gideon®

INFECTIOUS DISEASES OF ISRAEL

STEPHEN BERGER, MD
GIDEON SCIENCE TEAM

2023 EDITION

Infectious Diseases of Israel - 2023 edition
Stephen Berger, MD
GIDEON science team

Published by GIDEON Informatics, Inc, Los Angeles, California, USA. www.gideononline.com

Cover design by GIDEON Informatics, Inc

ISBN: 978-1-4988-3921-1

Visit www.gideononline.com/ebooks/ for the up to date list of GIDEON ebooks.

DISCLAIMER
Publisher assumes no liability to patients with respect to the actions of physicians, health care facilities and other users, and is not responsible for any injury, death or damage resulting from the use, misuse or interpretation of information obtained through this book. Therapeutic options listed are limited to published studies and reviews. Therapy should not be undertaken without a thorough assessment of the indications, contraindications and side effects of any prospective drug or intervention. Furthermore, the data for the book are largely derived from incidence and prevalence statistics whose accuracy will vary widely for individual diseases and countries. Changes in endemicity, incidence, and drugs of choice may occur. The list of drugs, infectious diseases and even country names will vary with time.

Scope of Content
Disease designations may reflect a specific pathogen (ie, Adenovirus infection), generic pathology (Pneumonia - bacterial) or etiologic grouping (Coltiviruses - Old world). Such classification reflects the clinical approach to disease allocation in the Infectious Diseases Module of the GIDEON web application. Similarly, a number of diseases which are generally diagnosed and treated outside of the field of Infectious Diseases are not included, despite the fact that a clear infectious etiology exists. Examples include Peptic ulcer. In contrast, a number of other entities of unknown etiology which do present to Infectious Diseases specialists have been included: Kawasaki's disease, Chronic fatigue syndrome, Kikuchi and Kimura diseases. Several minor infections having minimal relevance to the field of Infectious Diseases are not covered: Paronychia, Otitis externa, etc.

Introduction: The GIDEON e-book series

Infectious Diseases of Israel is one in a series of GIDEON ebooks which summarize the status of Infectious diseases, Drugs, Vaccines and Pathogens in every country of the world.

Chapters are arranged alphabetically, by disease name. Each section is divided into three sub-sections:
1. Descriptive epidemiology
2. Status of the disease in Israel
3. References

The initial items in the first section, Descriptive epidemiology, are defined as follows:

Agent	Classification (e.g., virus, parasite) and taxonomic designation.
Reservoir	Any animal, arthropod, plant, soil or substance in which an infectious agent normally lives and multiplies, on which it depends primarily for survival, and where it reproduces itself in such a manner that it can be transmitted to a susceptible host.
Vector	An arthropod or other living carrier which transports an infectious agent from an infected organism or reservoir to a susceptible individual or immediate surroundings.
Vehicle	The mode of transmission for an infectious agent. This generally implies a passive and inanimate (i.e., non-vector) mode.

A chapter outlining the routine vaccination schedule of Israel follows the diseases chapters.

Content
There are 366 generic infectious diseases in the world today. 211 of these are endemic, or potentially endemic, to Israel. A number of other diseases are not relevant to Israel and have not been included in this book.

In addition to endemic diseases, we have included all published data regarding imported diseases and infection among expatriates from Israel.

Sources
Data are based on the GIDEON web application (www.gideononline.com) which relies on standard text books, peer-review journals, Health Ministry reports and ProMED, supplemented by an ongoing search of the medical literature.

The availability and quality of literature regarding specific infectious diseases vary from country to country. As such, you may find that many of the sections in this book are limited to a general discussion of the disease itself - with no data regarding Israel.

This is a book about the geography and epidemiology of Infection. Comprehensive and up-to-date information regarding the causes, diagnosis and treatment of each disease is available in the GIDEON web application. Many of the diseases are generic. For example, such designations as Pneumonia bacterial and Urinary tract infection include a number of individual diseases. These appear under the subheading, Synonyms, listed under each disease.

We welcome feedback, and will be pleased to add any relevant, sourced material. Email us at ebook@gideononline.com

For more information about GIDEON see the section **About GIDEON** and visit www.gideononline.com

Last updated: June 22, 2023

Table of Contents

* Not endemic. Imported, expatriate or other context reported.

+ Country specific note exists for disease

Acanthocephalan infections

Agent	PARASITE - Archiacanthocephala. Moniliformida: *Moniliformis moniliformis*, Oligocanthorhynchida: *Maracanthorhynchus hirudinaceus*.
Reservoir	Pig (*Maracanthorhynchus*), rat and fox (*Moniliformis*), Zoonotic
Vector	None
Vehicle	Insect ingestion
Incubation Period	Unknown - presumed 15 to 40 days
Diagnostic Tests	Identification of worm in stool: Moniliformis moniliformis adult: female - 10 to 30 cm; male - 4 to 5 cm Macracanthorhynchus hirudinaceus adult: female - 5.6 to 35.1 cm; male 5.2 to 8.9 cm
Typical Adult Therapy	Infection is usually self-limited. Pyrantel pamoate has been used against Moniliformis moniliformis - 11 mg/kg PO - repeat once in 2 weeks Levamisole (3 mg/kg/day for 3 days) OR Mebendazole (100 mg PO BID X3 days, repeated after one week) have been used successfully[1] [2] [3]
Typical Pediatric Therapy	Infection is usually self-limited. Pyrantel pamoate has been used against Moniliformis moniliformis - 11 mg/kg PO - repeat once in 2 weeks Levamisole (3 mg/kg/day for 3 days) OR Mebendazole (100 mg PO BID X3 days, repeated after one week) have been used successfully
Clinical Hints	- Most infections are characterized by asymptomatic passage of a worm - In some cases, only vague complaints such as 'periumbilical discomfort' and 'giddiness' have been described
Synonyms	Atrophic rhinitis, Corynosoma, Dabie bandavirus, Macracanthorhynchus, Moniliform acanthocephalan, Moniliformis moniliformis, Negi nagi. ICD9: 128.9 ICD10: B83.8

References

1. Ann Saudi Med 2006 Jul-Aug;26(4):321-4.
2. Korean J Parasitol 2007 Jun ;45(2):145-8.
3. Cochrane Database Syst Rev 2021 Dec 09;12:CD015374.

Actinomycosis

Agent	BACTERIUM. Actinomycetes, *Actinomyces* spp. Anaerobic gram-positive bacillus
Reservoir	Human (oral, fecal and vaginal flora)
Vector	None
Vehicle	Endogenous
Incubation Period	Unknown
Diagnostic Tests	Gram stain and bacteriological culture using strict anaerobic technique. Growth is apparent in 3-7 days.
Typical Adult Therapy	Penicillin G 18 to 24 million units/day X 2 to 6w Then Penicillin V 2 to 4 Grams daily X 6 to 12 months Alternatives: Doxycycline, Ceftriaxone, Erythromycin Excision/drainage[1]
Typical Pediatric Therapy	Penicillin G 100,000 units/kg/day X 2 to 6 weeks Then Penicillin V 25,000 units/day X 6-12m Alternatives: Ceftriaxone, Erythromycin Excision/drainage
Clinical Hints	- Mandibular osteomyelitis with fistulae (sulfur granules) in the setting of poor dental hygiene - Pelvic abscesses in a women with intra-uterine device - Fever, right lower quadrant mass and fistulae - Suppurative pleuropulmonary infection with fistulae
Synonyms	Actinomyces, Aktinomykose, Lumpy jaw. ICD9: 039. ICD10: A42

References

1. BMJ 2011 Oct 11;343:d6099.

Adenovirus infection

Agent	VIRUS - DNA. Adenoviridae, Adenovirus Enteric strains are classified in genus Mastadenovirus
Reservoir	Human, Non-human primates, Zoonotic
Vector	None
Vehicle	Droplet, Water, Respiratory of pharyngeal acquisition
Incubation Period	4d - 12d
Diagnostic Tests	Viral culture/serology or antigen assay. Direct fluorescence of secretions. Nucleic acid amplification.
Typical Adult Therapy	Enteric/secretion precautions. Cidofovir and Brincidofovir have been used in some cases. Symptomatic therapy[1] [2] [3]
Typical Pediatric Therapy	As for adult
Vaccine	Adenovirus vaccine
Clinical Hints	- Generally, an uncomplicated illness lasting 3 to 5 days - Atypical pneumonia, upper respiratory infection, tracheitis, bronchiolitis - Keratoconjunctivitis with preauricular adenopathy - Gastroenteritis or hemorrhagic cystitis
Synonyms	Adenovirus gastroenteritis, Epidemic keratoconjunctivitis, Hepatitis of unknown origin, Pharyngoconjunctival fever, Severe acute hepatitis in children. ICD9: 047.9,077.1,077.2,008.62,480.0 ICD10: A08.2,B30.1,B34.0,J12.0

Adenovirus infection in Israel

- 2005 to 2010 - Major outbreaks of adenoviral infection have occurred in the West Bank during the months of spring. [4]

- 2006 to 2008 - Adenovirus accounted for 18.3% of laboratory-confirmed viral infections among hospitalized patients. 66.5% of patients were below age 3 years, and 59.7% were males. (National Reference Center). [5]

Prevalence surveys

Years	Region	Study Group	%	Notes
2005 - 2006	Northern Region	children	0.2	children ages <= 2 years hospitalized with acute bronchiolitis [6]
1998*	Southern Region	patients	5	winter respiratory tract infections in an outpatient setting [7]
2004 - 2006	Beer Sheva	patients	0.7	patients hospitalized with lower respiratory tract infections (winter seasons) [8]
2011*	Northern Region	patients	10.3	patients with community-acquired pneumonia [9]
2011 - 2016	West Bank	patients	0.5	[10]
2006		children - respiratory	32.9	children below age 10 hospitalized for respiratory infection [11]
2009*	Beer Sheva	children - respiratory	3.4	children below age 5 years with community-acquired alveolar pneumonia [12]
2009 - 2015	Multiple locations	children - respiratory	11.2	Adenovirus DNA was detected in 145 (11.2%) out of 1,297 people aged 3 months to 20 years. Median age was 1.2 years and the majority (50.7%) were male. [13]

Years	Region	Study Group	%	Notes
2018 - 2020	Tel Aviv	children - gastrointestinal	1	In the stool samples collected from 118 hospitalized children at the Schneider Children's Medical Center of Israel, *Adenovirus* was detected in 1% of the samples. [14]

* indicates publication year (not necessarily year of survey)

Notable outbreaks

Years	Region	Setting	Cases	Clinical	Population	Notes
1974*		kibbutz		pharyngoconjunctivitis		multiple pathogens. Adenovirus types 2 and 7 [15]
1993*	Ramat Gan	neonatal intensive care unit		conjunctivitis		Adenovirus 8. [16]
2010		residential facility	8		children	Adenovirus 7. Outbreak among disabled children in a residential facility [17]
2016*		psychiatric institution				Adenovirus 55. Outbreak involved two psychiatric institutions [18]

* indicates publication year (not necessarily year of outbreak)

Adenovirus 41 [19] [20] [21] [22] [23] [24]

Adenovirus 41 is primarily transmitted via the fecal-oral route and is a common cause of acute gastroenteritis in children - typically with diarrhea, vomiting and fever. Respiratory symptoms are also common.

- 2022 - Several cases of severe acute hepatitis of unknown etiology were reported ion a number of countries, among previously healthy children. Most patients were afebrile, and experienced an initial illness characterized by vomiting and diarrhea, followed by jaundice and elevation of blood transaminase levels. Adenovirus 41 viremia was identified in over 50% of the patients. Acute liver failure requiring liver transplantation was required in some cases.
- As of November 24, 2022, five cases (0 fatal) had been reported in Israel and 1 (fatal) in Gaza. [25] [26] [27]

References

1. Biol Blood Marrow Transplant 2017 Mar ;23(3):512-521.
2. Bone Marrow Transplant 2003 Mar ;31(6):481-6.
3. Pediatr Infect Dis J 2020 May 12;
4. PLoS One 2012 ;7(8):e42732.
5. J Clin Microbiol 2011 Feb ;49(2):597-601.
6. Pediatr Infect Dis J 2010 Jan ;29(1):e7-e10.
7. Eur J Clin Microbiol Infect Dis 1998 Oct ;17(10):685-9.
8. J Clin Microbiol 2009 Nov ;47(11):3439-43.
9. Isr Med Assoc J 2010 Aug ;12(8):477-82.
10. Can J Infect Dis Med Microbiol 2021 ;2021:5643134.
11. J Clin Microbiol 2008 Jan ;46(1):334-7.
12. J Pediatr 2010 Jan ;156(1):115-20.
13. Front Pediatr 2022 ;10:990750.
14. Acta Paediatr 2022 Nov 29;
15. Isr J Med Sci 1974 Dec ;10(12):1505-9.
16. Arch Dis Child 1993 May ;68(5 Spec No):610-1.
17. Pediatr Infect Dis J 2011 Nov ;30(11):948-52.
18. J Clin Virol 2016 May ;78:31-5.
19. Euro Surveill 2022 Apr ;27(15)
20. ProMED <promedmail.org> archive: 20220406.8702449
21. ProMED <promedmail.org> archive: 20220425.8702847
22. ProMED <promedmail.org> archive: 20220426.8702848
23. ProMED <promedmail.org> archive: 20220427.8702884
24. ProMED <promedmail.org> archive: 20220428.8702896
25. ProMED <promedmail.org> archive: 20220505.8703064
26. ProMED <promedmail.org> archive: 20220512.8703191
27. ProMED <promedmail.org> archive: 20220529.8703516

Aeromonas and marine Vibrio infx.

Agent	BACTERIUM. *Aeromonas hydrophila*, *Vibrio vulnificus*, et al Facultative gram-negative bacilli
Reservoir	Salt or brackish water, Fish
Vector	None
Vehicle	Water, Shellfish, Contact
Incubation Period	Range 2d - 7d
Diagnostic Tests	Culture. Notify laboratory if these organisms are suspected in stool.
Typical Adult Therapy	Fluoroquinolone, third generation cephalosporin or Sulfamethoxazole / Trimethoprim. Doxycycline + Ciprofloxacin or Ceftriaxone for necrotizing infection. Other antimicrobial agent as determined by susceptibility testing[1] [2]
Typical Pediatric Therapy	Sulfamethoxazole / Trimethoprim. Or other antimicrobial agent as determined by susceptibility testing
Clinical Hints	- Disease follows marine injury or ingestion of raw oysters / contaminated fresh or brackish water - Diarrhea, fever, vomiting or sepsis - Fecal leukocytes present - Severe or fatal in immunosuppressed or alcoholic patients
Synonyms	Aeromonas, Aeromonas hydrophila, Vibrio alginolyticus, Vibrio mimicus, Vibrio vulnificus. ICD9: 005.81,027.9 ICD10: A48.8

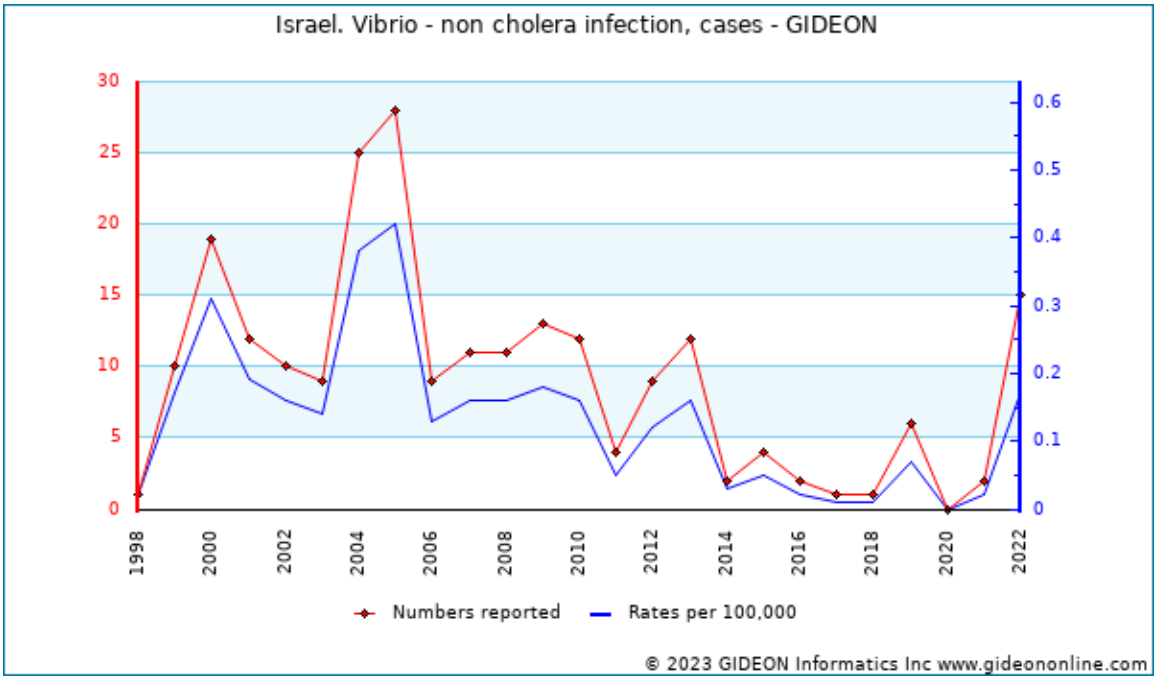
Aeromonas and marine Vibrio infx. in Israel

Chronology

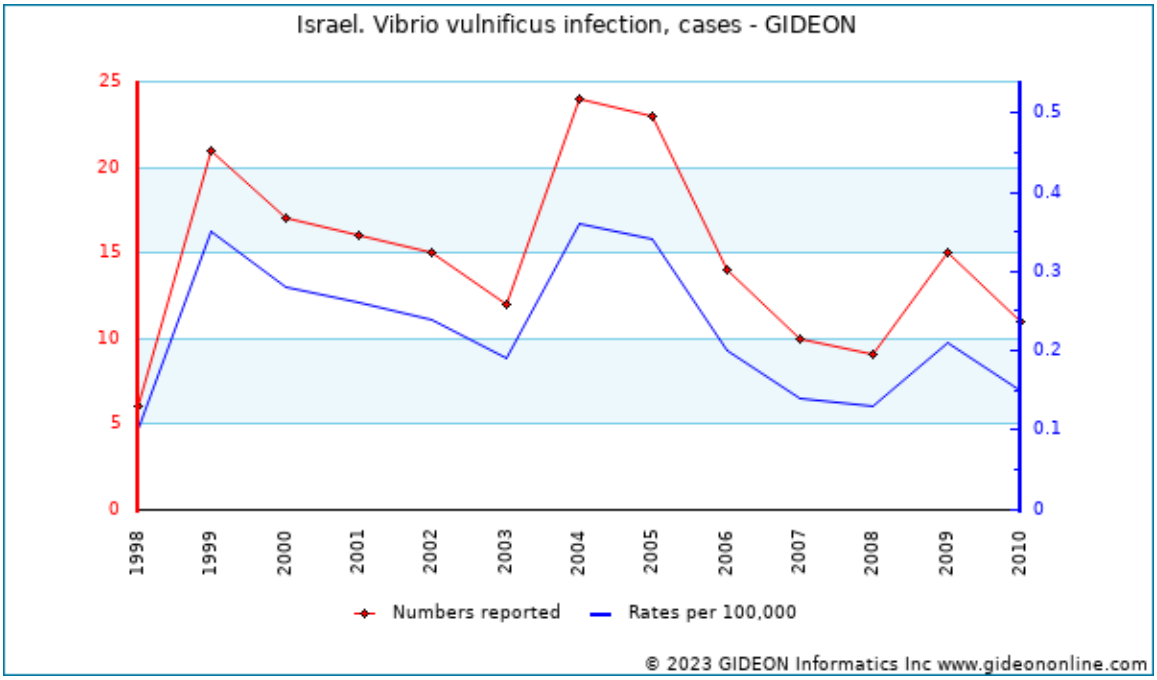
- 1996 to 1997 - *Vibrio vulnificus* was first isolated in 1996, and was implicated in 62 cases (0 fatal) of wound infection during May 1996 to December 1997, acquired from handling commercially-raised fresh water fish (St. Peter's fish = *Tilapia zillii*). [3] A heretofore undescribed strain (*V. vulnificus* biotype III) was isolated from these patients. [4] [5] [6] [7]
- 1996 to 1997 - 106 cases (66 laboratory-confirmed) of *V. vulnificus* biotype III infection were reported
- 1998 to 2006 - 132 cases of *V. vulnificus* biotype III infection were reported - 83% related to exposure to tilapia and 13% to common carp. [8] [9]

Prevalence surveys

Years	Region	Study Group	%	Notes
1993 - 1994		water	6.9	*Vibrio vulnificus* was found in 6.9% of sea water (Mediterranean) and 1.4% of beach sand samples
1996 - 1998		water	32.8	32.8% of sea water and 2.9% of beach sand
2006 - 2007	Gaza	specimens - stool	4.7	*Aeromonas* was found in 4.7% of childhood diarrhea [10]
2010	Northern Region	specimens - stool	1.6	*Aeromonas* spp. were found in 1.6% of diarrheal stool specimens - 65% of these *A. caviae*, 29% *A. veronii* and 6% *Aeromonas taiwanensis* [11]
2010		children - gastrointestinal	0.4	*Aeromonas hydrophila* is found in 0.4% of stool specimens from children with gastroenteritis



Graph: Israel. Vibrio - non cholera infection, cases



Graph:

Israel. Vibrio vulnificus infection, cases

References

1. Clin Infect Dis 2014 Jul 15;59(2):e10-52.
2. Antimicrob Agents Chemother 2012 Feb ;56(2):1110-2.
3. Emerg Infect Dis 2009 Aug ;15(8):1282-5.
4. Lancet 1999 Oct 23;354(9188):1421-4.
5. Emerg Infect Dis 2005 Jan ;11(1):30-5.
6. Genome Announc 2014 Mar 20;2(2)
7. Front Microbiol 2014 ;5:803.
8. Lancet 1999 Oct 23;354(9188):1421-4.
9. ProMED <promedmail.org> archive: 20031229.3159
10. Indian J Pediatr 2011 Feb ;78(2):165-70.
11. PLoS One 2012 ;7(2):e30070.

African tick bite fever

Agent	BACTERIUM. Rickettsiales: *Rickettsia africae*
Reservoir	Sheep, Goat, Cattle, Tick, Zoonotic
Vector	Tick (*Rhipicephalus*, *Haemaphysalis*, *Amblyomma*)
Vehicle	None
Incubation Period	6d - 7d (range 3d - 18d)
Diagnostic Tests	Serology. Demonstration of rickettsiae by immunofluorescence or culture. Nucleic acid amplification
Typical Adult Therapy	Doxycycline 100 mg PO BID X 7d. OR Chloramphenicol 500 mg PO QID X 3 to 5d[1]
Typical Pediatric Therapy	Doxycycline 2 mg/kg PO BID X 3 to 5d (maximum 200 mg/day). OR Chloramphenicol 10 mg/kg PO QID X 3 to 5d
Clinical Hints	- Fever and rash following a tick bite In contrast to Mediterranean spotted fever: - Multiple eschars may be present - The rash is vesicular, and is present in only 30% of patients
Synonyms	Rickettsia africae, South African spotted fever. ICD9: 082.1 ICD10: A77.1

Although African tick bite fever is not endemic to Israel, imported, expatriate or other presentations of the disease have been associated with this country.

African tick bite fever in Israel

Cross-border events

Years	Acquired by**	Originated in**	Setting	Cases	Notes
2007*	Israel		travel	1	Country of acquisition not specified.
2008	Israel	South Africa	jeep expedition	9	Outbreak among Israeli women participating in a jeep expedition in South Africa [2]

***** indicates publication year (not necessarily year of event)
****** Country or Nationality

Vectors

- 2010 - DNA of *Rickettsia africae* was identified in a tick (*Hyalomma detritum*) from a wild boar. [3]
- 2013 (publication year) - The pathogen was also identified in *Hyalomma turanicum*, *H. impeltatum*, *H. dromedarii*, and *H. excavatum* from camels and horses in southern Israel. [4]

Notable outbreaks

Years	Region	Setting	Cases	Population	Notes
2008	Foreign Country	travel	9	tourists	Israeli women participating in a jeep expedition in South Africa [5]

References

1. Lancet Infect Dis 2003 Sep ;3(9):557-64.
2. Harefuah 2010 Sep ;149(9):572-5, 620.

3. Am J Trop Med Hyg 2014 May ;90(5):920-2.
4. Vector Borne Zoonotic Dis 2013 Dec ;13(12):851-6.
5. Harefuah 2010 Sep ;149(9):572-5, 620.

Amoeba - free living

Agent	PARASITE - Protozoa. Centramoebida, Acanthamoebidae: *Acanthamoeba* and *Balamuthia* Schizopyrenida, Vahkampfidae: *Naegleria*
Reservoir	Water, Soil
Vector	None
Vehicle	Water (diving, swimming), Contact
Incubation Period	5d - 6d (range 2d - 14d) Granulomatous ? to 2m
Diagnostic Tests	Wet preparation. Specialized cultures. Serology available in reference centers.
Typical Adult Therapy	CNS *Naegleria*: Amphotericin B to 1.5 mg/kg/d IV + 1.5 mg intrathecal. X 8 days + Fluconazole 10 mg/kg/day PO + Rifampin 10 mg/kg/day PO + Azithromycin 10 mg/kg/day PO + Miltefosine 50 mg TID PO + dexamethasone. *Acanthamoeba*: Pentamidine, Amphotericin B, Flucytosine, Rifampin, Itraconazole Miltefosine used in some cases of *Acanthamoeba* / *Balamuthia* infection[1] [2] [3] [4]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Severe, progressive meningoencephalitis (*Naegleria*, *Acanthamoeba* or *Balamuthia*) after swimming or diving in fresh water - Keratitis (*Acanthamoeba*), associated with contaminated solutions used to clean contact lenses
Synonyms	Acanthamoben, Acanthamoeba, Allovahlkampfia, Amebic keratitis, Balamuthia, Balmuthia, Dictyostelium, Free-living ameba, Leptomyxid ameba, Naegleria, Paravahlkampfia, Primary amebic meningoencephalitis, Sappinia, Vahlkampfia. ICD9: 136.2 ICD10: B60.1,B60.2

Amoeba - free living in Israel

Sporadic cases of amebic keratitis have been reported. [5]

- 2008 to 2012 - 23 cases of *Acanthamoeba* keratitis were identified through active case-finding (1 per 1,668,552 per year). [6]
- 2022 - A fatal case of *Naegleria fowleri* meningoencephalitis was reported in Northern Israel. [7]
- 2005 (publication year) - Free-living amoebae, including *Acanthamoeba* species, are found in the Negev region. [8]

References

1. Pediatrics 2015 Mar ;135(3):e744-8.
2. Clin Microbiol Rev 2003 Apr ;16(2):273-307.
3. Emerg Infect Dis 2008 Nov ;14(11):1743-6.
4. Eye (Lond) 2021 Sep 21;
5. Harefuah 2006 Mar ;145(3):194-8, 246.
6. Br J Ophthalmol 2013 Nov ;97(11):1382-3.
7. ProMED <promedmail.org> archive: 20220812.8705000
8. Microb Ecol 2005 Jan ;49(1):134-41.

Amoebiasis

Agent	PARASITE - Protozoa. Sarcomastigota, Entamoebidea: *Entamoeba histolytica* (must be distinguished from non-invasive, *Entamoeba dispar*)
Reservoir	Human
Vector	Fly (Musca) - occasionally
Vehicle	Food, Water, Sexual contact, Fly
Incubation Period	1w - 3w (range 3d - 90d)
Diagnostic Tests	Fresh stool/aspirate for microscopy. Stool antigen assay. Stool PCR. Note: serological tests usually negative.
Typical Adult Therapy	Tinidazole 2 G PO X 5d OR Metronidazole 500 mg TID X 7-10d Follow with: Paromomycin 500 mg PO TID X 7d[1]
Typical Pediatric Therapy	Tinidazole 50 mg/kg/d PO X 5d OR Metronidazole 15 mg/kg TID PO X 10d Follow with: Paromomycin 10 mg/kg PO TID X 7d
Clinical Hints	- Dysentery, abdominal pain, tenesmus. - Unlike shigellosis, hyperemia of the rectal mucosa and fecal pus are absent. - Liver abscess and dysentery rarely coexist in a given patient
Synonyms	Amebiasis, Amebiasis intestinal, Amebic colitis, Amebic dysentery, Amoebenruhr, Entamoeba bangladeshi, Entamoeba gingivalis, Entamoeba hartmanni, Entamoeba moshkovskii. ICD9: 006.0,006.1,006.2 ICD10: A06.0,A06.1,A06.2

Amoebiasis in Israel

Evidence for *Entamoeba histolytica* infestation has been identified in an Ottoman latrine in Acre dating from the early 1800's. [2]

Time and Place

- 1950 to 1952, 400 to 500 Israelis were hospitalized for amebiasis each year - with a mortality rate of 0.8 per 100,000 population.
- 1950 to 1958, 97 fatal cases were reported
- By 1958 to 1961, hospitalization had fallen to 150 per year and mortality to 0.2 per 100,000 per year.
- 1952 to 1953, 966 patients were hospitalized for amebiasis; 427 (4 fatal) in 1955.

Prevalence surveys

Years	Region	Study Group	%	Notes
1992*	Multiple locations	children	3	3% of children in the West Bank and Gaza [3]
2004*	Gaza	children	7	7.0% of children in Khan Younis [4]
2010*	West Bank	children	9.7	9.7% of school children in the northern West Bank [5]
1980 - 1989		immigrants	4.8	4.8% of Ethiopian immigrants during the 1980's
1999 - 2014	Jerusalem	travelers	0.2-0.77	Amebiasis accounted for 0.77% of illness among returning Israeli travelers; and amebic liver abscess for 0.2% [6]
2014*	Gaza	patients	28.8	28.8% of patients in Gaza [7]
1951*		general population	34	[8]

Years	Region	Study Group	%	Notes
1979 - 1982		general population	0.6-16	[9]
1960 - 1979	Petah Tikva	specimens - stool	13.5	13.5% of stool specimens in the Petah Tikva area during the 1960's and 1970's.
1981 - 1986	Nablus	specimens - stool	22.9	22.9% of stool specimens submitted in Nablus [10]
2013*	Gaza	rodents	17.1	17.1% of *Rattus rattus* in Khan Younis and Jabalia, Gaza [11]
1967 - 1977	Jerusalem	patients - liver disease	42	Amoebic abscess accounted for 42% of liver abscesses [12]
2019*	Gaza	students - university	7.5	Survey of female university students [13]
2008*	Gaza	children - gastrointestinal	15	15% of diarrhea among children below age 5 in Gaza [14]
2015*	Gaza	children - gastrointestinal	28	28.0% of diarrhea among kindergarten children below age 5, in Gaza [15] [16]

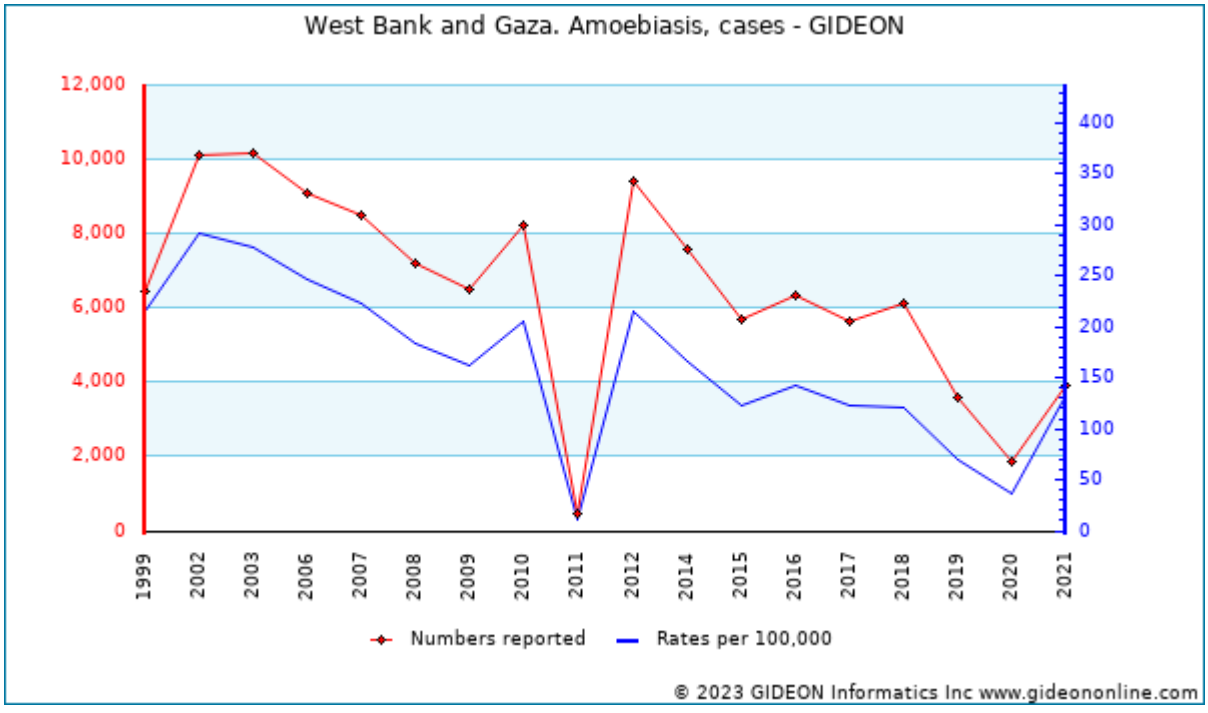
* indicates publication year (not necessarily year of survey)

Notable outbreaks

Years	Region	Setting	Notes
1984*	Negev	kibbutz	Outbreak affected 25% of the population [17]

* indicates publication year (not necessarily year of outbreak)

West Bank and Gaza



Graph: West Bank and Gaza. Amoebiasis, cases

- 2005 (publication year) - *E. histolytica* accounted for 69.6% of pediatric fecal isolates in Gaza, and *E. dispar* for 22.8%. [18]
- 2002 to 2003 - No cases of amebic abscess were reported.

References

1. Cochrane Database Syst Rev 2009 Apr 15;(2):CD006085.
2. Korean J Parasitol 2019 Dec ;57(6):575-580.
3. Riv Inferm 1992 Oct-Dec;11(4):247-52.
4. Parasitol Res 2004 Dec ;94(6):449-51.
5. Trop Med Int Health 2011 Feb ;16(2):240-4.
6. Am J Trop Med Hyg 2016 May 04;94(5):1015-9.
7. Ann Parasitol 2014 ;60(4):281-9.
8. J Med Liban 1951 May ;4(3):163-9.
9. Harefuah 1987 Jun 15;112(12):612-5.
10. Ann Trop Med Parasitol 1989 Feb ;83(1):67-72.
11. J Egypt Soc Parasitol 2013 Apr ;43(1):259-68.
12. Isr J Med Sci 1980 Nov ;16(11):761-6.
13. Avicenna J Med 2019 Oct-Dec;9(4):143-147.
14. Med Princ Pract 2008 ;17(4):296-301.
15. J Biomed Res 2015 Jan ;29(1):61-8.
16. Ann Med Health Sci Res 2015 Jul-Aug;5(4):292-8.
17. Trans R Soc Trop Med Hyg 1984 ;78(3):346-8.
18. J Egypt Soc Parasitol 2005 Apr ;35(1):59-68.

Amoebic abscess

Agent	PARASITE - Protozoa. Sarcomastigota, Entamoebidea: *Entamoeba histolytica* (must be distinguished from non-invasive, *Entamoeba dispar*)
Reservoir	Human
Vector	Fly (Musca) - occasionally
Vehicle	Food, Water, Sexual contact, Fly
Incubation Period	2w - 6m (rarely years; 95% within 6m)
Diagnostic Tests	Imaging. Serology. Nucleic acid amplification. Note: Amoebae are usually not present in stool at this stage.
Typical Adult Therapy	Tinidazole 2 G X 5d OR Metronidazole 750 mg PO TID X 10d[1]
Typical Pediatric Therapy	Metronidazole 15 mg/kg TID X 10d OR Tinidazole 15 to 20 mg/kg TID X 5d
Clinical Hints	- Fever, local pain and weight loss - Concurrent amebic colitis is usually not present. - Typically a single abscess in the right hepatic lobe (bacterial abscesses may be multiple)
Synonyms	Absceso amebiano, Amebic liver abscess. ICD9: 006.3,006.4,006.5,006.6,006.8 ICD10: A06.4,106.5,A06.7,106.8

Amoebic abscess in Israel

Epidemiological data regarding Amebic abscess are included in the notes for Amoebiasis.

References

1. J Trop Med Hyg 1978 Jan ;81(1):16-9.

Anaplasmosis

Agent	BACTERIUM. Anaplasmataceae *Anaplasma phagocytophilum*. (*E. phagocytophila*, *E. equi* "HE agent" merged into this species) Intracellular *Rickettsia*-like
Reservoir	Rodent, Rabbit, Deer, Tick, Primate, Cattle, Horse, Goat, Sheep, Zoonotic
Vector	Tick (*Ixodes scapularis*, *Ix. pacificus*, *Ix. ricinus*)
Vehicle	Blood or secretions (rare)
Incubation Period	Unknown; mean 8d
Diagnostic Tests	Intraleucocytic inclusions ('morulae') seen in blood smear. Serology. Nucleic acid amplification/
Typical Adult Therapy	Doxycycline 100 mg PO BID X 4 to 5 days OR Rifampin 300 mg PO BID X 5 to 7 days[1] [2]
Typical Pediatric Therapy	Above age 8 years: Doxycycline 2 mg/kg PO BID X 4 to 5 days OR Rifampin 10 mg/kg/day PO BID X 5 to 7 days Below age 8 years: Tetracycline 25 mg/kg/d PO QID X 4 to 5 days OR Rifampin 10 mg/kg/day PO BID X 5 to 7 days
Clinical Hints	- Fever, headache and myalgia following tick bite or exposure - Arthralgia or macular rash may be present - Leukopenia, thrombocytopenia or hepatic dysfunction are common - Inclusions may be seen in granulocytes - Case-fatality rate is 5%
Synonyms	Anaplasma bovis, Anaplasma capra, Anaplasma ovis, Anaplasma phagocytophilum, Anaplasma platys, Anaplasmosis - human granulocytic, Candidatus A. sparouinense, Ehrlichia equi, Ehrlichia ewingii, Ehrlichia microti, Ehrlichia phagocytophila, Ehrlichiosis - human granulocytic, Human granulocytic anaplasmosis, Human granulocytic ehrlichiosis. ICD9: 082.4 ICD10: B28.8

Anaplasmosis in Israel

1994 to 1997 - One case of human granulocytic ehrlichiosis was confirmed among 1,000 patients with fever of unknown origin. [3] [4]

Reservoirs and Vectors

- 2004 to 2005 - *Anaplasma phagocytophilum* has been detected in ticks (*Hyalomma marginatum*, *Rhipicephalus turanicus*, and *Boophilus kohlsi*) collected from roe deer (*Capreolus capreolus*) in Mount Carmel. [5]
- 2006 (publication year) - Antibody to *Anaplasma phagocytophilum* has been found among free-ranging jackals and dogs. [6]

Seroprevalence surveys

Years	Study Group	%	Notes
2006*	various	0-9	9% of domestic dogs and 0% of horses [7]
1999*	jackals	26	26% of jackals (*Canis aureus syriacus*) [8]

***** indicates publication year (not necessarily year of survey)

References

1. Infect Dis Clin North Am 2008 Sep ;22(3):433-48, viii.
2. JAMA 2016 Apr 26;315(16):1767-77.
3. Emerg Infect Dis 2000 May-Jun;6(3):314-5.
4. Emerg Infect Dis 1999 Nov-Dec;5(6):775-8.
5. Emerg Infect Dis 2007 Sep ;13(9):1411-2.
6. J Vet Med B Infect Dis Vet Public Health 2006 Mar ;53(2):78-80.
7. J Vet Med B Infect Dis Vet Public Health 2006 Mar ;53(2):78-80.
8. Vet Parasitol 1999 Mar 31;82(2):121-8.

Animal bite-associated infection

Agent	BACTERIUM. *Pasteurella multocida*, and other zoonotic bite pathogens
Reservoir	Cat, Dog, Marsupial, Other mammal, Rarely bird, Zoonotic
Vector	None
Vehicle	Bite (cat in 60%, dog in 30%), No obvious source in 10%
Incubation Period	3h - 3d
Diagnostic Tests	Gram stain/culture. Hold specimen for 2 weeks to discount Capnocytophaga & other genera.
Typical Adult Therapy	Amoxicillin-clavulanate, Doxycycline, Cefuroxime. Dosage and duration appropriate for nature and severity of infection[1]
Typical Pediatric Therapy	Amoxicillin-clavulanate, Cefuroxime. Dosage and duration appropriate for nature and severity of infection
Clinical Hints	- Infection of cat- dog- or other bite wound; however, as many as 10% do not recall the bite - Symptoms appear within 3 to 72 hours - Systemic infection (meninges, bone, lungs, joints, etc) may occur
Synonyms	Bacteroides pyogenes, Bacteroides tectus, Bergeyella zoohelcum, Bisgaard's taxon 16, Capnocytophaga canimorsus, Capnocytophaga cynodegmi, CDC EF-4, CDC NO-1, Coryebacterium kutscheri, Corynebacterium canis, Corynebacterium freiburgense, Fusobacterium canifelinum, Halomonas venusta, Kingella potus, Moraxella canis, Mycobacterium vulneris, Neisseria animaloris, Neisseria canis, Neisseria weaveri, Neisseria zoodegmatis, Pasteurella caballi, Pasteurella canis, Pasteurella dagmatis, Pasteurella multocida, Pasteurella stomatis, Psychrobacter immobilis, Seal finger, Staphylococcus intermedius, Vibrio harveyi. ICD9: 027.2 ICD10: A28.0

Animal bite-associated infection in Israel

References

1. Clin Infect Dis 2014 Jul 15;59(2):147-59.
2. Scand J Infect Dis 2009 ;41(6-7):445-9.
3. Harefuah 2004 Feb ;143(2):92-6, 168.

Anisakiasis

Agent	PARASITE - Nematoda. Secernentea: *Anisakis simplex* and *Pseudoterranova decipiens*
Reservoir	Marine mammals Fish, Zoonotic
Vector	None
Vehicle	Undercooked fish
Incubation Period	Hours - 14d
Diagnostic Tests	Endoscopic identification of larvae. Anisakis larvae: length 5 to 30 mm
Typical Adult Therapy	Endoscopic removal of larvae; surgery for complications Mebendazole has been effective in animal models[1] [2]
Typical Pediatric Therapy	As for adult
Clinical Hints	Follows ingestion of undercooked fish (e.g., sushi), squid or octopus May present as - Generalized allergic reaction, or - Acute and chronic abdominal pain, often with "peritoneal signs" or hematemesis
Synonyms	Anasakis, Anisakidosis, Bolbosoma, Cod worm disease, Contracaecum, Eustrongylides, Herring worm disease, Hysterothylacium, Pseudoterranova, Whaleworm. ICD9: 127.1 ICD10: B81.0

Anisakiasis in Israel

Cross-border events

Years	Acquired by**	Originated in**	Setting	Cases	Notes
2003	Israel	Belgium	travel	1	

** Country or Nationality

References

1. Clin Microbiol Rev 1989 Jul ;2(3):278-84.

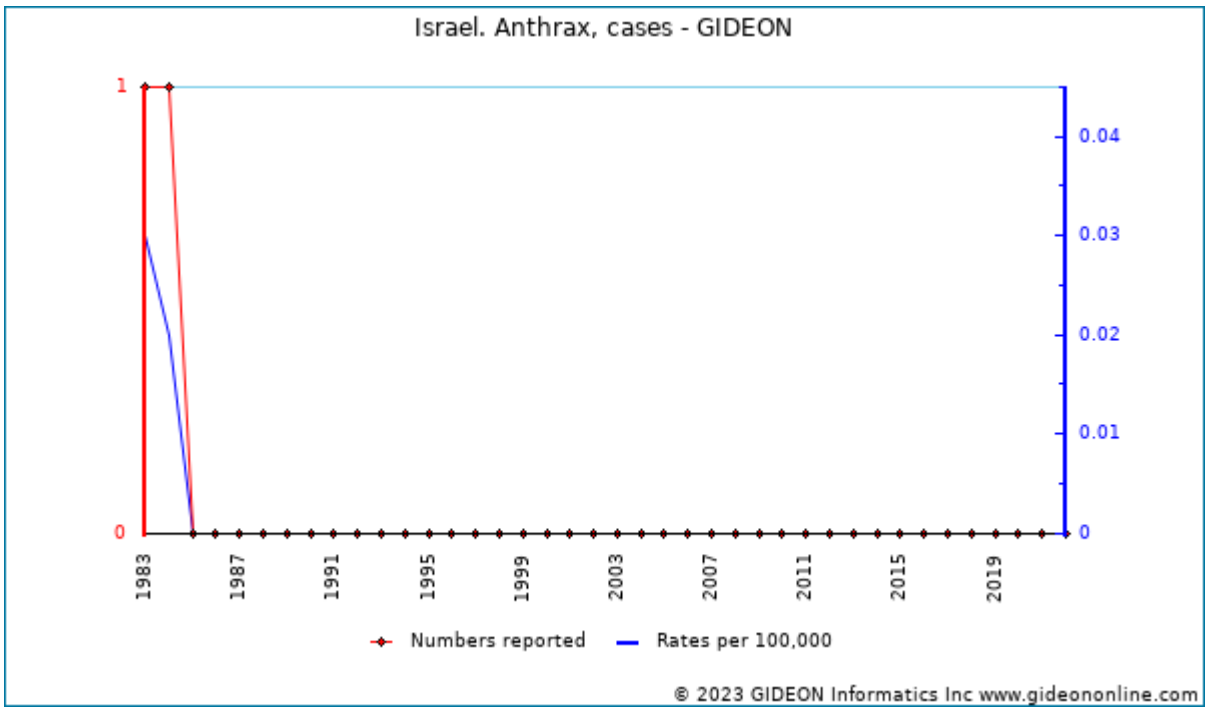
2. Dig Dis Sci 2020 Feb 27;

Anthrax

Agent	BACTERIUM. *Bacillus anthracis* An aerobic gram positive bacillus
Reservoir	Soil, Goat, Cattle, Sheep, Water, Horse, Zoonotic
Vector	Fly (rare)
Vehicle	Hair, Wool, Hides, Bone products, Air, Meat, Contact, Respiratory or pharyngeal acquisition
Incubation Period	1d-7d; 1-12 cutaneous, 1-7 GI; 1-43 pulmonary
Diagnostic Tests	Bacteriological culture. Alert laboratory that organism may be present. Serology and rapid tests by Ref. Centers.
Typical Adult Therapy	Isolation (secretions). Ciprofloxacin (or Penicillin if susceptible). If systemic infection, add Meropenem (or Imipenem) + Linezolid (or Rifampin or Clindamycin) Dosage/route/duration as per severity If inhalational anthrax, add Raxibacumab[1]
Typical Pediatric Therapy	As for adult
Vaccine	Anthrax immune globulin Anthrax vaccine
Clinical Hints	Acquired from contact with large mammals or their products (meat, wool, hides, bone). Anthrax may present as dermal, pulmonary, gastrointestinal or other forms depending of site of inoculation. - Edematous skin ulcer covered by black eschar - satellite vesicles may be present - Fulminant gastroenteritis or pneumonia - Necrotizing stomatitis - Hemorrhagic meningitis
Synonyms	Antrace, Antrax, Antraz, Bacillus cereus biovar anthracis, Carbunco, Carbunculo, La fievre charbonneuse, Malcharbon, Malignant pustule, Miltbrann, Miltvuur, Milzbrand, Mjaltbrand, Rural carbuncle, Siberian plague, Siberian ulcer, Splenic fever, Wool-sorter's disease. ICD9: 022 ICD10: A22

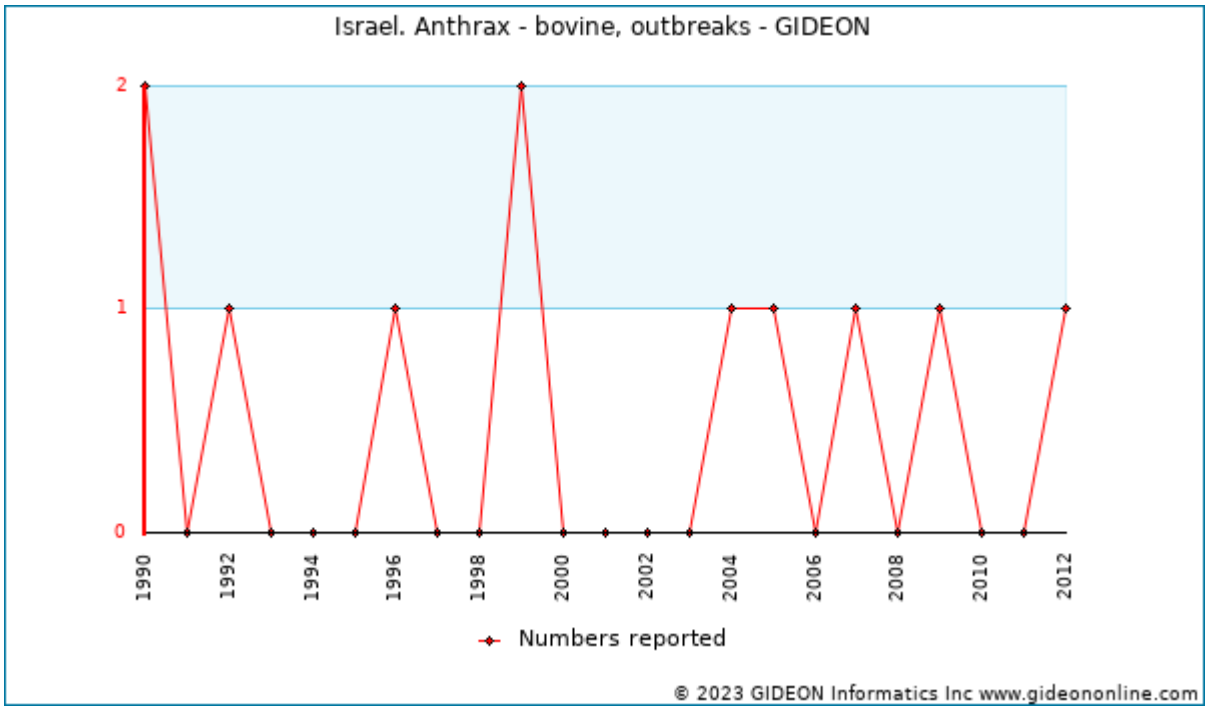
Anthrax in Israel

- A review of anthrax in Israel and Jordan during 1909 to 2012 [2]

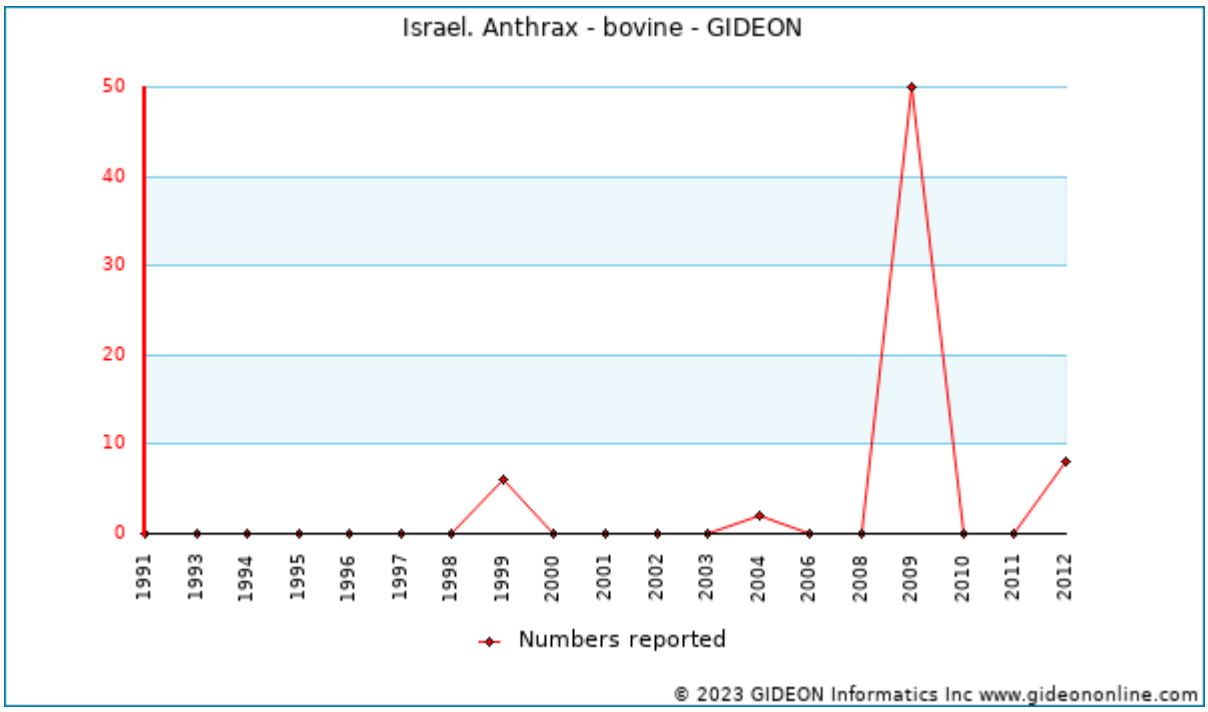


Graph: Israel. Anthrax, cases

25 infected animals were identified during 1971 to 1973, and 1 to 2 yearly during more recent years.

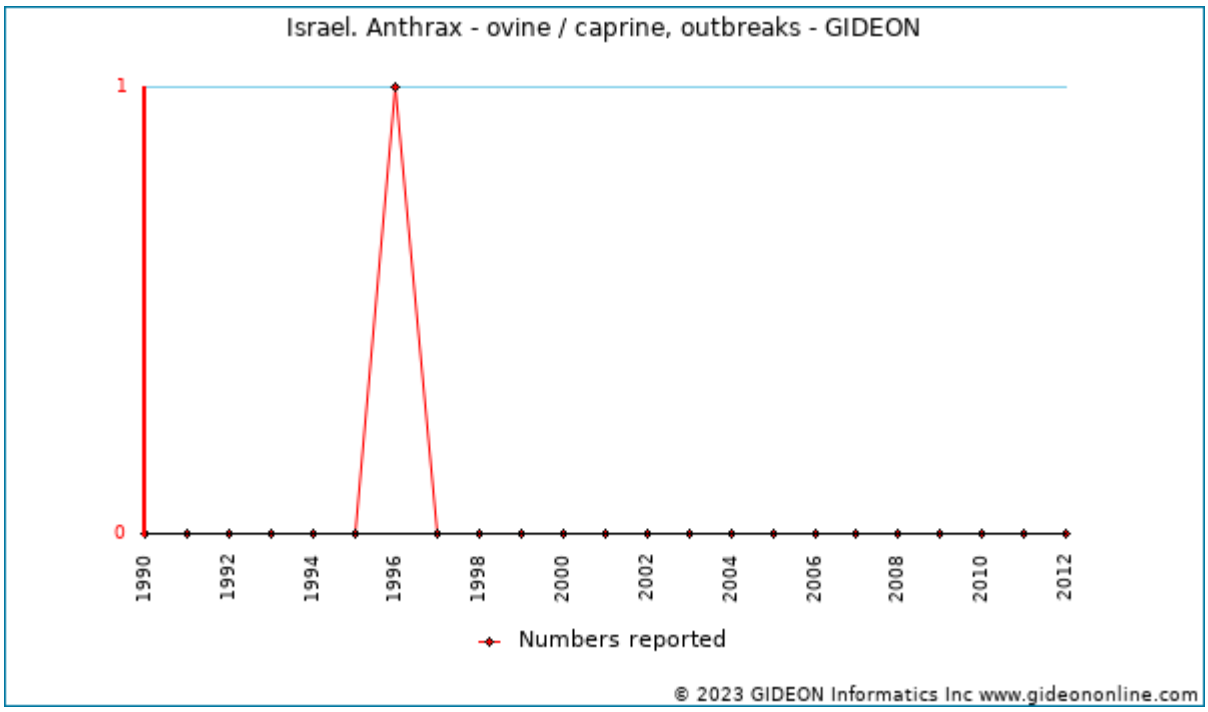


Graph: Israel. Anthrax - bovine, outbreaks

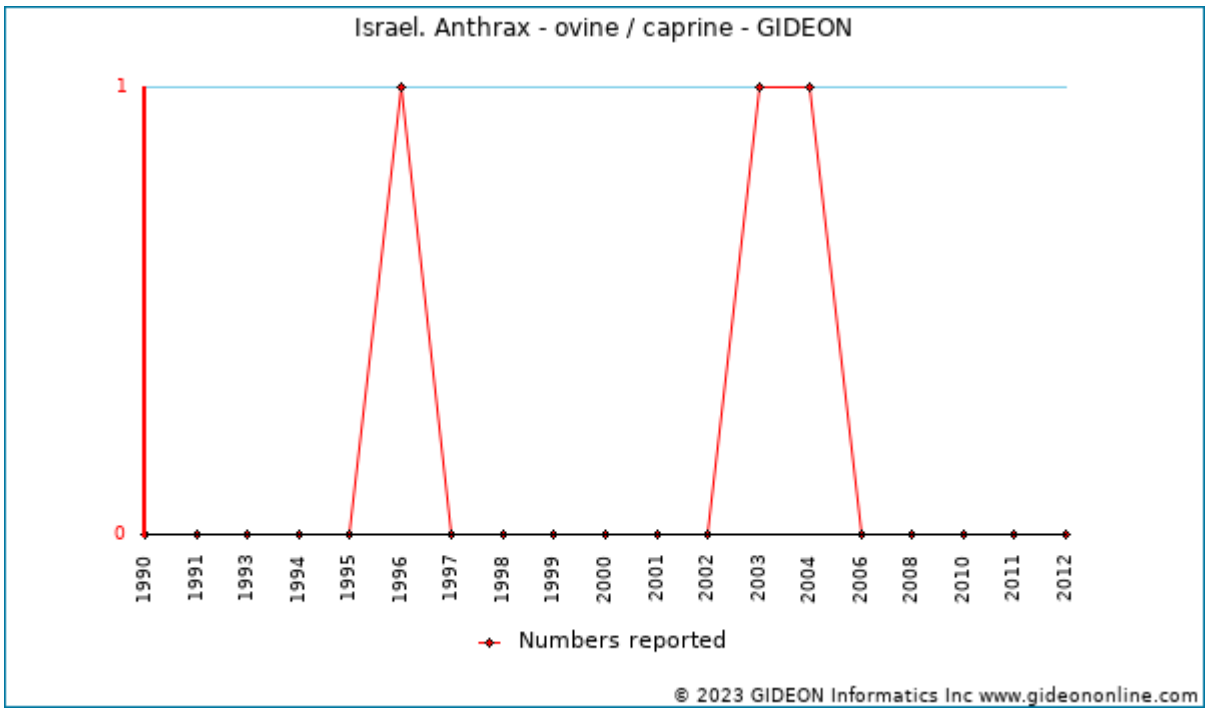


Graph: Israel. Anthrax - bovine

Notes:
Individual years:
2004 - Two cases of bovine anthrax were confirmed in Lachish.
2005 - An infected bovine was reported in Lachish. [3]
2007 - Two infected bovines were reported in Lachish. [4]
2009 - An infected cow was identified in the Megiddo region. [5]
2012 - Eight infected cattle were identified in Qeshet. [6]
2013 - 15 infected cattle were identified in the Northern Golan Heights. [7]
2014 - An infected cow was identified in the Northern District. [8]



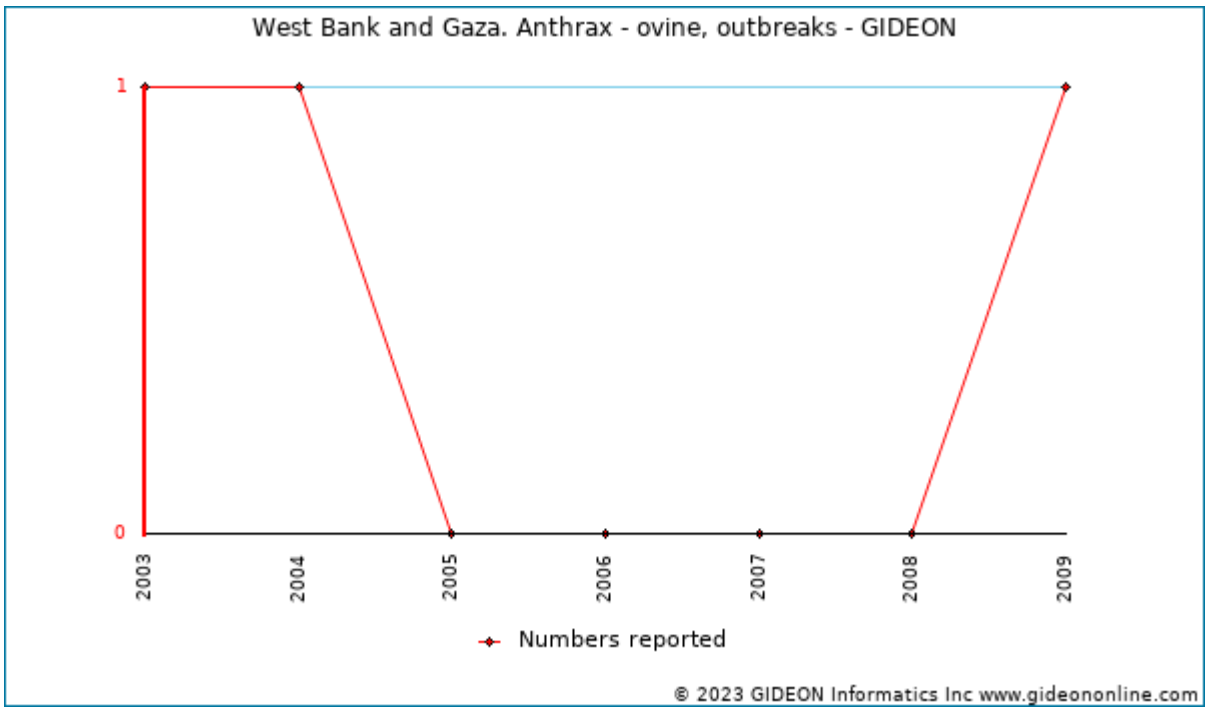
Graph: Israel. Anthrax - ovine / caprine, outbreaks



Graph: Israel. Anthrax - ovine / caprine

West Bank and Gaza:

West Bank and Gaza. Anthrax, cases: None reported between 2003 and 2004



Graph: Individual years: West Bank and Gaza. Anthrax - ovine, outbreaks

Individual years:
2009 [9]

References

1. Health Secur 2015 Nov-Dec;13(6):355-64.
2. Vet J 2014 Mar ;199(3):319-23.
3. ProMED <promedmail.org> archive: 20040714.1893
4. ProMED <promedmail.org> archive: 20071125.3817
5. ProMED <promedmail.org> archive: 20090706.2423
6. ProMED <promedmail.org> archive: 20120820.1253169
7. ProMED <promedmail.org> archive: 20130614.1771702
8. ProMED <promedmail.org> archive: 20150105.3072511
9. ProMED <promedmail.org> archive: 20091120.3992

Ascariasis

Agent	PARASITE - Nematoda. Secernentea: *Ascaris lumbricoides*
Reservoir	Human, Dog, Zoonotic
Vector	None
Vehicle	Vegetables, Fly
Incubation Period	10d - 14d (range 7d - >200d)
Diagnostic Tests	Stool microscopy. Ascaris lumbricoides adult: female - 20 to 49 cm; male - 15 to 30 cm
Typical Adult Therapy	Mebendazole 500 mg BID X 1 dose OR Albendazole 400 mg X 1 dose[1] [2]
Typical Pediatric Therapy	Albendazole 200 mg PO single dose OR Mebendazole 100 mg BID X 3 d (> age 2).
Clinical Hints	- Highest rates among children and in areas of crowding and poor sanitation - Acute illness characterized by cough, wheezing and eosinophilia - Adult worms are associated with abdominal pain (occasionally obstruction), pancreatic or biliary disease - Passage of a roundworm longer than 5 cm is virtually pathognomonic
Synonyms	Ascaris, Ascaris lumbricoides, Askariasis. ICD9: 127.0 ICD10: B77

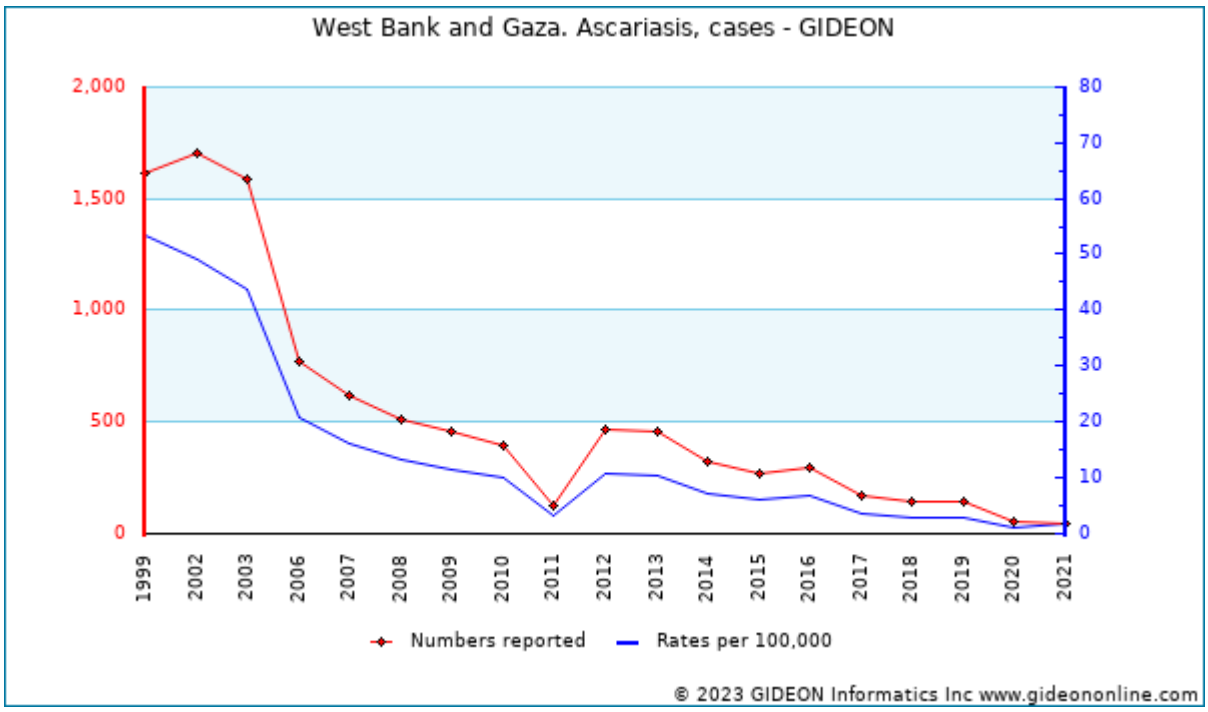
Ascariasis in Israel

- Ova of *Ascaris lumbricoides* were identified in a cesspit in Jerusalem dating from the mid 7th century BCE. [3]
- Evidence for *Ascaris lumbricoides* infestation has been identified in an Ottoman latrine in Acre dating from the early 1800's. [4]

Prevalence surveys

Years	Region	Study Group	%	Notes
1992*	Multiple locations	children	1	1% of children in the West Bank and Gaza [5]
2004*	Gaza	children	12.8	12.8% of secondary school children in Gaza [6]
2010*	West Bank	children	3.8	3.8% of school children in the northern West Bank [7]
1991*	Multiple locations	immigrants	20.3	20.3% of Ethiopian immigrants [8]
1994*		foreign workers	1	1% of Thai workers in Israel [9]
1921	Jerusalem	general population	51	51% of the population of Jerusalem in 1921 (62.7% of children)
1949		general population	3	
1950 - 1959		general population	1	
1951*		general population	62	[10]
1969 - 1975	Tel Aviv	general population	0.36	0.36% of the population of Tel Aviv during 1969 to 1975.
1981 - 1986	Nablus	specimens - stool	5.7	5.7% of stool specimens submitted in Nablus [11]
2019*	Gaza	students - university	0.3	Survey of female university students [12]

* indicates publication year (not necessarily year of survey)



Graph:
West Bank and Gaza. Ascariasis, cases

Notes:
Individual years:
1999 - Included 1,595 cases in Gaza.

References

1. JAMA 2008 Apr 23;299(16):1937-48.
2. Cochrane Database Syst Rev 2020 Apr 14;4:CD010599.
3. Int J Paleopathol 2021 Nov 12;36:1-6.
4. Korean J Parasitol 2019 Dec ;57(6):575-580.
5. Riv Inferm 1992 Oct-Dec;11(4):247-52.
6. Parasitol Res 2004 Dec ;94(6):449-51.
7. Trop Med Int Health 2011 Feb ;16(2):240-4.
8. Isr J Med Sci 1991 May ;27(5):278-83.
9. Harefuah 1994 May 01;126(9):507-9, 563.
10. J Med Liban 1951 May ;4(3):163-9.
11. Ann Trop Med Parasitol 1989 Feb ;83(1):67-72.
12. Avicenna J Med 2019 Oct-Dec;9(4):143-147.

Aspergillosis

Agent	FUNGUS. Ascomycota, Euascomycetes, Eurotiales: *Aspergillus*. A hyaline hyphomycete
Reservoir	Compost, Hay, Cereal, Soil
Vector	None
Vehicle	Air, Respiratory or pharyngeal acquisition
Incubation Period	3d - 21d
Diagnostic Tests	Fungal culture. Biopsy. Nasal culture or serologic testing may be useful in select cases.
Typical Adult Therapy	Voriconazole 6 mg/kg IV Q12h, day 1; follow with 4 mg/kg IV OR Liposomal Amphotericin B 3 to 5 mg/kg/day OR Isavuconazole 200 mg q8h for 6 doses, then 200 mg daily[1]
Typical Pediatric Therapy	Voriconazole 9 mg/kg IV q12h, day 1; follow with 8 mg/kg IV q12h OR Liposomal Amphotericin B, dosing as for adults
Clinical Hints	- Pulmonary "fungus ball" or adult-onset asthma - Pulmonary consolidation or infected "pulmonary infarct" in the setting of immune suppression (e.g., AIDS, leukemia, etc) - May progress to widespread hematogenous dissemination if not treated promptly
Synonyms	Aspergillose, Aspergillus. ICD9: 117.3 ICD10: B44

Aspergillosis in Israel

- 2015 (publication year) - The rate of invasive aspergillosis in Israel was estimated at 254 cases per year (mortality 0.96 per 100,000 per year). [2]

- 2020 to 2021 - Clinical characteristics of 311 critically-ill patients with COVID-19 (including 3.5% with pulmonary aspergillosis). [3]

Notable outbreaks

Years	Region	Setting	Cases	Clinical	Source	Population	Notes
1993	Haifa	hospital		respiratory tract infection	construction activity	patients - cancer	Outbreak of invasive pulmonary aspergillosis among leukemia patients was related to ongoing construction adjacent to the hospital [4]
2004 - 2005	Ramat Gan	hospital	8		construction activity	transplant recipients	Outbreak among lung transplant recipients was related to ongoing construction work adjacent to the hospital [5]

References

1. Clin Infect Dis 2016 08 15;63(4):e1-e60.
2. Isr Med Assoc J 2015 Jun ;17(6):374-9.
3. J Crit Care 2022 Feb 10;69:154004.
4. Am J Hematol 2001 Apr ;66(4):257-62.
5. Transpl Int 2007 Feb ;20(2):135-40.

Babesiosis

Agent	PARASITE - Protozoa. Apicomplexa: *Babesia microti*, *Babesia duncani* (U.S.); or *B. divergens*, *Babesia* EU1 and *B. bigemina* (Europe, Southeast Asia)
Reservoir	Rodent (usually white-footed mouse = *Peromyscus leucopus*), Rabbit, Deer, Cattle, Tick, Zoonotic
Vector	Tick (*Ixodes scapularis* for *Babesia microti*; *Ixodes ricinus* for *B. divergens*)
Vehicle	Blood
Incubation Period	1w - 2w (range 1w - 9w)
Diagnostic Tests	Microscopy of stained blood smears. Animal inoculation. Serology. Nucleic acid amplification.
Typical Adult Therapy	Atovaquone 750 mg BID + Azithromycin 500 mg daily X 7 to 10 days. OR Clindamycin 600 mg PO TID + Quinine 650 mg PO TID X 7d. Exchange transfusion has been used in cases of high grade (>10%) parasitemia. [1] [2] [3]
Typical Pediatric Therapy	Atovaquone 20 mg/kg BID + Azithromycin 10 mg/kg on day 1, then 5 mg/kg daily X 7 to 10 days. OR Clindamycin 7 to 10 mg/kg PO TID + Quinine 8 mg/kg TID X 7 to 10 days.
Clinical Hints	- Fever, rigors, myalgia, hepatomegaly and hemolysis - mimics malaria - Multiple relapses are common - Severe disease among asplenic patients - jaundice, renal failure and death - European (*Babesia divergens*) infection is restricted to splenectomized patients is usually fatal
Synonyms	Anthemosoma garnhami, Babesia, Babesia bigemina, Babesia bovis, Babesia crassa, Babesia divergens, Babesia duncani, Babesia EU1, Babesia microti, Babesia motasi, Babesia odocoilei, Babesia sp. FR1, Babesia sp. XXB/HangZhou, Babesia venatorum, Babesiose, Colpodella. ICD9: 088.82 ICD10: B60.0

Although Babesiosis is not endemic to Israel, imported, expatriate or other presentations of the disease have been associated with this country.

Babesiosis in Israel

Notable outbreaks

Years	Region	Notes
2022	West Bank	An outbreak of *Babesia bovis* involving 8 confirmed cases among 140 susceptible cattle was reported on October 30 (started on October 16). [4]

2022 (publication year) - *Babesia microti* was identified in ticks (*Rhipicephalus turanicus*). [5]

References

1. Clin Infect Dis 2006 Nov 01;43(9):1089-134.
2. JAMA 2016 Apr 26;315(16):1767-77.
3. J Clin Apher 2020 Nov 12;
4. ProMED <promedmail.org> archive: 20221103.8706516
5. Ticks Tick Borne Dis 2022 Jun 15;13(5):101986.

Bacillary angiomatosis

Agent	BACTERIUM. *Bartonella henselae* or *Bartonella quintana*. *Rickettsia*-like bacteria
Reservoir	Human, Tick, Cat, Zoonotic
Vector	Cat flea,Tick (Ixodid)
Vehicle	None
Incubation Period	Unknown
Diagnostic Tests	Histology with special stains. Specialized culture techniques. Serology. Nucleic acid amplification.
Typical Adult Therapy	Doxycycline 100 mg BID X 3 months OR Erythromycin 500 mg QID X 3 months[1]
Typical Pediatric Therapy	Erythromycin 10 mg/kg/day QID X 4 months
Clinical Hints	- Virtually all cases occur in the setting of AIDS or other immune deficiency - Hemangiomatous papules and nodules of skin, spleen, liver (peliosis hepatis), bone or other tissues - Rare instances are reported following tick bite in immune-competent individuals
Synonyms	Bacillary peliosis, Peliosis hepatis. ICD9: 757.32,083.8 ICD10: K76.4,A44.0

References

1. Antimicrob Agents Chemother 2004 Jun ;48(6):1921-33.

Bacillus cereus food poisoning

Agent	BACTERIUM. *Bacillus cereus* (toxin). An aerobic gram-positive bacillus
Reservoir	Soil, Processed & dried foods
Vector	None
Vehicle	Food
Incubation Period	2h - 9h (range 1h - 24h)
Diagnostic Tests	No practical test available. Isolation of organism from suspect food.
Typical Adult Therapy	Supportive[1]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Usually follows ingestion of rice or other vegetables - Vomiting within 1 to 6 hours and/or diarrhea within 6 to 24 hours - Fecal leukocytes are not seen
Synonyms	Bacillus cytotoxicus. ICD9: 005.89 ICD10: A05.4

References

1. Clin Microbiol Rev 1993 Oct ;6(4):324-38.

Bacterial vaginosis

Agent	BACTERIUM. *Gardnerella vaginalis* (facultative gram-negative bacillus), *Mobiluncus curtisii*, *Mobiluncus mulieris*, *Prevotella*, et al
Reservoir	Human
Vector	None
Vehicle	Sexual contact, Normal flora in 14% (girls) to 70% (women)
Incubation Period	Unknown
Diagnostic Tests	Identification of "clue cells" or positive KOH test in vaginal discharge. Culture.
Typical Adult Therapy	Metronidazole 500 mg PO BID X 7d OR intravaginal Metronidazole 0.75% gel daily X 5 days OR Clindamycin 300 mg PO BID X 7d OR intravaginal Clindamycin 2% gel daily X 7 days Also treat sexual partner[1] [2]
Typical Pediatric Therapy	Metronidazole 7.5 mg/kg BID X 7d
Clinical Hints	- Thin vaginal discharge - "fishy" odor when mixed with KOH - Mild to moderate pruritis - Urethritis may be present in sexual partner
Synonyms	Gardnerella, Gardnerella vaginalis, Mobiluncus. ICD9: 041.89,616,10,099.8 ICD10: N76.1

Bacterial vaginosis in Israel

Prevalence surveys

Years	Region	Study Group	%	Notes
2003*	Holon	patients - vaginitis	23.5	23.5% of vaginitis [3]

* indicates publication year (not necessarily year of survey)

References

1. MMWR Recomm Rep 2015 Jun 05;64(RR-03):1-137.
2. Front Reprod Health 2023 ;5:1100029.
3. Isr Med Assoc J 2003 Sep ;5(9):629-32.

Balantidiasis

Agent	PARASITE - Protozoa. Ciliate (Ciliophora), Litostomatea: *Neobalantidium (Balantidium; Balantioides) coli*
Reservoir	Pig, Non-human primate, Rodent, Zoonotic
Vector	None
Vehicle	Water, Food
Incubation Period	1d - 7d (range 1d - 60d)
Diagnostic Tests	Microscopy of stool or colonic aspirates.
Typical Adult Therapy	Tetracycline 500 mg QID X 10d. OR Metronidazole 750 mg TID X 5d. OR Iodoquinol 650 mg TID X 20d[1]
Typical Pediatric Therapy	Age >= 8 years: Tetracycline 10 mg/kg QID (max 2g/d) X 10d. Age <8 yrs, Metronidazole 15 mg/kg TID X 5d; or Iodoquinol 13 mg/kg TID X 20d
Clinical Hints	- The disease is most common in pig-raising areas - Dysentery, often with vomiting - Mimics intestinal amebiasis - Symptoms pay persist for one to four weeks, and may recur
Synonyms	Balantidiose, Balantidiosis, Balantidium coli, Balantidosis, Balantioides coli, Balindosis, Ciliary dysentery, Neobalantidium coli. ICD9: 007.0 ICD10: A07.0

Although Balantidiasis is not endemic to Israel, imported, expatriate or other presentations of the disease have been associated with this country.

Balantidiasis in Israel

1943 - Balantidiasis was diagnosed in a man who had emigrated from Iraq nine years previously.

References

1. Clin Microbiol Rev 2008 Oct ;21(4):626-38.

Bartonellosis - cat borne

Agent	BACTERIUM. *Afipia felis*, *Bartonella henselae*, *Bartonella clarridgeiae*, *Bartonella grahamii*, et al. A facultative gram-negative coccobacillus
Reservoir	Cat, Possibly tick, Zoonotic
Vector	Cat flea (*Ctenocephalides*)
Vehicle	Cat scratch, Plant matter (thorn, etc)
Incubation Period	3d - 14d
Diagnostic Tests	Visualization of organisms on Warthin Starry stain. Culture. Serology. Nucleic acid amplification.
Typical Adult Therapy	Azithromycin 500 mg day 1, then 250 daily X 4 days Alternatives: Clarithromycin, Ciprofloxacin, Sulfamethoxazole / Trimethoprim Aspiration of nodes as necessary.[1]
Typical Pediatric Therapy	Azithromycin 10 mg/kg day 1, then 5 mg/kg daily X 4 days Aspiration of nodes as necessary.
Clinical Hints	- Tender suppurative regional adenopathy following a cat scratch (usually kitten) - Fever present in 25% - Systemic infection (liver, brain, endocardium, bone, etc) occasionally encountered - Most cases resolve within 6 weeks.
Synonyms	Afipia felis, Bartonella clarridgeiae, Bartonella grahamii, Bartonella henselae, Bartonella koehlerae, Cat scratch disease, Debre's syndrome, Foshay-Mollaret cat-scratch fever, Katszenkratz-Krankheit, Petzetakis' syndrome, SENLAT. ICD9: 078.3 ICD10: A28.1

Bartonellosis - cat borne in Israel

Approximately 100 laboratory-confirmed cases are registered annually.

- 2001 to 2020 - 37 cases of *Bartonella* endocarditis were reported from a reference laboratory - 18 due to *Bartonella henselae*, 18 *B. quintana* and 1 *B. koehlerae*. [2]
- 2007 (publication year) - 913 cases were reported by a reference laboratory during an 11-year period. [3]
- 2004 to 2017 - 66 cases of cat-scratch disease presenting as fever of unknown origin were reported through a national surveillance system. [4]

Prevalence surveys

Years	Region	Study Group	%	Notes
2013*	Multiple locations	cats	25.1	25.1% of stray cats in central and north-central Israel (*Bartonella henselae*, *Bartonella clarridgeiae* and *Bartonella koehlerae* [5] [6]
2013*		fleas	50	50% of *Ctenocephalides felis* fleas (*Bartonella rochalimae* and *Bartonella koehlerae*)
2014*	West Bank	fleas	50-57	50% of *Ctenocephalides felis* (*Bartonella rochalimae* and *Bartonella koehlerae*) fleas; and 57% of *Xenopsylla* sp. fleas (*Bartonella tribocorum*, *Bartonella elizabethae*, and *Bartonella rochalimae*) from the West Bank [7]
2015*		fleas	7.8	7.8% of dog flea pools (*Bartonella henselae*, *B. elizabethae* and *B. rochalimae* [8]
2015*	Jerusalem	fleas	33.4	Survey of *Ctenocephalides felis* fleas removed from feral cats [9]

* indicates publication year (not necessarily year of survey)

Seroprevalence surveys

Years	Study Group	%	Notes
1996*	cats	59.7	10

* indicates publication year (not necessarily year of survey)

- 2007 - *Bartonella henselae* was identified in fleas from rodents in the Negev Desert [11]
- 1998 (publication year) - A case of *Afipia felis* infection was reported. [12]
- 2004 - *Bartonella koehlerae* infection was first reported in Israel. [13]

References

1. Pediatr Infect Dis J 1998 Jun ;17(6):447-52.
2. J Clin Microbiol 2021 05 19;59(6)
3. Clin Infect Dis 2007 Dec 15;45(12):1535-40.
4. Clin Infect Dis 2019 Nov 23;
5. Vector Borne Zoonotic Dis 2013 Dec ;13(12):857-64.
6. ProMED <promedmail.org> archive: 20131014.2001259
7. J Vector Ecol 2014 Dec ;39(2):261-70.
8. Med Vet Entomol 2015 Sep ;29(3):344-8.
9. Vet Parasitol Reg Stud Reports 2015 Dec ;1-2:59-64.
10. Vet Microbiol 1996 May ;50(1-2):95-103.
11. Appl Environ Microbiol 2010 Oct ;76(20):6864-9.
12. J Clin Microbiol 1998 Sep ;36(9):2499-502.
13. J Clin Microbiol 2004 Aug ;42(8):3462-8.

Bartonellosis - other systemic

Agent	BACTERIUM. *Bartonella quintana*, *B. koehlerae*, *B. elizabethae*, *B. tamiae*, *B. washoensis*, etc A fastidious gram-negative coccobacillus
Reservoir	Human, Louse, Rat, Cat, Dog, Sheep, Zoonotic
Vector	Louse (*Pediculus*)Flea (*Ctenocephalides*, *Pulex*), Mite (*Dermanyssus*)
Vehicle	Wound or eye contact with secretions/louse feces
Incubation Period	9d - 25d (range 4d - 35d)
Diagnostic Tests	Serology. Culture. Nucleic acid amplification.
Typical Adult Therapy	Doxycycline 100 mg PO BID + Rifampin 300 mg BID X 4 to 6 weeks (neuroretinitis) OR Rifampin 300 mg BID +/- Gentamicin or Trimethoprim-Sulfamethoxazole X 14 days (hepatosplenic) If endocarditis, Doxycycline 100 mg PO BID X 4 weeks + Gentamicin 3 mg/kg daily X 2 weeks)[1] [2] [3]
Typical Pediatric Therapy	Rifampin 20 mg/kg/d X 14 days +/- Gentamicin or Trimethoprim-Sulfamethoxazole (hepatosplenic)
Clinical Hints	- Often associated with poor hygiene and crowding - Headache, myalgias, shin pain, macular rash and splenomegaly - Endocarditis and bacteremia in some cases - Relapse is common
Synonyms	Bartonella alsatica, Bartonella bovis, Bartonella capreoli, Bartonella doshiae, Bartonella elizabethae, Bartonella melophagi, Bartonella quintana, Bartonella rattimassiliensis, Bartonella rochalimae, Bartonella rousetti, Bartonella schoenbuchensis, Bartonella tamiae, Bartonella taylorii, Bartonella tribocorum, Bartonella vinsonii, Bartonella vinsonii berkhoffii, Bartonella volans, Bartonella washoensis, Candidatus Bartonella mayotimonensis, Candidatus Bartonella merieuxii, Candidatus Bartonella rochalimae, Five day fever, His-Werner disease, Meuse fever, Quintan fever, Quintana fever, Shank fever, Shin fever, Shinbone fever, Trench fever, Volhynian fever. ICD9: 083.1 ICD10: A44.0,A44.8,A79.0

Bartonellosis - other systemic in Israel

Prevalence surveys

Years	Region	Study Group	%	Notes
2016*		various	9-58	13% of golden jackals (*Canis aureus*), 18% of red foxes (*Vulpes vulpes*), 9% of rock hyraxes (*Procavia capensis*, 33% of southern white-breasted hedgehogs (*Erinaceus concolor*, 9% of Cairo spiny mice (*Acomys cahirinus*), 58% of Tristram's jirds (*Meriones tristrami*) and 16% house mice (*Mus musculus*) (*Bartonella* spp) [4]
2016*	West Bank	ticks	0-4.3	4.3% of *Rhipicephalus sanguineus* ticks collected from dogs and 0% collected from domestic animals [5]
2014*	West Bank	fleas	57	57% of *Xenopsylla* sp. fleas (*Bartonella tribocorum*, *Bartonella elizabethae*, and *Bartonella rochalimae*) from the West Bank [6]
2014*	West Bank and Gaza	fleas	50	50% of *Ctenocephalides felis* fleas (*Bartonella rochalimae* and *Bartonella koehlerae*) [7]
2015*		fleas	7.8	7.8% of dog flea pools (*Bartonella henselae*, *B. elizabethae* and *B. rochalimae*) [8]

* indicates publication year (not necessarily year of survey)

Seroprevalence surveys

Years	Study Group	%	Notes
1998*	dogs	10	10% of dogs with suspected tick-borne disease (*Bartonella vinsonii berkhoffii*) [9]
1996*	cats	59.7	59.7% of cats (*Bartonella quintana*) [10]

* indicates publication year (not necessarily year of survey)

- 2001 to 2020 - 37 cases of *Bartonella* endocarditis were reported from a reference laboratory - 18 due to *Bartonella henselae*, 18 *B. quintana* and 1 *B. koehlerae*. [11]
- 2005 (publication year) - *Bartonella quintana* endocarditis was reported in an Ethiopian immigrant in Israel. [12]
- 2006 to 2015 - Five Ethiopian children with *Bartonella* endocarditis were treated at a hospital in Israel. [13]

2009 (publication year) - There is evidence for carriage of *Bartonella elizabethae* in wild rodents - Cairo spiny mouse (*Acomys cahirinus*) and Black rat (*Rattus rattus*) [14]

References

1. Ophthalmology 1998 Mar ;105(3):459-66.
2. Eur Heart J 2015 Nov 21;36(44):3075-3128.
3. Clin Infect Dis 1999 Apr ;28(4):778-84.
4. Parasitology 2016 Sep ;143(10):1232-42.
5. Front Microbiol 2016 ;7:1217.
6. J Vector Ecol 2014 Dec ;39(2):261-70.
7. J Vector Ecol 2014 Dec ;39(2):261-70.
8. Med Vet Entomol 2015 Sep ;29(3):344-8.
9. Vet Parasitol 1998 Jan 31;74(2-4):133-42.
10. Vet Microbiol 1996 May ;50(1-2):95-103.
11. J Clin Microbiol 2021 05 19;59(6)
12. Eur J Intern Med 2005 Nov ;16(7):518-9.
13. Emerg Infect Dis 2017 08 ;23(8)
14. Vet Microbiol 2009 Nov 18;139(3-4):293-7.

Blastocystis hominis infection

Agent	PARASITE - Protozoa. Chromista, Bigyra, Blastocystea: *Blastocystis hominis*. (taxonomic status remains uncertain)
Reservoir	Human
Vector	None
Vehicle	Fecal-oral, Water
Incubation Period	Unknown
Diagnostic Tests	Stool microscopy. Nucleic acid amplification.
Typical Adult Therapy	No treatment necessary for asymptomatic patients Nitazoxanide 500 mg BID X 3 d. OR Metronidazole 750 mg TID X 10d. OR Tinidazole 2 G Once OR Sulfamethoxazole / Trimethoprim[1] [2] [3]
Typical Pediatric Therapy	No treatment necessary for asymptomatic patients Nitazoxanide - Age 1 to 3 years: 5 ml (100 mg) PO Q12h X 3 days Age 4 to 11 years: 10 mg (200 mg) PO Q12h X 3 days; OR Metronidazole 15 mg/kg/d X 10d. OR Tinidazole (age >3) 50 mg/kg Once OR Sulfamethoxazole / Trimethoprim
Clinical Hints	The precise role of this organism in disease is controversial - Diarrhea and flatulence, usually without fever - The illness is similar to giardiasis - Increased risk among immune-suppressed patients
Synonyms	Apoi, Blastocystiose, Blastocystis hominis, Zierdt-Garavelli disease. ICD9: 007.8 ICD10: A07.8

Blastocystis hominis infection in Israel

As of 2010, only isolated cases of *Blastocystis hominis* infection had been officially-reported in Israel. [4] [5]

Prevalence surveys

Years	Region	Study Group	%	Notes
2019*	Gaza	students - university	3.9	Survey of female university students [6]

* indicates publication year (not necessarily year of survey)

References

1. J Travel Med 2003 Mar-Apr;10(2):128-30.
2. Am J Gastroenterol 1999 Nov ;94(11):3245-7.
3. Clin Gastroenterol Hepatol 2005 Oct ;3(10):987-91.
4. J Infect 1996 Jul ;33(1):57-9.
5. Eur J Clin Microbiol Infect Dis 2004 May ;23(5):399-402.
6. Avicenna J Med 2019 Oct-Dec;9(4):143-147.

Blastomycosis

Agent	FUNGUS. Ascomycota, Euascomycetes, Onygenales. *Blastomyces dermatitidis*, *Blastomyces gilchristii*, et al. A dimorphic fungus
Reservoir	Soil, Beaver, Dog, Rodent, Zoonotic
Vector	None
Vehicle	Air, Respiratory or pharyngeal acquisition
Incubation Period	14d - 44d (range 7d - 100d)
Diagnostic Tests	Microscopy and culture. Skin tests and serology not useful. Nucleic acid amplification.
Typical Adult Therapy	Itraconazole 200 mg PO TID for three days then 200 mg PO once-twice daily X 6 to 12 months. OR Liposomal Amphotericin B 3-5 mg/kg daily for 1 to 2 weeks then continue Itraconazole as above OR Amphotericin B deoxycholate 0.7 to 1 mg/kg daily for 1 to 2 weeks; then continue Itraconazole as above[1]
Typical Pediatric Therapy	Itraconazole 10 mg/kg/day for 6-12 months OR Liposomal Amphotericin B 3-5 mg/kg daily for 1-2 weeks then continue Itraconazole as above OR Amphotericin B deoxycholate 0.7-1 mg/kg daily for 1-2 weeks then continue Itraconazole as above
Clinical Hints	- Acute or chronic lung infection - Hematogenous involvement of skin common (verrucous or ulcerated skin/subcutaneous lesions) - Osteomyelitis of vertebrae or long bones, meningitis, prostatitis, etc
Synonyms	Blastomyces africanus, Blastomyces dermatitidis, Blastomyces emzantsi, Blastomyces gilchristii, Blastomyces helicus, Blastomyces percursus, Blastomykose, Chicago disease, Gilchrist's disease, North Amercian blastomycosis. ICD9: 116.0 ICD10: B40

Although Blastomycosis is not endemic to Israel, imported, expatriate or other presentations of the disease have been associated with this country.

Blastomycosis in Israel

1944 - Blastomycosis was diagnosed in two brothers who had emigrated from Syria.

1978 (publication year) - A case of autochthonous blastomycotic arthritis was reported. [2]

References

1. Clin Infect Dis 2008 Jun 15;46(12):1801-12.

2. Am J Trop Med Hyg 1978 Nov ;27(6):1203-5.

Borna virus encephalitis

Agent	VIRUS - RNA Mononegavirales Bornavirus
Reservoir	Squirrel, Horse, Sheep, Zoonotic
Vector	None
Vehicle	Unknown
Incubation Period	Unknown
Diagnostic Tests	Metagenomic analysis of brain tissue and cerebrospinal fluid Culture on specialized cell lines Serology
Typical Adult Therapy	Supportive
Typical Pediatric Therapy	As for adult
Clinical Hints	- May follow animal (horse, squirrel) contact - Most infections are subclinical - Manifested in some cases by mood disorders or possibly schizophrenia - Overt and fatal encephalitis has been reported, with fever, gait disturbance and ocular palsy
Synonyms	Borna disease, Heated head disease, Sad horse disease, Staggering disease of cats, Variegated squirrel 1 bornavirus, VSBV-1. ICD9: 323.9 ICD10: A83.9

Borna virus encephalitis in Israel

Borna disease paralytic syndrome is commonly reported among ostriches (1989 to 1993). [1] [2]

References

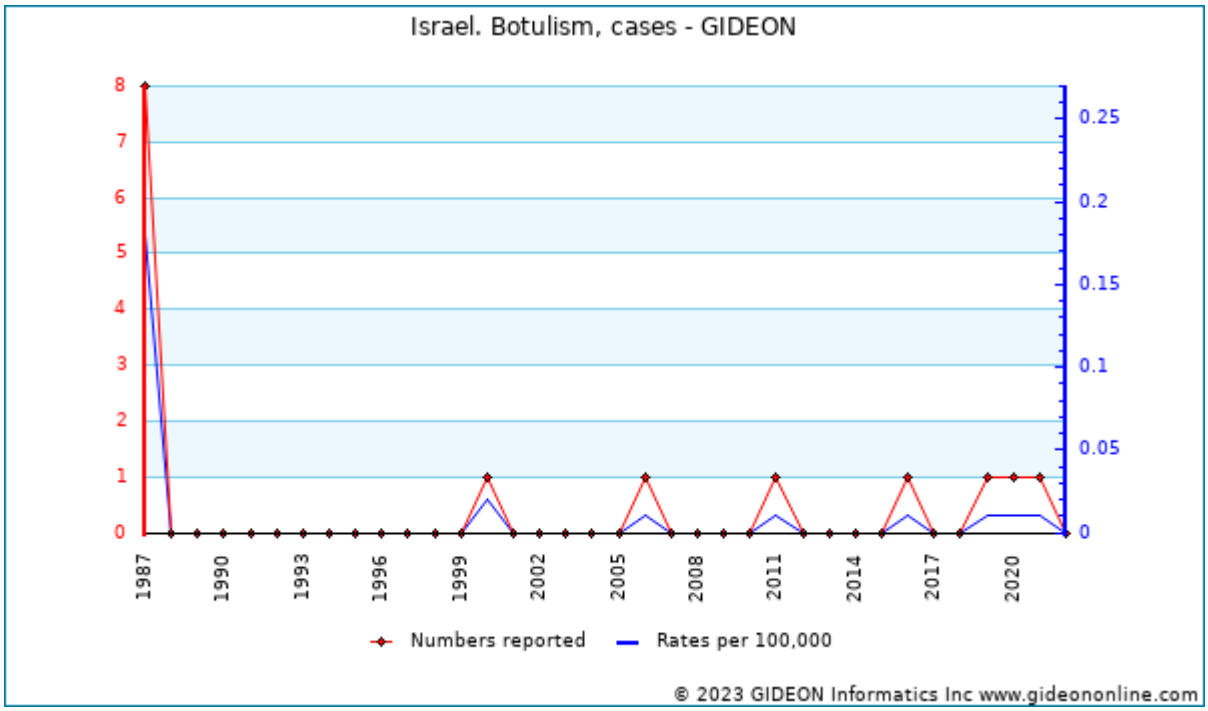
1. Avian Dis 1996 Jan-Mar;40(1):240-5.

2. Vet Rec 1996 Apr 27;138(17):418-9.

Botulism

Agent	BACTERIUM. *Clostridium botulinum*. An anaerobic gram-positive bacillus
Reservoir	Soil, Animal, Fish
Vector	None
Vehicle	Food, Soil (contamination of wound or injected drug)
Incubation Period	1d - 2d
Diagnostic Tests	Electrophysiologic (EMG) pattern. Isolation of organism from food (occ. from infant stomach). Mouse toxin assay
Typical Adult Therapy	Heptavalent (types A-G) antitoxin (following test dose) 1 vial (10-22 ml) in 100 ml saline over 30 min For wound botulism debridement AND Penicillin G 3 million units X6/day Respiratory support
Typical Pediatric Therapy	Age < 1 year: Botulism immune globulin 50 mg/kg 1-17 years: Heptavalent antitoxin, 20%-100% of adult dose: For weight >= 30 kg: % adult dose = weight (kg) + 30
Vaccine	Botulism antitoxin
Clinical Hints	- Clinical manifestations similar to those of atropine poisoning - Dysarthria, diplopia, dilated pupils, dry mouth, constipation, flaccid paralysis - Onset approximately 36 hrs after ingestion of poorly-preserved food - May follow contaminated injection (ie, illicit drug) or other wound - Infant botulism associated with infant formula containing honey contaminated by bacterial spores
Synonyms	Botulisme, Botulismo, Botulismus, Kerner's disease. ICD9: 005.1 ICD10: A05.1

Botulism in Israel



Graph: Israel. Botulism, cases

Notes:
1. Reporting statistics do not include cases of infant botulism (below).

Infant botulism

- 1994 (publication year) - The first case infant botulism in Israel reported. [1]
- 2002 to 2007 - Two subsequent cases (nonfatal, both type B) were reported, in 2002 and 2007. [2] [3]
- 2007 to 2021 - A review of infant botulism in Israel identified 8 cases between 2007 and 2021, including a cluster of 5 cases between 2019 and 2021. [4]
- 2014 - A case of infant botulism was reported. [5]

Cross-border events

Includes botulism associated with imported foods

Years	Acquired by**	Originated in**	Setting	Cases	Notes
1987	Israel	United States	imported goods	8	Outbreak of type E botulism in Israel was traced to imported fish - the index case had occurred in New York City, and was related to ingestion of "Kapchunka" = "ribyetz" (an ungutted, dried, salted whitefish product that is not cooked before eating) [6] [7] [8]

** Country or Nationality

Notable outbreaks

Years	Cases	Source	Pathogen	Notes
1987	8	seafood - fish	type E botulism	Outbreak caused by imported fish - the index case had occurred in New York City, and was related to consumption of "Kapchunka" = "ribyetz" (an ungutted, dried, salted whitefish product that is not cooked before eating). [9] [10] [11]

References

1. Isr J Med Sci 1994 Jul ;30(7):533-4.
2. Isr Med Assoc J 2007 Sep ;9(9):682-3.

3. Isr Med Assoc J 2004 Apr ;6(4):249-50.
4. Emerg Infect Dis 2023 Feb ;29(2):235-241.
5. ProMED <promedmail.org> archive: 20140530.2506775
6. J Infect Dis 1990 Feb ;161(2):340-2.
7. Int J Epidemiol 1989 Sep ;18(3):693-6.
8. MMWR Morb Mortal Wkly Rep 1987 Dec 18;36(49):812-3.
9. J Infect Dis 1990 Feb ;161(2):340-2.
10. Int J Epidemiol 1989 Sep ;18(3):693-6.
11. MMWR Morb Mortal Wkly Rep 1987 Dec 18;36(49):812-3.

Brain abscess

Agent	BACTERIUM OR FUNGUS. Mixed oral anaerobes / streptococci, *Staphylococcus aureus* (from endocarditis), etc.
Reservoir	Human
Vector	None
Vehicle	None
Incubation Period	Variable
Diagnostic Tests	Imaging techniques (CT, scan, etc).
Typical Adult Therapy	Antibiotic(s) appropriate to likely pathogens + drainage Typical empiric therapy: Intravenous Ceftriaxone 2 gm Q12h + Metronidazole 500 mg Q8h[1]
Typical Pediatric Therapy	Typical empiric therapy: Intravenous Ceftriaxone 50 mg/kg Q12 h + Metronidazole 7.5 to 15 mg/kg IV, Q8h
Clinical Hints	- Headache, vomiting and focal neurological signs - Often associated with chronic sinusitis or otitis media, pleural or heart valve infection - Patients are often afebrile
Synonyms	Ascesso cerebrale, Cerebral abscess. ICD9: 324.0 ICD10: G06.0

References

1. Handb Clin Neurol 2017 ;140:349-364.

Brucellosis

Agent	BACTERIUM. *Brucella abortus*, *Brucella melitensis*, *Brucella suis*, *Brucella canis* An aerobic gram-negative bacillus
Reservoir	Pig, Cattle, Sheep, Goat, Dog, Coyote, Caribou, Zoonotic, Alpine ibex
Vector	None
Vehicle	Food, Air, Dairy products, Animal excretions, Breastfeeding, Water
Incubation Period	10d - 14d (range 5d - 60d)
Diagnostic Tests	Culture of blood or bone marrow. Serology. Note: Alert laboratory to possibility of Brucella.
Typical Adult Therapy	Doxycycline 100 mg BID X 6 weeks PLUS Rifampin 600 mg once daily X 6 weeks. OR Gentamicin 5 mg/kg daily X 7 days OR Streptomycin 1 g IM daily X 14 days[1] [2] [3] [4]
Typical Pediatric Therapy	Rifampin 20 mg/kg/day (maximum 600 mg) PLUS if age >8 years: Doxycycline 2 mg/kg BID PO X 6w if age <8 years Sulfamethoxazole / Trimethoprim 4/20 mg/kg BID X 4 to 6w Consider adding aminoglycoside if severe
Clinical Hints	- Prolonged fever, hepatosplenomegaly, lymphadenopathy - Arthritis, osteomyelitis or chronic multisystem infection - Follows ingestion of unpasteurized dairy products, contact with farm animals or meat processing
Synonyms	Bang's disease, Bangsche Krankheit, Brucella, Brucellemia, Brucelliasis, Brucellose, Brucellosen, Brucellosi, Brucelose, Brucelosis, Cyprus fever, Febris melitensis, Febris sudoralis, Febris undulans, Fievre caprine, Gibraltar fever, Goat fever, Malta fever, Maltafieber, Melitococcosis, Neapolitan fever, Rock fever, Typhomalarial fever, Undulant fever. ICD9: 023 ICD10: A23

Brucellosis in Israel

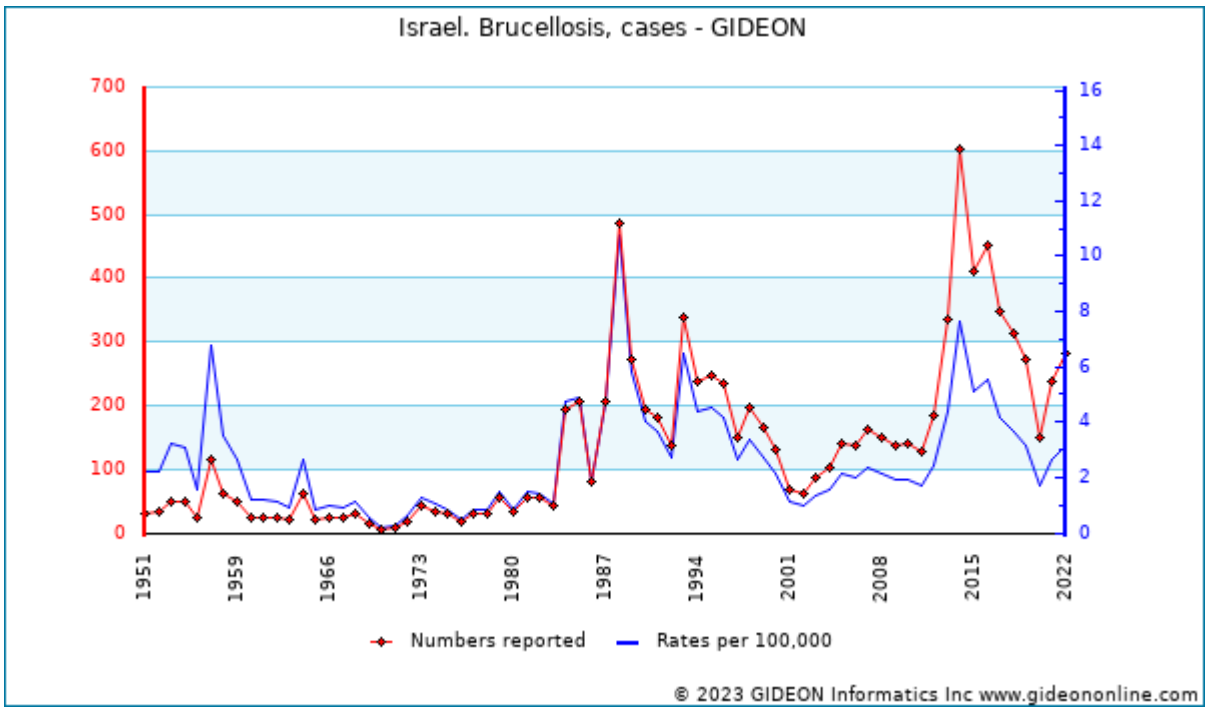
Time and Place

Human disease in Israel is caused by *Brucella melitensis*.

- 72% of cases are reported during April through August.
- Rates of brucellosis declined by almost 70% during 1998 to 2002, but subsequently increased. [5]
- Rates increased from 1.9 per 100,000 (10 per 100,000 Arabs) in 2009, to 7.3 per 100,000 (33.5 per 100,000 Arabs) in 2014. [6]
- The usual vehicles are unpasteurized dairy products from sheep and goats.
- In 2016, several cases were associated with ingestion of camel milk. [7] [8] [9] [10]
- *Brucella abortus* infection was last reported in 1984. [11] No additional isolates of *B. abortus* were identified until 2022, when a suspected strain was reported among cattle in the northern region. [12]

Demography

- 87% of cases occur among non-Jews, most commonly in Jerusalem, Hadera, Acre, Ramle and Beer Sheva Districts.
- During 2009 to 2015, the Arab sector accounted for 95% to 100% of cases. [13]
- Three-fourths of patients are in the age group 5 to 44 years, and the male/female ratio is 1.0.
- Human brucellosis has been epidemiologically linked to serious pregnancy complications, notably in southern Israel and among Bedouin populations (2020 to 2014). [14]



Graph: Israel. Brucellosis, cases

Notes:
1. Brucellosis has been a reportable disease since 1951.
2. During 1998 to 2009, 63% of cases were reported from Beer Sheva and Acre
   Individual years:
   2009 - 7.0 per 100,000 Arabs and 0.2 per 100,000 Jews. [15]
   2015 - 252 cases were reported to July. [16]

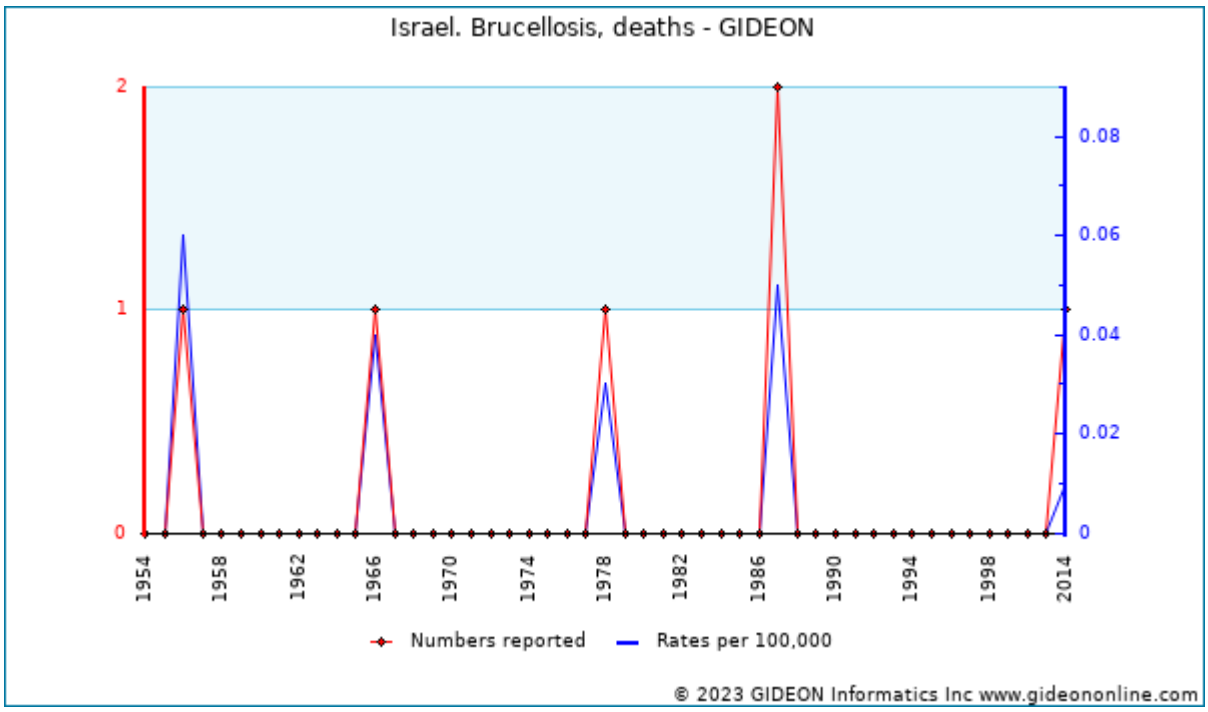
Prevalence surveys

Years	Region	Study Group	%	Notes
1992 - 2001	Southern Bavaria	children	13	13% of pathogens associated with community-acquired bloodstream infection among children ages >1 month [17]
2005 - 2014	Southern Region	children	8.7-12.7	*Brucella* spp accounted for 8.7% of occult bacteremia cases and 12.7% of infections with an established focus [18]
2015 - 2017	West Bank	patients	5.4	*Brucella mellitensis* was detected in blood culture from 5.4% of patients with clinically suspected brucellosis.
1998	Southern Region	patients - fever	8	8% of febrile illness among Bedouins, requiring hospitalization [19]
2008 - 2009	Southern Region	specimens - blood	4.3	*Brucella melitensis* accounted for 4.3% of positive blood cultures [20]

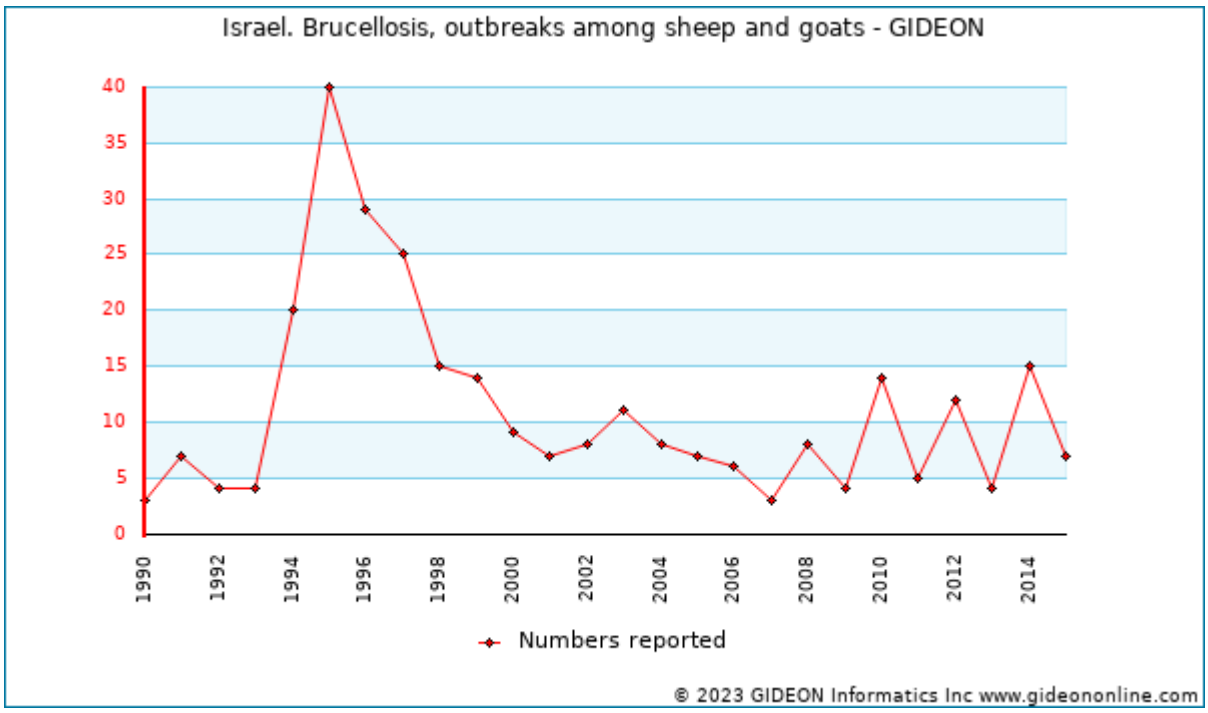
Seroprevalence surveys

Years	Region	Study Group	%	Notes
2015 - 2017	West Bank	patients	42.2	*Brucella* antibodies were detected in 42.2% of patients with clinically suspected brucellosis.
2022*	West Bank	veterinarians	76	[21]

* indicates publication year (not necessarily year of survey)

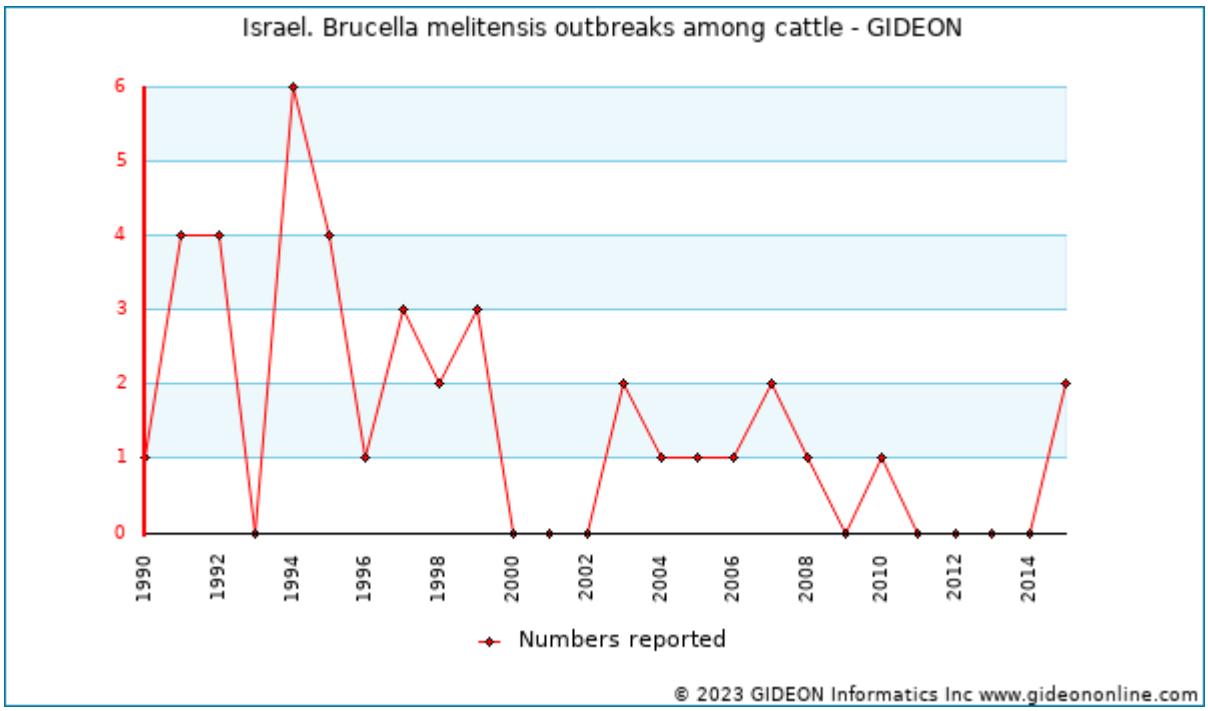


Graph: Israel. Brucellosis, deaths



Graph: Israel. Brucellosis, outbreaks among sheep and goats

Notes:
1. Also see references [22] [23]
2. 3.5% of 195,000 animals tested during 1995 to 1996 were seropositive.



Graph: Israel. Brucella melitensis outbreaks among cattle

Notes:
Individual years:

2016 - An outbreak was reported among cattle on a kibbutz in southern Israel. [24]

- 2019 - *Brucella canis* infection was reported in a dog. [25]

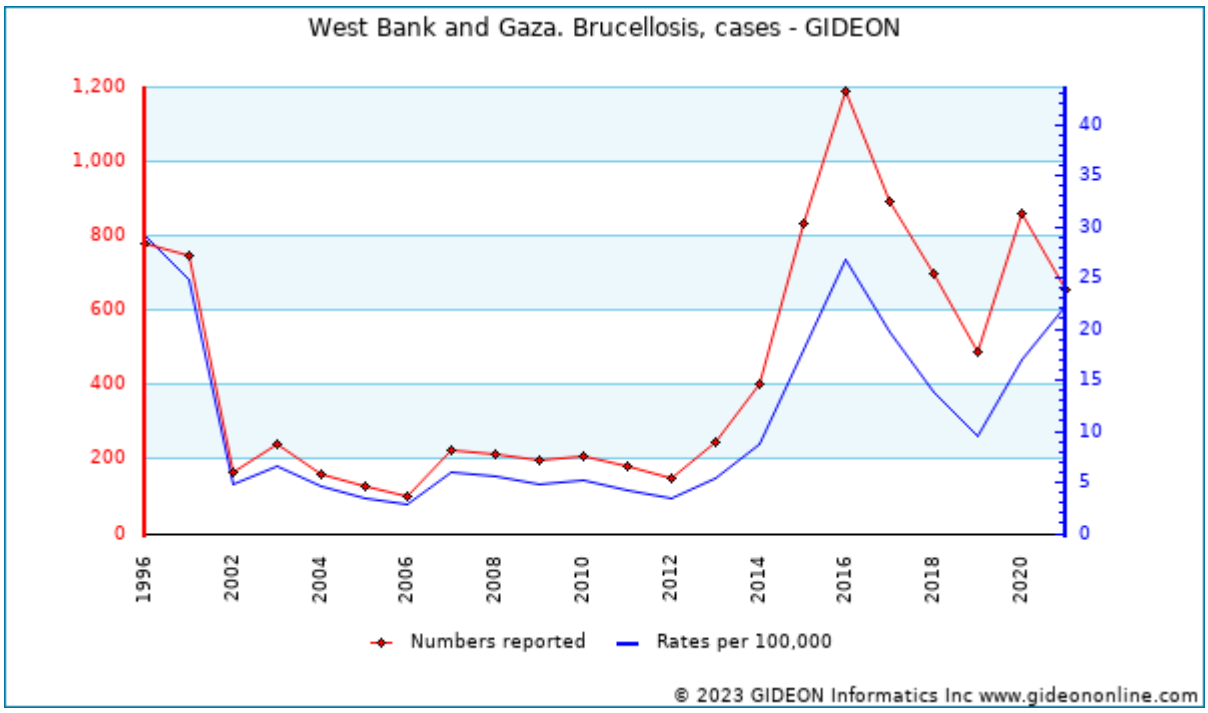
Notable outbreaks

Years	Region	Setting	Cases	Source	Population	Notes
1957	Beer Sheva		79			[26]
1997	Beer Sheva	hospital	7		health care workers	[27]
1999*		meat processing plant	9		workers	[28]
1999*		kibbutz	16			[29]
2007*	Beer Sheva		5		health care workers	Outbreak among physicians treating an infected mother and newborn infant [30]
2011	Southern Region		15	milk - camel	Bedouin	[31] [32]
2014	Afula			milk		Outbreak in Afula associated with ingestion of unpasteurized milk. Additional outbreaks were reported in the Western Galilee and Jerusalem. [33] [34] [35]
2016	Multiple locations		22	milk - camel		Outbreak associated with commercially-sold camel milk [36] [37] [38] [39] [40] [41]
2023	Haifa	community	7		general population	An outbreak of brucellosis was reported in the municipality of Umm al-Fahm, Haifa district. As of March 16, 2023, 7 new cases of brucellosis were registered since the beginning of 2023 in residents of the city of Umm al-Fahm who were admitted for treatment in various hospitals. [42]

* indicates publication year (not necessarily year of outbreak)

West Bank and Gaza:

- 2000 to 2020 - 7,935 cases of human brucellosis were reported in the West Bank (mean rate 9.4 per 100,000 population). 6,106 cases were reported in Hebron, 697 in Bethlehem and 274 in Ramallah. [43]



Graph:
West Bank and Gaza. Brucellosis, cases

Notes:
Individual years
1995 - Included 240 cases in Hebron
1996 - the rate in Gaza was 8 per 100,000
1999 - Included 451 cases in Hebron

References

1. Ann Intern Med 1992 Jul 01;117(1):25-30.
2. Clin Infect Dis 2006 Apr 15;42(8):1075-80.
3. Pediatr Infect Dis J 1989 Feb ;8(2):75-8.
4. Infection 2022 Oct ;50(5):1267-1271.
5. Isr Med Assoc J 2011 Jun ;13(6):359-62.
6. Isr Med Assoc J 2019 Jan ;21(1):10-12.
7. ProMED <promedmail.org> archive: 20160814.4414452
8. ProMED <promedmail.org> archive: 20160814.4416170
9. ProMED <promedmail.org> archive: 20160908.4475736
10. ProMED <promedmail.org> archive: 20161120.4642467
11. ProMED <promedmail.org> archive: 20151204.3840328
12. ProMED <promedmail.org> archive: 20220611.8703810
13. Isr Med Assoc J 2019 Jan ;21(1):10-12.
14. Eur J Clin Microbiol Infect Dis 2018 Jan 17;
15. Isr Med Assoc J 2011 Jun ;13(6):359-62.
16. ProMED <promedmail.org> archive: 20150801.3550984
17. Scand J Infect Dis 2006 ;38(8):604-12.
18. Int J Environ Res Public Health 2016 07 19;13(7)
19. Trans R Soc Trop Med Hyg 2001 May-Jun;95(3):301-3.
20. Eur J Clin Microbiol Infect Dis 2012 Apr ;31(4):441-3.
21. Front Vet Sci 2021 ;8:813900.
22. ProMED <promedmail.org> archive: 20140513.2467609
23. ProMED <promedmail.org> archive: 20140607.252598
24. ProMED <promedmail.org> archive: 20160302.4061936
25. ProMED <promedmail.org> archive: 20191029.6750914
26. J Hyg (Lond) 1961 Dec ;59:379-86.
27. Scand J Infect Dis 2000 ;32(1):31-5.
28. Scand J Infect Dis 1999 ;31(5):511-2.
29. Int J Mol Med 1999 Dec ;4(6):655-8.
30. Clin Infect Dis 2007 Dec 15;45(12):e135-40.
31. Isr Med Assoc J 2012 Aug ;14(8):475-8.
32. ProMED <promedmail.org> archive: 20140622.2558324
33. ProMED <promedmail.org> archive: 20140513.2467609
34. Am J Trop Med Hyg 2016 Jul 06;95(1):31-4.
35. ProMED <promedmail.org> archive: 20140607.2525983
36. Emerg Infect Dis 2021 Jun ;27(6):1728-1731.
37. ProMED <promedmail.org> archive: 20160814.4414452
38. ProMED <promedmail.org> archive: 20160814.4416170
39. ProMED <promedmail.org> archive: 20160908.4475736
40. ProMED <promedmail.org> archive: 20161120.4642467
41. ProMED <promedmail.org> archive: 20170512.5031180
42. ProMED <promedmail.org> archive: 20230323.8709102
43. Int J Infect Dis 2021 Apr 14;

Bunyaviridae infections - misc.

Agent	VIRUS - RNA. Bunyaviridae, Orthobunyavirus. Over 30 strains have been associated with human disease (see Synonyms)
Reservoir	Rat, Bird, Marsupial, Chipmunk, Cattle, Sheep, Horse, Bat, Zoonotic
Vector	Mosquito (exceptions: Shuni is transmitted by culicoid flies; Bhanja, Tamdy, Wanowrie and Zirqa by ticks)
Vehicle	None
Incubation Period	3d - 12d
Diagnostic Tests	Biosafety level 2 or 3. Serology and virus isolation. Nucleic acid amplification.
Typical Adult Therapy	Supportive
Typical Pediatric Therapy	As for adult
Clinical Hints	- Abrupt onset of fever, chills, headache; photophobia, rash arthralgia or myalgia - Vomiting, diarrhea or cough may be present - Meningitis or myocarditis may occur with Bwamba virus - Illness resolves within two-to-seven days
Synonyms	Abbey Lake, Avalon, Bangui, Batai, Bhanja, Bunyamwera, Bwamba, Cache Valley, Calovo, Cat Que, Catu, Chittoor virus, Cristoli, Ebinur Lake, Fort Sherman, Garissa, Germiston, Guama, Hartland virus, Ilesha, Ingwavuma, Issyk-Kul, Kairi, Lumbo, Maguari, Ngari, Northway, Ntwetwe, Nyando, Pongola, Shokwe, Shuni, Tacaiuma, Tamdy, Tataguine, Tensaw, Umbre, Wanowrie, Wyeomyia, Zirqa. ICD9: 066.3 ICD10: A93.8

Although Bunyaviridae infections - misc. is not endemic to Israel, imported, expatriate or other presentations of the disease have been associated with this country.

Bunyaviridae infections - misc. in Israel

2014 to 2015 - Shuni virus infection was identified among cattle, sheep and goats in Israel. [1] [2] [3] [4]
2020 to 2021 - Shuni virus infection was identified in domestic ruminants in Israel. [5]

References

1. Virus Genes 2016 Dec ;52(6):806-813.
2. Emerg Infect Dis 2015 Dec ;21(12):2267-8.
3. PLoS Negl Trop Dis 2018 Dec ;12(12):e0006993.
4. PLoS Negl Trop Dis 2019 Feb ;13(2):e0006609.
5. Trop Med Infect Dis 2022 Oct 13;7(10)

Campylobacteriosis

Agent	BACTERIUM. *Campylobacter jejuni* subsp *jejuni*, et al A microaerophilic gram-negative bacillus
Reservoir	Human, Mammal, Bird, Zoonotic
Vector	None
Vehicle	Water, Food, Sexual contact
Incubation Period	2d - 4d (range 1d - 10d)
Diagnostic Tests	Stool (rarely blood, CSF) culture. Nucleic acid amplification. Alert laboratory when these organisms are suspected.
Typical Adult Therapy	Stool precautions. Azithromycin 500 mg QD X 3 days Alternatives Erythromycin, Fluoroquinolone (Ciprofloxacin, Levofloxacin, Trovafloxacin, Pefloxacin, Sparfloxacin or Moxifloxacin), Gentamicin[1]
Typical Pediatric Therapy	Stool precautions. Azithromycin 10 mg/kg QD X 3 days Alternatives - Erythromycin, Gentamicin
Clinical Hints	- Febrile diarrhea or dysentery - Vomiting or bloody stool often noted - Severe abdominal pain may mimic appendicitis - Disease is most common among children and lasts for one-to-four days
Synonyms	Campylobacter. ICD9: 008.43 ICD10: A04.5

Campylobacteriosis in Israel

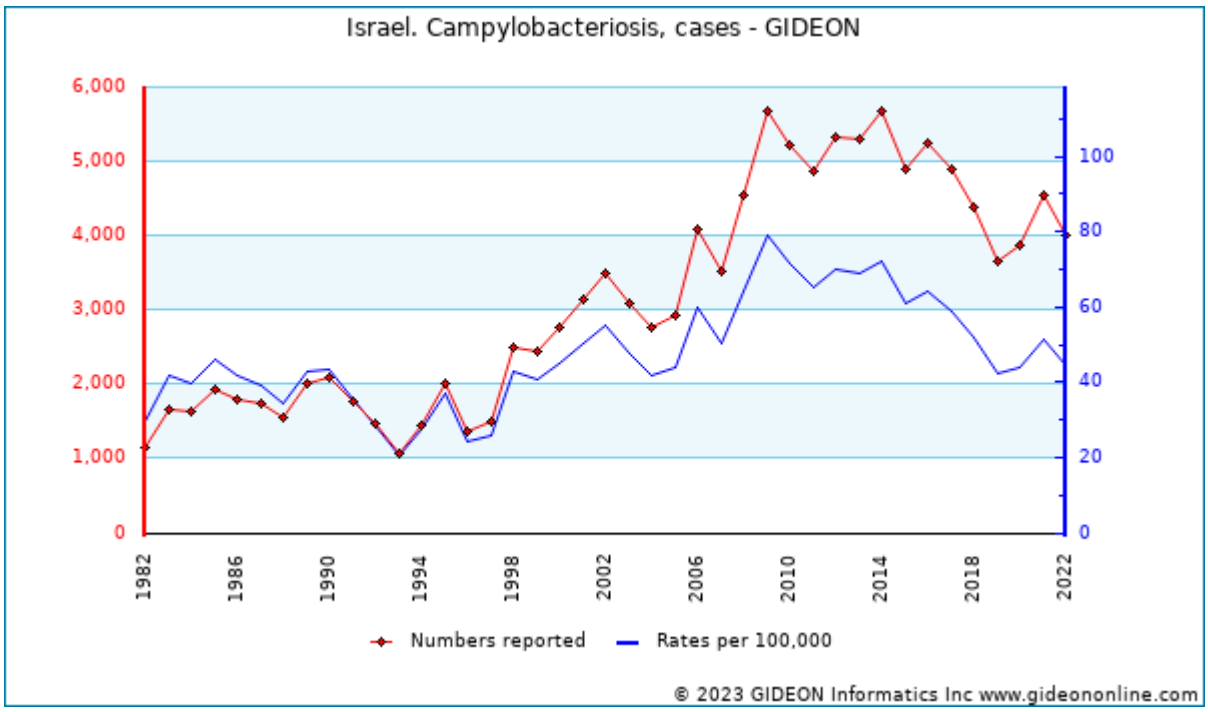
Time and Place

Campylobacteriosis has been a reportable disease in Israel since 1982.

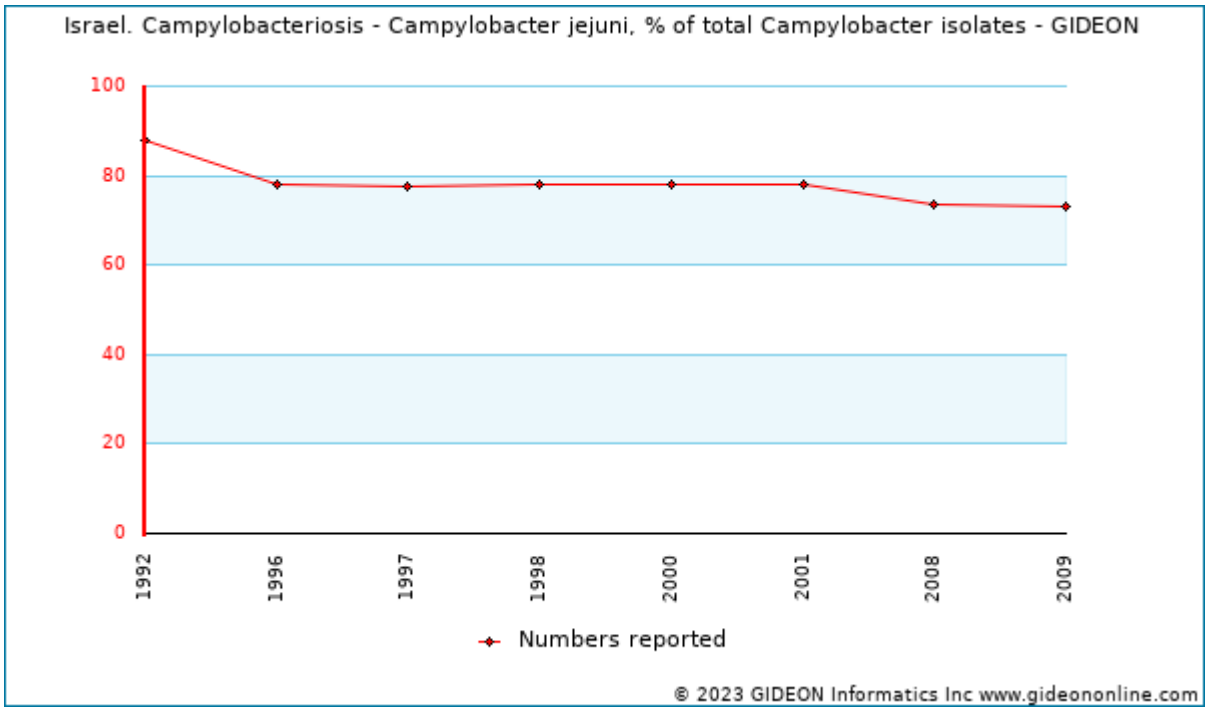
- Disease rates are highest during late spring, and among males and younger age groups (1991 to 2012). [2]
- Disease rates among children rise when ambient temperatures increase. [3]
- During 1990 to 2008, *Campylobacter* accounted for 18.2% of enteric infections in Jerusalem - with rates of 15.0 per 100,000 in 1990, and 110.8 per 100,000 in 2008. [4]

Incidence

- 1999 to 2010 - The annual incidence of *Campylobacter* spp. infection in Israel increased from 31.04 to 90.99 cases/ 100,000 population. Rates among children below age 2 were 356.12 per 100,000. [5]
- 1999 to 2012 - 40,978 stool isolates of *Campylobacter* were reported through a surveillance system - increasing from 65.7 per 100,000 population in 1999, to 101.7 per 100,000 in 2012. [6]



Graph: Israel. Campylobacteriosis, cases



Graph: Israel. Campylobacteriosis - Campylobacter jejuni, % of total Campylobacter isolates

No deaths were ascribed to Campylobacteriosis during 1986 to 2000.

Prevalence surveys

Years	Region	Study Group	%	Notes
1986*		immigrants	8.4	8.4% of Ethiopian immigrants hospitalized in Israel [Z]

Years	Region	Study Group	%	Notes
1977 - 1979		patients	4.3	4.3% of diarrhea episodes - third most common cause of bacterial diarrhea in Israel [8]
1990 - 2008	Jerusalem	patients	18.2	18.2% of bacterial enteric infections in Jerusalem [9]
1986*		poultry - chicken	70-85	[10]
1994*	Gaza	children - gastrointestinal	8.3	8.3% of diarrhea among children below age 5 years, in Gaza [11]
1998 - 1992		children - gastrointestinal	1	1% of diarrhea among children on a communal settlement [12]
2003 - 2012	Afula	children - gastrointestinal	53.3	Survey of children hospitalized for gastroenteritis [13]
2006 - 2007	Gaza	children - gastrointestinal	5	5% of childhood diarrhea in Gaza [14]
2007*	Gaza	children - gastrointestinal	4.7	4.7% of diarrhea in children less than 5 years of age [15]
2008*	Gaza	children - gastrointestinal	5	5% of diarrhea among children below age 5 in Gaza [16]
2015 - 2020	Kfar Saba	children - gastrointestinal	38.7	In this study, stool culture tests of 276 patients with acute gastroenteritis (AGE) and positive bacterial culture, as well as 560 control patients (negative bacterial cultures), who visited the pediatric emergency department in Meir Medical Center were evaluated. *Campylobacter jejuni* was detected in 108 (38.7%) of the culture-positive samples. [17]
2015 - 2018	Jerusalem	children - gastrointestinal	27	Out of 162 children who were diagnosed with clinical dysentery during the study period at Shaare Zedek Medical Center, 27% had a stool culture positive for *Campylobacter* spp. [18]
2016 - 2019	Netanya	children - gastrointestinal	44	*Campylobacter* was detected in 44% of 135 hospitalized children with clinical dysentery. Testing was done on stool cultures. *Campylobacter jejuni* was detected in all isolates and *Campylobacter coli* in 1 isolate. [19]
2018 - 2020	Tel Aviv	children - gastrointestinal	11	In the stool samples collected from 118 hospitalized children at the Schneider Children's Medical Center of Israel, *Campylobacter* was detected in 11% of the samples. [20]

* indicates publication year (not necessarily year of survey)

Notable outbreaks

Years	Region	Setting	Cases	Source	Population	Notes
1982	Jerusalem	kibbutz	150	water		[21]
1982		military base	6			[22]
1987*		neonatal intensive care unit				[23]
2002*	Haifa	farm			children	[24]

* indicates publication year (not necessarily year of outbreak)

References

1. Expert Rev Anti Infect Ther 2016 ;14(2):193-206.
2. Foodborne Pathog Dis 2016 08 ;13(8):448-55.
3. Environ Res 2018 Mar 30;164:539-545.
4. Epidemiol Infect 2009 Nov ;137(11):1531-7.
5. Emerg Infect Dis 2013 Nov ;19(11):1828-31.
6. Foodborne Pathog Dis 2016 08 ;13(8):448-55.
7. J Trop Med Hyg 1986 Jun ;89(3):107-12.
8. Isr J Med Sci 1982 Sep ;18(9):935-40.
9. Epidemiol Infect 2009 Nov ;137(11):1531-7.
10. J Food Prot 1986 Apr ;49(4):290-292.
11. Ann Trop Med Parasitol 1994 Apr ;88(2):175-82.
12. Pediatr Infect Dis J 1994 Feb ;13(2):116-22.
13. Sci Rep 2020 Apr 02;10(1):5823.
14. Indian J Pediatr 2011 Feb ;78(2):165-70.
15. Int J Infect Dis 2007 Nov ;11(6):501-7.
16. Med Princ Pract 2008 ;17(4):296-301.
17. Clin Pediatr (Phila) 2022 Dec 01;:99228221140772.
18. Isr Med Assoc J 2023 Jan ;25(1):5-7.
19. Acta Paediatr 2023 Feb 18;
20. Acta Paediatr 2022 Nov 29;
21. Eur J Clin Microbiol 1983 Dec ;2(6):588-90.
22. Isr J Med Sci 1984 Mar ;20(3):216-8.
23. J Hosp Infect 1987 Jan ;9(1):54-9.
24. Harefuah 2002 Aug ;141(8):683-4, 763.

Candidiasis

Agent	FUNGUS - Yeast. Ascomycota, Hemiascomycetes, Saccharomycetales. *Candida albicans*, and other species.
Reservoir	Human
Vector	None
Vehicle	Contact, Catheter
Incubation Period	Variable
Diagnostic Tests	Culture. Serology and assays for cell-specific antigens are performed in some centers,
Typical Adult Therapy	Topical, oral, systemic antifungal agent depending on clinical presentation and species (in Drugs module, scroll through upper left box)[1] [2]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Dermal erythema with satellite pustules - "Cheesy" mucosal discharge - Candidemia in the setting of intravenous catheter or endocarditis - Severe, widespread or intractable disease may suggest underlying diabetes, AIDS or other form of immune suppression
Synonyms	Candida, Candida-Mykosen, Candidiase, Candidiasi, Candidose, Monilia, Moniliasis, Thrush. ICD9: 112 ICD10: B37

Candidiasis in Israel

- 1994 - The rate of nosocomial candidemia in general hospitals was 600 per 100,000 to 800 per 100,000 admissions. [3]

- 2015 (publication year) - The rate of candidemia in Israel was estimated at 649 cases per year (mortality 2.75 per 100,000) ; and the incidence of recurrent monilial vulvovaginitis at 130,440 women per year. [4]

Candida auris

- 2014 - Five cases of *Candida auris* bloodstream infection were treated at a hospital in Tel Aviv. [5]
- 2017 - An Israeli patient with *Candida auris* fungemia was transferred from South Africa to a hospital in Ramat Gan. Nosocomial infection by the same strain was subsequently reported in a second patient. [6]

Prevalence surveys

Years	Region	Study Group	%	Notes
2007*	Gaza	women	5.2	5.2% of pregnant women aged 16 to 50 years attending child and mother health center (vaginal candidiasis) [7]
2003*	Holon	patients - vaginitis	35.5	35.5% of vaginitis [8]

* indicates publication year (not necessarily year of survey)

Notable outbreaks

Years	Region	Setting	Clinical	Pathogen	Notes
1993*	Haifa	neonatal intensive care unit	fungemia	*Candida tropicalis*	[9]

* indicates publication year (not necessarily year of outbreak)

Cas series

References

1. J Antimicrob Chemother 2018 Jan 01;73(suppl_1):i33-i43.
2. J Antimicrob Chemother 2018 01 01;73(suppl_1):i14-i25.
3. Infection 2000 Jan-Feb;28(1):26-9.
4. Isr Med Assoc J 2015 Jun ;17(6):374-9.
5. Emerg Infect Dis 2017 02 ;23(1)
6. Emerg Infect Dis 2018 Apr ;24(4):801-804.
7. West Afr J Med 2007 Apr-Jun;26(2):138-42.
8. Isr Med Assoc J 2003 Sep ;5(9):629-32.
9. Infect Control Hosp Epidemiol 1993 Oct ;14(10):587-90.

Capillariasis - extraintestinal

Agent	PARASITE - Nematoda. *Capillaria hepatica* (*Calodium hepaticum*), *Capillaria aerophila*, *Anatrichosoma cutaneum*
Reservoir	Rat, Dog, Cat, Monkey, Soil, Earthworm, Zoonotic
Vector	None
Vehicle	Soil Earthworm
Incubation Period	21d -28d
Diagnostic Tests	Visualization of ova or adults in liver, lung or dermal tissue. Capillaria hepatica adult: female - 53 to 78 mm; male - 24 to 37 mm
Typical Adult Therapy	Consider Thiabendazole 25 mg/kg/day X 30d[1]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Three infecting species, associated with: - Bronchitis or pneumonia - Acral pruritic rash - Tender hepatomegaly, abdominal distention, eosinophilia and fever
Synonyms	Anatrichosoma cutaneum, Calodiasis, Calodium hepaticum, Capillaria aerophila, Capillaria hepatica, Capillariasis - pulmonary, Capillary liver worm, Eucoleus aerophilus, Hepatic capillariasis, Thominx aerophilus. ICD9: 128.8 ICD10: B83.8

Although Capillariasis - extraintestinal is not endemic to Israel, imported, expatriate or other presentations of the disease have been associated with this country.

Capillariasis - extraintestinal in Israel

2021 (publication year) - The first case of *Capillaria hepatica* infestation in Israel was reported, in a patient with an extensive travel history. [2]

References

1. Am J Trop Med Hyg 1993 May ;48(5):610-25.

2. Am J Trop Med Hyg 2021 May 17;

Capillariasis - intestinal

Agent	PARASITE - Nematoda. *Capillaria* (*Aonchotheca*, *Paracapillaria*) *philippinensis*
Reservoir	Bird, Fish, Zoonotic
Vector	None
Vehicle	Food (small fish)
Incubation Period	Usually a few weeks
Diagnostic Tests	Identification of ova or adults in stool, biopsy material or duodenal aspirate. Capillaria philippinensis adult: female - 2.5 to 4.5 mm; male - 2.0 to 3.5 mm
Typical Adult Therapy	Albendazole 400 mg QD X 30d. OR Mebendazole 200 mg BID X 20-30d[1]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Diarrhea, weight loss, vomiting and eosinophilia - Follows ingestion of raw fresh water fish - Malabsorption and wasting illness may occur - Case-fatality rates of 10% to 20% have been reported
Synonyms	Aonchotheciasis, Capillaria philippinensis, Intestinal capillariasis, Paracapillaria philippinensis. ICD9: 127.5 ICD10: B81.1

Although Capillariasis - intestinal is not endemic to Israel, imported, expatriate or other presentations of the disease have been associated with this country.

Capillariasis - intestinal in Israel

Cross-border events

Years	Acquired by**	Originated in**	Cases	Notes
2021*	Israel	Thailand	1	2

* indicates publication year (not necessarily year of event)
** Country or Nationality

References

1. Indian J Med Microbiol 2012 Apr-Jun;30(2):236-9.
2. J Travel Med 2021 Sep 06;

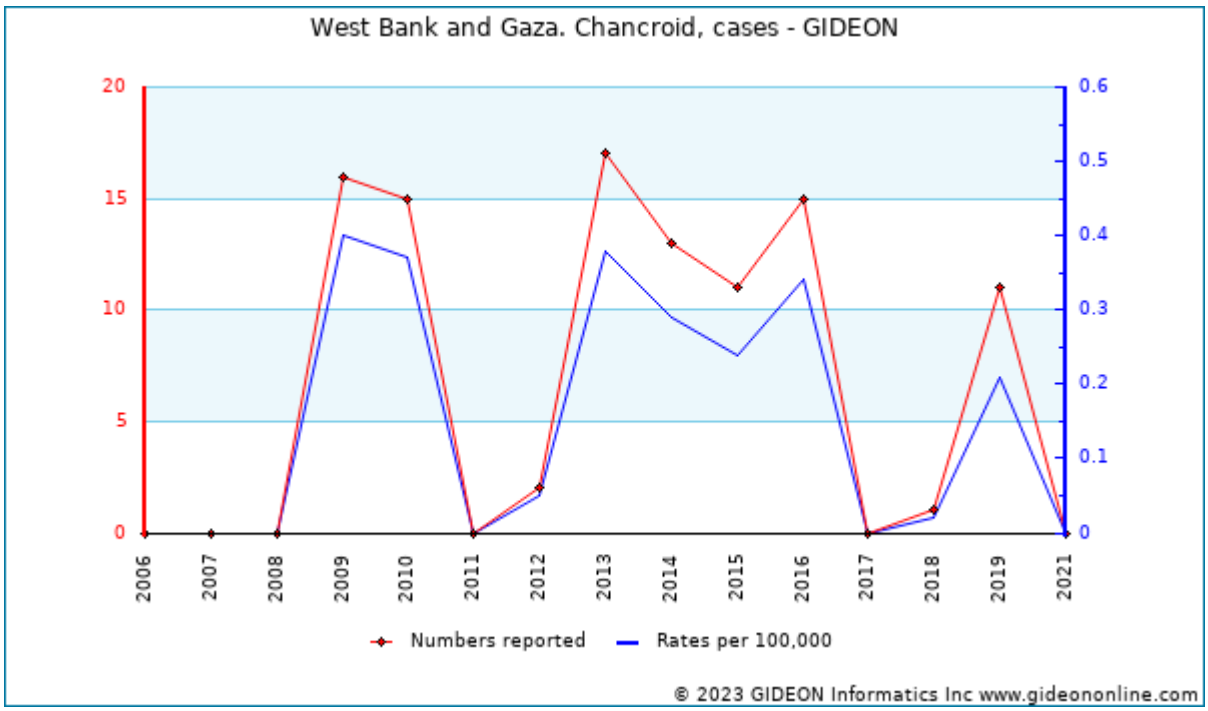
Chancroid

Agent	BACTERIUM. *Haemophilus ducreyi*. A facultative gram-negative bacillus
Reservoir	Human
Vector	None
Vehicle	Sexual contact
Incubation Period	3d - 10d (2d - 21d)
Diagnostic Tests	Culture (inform laboratory when this diagnosis is suspected). Fluorescent staining under development
Typical Adult Therapy	Azithromycin 1.0 g PO X 1 dose. OR Ceftriaxone 250 mg IM X 1 dose. OR Ciprofloxacin 500 mg PO BID X 3 days OR Erythromycin 500 mg PO TID X 7d.[1] [2] [3]
Typical Pediatric Therapy	Azithromycin 20 mg/kg PO X 1 dose OR Erythromycin 10 mg/kg PO TID X 7d. OR Ceftriaxone10 mg/kg IM X 1
Clinical Hints	- Soft, painful and tender chancre on erythematous base - Regional lymphadenopathy - generally unilateral and painful - Onset three-to-ten days following sexual exposure
Synonyms	Blot sjanker, Chancre mou, Chancro blando, Haemophilus ducreyi, Nkumunye, Soft chancre, Ulcera mole, Ulcus molle, Weeke sjanker, Weicher Schanker. ICD9: 099.0 ICD10: A57

Chancroid in Israel

Four cases were reported among Jews in Jerusalem during 1936 to 1937.

25 cases were reported for Tel Aviv during the years of World War II.



Graph:

West Bank and Gaza. Chancroid, cases

References

1. Sex Transm Dis 1994 Jul-Aug;21(4):231-4.
2. MMWR Recomm Rep 2015 Jun 05;64(RR-03):1-137.
3. Antimicrob Agents Chemother 1987 Jan ;31(1):67-9.

Chikungunya

Agent	VIRUS - RNA. Togaviridae, Alphavirus: Chikungunya virus. Related Semliki Forest and Me Tri viruses are found in Africa & Asia
Reservoir	Non-human primate, Zoonotic
Vector	Mosquito (*Aedes* spp.; *Ae. furcifer-taylori* group in Africa)
Vehicle	None
Incubation Period	2d - 12d
Diagnostic Tests	Biosafety level 3. Viral culture (blood). Serology. Nucleic acid amplification.
Typical Adult Therapy	Supportive
Typical Pediatric Therapy	As for adult
Clinical Hints	- Abrupt onset of fever, leukopenia, myalgia and prominent bilateral joint pain - Maculopapular rash appears on 2nd to 5th days in greater than 50% of cases - Fever resolves within 7 days, but joint pain may persist for months
Synonyms	Buggy Creek, Getah, Kankasha, Kidenga pepo, Knuckle fever, Me Tri, Middelburg, Semliki Forest. ICD9: 062.8,066.3 ICD10: A92.1

Although Chikungunya is not endemic to Israel, imported, expatriate or other presentations of the disease have been associated with this country.

Chikungunya in Israel

2006 - Three Israeli travelers acquired Chikungunya in northern India. [1]

2010 (publication year) - 15 cases of Chikungunya were confirmed among Israeli travelers during a three-year period.

2009 - *Aedes albopictus* was found to be widely distributed in Israel. [2]

References

1. J Travel Med 2008 Sep-Oct;15(5):382-4.

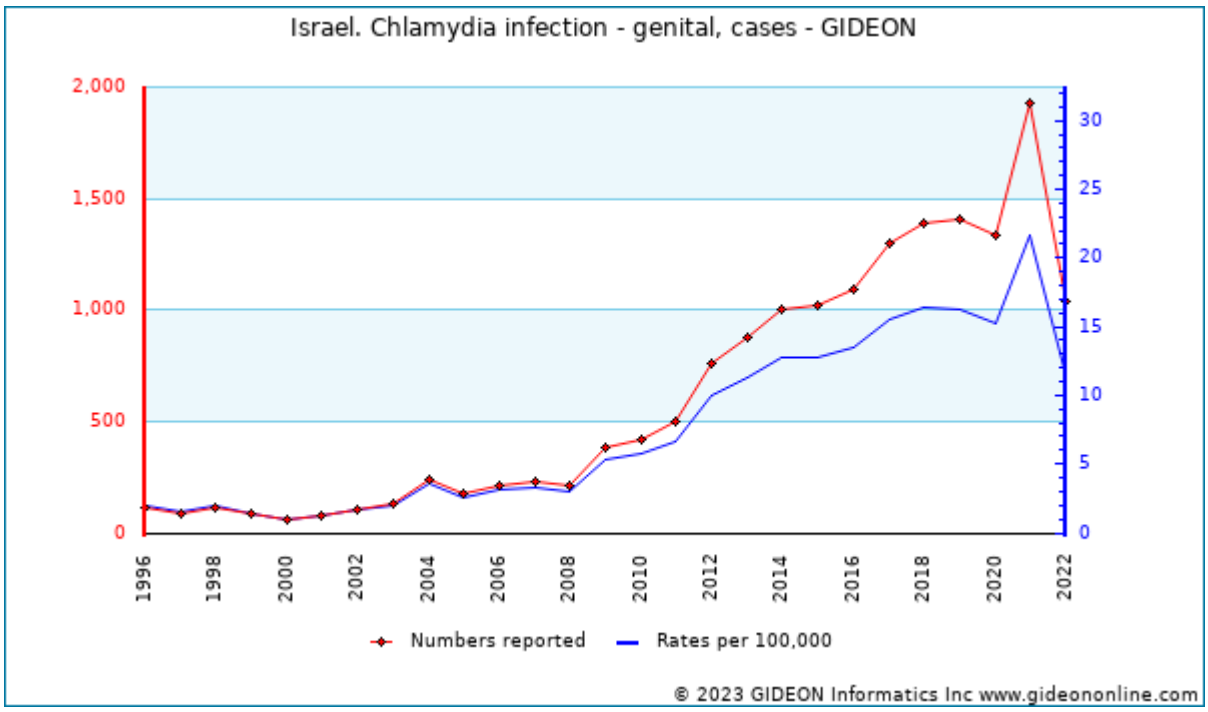
2. Emerg Infect Dis 2012 Feb ;18(2):345-7.

Chlamydia infections, misc.

Agent	BACTERIUM. Chlamydiaceae, Chlamydiae, *Chlamydia trachomatis*; *Simkania negevensis*; *Waddlia chondrophila*
Reservoir	Human
Vector	None
Vehicle	Sexual contact
Incubation Period	5d - 10d
Diagnostic Tests	Microscopy and immunomicroscopy of secretions. Serology. Tissue culture. Nucleic acid amplification.
Typical Adult Therapy	Azithromycin 1g as single dose OR Doxycycline 100 mg BID X 7d. OR Levofloxacin 500 mg daily X 7 days OR Ofloxacin 300 mg BID X 7 days[1] [2]
Typical Pediatric Therapy	Weight <45 kg: Erythromycin 12.5 mg/kg QID X 14d Weight >=45 kg, but age <8 years: Azithromycin 1 g as single dose Age >= 8 years: Azithromycin 1 g as single dose OR Doxycycline 100 mg BID X 7 d
Clinical Hints	- Thin, scant penile discharge - Cervicitis, with overt pelvic inflammatory disease in some cases - Conjunctivitis or neonatal pneumonia - Concurrent gonorrhea may be present
Synonyms	Bedsonia, Chlamydia felis, Chlamydia suis, Chlamydia trachomatis, Chlamydien-Urethritis, Chlamydien-Zervizitis, Chlamydophila, Inclusion blenorrhea, Non-gonococccal urethritis, Nonspecific urethritis, Parachlamydia, Parachlamydia acanthamoebae, Prachlamydia, Protochlamydia, Protochlamydia naegleriophila, Rhabdochlamydia, Simkania negevensis, Waddlia chondrophila. ICD9: 099.41,099.5 ICD10: A56,A55

Chlamydia infections, misc. in Israel

Chlamydial infection has been officially-reportable since 1994.



Graph: Israel. Chlamydia infection - genital, cases

Notes:
Individual years:
2004 - Included 74 cases (8.8 per 100,000) in the Haifa district. [3]

The annual rate of *Chlamydia* infection in Haifa District increased from 5.1 per 100,000 in 2001, to 18.5 per 100,000 in 2015. [4]

Prevalence surveys

Years	Region	Study Group	%	Notes
2003*		military personnel	3.2	3.2% of female military personnel [5]
1991*	Tel Aviv	injecting drug users	25	25% of female IDU [6]
2000 - 2005	Gaza	women	12.8	12.8% of infertile women in Gaza [7]
2008*	Gaza	women	20.2	20.2% of female infertility and gynecology clinic patients in Gaza [8]
2006 - 2007	Gaza	patients	10	10% of patients with sterile pyuria [9]
2016 - 2019	Kfar Saba	patients	9.8	9.8% of pathogens identified in women with pelvic inflammatory disease [10]
2016 - 2019	Tel Aviv	sex workers	6.1	
2006*	Beer Sheva	sex workers	16.7	16.7% of foreign CSW in the Beer Sheva area [11]
2008*	Tel Aviv	sex workers	6.3	6.3% of brothel-based CSW in Tel Aviv [12]
2017 - 2019	Multiple locations		1.5	Survey of men purchasing HIV pre-exposure prophylaxis [13]
2007*	Gaza	pregnant women	8.3	8.3% of pregnant women aged 16 to 50 years attending a child and mother health center in Gaza [14]
1996 - 1998	Haifa	patients - STD	51.5	51.5% of male STD patients with urethritis [15]

Years	Region	Study Group	%	Notes
2008 - 2010	Tel Aviv	patients - STD	5-22	12.7% / 22% / 5.0% of male patients / male patients with urethritis / asymptomatic men, in an STD clinic in Tel Aviv [16]
2022*	Northern	patients - STD	4.8	*Chlamydia trachomatis* was detected in 4.8% out of 3,753 assays performed on 2,407 patients screened for STD from a secondary referral hospital and 2 STD clinics in northern Israel. Chlamydia was the most frequently detected STD. [17]

***** indicates publication year (not necessarily year of survey)

55% to 80% of healthy individuals in the southern region are seropositive to Simkania Z [18] ; 15% of infants with acute bronchiolitis. [19]

References

1. MMWR Recomm Rep 2015 Jun 05;64(RR-03):1-137.
2. 2016 ;
3. Harefuah 2007 Jun ;146(6):425-8, 503, 502.
4. Int J STD AIDS 2017 12 ;28(14):1389-1396.
5. Emerg Infect Dis 2003 Oct ;9(10):1344-6.
6. Genitourin Med 1991 Apr ;67(2):133-6.
7. J Egypt Soc Parasitol 2010 Aug ;40(2):451-8.
8. Int J Infect Dis 2009 May ;13(3):334-41.
9. Adv Med Sci 2008 ;53(1):80-6.
10. J Gynecol Obstet Hum Reprod 2021 Jun 01;:102176.
11. Sex Health 2006 Dec ;3(4):301-3.
12. Int J STD AIDS 2008 Oct ;19(10):656-9.
13. PLoS One 2021 ;16(11):e0259168.
14. West Afr J Med 2007 Apr-Jun;26(2):138-42.
15. Isr Med Assoc J 2003 Jan ;5(1):24-7.
16. Int J STD AIDS 2017 02 ;28(2):127-132.
17. J Low Genit Tract Dis 2022 Nov 30;
18. Epidemiol Infect 1999 Feb ;122(1):117-23.
19. J Infect Dis 1998 May ;177(5):1425-9.

Chlamydia pneumoniae infection

Agent	BACTERIUM. Chlamydiaceae, Chlamydiae, *Chlamydia* (*Chlamydophila*) *pneumoniae*
Reservoir	Human
Vector	None
Vehicle	Droplet, Respiratory or pharyngeal acquisition
Incubation Period	7d - 28d
Diagnostic Tests	Direct fluorescence of sputum. Serology and culture in specialized laboratories. Nucleic acid amplification.
Typical Adult Therapy	Respiratory isolation. Azithromycin 500 mg day 1, then 0.25 g daily X 4 days OR Levofloxacin 750 mg po BID X 7d. OR Alternatives: Doxycycline 100 mg BID X 7d. Erythromycin 500 mg QID X 10d. Clarithromycin 0.5 g BID X 7d[1]
Typical Pediatric Therapy	Respiratory isolation Azithromycin 10 mg/kg PO day 1; 5 mg/kg PO days 2 to 5 OR Doxycycline 1-2 mg/kg BID X 10d OR Clarithromycin 5 mg/kg BID X 10d
Clinical Hints	- Atypical pneumonia, often associated with pharyngitis and myalgia - Consider this diagnosis when *Mycoplasma*, *Legionella* and influenza are discounted
Synonyms	Chlamydia caviae, Chlamydia pneumoniae, Chlamydia TWAR, Chlamydophila pneumoniae, TWAR. ICD9: 078.88 ICD10: J16.0

Chlamydia pneumoniae infection in Israel

Prevalence surveys

Years	Region	Study Group	%	Notes
1995*		patients	4.6	4.6% of atypical respiratory infections; 55.5% of the patients had evidence of previous infection. [2]
1997*	Negev	patients	17.9	Patients with community-acquired pneumonia [3]
1998*	Southern Region	patients	18	18% of winter respiratory tract infections in an outpatient setting [4]
2011*	Northern Region	patients	20.6	20.6% of patients with community-acquired pneumonia i [5]

* indicates publication year (not necessarily year of survey)

Seroprevalence surveys

Years	Study Group	%	Notes
1996 - 1997	general population	31-74	31% of children and 74% of adults

References

1. Expert Rev Anti Infect Ther 2003 Oct ;1(3):493-503.
2. Harefuah 1995 Oct ;129(7-8):229-32, 296.

3. J Infect 1997 Jan ;34(1):41-8.
4. Eur J Clin Microbiol Infect Dis 1998 Oct ;17(10):685-9.
5. Isr Med Assoc J 2010 Aug ;12(8):477-82.

Cholecystitis and cholangitis

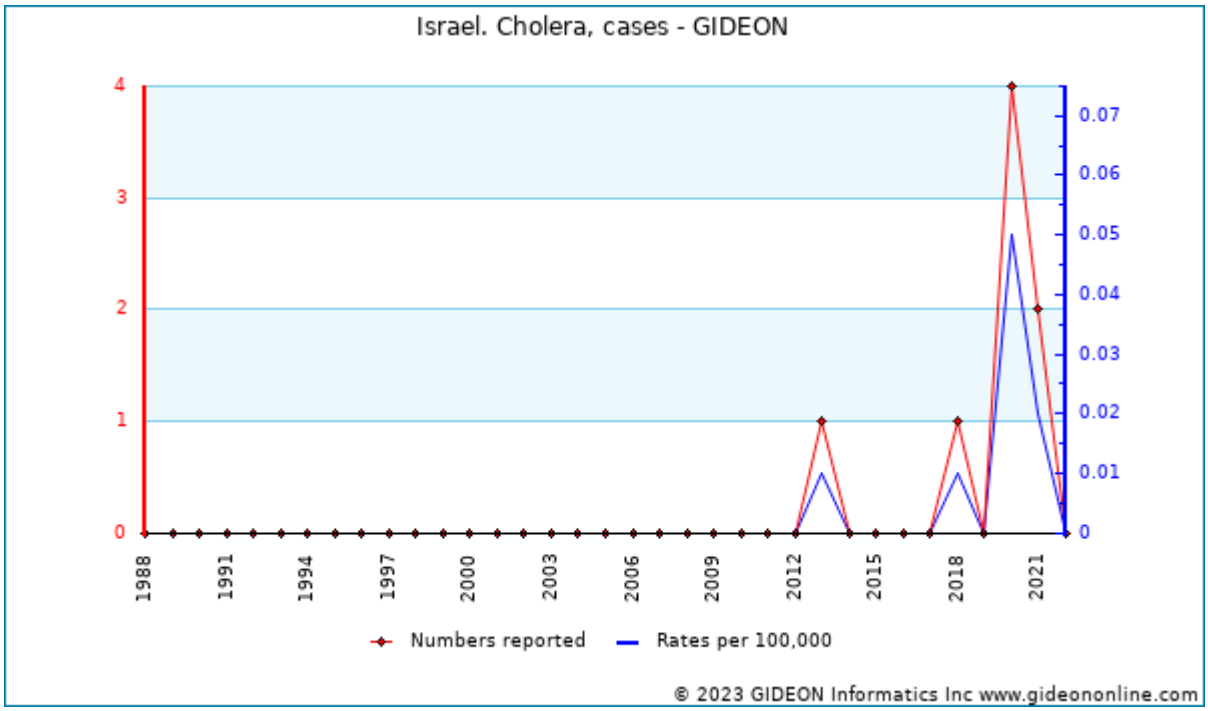
Agent	BACTERIUM. *Escherichia coli*, *Klebsiella pneumoniae*, enterococci, et al.
Reservoir	Human
Vector	None
Vehicle	Endogenous
Incubation Period	Variable
Diagnostic Tests	Roentgenograms/imaging (cholecystogram, ultrasound, CT, etc).
Typical Adult Therapy	Antibiotics and surgical intervention as required
Typical Pediatric Therapy	As for adult
Clinical Hints	- Fever, chills and right upper quadrant abdominal pain; - Often "female, fat and forty" - May be associated with gallstones or pancreatitis, or present as "fever of unknown origin"
Synonyms	Acute cholecystitis, Angiocholite, Ascending cholangitis, Cholangitis, Cholecystite, Cholecystitis, Cholezystitis, Colangite, Colangitis, Colecistite, Gall bladder. ICD9: 575.0,576.1 ICD10: K81,K83.0

Cholera

Agent	BACTERIUM. *Vibrio cholerae* A facultative gram-negative bacillus
Reservoir	Human
Vector	None
Vehicle	Water, Fecal-oral, Seafood (oyster, ceviche), Vegetables, Fly
Incubation Period	1d - 5d (range 9h - 6d)
Diagnostic Tests	Stool culture. Advise laboratory when this organism is suspected.
Typical Adult Therapy	Stool precautions. Doxycycline 300 mg single dose OR Tetracycline 500 mg Q6h X 3d OR Azithromycin 1000 mg single dose OR Erythromycin 500 mg Q6h X 3d OR Ciprofloxacin 1000 mg single dose Fluids (g/l): NaCl 3.5, NaHCO3 2.5, KCl 1.5, glucose 20 IV Ringer's lactate if severe[1]
Typical Pediatric Therapy	Stool precautions. Doxycycline 4-6 mg/kg single dose OR Tetracycline 10-12 mg/kg Q6h X 3d OR Azithromycin 20 mg/kg single dose OR Erythromycin 10 mg/kg Q6h X 3d Fluids as for adult
Vaccine	Cholera - injectable vaccine Cholera - oral vaccine
Clinical Hints	- Massive, painless diarrhea and dehydration - Occasionally vomiting - Apathy or altered consciousness are common - Rapid progression to acidosis, electrolyte imbalance and shock - Fever is uncommon
Synonyms	Colera, Kolera. ICD9: 001 ICD10: A00

Although Cholera is not endemic to Israel, imported, expatriate or other presentations of the disease have been associated with this country.

Cholera in Israel



Graph: Israel. Cholera, cases

Notes:
1. Three cases were imported from Egypt in 1982 and 1987.
2. No cases have been reported in Israel (within the "green line') since 1987.

- 1970 to 1983 - There were 495 cases reported in Gaza, Judea, and Samaria. Gaza accounted for 180 cases.
- 1971 - One case was reported in Gaza.
- 1995 to 2012 - No cases were reported in Gaza, Judea, or Samaria.
- 2022 - On November 11, 2022 cholera was detected in the Yarmoukim reservoir in northern Israel. The Yarmouk river also runs through Syria where a significant cholera outbreak has been reported since September 2022. [2]

Cross-border events
Outbreaks among tourists, refugees and other groups

Years	Acquired by**	Originated in**	Setting	Cases	Deaths	Notes
1981	Israel	Jordan	travel	161		Outbreak (161 cases) in Gaza originated with a visitor from Jordan. [3] [4]
1994	Israel		travel	103	1	Outbreak in Gaza originated with persons arriving from Yemen and Egypt.

** Country or Nationality

Talking Points
- The first documented cholera epidemic in Israel was recorded in 1831 in Bethlehem.
- Subsequent epidemics were reported between 1837;1840 (Jerusalem); 1848 (Schechem and the Galilee); 1855 (Haifa); 1864 (Jaffa); 1865 (Jerusalem, Jaffa and Tiberias); 1866 (Jerusalem); 1888 to 1890 (Jerusalem); 1902 (many areas); 1911 (Haifa); 1912 (Tiberias); 1916 (many areas); 1917 (Beer Sheva and Tiberias); and 1918 (Tiberias). [5]

Notable outbreaks

Years	Region	Cases	Deaths	Source	Notes
1866					Outbreak reported - additional details unavailable. [6]
1970	Jerusalem	397		vegetable	Outbreak related to vegetables grown in human sewage. [7] [8] [9] [10] [11]

Years	Region	Cases	Deaths	Source	Notes
1981	Gaza	161			Outbreak related to an index patient from Jordan. [12] [13]
1994	Gaza	103	1		Outbreak related to index patients from Yemen and Egypt

References

1. Cochrane Database Syst Rev 2014 Jun 19;(6):CD008625.
2. ProMED <promedmail.org> archive: 20221119.8706811
3. Trans R Soc Trop Med Hyg 1984 ;78(4):554-7.
4. Ann Soc Belg Med Trop 1984 Jun ;64(2):199-200.
5. Harefuah 2005 May ;144(5):363-70, 381.
6. Acta Med Orient 1957 May-Jun;16(5-6):136-8.
7. Lancet 1971 Jul 10;2(7715):86-9.
8. Isr J Med Sci 1972 Apr ;8(4):531-9.
9. Harefuah 1970 Sep 15;79(6):268-9.
10. Harefuah 1970 Sep 01;79(5):230-1.
11. Proc R Soc Med 1972 May ;65(5):428-32.
12. Trans R Soc Trop Med Hyg 1984 ;78(4):554-7.
13. Ann Soc Belg Med Trop 1984 Jun ;64(2):199-200.

Chromomycosis

Agent	FUNGUS. Ascomycota, Euascomycetes, Chaetothyriales. Dematiaceous molds: *Phialophora*, *Cladiophialophora*, *Fonsecaea*, *Rhinocladiella*
Reservoir	Wood, Soil, Vegetation
Vector	None
Vehicle	Minor trauma
Incubation Period	14d - 90d
Diagnostic Tests	Biopsy and fungal culture.
Typical Adult Therapy	Itraconazole 100-200 mg PO BID X (up to) 36 m. OR Terbinafine 500 mg QD X (minimum) 12 months OR Posaconazole 400 mg PO BID X 12 months Local heat Excision as necessary[1]
Typical Pediatric Therapy	Itraconazole 2.5 mg/kg PO BID X (up to) 36 m. OR Terbinafine Weight 35 kg 250 mg QD Local heat Excision as necessary
Clinical Hints	- Violaceous, verrucous, slowly-growing papule(s) or nodules - Most commonly on lower extremities - Usually follows direct contact with plant matter in tropical regions
Synonyms	Chromoblastomycosis, Chromomykose, Phoma insulana, Veronaea, Verrucous dermatitis. ICD9: 117.2 ICD10: B43.0

References

1. Clin Microbiol Rev 2017 01 ;30(1):233-276.

Chronic meningococcemia

Agent	BACTERIUM. *Neisseria meningitidis* An aerobic gram-negative coccus
Reservoir	Human
Vector	None
Vehicle	Air, Infected secretions
Incubation Period	Unknown
Diagnostic Tests	Blood culture. Test patient for complement component deficiency.
Typical Adult Therapy	Ceftriaxone 2 g IV BID X 7-10d[1]
Typical Pediatric Therapy	Ceftriaxone 50 mg/kg BID X 7-10d
Clinical Hints	- Recurrent episodes of low-grade fever, rash, arthralgia and arthritis - May persist for months - Rash is distal and prominent near joints and may be maculopapular, petechial or pustular - In some cases, associated with complement component-deficiency
Synonyms	Meningococcemia, chronic. ICD9: 036.2 ICD10: A39.3

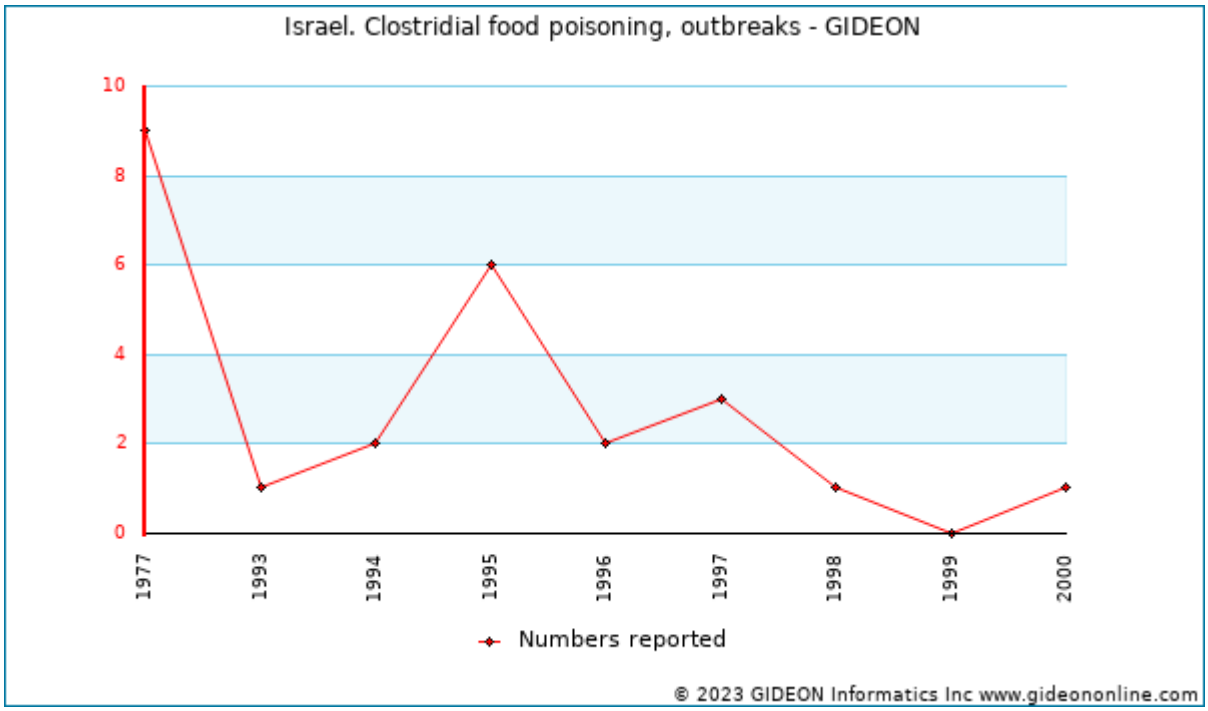
References

1. Pediatr Dermatol 1996 Nov-Dec;13(6):483-7.

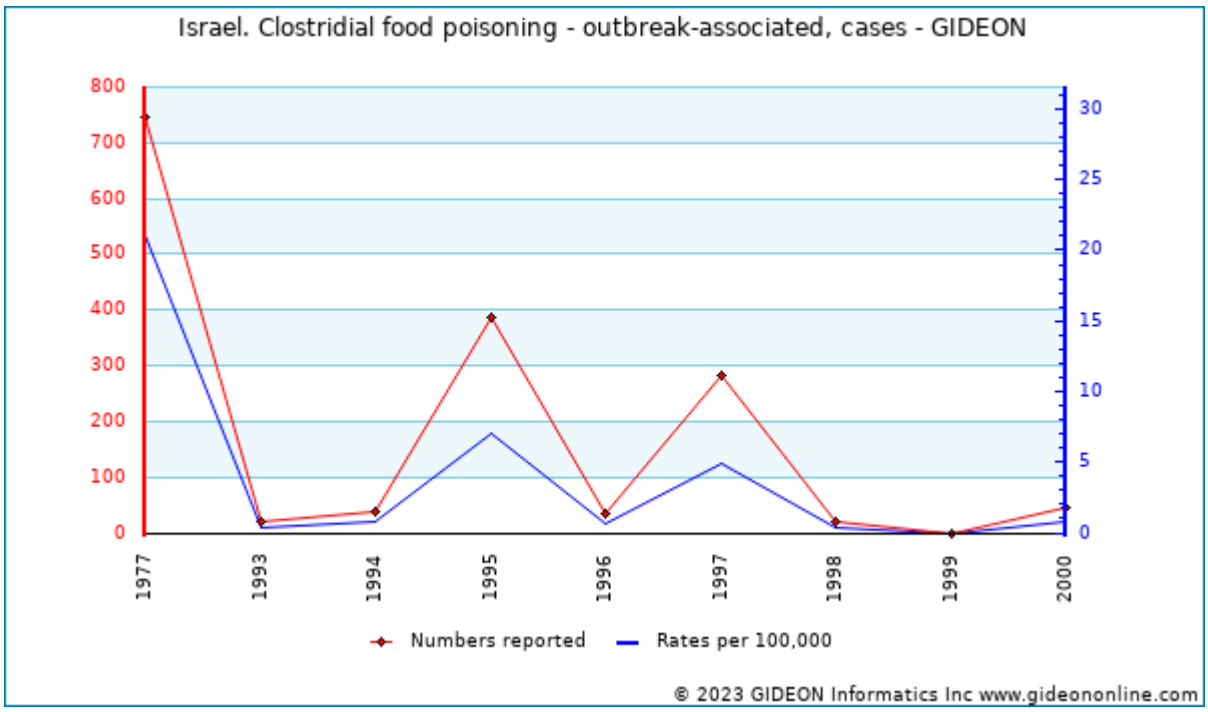
Clostridial food poisoning

Agent	BACTERIUM. *Clostridium perfringens* An anaerobic gram-positive bacillus
Reservoir	Soil, Human, Pig, Cattle, Fish, Poultry
Vector	None
Vehicle	Food
Incubation Period	8h - 14h (range 5h - 24h)
Diagnostic Tests	Laboratory diagnosis is usually not practical. Attempt culture of food for C. perfringens.
Typical Adult Therapy	Supportive
Typical Pediatric Therapy	As for adult
Clinical Hints	- Abdominal pain and watery diarrhea - Usually no fever or vomiting - Onset 8 to 14 hours after ingestion of meat, fish or gravy - Fecal leukocytes not seen - Most cases resolve within 24 hours
Synonyms	ICD9: 005.2 ICD10: A05.2

Clostridial food poisoning in Israel



Graph: Israel. Clostridial food poisoning, outbreaks



Graph: Israel. Clostridial food poisoning - outbreak-associated, cases

- 1990 to 1992 - *Clostridium perfringens* accounted for 18% of all food-related outbreaks
- 1990 to 1999 - *Clostridium perfringens* accounted for 15% of all food-related illness.

Notable outbreaks

Years	Region	Setting	Cases	Deaths	Population	Notes
2022	Holon	long term care facility	6	3	patients	Outbreak reported among inmates and care-takers. [1]

References

1. ProMED <promedmail.org> archive: 20220505.8703036

Clostridial myonecrosis

Agent	BACTERIUM. *Clostridium perfringens* An anaerobic gram-positive bacillus
Reservoir	Soil, Human
Vector	None
Vehicle	Soil, Trauma
Incubation Period	6h - 3d
Diagnostic Tests	Gram stain of exudate. Wound and blood cultures. Presence of gas in tissue (not specific).
Typical Adult Therapy	Prompt, aggressive debridement. Penicillin G 3 million units IV Q4h + Clindamycin 900 mg IV Q8h. OR Piperacillin-tazobactam 4.5 g + Clindamycin 900 mg TID
Typical Pediatric Therapy	Prompt, aggressive debridement. Penicillin G 50,000 units/kg IV Q4h + Clindamycin 10 mg/kg IV Q6h. OR Piperacillin-tazobactam (dosing for piperacillin): 100 mg/kg TID (maximum 16 g/day) + Clindamycin 10 mg/kg IV Q6h
Vaccine	Gas gangrene antitoxin
Clinical Hints	- Rapidly progressive tender and foul-smelling infection of muscle - Local gas present - crepitus or visible on X-ray - Hypotension, intravascular hemolysis and obtundation
Synonyms	Anaerobic myonecrosis, Clostridial gangrene, Gas gangrene. ICD9: 040.0 ICD10: A48.0

Clostridioides difficile colitis

Agent	BACTERIUM. *Clostridioides difficile* An anaerobic gram-positive bacillus
Reservoir	Human
Vector	None
Vehicle	Endogenous,Food
Incubation Period	Variable
Diagnostic Tests	Assay of stool for C. difficile toxin.
Typical Adult Therapy	Fidaxomicin 200 mg PO BID X 10d OR Vancomycin 125 mg (oral preparation) QID X 10d OR Metronidazole 500 mg PO TID X 10d. Add Bezlotoxumab in cases of recurrence within six months of initial episode. Fecal transplantation (PO or by enema) has been effective in some cases.[1] [2] [3] [4]
Typical Pediatric Therapy	Fidaxomicin Age 0 to <6 years: 16 mg/kg oral suspension twice daily (maximum, 400 mg/d) X 10d Age >=6 to <18 years: 200 mg PO BID X 10d OR Vancomycin 10 mg/kg PO QID X 10d OR Metronidazole 7.5 mg/kg PO QID X 10d
Vaccine	Bezlotoxumab
Clinical Hints	- Fever, leukocytosis and abdominal pain - Mucoid or bloody diarrhea during or following antibiotic therapy - Fecal leucocytes are seen - Suspect this diagnosis even when mild diarrhea follows antibiotic intake
Synonyms	Klebsiella oxytoca colitis, Pseudomembranous colitis. ICD9: 008.45 ICD10: A04.7

Clostridioides difficile colitis in Israel

Prevalence surveys

Years	Region	Study Group	%	Notes
2008 - 2013	Tel Aviv	patients	7.31	7.31% of IBD patients hospitalized with diarrhea [5]
2012 - 2014	Tel Aviv	patients	18.4	18.4% of hospitalization-associated diarrhea episodes [6]
2018 - 2021	West Bank	patients	53	53% of patients were found to have hospital acquired *Clostridioides difficile* infection. [7]
2019*		patients	3.4	Survey of all patients admitted to a medical center [8]
2020*	Ramat Gan	environmental	40-41	*Clostridioides difficile* was identified in the rooms of 41% of carriers and 40% of infected patients. [9]
2015 - 2020	Kfar Saba	children - gastrointestinal	3.2	In this study, stool culture tests of 276 patients with acute gastroenteritis (AGE) and positive bacterial culture, as well as 560 control patients (negative bacterial cultures), who visited the pediatric emergency department in Meir Medical Center were evaluated. *Clostridioides difficile* was detected in 9 (3.2%) of the culture-positive samples. [10]

Years	Region	Study Group	%	Notes
2019 - 2021	Tel Aviv	patients - surgical	1.56	*Clostridium difficile* infection was detected in 2 (1.56%) post-surgical patients. The group that was studied consisted of 128 adolescents with idiopathic scoliosis. [11]

***** indicates publication year (not necessarily year of survey)

- 2014 - Ribotype 027 was the most common *Clostridioides difficile* strain identified from long-term care facilities, accounting for 31.8% of isolates. [12]
- 2015 to 2020 - In a study of 309 hospitalized patients with a first episode of non-severe *Clostridioides difficile* infection, re-hospitalization within 8 weeks occurred in 6.2% treated with vancomycin, and 8.7% treated with metronidazole. [13]

Notable outbreaks

Years	Region	Setting	Cases	Pathogen	Population	Notes
1994*	Kfar Saba		10		adults - elderly	[14]
2014*	Jerusalem	hospital		*Clostridium difficile* 027		[15]

***** indicates publication year (not necessarily year of outbreak)

References

1. Clin Infect Dis 2018 Feb 15;
2. Curr Opin Gastroenterol 2019 Jan ;35(1):20-24.
3. Adv Geriatr Med Res 2021 ;3(2)
4. J Clin Gastroenterol 2021 Sep 09;
5. Medicine (Baltimore) 2018 Feb ;97(5):e9772.
6. J Antimicrob Chemother 2021 May 10;
7. Infect Drug Resist 2021 ;14:4681-4688.
8. Clin Microbiol Infect 2019 Feb 13;
9. Clin Microbiol Infect 2020 Jan 02;
10. Clin Pediatr (Phila) 2022 Dec 01;:99228221140772.
11. Acta Chir Orthop Traumatol Cech 2022 ;89(5):376-379.
12. Diagn Microbiol Infect Dis 2015 Sep ;83(1):21-4.
13. Infection 2022 Feb 22;
14. Harefuah 1994 Feb 01;126(3):121-5, 176.
15. Infect Control Hosp Epidemiol 2014 Oct ;35(10):1306-8.

Coccidioidomycosis

Agent	FUNGUS. Ascomycota, Euascomyces, Onygenales: *Coccidioides immitis* (also *Coccidioides posadasii*) A dimorphic fungus
Reservoir	Soil, Zoonotic
Vector	None
Vehicle	Air, Respiratory or pharyngeal acquisition
Incubation Period	10d - 14d (range 7d - 28d)
Diagnostic Tests	Culture of sputum, CSF, biopsy etc for fungi. Nucleic acid amplification.
Typical Adult Therapy	Fluconazole 400 mg PO daily. OR Itraconazole 200 mg PO BID X 1y. OR Amphotericin B deoxycholate 0.3-0.6 mg/kg/d until stable then Fluconazole as above OR Liposomal Amphotericin B 3-5 mg/kg/d until stable then Fluconazole as above OR Isavuconazole 200 mg PO or IV Q8h X 6 doses Then 200 mg PO IV daily[1] [2] [3]
Typical Pediatric Therapy	Fluconazole 8 mg/kg/day PO or IV OR Amphotericin B 0.3-0.6 mg/kg/d until stable then Fluconazole as above OR Liposomal Amphotericin B 3-5 mg/kg/d until stable then Fluconazole as above
Clinical Hints	- Cough, chest pain and myalgia - Eosinophilia, erythema nodosum or headache in many cases - Extrapulmonary infection (bone, skin, genitourinary, etc) is occasionally encountered
Synonyms	California disease, Coccidioides immitis, Coccidioides posadasii, Coccidioidomykose, Desert rheumatism, Posada's disease, Valley fever. ICD9: 114 ICD10: B38

Although Coccidioidomycosis is not endemic to Israel, imported, expatriate or other presentations of the disease have been associated with this country.

Coccidioidomycosis in Israel

Cross-border events

Years	Acquired by**	Originated in**	Cases	Notes
1990	Israel	United States	1	[4]
2003	Israel	United States	1	[5]

** Country or Nationality

References

1. Clin Infect Dis 2016 Sep 15;63(6):e112-46.
2. J Fungi (Basel) 2023 Feb 07;9(2)
3. Clin Infect Dis 2023 Mar 11;
4. J Clin Microbiol 1992 May ;30(5):1304-6.
5. Travel Med Infect Dis 2003 Feb ;1(1):53-7.

Coenurosis

Agent	PARASITE - Platyhelminthes, Cestoda. Cyclophyllidea, Taeniidae: *Taenia multiceps* (*Multiceps* spp.) and *Taenia serialis*
Reservoir	Sheep, Wild carnivore, Horse, Dog, Zoonotic
Vector	None
Vehicle	Water, Food, Soil (contaminated by dog)
Incubation Period	months to years
Diagnostic Tests	Identification of parasite in biopsy material.
Typical Adult Therapy	Excision Consider praziquantel[1]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Mass in brain, eye, muscle or subcutaneous tissue - May present months to years after exposure in sheep-raising areas - Basilar arachnoiditis with internal hydrocephalus is common
Synonyms	Coenurus cerebralis, Multiceps, Taenia multiceps, Taenia serialis. ICD9: 123.8 ICD10: B71.8

Coenurosis in Israel

2006 - A case of human cerebral coenurosis was confirmed in Beer Sheba. [2] [3]

2014 (publication year) - Cerebral coenurosis was identified in wild Nubian ibex (*Capra nubiana*). [4]

References

1. Clin Infect Dis 1998 Sep ;27(3):519-23.
2. J Neurosurg 2007 Dec ;107(6 Suppl):511-4.
3. Vet Ital 2008 Oct-Dec;44(4):621-31.
4. J Zoo Wildl Med 2014 Mar ;45(1):193-6.

Common cold

Agent	VIRUS - RNA. Picornaviridae. Rhinoviruses, Coronavirus, et al.
Reservoir	Human
Vector	None
Vehicle	Droplet, Contact, Respiratory or pharyngeal acquisition
Incubation Period	1d - 3d
Diagnostic Tests	Viral culture and serology are available, but not practical.
Typical Adult Therapy	Supportive
Typical Pediatric Therapy	As for adult
Clinical Hints	- Nasal obstruction or discharge, cough and sore throat are common - Fever above 38 C is common in children, but unusual in adults - Illness typically persists for one week, occasionally two
Synonyms	Acute coryza, Raffreddore. ICD9: 079,460 ICD10: J00

Conjunctivitis - inclusion

Agent	BACTERIUM. Chlamydiae, *Chlamydia trachomatis*
Reservoir	Human
Vector	None
Vehicle	Infected secretions, Sexual contact, Water (swimming pools)
Incubation Period	2d - 20d
Diagnostic Tests	Demonstration of chlamydiae on direct fluorescence or culture of exudate.
Typical Adult Therapy	Secretion precautions. Azithromycin 1g as single dose OR Doxycycline 100 mg BID X 7d. OR Levofloxacin 500 mg daily X 7 days OR Ofloxacin 300 mg BID X 7 days[1]
Typical Pediatric Therapy	Secretion precautions. Weight =45 kg, but age = 8 years: Azithromycin 1 g as single dose OR Doxycycline 100 mg BID X 7 d
Clinical Hints	- Ocular foreign body sensation, photophobia and discharge - Illness can persist for months, to as long as 2 years
Synonyms	Inclusion conjunctivitis, Paratrachoma. ICD9: 077.0 ICD10: P39.1,A74.0

References

1. MMWR Recomm Rep 2015 Jun 05;64(RR-03):1-137.

Conjunctivitis - viral

Agent	VIRUS. Picornavirus, Adenovirus
Reservoir	Human
Vector	None
Vehicle	Contact
Incubation Period	1d - 3d
Diagnostic Tests	Viral isolation is available but rarely practical.
Typical Adult Therapy	Supportive
Typical Pediatric Therapy	As for adult
Clinical Hints	- Watery discharge, generalized conjunctival injection and mild pruritus - May be associated with an upper respiratory infection
Synonyms	Apollo conjunctivitis, Apollo eye, Congiuntivite virale, Hemorrhagic conjunctivitis, Viral conjunctivitis. ICD9: 077.1,077.2,077.3,077.4,077.8,372.0 ICD10: B30,B30.3,H10

Conjunctivitis - viral in Israel

Notable outbreaks

Years	Region	Setting	Clinical	Pathogen	Notes
1937 - 1938	Multiple locations		keratoconjunctivitis		1
1974*		kibbutz	pharyngoconjunctivitis	multiple pathogens	Adenovirus types 2 and 7 2
1993*	Ramat Gan	neonatal intensive care unit		Adenovirus 8	3
1994			conjunctivitis - acute hemorrhagic	Enterovirus 70	4

* indicates publication year (not necessarily year of outbreak)

References

1. Br J Ophthalmol 1945 Aug ;29(8):389-406.
2. Isr J Med Sci 1974 Dec ;10(12):1505-9.
3. Arch Dis Child 1993 May ;68(5 Spec No):610-1.
4. J Clin Microbiol 1997 Aug ;35(8):2145-9.

COVID-19

Agent	Virus - RNA Coronaviridae, Betacoronavirus. SARS-CoV-2 (Severe acute respiratory syndrome coronavirus-2)
Reservoir	Human, Bat, Mink, Cat, Dog, Mammal, Zoonotic
Vector	None
Vehicle	Aerosol, Droplet, Contact, Food, Fecal-oral, Respiratory or pharyngeal acquisition
Incubation Period	2d - 19d (mean 5 to 7 days)
Diagnostic Tests	Identification of virus - PCR or direct methods Serology
Typical Adult Therapy	Isolation (respiratory and other secretions). Molnupiravir 800 mg PO every 12 hours X 5 days. For early treatment of mild to moderate disease. Nirmatrelvir/ritonavir 300 mg/100 mg BID X 5 days. For early treatment of mild-to-moderate COVID-19 who are at high risk for progression to severe disease Remdesivir (released for use in several countries) 200 mg IV day 1; then, 100 mg IV X 4 to 9 days Baricitinib appears to increase the effectiveness of Remdesivir and has been used in situations where corticosteroids cannot be administered. Chloroquine 500 mg PO BID X 10 days has been used in some cases. (several publications have suggested that Hydroxychloroquine is more effective and less toxic) The effectiveness of these drugs against COVID-19 is unproven. Monoclonal antibodies (Casirivimab / Imdevimab; Bamlanivimab) have been issued emergency use authorization for treatment of patients aged >=12 years at high risk for severe COVID-19. Tocilizumab (a monoclonal antibody that inhibits IL-6 receptors) may dampen the response to cytokines. Corticosteroids have been used as an adjunct or substitute to Remdesivir in some cases. Lopinavir and other antivirals may be effective There is some evidence that convalescent plasma from COVID-19 patients may be effective. [1] Anakinra a [recombinant interleukin-1 (IL-1) receptor antagonist] and Vilobelimab [a C5a receptor inhibitor] have been used for treatment of hospitalized adults with confirmed COVID-19 pneumonia who require mechanical ventilation and supplemental oxygen, and are at risk of progressing to severe respiratory failure. [2] [3] [4] [5] [6] [7] [8] [9] [10] [11] [12] [13] [14] [15] [16] [17] [18] [19] [20] [21] [22] [23] [24] [25] [26] [27] [28] [29] [30] [31] [32] [33] [34] [35] [36] [37] [38] [39] [40] [41] [42] [43] [44] [45] [46] [47] [48] [49]
Typical Pediatric Therapy	Molnupirivir: Use in children not established. Nirmatrelvir/ritonavir: Use in children not established. Remdesivir: Weight 3.5 to 40 Kg: Day 1: 5 mg/kg IV X 1 Days 2-10: 2.5 mg/kg IV X 1 Monoclonal antibodies: Use in children not established.
Vaccines	Bamlanivimab Bebtelovimab

	Casirivimab / Imdevimab COVID-19 - inactivated vaccine COVID-19 - mRNA vaccine COVID-19 - recombinant nanoparticle vaccine COVID-19 - viral vector vaccine Regdanvimab Sotrovimab Tixagevimab / Cilgavimab
Clinical Hints	- Exposure to endemic area or patient - Fever (>38 C), cough, respiratory difficulty, pneumonia - Diminished sense of smell and / or taste is an important early symptom - Severe illness more common in the elderly and individuals with underlying conditions - Case-fatality rate 2-5%
Synonyms	2019-nCoV, 2019-new coronavirus, 2019-Novel coronavirus infection, Covid-19, covid19, Novel coronavirus 2019 infection, Pediatric multisystem inflammatory syndrome, SARS-CoV-2 infection, Severe Specific Contagious Pneumonia, SSCP. ICD9: 079.82 ICD10: U07.1

COVID-19 in Israel

2020 - The first case of COVID-19 in Israel was reported on February 21. It was an Israeli traveler who had acquired the infection on a cruise ship near Japan.
2020 - The first case of COVID-19 in the West Bank was reported in Bethlehem on March 5. It was imported from Greece.
2020 - The first cases of COVID-19 in Gaza were detected on March 22. It was imported from Pakistan.

On December 19, 2020, Israel became the first country to institute a national SARS-CoV-2 immunization campaign. Within 3 weeks, 16% of the population had been vaccinated. Eighty vaccine doses per 100 population had been administered as of February 18, 2021. [50] [51] [52] [53] [54] [55] [56] [57] [58] [59]

- 2020 - Analysis of the initial response to COVID-19 in Israel [60]
- 2020 - Analysis of the first wave of COVID-19 in Israel [61]
- 2020 - Analyses of the situation of COVID-19 in the Gaza Strip [62] [63]
- 2020 - Major negative impact of a religious holiday on COVID-19 rates in Israel [64]
- 2020 to 2021 - The incidence rate of hospital-acquired bacterial infections in COVID-19 patients across 26 hospitals was highest during the first COVID-19 wave. This condition existed despite a lower proportion of severe COVID-19 cases among total hospitalizations reported during this wave. [65]
- 2020 to 2021 - A study that involved 2,593 hospitalized COVID-19 patients, 2,041 influenza patients, and 429 RSV patients found that the patients with RSV were older, had more comorbidities and presented with higher rates of acute kidney injuries at admission. COVID-19 patients had higher mortality and higher need of mechanical ventilation. [66]
- 2020 to 2021 - Impact of ethnic and religious variables on the COVID-19 epidemic in Israel [67]
- 2020 to 2021 - Epidemiologic characteristics of 72,426 children with SARS-CoV-2 infection - first wave vs. second wave.[68]
- 2020 to 2021 - No difference was found in COVID-19 infection status for post-acute incidence of diabetes, cerebrovascular accident, myocardial infarction, acute kidney disease, hypertension, and ischemic heart disease. [69]
- 2020 to 2021 - A nationwide survey of 1,913,234 Maccabi Healthcare Services members suggests that patients with mild COVID-19 are at risk for a small number of health outcomes, most of which are resolved within 1 year from diagnosis. [70]
- 2020 to 2021 - At the Hadassah-Hebrew university medical center, a 17% decrease in pediatric respiratory admissions was observed during the COVID-19 era (March 2020 to August 2021) compared to the pre-COVID-19 era (January 2015 to February 2020). The decreased admissions percentages were primarily attributed to bronchiolitis and pneumonia cases, likely due to a significant decrease in the detection of respiratory viruses, particularly respiratory syncytial virus (RSV) and influenza. [71]
- 2020 to 2022 - A nationwide survey of 84 pregnant women who were admitted to ICUs with severe COVID-19 pneumonitis from the 13th week of gestation to the 1st week postpartum found that in patients who underwent delivery during their ICU stay, maternal outcome deteriorated following delivery among those defined as critical compared with non-critical patients (who improved following delivery). [72]
- 2021 - A cross-sectional study conducted in November and December on a nationally-representative sample of the Israeli population (n = 2,246) supported the findings that there was a greater likelihood of experiencing long-COVID symptoms among low-income and among marginalized groups. [73]
- 2021 to 2022 - A study at 3 follow-up time points post-infection revealed that the biggest and most sustained

changes in subjective well-being (SWB) stemmed from non-specific symptoms (fatigue; confusion/lack of concentration; and sleep disorders). However, the effect of system-specific symptoms, such as musculoskeletal symptoms (weakness in muscles and muscle pain) on SWB, was less profound and more transient. [74]

- 2021 to 2022 - A nationwide online study of 3,240 parents of children aged 5 to 18 years with and without SARS-CoV-2 infection (1,148 and 2,092 with/without a history of infection, respectively) found that that the prevalence of long COVID symptoms in children with a history of SARS-CoV-2 infection was higher and more prevalent in adolescents than in young children. Some of the symptoms (mainly somatic symptoms) were more prevalent in children without a history of SARS-CoV-2 infection. This highlighted the impact of the pandemic itself rather than the infection. [75]
- 2021 to 2022 - A nationwide study involving 48,868 infants that evaluated the effectiveness of the third booster dose versus the second dose against infant COVID-19-related hospitalizations found that the rates of COVID-19 hospitalization were 0.4% in the third dose group, 0.6% in the second dose group, and 0.7% in the unvaccinated group. The third dose was associated with reduced infant hospitalization, with an effectiveness of 53% for the first 120 days of life, compared to the second dose. [76]

Prevalence surveys

Years	Region	Study Group	%	Notes
2021	Multiple locations	military personnel	4.7-16	SARS-CoV-2 infection rate in soldiers from 11 military bases across Israel ranged between 4.7% and 16% from May 2020 until May 2021. This corresponds to the period that includes the first 3 waves of COVID-19 in Israel. [77]
2020	Holon	women	1.9	Survey of vaginal secretions for SARS-CoV-2 (PCR) [78]
2020 - 2021	Multiple locations	patients	21.9	COVID-19 infection was reported in 2,503 (51.5%) out of 4,860 patients from 68 centers in 23 countries. The patients were enrolled in a database for home parenteral nutrition for chronic intestinal failure of the European Society for Clinical Nutrition and Metabolism. COVID-19 infection occurred in 241 patients, corresponding to an annual cumulative incidence rate of 9.6%. Out of the 241 confirmed cases, 21.9% of the cases were from Israel. [79]
2020	Multiple locations	health care workers	0.2	[80]
2020	Nationwide	health care workers	0.05-1.5	SARS-CoV-2 RNA was detected in 0.05 to 1.5% of 55,282 (ranging from 45,910 to 62,159 per week) health care workers screened weekly during the second wave. The workers came from 1,107 long-term care facilities. [81]
2021	Multiple locations	cats	0	Out of 132 stray cats tested from February 2021 to July 2021 from 11 military bases with varying levels of human COVID-19 incidence across Israel, none of the cats were positive for SARS-CoV-2 RNA by RT-PCR. The cats were also tested for COVID-19 IgG antibodies. [82]
2020	Jerusalem	pregnant women	0.7	Survey of pregnant women at time of delivery [83]
2022*	Northern Region	pregnant women	2.6-5.5	5.5% / 2.6% of asymptomatic pregnant / non-pregnant women [84]
2020	Multiple locations	environmental	38-52.7	52.7% of surface samples from the surrounding of symptomatic COVID-19 patients in isolation units; and 38% from a quarantine hotel for asymptomatic and very mild COVID-19 patients [85]
2020 - 2021	Haifa	environmental - wastewater	13	Using RT-qPCR, SARS-CoV-2 RNA was detected in 13% of the 523 sewage samples collected from 11 manholes connected to 103 buildings that were housing 3,310 residents in the Technion-Israel Institute of Technology campus. [86]
2020	Tel Aviv	patients - rheumatological	0.16-0.22	0.16% / 0.22% or rheumatologic / autoimmune patients [87]

***** indicates publication year (not necessarily year of survey)

Seroprevalence surveys

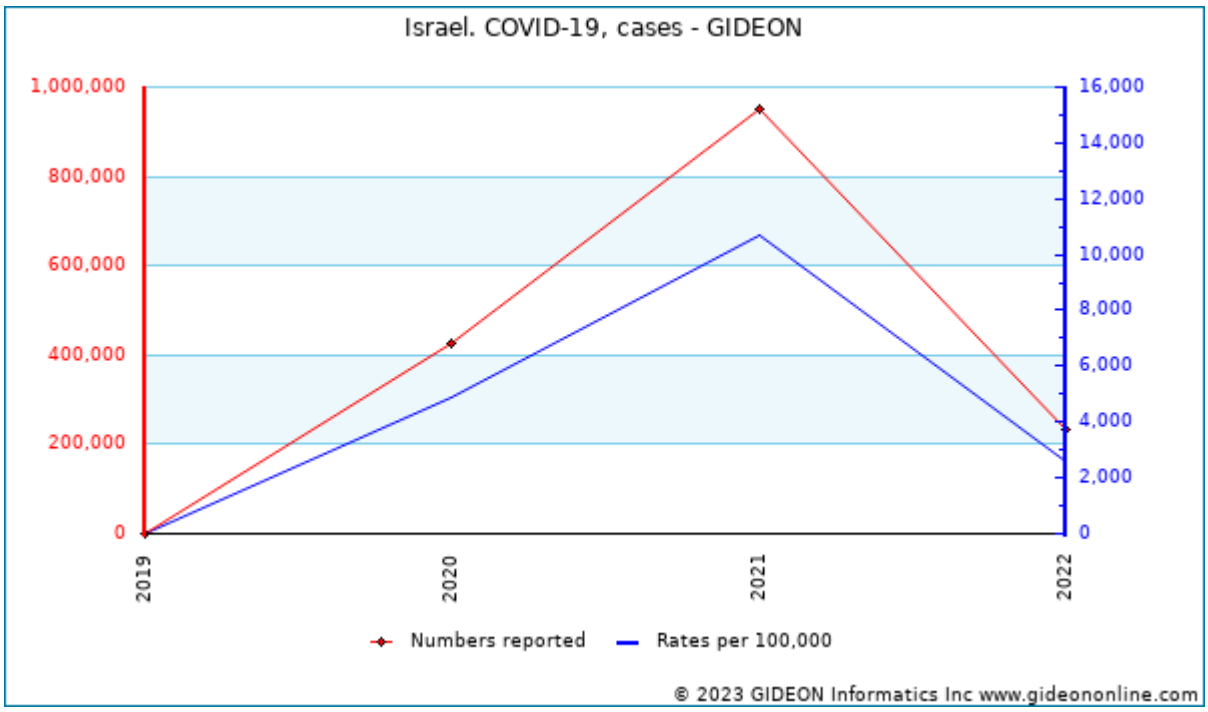
Years	Region	Study Group	%	Notes
2020 - 2021	Nationwide	children	5.6	Survey of children ages 0 to 15 years. [88]
2020	Nationwide	patients	3.8	Survey of clinic outpatients [89]
2020	Nationwide	adults	1.9	An estimated 1.9% of the adult HMO population was seropositive 4 months after the first cases of COVID-19 were reported in Israel [90]
2020	Multiple locations	health care workers	1.1-8.3	1.1% of health-care workers during April to May; and 8.3% during September to November [91]

Years	Region	Study Group	%	Notes
2020	Haifa	health care workers	4.65	[92]
2020 - 2021	Afula	health care workers	9.9	Survey of health-care workers at a medical center [93]
2021	Multiple locations	cats	2.29	Out of 132 stray cats tested from February 2021 to July 2021 from 11 military bases with varying levels of human COVID-19 incidence across Israel, 3 cats (2.29%) showed IgG antibodies against SARS-CoV-2. None of the cats were positive for SARS-CoV-2 RNA tested by RT-PCR. [94]
2020	West Bank	general population	0-0.354	0% in randomly-tested households, and 0.354% of those visiting medical laboratories [95]
2020	West Bank	general population	24	[96]
2021	West Bank	general population	75.9	Survey of vaccinated- and non-vaccinated adults in the West Bank [97]
2020	Tel Aviv	patients - rheumatological	2.07	2.07% or rheumatologic patients [98]
2021*	Tel Aviv	patients - rheumatological	5.24	Survey of patients with autoimmune inflammatory rheumatic diseases [99]

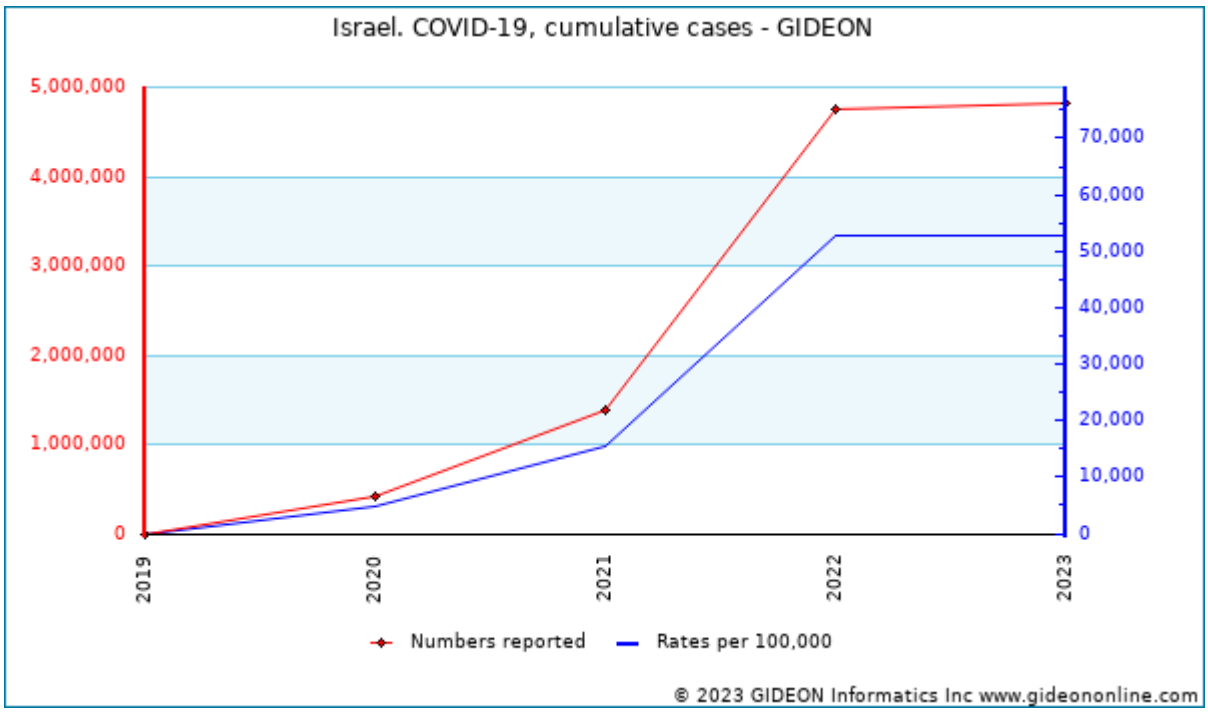
***** indicates publication year (not necessarily year of survey)

Notable outbreaks

Years	Region	Setting	Cases	Deaths	Population	Notes
2020 - 2023	Nationwide		4,828,123	12,557		Case count to June 22, 2023. Includes 423,262 cases (3,325 fatal) in 2020 [100] [101] [102] [103] [104] [105] [106] [107] [108] [109] [110] [111] [112] [113] [114] [115] [116] [117] [118] [119] [120] [121] [122] [123]
2020 - 2022	West Bank and Gaza		703,228	5,708		Case count to June 22, 2023. Initial cases in the area of Bethlehem, linked to index patients who arrived from Greece. The initial case(s) in Gaza were imported from Pakistan. Includes 138,004 cases (1,400 fatal) in 2020. [124] [125] [126] [127] [128] [129] [130] [131] [132] [133] [134] [135] [136] [137] [138]
2020	Jerusalem	high school	178			Outbreak involved 153 students and 25 staff members [139]
2020		religious community	42			[140]
2020	Ramat Gan	hospital	11		workers	Outbreak associated with use of a public shower used by workers at a hospital-based laundry facility [141]
2020	Tel Aviv	hospital	17			Outbreak among patients and hospital staff. [142]
2021	Tel Aviv	hospital	15		health care workers	[143]
2021	Kfar Saba	hospital	42	5		Outbreak of Delta variant SARS-CoV-2 infections involved patients, staff and family members [144]

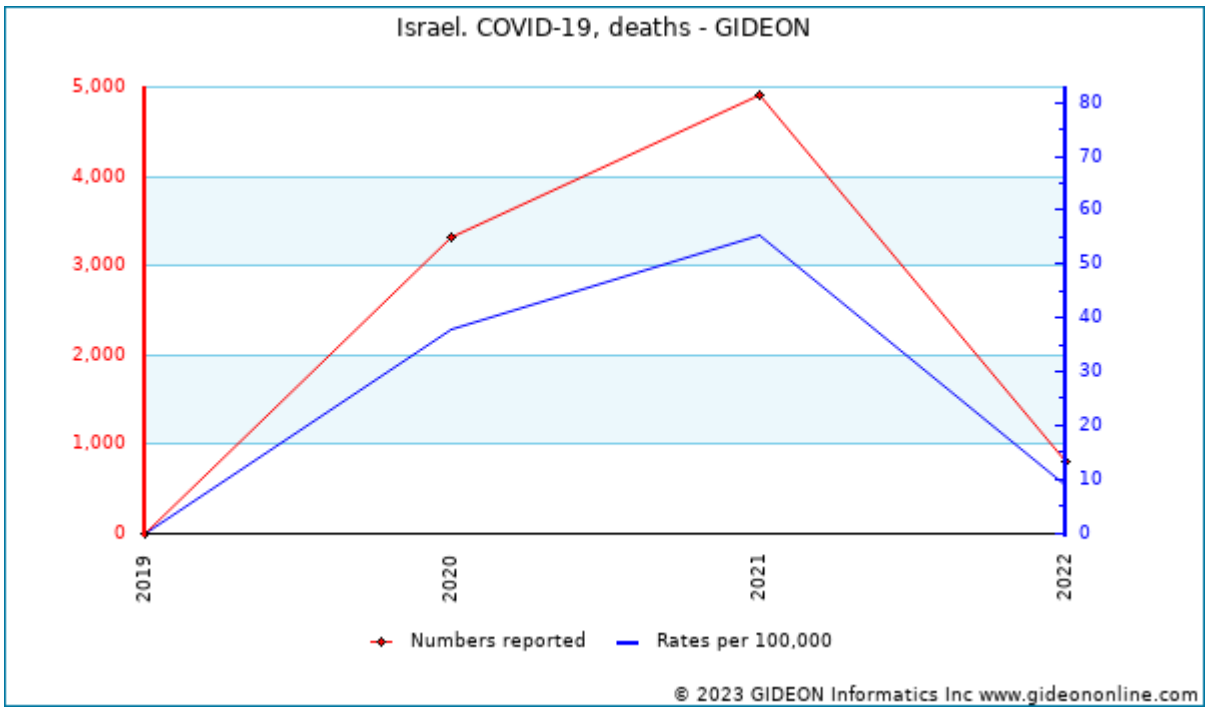


Graph: Israel. COVID-19, cases

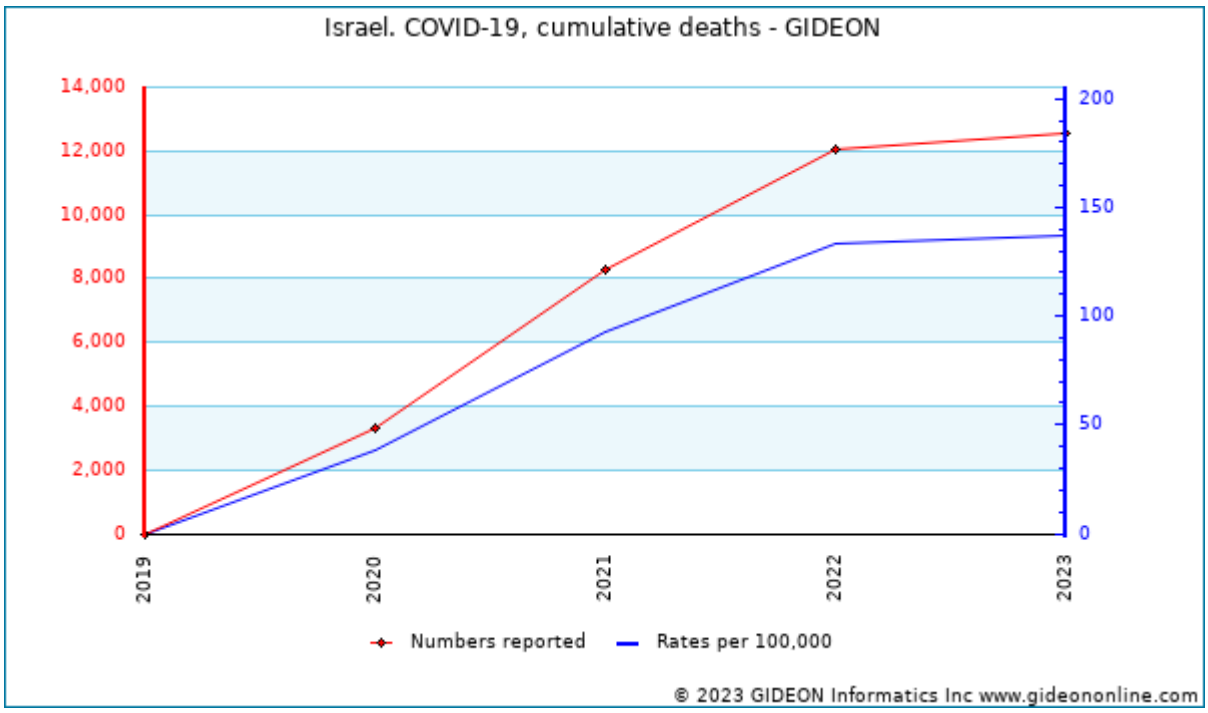


Graph: Israel. COVID-19, cumulative cases

Notes:
Individual years:
2022 - Reported cases as of June 22, 2023.

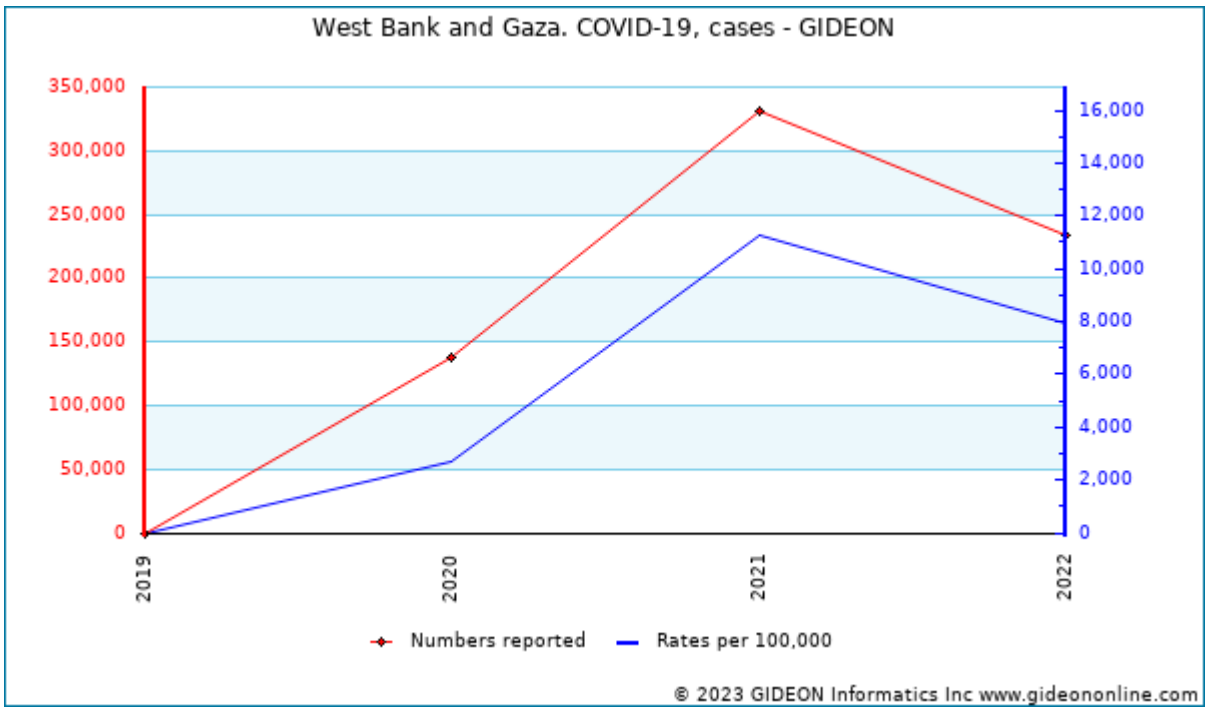


Graph: Israel. COVID-19, deaths

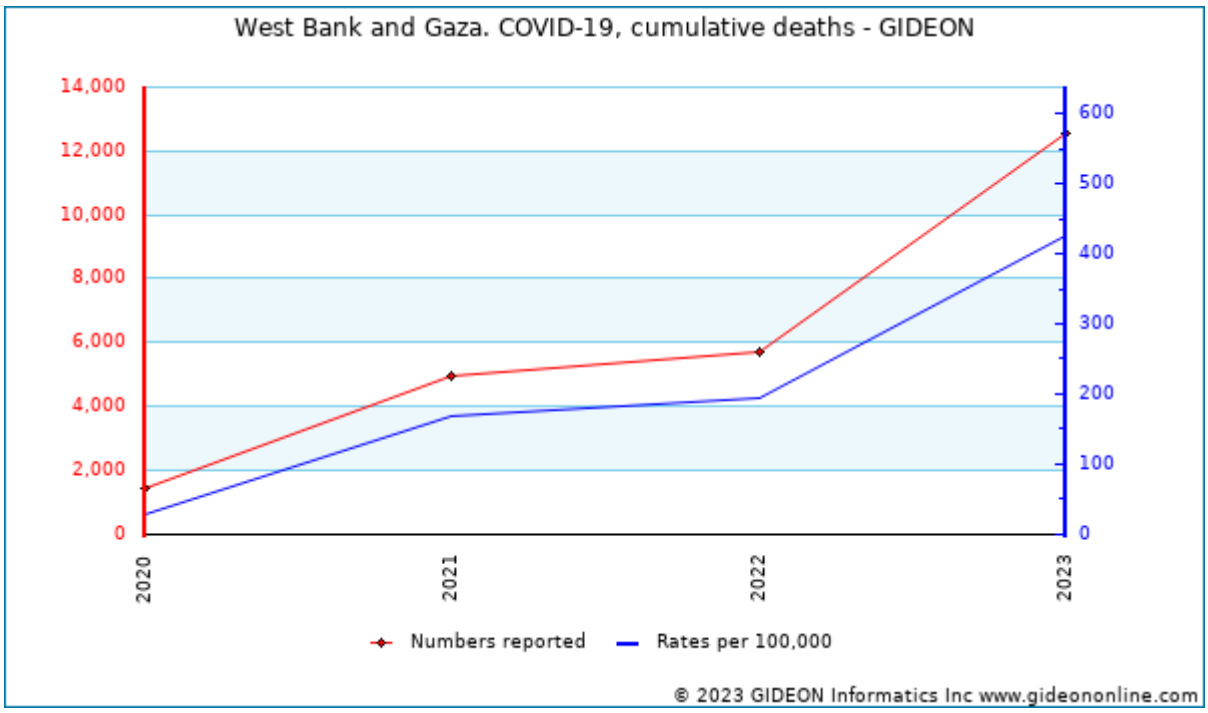


Graph: Israel. COVID-19, cumulative deaths

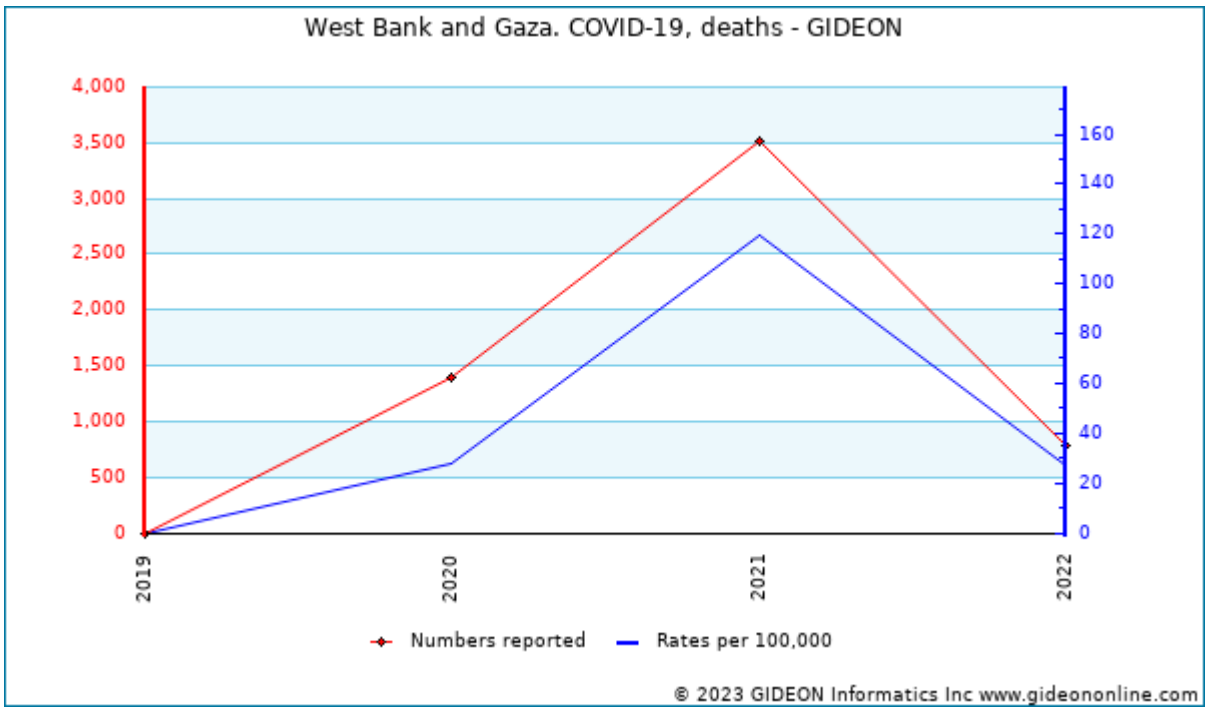
Notes:
Individual years:
2022 - Reported cases as of June 22, 2023.



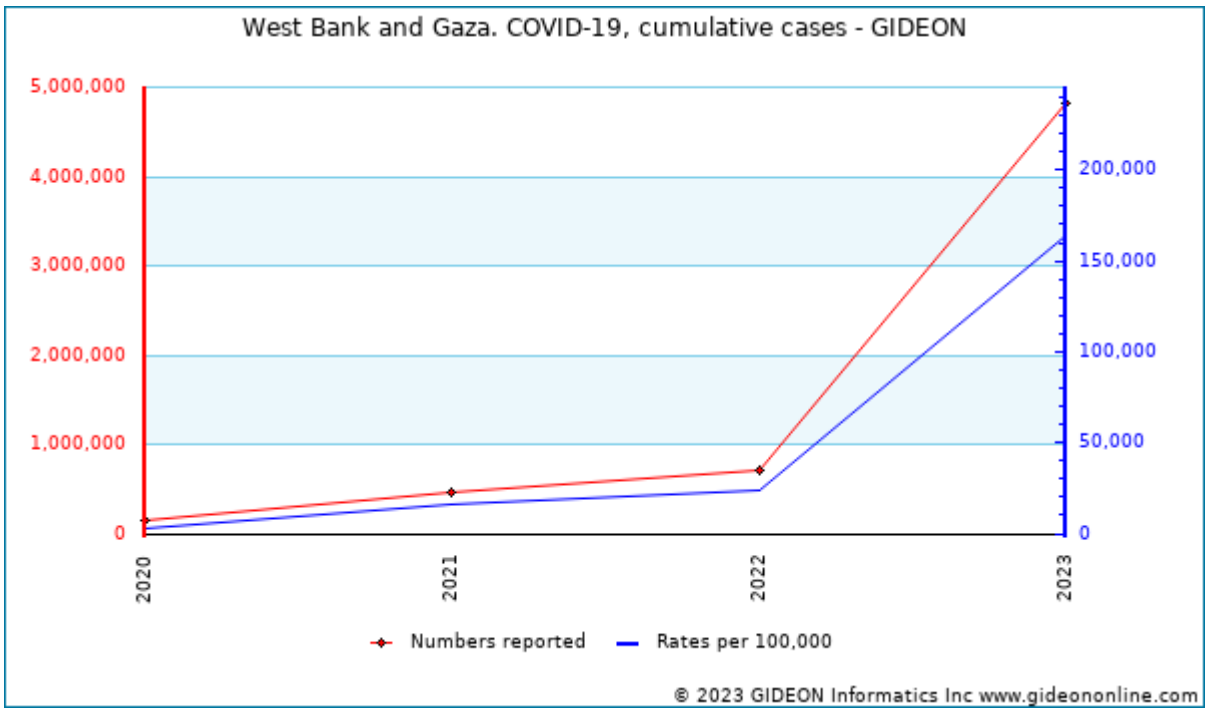
Graph: West Bank and Gaza. COVID-19, cases



Graph: West Bank and Gaza. COVID-19, cumulative deaths



Graph: West Bank and Gaza. COVID-19, deaths



Graph: West Bank and Gaza. COVID-19, cumulative cases

References

1. Int J Antimicrob Agents 2020 Mar 20;:105949.

2. Intensive Care Med 2020 Feb 10;

3. Microbes Infect 2020 Feb 01;
4. J Med Virol 2020 Feb 13;
5. Zhonghua Jie He He Hu Xi Za Zhi 2020 Feb 20;43:E019.
6. Travel Med Infect Dis 2020 Mar 04;:101615.
7. Int J Antimicrob Agents 2020 Mar 04;:105932.
8. Antimicrob Agents Chemother 2020 Mar 09;
9. Zhonghua Jie He He Hu Xi Za Zhi 2020 Mar 12;43(3):185-188.
10. Zhonghua Jie He He Hu Xi Za Zhi 2020 Mar 12;43(3):170-172.
11. J Crit Care 2020 Mar 10;
12. J Antimicrob Chemother 2020 Mar 20;
13. Travel Med Infect Dis 2020 Apr 02;:101647.
14. N Engl J Med 2020 May 07;
15. Drug Discov Ther 2020 ;14(2):73-76.
16. N Engl J Med 2020 May 22;
17. N Engl J Med 2020 Jun 03;
18. Contemp Clin Trials 2021 Jan 07;:106272.
19. Ann Intern Med 2021 Feb 09;
20. Clin Microbiol Infect 2021 Apr 26;
21. Sci Rep 2021 May 26;11(1):11022.
22. BMJ Open 2021 06 24;11(6):e048416.
23. Expert Rev Anti Infect Ther 2021 Jun 30;
24. J Clin Med 2021 Jun 05;10(11)
25. Eur J Clin Microbiol Infect Dis 2021 Aug 04;
26. Cochrane Database Syst Rev 2021 08 05;8:CD014962.
27. Am J Ther 2021 Aug 18;
28. Infect Chemother 2021 Aug 30;
29. QJM 2021 Sep 27;
30. Am J Trop Med Hyg 2021 Sep 10;
31. Eur J Intern Med 2021 Oct 23;
32. Clin Microbiol Infect 2022 May 19;
33. Clin Pharmacol Ther 2022 Jun 16;
34. Pharmaceuticals (Basel) 2022 Dec 05;15(12)
35. Cochrane Database Syst Rev 2023 Feb 01;2(2):CD013600.
36. Process Biochem 2023 Apr ;127:66-81.
37. Can J Respir Ther 2023 ;59:52-65.
38. Eur J Med Res 2023 Feb 25;28(1):100.
39. Metabolites 2023 Feb 20;13(2)
40. J Blood Med 2023 ;14:159-187.
41. Transfus Apher Sci 2023 Apr ;62(2):103680.
42. Med Res Rev 2023 Mar 23;
43. Viruses 2023 Mar 16;15(3)
44. Lancet Respir Med 2022 Dec ;10(12):1137-1146.
45. Lancet Rheumatol 2020 Dec ;2(12):e764-e773.
46. Nat Microbiol 2023 May ;8(5):771-786.
47. Immune Netw 2023 Apr ;23(2):e13.
48. Int J Mol Sci 2023 May 16;24(10)
49. Microbes Infect 2021 Feb 09;:104796.
50. BMJ 2021 02 04;372:n338.
51. Isr J Health Policy Res 2021 02 01;10(1):9.
52. Isr J Health Policy Res 2021 01 26;10(1):6.
53. Isr J Health Policy Res 2021 01 26;10(1):5.
54. Lancet 2021 Feb 18;
55. MMWR Morb Mortal Wkly Rep 2021 Mar 05;70(9):326-328.
56. Lancet 2021 Feb 18;
57. Lancet 2021 May 05;
58. Lancet 2021 May 05;
59. Emerg Infect Dis 2020 Jul 03;26(9)
60. PLoS One 2020 ;15(10):e0240393.
61. Int J Infect Dis 2020 Sep 03;
62. World Dev 2020 Nov ;135:105063.
63. Int J Infect Dis 2020 Oct 09;
64. Infect Control Hosp Epidemiol 2022 Dec 23;:1-6.
65. J Nephrol 2023 Mar 27;:1-11.
66. QJM 2021 Jun 09;
67. JAMA Netw Open 2021 Sep 01;4(9):e2124343.
68. Prev Med Rep 2022 Dec 21;31:102097.
69. BMJ 2023 Jan 11;380:e072529.
70. Pediatr Pulmonol 2023 Apr 25;
71. Lancet Respir Med 2023 Feb 03;
72. Int J Public Health 2022 ;67:1605086.
73. Epidemiol Infect 2023 Jan 04;151:e16.
74. BMJ Open 2023 Feb 21;13(2):e064155.
75. Nat Med 2023 Mar 23;
76. Comp Immunol Microbiol Infect Dis 2022 Nov 03;90-91:101905.
77. J Clin Med 2021 Jun 21;10(12)
78. Clin Nutr ESPEN 2023 Jun ;55:212-220.
79. Clin Microbiol Infect 2020 Sep 30;
80. Gerontology 2023 Jan 11;
81. Comp Immunol Microbiol Infect Dis 2022 Nov 03;90-91:101905.
82. Am J Obstet Gynecol 2021 Jan 13;
83. Int J Gynaecol Obstet 2022 Jul 16;
84. Clin Microbiol Infect 2020 Sep 09;
85. Water Sci Technol 2023 Feb ;87(4):910-923.
86. Intern Med J 2021 Apr 12;
87. Euro Surveill 2021 12 ;26(48)
88. Eur J Epidemiol 2021 Apr 21;
89. Isr Med Assoc J 2021 Oct ;23(10):611-614.
90. Front Med (Lausanne) 2021 ;8:689994.
91. Rambam Maimonides Med J 2022 Apr 26;13(2)
92. Isr Med Assoc J 2022 May ;24(5):284-288.
93. Comp Immunol Microbiol Infect Dis 2022 Nov 03;90-91:101905.
94. BMJ Open 2021 Feb 04;11(2):e044552.
95. PLoS One 2021 ;16(10):e0258255.
96. Vaccines (Basel) 2022 Aug 17;10(8)
97. Intern Med J 2021 Apr 12;
98. Clin Exp Rheumatol 2021 Sep 07;
99. ProMED <promedmail.org> archive: 20200125.6914553
100. ProMED <promedmail.org> archive: 20200206.6959291
101. ProMED <promedmail.org> archive: 20200213.6984084
102. ProMED <promedmail.org> archive: 20200215.6993525
103. ProMED <promedmail.org> archive: 20200224.7022200
104. ProMED <promedmail.org> archive: 20200226.7029842
105. ProMED <promedmail.org> archive: 20200228.7035438
106. ProMED <promedmail.org> archive: 20200301.7039103
107. ProMED <promedmail.org> archive: 20200303.7042402
108. ProMED <promedmail.org> archive: 20200304.7046372
109. ProMED <promedmail.org> archive: 20200309.7066281
110. ProMED <promedmail.org> archive: 20200320.7116046
111. ProMED <promedmail.org> archive: 20200211.6979942
112. ProMED <promedmail.org> archive: 20200327.7149046
113. ProMED <promedmail.org> archive: 20200404.7182744
114. ProMED <promedmail.org> archive: 20200417.7235118
115. ProMED <promedmail.org> archive: 20200425.7267692
116. ProMED <promedmail.org> archive: 20200506.7306556
117. ProMED <promedmail.org> archive: 20200527.7385049
118. ProMED <promedmail.org> archive: 20200807.7653452
119. ProMED <promedmail.org> archive: 20201205.7994443
120. ProMED <promedmail.org> archive: 20210130.8149707
121. ProMED <promedmail.org> archive: 20210615.8450798
122. ProMED <promedmail.org> archive: 20210914.8668802
123. ProMED <promedmail.org> archive: 20200304.7046372
124. ProMED <promedmail.org> archive: 20200305.7051670
125. ProMED <promedmail.org> archive: 20200309.7066281
126. ProMED <promedmail.org> archive: 20200310.7070560
127. ProMED <promedmail.org> archive: 20200320.7116046
128. ProMED <promedmail.org> archive: 20200323.7131569
129. ProMED <promedmail.org> archive: 20200327.7149046
130. ProMED <promedmail.org> archive: 20200404.7182744
131. ProMED <promedmail.org> archive: 20200417.7235118
132. ProMED <promedmail.org> archive: 20200425.7267692
133. ProMED <promedmail.org> archive: 20200506.7306556
134. ProMED <promedmail.org> archive: 20200527.7385049
135. ProMED <promedmail.org> archive: 20200611.7458885
136. ProMED <promedmail.org> archive: 20200807.7653452
137. ProMED <promedmail.org> archive: 20201205.7994443
138. Euro Surveill 2020 07 ;25(29)
139. Epidemiol Infect 2021 06 24;149:e153.
140. Epidemiol Infect 2021 Sep 15;:1-17.
141. Open Forum Infect Dis 2021 Oct ;8(10):ofab120.
142. Infect Control Hosp Epidemiol 2021 Sep 20;:1-12.
143. Euro Surveill 2021 09 ;26(39)

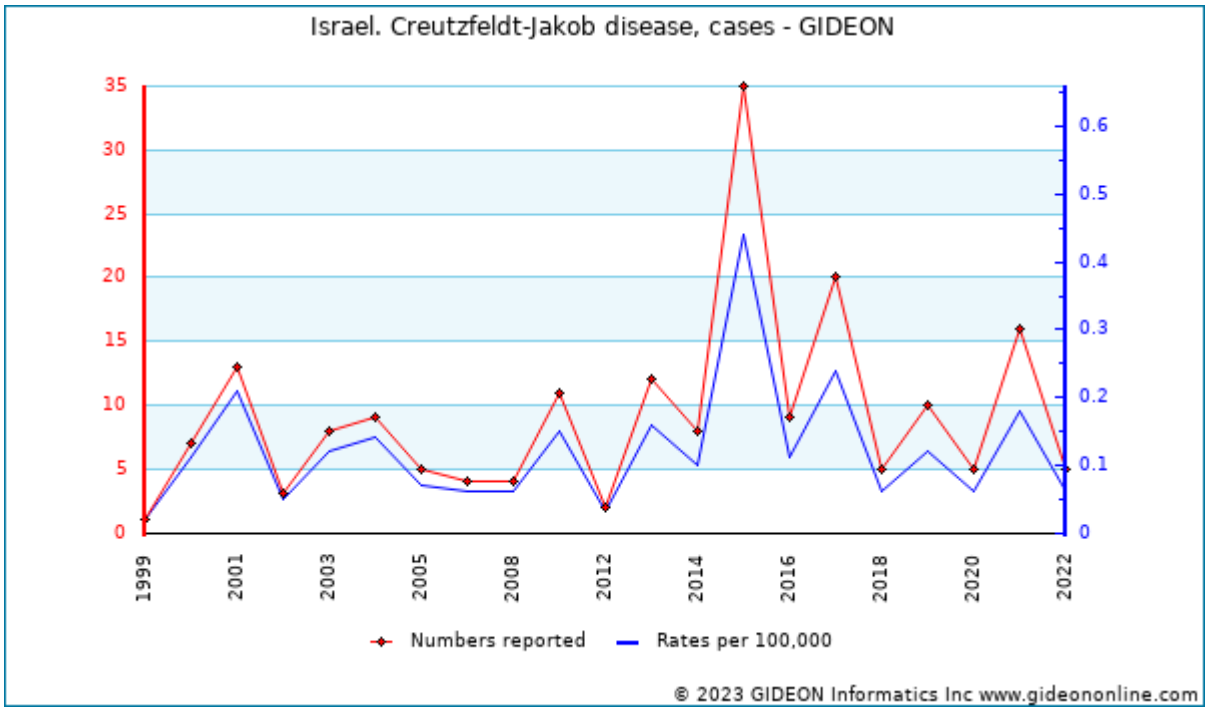
Creutzfeldt-Jakob disease

Agent	PRION
Reservoir	Human
Vector	None
Vehicle	Corneal graft Dural graft Neurosurgical instrumens
Incubation Period	14 months to >=42 years
Diagnostic Tests	Biopsy and specialized tests for protein markers in cerebrospinal fluid protein
Typical Adult Therapy	None
Typical Pediatric Therapy	NA
Clinical Hints	- Most infections are sporadic and characterized by severe, progressive and ultimately fatal neurological disease - Patient may recall neurosurgical intervention several year previously
Synonyms	CJD, Familial spongiform encephalopathy, Fatal familial insomnia, Gerstmann–Straussler–Scheinker syndrome, Subacute spongiform encephalopathy, Variably protease-sensitive prionopathy. ICD9: 046.11 ICD10: A81.09

Creutzfeldt-Jakob disease in Israel

Time and Place

- 1960 to 2016 - 728 patients with late-onset (>80 years of age) Creutzfeldt-Jakob disease were identified in the Israeli national database of prion diseases. [1]
- 1985 to 2018 - An analysis of data from the national Creutzfeldt-Jakob disease (CJD) registry found that the average age adjusted annual incidence rate of familial CJD during the period was 1.88 ± 0.09 per 1,000,000 people and that of sporadic CJD was 0.93 ± 0.06 per 1,000,000 people. [2]



Graph: Israel. Creutzfeldt-Jakob disease, cases

- Unusually high rates of Creutzfeldt-Jakob disease have been reported among Libyan Jews in Israel. [3] [4] [5] [6] [7] [8]

References

1. Neurol Sci 2022 Mar 08;
2. Neuroepidemiology 2023 Apr 12;
3. Neurology 1991 Sep ;41(9):1385-9.
4. Neurology 1991 Sep ;41(9):1390-2.
5. Eur J Epidemiol 1991 Sep ;7(5):490-3.
6. N Engl J Med 1991 Apr 18;324(16):1091-7.
7. Neuroepidemiology 1991 ;10(5-6):228-31.
8. Neurology 1979 Feb ;29(2):225-31.

Cryptococcosis

Agent	FUNGUS - Yeast. Basidiomycota, Hymenomycetes, Sporidiales: *Cryptococcus neoformans* and other species
Reservoir	Pigeon, Soil, Zoonotic
Vector	None
Vehicle	Air, Respiratory or pharyngeal acquisition
Incubation Period	Variable
Diagnostic Tests	Fungal culture and stains. Latex test for fungal antigen in CSF and serum. Nucleic acid amplification.
Typical Adult Therapy	(Induction) Liposomal Amphotericin B 3-4 mg/kg/d X 2-6 weeks + (Preferred) Flucytosine 25 mg/kg/d PO QID X 2 weeks OR Fluconazole 400 mg BID X 2 weeks[1]
Typical Pediatric Therapy	(Induction) Amphotericin B deoxycholate 1 mg/kg/d X 2-6w + Flucytosine 25 mg/kg/d PO QID X 2 weeks
Clinical Hints	- Chronic lymphocytic meningitis or pneumonia in an immune-suppressed patient - Meningitis may be subclinical, or "wax and wane" - Nuchal rigidity is absent or minimal; - Bone, skin, adrenals, liver, prostate and other sites may be infected hematogenously
Synonyms	Busse-Buschke disease, Cryptococcus, European blastomycosis, Torulosis. ICD9: 117.5,321.0 ICD10: B45

Cryptococcosis in Israel

Sporadic case series [2] [3] [4] and case reports of cryptococcosis are published [5] [6] [7] [8] [9] [10] [11] [12]

- 1977 (publication year) - *Cryptococcus neoformans* was the third most common cause of bacterial and fungal meningitis among adults. [13]

Studies of the regional distribution of *Cryptococcus neoformans* and *C. gattii*. [14] [15] [16] [17]

References

1. Clin Infect Dis 2010 Feb 01;50(3):291-322.
2. Fungal Genet Biol 2019 08 ;129:16-29.
3. Mycoses 2019 Dec ;62(12):1140-1147.
4. Eur J Clin Microbiol Infect Dis 2018 Jul ;37(7):1231-1240.
5. Confin Neurol 1973 ;35(5):304-11.
6. Mykosen 1972 Sep 01;15(9):359-65.
7. Harefuah 2020 Jan ;159(1):14-17.
8. IDCases 2018 ;12:142-148.
9. Med Mycol 2002 Oct ;40(5):479-84.
10. Clin Infect Dis 1999 Dec ;29(6):1592-3.
11. J Med Vet Mycol 1994 ;32(4):315-8.
12. Am J Clin Pathol 1992 May ;97(5):663-4.
13. Isr J Med Sci 1977 Dec ;13(12):1151-62.
14. Mykosen 1976 Jun ;19(6):189-92.
15. FEMS Yeast Res 2016 11 ;16(7)
16. FEMS Yeast Res 2016 06 ;16(4)
17. Mycopathol Mycol Appl 1966 Aug 30;29(3):350-4.

Cryptosporidiosis

Agent	PARASITE - Protozoa. Apicomplexa, Eimeriida: *Cryptosporidium hominis* and *C. parvum* (rarely *C. muris*, *C. felis*, *C. meleagridis*, et al).
Reservoir	Mammal (over 150 species), Zoonotic
Vector	None
Vehicle	Water, Feces, Oysters, Fly
Incubation Period	5d - 10d (range 2d - 14d)
Diagnostic Tests	Stool/duodenal aspirate for acid-fast, direct fluorescence staining, or antigen assay. Nucleic acid amplification
Typical Adult Therapy	Stool precautions. Nitazoxanide 500 mg PO BID X 3 days[1] [2] [3]
Typical Pediatric Therapy	Stool precautions. Nitazoxanide: 1 to 3 years: 100 mg PO BID X 3 days 4 to 11 years: 200 mg PO BID X 3 days >12 years: 500 mg PO BID X 3 days
Clinical Hints	- Watery diarrhea, vomiting, abdominal pain - Self-limited disease in healthy subjects - Immunosuppressed (e.g., AIDS) patients experience chronic, wasting illness (may be associated with pulmonary disease)
Synonyms	Cryptosporidium, Cryptosporidium andersoni, Cryptosporidium baileyi , Cryptosporidium bovis, Cryptosporidium chipmunk genotype, Cryptosporidium cunulicus, Cryptosporidium ditrichi, Cryptosporidium fayeri, Cryptosporidium felis, Cryptosporidium hedgehog genotype, Cryptosporidium hominis, Cryptosporidium meleagridis, Cryptosporidium occultus, Cryptosporidium parvum, Cryptosporidium pestis, Cryptosporidium suis, Cryptosporidium tyzzeri, Cryptosporidium ubiquitum, Cryptosporidium viatorum, Cryptosporidium wrairi, Kryptosporidiose. ICD9: 007.4 ICD10: A07.2

Cryptosporidiosis in Israel

IgG antibody toward *Cryptosporidium* is found in 42.3% of the general population and 81.5% of healthy adults. [4]

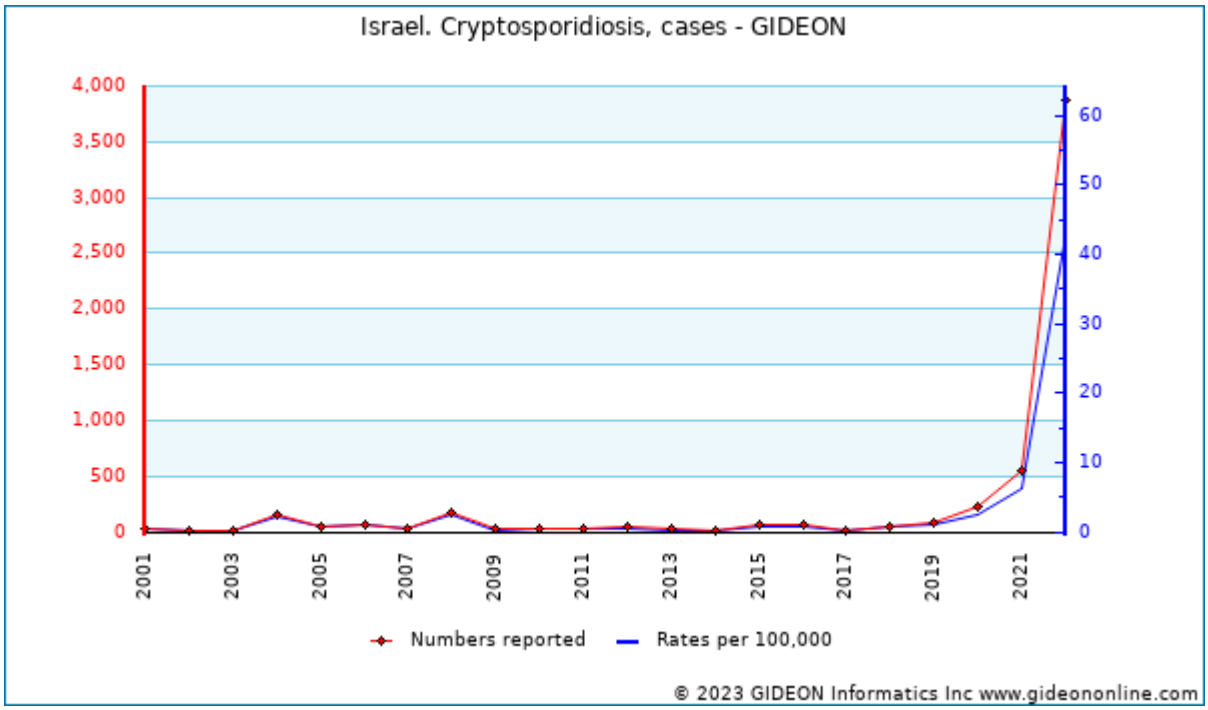
91% of Bedouin children will be infected by *Cryptosporidium* by age 2 years. [5] [6]

Prevalence surveys

Years	Region	Study Group	%	Notes
2019	West Bank	dogs	3	[7]
2015 - 2016	West Bank	general population	6	Survey of marginalized rural communities [8]
1990*	Holon	children - gastrointestinal	3.25	3.25% of childhood diarrhea in Israel [9]
1991*	Gaza	children - gastrointestinal	19	19% of childhood gastroenteritis in Gaza requiring hospitalization [10]
1994*	Gaza	children - gastrointestinal	14.6	14.6% of diarrhea among children below age 5 years, in Gaza [11]
2018 - 2020	Tel Aviv	children - gastrointestinal	5	In the stool samples collected from 118 hospitalized children at the Schneider Children's Medical Center of Israel, *Cryptosporidium* was detected in 5% of the samples. [12]
2019*		children -	3.1	Survey of children hospitalized for gastrointestinal symptoms [13]

Years	Region	Study Group	%	Notes
		gastrointestinal		

* indicates publication year (not necessarily year of survey)



Graph: Israel. Cryptosporidiosis, cases

Notes:
1. Cryptosporidiosis has been an officially-notifiable disease in Israel since 2001.
2. 522 cases were reported during 2001 to 2014.

- 2014 to 2018 - The predominant species infecting humans in northern and central Israel is *Cryptosporidium hominis* (2014 to 2018) [14]
- 2001 (publicaton year) - Infection has been demonstrated in a free-ranging house gecko (*Hemidactylus turcicus*). [15]

Notable outbreaks

Years	Region	Cases	Source	Population	Notes
1991*	Afula	11	cattle - calves	children	[16]
2010*	Nablus	30			[17]

* indicates publication year (not necessarily year of outbreak)

References

1. Lancet 2002 Nov 02;360(9343):1375-80.
2. J Infect Dis 2001 Jul 01;184(1):103-6.
3. Int J Parasitol Drugs Drug Resist 2021 Sep 21;17:128-138.
4. Isr Med Assoc J 2000 May ;2(5):343-5.
5. Am J Epidemiol 2001 Jan 15;153(2):194-201.
6. Am J Trop Med Hyg 1997 Nov ;57(5):544-9.
7. Iran J Parasitol 2021 Jul-Sep;16(3):435-442.
8. BMC Public Health 2019 Dec 11;19(1):1667.
9. J Infect 1990 Sep ;21(2):139-41.
10. Ann Trop Paediatr 1991 ;11(3):277-81.
11. Ann Trop Med Parasitol 1994 Apr ;88(2):175-82.
12. Acta Paediatr 2022 Nov 29;
13. Am J Trop Med Hyg 2019 May 20;
14. PLoS One 2019 ;14(9):e0219977.
15. Parassitologia 2001 Sep ;43(3):91-3.
16. Pediatr Infect Dis J 1991 Jun ;10(6):438-41.
17. Trop Med Int Health 2011 Jan ;16(1):12-7.

Cutaneous larva migrans

Agent	PARASITE - Nematoda. Secernentea: *Ancylostoma braziliense*, *A. caninum*, *Bunostomum phlebotomum*, *Strongyloides myopotami*
Reservoir	Cat, Dog, Cattle, Zoonotic
Vector	None
Vehicle	Soil, Contact
Incubation Period	2d - 3d (range 1d - 30d)
Diagnostic Tests	Biopsy is rare helpful.
Typical Adult Therapy	Ivermectin 200 micrograms/kg as single dose OR Albendazole 200 mg BID X 3d OR Thiabendazole topical X 5d[1] [2]
Typical Pediatric Therapy	Ivermectin 200 micrograms/kg as single dose. OR Albendazole 7.5 mg/kg BID X 3d OR Thiabendazole topical X 5d
Clinical Hints	- Erythematous, serpiginous, intensely pruritic and advancing lesion(s) or bullae - Usually involves the feet - Follows contact with moist sand or beach - May recur or persist for months.
Synonyms	Creeping eruption, Pelodera, Plumber's itch, Uncinariasis. ICD9: 126.2,126.8,126.9 ICD10: B76.9

Cutaneous larva migrans in Israel

Sporadic imported cases are reported. [3]

Ancylostoma caninum infestation has been identified in dogs and jackals in Northern Israel [4] [5] and in dogs in the West Bank. [6]

Prevalence surveys

Years	Region	Study Group	%	Notes
2019	West Bank	dogs	8	*Ancylostoma caninum* infestation was identified in 8.0% of dogs. [7]

References

1. Clin Infect Dis 2013 Oct ;57(8):1155-7.
2. Eur J Dermatol 1999 Jul-Aug;9(5):352-3.
3. Harefuah 1993 Apr 01;124(7):405-8, 455.
4. J Helminthol 1998 Jun ;72(2):127-31.
5. Vet J 2001 Jul ;162(1):66-72.
6. Iran J Parasitol 2021 Jul-Sep;16(3):435-442.
7. Iran J Parasitol 2021 Jul-Sep;16(3):435-442.

Cyclosporiasis

Agent	PARASITE - Protozoa. Apicomplexa, Eimeriida: *Cyclospora cayetanensis*
Reservoir	Human, Non-human primate, Zoonotic
Vector	None
Vehicle	Water, Vegetables
Incubation Period	1d - 11d
Diagnostic Tests	Identification of organism in stool smear. Cold acid fast stains and ultraviolet microscopy may be helpful.
Typical Adult Therapy	Sulfamethoxazole / Trimethoprim 800/160 mg BID X 7d Ciprofloxacin 500 mg PO BID X 7 d (followed by 200 mg TIW X 2 w) has been used in sulfa-allergic patients[1] [2]
Typical Pediatric Therapy	Sulfamethoxazole / Trimethoprim 10/2 mg/kg BID X 7d
Clinical Hints	- Most cases follow ingestion of contaminated water in underdeveloped countries - Large outbreaks have been associated with ingestion of contaminated fruit - Watery diarrhea (average 6 stools daily) - Abdominal pain, nausea, anorexia and fatigue - May persist for up to 6 weeks (longer in AIDS patients)
Synonyms	Cryptosporidium muris, Cyanobacterium-like agent, Cyclospora. ICD9: 007.5 ICD10: A07.8

References

1. Lancet 1995 Mar 18;345(8951):691-3.

2. Ann Intern Med 2000 Jun 06;132(11):885-8.

Cysticercosis

Agent	PARASITE - Platyhelminthes, Cestoda. Cyclophyllidea, Taeniidae: *Taenia solium*
Reservoir	Pig, Human, Zoonotic
Vector	None
Vehicle	Soil (contaminated by pigs), Fecal-oral, Fly
Incubation Period	3m - 3y
Diagnostic Tests	Serology (blood or CSF) and identification of parasite in biopsy material.
Typical Adult Therapy	Albendazole 7.5 mg/kg PO BID X 10-14d AND / OR Praziquantel 17 mg/kg TID X 14d Add corticosteroids if brain involved Surgery as indicated[1]
Typical Pediatric Therapy	Albendazole 15 mg/kg PO BID X 30d. AND / OR Praziquantel 30 mg/kg TID X 14d (15 to 30d for neurocysticercosis). Add corticosteroids if brain involved. Surgery as indicated
Clinical Hints	- Cerebral, ocular or subcutaneous mass - Usually no eosinophilia - Calcifications noted on X-ray examination - Associated with regions where pork is eaten - 25% to 50% of patients have concurrent tapeworm infestation
Synonyms	Taenia crassiceps, Taenia martis, Versteria. ICD9: 123.1 ICD10: B69

Cysticercosis in Israel

- 1994 to 2004 - Ten cases of neurocysticercosis were reported, including five returning Israeli travelers, and one Arab citizen with no history of travel.

- 1994 to 2009 - Seventeen cases of neurocysticercosis were identified, including nine acquired in endemic countries and two which were presumably acquired in Israel; the rate of imported disease was estimated at 1 per 275,000 travel episodes. [2]

Cross-border events

Does not include individual cases involving immigrants

Years	Acquired by**	Setting	Cases	Notes
1994	Israel	travel	1	Disease acquired during travel in India and Nepal. [3]
1995	Israel	travel	1	Disease acquired during travel in Southeast Asia [4]
1999	Israel	travel	1	Disease acquired during travel in Southeast Asia [5]
2004	Israel	travel	1	Disease acquired in South America [6]
2005	Israel	travel	1	Disease acquired during travel in Southeast Asia [7]
2006	Israel	travel	1	Disease acquired during travel in Southeast Asia [8]
2007	Israel	travel	1	Disease acquired during travel in Southeast Asia [9]
2008*	Israel	travel	1	Disease acquired during travel in India and Nepal. [10]

* indicates publication year (not necessarily year of event)

** Country or Nationality

References

1. Clin Infect Dis 2018 Apr 03;66(8):e49-e75.
2. J Travel Med 2011 May-Jun;18(3):191-7.
3. J Travel Med 2011 May-Jun;18(3):191-7.
4. J Travel Med 2011 May-Jun;18(3):191-7.
5. J Travel Med 2011 May-Jun;18(3):191-7.
6. J Travel Med 2011 May-Jun;18(3):191-7.
7. J Travel Med 2011 May-Jun;18(3):191-7.
8. J Travel Med 2011 May-Jun;18(3):191-7.
9. J Travel Med 2011 May-Jun;18(3):191-7.
10. J Travel Med 2011 May-Jun;18(3):191-7.

Cystoisosporiasis

Agent	PARASITE - Protozoa. Apicomplexa, Eimeriida: *Isospora* (*Cystoisospora*) *belli*
Reservoir	Human
Vector	None
Vehicle	Food, Liquids, Fecal-oral, Sexual (homosexual) contact
Incubation Period	7d - 10d
Diagnostic Tests	Microscopy of stool or duodenal contents. Advise laboratory when this organism is suspected.
Typical Adult Therapy	Immunocompetent patients: Sulfamethoxazole / Trimethoprim 800/160 mg BID X 10 days OR Ciprofloxacin 500 mg PO BID X 10 days Immunosuppressed: Sulfamethoxazole / Trimethoprim 800/160 mg BID X 10 days then 3/week until CD4>200 OR Pyrimethamine 75 mg QD + leucovorin then 25 mg QD until CD4>200 OR Ciprofloxacin 500 mg PO BID X 10 days then 3/week until CD4>200[1] [2] [3]
Typical Pediatric Therapy	As for adult (dosage adjusted for weight)
Clinical Hints	- Myalgia, watery diarrhea, nausea and leukocytosis - Eosinophilia may be present - Illness is prolonged and severe in AIDS patients
Synonyms	Isospora belli, Isosporiasis. ICD9: 007.2 ICD10: A07.3

Cystoisosporiasis in Israel

1975 - A case report of *Isospora belli* infection was published. [4]

References

1. N Engl J Med 1986 Jul 10;315(2):87-90.
2. Ann Intern Med 1988 Sep 15;109(6):474-5.
3. Ann Intern Med 2000 Jun 06;132(11):885-8.
4. Isr J Med Sci 1975 Apr ;11(4):373-7.

Cytomegalovirus infection

Agent	VIRUS - DNA. Herpesviridae, Betaherpesvirinae: Human herpesvirus 5 (Cytomegalovirus)
Reservoir	Human
Vector	None
Vehicle	Droplet (respiratory), Urine, Dairy products, Tears, Stool, Sexual, contact (rare), Transplacental, Breastfeeding
Incubation Period	3w - 5w (range 2w - 12w)
Diagnostic Tests	Viral culture (blood, CSF, urine, tissue). Serology. Direct viral microscopy. Nucleic acid amplification
Typical Adult Therapy	(Most cases self-limited). Ganciclovir 5 mg/kg q12h IV X 2 to 3w. OR Foscarnet 90 mg/kg Q12h IV OR Cidofovir 5 mg/kg IV weekly + probenicid[1] [2] [3] [4] [5]
Typical Pediatric Therapy	(Most cases self-limited) Ganciclovir 5 mg/kg q12h IV X 2 to 3w
Vaccine	Cytomegalovirus immune globulin
Clinical Hints	- Heterophile-negative "mononucleosis" - Mild pharyngitis, without exudate - Variable degree of lymphadenopathy and splenomegaly - Retinitis in AIDS patients - Pneumonia in setting of immune suppression - Congenital infection characterized by multisystem disease in newborns
Synonyms	Cytomegalovirus, Zytomegalie. ICD9: 078.5 ICD10: B25

Cytomegalovirus infection in Israel

- 2013 to 2017 - The incidence of primary CMV infection among pregnant women was 14.5 per 1,000. [6]

Prevalence surveys

Years	Region	Study Group	%	Notes
2019	Haifa	neonates	0.6	Survey for congenital CMV infection [7]
2021*	Petah Tikva	transplant recipients	19	Survey of pediatric kidney transplant recipients. [8]
2014 - 2017	Negev	infants	0.9	Congenital CMV infection was identified in 0.9% of hearing-disabled or growth retarded infants.
2014*	Haifa	patients	5.8	5.8% of CMV IgG-seropositive of immunocompetent patients [9]
2008 - 2009	Hadera	pregnant women	1.03	CMV IgM was identified in 1.03% of women in first trimester of pregnancy [10]
2011*	Central Region	pregnant women	0	0% pre-conception and 4.6% of periconception pregnancies [11]
2003*	Jerusalem	congenital	0.7	0.7% of newborn infants [12]
2013*	Central Region	congenital	0.27	0.27% of newborn infants [13]
2016 - 2020	Northern Region	patients - CNS	2.9	Survey of CSF specimens collected from patients admitted to hospital in Safed with suspected meningitis or encephalitis. Percentage reflects proportion of all test-

Years	Region	Study Group	%	Notes
				positive specimens. [14]

* indicates publication year (not necessarily year of survey)

Seroprevalence surveys

Years	Region	Study Group	%	Notes
1982*	Beer Sheva	children	76	76% of kibbutz children, 44% of urban Jewish children and 54% of Bedouin children [15]
1991*		MSM	87-100	87% of HIV-negative and 100% of HIV-positive MSM [16]
2000 - 2005	Gaza	women	6	6% of infertile women in Gaza [17]
2012*		patients	90	90% of patients with primary biliary cirrhosis vs. 75% of controls [18]
2005*	Multiple locations	pregnant women	81.5-87	81.5% to 87% of pregnant women [19] [20]
2006 - 2012	Jerusalem	pregnant women	96.6	96.6% of pregnant women in East Jerusalem [21]
2013 - 2017	Multiple locations	pregnant women	63.4	63.4% of women were seropositive at the start of pregnancy [22]

* indicates publication year (not necessarily year of survey)

References

1. An Pediatr (Barc) 2011 Jan ;74(1):52.e1-52.e13.
2. Pediatr Ann 2015 May ;44(5):e115-25.
3. Paediatr Child Health 2017 May ;22(2):72-74.
4. Acta Paediatr 2010 Apr ;99(4):509-15.
5. Virus Res 2011 May ;157(2):212-21.
6. J Med Virol 2021 Oct 19;
7. J Clin Virol 2021 Mar 17;138:104798.
8. Pediatr Transplant 2021 Nov 24;:e14199.
9. Lung 2014 Dec ;192(6):875-9.
10. Isr Med Assoc J 2017 Aug ;19(8):484-488.
11. Am J Obstet Gynecol 2011 Oct ;205(4):342.e1-6.
12. Arch Dis Child Fetal Neonatal Ed 2003 Sep ;88(5):F371-4.
13. Isr Med Assoc J 2013 Jun ;15(6):279-83.
14. Diagn Microbiol Infect Dis 2022 Jul 18;104(3):115769.
15. J Med Virol 1982 ;10(3):195-201.
16. J Med Virol 1991 Nov ;35(3):174-9.
17. J Egypt Soc Parasitol 2010 Aug ;40(2):451-8.
18. Exp Mol Pathol 2012 Dec ;93(3):386-90.
19. Isr Med Assoc J 2005 Apr ;7(4):237-40.
20. Isr J Med Sci 1997 Jan ;33(1):53-8.
21. BMC Infect Dis 2013 Nov 09;13:528.
22. J Med Virol 2021 Oct 19;

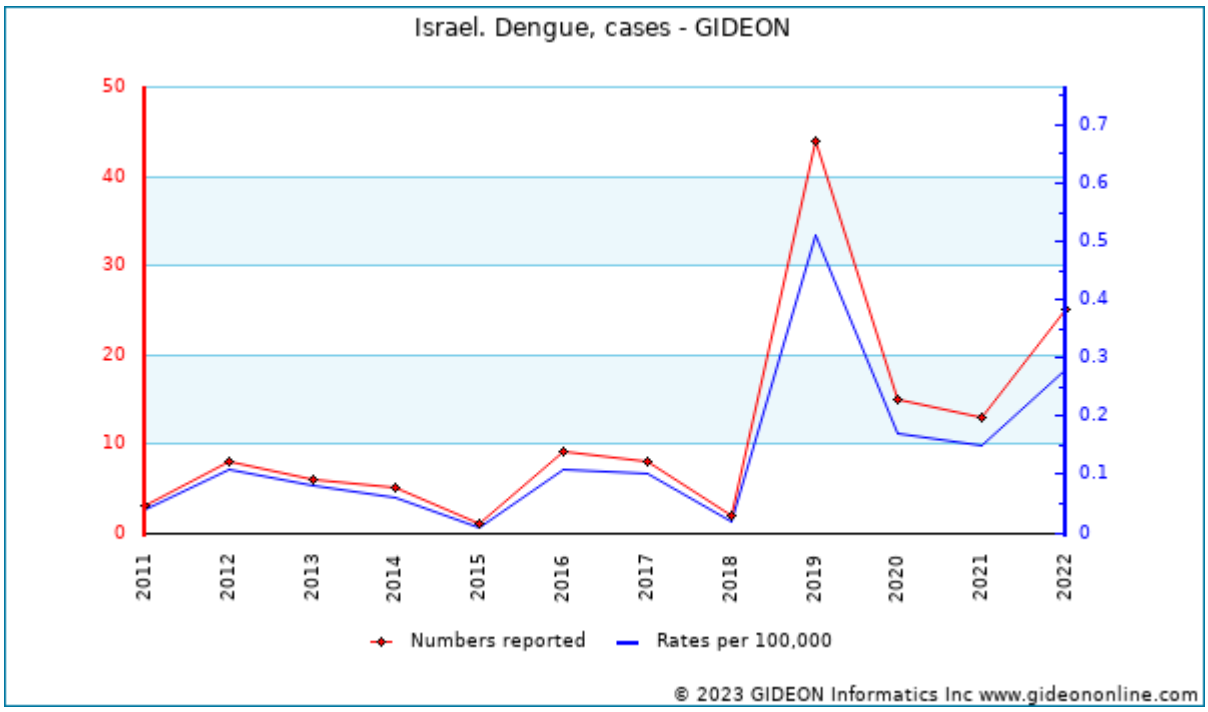
Dengue

Agent	VIRUS - RNA. Flaviviridae, Flavivirus: Dengue virus
Reservoir	Human, Mosquito, Monkey (in Malaysia and Africa), Zoonotic
Vector	Mosquito - *Stegomyia* (*Aedes*) aegypti, *S. albopictus*, *S. polynesiensis*, *S. scutellaris*
Vehicle	Blood, Breastfeeding
Incubation Period	5d - 8d (range 2d - 15d)
Diagnostic Tests	Biosafety level 2. Viral isolation (blood). Serology. Nucleic acid amplification.
Typical Adult Therapy	Supportive; IV fluids to maintain blood pressure and reverse hemoconcentration
Typical Pediatric Therapy	As for adult
Vaccine	Dengue - DEV serogroup 2 derived Dengue - Yellow-fever derived
Clinical Hints	- Headache, myalgia, arthralgia - Relative bradycardia, leukopenia and maculopapular rash - Severe dengue (DHF or dengue-shock syndrome) defined by thrombocytopenia, hemoconcentration and hypotension
Synonyms	Bouquet fever, Break-bone fever, Dandy fever, Date fever, Dengue Fieber, Duengero, Giraffe fever, Petechial fever, Polka fever. ICD9: 061 ICD10: A90,A91

Although Dengue is not endemic to Israel, imported, expatriate or other presentations of the disease have been associated with this country.

Dengue in Israel

Outbreaks were described in the Tiberias area in 1921 and 1927.



Graph: Israel. Dengue, cases

Notes:
1. 41 cases of dengue were confirmed among Israeli travelers during a three-year period (2010 publication)

- 2008 to 2019 - There were 425 Israeli travelers who were diagnosed with dengue. Most cases (80.3%) were acquired in Asia. [1]

Vectors

- *Stegomyia (Aedes) aegypti* was last identified in Israel in 1975. It was identified again in the area of Lod in 2002. [2]
- As of 2009, *Aedes albopictus* is widely distributed in Israel. [3]

Notable outbreaks

Years	Region	Cases	Population	Notes
1927	Tiberias	200		
2017	Foreign Country	6	travelers	Outbreak among Israeli travelers returning from Seychelles [4] [5]

References

1. Travel Med Infect Dis 2022 Apr 18;:102330.
2. ProMED <promedmail.org> archive: 20020920.5363
3. Emerg Infect Dis 2012 Feb ;18(2):345-7.
4. Euro Surveill 2017 Jun 29;22(26)
5. ProMED <promedmail.org> archive: 20170531.5073985

Dermatophytosis

Agent	FUNGUS. Ascomycota, Euascomyces, Onygenales: *Epidermophyton*, *Microsporum*, *Trichophyton*, *Trichosporon* spp., *Arthroderma*, et al
Reservoir	Human, Dog, Cat, Rabbit, Marsupial, Other mammal, Zoonotic
Vector	None
Vehicle	Contaminated soil/flooring, Animal Contact
Incubation Period	2w - 38w
Diagnostic Tests	Fungal culture and microscopy of skin, hair or nails. Nucleic acid amplification.
Typical Adult Therapy	Skin - Topical Clotrimazole, Miconazole, etc. Hair/nails - PO - Terbinafine, Griseofulvin, Itraconazole or Fluconazole Topical - Ciclopirox, Efinaconazole or Tavaborole (agents not covered in this database)[1] [2] [3]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Erythematous, circinate, scaling or dyschromic lesions of skin, hair or nails - Pruritus, secondary infection or regional lymphadenopathy may be present
Synonyms	Arthroderma, Dermatomicose, Dermatomycose, Dermatomycosis, Dermatomykose, Dermatomykosen, Emericella, Epidermophyton, Favus, Granuloma trichophyticum, Gruby's disease, Kodamaea, Leukonychia trichophytica, Microsporum, Nattrassia, Onychocola, Onychomycosis, Pityriasis versicolor, Ringworm, Saint Aignan's disease, Scopulariopsis, Scytalidium, Tinea, Tinea barbae, Tinea capitis, Tinea corporis, Tinea cruris, Tinea faciei, Tinea favosa, Tinea imbricata, Tinea incognito, Tinea manum, Tinea pedis, Tinea unguinum, Tinea versicolor, Tokelau ringworm, Triadelphia pulvinata, Trichomycosis, Trichophyton, Trichophytosis, Trichophytosis gladiatorum. ICD9: 110,111 ICD10: B35,B36

Dermatophytosis in Israel

Notable outbreaks

Years	Region	Setting	Cases	Clinical	Source	Pathogen	Notes
1975 - 1976	Eilat		78			*Microsporum canis*	[4] [5]
1976*				pityriasis versicolor			family members. [6]
1979*						*Microsporum canis*	[7]
2011	Tel Aviv		145	tinea capitis			refugees. Outbreak among refugee children. [8] [9]
2018*	Southern Region	military base	53		cats	*Microsporum canis*	military personnel. Outbreak at a military base was associated with exposure to stray cats [10]

* indicates publication year (not necessarily year of outbreak)

References

1. Dig Endosc 2014 Nov ;26(6):752-3.
2. Arch Dermatol 1989 Nov ;125(11):1537-9.
3. Br J Dermatol 1997 Apr ;136(4):575-7.
4. Sabouraudia 1978 Mar ;16(1):79-81.
5. Mycopathologia 1979 Jul 16;67(3):169-72.
6. Harefuah 1976 Oct 01;91(7):173-4.

7. Mycopathologia 1979 Jul 16;67(3):169-72.
8. Mycoses 2012 Mar ;55(2):e36-9.
9. Mycoses 2016 Sep ;59(9):553-7.
10. Mycoses 2018 Mar 23;

Dicrocoeliasis

Agent	PARASITE - Platyhelminthes, Trematoda. Plagiorchiida, Dicrocoeliidae: *Dicrocoelium dendriticum* and *D. hospes*
Reservoir	Sheep, Cattle, Pig, Goat, Snail, Ant, Zoonotic
Vector	None
Vehicle	Ingested ant
Incubation Period	Unknown
Diagnostic Tests	Identification of ova in stool, bile or duodenal aspirate.
Typical Adult Therapy	Triclabendazole 10 mg/kg single dose OR Praziquantel 25 mg/kg PO TID X 1d (investigational)[1]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Acquired in sheep-raising areas - Abdominal pain, often accompanied by eosinophilia - Diarrhea - Follows inadvertent ingestion of ants (with raw vegetables or fruit)
Synonyms	Dicrocoelium dendriticum, Dicrocoelium hospes, Halzoun, Lancet liver fluke. ICD9: 121.8 ICD10: B66.2

Although Dicrocoeliasis is not endemic to Israel, imported, expatriate or other presentations of the disease have been associated with this country.

Dicrocoeliasis in Israel

Evidence for *Dircocoelium dendriticum* infestation has been identified in an Ottoman latrine in Acre dating from the early 1800's. [2]

References

1. Ann Saudi Med 2010 Mar-Apr;30(2):159-61.

2. Korean J Parasitol 2019 Dec ;57(6):575-580.

Dientamoeba fragilis infection

Agent	PARASITE - Protozoa. Metamonada, Parabasala, Trichomonadea. Flagellate: *Dientamoeba fragilis*
Reservoir	Human, Gorilla, Pig, Zoonotic
Vector	None
Vehicle	Fecal-oral (ingestion of pinworm ova)
Incubation Period	8d - 25d
Diagnostic Tests	Identification of trophozoites in stool. Nucleic acid amplification. Alert laboratory if this diagnosis is suspected.
Typical Adult Therapy	Stool precautions. Iodoquinol 650 mg PO TID X 20d. OR Tetracycline 500 mg QID X 10d. OR Paromomycin 10 mg/kg TID X 7d OR Metronidazole 750 mg PO TID X 10d[1] [2] [3] [4] [5] [6]
Typical Pediatric Therapy	Stool precautions. Iodoquinol 13 mg/kg PO TID X 20d. OR (age >8) Tetracycline 10 mg/kg QID X 10d OR Paromomycin 10 mg/kg TID X 7d OR Metronidazole 15 mg/kg PO TID X 10d
Clinical Hints	- Abdominal pain with watery or mucous diarrhea - Eosinophilia may be present - Concurrent enterobiasis (pinworm) is common - Infestation may persist for more than one year
Synonyms	ICD9: 007.8 ICD10: A60.8

Dientamoeba fragilis infection in Israel

Prevalence surveys

Years	Region	Study Group	%	Notes
2013*	Gaza	patients	8.8	8.8% of clinic patients with gastrointestinal symptoms [7]
2019*	Gaza	students - university	1	Survey of female university students [8]

* indicates publication year (not necessarily year of survey)

References

1. Int J Parasitol Drugs Drug Resist 2012 Dec ;2:204-15.
2. Int J Infect Dis 2016 Aug ;49:59-61.
3. Antimicrob Agents Chemother 2012 Jan ;56(1):487-94.
4. Am J Trop Med Hyg 2012 Dec ;87(6):1046-52.
5. Pediatr Infect Dis J 2013 Apr ;32(4):e148-50.
6. Expert Rev Gastroenterol Hepatol 2020 Mar 10;
7. Iran J Parasitol 2013 Apr ;8(2):249-55.
8. Avicenna J Med 2019 Oct-Dec;9(4):143-147.

Diphtheria

Agent	BACTERIUM. *Corynebacterium diphtheriae* A facultative gram-positive bacillus
Reservoir	Human
Vector	None
Vehicle	Droplet, Contact, Dairy products, Clothing
Incubation Period	2d - 5d (range 1d - 10d)
Diagnostic Tests	Culture on special media. Advise laboratory when this diagnosis is suspected.
Typical Adult Therapy	Respiratory isolation. Equine antitoxin 20,000 to 120,000 units IM. (first perform scratch test) AND Erythromycin 500 mg QID (or Penicillin preparation) X 14d[1]
Typical Pediatric Therapy	Respiratory isolation. Equine antitoxin 20,000 to 120,000 units IM. (first perform scratch test) AND Erythromycin 10 mg/kg QID (or penicillin preparation) X 14d
Vaccines	Diphtheria antitoxin Diphtheria vaccine DT vaccine DTaP vaccine DTP vaccine Td vaccine
Clinical Hints	- Pharyngeal membrane with cervical edema and lymphadenopathy - "Punched out" skin ulcers with membrane - Myocarditis or neuropathy (foot/wrist drop) may appear weeks following initial infection
Synonyms	Corynebacterium diphtheriae, Difteri, Difteria, Difterie, Difterite, Diphterie. ICD9: 032 ICD10: A36

Diphtheria in Israel

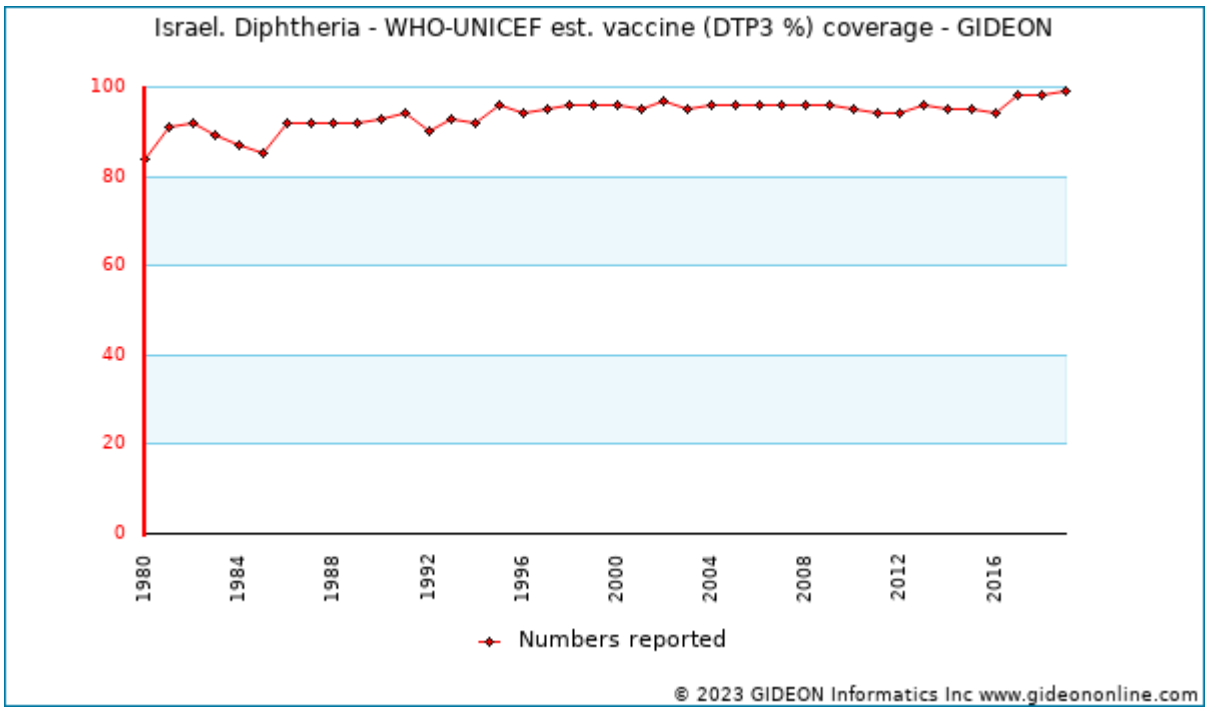
Vaccine Schedule:

DTaP - 2,4,6,12 months
DTaPHibIPV - 2,4,6,12 months
HPV - 13 years; +6 months
HepA - 18, 24 months
HepB - birth; 1,6 months
IPV - 7 years
MMRV - 12 months; 6 years
OPV - 6,18 months
Pneumo ps - >=65 years
Pneumo-conj - 2,4,12 months
Rotavirus - 2,4,6 months
Td - every 10 years (adults)
TdaP - 13 years
TdaPIPV - 7 years

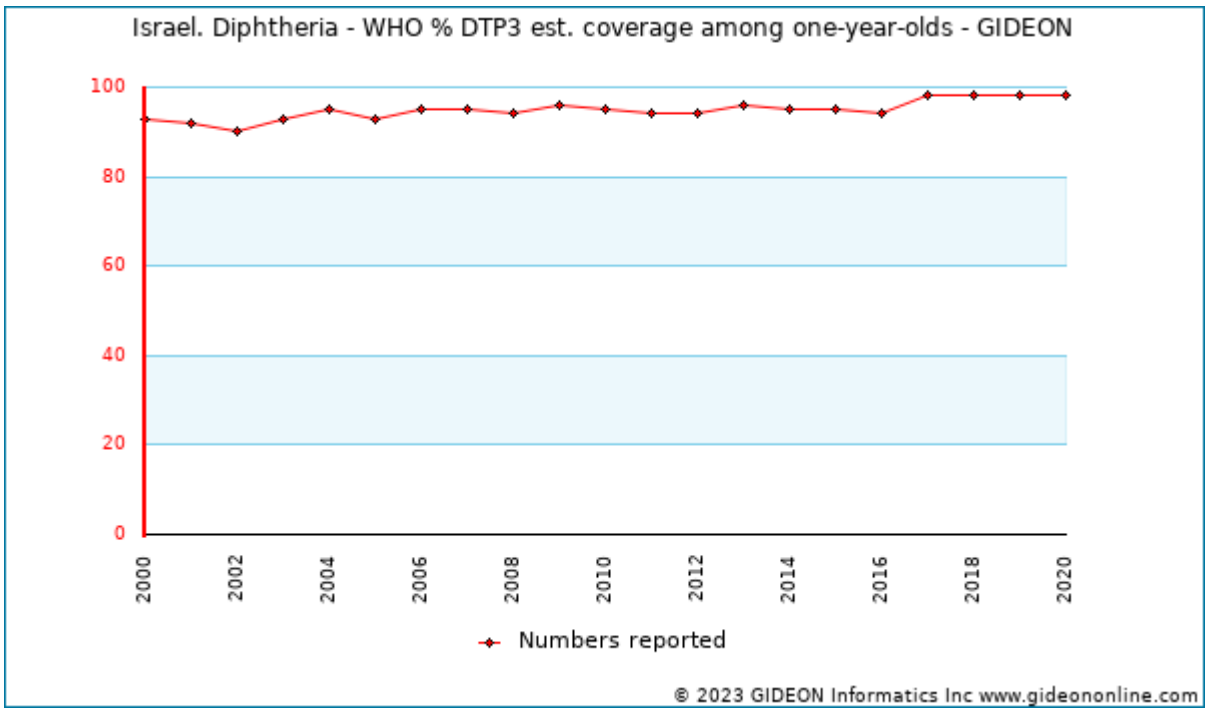
Israel:

Routine immunization was introduced in 1952; and replaced by DPT in 1957.

- Tdap-IPV was vaccination of elementary school students was introduced in 2005.



Graph: Israel. Diphtheria - WHO-UNICEF est. vaccine (DTP3 %) coverage



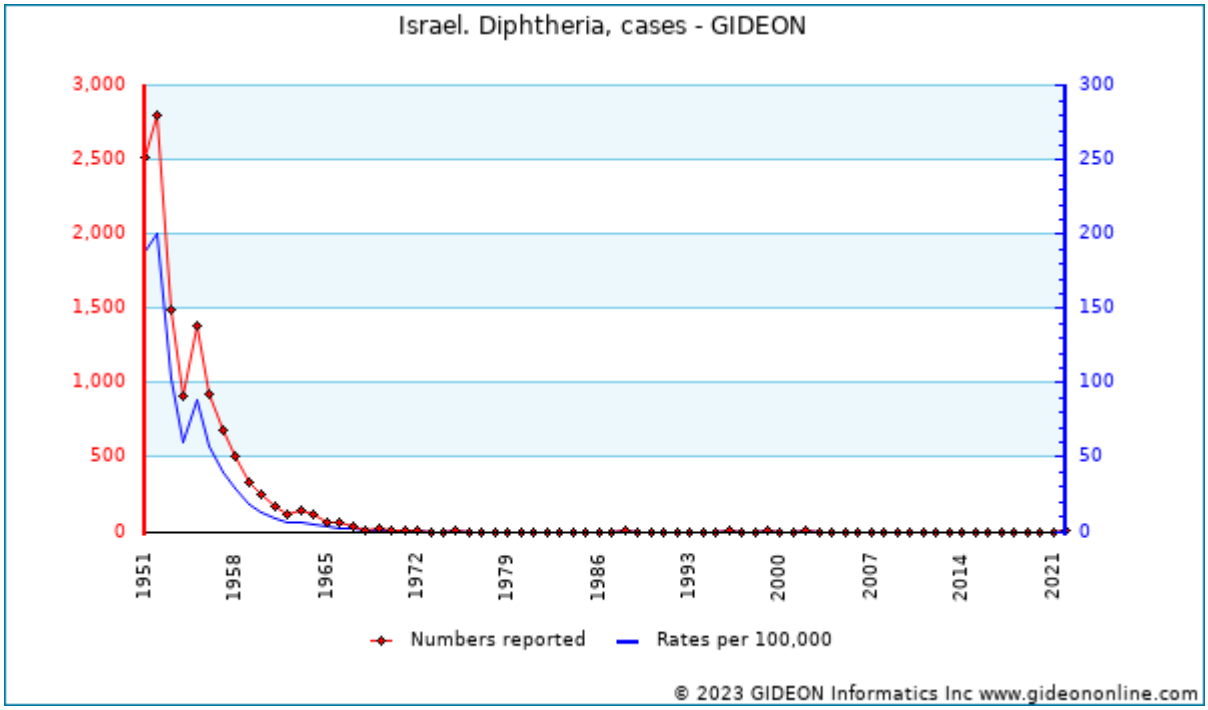
Graph: Israel. Diphtheria - WHO % DTP3 est. coverage among one-year-olds

Seroprevalence surveys

Years	Region	Study Group	%	Notes
1991*		military personnel	58.1	58.1% of Army recruits [2]
1994*		military personnel	15-64.3	64.3% of male Army reserve soldiers ages 18 to 19, 32.8% ages 25 to 35, and 15% ages 41 to 51 [3]

Years	Region	Study Group	%	Notes
1990 - 1991		immigrants	95.2-97.9	95.2% of male / 97.9% of female immigrants from the former Soviet Union [4]
2000 - 2001	Multiple locations	general population	81.1-90.3	90.3% in the age group 50 to 54, and 81.1% in the age group > 60 [5]
2006*		general population	94.7	[6]

* indicates publication year (not necessarily year of survey)

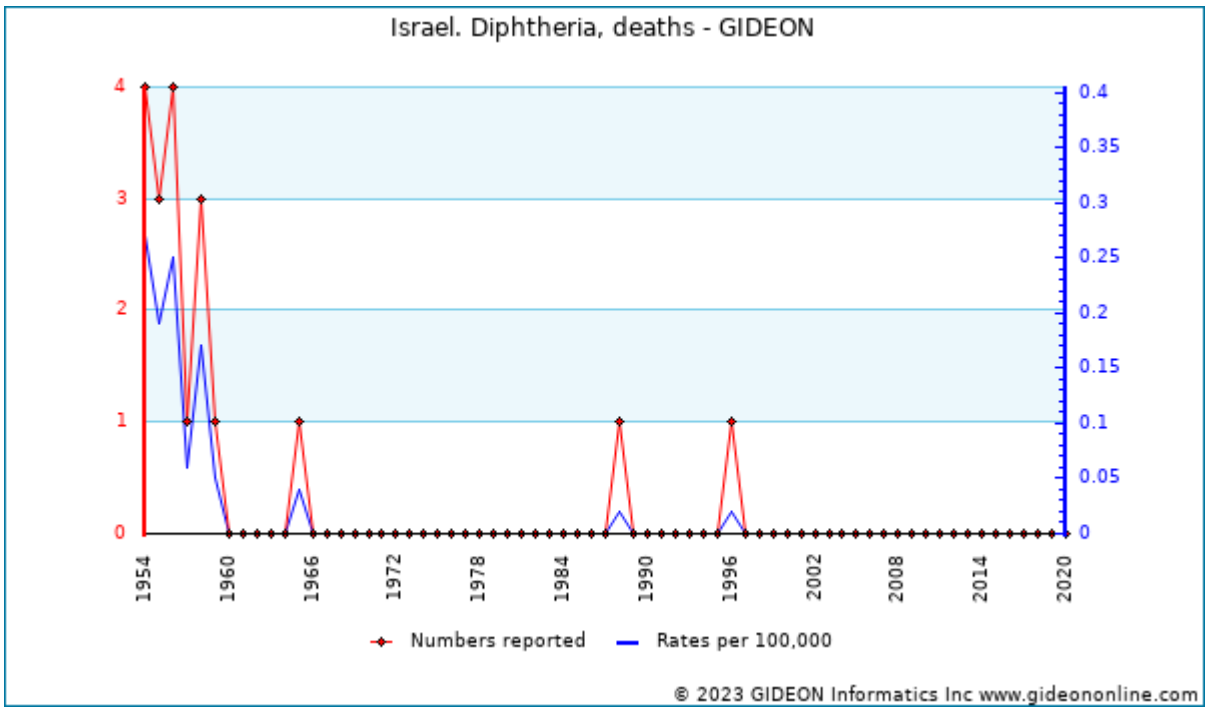


Graph: Israel. Diphtheria, cases

Notes:
1. Diphtheria has been a reportable disease since 1951.
2. Although no cases of diphtheria were reported from Israel per se during 1976 to 1987, cases of *Corynebacterium diphtheriae* mitis infection were registered in Nablus and the Sinai during this period.
3. Review of diphtheria in Israel - see reference [7]

Individual years:
1988 - One case (fatal) was reported in Bnei Barak.
1996 - One case (fatal) was reported in Jerusalem; and an asymptomatic culture-positive contact was also identified.

A review of 25 years of diphtheria treated at a Jerusalem hospital (1947 publication) [8]



Graph: Israel. Diphtheria, deaths

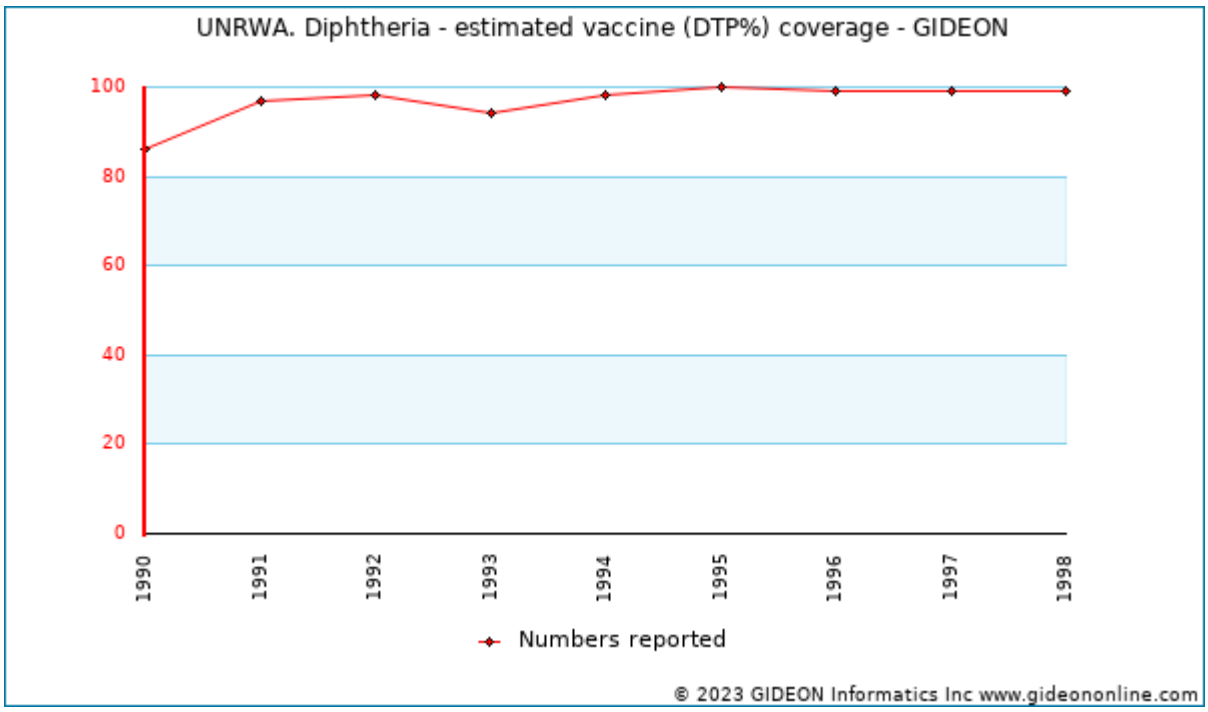
Notes:
1. 95 fatal cases were reported during 1951 to 1952.

Cross-border events

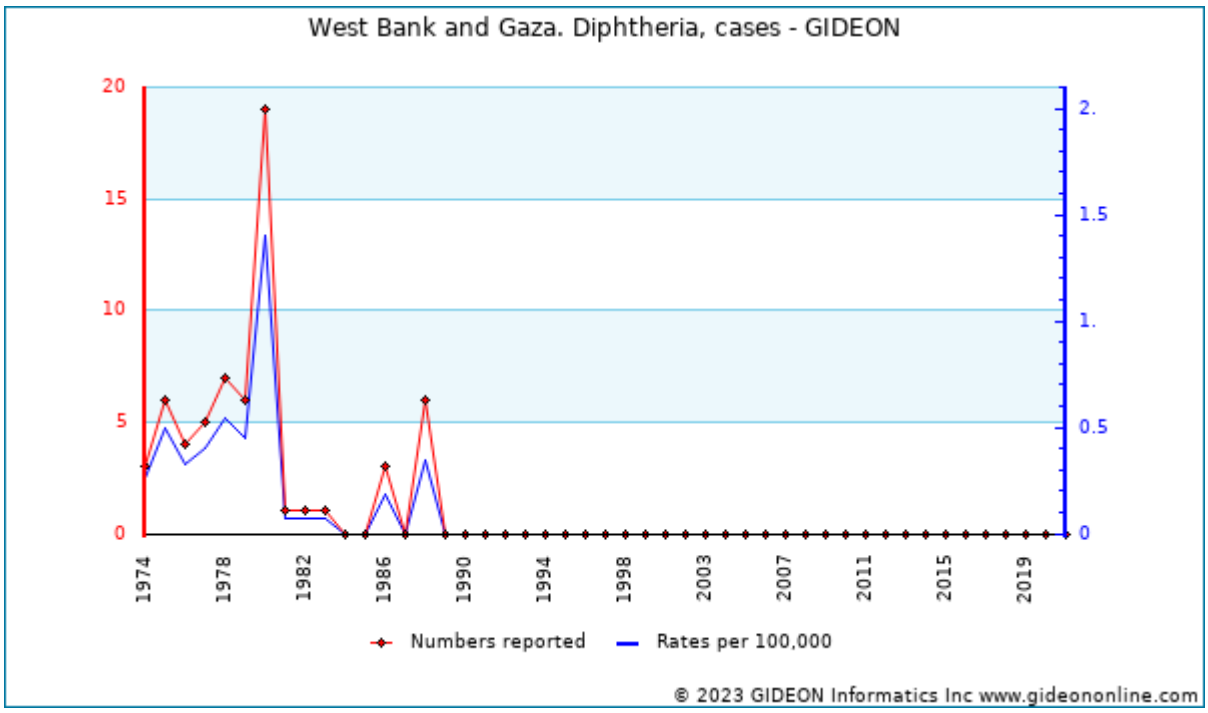
Years	Acquired by**	Originated in**	Cases	Notes
2002	United Kingdom	Israel	1	Diphtheria was identified in a child from a religious community in Salford - following return from Israel.

** Country or Nationality

UNRWA, West Bank and Gaza:

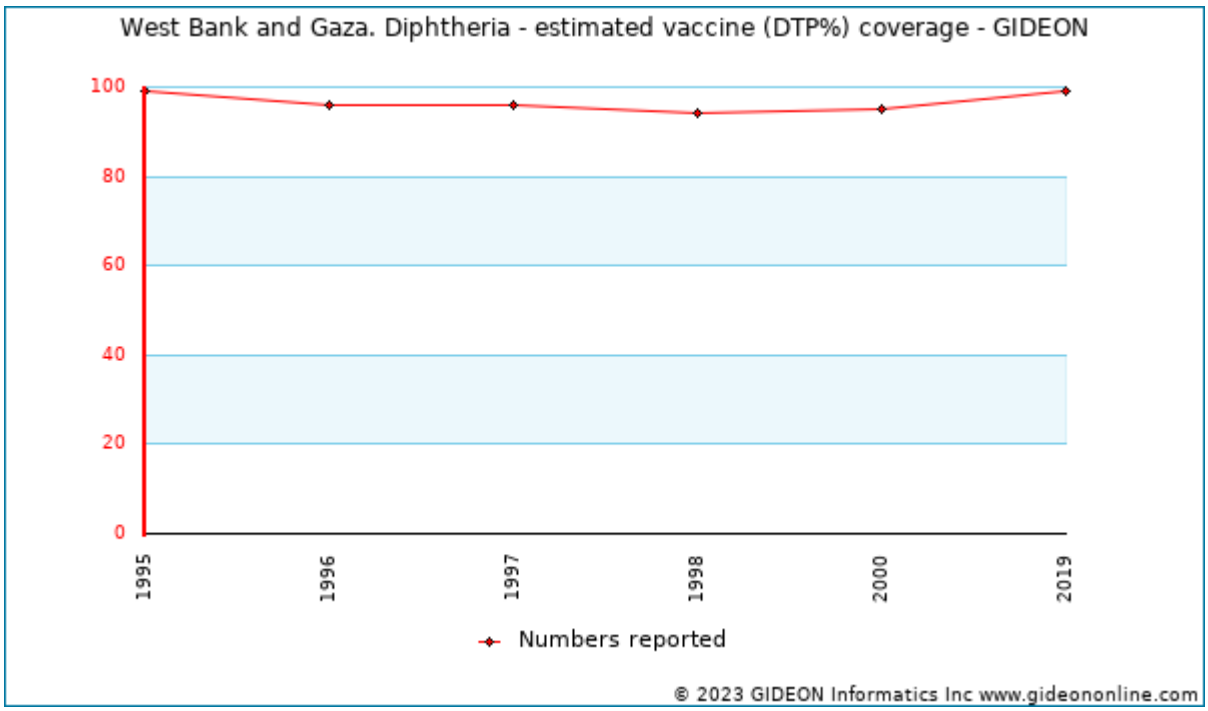


Graph: UNRWA. Diphtheria - estimated vaccine (DTP%) coverage



Graph: West Bank and Gaza. Diphtheria, cases

In the West Bank and Gaza, routine vaccination (DTP) is administered at ages 2, 4, 6 and 12 months. DT is given at ages 6 and 15 years.



Graph:
West Bank and Gaza. Diphtheria - estimated vaccine (DTP%) coverage

References

1. Clin Infect Dis 1998 Oct ;27(4):845-50.
2. J Infect 1991 Sep ;23(2):117-21.
3. Eur J Epidemiol 1994 Jun ;10(3):267-70.
4. Infection 1998 Mar-Apr;26(2):104-8.
5. Clin Microbiol Infect 2006 Oct ;12(10):968-73.
6. Clin Microbiol Infect 2006 Oct ;12(10):968-73.
7. Harefuah 2000 Aug ;139(3-4):106-8, 166.
8. Harefuah 1947 Feb 02;32(3):38-42.

Diphyllobothriasis

Agent	PARASITE - Platyhelminthes, Cestoda. Pseudophyllidea, Diphyllobothriidae: *Diphyllobothrium latum*, et al
Reservoir	Human, Dog, Bear, Fish-eating mammal, Zoonotic
Vector	None
Vehicle	Fresh-water fish - notably (for *D. latum*) perch, burbot and pike
Incubation Period	4w - 6w (range 2w - 2y)
Diagnostic Tests	Identification of ova or proglottids in feces. Tapeworm length often exceeds ten meters
Typical Adult Therapy	Praziquantel 10 mg/kg PO as single dose OR Niclosamide 2 g PO once[1] [2]
Typical Pediatric Therapy	Praziquantel 10 mg/kg PO as single dose OR Niclosamide 50 mg/kg PO once
Clinical Hints	- Abdominal pain, diarrhea and flatulence - Vitamin B12 deficiency is noted in 0.02% of patients - Rare instances of intestinal obstruction have been described - Worm may survive for decades in the human intestine
Synonyms	Adenocephalus pacificus, Bandwurmer [Diphyllobothrium], Bothriocephalus acheilongnathi, Bothriocephalus latus, Broad fish tapeworm, Dibothriocephalus infection, Diphyllobothrium cordatum, Diphyllobothrium dalliae, Diphyllobothrium dendriticum, Diphyllobothrium klebanovskii, Diphyllobothrium latum, Diphyllobothrium nihonkaiense, Diphyllobothrium stemmacephalum, Diphyllobothrium ursi, Diplogonoporiasis, Fish tapeworm. ICD9: 123.4 ICD10: B70.0

Diphyllobothriasis in Israel

Evidence for *Dibotrhiocephalus* infestation has been identified in an Ottoman latrine in Acre dating from the early 1800's. [3]

1920 - The first case of diphyllobothriasis in Israel was reported.

Prevalence surveys

Years	Region	Study Group	%	Notes
1934	Jerusalem	general population	0.04	0.04% of the population of Jerusalem in 1934
1955	Jerusalem	general population	0.02	0.02% of the population of Jerusalem in 1955

References

1. Acta Trop 1980 Sep ;37(3):293-6.
2. Curr Opin Infect Dis 2007 Oct ;20(5):524-32.
3. Korean J Parasitol 2019 Dec ;57(6):575-580.

Dipylidiasis

Agent	PARASITE - Platyhelminthes, Cestoda. Cyclophyllidea, Dipylidiidae: *Dipylidium caninum*
Reservoir	Dog, Cat, Zoonotic
Vector	None
Vehicle	Ingested flea (*Ctenocephalides* spp.)
Incubation Period	21d - 28d
Diagnostic Tests	Identification of proglottids in feces. Tapeworm length may exceed 50 cm.
Typical Adult Therapy	Praziquantel 10 mg/kg PO as single dose OR Niclosamide 2 g PO once[1] [2]
Typical Pediatric Therapy	Praziquantel 10 mg/kg PO as single dose OR Niclosamide: weight 11-34 kg 1 g PO as single dose weight >34 kg 1.5 g PO as single dose
Clinical Hints	- Diarrhea, abdominal distention and restlessness (in children) - Eosinophilia present in some cases - Proglottids may migrate out of the anus
Synonyms	Cucumber tapeworm, Dipylidium caninum, Dog tapeworm, Double-pored dog tapeworm. ICD9: 123.8 ICD10: B71.1

Dipylidiasis in Israel

Dipylidium caninum is found among dogs in Israel. [3]

Prevalence surveys

Years	Region	Study Group	%	Notes
1995 - 1996	Northern Region	dogs	17.3	17.3% of dogs in Jewish villages of Northern Israel [4]
2019	West Bank	dogs	23	[5]

References

1. Acta Trop 1980 Sep ;37(3):293-6.
2. Pediatr Infect Dis J 2018 Nov 07;
3. Can Vet J 2007 Jun ;48(6):619-22.
4. J Helminthol 1998 Jun ;72(2):127-31.
5. Iran J Parasitol 2021 Jul-Sep;16(3):435-442.

Dirofilariasis

Agent	PARASITE - Nematoda. Secernentea: *Dirofilaria* (*Nochtiella*) *immitis* (pulmonary); *D. tenuis* & *D. repens* (subcutaneous infection) & *D. ursi*
Reservoir	Mammal, Dog, Wild carnivore (*D. tenuis* in raccoons; *D. ursi* in bears), Zoonotic
Vector	Mosquito
Vehicle	None
Incubation Period	60d - 90d
Diagnostic Tests	Identification of parasite in tissue. Serology. Nucleic acid amplification. Dirofilaria immitis adult: female - 23 to 31 cm; male - 12 to 23 cm Dirofilaria repens adult: female - 25 to 30 cm; male - 5 to 7 cm
Typical Adult Therapy	Not available; excision is often diagnostic and curative
Typical Pediatric Therapy	As for adult
Clinical Hints	- Most patients are asymptomatic - Cough and chest pain in some cases - Solitary pulmonary coin lesion seen on imaging - Multiple tender subcutaneous nodules may be present - Eosinophilia is usually absent
Synonyms	Breinlia, Candidatus Dirofilaria hongkongensis, Dirofilaria sp. genotype Hongkong, Dirofilariosis, Dirofiliaria, Dog heartworm, Filaria conjunctivae, Loaina. ICD9: 125.6 ICD10: B74.8

Dirofilariasis in Israel

- The first case of dirofilariasis in Israel (*Dirofilaria repens* infection of a dog) was reported in 1934.

- Sixty-five years later, a second case was reported. [1]
- Seven cases of human infection were reported to 1997 - most in northern Israel: 4 ocular, 1 lymphatic and 2 cutaneous. [2] [3] [4] [5]
- Additional reports of *Dirofilaria repens* infection were published in 1999 (one case) [6] , 2001 (two cases) [7] [8] and 2006 (one case). [9]

26 cases of canine infection were reported by veterinary clinics during 1998 to 2009 - most from the Galilee.

References

1. Am J Trop Med Hyg 1999 Oct ;61(4):639-41.
2. Harefuah 2001 Dec ;140(12):1125-6, 1232.
3. Am J Surg Pathol 1995 Sep ;19(9):1088-91.
4. Hum Pathol 1981 Oct ;12(10):939-40.
5. Isr J Med Sci 1976 Mar ;12(3):208-14.
6. BJU Int 1999 Oct ;84(6):746-7.
7. Isr Med Assoc J 2001 Nov ;3(11):860-1.
8. Harefuah 2001 Dec ;140(12):1125-6, 1232.
9. Isr Med Assoc J 2006 Feb ;8(2):139.

Dracunculiasis

Agent	PARASITE - Nematoda. Secernentea, Camallanida: *Dracunculus medinensis*
Reservoir	Human, Dog, Zoonotic
Vector	None
Vehicle	Copepod (*Mesocyclops* and *Thermocyclops*) in drinking water
Incubation Period	12m - 18m
Diagnostic Tests	Identification of adult worm in situ; or identification of discharged larvae from wound. Dracunculus medinensis adult: female - 70 to 170 cm
Typical Adult Therapy	Worm removal Metronidazole 500 mg PO TID X 10d. OR Thiabendazole 50 mg/kg PO X 2d (drugs have been used to facilitate worm removal)[1]
Typical Pediatric Therapy	Worm removal Metronidazole 8 mg/kg PO TID X 10d. OR Thiabendazole 50 mg/kg X 2d (drugs have been used to facilitate worm removal)
Clinical Hints	- Nausea and urticaria followed by appearance of papule or bulla (usually lower leg) which ruptures - Calcified worm may be visible on x-ray - Occasional eosinophilia - Adult worm may survive for 18 months in humans
Synonyms	Dracunculose, Dracunculus medinensis, Drancontiasis, Filaria medinensis, Guinea worm, Medina worm. ICD9: 125.7 ICD10: B72

Although Dracunculiasis is not endemic to Israel, imported, expatriate or other presentations of the disease have been associated with this country.

Dracunculiasis in Israel

Autochthonous disease does not occur.

Cross-border events

Years	Acquired by**	Originated in**	Setting	Notes
1948 to 1950	Israel	Yemen	immigrant / expatriate	Multiple cases identified. [2] [3]

** Country or Nationality

References

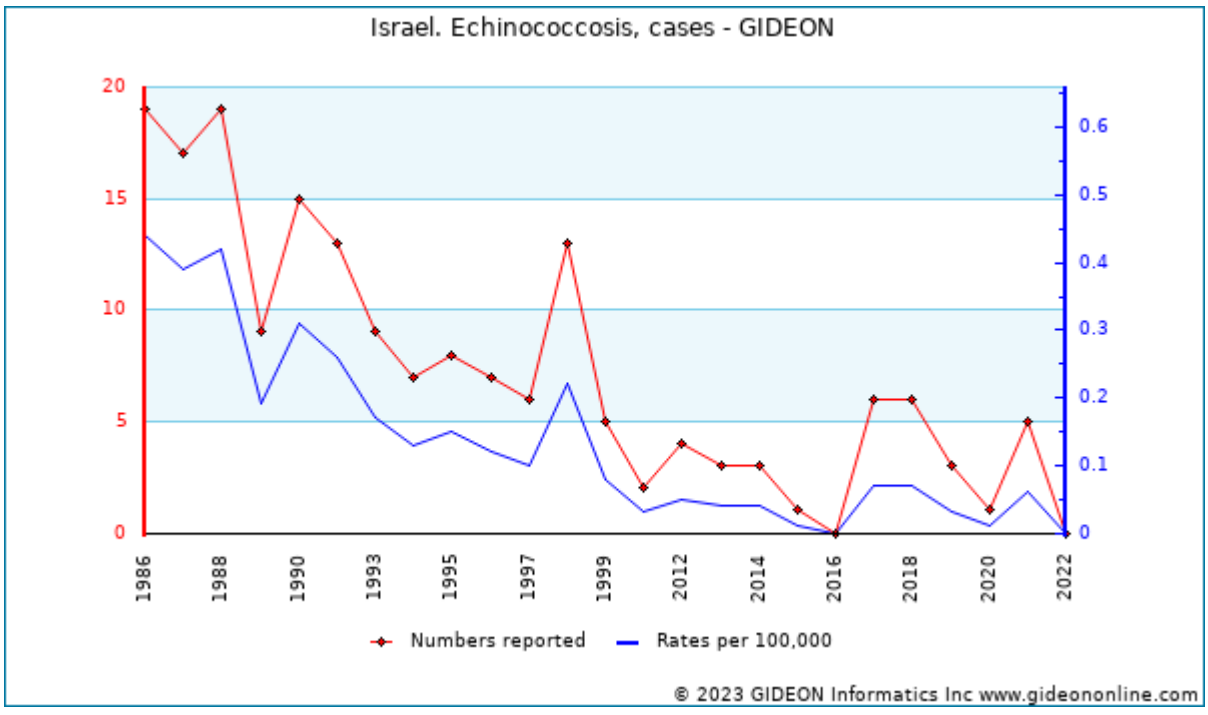
1. Ann Trop Med Parasitol 1983 Apr ;77(2):151-7.
2. Dermatologica 1954 Feb ;108(2):129-36.
3. Harefuah 1950 Oct 15;39(7-8):77-80.

Echinococcosis - unilocular

Agent	PARASITE - Platyhelminthes, Cestoda. Cyclophyllidea, Taeniidae: *Echinococcus granulosus*, *Echinococcus canadensis*
Reservoir	Dog, Wolf, Dingo, Sheep, Horse, Pig, Zoonotic
Vector	None
Vehicle	Soil, Dog feces, Fly
Incubation Period	1y - 20y
Diagnostic Tests	Serology. Identification of parasite in surgical specimens.
Typical Adult Therapy	Albendazole 400 mg BID X 1-3 months Praziquantel has been used preoperatively to sterilize cyst. Follow by surgery as indicated. PAIR (puncture-aspiration-injection-reaspiration) is also used[1]
Typical Pediatric Therapy	Albendazole 10 mg/kg/day X 1-3 months Praziquantel has been used preoperatively to sterilize cyst. Follow by surgery as indicated. PAIR (puncture-aspiration-injection-reaspiration) also used
Clinical Hints	- Calcified hepatic cyst or mass lesions in lungs and other organs - Brain and lung involvement are common in pediatric cases
Synonyms	Echinococcus canadensis, Echinococcus granulosus, Echinococcus intermedius, Echinococcus ortleppi, Hydatid cyst, Unilocular echinococcosis. ICD9: 122.0,122.1,122.2,122.3,122.4 ICD10: B67.0,B67.1,B67.2,B67.3,B67.4

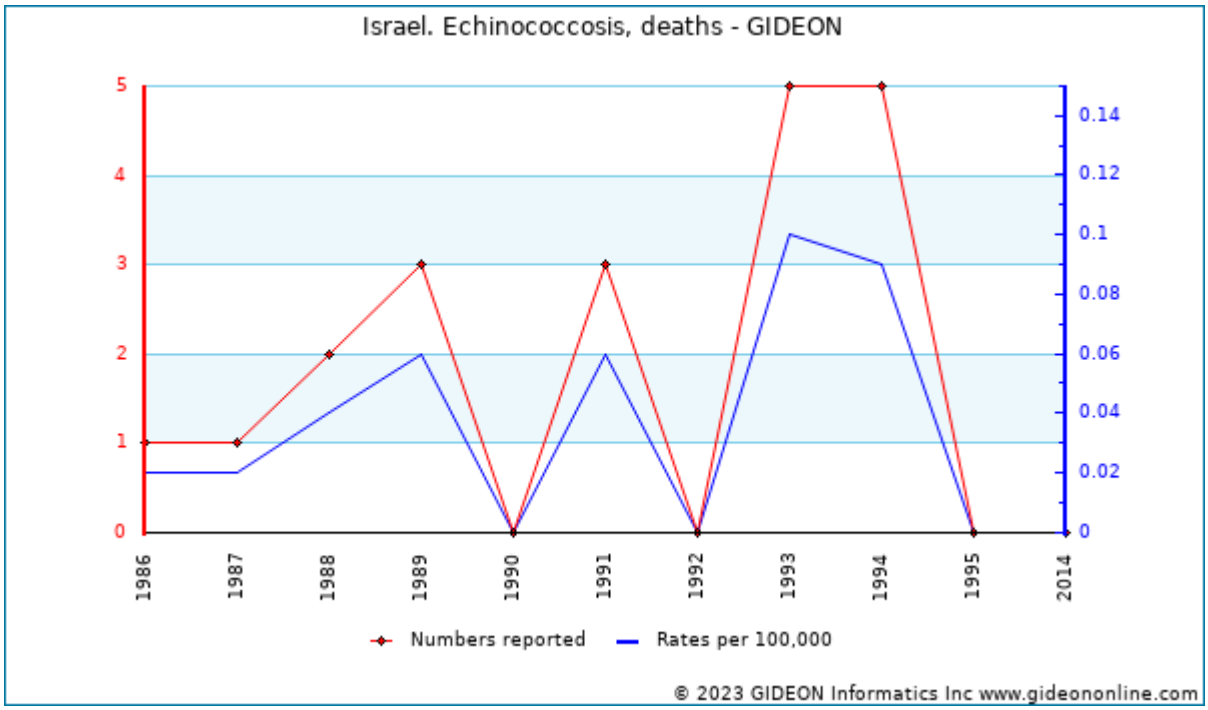
Echinococcosis - unilocular in Israel

Echinococcosis is common in the rural Galilee and Gaza, particularly among Arab and Druze [2] residents.



Graph: Israel. Echinococcosis, cases

Notes:
1. Annual rates of 0.68 to 0.75 per 100,000 were reported among Bedouin in the Negev region during 1970 to 1979.
2. Annual rates of 2.7 / 0.4 per 100,000 were reported among Bedouin / Jewish populations in southern Israel during 2005 to 2012. [3]
3. Annual rates of 53 per 100,000 were recorded in Yirka (a Druze community) during 1960 to 1989 - 224 surgically-confirmed cases. [4]



Graph: Israel. Echinococcosis, deaths

- 1994 to 2007 - Surgery was performed in 29 cases of hepatic hydatid cyst at a hospital in Petah Tikva. [5]

Prevalence surveys

Years	Region	Study Group	%	Notes
2023*	Gaza	cattle	46.6	Hydatid cyst was detected in 46.6% of 30 bovine/cattle harboring cysts. [6]
2023*	Tamra	dogs	10.7	
2019	West Bank	dogs	14	[7]
2023*	Gaza	dogs	15.7	*Echinococcus granulosus* DNA was detected in 15.7% of 38 fecal samples from dogs. [8]
1990		sheep	0.258	
1995	Yarqa	sheep	7.65	
1995		sheep	0.399	
2023*	Gaza	sheep	0	*Echinococcus granulosus* DNA was not detected in any of 4 sheep. [9]
1995 - 1996	Northern Region	sheep and goats	5.3-5.9	5.9% of sheep and 5.3% of goats in Northern Israel [10]
2023*	Gaza	camels	0	*Echinococcus granulosus* DNA was not detected in the tested camel. [11]
1989	Yarqa	various	8-10	10% of sheep and 8% of dogs in Yarqa
1998 - 2005		various	0	0% of foxes and other wild animals

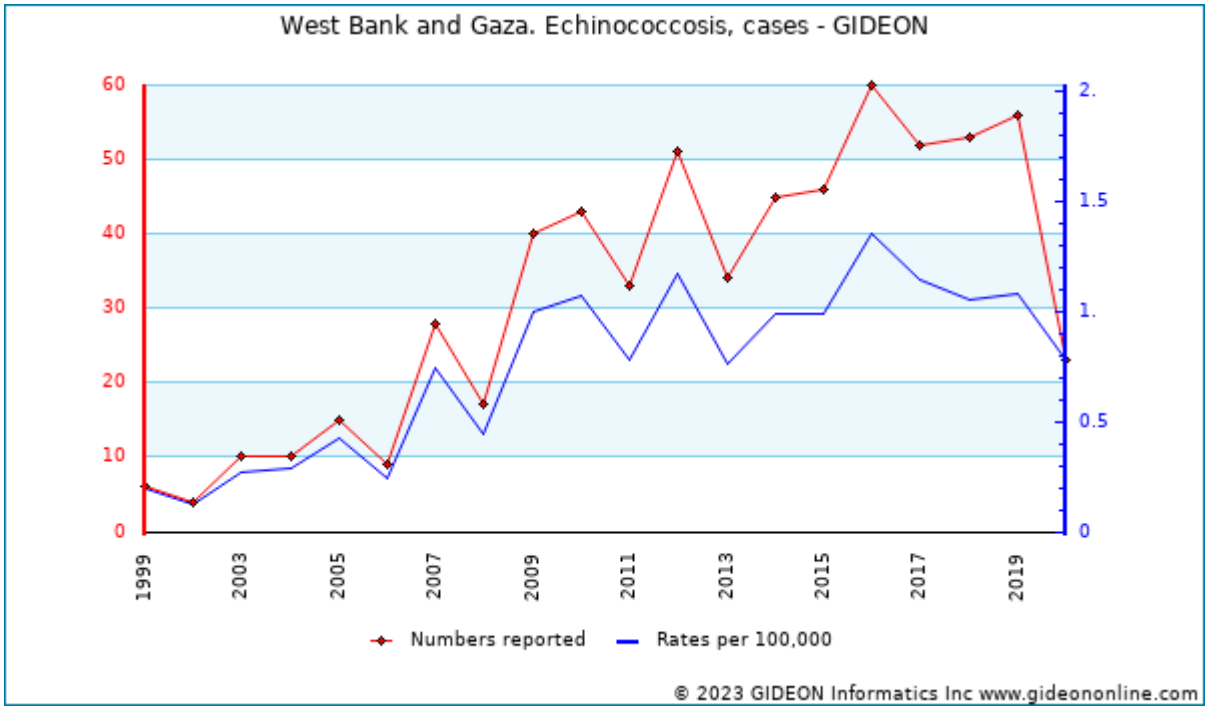
***** indicates publication year (not necessarily year of survey)

Seroprevalence surveys

Years	Region	Study Group	%	Notes
2023*	Gaza	farmers	13	Hydatid cyst was detected in 13% of 23 sera samples from farmers. The testing was done by ELISA. [12]
1991 - 1992	Yarqa	dogs	14.2	
2015*	Multiple locations	dogs	18	18% of domestic dogs in Hebron, Tubas and Jenin [13]
1997*	Tamra	adults	0.48	0.48% of adults in Tamra [14]
2002*	Southern Region	general population	0.5-0.68	0.68% of Bedouin and 0.5% of Jews in southern Israel [15]

* indicates publication year (not necessarily year of survey)

West Bank and Gaza:



Graph: West Bank and Gaza. Echinococcosis, cases

- 1990 to 1997 - 390 surgically-confirmed cases were reported in the West Bank.
- 2010 to 2015 - 353 surgically confirmed cases were reported in the West Bank and Gaza - 2.1 per 100,000 in the West Bank. [16]

Disease rates

The overall annual rate per 100,000 was 3.1 for the entire West Bank, 4.9 Hebron, 5.0 Jericho, 5.1 Bethlehem.

- 1990 to 1997 - Rates in Kfar Yata (West Bank) are 16.8/100,000 per year - 2.1% to 2.4% of children in the town are seropositive.
- 2015 (publication year) - The rate of echinococcosis among surgical patients was 1.2 per 100,000 in the West Bank, and 1.0 per 100,000 in the Gaza Strip. [17]

References

1. Infect Dis Clin North Am 2012 Jun ;26(2):421-35.
2. Harefuah 1993 May 02;124(9):529-34, 600.
3. Acta Parasitol 2016 Jan ;61(1):178-86.
4. Trans R Soc Trop Med Hyg 1991 Jan-Feb;85(1):98-100.
5. ISRN Surg 2013 ;2013:276807.
6. Parasite Epidemiol Control 2023 May ;21:e00298.
7. Iran J Parasitol 2021 Jul-Sep;16(3):435-442.
8. Parasite Epidemiol Control 2023 May ;21:e00298.
9. Parasite Epidemiol Control 2023 May ;21:e00298.
10. J Helminthol 1998 Jun ;72(2):127-31.
11. Parasite Epidemiol Control 2023 May ;21:e00298.
12. Parasite Epidemiol Control 2023 May ;21:e00298.

13. PLoS Negl Trop Dis 2015 ;9(7):e0003934.
14. Trans R Soc Trop Med Hyg 1997 Sep-Oct;91(5):529-32.
15. Acta Trop 2002 Jun ;82(3):369-75.
16. PLoS Negl Trop Dis 2017 Jul ;11(7):e0005717.
17. PLoS Negl Trop Dis 2015 ;9(7):e0003934.

Ehrlichiosis - human monocytic

Agent	BACTERIUM. Anaplasmataceae *Ehrlichia chaffeensis* *Ehrlichia canis* *Neoehrlichia mikurensis*, et al. Intracellular *Rickettsia*-like bacteria
Reservoir	Dog, Tick, Deer, Coyote, Zoonotic
Vector	Tick (*Dermacentor variabilis* or *Amblyomma americanum*)
Vehicle	None
Incubation Period	7d - 21d
Diagnostic Tests	Intramonocytic inclusions seen in blood smear. Serology. Nucleic acid amplification. Cell culture (HL60 cells).
Typical Adult Therapy	Doxycycline 100 mg PO BID X 7 to 14 days OR Rifampin 300 mg BID[1]
Typical Pediatric Therapy	Above age 8 years: Doxycycline 2 mg/kg PO BID X 7 to 14 days. OR Rifampin 10 mg/kg/day (maximum 300 mg) PO
Clinical Hints	- Headache, myalgia and vomiting 1 to 2 weeks following tick bite - Arthralgia or macular rash may be present - Leukopenia, thrombocytopenia or hepatic dysfunction are common - Inclusions may be visible in monocytes
Synonyms	Candidatus Neoehrlichia mikurensis, Cowdria ruminantium, Ehrlichia canis, Ehrlichia chaffeensis, Ehrlichia muris, Ehrlichia runinantium, Ehrlichia sp. Panola Mountain, Human monocytic ehrlichiosis, Human monocytotropic ehrlichiosis, Neoehrlichia mikurensis, Panola Mountain Ehrlichia. ICD9: 082.41 ICD10: B28.8

Ehrlichiosis - human monocytic in Israel

Five cases (none fatal) were confirmed in a survey of 1,000 patients with fever of unknown origin. [2] [3]

Sporadic cases of clinical ehrlichiosis are documented. [4] [5]

Seroprevalence surveys

Years	Region	Study Group	%	Notes
1996*	Multiple locations	dogs	23.9-37.5	23.9% of pet dogs and 37.5% of stray dogs (*Ehrlichia canis* [6]
1998*		dogs	63	63% of dogs with suspected tick-borne infection (*Ehrlichia canis*) [7]
1993 - 1998	Haifa	patients	5.5	5.5% of patients treated for vasculitis
2004*		foxes	36	36% of red foxes (*Vulpes vulpes*) (*Ehrlichia canis*) [8]
2006*		various	0-30	30% of domestic dogs and 0% of horses (*Ehrlichia canis*) [9]
1999*		jackals	26.4-35.8	26.4% of jackals (*Canis aureus syriacus* were found to be seropositive toward *Ehrlichia chaffeensis* and 35.8% toward *Ehrlichia canis* [10]
2001*	Multiple locations	jackals	54.3	54.3% of adult free-ranging golden jackals (*Canis aureus*) (*Ehrlichia canis*) [11]

* indicates publication year (not necessarily year of survey)

Ehrlichia canis has been identified in dogs [12] and ticks (*Rhipicephalus turanicus*). [13]

References

1. MMWR Recomm Rep 2016 May 13;65(2):1-44.
2. Emerg Infect Dis 2000 May-Jun;6(3):314-5.
3. Emerg Infect Dis 1999 Nov-Dec;5(6):775-8.
4. Harefuah 1999 May 02;136(9):667-8, 756.
5. Acta Paediatr 2019 May 29;
6. Vet Rec 1996 Mar 16;138(11):257-9.
7. Vet Parasitol 1998 Jan 31;74(2-4):133-42.
8. Vet Parasitol 2004 Jan 05;119(1):21-6.
9. J Vet Med B Infect Dis Vet Public Health 2006 Mar ;53(2):78-80.
10. Vet Parasitol 1999 Mar 31;82(2):121-8.
11. Vet J 2001 Jul ;162(1):66-72.
12. Vet J 2008 Feb ;175(2):212-7.
13. Clin Microbiol Infect 2011 Mar ;17(3):459-63.

Endemic syphilis (bejel)

Agent	BACTERIUM. *Treponema pallidum* subsp. *endemicum* A microaerophilic gram-negative spirochete
Reservoir	Human
Vector	None
Vehicle	Contact Sexual contact
Incubation Period	14d - 90d
Diagnostic Tests	VDRL & FTA (or MHTP) are positive, as in venereal syphilis.
Typical Adult Therapy	Benzathine Penicillin G 2.4 million units OR Azithromycin 2 g given once[1]
Typical Pediatric Therapy	Benzathine Penicillin G IM: <14 kg - 300,000u X one dose 14 to 18kg - 600,000u X one dose >18kg - 1.2 million units X one dose OR Azithromycin 30 mg/kg given once
Clinical Hints	- Oral mucous patches, intertriginous papillomata and generalized lymphadenopathy - Occasional instances of condyloma lata are encountered - Late gummata and periostitis (often of the tibia or fibula) may develop
Synonyms	Bejel, Belesh, Dichuchwa, Endemic syphilis, Firjal, Frenga, Mal de Breno, Morbus Skerljebo, Njovera, Siti, Skerljevo. ICD9: 104.0 ICD10: A65

Although Endemic syphilis (bejel) is not endemic to Israel, imported, expatriate or other presentations of the disease have been associated with this country.

Endemic syphilis (bejel) in Israel

Although identified among Iraqi immigrants and once found in the Hebron-Beit Jibrin district and Nahalin, the disease is no longer endemic.

- 1976 (publication year) - Evidence of endemic syphilis was identified in skeletal remains of Bedouin in the Negev Desert. [2]

References

1. Lancet 2012 Jan 28;379(9813):342-7.

2. Am J Phys Anthropol 1976 Nov ;45(3 pt. 2):621-39.

Endocarditis - infectious

Agent	BACTERIUM OR FUNGUS. viridans streptococci, *Staphylococcus aureus*, enterococci, *Candida albicans*, et al.
Reservoir	Human
Vector	None
Vehicle	Endogenous
Incubation Period	Variable
Diagnostic Tests	Blood culture, clinical findings, ultrasonography of heart valves.
Typical Adult Therapy	Bactericidal antibiotic appropriate to species[1] [2] [3] [4]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Consider in any patient with prolonged and unexplained fever, - Multisystem disease and a preexisting cardiac valvular lesion may be present - Skin lesions, hematuria, neurological symptoms, single or multiple abscesses or bone, brain, lung (etc).
Synonyms	Bacterial endocarditis, Endocardite, Endocarditis, Endokarditis, Fungal endocarditis, Infectious endocarditis, S.B.E.. ICD9: 421 ICD10: I33

Endocarditis - infectious in Israel

- 2018 (publication year) - A country-by-country review of studies of endocarditis in the Mediterranean basin - [5]

References

1. Infect Dis Clin North Am 2009 Sep ;23(3):643-64.
2. J Antimicrob Chemother 1987 Sep ;20 Suppl A:143-5.
3. Curr Cardiol Rep 2018 Aug 16;20(10):86.
4. J Am Coll Cardiol 2022 Mar 01;79(8):772-785.
5. New Microbes New Infect 2018 Nov ;26:S43-S51.

Enterobiasis

Agent	PARASITE - Nematoda. Secernentea: *Enterobius vermicularis*
Reservoir	Human
Vector	None
Vehicle	Fecal-oral, Air, Clothing, Sexual contact
Incubation Period	14d - 42d
Diagnostic Tests	Apply scotch tape to anal verge in a.m. & paste onto glass slide for microscopy. Enterobius vermicularis adult: female - 8 to 13 mm; male - 1 to 4 mm
Typical Adult Therapy	Albendazole 400 mg PO as single dose - repeat in 2w. OR Mebendazole 100 mg PO as single dose - repeat in 2w. OR Pyrantel pamoate 11 mg/kg (max 1g) PO as single dose; or[1]
Typical Pediatric Therapy	Mebendazole 100 mg PO as single dose (>age 2) - repeat in 2w. OR Pyrantel pamoate 11 mg/kg (max 1g) PO X 1
Clinical Hints	- Nocturnal anal pruritus - Occasionally presents with vaginitis or abdominal pain - Eosinophilia is rarely, if ever, encountered
Synonyms	Enterobio, Enterobius vermicularis, Oxyuriasis, Oxyuris, Pinwom, Seatworm. ICD9: 127.4 ICD10: B80

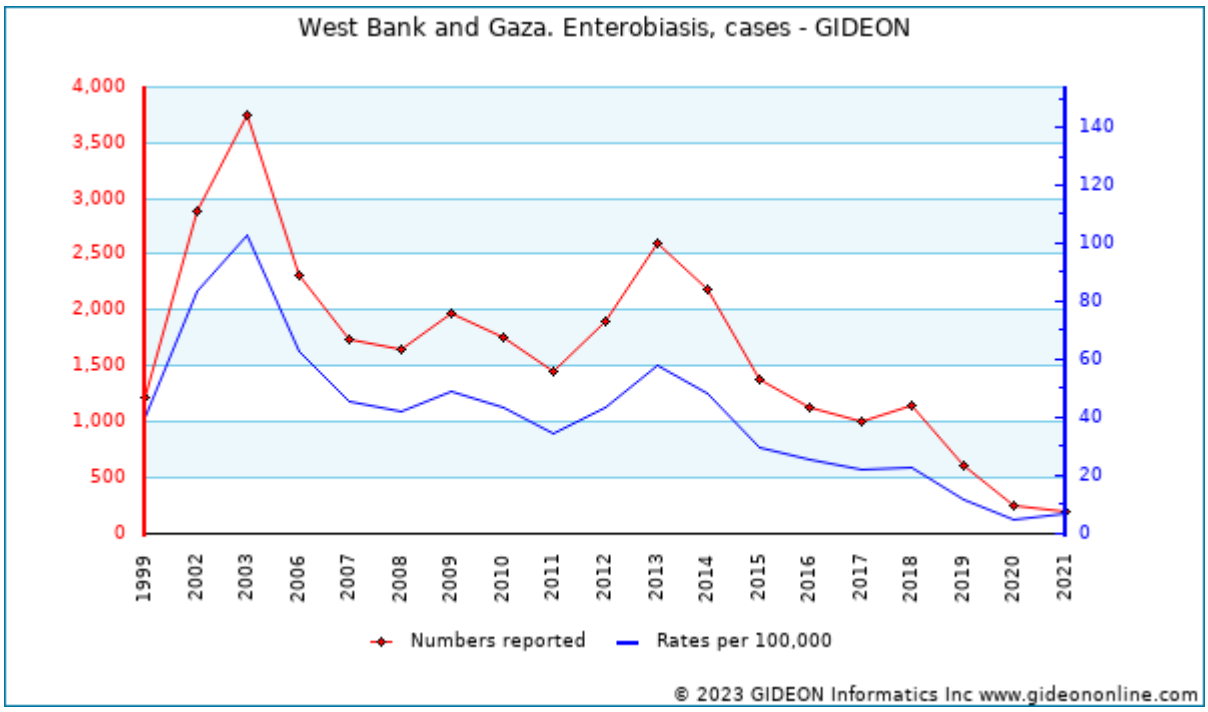
Enterobiasis in Israel

- Ova of *Enterobius vermicularis* were identified in a cesspit in Jerusalem dating from the mid 7th century BCE. [2]

Prevalence surveys

Years	Region	Study Group	%	Notes
2010*	West Bank	children	1.6	1.6% of school children in the northern West Bank [3]
2015	West Bank	children	22.1	Survey of pre-school children. [4]
2015		general population	24.5	24.5% of Israelis during the 1980's
2015 - 2016	West Bank	general population	1	Survey of marginalized rural communities [5]
2016*	Gaza	specimens	15	15.0% of appendices removed in the Gaza Strip [6]
2019*	Gaza	students - university	0	Survey of female university students [7]

* indicates publication year (not necessarily year of survey)



Graph: West Bank and Gaza. Enterobiasis, cases

- 2015 - Risk factors for *Enterobius vermicularis* infestation in the West Bank include: preschool children living in villages, living in a household with>= nine family members and not washing hands after using the toilet. [8]

References

1. Expert Opin Pharmacother 2001 Feb ;2(2):267-75.
2. Int J Paleopathol 2021 Nov 12;36:1-6.
3. Trop Med Int Health 2011 Feb ;16(2):240-4.
4. East Mediterr Health J 2021 Dec 01;27(11):1052-1060.
5. BMC Public Health 2019 Dec 11;19(1):1667.
6. J Parasit Dis 2016 Mar ;40(1):176-83.
7. Avicenna J Med 2019 Oct-Dec;9(4):143-147.
8. East Mediterr Health J 2021 Dec 01;27(11):1052-1060.

Enterovirus infection

Agent	VIRUS - RNA. Picornaviridae: Coxsackievirus, ECHO virus, Enterovirus, Parechovirus
Reservoir	Human
Vector	None
Vehicle	Droplet, Fecal-oral, Breastfeeding, Respiratory or pharyngeal acquisition
Incubation Period	2d-7d
Diagnostic Tests	Viral culture (stool, pharynx, CSF). Serology. Nucleic acid amplification.
Typical Adult Therapy	Supportive. Pleconaril 200 to 400 mg PO TID X 7d has been used for severe infections[1] [2]
Typical Pediatric Therapy	Supportive. Pleconaril 8.5 mg/kg PO TID has been used for severe infections
Vaccine	Enterovirus 71 vaccine
Clinical Hints	- Summer-to-autumn sore throat - Specific forms present with conjunctivitis, chest pain, macular or vesicular rash, meningitis, myopericarditis, etc
Synonyms	Acute flaccid myelitis, Boston exanthem [Caxsackie. A 16], Coxsackie, Coxsackievirus, ECHO, Echovirus, Enteroviruses, Hand, foot and mouth disease, Hand-foot-and-mouth disease, Herpangina [Coxsackievirus A], HEV 68, HPeVs, Human Enterovirus 68, Human Parechovirus, Ljungan virus, Myocarditis, enteroviral, Parechovirus, Pericarditis, enteroviral, Tomato fever, Tomato flu. ICD9: 049,079.2,008.67,074.0,074.8,074.3,070.4,078.89 ICD10: A88.0,A87.0,B08.4,B08.5,B08.8,B30.3,B34.1

Enterovirus infection in Israel

Epidemics of Echovirus 9 infection were reported in 1959; 1964; 1968.

2007 to 2009 - Human parechovirus type 3 was identified in CSF samples that were "negative" for Enteroviruses. [3]

2012 to 2013 - Five adults were treated at a hospital in Jerusalem for Hand, Foot and Mouth disease due to Coxsackievirus A6. [4]

2014 - Two cases of Enterovirus D68 infection were confirmed in November. [5]

Prevalence surveys

Years	Region	Study Group	%	Notes
2017	West Bank	children	22	22% of children having aseptic meningitis (Jenin) [6]
2023*	Beer Sheva	infants	45	Rhinovirus/enterovirus was detected in 45% of 211 nasopharyngeal swabs from 99 infants with community acquired alveolar pneumonia. [7]
2011 - 2016	West Bank	patients	0.2	[8]
2021	Multiple locations	various	7-100	7% of pediatric patients with severe respiratory illness and 100% of wastewater samples were positive for EVD68 [9]
1979*		environmental - water	20	Enteroviruses were found in 20% of ground water samples [10]
2016 - 2020	Northern Region	patients - CNS	4.8-62	Survey of CSF specimens collected from patients admitted to hospital in Safed with suspected meningitis or encephalitis. Human parechovirus was detected in 4.8%, and enterovirus in 62% of all test-positive specimens. [11]

Years	Region	Study Group	%	Notes
2021 - 2022	Ramat Gan	patients - CNS	5.3	A retrospective analysis of CSF samples of 1,846 patients who presented with fever, headache, vomiting, and neck stiffness showed that 98 (5.3%) were positive for enterovirus. [12]
2014	Multiple locations	children - respiratory	1	Enterovirus D68 was found in specimens from 1% of children hospitalized with respiratory illness; and in 10% of sewage samples [13]

* indicates publication year (not necessarily year of survey)

Notable outbreaks

Years	Region	Setting	Cases	Deaths	Clinical	Pathogen	Notes
1959*						Echovirus 9	[14]
1964*		kibbutz				Echovirus 9	[15]
1970*		kibbutz				Echovirus 4	[16]
1970*	Jerusalem				meningitis	Echovirus	Outbreak due to Echovirus 4 and Echovirus 9. [17] [18]
1973*		kibbutz				multiple pathogens	Outbreak due to Coxsackievirus B4 and Echovirus 9. [19]
1975	Jerusalem	kibbutz	148			Coxsackie B1	Illness characterized by fever, gastrointestinal and upper respiratory symptoms, pleurodynia and myocarditis. [20]
1986 - 1988	Tel Aviv	nursery	14	2		Coxsackievirus	Outbreak due to coxsackieviruses B 1, 2 and 3
1992	Ramat Gan	neonatal intensive care unit			gastrointestinal infection	Echovirus 22	[21]
1994*	Jerusalem	neonatal unit				Coxsackie B	[22]
1994					conjunctivitis - acute hemorrhagic	Enterovirus 70	[23]
1997	Nationwide				meningitis	Echovirus 4	The first time that Echovirus 4 had been isolated in the area since 1980 [24] [25]
1999	Holon	children's home	16			Echovirus 11	[26]
2000	Central Region		91		meningitis	Echovirus 13	[27]
2001					meningitis	Echovirus 4	[28]
2011	Beer Sheva	neonatal unit					[29]
2021 - 2022	Ramat Gan	hospital	23		aseptic meningitis	Enterovirus	patients - CNS. In March 2022, the prevalence of enteroviral meningitis increased immediately. It occurred in 23 hospitalized patients. Echovirus-6 (E-6) strains accounting for 12 (52%) of these infections. As of May 2022, E-6 derived enteroviral meningitis had declined. [30]

* indicates publication year (not necessarily year of outbreak)

References

1. Antimicrob Agents Chemother 2006 Jul ;50(7):2409-14.
2. J Pediatric Infect Dis Soc 2016 Mar ;5(1):53-62.
3. J Clin Virol 2013 Sep ;58(1):205-10.
4. J Clin Virol 2014 Mar ;59(3):201-3.
5. ProMED <promedmail.org> archive: 20141118.2966267
6. PLoS One 2018 ;13(12):e0202243.
7. Pediatr Infect Dis J 2023 Mar 08;
8. Can J Infect Dis Med Microbiol 2021 ;2021:5643134.
9. Viruses 2022 May 09;14(5)
10. Ground Water 1979 Sep ;17(5):487-491.
11. Diagn Microbiol Infect Dis 2022 Jul 18;104(3):115769.
12. J Clin Virol 2023 Mar 24;162:105425.
13. J Clin Virol 2017 01 ;86:52-55.
14. Harefuah 1959 Sep 01;57:115-8.

15. Harefuah 1964 Oct 15;67:289-91.
16. Isr J Med Sci 1970 Jul-Aug;6(4):535-9.
17. Scand J Infect Dis 1970 ;2(2):87-93.
18. Isr J Med Sci 1971 Nov ;7(11):1240-7.
19. Isr J Med Sci 1973 Jul ;9(7):895-9.
20. J Fam Pract 1977 Aug ;5(2):201-7.
21. Am J Perinatol 1997 Sep ;14(8):469-73.
22. Isr J Med Sci 1994 May-Jun;30(5-6):371-4.
23. J Clin Microbiol 1997 Aug ;35(8):2145-9.
24. J Clin Virol 1999 Jun ;13(1-2):29-36.
25. ProMED <promedmail.org> archive: 19980214.0290
26. Epidemiol Infect 2001 Jun ;126(3):441-4.
27. Epidemiol Infect 2003 Apr ;130(2):257-62.
28. Pediatr Neurol 2003 Oct ;29(4):312-6.
29. Clin Pediatr (Phila) 2013 Jul ;52(7):639-44.
30. J Clin Virol 2023 Mar 24;162:105425.

Epidural abscess

Agent	BACTERIUM. *Staphylococcus aureus*, facultative gram negative bacilli, etc
Reservoir	Human
Vector	None
Vehicle	Endogenous
Incubation Period	Variable
Diagnostic Tests	Imaging (CT scan, MRI). Gram-stain and culture of blood or pus.
Typical Adult Therapy	Intravenous antibiotic(s) appropriate to identified or suspected pathogens. Drainage as indicated[1] [2]
Typical Pediatric Therapy	Intravenous antibiotic(s) appropriate to identified or suspected pathogen. Drainage as indicated
Clinical Hints	- Frontal bone abscess; or spinal cord compression with signs of infection - Often in setting of injecting drug abuse or preexisting staphylococcal infection
Synonyms	ICD9: 324.9 ICD10: G06.1,G06.2

References

1. Continuum (Minneap Minn) 2018 Oct ;24(5, Neuroinfectious Disease):1327-1348.

2. Acta Neurochir (Wien) 2018 Mar ;160(3):487-496.

Erysipelas or cellulitis

Agent	BACTERIUM. Erysipelas: *Streptococcus pyogenes* Cellulitis: *Staphylococcus aureus*, *Streptococcus pyogenes*, occasionally others
Reservoir	Human
Vector	None
Vehicle	Endogenous
Incubation Period	1d - 7d
Diagnostic Tests	Clinical diagnosis is usually sufficient. Aspiration of lesion for smear and culture may be helpful in some cases.
Typical Adult Therapy	Antibiotic directed at likely pathogens (Group A Streptococcus and Staphylococcus aureus)[1] [2] [3] [4]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Erysipelas is well-circumscribed, tender, edematous (peau d'orange), warm and painful - Cellulitis is less painful, flat and without a distinct border
Synonyms	Cellulite, Cellulitis, Celulite, Celulitis, Erisipela, Erysipelas, St. Anthony's fire (erysipelas), St. Francis' fire (erysipelas), Zellulitis. ICD9: 035,681,682 ICD10: A46,L03

References

1. 2018 01 ;
2. Cochrane Database Syst Rev 2017 06 20;6:CD009758.
3. Cochrane Database Syst Rev 2010 Jun 16;(6):CD004299.
4. BMJ Clin Evid 2008 Jan 02;2008

Erysipeloid

Agent	BACTERIUM. *Erysipelothrix rhusiopathiae* A facultative gram-positive bacillus
Reservoir	Mammal, Bird, Fish, Zoonotic
Vector	None
Vehicle	Contact with meat (mammal, poultry or fish)
Incubation Period	1d - 7d
Diagnostic Tests	Culture.
Typical Adult Therapy	Oral therapy for 7 days: Penicillin V, Cephalexin, Ciprofloxacin, Clindamycin. For diffuse cutaneous or systemic infection parenteral therapy: Penicillin, Ceftriaxone, Imipenem, Ciprofloxacin, Levofloxacin, Daptomycin[1] [2] [3]
Typical Pediatric Therapy	Oral therapy for 10 days: Penicillin V, Ampicillin, third-generation cephalosporin or Erythromycin, Clindamycin are generally adequate
Clinical Hints	- Typically follows contact with raw animal or fish products - Annular erythema or "target lesion" on hand - Fever is present in only 10% of cases. - Local pain and swelling, without discharge
Synonyms	Erysipelothrix rhusiopathiae, Rutlauf. ICD9: 027.1 ICD10: A26

Erysipeloid in Israel

1972 (publication year) - Human infection has been acquired from sheep. [4]

1982 - Three individuals in Acre were infected during a single month.

Notable outbreaks

Years	Cases	Source	Notes
1942	15	seafood - fish	Outbreak associated with handling fish.

References

1. Arch Derm Syphilol 1945 Nov-Dec;52:400.
2. Rev Infect Dis 1988 Mar-Apr;10(2):317-25.
3. Clin Microbiol Rev 1989 Oct ;2(4):354-9.
4. Harefuah 1972 May 15;82(10):467.

Erythrasma

Agent	BACTERIUM. *Corynebacterium minutissimum* A facultative gram-positive bacillus
Reservoir	Human
Vector	None
Vehicle	Endogenous
Incubation Period	Unknown
Diagnostic Tests	Coral fluorescence of skin lesion under Wood's lamp. Culture (alert lab regarding diagnosis).
Typical Adult Therapy	For limited disease: Topical Clindamycin 2%, topical Erythromycin and topical Fusidic acid. For extensive disease: Erythromycin 250 mg PO QID X 14d OR Clarithromycin 1 g PO taken once[1]
Typical Pediatric Therapy	For limited disease: Topical Clindamycin 2%, topical Erythromycin and topical Fusidic acid. For extensive disease: Erythromycin 10 mg/kg PO QID X 14d
Clinical Hints	- Common in obese or diabetic males - Pruritic, scaling, slowly-progressive red-brown patch - Usually affects the groin - occasionally in toe webs - Coral fluorescence under Wood's light.
Synonyms	Corynebacterium minutissimum, Eritrasma. ICD9: 039.0 ICD10: L08.1

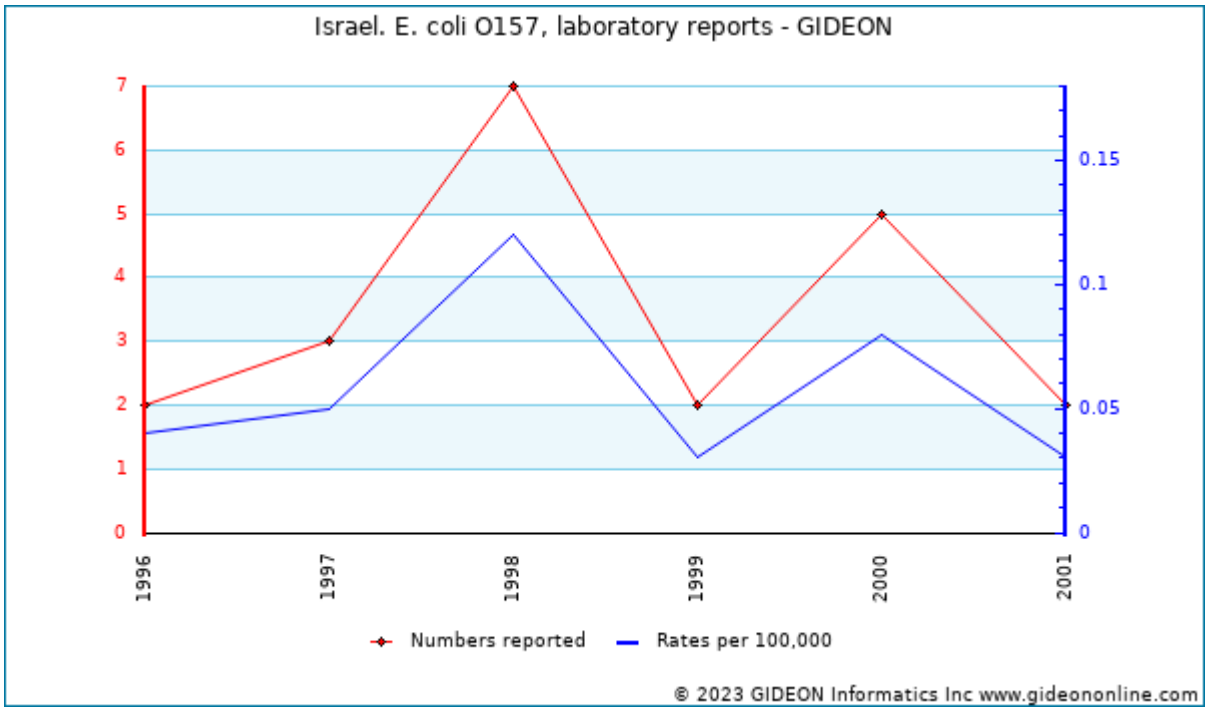
References

1. J Dermatolog Treat 2013 Feb ;24(1):70-4.

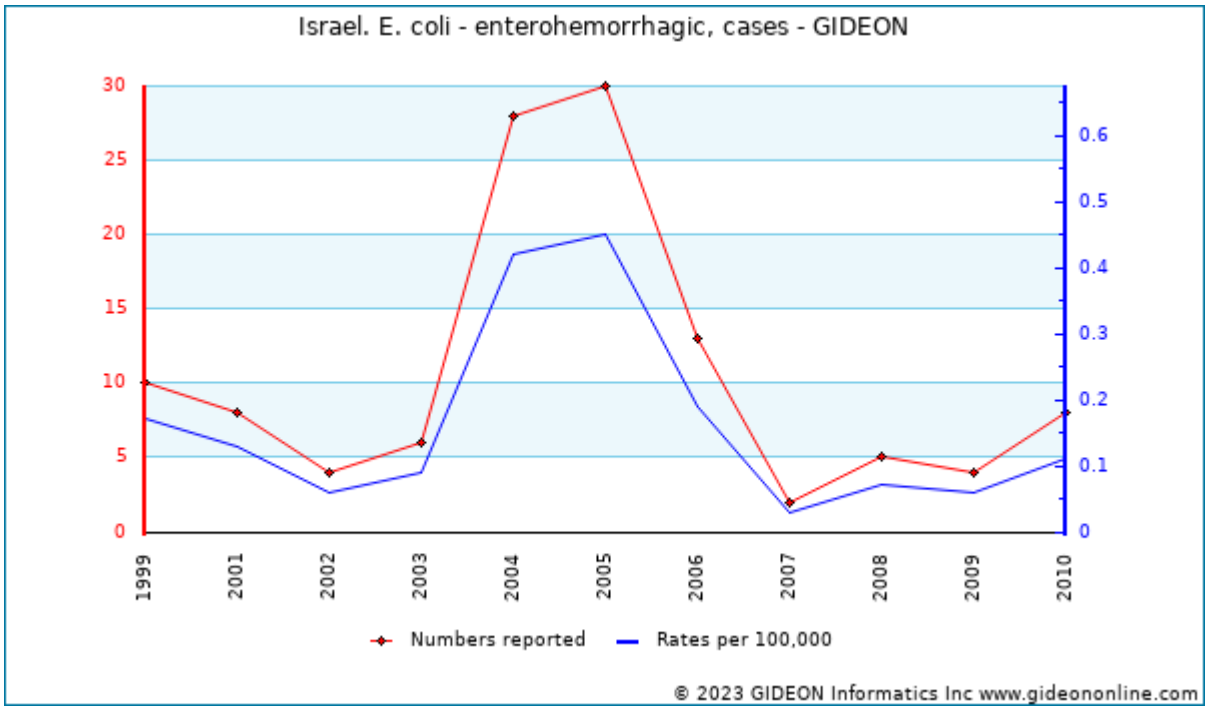
Escherichia coli diarrhea

Agent	BACTERIUM. *Escherichia coli* A facultative gram-negative bacillus
Reservoir	Human, Mammal, Zoonotic
Vector	None
Vehicle	Food, Water, Fecal-oral
Incubation Period	1d - 3d (range 12h - 10d)
Diagnostic Tests	Stool culture. Request characterization of E. coli isolates.
Typical Adult Therapy	Supportive therapy. If EHEC, avoid anti-motility drugs and antimicrobial agents. Plasma exchange may be effective in HUS Note that antimicrobial agents may increase risk for hemolytic-uremic syndrome when used in cases of E. coli O157:H7 infection[1]
Typical Pediatric Therapy	Supportive therapy. If EHEC, avoid anti-motility drugs and antimicrobial agents. Plasma exchange may be effective in HUS Note that antimicrobial agents may increase risk for hemolytic-uremic syndrome when used in cases of E. coli O157:H7 infection
Clinical Hints	- Watery diarrhea or dysentery - Common among travelers and infants - Hemorrhagic colitis and hemolytic uremic syndrome with type O157, and occasionally other strains
Synonyms	DAEC (Diffusely Adherent E. coli), E. coli diarrhea, EAEC (Enteroadherent E. coli), EAggEC (Enteroaggregative E. coli), EHEC (Enterohemorrhagic E. coli), EIEC (Enteroinvasive E. coli), EPEC (Enteropathogenic E. coli), Escherichia albertii, ETEC (Enterotoxic E. coli), Hamolytisch-uramisches Syndrom, Hemolytic Uremic Syndrome, HUS. ICD9: 008.0 ICD10: A04.0,A04.1,A04.2,A04.3,A04.4

Escherichia coli diarrhea in Israel

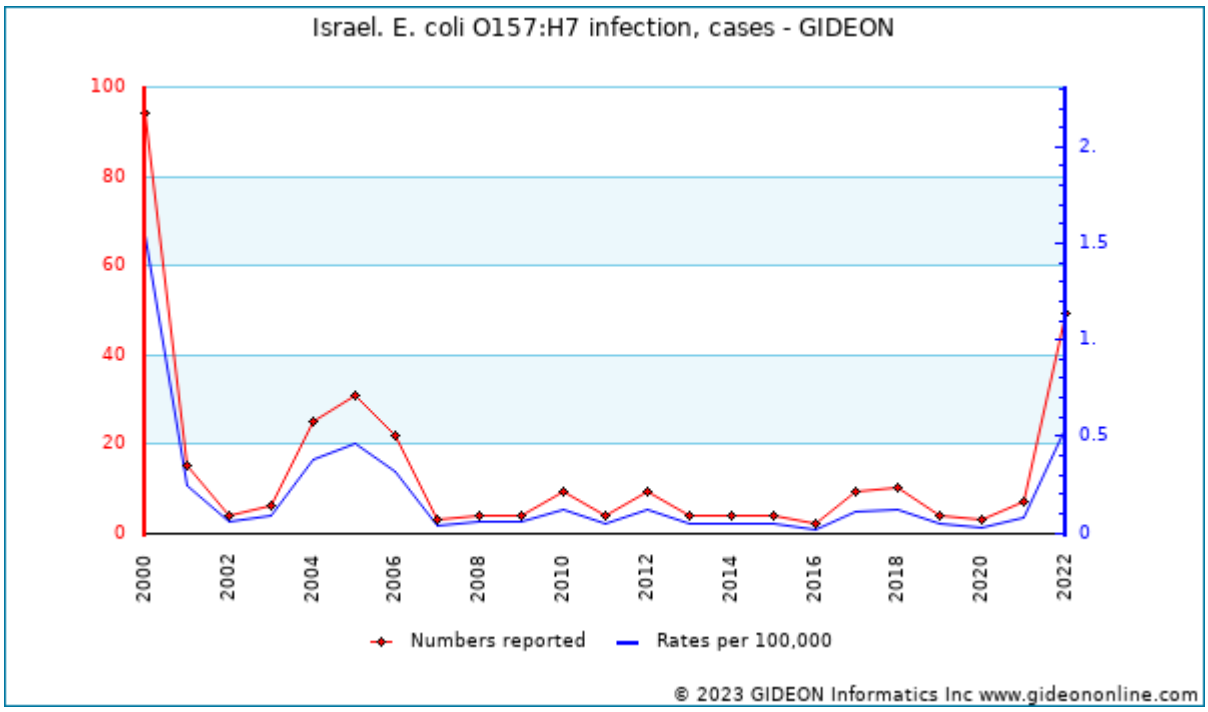


Graph: Israel. E. coli O157, laboratory reports

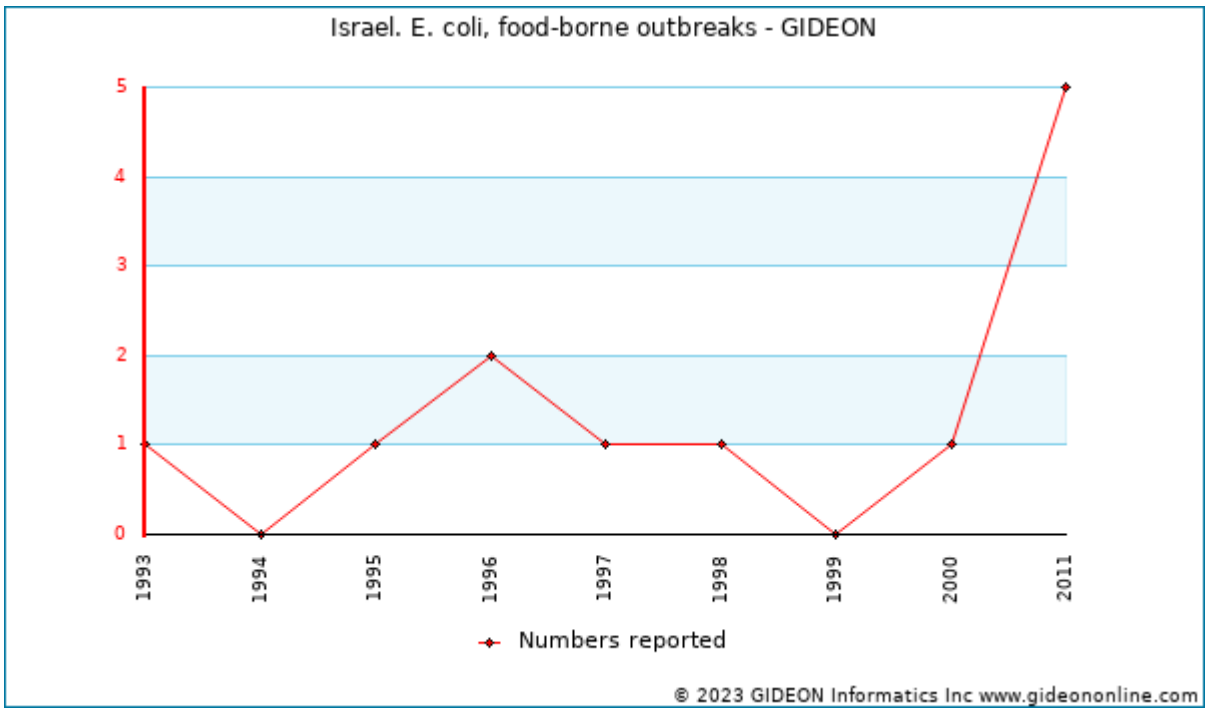


Graph: Israel. E. coli - enterohemorrhagic, cases

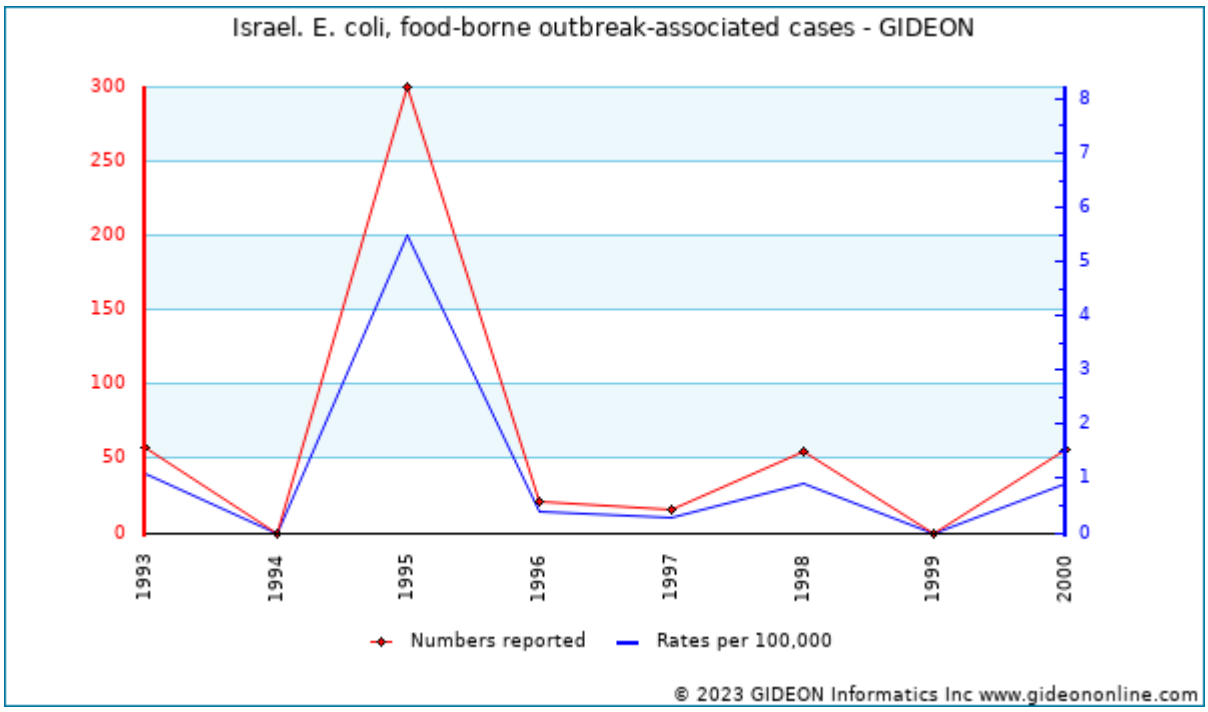
Notes:
1. Data reported to European CDC



Graph: Israel. E. coli O157:H7 infection, cases



Graph: Israel. E. coli, food-borne outbreaks



Graph: Israel. E. coli, food-borne outbreak-associated cases

Prevalence surveys

Years	Region	Study Group	%	Notes
2018 - 2019	Gaza	environmental - water	6.9	*E. coli* 0157:H7 was detected in 6.9% of water samples (water wells, small-scale water desalination plants, tanker trucks, desalinated water at households, municipal water at households, private wells, and private well water at households).
1988 - 1992		children - gastrointestinal	11	11% of diarrhea among children on a communal settlement [2]
2006 - 2007	Gaza	children - gastrointestinal	1.3-8.3	EPEC accounted for 8.3% of childhood diarrhea in Gaza, and EHEC for 1.3% [3]
2007 - 2011		children - gastrointestinal	19	EPEC was found in 19% of children below age 5 years hospitalized for acute gastroenteritis [4]
2007*	Gaza	children - gastrointestinal	4.7	*E. coli* O157:H7 accounted for 4.7% of diarrhea in children less than 5 years of age in Gaza [5]
2008*	Gaza	children - gastrointestinal	5	5% of diarrhea among children below age 5 in Gaza [6]
2015*	Gaza	children - gastrointestinal	3.1	EHEC accounted for 3.1% of diarrhea among kindergarten children below age 5 in Gaza [7]
2016 - 2019	Netanya	children - gastrointestinal	12	Enteropathogenic *Escherichia coli* was detected in 12% of 135 hospitalized children with clinical dysentery. Testing was done on stool cultures. [8]
2018 - 2020	Tel Aviv	children - gastrointestinal	1-20	In the stool samples collected from 118 hospitalized children at the Schneider Children's Medical Center of Israel, *Enteropathogenic Escherichia coli* was detected in 20% of the samples. *Enteroaggregative E. coli* was found in 12% of the samples, and *Enterotoxigenic E. coli* in 1% of the samples. . [9]

***** indicates publication year (not necessarily year of survey)

- 2003 (publication year) - EAEC serotype O126:H27 appears to be an important cause of severe diarrhea in children. [10]

West Bank and Gaza:

- 1999 - *E. coli* O157 was identified in symptomatic patients [11]
- 2004 (publication year) - *E. coli* O157 was identified in raw beef samples from the area of Nablus. [12]

Talking Points

- 1990 to 1999 - *Escherichia coli* accounted for 4% of food poisoning cases in Israel.

Notable outbreaks

Years	Region	Setting	Cases	Source	Pathogen	Population	Notes
1990*		military base			EIEC		[13]
1990		day-care center	4		*E. coli* O157		Outbreak due to *E. coli* O157 (nonmotile). This was the country's first outbreak of *E. coli* O157 infection. [14]
1998	Golan Heights			water	ETEC	military personnel	[15]
2000		agricultural settlement	4		*E. coli* O26:H11		
2016	Southern Region	petting zoo	8	animal contact		infants	Outbreak among infants on a kibbutz was associated with a petting zoo [16] [17]
2017*		nursery	13		*E. coli* O26:H11		three HUS cases, one definite case, one probable case, three possible cases and five carriers [18]

***** indicates publication year (not necessarily year of outbreak)

References

1. Expert Rev Anti Infect Ther 2016 ;14(2):193-206.
2. Pediatr Infect Dis J 1994 Feb ;13(2):116-22.
3. Indian J Pediatr 2011 Feb ;78(2):165-70.
4. BMC Infect Dis 2015 Feb 21;15:79.
5. Int J Infect Dis 2007 Nov ;11(6):501-7.
6. Med Princ Pract 2008 ;17(4):296-301.
7. J Biomed Res 2015 Jan ;29(1):61-8.
8. Acta Paediatr 2023 Feb 18;
9. Acta Paediatr 2022 Nov 29;
10. Emerg Infect Dis 2003 Sep ;9(9):1170-3.
11. J Med Microbiol 2002 Apr ;51(4):332-5.
12. Int J Food Microbiol 2004 Dec 01;97(1):81-4.
13. Public Health Rev 1990-1991;18(2):171-7.
14. J Clin Microbiol 1992 Feb ;30(2):520-1.
15. Infection 2000 Sep ;28(5):267-71.
16. ProMED <promedmail.org> archive: 20160502.4196559
17. ProMED <promedmail.org> archive: 20160505.4201599
18. Epidemiol Infect 2017 10 ;145(14):2998-3006.

Fascioliasis

Agent	PARASITE - Platyhelminthes, Trematoda. Echinostomatida, Fasciolidae: *Fasciola hepatica* or *Fasciola gigantica*
Reservoir	Sheep, Cattle, Snail (*Lymnaea*, *Galba*, *Fossaria*), Zoonotic
Vector	None
Vehicle	Food, Aquatic plants, Watercress (*Nasturtium officinale*)
Incubation Period	2w - 3m
Diagnostic Tests	Identification of ova in stool or duodenal aspirates (adult parasite in tissue). Serology. PCR. CT scan. Fasciola hepatica adult: 13 mm X 30 mm
Typical Adult Therapy	Triclabendazole 10 mg/kg PO X 2 doses. OR Nitazoxanide 500 mg PO BID X 7d[1] [2] [3]
Typical Pediatric Therapy	Triclabendazole 10 mg/kg PO X 2 doses. OR Nitazoxanide: Age 1 to 3y 100 mg BID X 7 d Age 4 to 11y 200 mg BID X 7d Multiple regimens may be necessary for cure in some cases
Clinical Hints	- Fever, hepatomegaly, cholangitis, jaundice and eosinophilia - Urticaria occasionally observed during the acute illness - Parasite may survive more than 10 years in the biliary tract
Synonyms	Eurytrema, Fasciola gigantica, Fasciola hepatica, Hepatic distomiasis, Lederegelbefall, Sheep liver fluke. ICD9: 121.3 ICD10: B663

Although Fascioliasis is not endemic to Israel, imported, expatriate or other presentations of the disease have been associated with this country.

Fascioliasis in Israel

- 1969 to 1989 - Two Israeli cases were published.

Prevalence surveys

Years	Region	Study Group	%	Notes
1991*	Multiple locations	immigrants	0.4	0.4% of Ethiopian immigrants to Israel [4]

* indicates publication year (not necessarily year of survey)

References

1. Aliment Pharmacol Ther 2003 Jan ;17(2):265-70.
2. Am J Trop Med Hyg 1995 Jun ;52(6):532-5.
3. J Glob Antimicrob Resist 2021 Apr 13;
4. Isr J Med Sci 1991 May ;27(5):278-83.

Fasciolopsiasis

Agent	PARASITE - Platyhelminthes, Trematoda. Echinostomatida, Fasciolidae: *Fasciolopsis buski*
Reservoir	Pig, Human, Dog, Snail (*Hippeutis*, *Segmentina*), Zoonotic
Vector	None
Vehicle	Food Aquatic plants, Water-chestnut (*Eliocharis tuberosa*), Water-caltrop (*Tropan natans*), Water fern (*Salvinia natans*)
Incubation Period	1m - 3m
Diagnostic Tests	Identification of ova in stool. Adult parasites may be vomited. Fasciolopsis buski adult: length 7.5 cm
Typical Adult Therapy	Praziquantel 25 mg/kg TID X 3 doses.[1] [2] [3]
Typical Pediatric Therapy	Praziquantel 25 mg/kg TID X 3 doses.
Clinical Hints	- Epigastric pain, diarrhea, nausea and eosinophilia - Associated with ingestion of water chestnuts or other fresh water plants - Parasite may survive for one year in the human host
Synonyms	Clinostomum, Distomum crassum, Fasciolopsis buski, Philophthalmis. ICD9: 121.4 ICD10: B66.5

Although Fasciolopsiasis is not endemic to Israel, imported, expatriate or other presentations of the disease have been associated with this country.

Fasciolopsiasis in Israel

1994 (publication year)- *Fasciolopsis buski* infection was identified among Thai workers in Israel. [4]

References

1. Southeast Asian J Trop Med Public Health 1983 Jun ;14(2):216-9.
2. Trans R Soc Trop Med Hyg 1985 ;79(4):513-5.
3. Clin Microbiol Rev 2009 Jul ;22(3):466-83.
4. Harefuah 1994 May 01;126(9):507-9, 563.

Filariasis - Bancroftian

Agent	PARASITE - Nematoda. Secernentea: *Wuchereria bancrofti*
Reservoir	Human
Vector	Mosquito (*Anopheles*, *Aedes*, *Culex*)
Vehicle	None
Incubation Period	5m - 18m (range 1m - 2y)
Diagnostic Tests	Identification of microfilariae in nocturnal blood specimen. Nucleic acid amplification. Serology may be helpful.
Typical Adult Therapy	Diethylcarbamazine : 50 mg day 1 50 mg TID day 2 100 mg TID day 3 Then 2 mg/kg TID X 18 days. OR Ivermectin 200ug/kg PO as single dose. Doxycycline 200 mg daily X 8 w is also effective.[1]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Lymphangitis, lymphadenitis and eosinophilia - Epididymitis, orchitis, hydrocoele or progressive edema are common - Chyluria occasionally encountered - Episodes of fever and lymphangitis may recur over several years
Synonyms	Bancroftian filariasis, Rosetta leg, Wuchereria bancrofti. ICD9: 125.0 ICD10: B74.0

Although Filariasis - Bancroftian is not endemic to Israel, imported, expatriate or other presentations of the disease have been associated with this country.

Filariasis - Bancroftian in Israel

Autochthonous disease does not occur.

The parasite was identified in 13.5% of 1,900 Jews emigrating from Cochin during the 1950's. [2] [3] [4]

References

1. Lancet 2010 Oct 02;376(9747):1175-85.
2. Harefuah 1956 Aug 01;51(3):51-6.
3. Trans R Soc Trop Med Hyg 1961 Jan ;55:52-5.
4. Trans R Soc Trop Med Hyg 1957 Mar ;51(2):125-31.

Fungal infection - invasive

Agent	FUNGUS. Various (major syndromes such as Candidiasis, Blastomycosis, etc are discussed separately in this module)
Reservoir	Human
Vector	None
Vehicle	Endogenous, Respiratory or pharyngeal acquisition
Incubation Period	Variable
Diagnostic Tests	Culture of blood, urine, biopsy material. Serum antigen or antibody assay in some cases.
Typical Adult Therapy	Antifungal agent(s) directed at known or likely pathogen[1] [2] [3]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Fungal etiology should be suspected in any patient with evidence of severe local or multisystem infection - Commonly encountered in the setting of immune suppression
Synonyms	Acremonium, Acrophialophora, Adiaspiromycosis, Allescheriasis, Alternaria, Arthrographis kalrae, Arxiozyma, Athopsis, Aureobasidium, Bipolaris, Blastobotrys proliferans, Chaetomium, Chondrostereum purpureum, Chrysosporium, Cladophialophora, Cladosporium, Curvularia, Cyphellophora, Dactylaria, Debaryomyces, Dreschslera, Emergomyces, Emmonsia, Exophiala, Exserohilum, Fonsecaea, Fungal meningitis, Fungal sepsis, Fusariosis, Fusarium, Geosmithia, Geosmithia argillacea, Geotrichosis, Graphium, Hansenula, Haplomycosis, Hendersonula, Humicola, Hyalophycomycosis, Kazachstania, Kluyveromyces, Lasiodiplodia, Lecythophora, Lomentospora, Magnusiomyces, Malassezia furfur, Monascus, Monosporiosis, Mycocentrospora, Nannizziopsis, Neocosmospora vasinfecta, Neosartorya hiratsukae, Neosartorya udagawae, Neoscytalidium, Ochroconis, Oidiodendron, Paecilomyces, Paraconiothyrium, Parathyridaria, Pestalotiopsis, Phaeoacremonium, Phaeohyphomycosis, Phialemoniopsis, Phialophora, Phoma, Pichia, Pseudallescheria, Pseudallescheriasis, Pseudochaetosphaeronema martinelli, Purpureocillium, Pyrenochaeta, Ramichloridium, Rhinocladiella, Rhytidhysteron, Rigidoporus, Saccharomyces, Saprochaete, Sarcopodium, Sarocladium, Scedosporium, Septicemia - fungal, Taeniolella, Thielavia, Trichoderma, Truncatella, Ulocladium, Veronacea, Verruconis, Wallemia. ICD9: 117.6,117.8,117.9,118 ICD10: B43.1,B43.2,B43.8,B48.2,B48.3,B48.7,B48.8

Fungal infection - invasive in Israel

Notable outbreaks

Years	Cases	Deaths	Clinical	Source	Pathogen	Notes
2002	5	1	endocarditis	injection	multiple pathogens	Outbreak of *Phialemonium* (4 cases, 1 fatal) and *Paecilomyces* (1 case) endocarditis was caused by contaminated syringes used for intracavernous penile injection [4]

References

1. Pharmacol Ther 2018 Oct 19;
2. Curr Opin Infect Dis 2018 Dec ;31(6):490-498.
3. J Mycol Med 2018 Sep ;28(3):574-584.
4. Clin Infect Dis 2005 Mar 15;40(6):781-6.

Gastroenteritis - viral

Agent	VIRUS - RNA or DNA Calicivirus (Norwalk, Hawaii, Sapporo, Snow Mountain, Norovirus); Torovirus; Mastadenovirus; Astrovirus
Reservoir	Human
Vector	None
Vehicle	Food, Water, Shellfish, Vegetables
Incubation Period	Norwalk 1d - 2d; Astrovirus 3d - 4d
Diagnostic Tests	Demonstration of virus (electron microscopy or stool antigen analysis). Serology. Nucleic acid amplification.
Typical Adult Therapy	Stool precautions; supportive
Typical Pediatric Therapy	As for adult
Clinical Hints	- Vomiting (less common with Astrovirus) and abdominal pain - Loose, watery diarrhea lasting 1 to 3 days - Fecal leucocytes not present - Fever in 50% - Headache or myalgia in some cases
Synonyms	Aichi, Astroviridae, Astrovirus, Bufavirus, Calicivirus gastroenteritis, Chiba, Cosavirus, Cutavirus, Cyclovirus, Diarrhea, Gastroenterite virale, Hawaii agent gastroenteritis, Human cosavirus, Klassevirus, Mexico virus, Mini-reovirus, Minireovirus, Norovirus gastroenteritis, Norwalk agent gastroenteritis, Norwalk-like, Parkville virus gastroenteritis, Picobirnavirus, Protoparvovirus, Recovirus, Roskilde disease, Saffold Cardiovirus, Salivirus, Sapovirus, Sapporo, Sapporo-like, Snow Mountain, SRSV gastroenteritis, STL polyomavirus, STLPyV, Toronto virus, Torovirus, Tusavirus, Vinterkraksjuka, Viral gastroenteritis, Winter vomiting disease. ICD9: 008.8,008.69,008.62,008.63,008.64,008.65,008.66,008.67 ICD10: A08.1,A08.2,A08.3,A08.4

Gastroenteritis - viral in Israel

Prevalence surveys

Years	Region	Study Group	%	Notes
2018 - 2020	Tel Aviv	children - gastrointestinal	5-12	In the stool samples collected from 118 hospitalized children at the Schneider Children's Medical Center of Israel, *Astrovirus* was detected in 6% of the samples; *Norovirus* in 12%; and *Sapovirus* in 5%. [1]

Notable outbreaks

Years	Region	Setting	Cases	Pathogen	Notes
1992	Ramat Gan	neonatal intensive care unit		Echovirus 22	[2]
1999		military base	159	Norovirus	[3] [4]
2002	Tel Aviv	nursing care facility	279	Norovirus	Outbreak affected 6 nursing homes [5]
2002 - 2003	Haifa	nursing care facility		Norovirus	Outbreak affected 6 nursing homes [6]

References

1. Acta Paediatr 2022 Nov 29;
2. Am J Perinatol 1997 Sep ;14(8):469-73.
3. Infection 2004 Dec ;32(6):339-43.
4. Eur J Clin Microbiol Infect Dis 2005 Oct ;24(10):697-700.
5. Epidemiol Infect 2005 Feb ;133(1):35-40.
6. Harefuah 2005 Mar ;144(3):187-90, 230.

Gianotti-Crosti syndrome

Agent	UNKNOWN
Reservoir	Unknown
Vector	None
Vehicle	Unknown
Incubation Period	Unknown
Diagnostic Tests	Clinical features and skin biopsy findings.
Typical Adult Therapy	None
Typical Pediatric Therapy	None
Clinical Hints	- History of recent viral illness or vaccination - Generalized skin eruption involving the extremities, face and buttocks - Lymphadenopathy of the axillae and inguinal region - Anicteric hepatitis may occur - Illness resolves in 15 to 42 days - Rare outbreaks have been reported
Synonyms	Acrodermatitis papulosa infantilis, Papular acrodermititis of childhood, Papulovesicular acrolocated syndrome. ICD9: 693.0 ICD10: L27.8

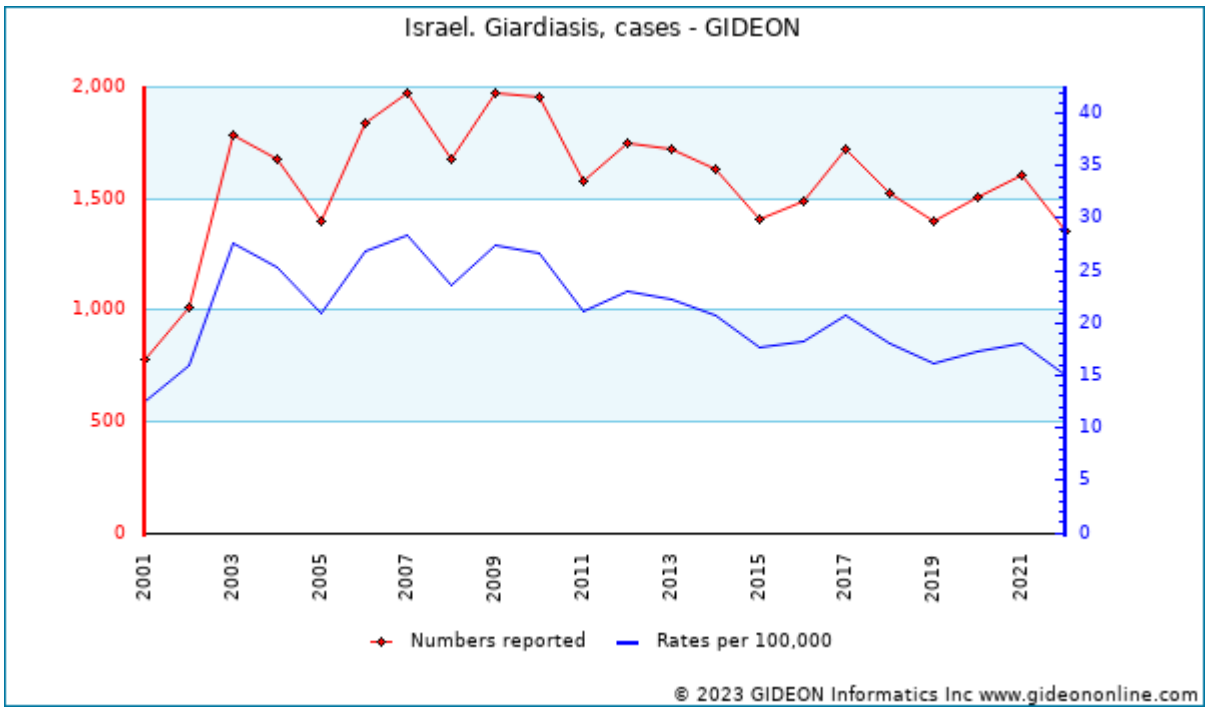
Giardiasis

Agent	PARASITE - Protozoa. Sarcomastigophora, Metamonada, Trepomonadea. Flagellate: *Giardia lamblia* (*G. intestinalis*, *G. duodenalis*)
Reservoir	Human, Beaver, Muskrat, Dog, Cat, Carnivores, Sheep, Goat, Horse, Cattle, Zoonotic
Vector	None
Vehicle	Food, Water, Fecal-oral, Fly
Incubation Period	1w - 3w (range 3d - 6w)
Diagnostic Tests	String test (gelatin capsule containing string). Stool microscopy or antigen assay. Nucleic acid amplification.
Typical Adult Therapy	Tinidazole 2 g PO X1. OR Nitazoxanide 500 mg PO BID X 3d Alternatives: Metronidazole 250 mg PO TID X 5d. OR Furazolidone 100 mg PO QID X 7d. OR Paromomycin 10 mg/kg PO TID X 7d OR Quinacrine 100 mg PO TID X 5d[1] [2] [3] [4]
Typical Pediatric Therapy	Tinidazole 50 mg PO X 1 (maximum 2g). OR Nitazoxanide: Age 1 to 3y 100 mg BID X 7 d Age 4 to 11y 200 mg BID X 7d Alternatives: Metronidazole 5 mg/kg PO TID X 5d. OR Furazolidone 2 mg/kg QID X 7d
Clinical Hints	- Foul smelling, bulky diarrhea - Nausea and flatulence - Upper abdominal pain is common - Illness may "wax and wane" - Weight loss and low-grade fever are common - Severe or intractable infection may suggest underlying IgA deficiency
Synonyms	Beaver fever, Giardia duodenalis, Giardia intestinalis, Giardia lamblia, Lambliasis. ICD9: 007.1 ICD10: A07.1

Giardiasis in Israel

- A study that evaluated sediments from 2 latrines in Jerusalem, one dating from the 7th century BCE and another from the 7th to early 6th century BCE, found that *Giardia* was positive for both latrine sediments when the testing (ELISA) was repeated 3 times. *Entamoeba* and *Cryptosporidium* were negative. [5]

- Evidence for *Giardia duodenalis* infestation has been identified in an Ottoman latrine in Acre dating from the early 1800's. [6]



Graph: Israel. Giardiasis, cases

- Disease rates peak during summer months.
- 52% to 71% of patients are in the age group 1 to 9 years.
- Approximately 25% of Bedouin children will experience one or more symptomatic episodes of giardiasis by age 18 months (southern region, 2009 publication) [7]

- 2002 to 2011 - 275 cases of recurrent giardiasis in children were reported, accounting for 4.03% of pediatric cases. [8]

Prevalence surveys

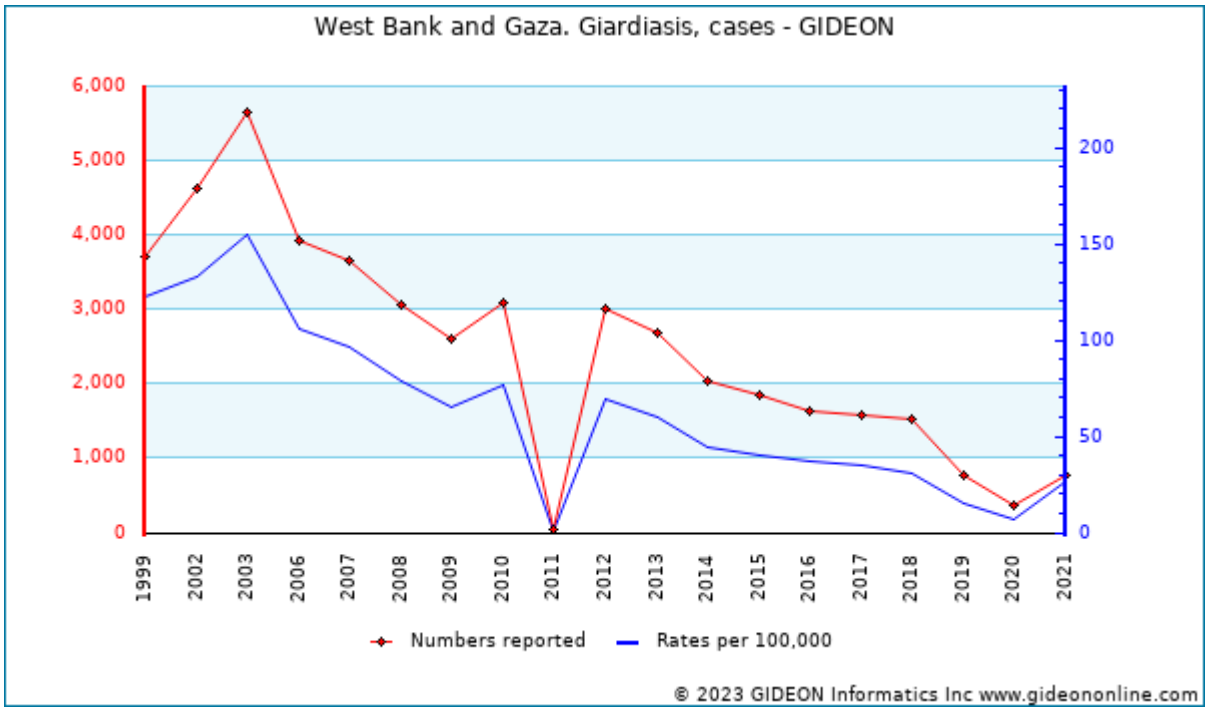
Years	Region	Study Group	%	Notes
1989*		children	37	37% of asymptomatic children ages 3 months3 years [9]
1992*	Multiple locations	children	26	26% of children in the West Bank and Gaza [10]
2004*	Gaza	children	8	8.0% of children in Khan Younis, Gaza [11]
2010*	West Bank	children	4.1	4.1% of school children in the northern West Bank [12]
1983		military personnel	1.1	1.1% of diarrhea episodes among military personnel 1983
1991*	Multiple locations	immigrants	11.3	11.3% of Ethiopian immigrants [13]
2008 - 2010	Rehovot	dogs	11.9	Survey of dogs admitted to a teaching hospital [14]
2016 - 2017	Multiple locations	dogs	24.5	[15]
2019	West Bank	dogs	5	[16]
1986 - 1987		patients	8-9	9% of diarrhea patients and 8% of asymptomatic controls
2010	Gaza	patients	20	20% of patients with diarrhea, Gaza [17]
2014*	Gaza	patients	9.5	9.5% of patients in Gaza [18]
1951*		general population	10	[19]
2015 - 2016	West	general	37	Survey of marginalized rural communities [20]

Years	Region	Study Group	%	Notes
	Bank	population		
1981 - 1986	Nablus	specimens - stool	7.3	7.3% of stool specimens submitted in Nablus [21]
2013*	Gaza	rats	14.6	14.6% of *Rattus rattus* in Khan Younis and Jabalia, Gaza [22]
2019*	Gaza	students - university	4.9	Survey of female university students [23]
2019*		children - gastrointestinal	4	4% of diarrheal pathogens 6.3% among children
1998 - 1992		children - gastrointestinal	10	10% of diarrhea among children on a communal settlement [24]
2008*	Gaza	children - gastrointestinal	1	1% of diarrhea among children below age 5 in Gaza [25]
2015*	Gaza	children - gastrointestinal	26.7	26.7% of kindergarten children suffering from gastroenteritis, in Gaza [26] [27]
2018 - 2020	Tel Aviv	children - gastrointestinal	4	In the stool samples collected from 118 hospitalized children at the Schneider Children's Medical Center of Israel, *Giardia lamblia* was detected in 4% of the samples. [28]

***** indicates publication year (not necessarily year of survey)

- 1994 - One food-borne outbreak (18 cases) was reported.

West Bank and Gaza:



Graph:

West Bank and Gaza. Giardiasis, cases

References

1. Expert Rev Anti Infect Ther 2014 Sep ;12(9):1143-57.
2. 2018 01 ;
3. Clin Microbiol Infect 2018 Jan ;24(1):37-42.
4. J Infect Dis 2021 May 24;
5. Parasitology 2023 May 26;:1-7.
6. Korean J Parasitol 2019 Dec ;57(6):575-580.
7. Ann Trop Paediatr 2009 Dec ;29(4):291-300.
8. J Pediatric Infect Dis Soc 2014 Dec ;3(4):343-6.
9. Pediatr Infect Dis J 1989 Nov ;8(11):773-9.
10. Riv Inferm 1992 Oct-Dec;11(4):247-52.
11. Parasitol Res 2004 Dec ;94(6):449-51.
12. Trop Med Int Health 2011 Feb ;16(2):240-4.
13. Isr J Med Sci 1991 May ;27(5):278-83.
14. Comp Immunol Microbiol Infect Dis 2019 Dec 03;68:101401.

15. Comp Immunol Microbiol Infect Dis 2020 Sep 07;73:101548.
16. Iran J Parasitol 2021 Jul-Sep;16(3):435-442.
17. Trans R Soc Trop Med Hyg 2011 Oct ;105(10):555-60.
18. Ann Parasitol 2014 ;60(4):281-9.
19. J Med Liban 1951 May ;4(3):163-9.
20. BMC Public Health 2019 Dec 11;19(1):1667.
21. Ann Trop Med Parasitol 1989 Feb ;83(1):67-72.
22. J Egypt Soc Parasitol 2013 Apr ;43(1):259-68.
23. Avicenna J Med 2019 Oct-Dec;9(4):143-147.
24. Pediatr Infect Dis J 1994 Feb ;13(2):116-22.
25. Med Princ Pract 2008 ;17(4):296-301.
26. Ann Med Health Sci Res 2015 Jul-Aug;5(4):292-8.
27. J Biomed Res 2015 Jan ;29(1):61-8.
28. Acta Paediatr 2022 Nov 29;

Glanders

Agent	BACTERIUM. *Burkholderia mallei* An aerobic gram negative bacillus
Reservoir	Horse, Mule, Donkey, Zoonotic
Vector	None
Vehicle	Infected secretions, Contact, Respiratory or pharyngeal acquisition
Incubation Period	5d - 14d (range 1d - 21d)
Diagnostic Tests	Culture of blood or exudate. Serology.
Typical Adult Therapy	Imipenem 25 mg/kg IV QID OR Meropenem 25 mg/kg IV TID OR Ceftazidime 50 mg/kg IV QID +/- Sulfamethoxazole / Trimethoprim 8/40 mg/kg IV TID For at least 10d Followed by: Sulfamethoxazole / Trimethoprim 8/40 mg/kg PO TID OR Doxycycline 2.5 mg/kg PO BID OR Amoxicillin-clavulanate 500 mg PO TID For 12-52 weeks[1]
Typical Pediatric Therapy	As for adult (dosage adjusted for weight)
Clinical Hints	- Ulcerating skin nodule with lymphangitis - Fever, myalgia, pneumonia and pleuritis in some cases - Usually follows contact with equines
Synonyms	Burkholderia mallei, Farcy, Mormo, Rotz. ICD9: 024 ICD10: A24.0

Although Glanders is not endemic to Israel, imported, expatriate or other presentations of the disease have been associated with this country.

Glanders in Israel

The last case in horses was reported in 1951.

References

1. Orphanet J Rare Dis 2013 Sep 03;8:131.

Gnathostomiasis

Agent	PARASITE - Nematoda. Secernentea: *Gnathostoma spinigerum* (rarely *G. hispidum*, *G. doloresi* and *G. nipponicum*)
Reservoir	Cat, Dog, Poultry, Frog, Fish, Zoonotic
Vector	None
Vehicle	Food, Fish, Amphibian, Reptile
Incubation Period	3w - 4w (range 2d - 1y)
Diagnostic Tests	Identification of larva in tissue. Serological testing in specialized laboratories.
Typical Adult Therapy	Albendazole 400 mg daily for 21 days has been recommended as an adjunct to surgical excision Ivermectin, 200 mcg/kg PO as a single dose has also been advocated.[1]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Follows ingestion of raw meat, poultry, fish or frog - Migratory nodules of skin, soft tissues, brain or eye - Eosinophilia in most cases - Parasite may survive for more than 10 years in human host
Synonyms	Gnathostoma, Gongylonematiasis, Larva migrans profundus, Nodular migratory eosinophilic panniculitis, Physaloptera, Spiruroid larva migrans, Wandering swelling, Yangtze edema. ICD9: 128.1 ICD10: B83.1

Although Gnathostomiasis is not endemic to Israel, imported, expatriate or other presentations of the disease have been associated with this country.

Gnathostomiasis in Israel

Cross-border events

Years	Acquired by**	Originated in**	Setting	Cases	Notes
1983*	Israel	Nepal		1	[2]
2015	Israel	Colombia	travel	1	

* indicates publication year (not necessarily year of event)
** Country or Nationality

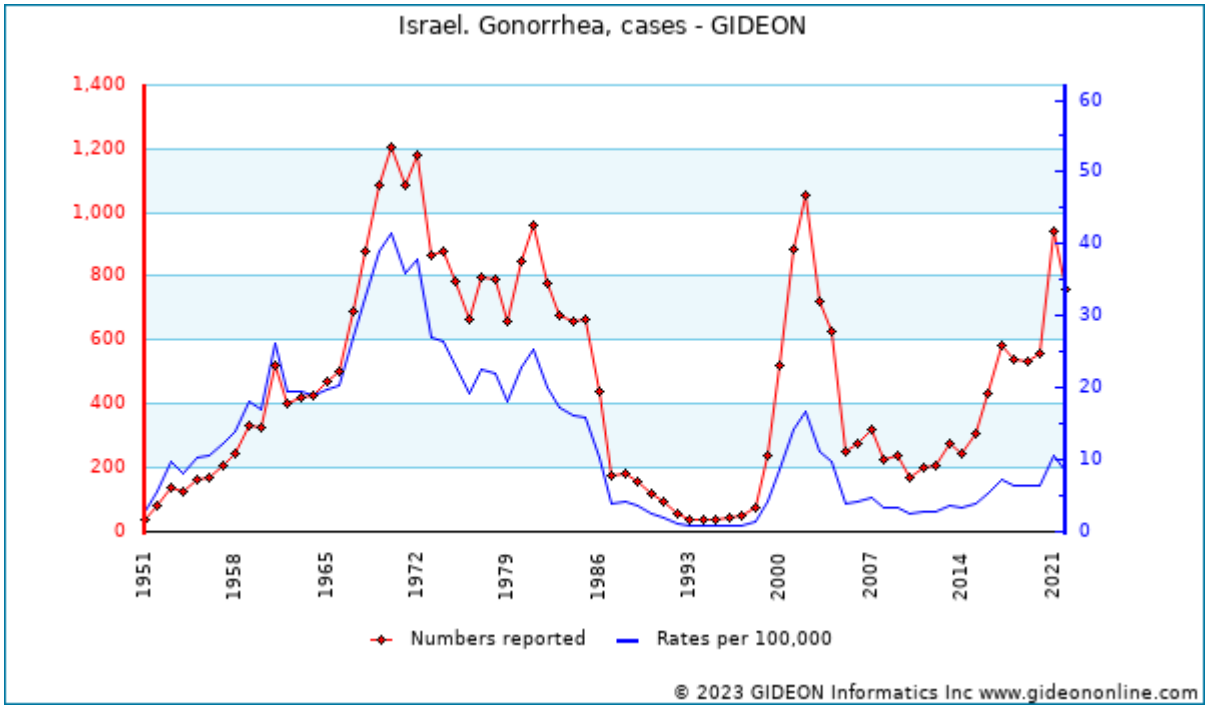
References

1. J Travel Med 2015 Sep-Oct;22(5):318-24.
2. Isr J Med Sci 1983 Sep ;19(9):834-7.

Gonococcal infection

Agent	BACTERIUM. *Neisseria gonorrhoeae* An aerobic gram-negative coccus
Reservoir	Human
Vector	None
Vehicle	Sexual, contact, Childbirth, Exudates, Respiratory or pharyngeal acquisition
Incubation Period	2d - 7d
Diagnostic Tests	Smear (male), culture. Consult laboratory for proper acquisition & transport. Nucleic acid amplification.
Typical Adult Therapy	Ceftriaxone 500 mg IM X 1. If chlamydial infection has not been excluded, add Doxycycline 100 mg PO BID X 7 days[1] [2] [3]
Typical Pediatric Therapy	Weight <=45 kg: Ceftriaxone 25 - 50 mg/kg IM or IV X 1 (max. 125 mg IM) Weight >45 kg: as for adult.
Clinical Hints	- Onset 2 to 7 days after sexual exposure - Copious urethral discharge (male) or cervicitis - Pelvic inflammatory disease - Systemic disease associated with fever, painful pustules and suppurative arthritis (primarily encountered in postmenstrual females)
Synonyms	Blennorragie, Blenorragia, Gonococcemia, Gonore, Gonorre, Gonorrea, Gonorrhea, Gonorrhee, Gonorrho, Gonorrhoe, Infeccion gonococica, Infeccoes gonococicas, Neisseria gonorrhoeae. ICD9: 098 ICD10: A54

Gonococcal infection in Israel



Graph: Israel. Gonorrhea, cases

Notes:
1. Gonorrhea accounts for one third of male urethritis cases.
2. Gonorrhea has been a reportable disease since 1951.
3. Only cases among Jews were reported during 1961 to 1962.
4. Declining incidence during the 1980's was ascribed to the global AIDS epidemic. [4]
Individual years:
1998 - Included 29 cases in Tel Aviv.
1999 - Included 120 cases in Tel Aviv.
2000 - Included 321 cases in Tel Aviv.
2004 - Included 57 cases in the Haifa district (7.9 per 100,000) [5]

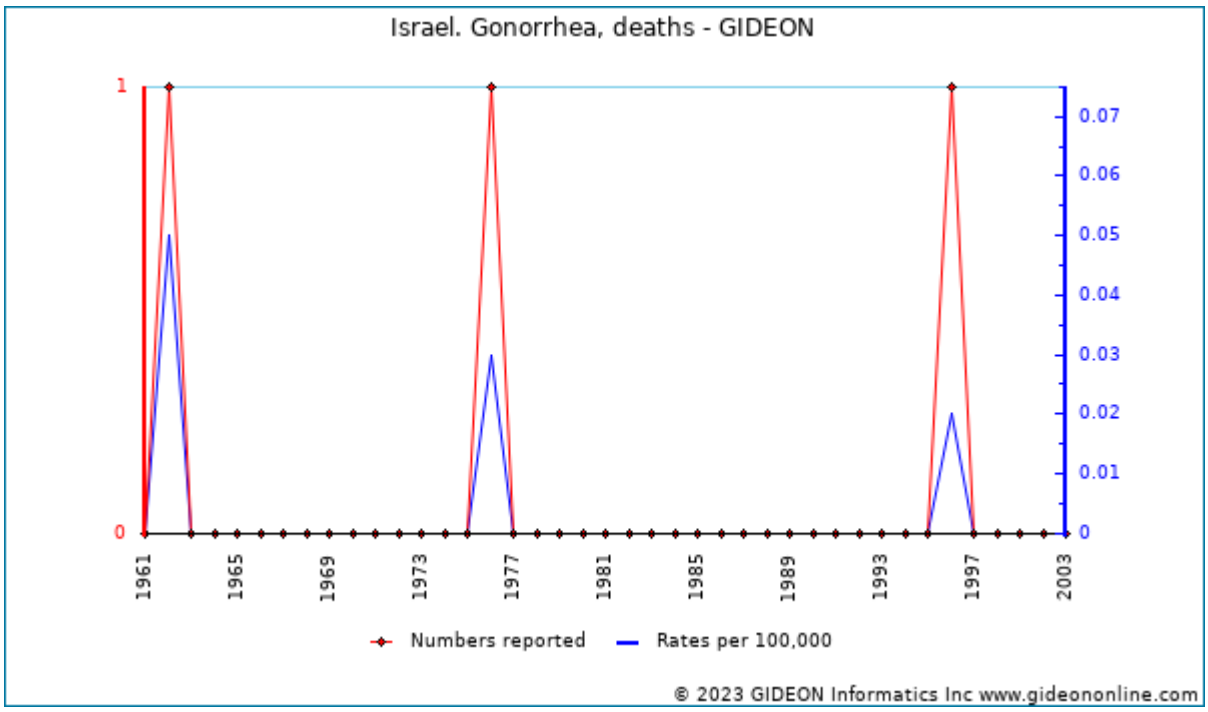
- 2001 to 2015 - 837 cases of gonorrhea were reported in Haifa - 6.4 per 100,000 per year; 93.1% male. [6]

Disease rates among soldiers decreased from 2.3 cases per 1,000 in 1978 to 0.07 cases per 1,000 in 2008. [7]

Prevalence surveys

Years	Region	Study Group	%	Notes
2009	Southern Region	women	0	0% of HIV-positive women (southern Israel, 2009)
2016 - 2019	Kfar Saba	patients	1.5	1.5% of pathogens identified in women with pelvic inflammatory disease [8]
2006*	Tel Aviv	sex workers	3.1-8.7	8.7% of CSW in the Tel Aviv region have pharyngeal gonorrhea, and 3.1% urogenital gonorrhea. [9]
2008*	Tel Aviv	sex workers	9	9.0% of brothel-based CSW in Tel Aviv have pharyngeal gonorrhea [10]
2002 - 2008	Tel Aviv		2.5	2.5% of MSM vs. 1.3% of heterosexual males visiting an STD clinic [11]
2017 - 2019	Multiple locations		0.8	Survey of men purchasing HIV pre-exposure prophylaxis [12]
1996 - 1998	Haifa	patients - STD	4.2	4.2% of male STD patients with urethritis [13]
2008 - 2010	Tel Aviv	patients - STD	1.4-49	23.1% / 49% / 1.4% of male patients / male patients with urethritis / asymptomatic men, in an STD clinic [14]
2022*	Northern	patients - STD	2.1	Out of 3,753 assays performed on 2,407 patients screened for STD from a secondary referral hospital and 2 STD clinics in Northern Israel, *Neisseria gonorrhoeae* was detected in 2.1% of the patients. [15]

***** indicates publication year (not necessarily year of survey)



Graph: Israel. Gonorrhea, deaths

One case of gonococcal ophthalmia (in 1998) was reported during 1994 to 1999. [16]

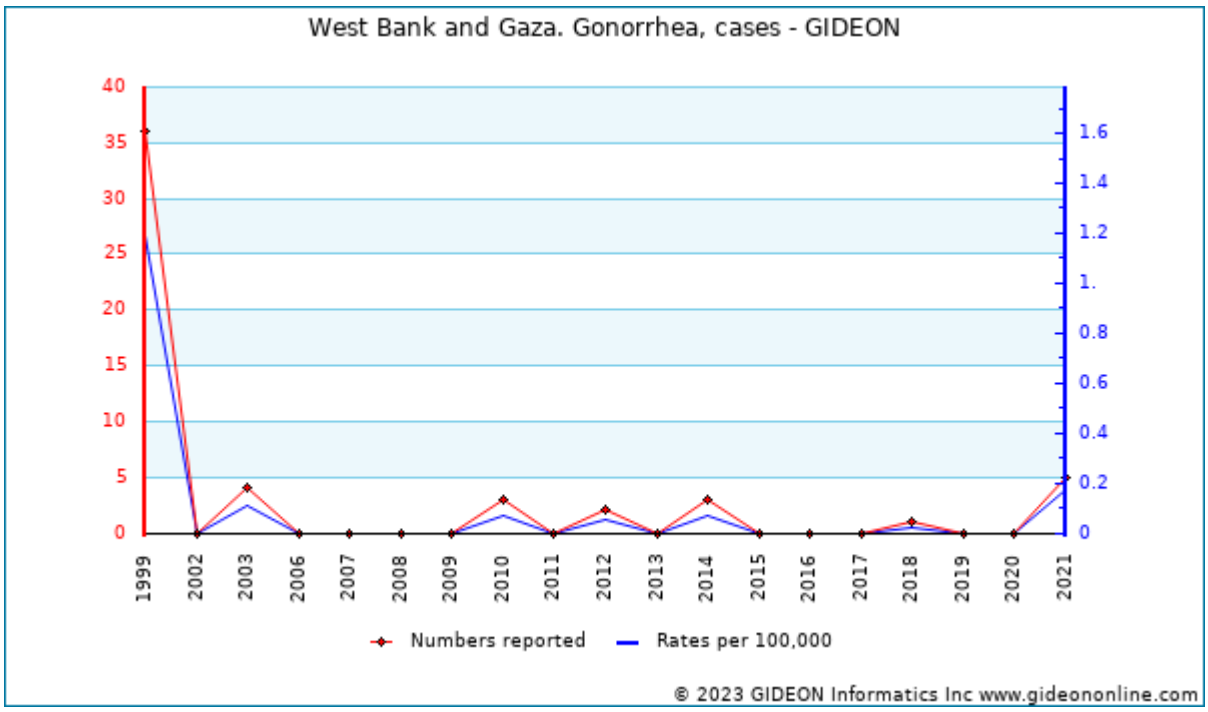
Drug resistance:

- Approximately 34% of isolates are penicillinase-producing.
- As of 2000, ciprofloxacin-resistance rates were 61% in Tel Aviv and 54% in southern Israel. [17] [18] [19]

Notable outbreaks

Years	Region	Cases	Notes
1988 - 1989	Southern Region	94	Outbreak due to penicillinase-producing *Neisseria gonorrhoeae* [20]

West Bank and Gaza:



Graph:

West Bank and Gaza. Gonorrhea, cases

References

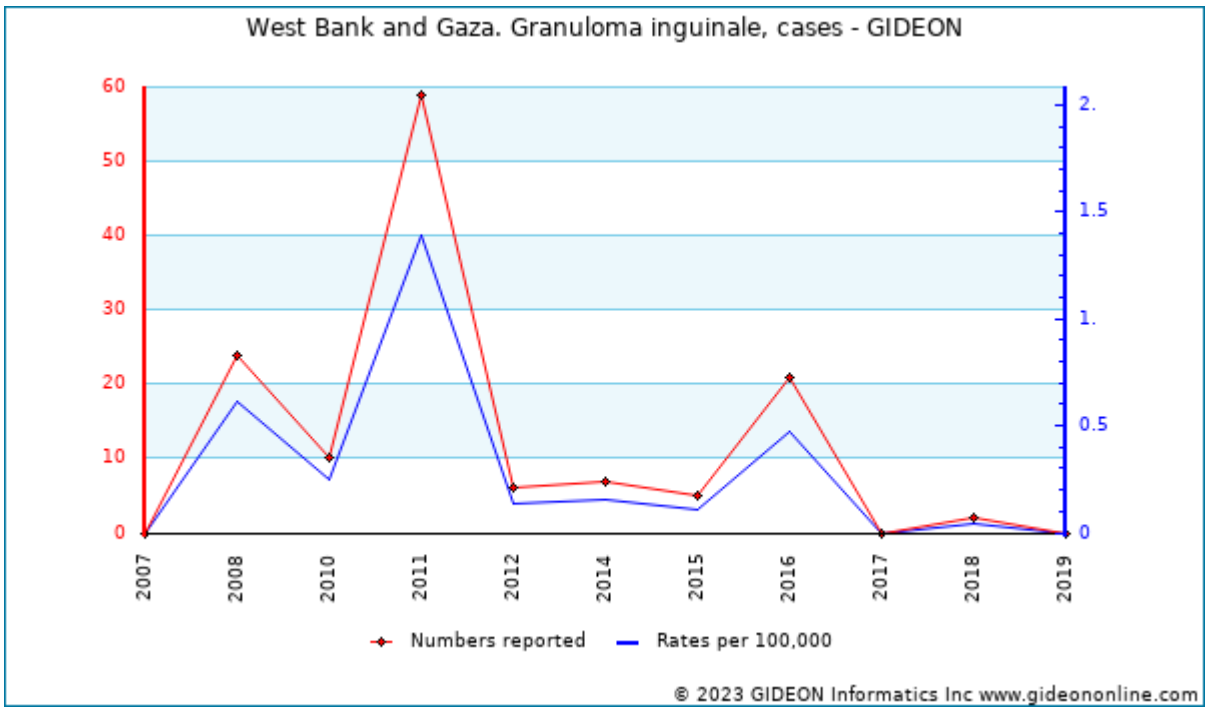
1. MMWR Recomm Rep 2015 Jun 05;64(RR-03):1-137.
2. Clin Infect Dis 2014 Oct 15;59(8):1083-91.
3. 2016 ;
4. Isr J Med Sci 1988 Mar ;24(3):137-40.
5. Harefuah 2007 Jun ;146(6):425-8, 503, 502.
6. BMJ Open 2017 Jun 22;7(6):e014265.
7. Eur J Clin Microbiol Infect Dis 2010 Sep ;29(9):1111-5.
8. J Gynecol Obstet Hum Reprod 2021 Jun 01;:102176.
9. Sex Transm Dis 2006 Aug ;33(8):512-5.
10. Int J STD AIDS 2008 Oct ;19(10):656-9.
11. Isr Med Assoc J 2012 Mar ;14(3):147-51.
12. PLoS One 2021 ;16(11):e0259168.
13. Isr Med Assoc J 2003 Jan ;5(1):24-7.
14. Int J STD AIDS 2017 02 ;28(2):127-132.
15. J Low Genit Tract Dis 2022 Nov 30;
16. Isr Med Assoc J 2004 Mar ;6(3):180-1.
17. Eur J Clin Microbiol Infect Dis 2002 May ;21(5):368-72.
18. Antimicrob Agents Chemother 2002 Jun ;46(6):1671-3.
19. J Infect Dis 2004 Jun 01;189(11):2085-93.
20. Isr J Med Sci 1991 Jun ;27(6):311-5.

Granuloma inguinale

Agent	BACTERIUM. *Klebsiella granulomatis* (formerly *Calymmatobacterium granulomatis*) A gram-negative bacillus
Reservoir	Human
Vector	None
Vehicle	Sexual, contact, Direct contact
Incubation Period	7d - 30d (range 3d - 1 year)
Diagnostic Tests	Identification of organism in stained smears. Culture in specialized laboratories (HEp-2 cells).
Typical Adult Therapy	Azithromycin 1 g weekly X 3 w. Alternatives: Doxycycline 100 mg BID PO X 3w. Sulfamethoxazole / Trimethoprim 800/160 mg BID X 3w Erythromycin 500 mg QID X 3w. Ciprofloxacin 750 mg BID X 3w[1]
Typical Pediatric Therapy	Azithromycin 10 mg / kg po day 1; then 250 mg / kg daily days 2 to 5 Alternatives: Sulfamethoxazole / Trimethoprim , Erythromycin or Doxycycline
Clinical Hints	- Slowly expanding, ulcerating skin nodule with friable base - Usually painless - May be complicated by edema or secondary infection - Rarely spreads to bone or joints
Synonyms	Calymmatobacterium granulomatis, Donovanosis, Granuloma genitoinguinale, Granuloma inguinale tropicum, Granuloma venereum, Sixth venereal disease. ICD9: 099.2 ICD10: A58

Granuloma inguinale in Israel

Sporadic cases of granuloma inguinale were diagnosed in the Arab sector of Jerusalem during 1920 to 1942.



Graph:

West Bank and Gaza. Granuloma inguinale, cases

References

1. MMWR Recomm Rep 2015 Jun 05;64(RR-03):1-137.

Hantavirus pulmonary syndrome

Agent	VIRUS - RNA. Bunyaviridae, Hantavirus: Sin Nombre, Black Creek Canal, Bayou, New York-1, Andes, et al
Reservoir	Rodent - Deer mouse (*Peromyscus maniculatus*); Pinon mouse, Harvest mouse, Cotton rat, Brush mouse, Chipmunk, Human, Zoonotic
Vector	None
Vehicle	Animal excreta, Rarely bite, direct contact, Person-to-person, Respiratory or pharyngeal acquisition
Incubation Period	9d - 33d
Diagnostic Tests	Biosafety level 3. Serology. Viral culture. Nucleic acid amplification.
Typical Adult Therapy	Supportive Ribavirin may be effective against Andes virus if administered early[1] [2] [3]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Exposure history (agriculture, hiking, exposure to rodents) often elicited - Rapidly progressive illness characterized by fever, myalgia, bilateral interstitial infiltrates and hypoxia - Case-fatality rate 45% to 50%
Synonyms	Alto Paraguay, Anajatuba virus, Andes, Araraquara, Ararquara, Araucaria, Bayou, Black Creek Canal, Bormejo, Calabazo, Cano Delgado, Carrizal, Castello dos Sonhos, Castelo dos Sonhos, Castelos dos Sonhos, Central Plata, Choclo, El Moro Canyon, Hantavirus cardiopulmonary syndrome, Hantavirus resp. distress syndrome, HU39694, Huitzilac, Jabora, Juquitiba, Laguna Negra, Lechiguanas, Limestone Canyon, Maciel, Maporal, Maripa, Monongahela, Montano, Muerto Canyon, New York orthohantavirus, New York virus, Oran, Paranoa, Rio Mamore, SCPH, Sin nombre, Sindr. cardiopulmonar por hantavirus. ICD9: 078.89 ICD10: B33.4

Although Hantavirus pulmonary syndrome is not endemic to Israel, imported, expatriate or other presentations of the disease have been associated with this country.

Hantavirus pulmonary syndrome in Israel

Cross-border events

Years	Acquired by**	Originated in**	Setting	Cases	Notes
2014*	Israel		travel	1	Infection acquired in South America [4]
2017	Israel	United States	travel	1	A case of Sin Nombre virus infection acquired in the southwestern United States [5] [6]

* indicates publication year (not necessarily year of event)
** Country or Nationality

References

1. Clin Infect Dis 2004 Nov 01;39(9):1307-13.
2. Virusdisease 2014 ;25(3):385-9.
3. Virusdisease 2014 ;25(3):385-9.
4. Isr Med Assoc J 2014 Apr ;16(4):259-61.
5. MMWR Morb Mortal Wkly Rep 2018 Oct 12;67(40):1129.
6. Harefuah 2019 May ;158(5):305-308.

Hantaviruses - Old World

Agent	VIRUS - RNA. Bunyaviridae, Hantavirus - Old world : Hantaan, Puumala, Dobrava/Belgrade, Saaremaa & Seoul viruses
Reservoir	Field mouse (*Apodemus agrarius*-Hantaan), Vole (*Myodes glareolus*-Puumala), Rat (*Rattus norvegicus*-Seoul), Bat, Bird, Zoonotic
Vector	None
Vehicle	Animal excreta, Respiratory or pharyngeal acquisition
Incubation Period	12d - 21d (range 4d - 42d)
Diagnostic Tests	Biosafety level 3. Serology. Viral culture. Nucleic acid amplification.
Typical Adult Therapy	Supportive. Suggest Ribavirin: Loading dose 33 mg/kg, then 16 mg/kg IV q6h X 4d, then 8 mg/kg q8h X 3d[1] [2] [3]
Typical Pediatric Therapy	Supportive. Suggest Ribavirin
Vaccine	Hantavirus vaccine
Clinical Hints	- Headache, backache, myalgia, diarrhea, vomiting, conjunctivitis - Hemorrhage and azotemia - Proteinuria and thrombocytopenia are common - History of local rodent infestation may be elicited - Case-fatality rates 0.1% (Puumala virus) to 15% (Belgrade virus)
Synonyms	Acute epidemic hemorrhagic fever, Anjozorobe , Bosnian hemorrhagic fever, Churilov disease, Dobrava/Belgrade, Endemic benign nephropathy, Epidemic hemorrhagic fever, Far eastern hemorrhagic fever, Haemorrhagic nephrosonephritis, Hantaan, Hemorrhagic fever & renal syndrome, Imjin virus, Infectious hemorrhagic fever, Jeju, Khabarovsk, Korean hemorrhagic fever, Mouse fever, Muju, Muroid virus nephropathy, Nephropathia epidemica, Puumala, Rodent-borne viral nephropathy, Saaremaa, Sandinavian epidemic nephropathy, Sangassou, Seoul, Sochi virus, Songo fever, Sorkfeber, Thailand orthohantavirus, Thailand virus, Thottapalayam, Topografov, Tula, Viral hemorrhagic fever, Viral hemorrhagic fevers. ICD9: 078.6 ICD10: A98.5

Although Hantaviruses - Old World is not endemic to Israel, imported, expatriate or other presentations of the disease have been associated with this country.

Hantaviruses - Old World in Israel

Israel. Hantavirus infection - Old World, cases: None reported between 1985 and 2008

Cross-border events

Years	Acquired by**	Originated in**	Setting	Cases	Deaths	Notes
2014	Israel	Finland	laboratory	1	1	An Israeli scientist acquired fatal Puumala virus in a laboratory in Finland. [4] [5]
2022*	Israel	Germany	travel	1	0	Hemorrhagic fever with renal syndrome due to Puumala virus was identified in a tourist from Germany. [6]

* indicates publication year (not necessarily year of event)
** Country or Nationality

Seroprevalence surveys

Years	Study Group	%	Notes
1998*	patients - dialysis	12.3	12.3% of hemodialysis patients and 2% of controls toward Puumala virus [7]
1998*	patients - dialysis	3.7	3.7% of hemodialysis patients and 0% of controls, toward Hantaan virus (1998 publication) [8]

***** indicates publication year (not necessarily year of survey)

Serum antibody toward Dobrava virus has been detected in patients suspected of leptospirosis.

References

1. J Infect Dis 1991 Dec ;164(6):1119-27.
2. Acta Virol 2017;61(1):3-12.
3. Virusdisease 2014 ;25(3):385-9.
4. Harefuah 2014 Aug ;153(8):443-4, 499.
5. ProMED <promedmail.org> archive: 20140818.2701265
6. Isr Med Assoc J 2022 Sep ;24(9):621-622.
7. Viral Immunol 1998 ;11(2):103-8.
8. Viral Immunol 1998 ;11(2):103-8.

Hepatitis A

Agent	VIRUS - RNA. Picornaviridae, Hepatovirus: Hepatitis A virus
Reservoir	Human, Non-human primate
Vector	None
Vehicle	Fecal-oral, Food, Water, Milk, Fly, Breastfeeding
Incubation Period	21d - 30d (range 14d - 60d)
Diagnostic Tests	Serology. Nucleic acid amplification.
Typical Adult Therapy	Stool precautions; supportive
Typical Pediatric Therapy	As for adult
Vaccine	Hepatitis A + Hepatitis B vaccine Hepatitis A vaccine Immune globulin
Clinical Hints	- Vomiting, anorexia, dark urine, light stools and jaundice - Rash and arthritis occasionally encountered - Fulminant disease, encephalopathy and fatal infections are rare - Case-fatality rate 0.15% to 2.7%, depending on age
Synonyms	Botkin's disease, Epatite A, HAV, Hepatite per virus A, Infectious hepatitis. ICD9: 070.0 ICD10: B15.0, B15.9

Hepatitis A in Israel

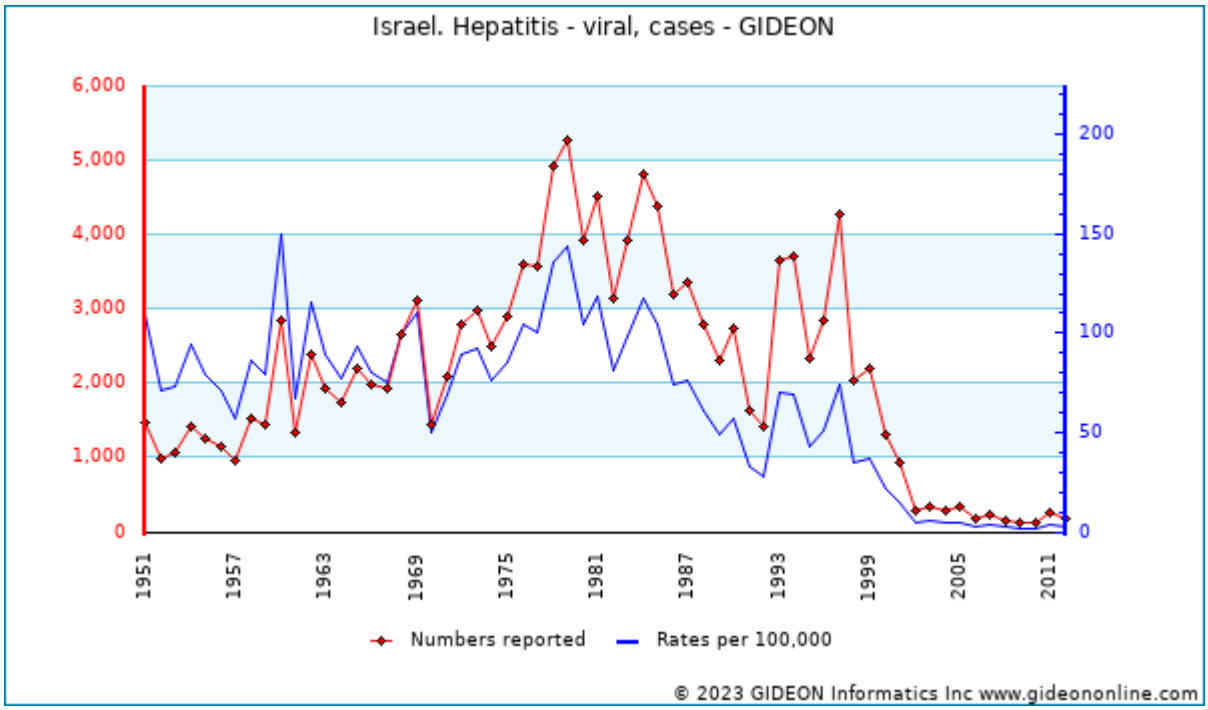
Israel

Vaccine Schedule:

DTaP - 2,4,6,12 months
DTaPHibIPV - 2,4,6,12 months
HPV - 13 years; +6 months
HepA - 18, 24 months
HepB - birth; 1,6 months
IPV - 7 years
MMRV - 12 months; 6 years
OPV - 6,18 months
Pneumo ps - >=65 years
Pneumo-conj - 2,4,12 months
Rotavirus - 2,4,6 months
Td - every 10 years (adults)
TdaP - 13 years
TdaPIPV - 7 years

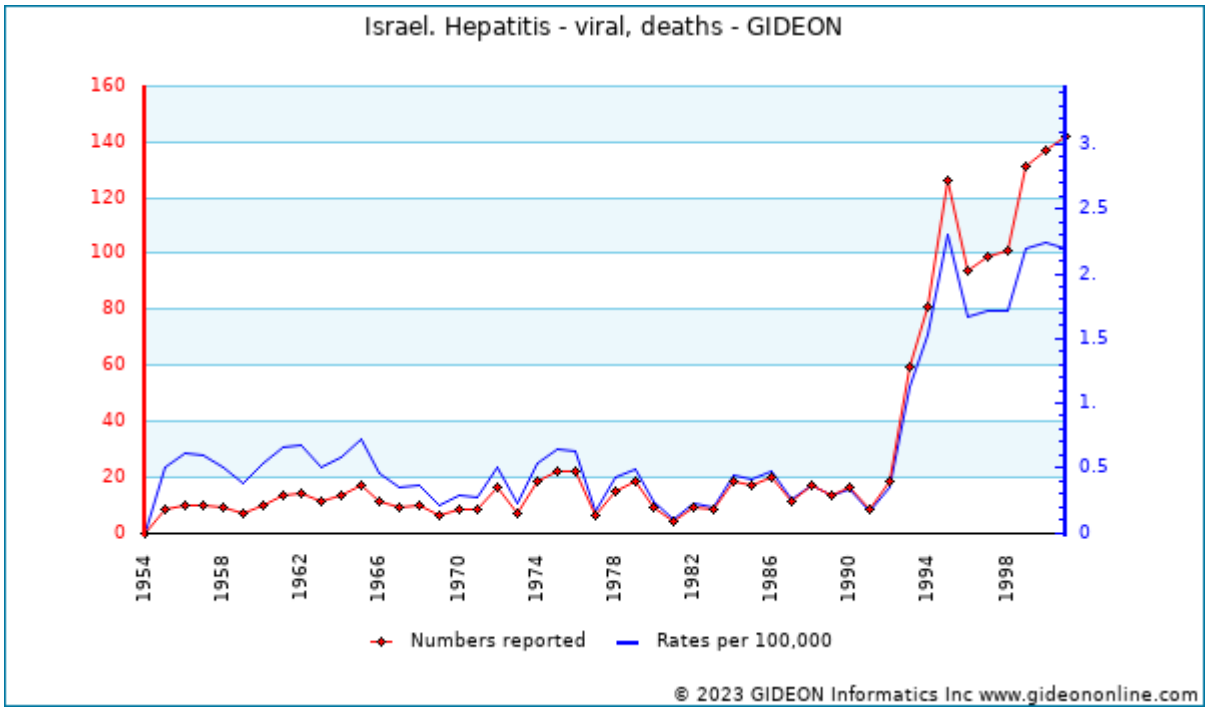
Notes regarding vaccination

- Widespread use of post-exposure prophylaxis of soldiers with immune serum globulin was introduced during the 1970's, and pre-exposure prophylaxis in 1978. [1]
- Israel was the first country to introduce routine infant vaccination against hepatitis A (initiated in 1999). [2] [3]
- Vaccine coverage during 2001 to 2002 was 90% for the first dose and 85% for the second dose. [4]
- Mean vaccine coverage during 2003 to 2010 was 92% for the first dose and 88% for the second dose.
- Introduction of vaccination was followed by a 95% reduction in disease rates as of 2002 to 2004; and a 25-fold reduction in less than 10 years. [5] [6]
- Annual incidence rates among children age <5 years decreased from 239.4 per 100,000 in 1998 to 2.2 per 100 000 in 2007. [7]

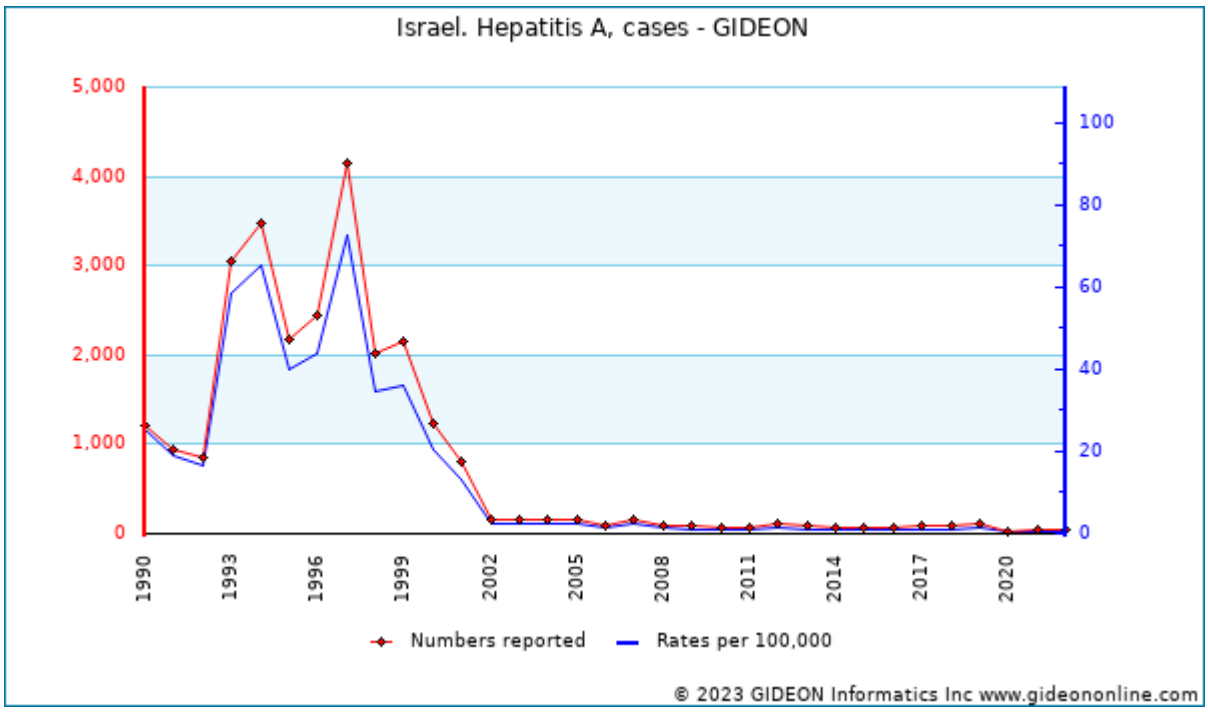


Graph: Israel. Hepatitis - viral, cases

Notes:
1. Individual reporting for Hepatitis A and Hepatitis B was instituted in 1992.



Graph: Israel. Hepatitis - viral, deaths



Graph: Israel. Hepatitis A, cases

Notes:
1. Reporting rates are estimated at 10% to 30% of true incidence. .
2. Hepatitis A accounts for 65% to 90% of all viral hepatitis in Israel.
3. The male/female ratio for patients with acute infection is 1.3/1. Highest rates (pre-vaccine era) occur in the age group 5 to 9.
4. The average annual rate of clinical hepatitis A was 600 per 100,000 during the 1960's, 250 per 100,000 during the 1970's, 50 to 100 per 100,000 during the 1980's; 2.2 to 2.5 per 100,000 as of 2002 to 2004 [8] ; <1.0 per 100,000 during 2008 to 2012.
5. 1,247 cases were reported during 2002 to 2012.
6. 146 cases were reported during 2017 to 2018 - 96% in unvaccinated individuals. [9]

Cross-border events
Does not include individual case reports

Years	Acquired by**	Originated in**	Setting	Cases	Notes
1985*	Finland	Israel	travel	9	An outbreak (9 cases) at a day care center in Finland was related to an index patient who had returned from Israel [10]
2010	United Kingdom	Israel	travel	5	An outbreak (5 cases) among Orthodox Jews consisted of two primary cases originating in Israel and 3 secondary cases in England. [11]

***** indicates publication year (not necessarily year of event)
****** Country or Nationality

Between 1950 and 1979, hepatitis rates increased, and later declined during the early 1980s. [12] [13]

- 1997 to 2012 - Thirteen Israelis were treated for travel-related hepatitis A at two medical centers. [14]

Demography
- Disease rates were highest among non-Jews prior to 1987.
- Since 1988, rates among Jews have been approximately 50% higher than those of non-Jews.
- Increased risk has been identified among yeshiva students, day care center and kindergarten staff, food industry workers, teachers, physicians, dentists, and medical technicians [15]
- In 2017, 45% of males with acute hepatitis A were MSM; 3% in 2018. [16]

Seroprevalence surveys

Years	Region	Study Group	%	Notes
1977 - 1996		military personnel	38.4-68.4	68.4% of military recruits in 1977, 54% in 1984 , and 38.4% in 1996 [17] [18]
1990 - 1991		immigrants	37	37% of immigrants ages 17 to 19, from the former Soviet Union (1990 to 1991) [19]
2020*		military recruits	35-68	35% / 68%of military recruits from birth cohorts from before / following introduction of childhood vaccination [20]
2002*	Petah Tikva	health care workers	48.2	48.2% of pediatric hospital staff (2002 publication) [21]
2001*	Gaza	general population	93.7	93.7% in Gaza - 87.8% by age 6 months (2001 publication) [22]
2017*	Nationwide	general population	47.1-67.4	47.1% / 67.4% of the general population, before / after implementation of childhood vaccination [23]
1998		daycare workers	90	90% among day-care workers 90% (1998)

* indicates publication year (not necessarily year of survey)

Talking Points

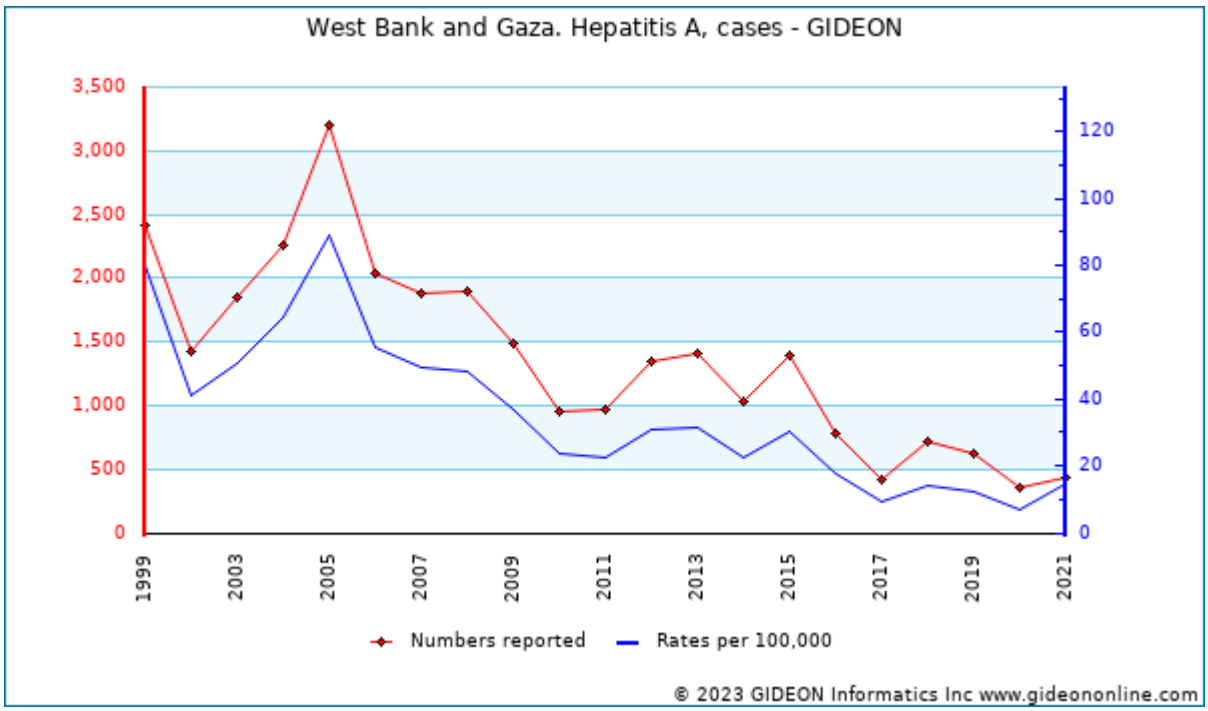
- During the 1950's and 1960's large scale epidemics occurred every 3 to 4 years in the Israel Defense Forces, with annual rates in excess of 1,000 per 100,000 soldiers at risk. [24] [25] [26]
- One food-borne outbreak (34 cases) was reported in 1993, 0 during 1994 to 1997, and 1 (47 cases) in 1998.

Notable outbreaks

Years	Region	Setting	Cases	Population	Notes
1985*	Foreign Country	day-care center	9		Outbreak in Finland related to an index patient who had returned from Israel [27]
1988*		military unit	19		[28]
1999*		day-care center	23		[29]
2001*		village			[30]
2010	Foreign Country		5	Jews	Outbreak in London among Orthodox Jews consisted of two primary cases originating in Israel and 3 secondary cases in England [31]
2012 - 2013	Tel Aviv		75		Only 7 cases had been reported in Tel Aviv the previous year [32]
2016 - 2017	Multinational			MSM	3,813 cases reported in Europe to December 24. 2017. Outbreak consisted of 3 case-clusters, and involved 19 countries in the European Union (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Norway, Poland, Portugal, Slovenia, Spain, Sweden and the United Kingdom). Related cases were subsequently reported in Israel (17 cases) and Chile. Cluster 1: 806 cases (85% MSM) ; Cluster 2: 509 cases (80% MSM) ; Cluster 3: 119 cases (87% MSM) [33] [34] [35] [36] [37] [38] [39] [40] [41] [42] [43] [44] [45] [46] [47] [48] [49] [50] [51] [52] [53] [54] [55] [56] [57] [58] [59]

* indicates publication year (not necessarily year of outbreak)

West Bank and Gaza



Graph:
West Bank and Gaza. Hepatitis A, cases

Notes:
Individual years:
2011 - 178 cases were reported in Gaza

References

1. Harefuah 2000 May 01;138(9):755-7, 806, 805.
2. Harefuah 2000 Feb 01;138(3):177-80, 272.
3. Prev Med 2007 Nov ;45(5):386-91.
4. JAMA 2005 Jul 13;294(2):202-10.
5. J Viral Hepat 2010 Apr ;17(4):293-7.
6. Euro Surveill 2015 Feb 19;20(7):3-10.
7. J Viral Hepat 2008 Oct ;15 Suppl 2:62-5.
8. JAMA 2005 Jul 13;294(2):202-10.
9. Euro Surveill 2021 Feb ;26(6)
10. Scand J Infect Dis 1985 ;17(3):331-2.
11. Euro Surveill 2010 Sep 16;15(37)
12. Isr Med Assoc J 2001 May ;3(5):347-51.
13. Rev Infect Dis 1989 May-Jun;11(3):464-9.
14. J Travel Med 2013 Jul-Aug;20(4):232-6.
15. Am J Epidemiol 1999 Aug 01;150(3):312-20.
16. Euro Surveill 2021 Feb ;26(6)
17. Public Health Rev 1992-1993;20(1-2):31-40.
18. Epidemiol Infect 1998 Oct ;121(2):477-9.
19. Infection 1999 May-Jun;27(3):212-7.
20. Vaccine 2020 Jan 10;
21. Pediatr Infect Dis J 2002 Jul ;21(7):618-22.
22. Epidemiol Infect 2001 Oct ;127(2):335-9.
23. Pediatr Infect Dis J 2017 Oct ;36(10):e248-e251.
24. Harefuah 2000 May 01;138(9):755-7, 806, 805.
25. J Infect 1987 May ;14(3):271-8.
26. Mil Med 1992 Oct ;157(10):530-2.
27. Scand J Infect Dis 1985 ;17(3):331-2.
28. J Infect 1988 Nov ;17(3):265-70.
29. Eur J Epidemiol 1999 Jul ;15(6):549-51.
30. Eur J Clin Microbiol Infect Dis 2001 Mar ;20(3):185-7.
31. Euro Surveill 2010 Sep 16;15(37)
32. J Infect Dis 2016 12 23;
33. Clin Infect Dis 2017 Sep 15;65(6):1053-1054.
34. AIDS Rev 2017 Apr - Jun;19(2):113-114.
35. Euro Surveill 2017 Jul 20;22(29)
36. Liver Int 2018 Apr ;38(4):588-593.
37. PLoS One 2017 ;12(11):e0185428.
38. HIV Med 2018 Jan 29;
39. Euro Surveill 2018 Mar ;23(9)
40. Infez Med 2018 Mar 01;26(1):46-51.
41. Rev Esp Enferm Dig 2018 Mar 12;
42. Laeknabladid 2018 Juni;104(6):283-287.
43. Euro Surveill 2018 Jun ;23(23)
44. Euro Surveill 2018 Aug ;23(33)
45. Med Clin (Barc) 2018 Oct 15;
46. Rev Esp Enferm Dig 2018 Sep 03;110:675-676.
47. J Viral Hepat 2019 Feb 22;
48. Food Environ Virol 2019 Mar 13;
49. Viruses 2019 Mar 20;11(3)
50. ProMED <promedmail.org> archive: 20170316.4905773
51. ProMED <promedmail.org> archive: 20170402.4942799
52. ProMED <promedmail.org> archive: 20170114.4763116
53. ProMED <promedmail.org> archive: 20170502.5007101
54. ProMED <promedmail.org> archive: 20170614.5105578
55. ProMED <promedmail.org> archive: 20170722.5197306
56. ProMED <promedmail.org> archive: 20170802.5222364
57. ProMED <promedmail.org> archive: 20170929.5350446
58. ProMED <promedmail.org> archive: 20171225.5522640
59. ProMED <promedmail.org> archive: 20180109.5545180

Hepatitis B

Agent	VIRUS - DNA. Hepadnaviridae, Orthohepadnavirus: Hepatitis B virus
Reservoir	Human, Non-human primate
Vector	None
Vehicle	Blood, Infected secretions, Sexual contact, Transplacental
Incubation Period	2m - 3m (range 1m - 13m)
Diagnostic Tests	Serology. Nucleic acid amplification.
Typical Adult Therapy	Needle precautions. For chronic infection: Entecavir OR Tenofovir OR Peginterferon alfa-2a OR Peginterferon alfa-2b[1] [2]
Typical Pediatric Therapy	As for adult
Vaccines	Hepatitis A + Hepatitis B vaccine Hepatitis B + Haemoph. influenzae vaccine Hepatitis B immune globulin Hepatitis B vaccine
Clinical Hints	- Vomiting and jaundice - Rash or arthritis occasionally noted - Fulminant and fatal infections are encountered - Risk group (drug abuse, blood products, sexual transmission) - Hepatic cirrhosis or hepatoma may follow years after acute illness
Synonyms	Epatite B, HBV, Hepatite per virus B, Serum hepatitis. ICD9: 070.1 ICD10: B16.2,B16.9, B16.1

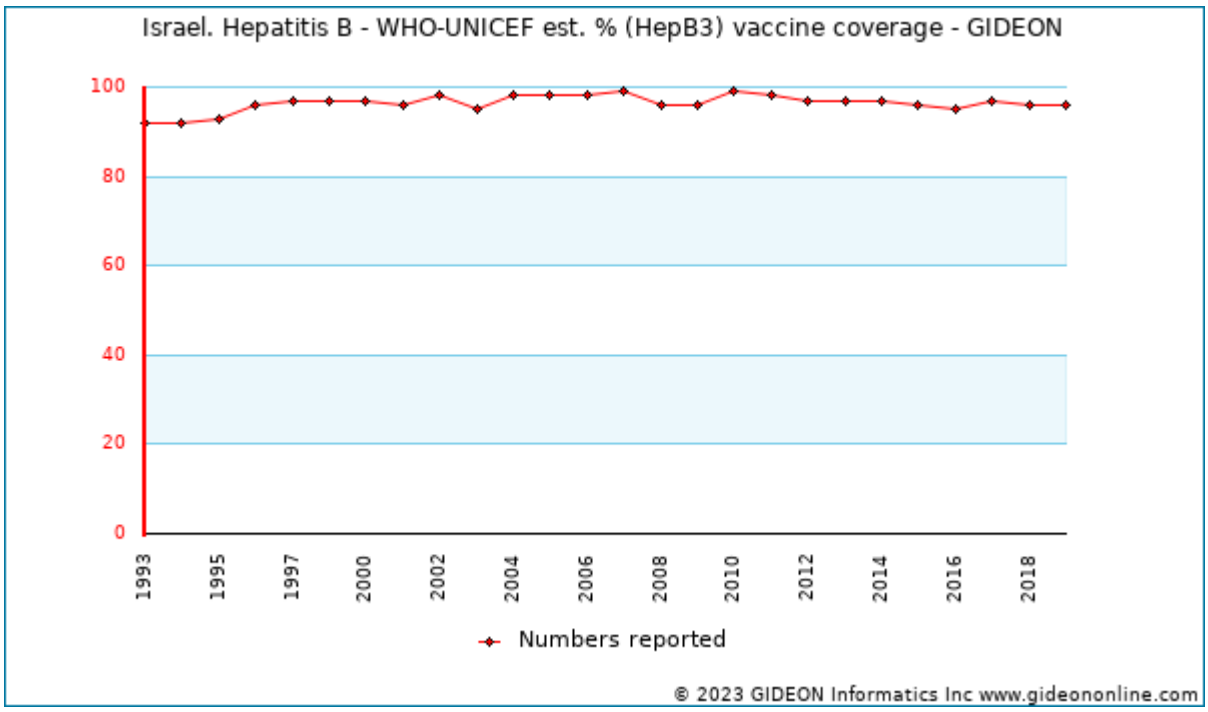
Hepatitis B in Israel

Vaccine Schedule:

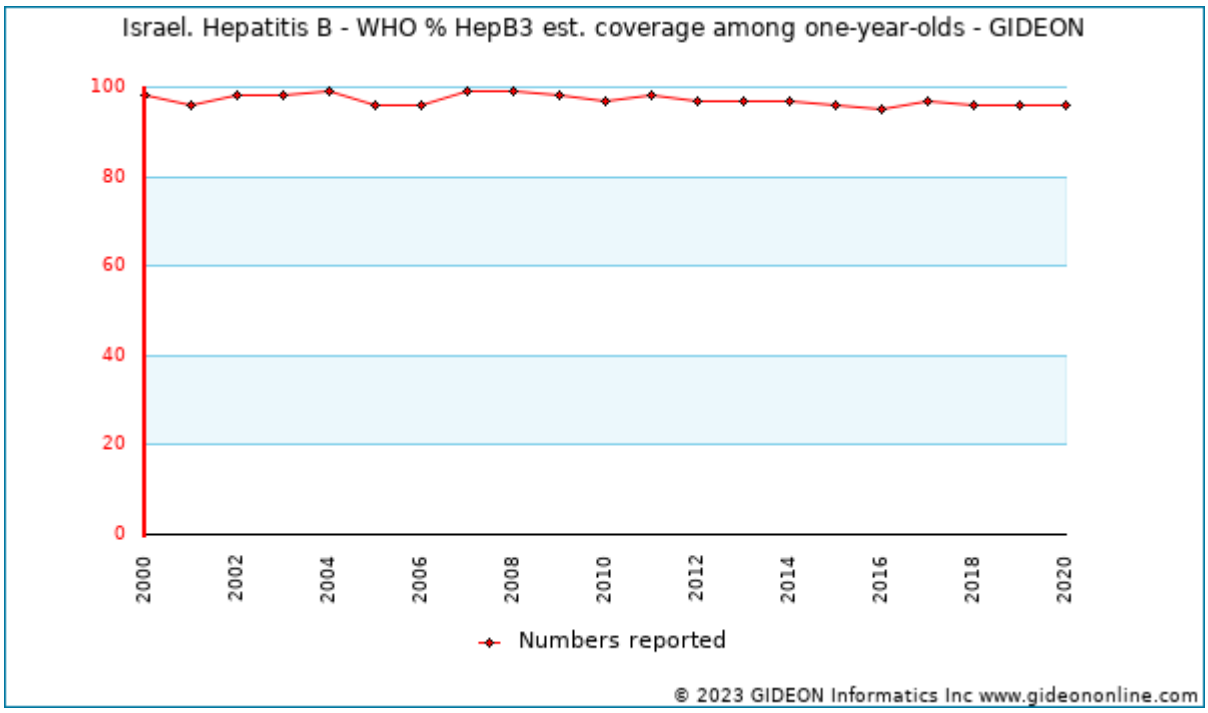
DTaP - 2,4,6,12 months
DTaPHibIPV - 2,4,6,12 months
HPV - 13 years; +6 months
HepA - 18, 24 months
HepB - birth; 1,6 months
IPV - 7 years
MMRV - 12 months; 6 years
OPV - 6,18 months
Pneumo ps - >=65 years
Pneumo-conj - 2,4,12 months
Rotavirus - 2,4,6 months
Td - every 10 years (adults)
TdaP - 13 years
TdaPIPV - 7 years

Israel:

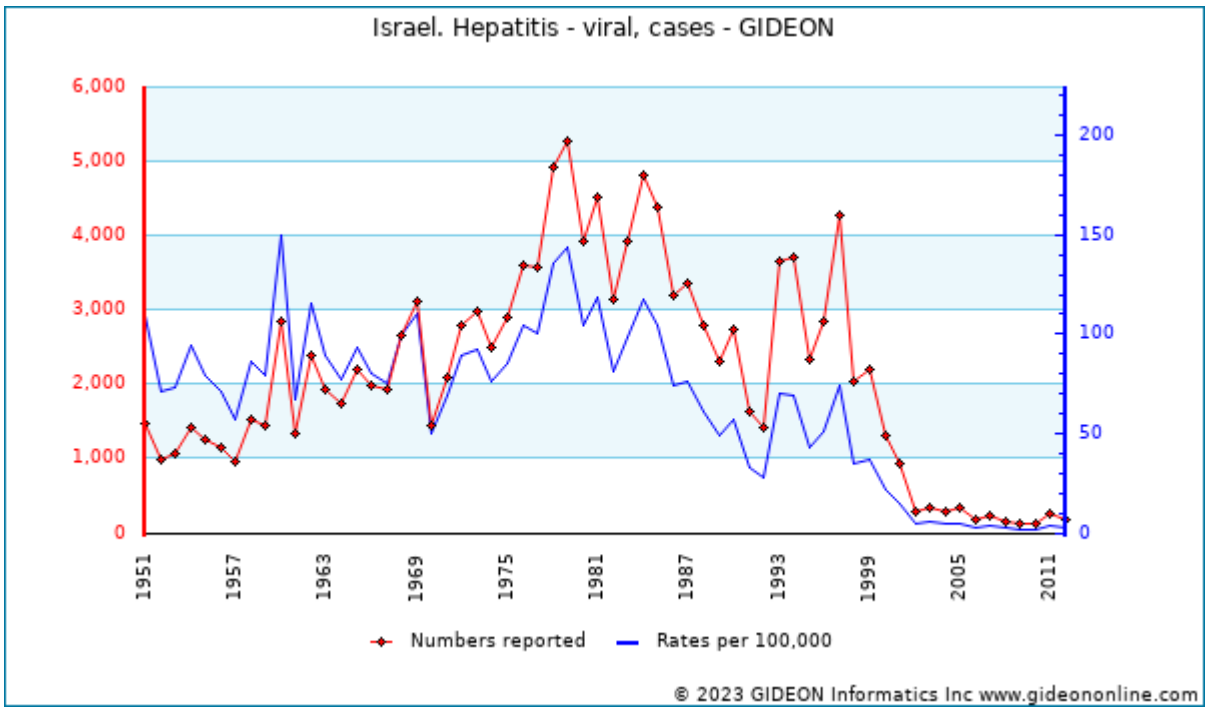
Mandatory vaccination against Hepatitis B was introduced in 1998.



Graph: Israel. Hepatitis B - WHO-UNICEF est. % (HepB3) vaccine coverage

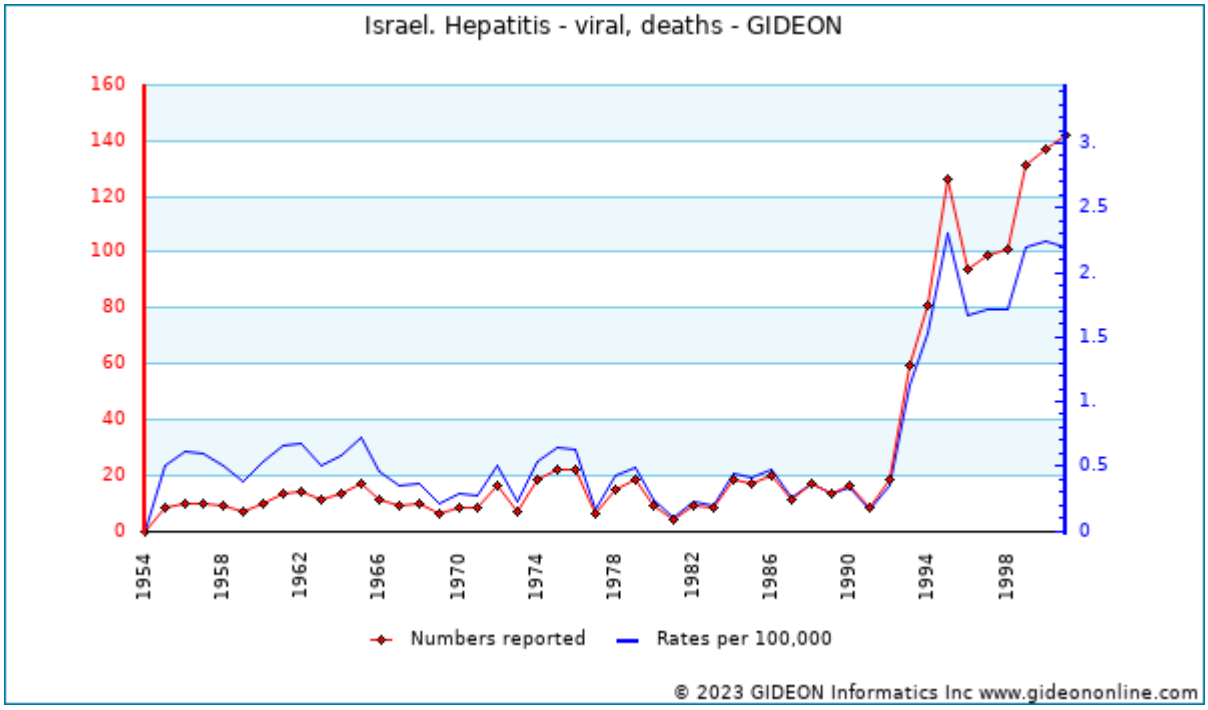


Graph: Israel. Hepatitis B - WHO % HepB3 est. coverage among one-year-olds

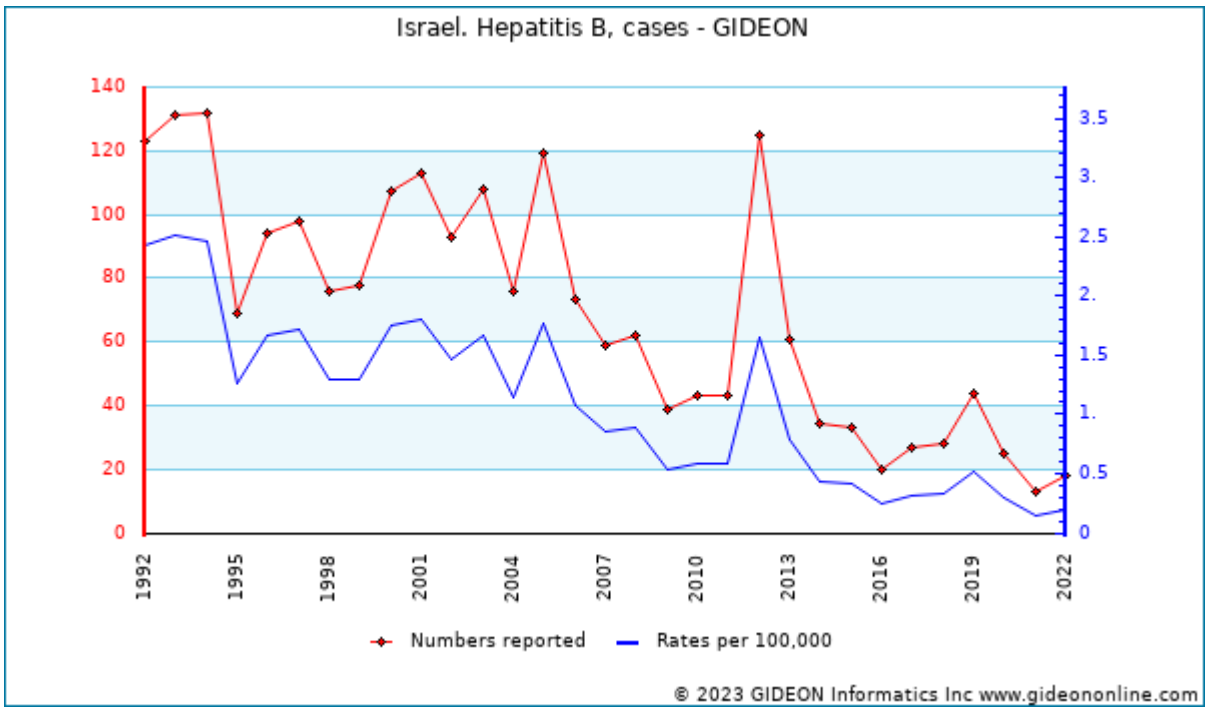


Graph: Israel. Hepatitis - viral, cases

Notes:
1. Individual reporting for Hepatitis A and Hepatitis B was instituted in 1992.



Graph: Israel. Hepatitis - viral, deaths



Graph: Israel. Hepatitis B, cases

HBsAg-positivity surveys

Years	Region	Study Group	%	Notes
1990 - 1991		immigrants	3	3% of immigrants from the former Soviet Union (1990 to 1991) [3]
1997*	Jerusalem	immigrants	15.7	15.7% of Bukharian immigrants (1997 publication) [4]
1993*	Tel Aviv	injecting drug users	5.5	5.5% of IDU (1993 publication) [5]
2003 - 2005		injecting drug users	3.5	3.5% of IDU (2003 to 2005) [6]
2012*	Jerusalem	injecting drug users	2.5	2.5% of Arab IDU in Jerusalem (2012 publication) [7]
2017	Hebron	infants	10.9	10.9% of babies born to HBsAg-positive mothers [8]
2010*	Multiple locations	patients	0.9	0.9% of patients with lichen planus (2010 publication) [9]
2014*	West Bank	patients	8.2	8.2% of hemodialysis patients in Tulkarem and Jenin (2014 publication) [10]
2016*	Multiple locations	patients	0.9	0.9% of patients with systemic lupus erythematosus vs. 0.56% of controls (2016 publication) [11]
2019*	Nationwide	patients	1.56	1.56% of patients with systemic sclerosis [12]
2010*	Gaza	patients - dialysis	8.1	8.1% of hemodialysis patients in Gaza (2010 publication) [13]
2016*	West Bank	patients - dialysis	3.8	3.8% of hemodialysis patients in the West Bank (2016 publication) [14]
2016*		general population	1	1% of the general population
2000 - 2019	Nationwide	general population	1.8-4.3	Chronic hepatitis B was detected in 4.3% of Arabs and 1.8% of Jews. [15]
2005 - 2006	Jerusalem	general population	1.59-3.9	3.9% of the Arab population and 1.59% of the Jewish population (Jerusalem, 2005 to 2006) [16]
1991 - 2014	Beer Sheva	pregnant women	0.2	[17]

Years	Region	Study Group	%	Notes
1994*	Jerusalem	pregnant women	0.64	0.64% of pregnant women (Jerusalem, 1994 publication) [18]
2015 - 2016	Nationwide	pregnant women	0.2	[19]
1998*		alcoholics	4.8	4.8% of alcoholics (1998 publication) [20]
1998*	Gaza	blood donors	3.5	3.5% of the general population and 3.8% of blood donors in Gaza
1992	Multiple locations	blood donors	0.44-0.85	0.85% male and 0.44% female blood donors (1992) [21]
2004		blood donors	2.4	2.4% of blood donors (2004)
1993 - 1995		patients - psychiatric	30.5	30.5% of high risk psychiatric inpatients (1993 to 1995) [22]
1999 - 2020		patients - eye	1.2	1.2% of patients with uveitis [23]
2002 - 2018	Tel Aviv	patients - HIV / AIDS	5.1	Among 274 patients with HIV and hepatitis C co-infection, hepatitis B surface antigen (HBsAg) was detected in 14 (5.1%) samples. Resolved HBV infection (positive anti-HBV core and negative HBsAg) was detected in 156 (56.9%) patients. [24]
2019*		patients - rheumatological	1.19	1.19% of patients with rheumatoid arthritis, vs. 0.63% of a control group [25]

***** indicates publication year (not necessarily year of survey)

- 2015 to 2016 - The percentage of HBsAg positivity among mothers who were born in Israel, the Former Soviet Union or Ethiopia, were 0.1%, 0.8% and 5%, respectively. [26]
- 2000 to 2019 - The prevalence of chronic hepatitis B was 4.3% among Arabs, and 1.8% among Jews. Although Arabs also had a lower rate of referral for HBsAg testing (7% vs 7.9%), they received comparable management and had a similar outcome compared to the Jewish population. [27]

Hepatitis D coinfection

- 1993 (publication year) - 18% of HBsAg-positive IDU and 3% of HBsAg-negative IDU were seropositive toward Hepatitis D virus [28]
- 1988 (publication year) - 20% of HBsAg-positive patients with advanced liver disease were seropositive toward Hepatitis D virus [29]
- 2000 to 2019 - 4.9% of patients with chronic hepatitis B infection were seropositive towards Hepatitis D virus. [30]

Hepatitis C coinfection

- 2000 to 2019 - Hepatitis C RNA was detected in 5.3% of patients with chronic hepatitis B infection. [31]

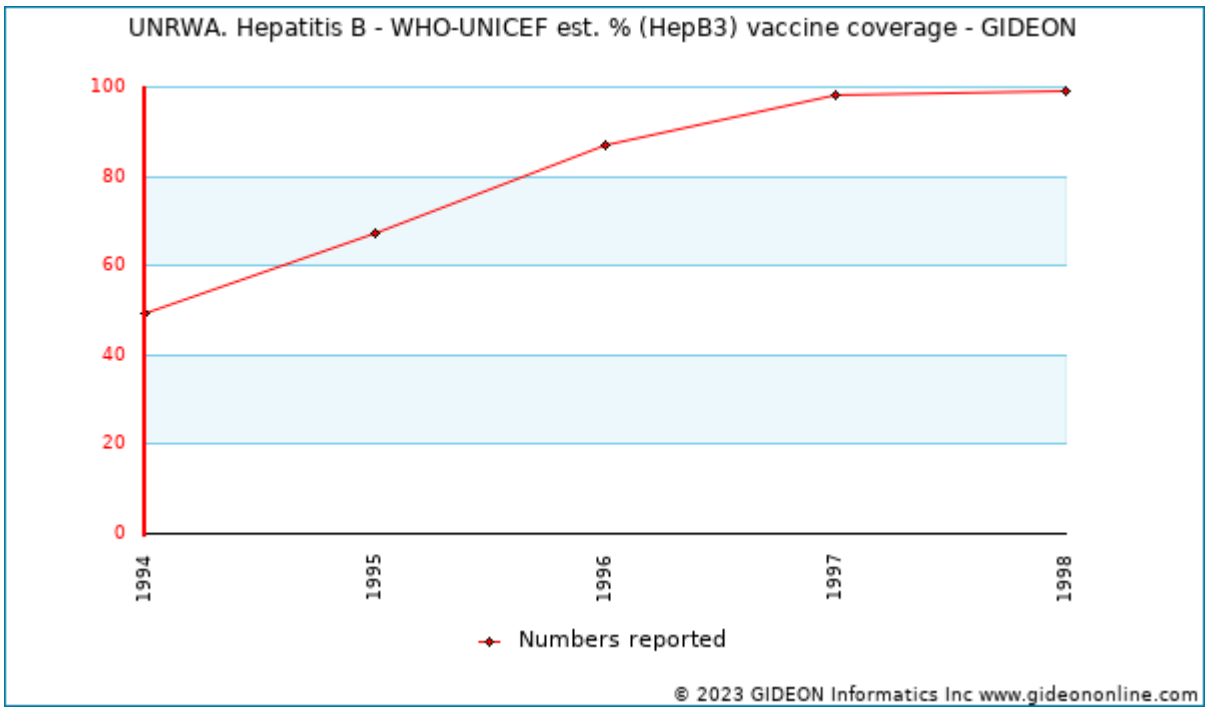
Notable outbreaks

Years	Region	Setting	Cases	Source	Notes
1972*		dialysis unit			[32]
1986	Haifa	hospital	5		Outbreak of fulminant hospital-acquired hepatitis. [33] [34] [35]
1986	Jerusalem		16	acupuncture	[36] [37]

***** indicates publication year (not necessarily year of outbreak)

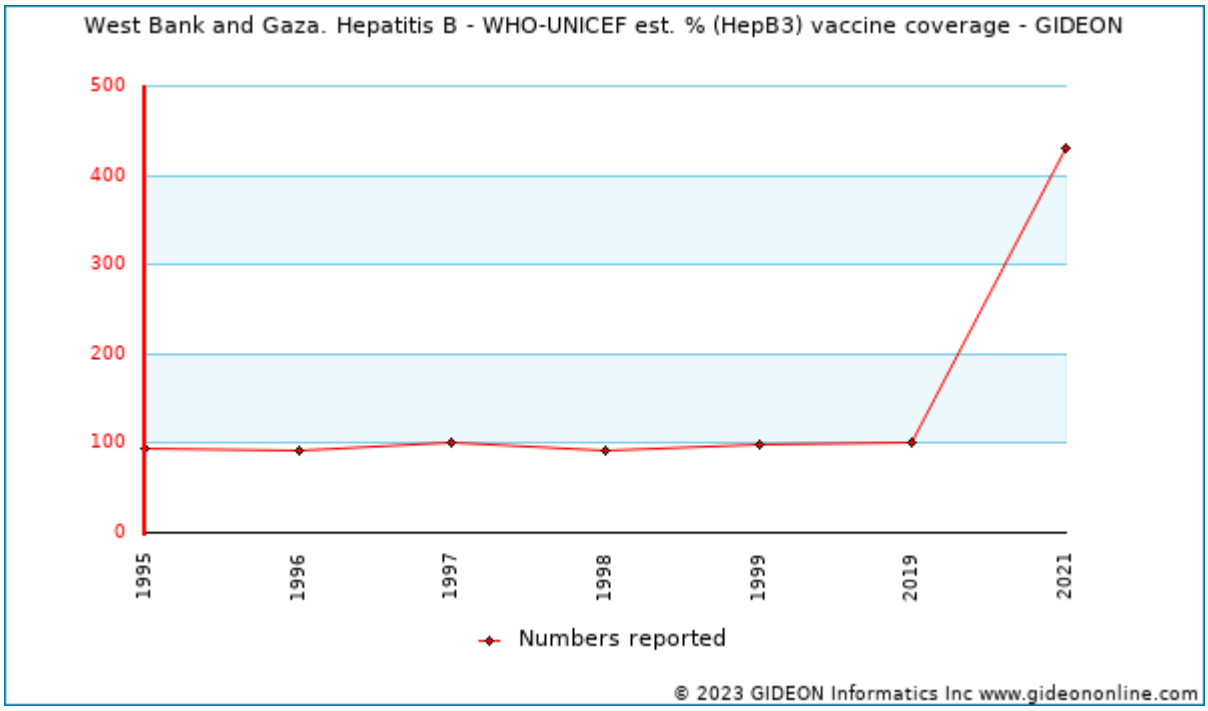
UNRWA:

Routine immunization is administered given at birth, 1 month and 6 months of age.

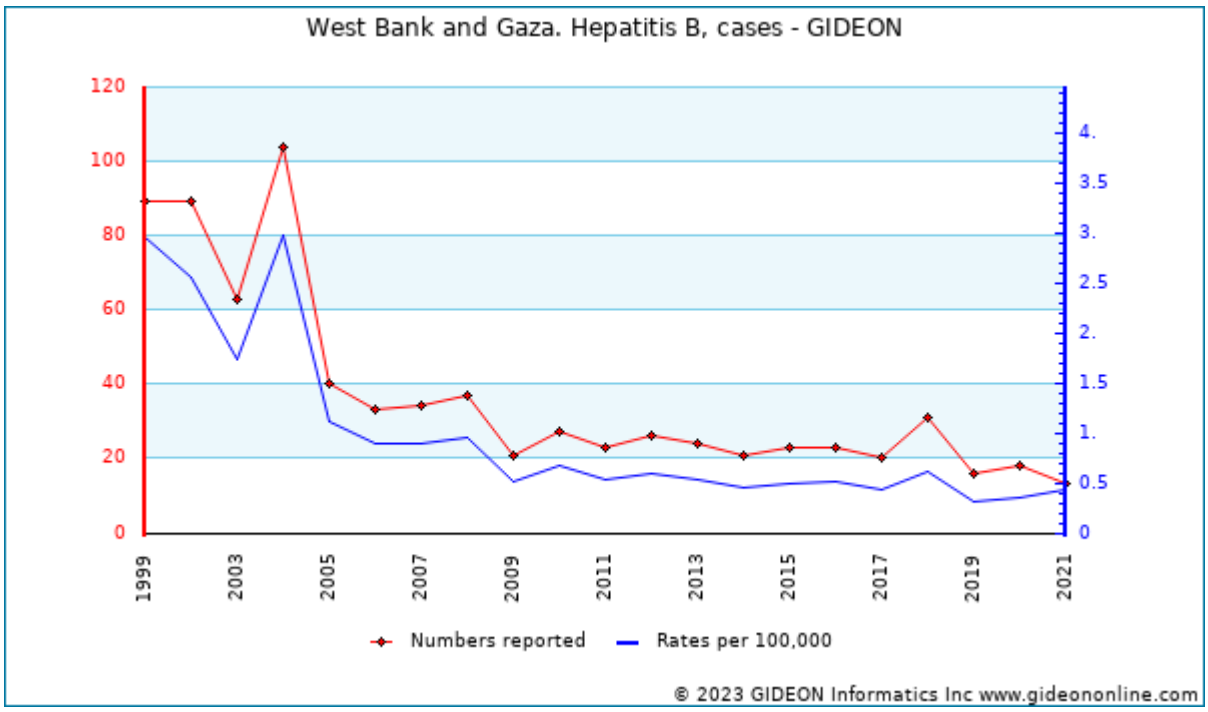


Graph: UNRWA. Hepatitis B - WHO-UNICEF est. % (HepB3) vaccine coverage

West Bank and Gaza

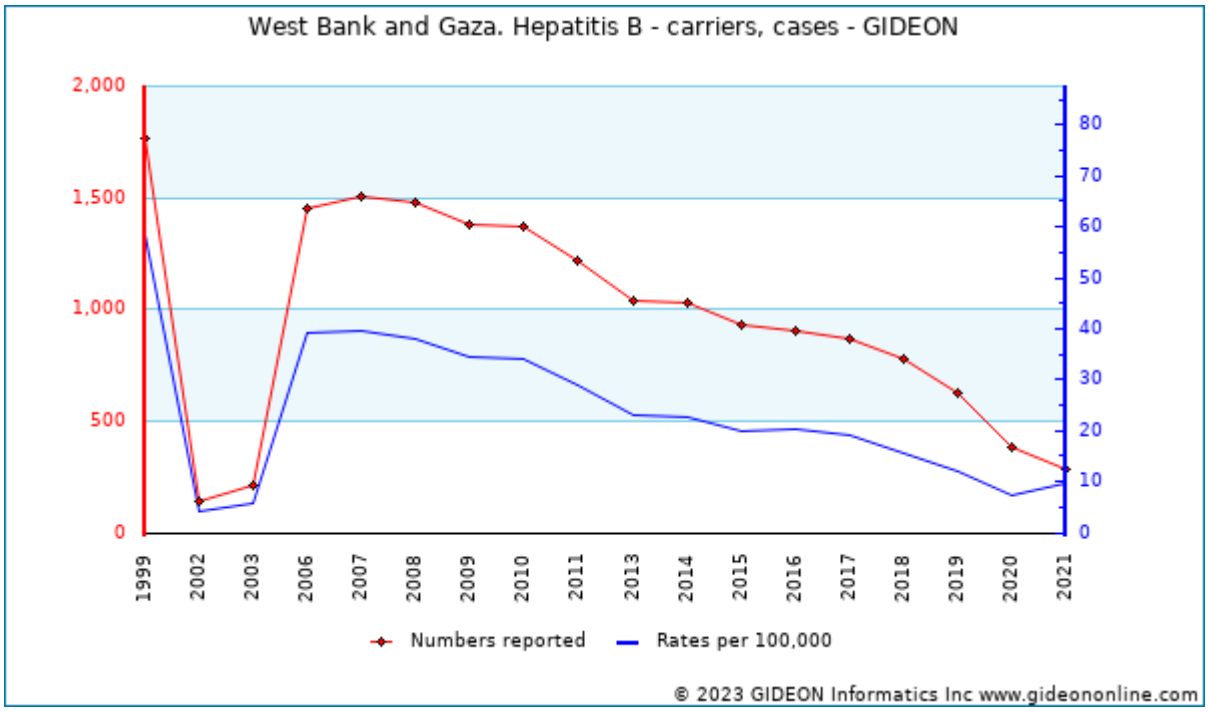


Graph: West Bank and Gaza. Hepatitis B - WHO-UNICEF est. % (HepB3) vaccine coverage



Graph: West Bank and Gaza. Hepatitis B, cases

Notes:
Individual years:
2011 - 97 cases were reported in Gaza



Graph: West Bank and Gaza. Hepatitis B - carriers, cases

References

1. Therap Adv Gastroenterol 2018 ;11:1756284818786108.
2. JAMA 2018 May 01;319(17):1802-1813.
3. Infection 1999 May-Jun;27(3):212-7.
4. J Clin Gastroenterol 1997 Jan ;24(1):30-3.
5. Int J Epidemiol 1993 Feb ;22(1):140-3.
6. Isr Med Assoc J 2008 Nov ;10(11):775-8.
7. J Urban Health 2012 Aug ;89(4):677.
8. Transl Gastroenterol Hepatol 2020 ;5:34.
9. J Eur Acad Dermatol Venereol 2011 Apr ;25(4):436-40.
10. J Med Virol 2014 Oct ;86(10):1694-9.
11. Immunol Res 2017 02 ;65(1):257-261.
12. Curr Opin Rheumatol 2019 Sep ;31(5):493-498.
13. Virol J 2010 Sep 01;7:210.
14. BMC Infect Dis 2016 Feb 01;16:41.
15. Ethn Health 2022 Feb 18;:1-10.
16. Harefuah 2012 Dec ;151(12):671-4, 722, 721.
17. J Viral Hepat 2020 Apr 09;
18. Isr J Med Sci 1994 May-Jun;30(5-6):368-70.
19. Vaccine 2021 Oct 20;
20. Eur J Epidemiol 1998 Jun ;14(4):333-7.
21. J Viral Hepat 1995 ;2(3):139-44.
22. Int J Risk Saf Med 1997 ;10(3):207-10.
23. Eye (Lond) 2022 Mar 29;
24. Int J Environ Res Public Health 2022 Nov 18;19(22)
25. Clin Rheumatol 2019 Feb 08;
26. Vaccine 2021 Oct 20;
27. Ethn Health 2022 Feb 18;:1-10.
28. Int J Epidemiol 1993 Feb ;22(1):140-3.
29. Isr J Med Sci 1988 Mar ;24(3):156-9.
30. Ethn Health 2022 Feb 18;:1-10.
31. Ethn Health 2022 Feb 18;:1-10.
32. Nephron 1972 ;9(2):113-22.
33. N Engl J Med 1991 Jun 13;324(24):1705-9.
34. Rev Latinoam Microbiol 1979 Jul-Sep;21(3):153-8.
35. Ann Intern Med 1989 May 01;110(9):691-8.
36. Eur J Epidemiol 1988 Sep ;4(3):322-5.
37. Harefuah 1989 Mar 15;116(6):300-2.

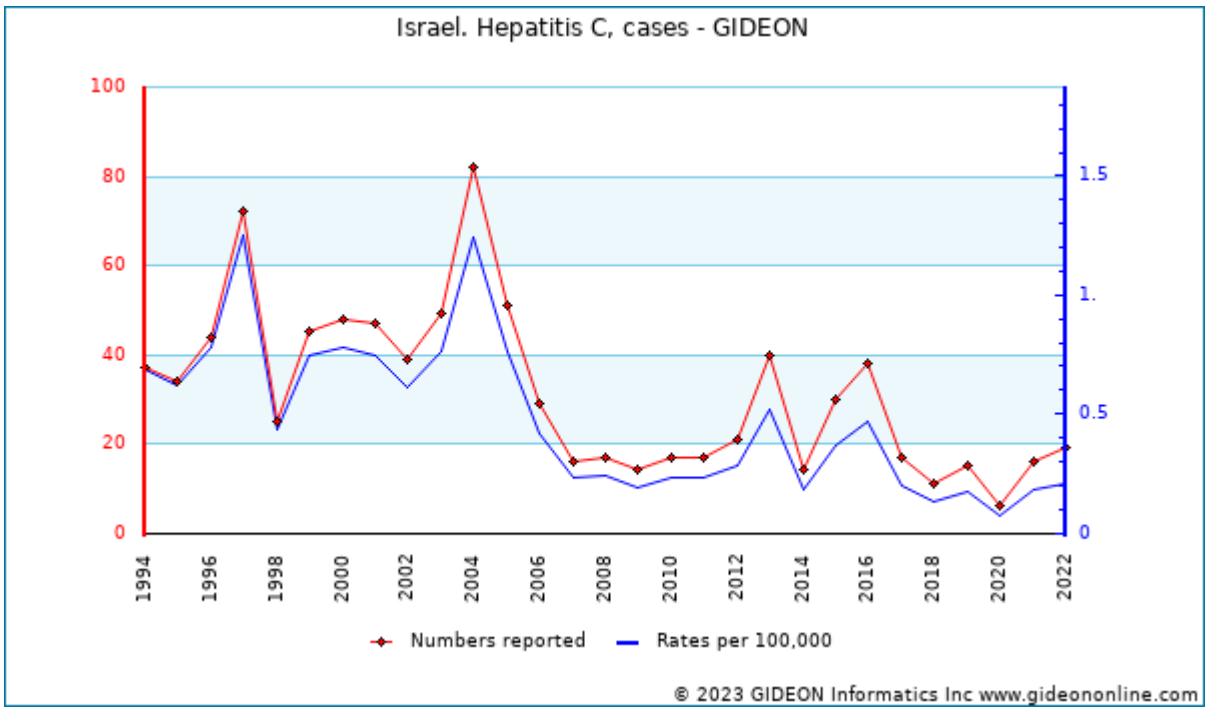
Hepatitis C

Agent	VIRUS - RNA. Flaviviridae, Hepacivirus: Hepatitis C virus
Reservoir	Human
Vector	None
Vehicle	Blood, Sexual contact, Transplacental
Incubation Period	5w - 10w (range 3w - 16w)
Diagnostic Tests	Serology. Nucleic acid amplification.
Typical Adult Therapy	Needle precautions. For chronic infection: Ledipasvir / Sofosbuvir (Genotype 1,4,5,6) OR Sofosbuvir / Velpatasvir (Genotype 1,2,3,4,5,6) OR Ombitasvir-Paritaprevir-Ritonavir + Dasabuvir + Ribavirin (Genotype 1,4) (Regimen / Duration dependent on viral genotype)[1] [2] [3] [4]
Typical Pediatric Therapy	Most agents recommended for adult disease are not currently licensed for use in children except (age >12): Sofosbuvir / Ribavirin Ledipasvir / Sofosbuvir Peginterferon alfa-2b 3 MU/m2 SC x1 weekly + Ribavirin 15mg/kg
Clinical Hints	- Vomiting and jaundice - May be history of transfusion or injection within preceding 1 to 4 months - Chronic hepatitis and fulminant infections are encountered - Hepatic cirrhosis or hepatoma may follow years after acute illness
Synonyms	Epatite C, HCV, Hepatite per virus C, Non-A, non-B parenteral hepatitis. ICD9: 070.2,070.3,070.44,070.51,070.54,070.7 ICD10: B17.1

Hepatitis C in Israel

- 2014 (publication year) - An estimated 100,000 individuals in Israel are infected with HCV. [5]

- 2007 (publication year) - In the era of blood screening, hepatitis C has become a largely iatrogenic disease in Israel. [6]



Graph: Israel. Hepatitis C, cases

Prevalence surveys

Years	Region	Study Group	%	Notes
2012	Multiple locations	patients	0.519	0.519% of patients enrolled in a Health Maintenance system (2012) [7]
2017*	Multiple locations	patients	1.06	Chronic hepatitis C was present in 1.06% of patients with systemic lupus erythematosus vs. 0.39% of a control group [8]
2017*		patients - dialysis	18	18% of hemodialysis patients and 7% of CAPD patients
1991 - 2014	Beer Sheva	pregnant women	0.1	[9]
2000 - 2019	Nationwide	patients - hepatitis	5.3	Hepatitis C RNA was detected in 5.3% of chronic hepatitis B patients [10]
1997		blood donors	0.44	0.44% of blood donors (estimated, 1997)
2014 - 2015	West Bank	patients - thalassemia	79	[11]

* indicates publication year (not necessarily year of survey)

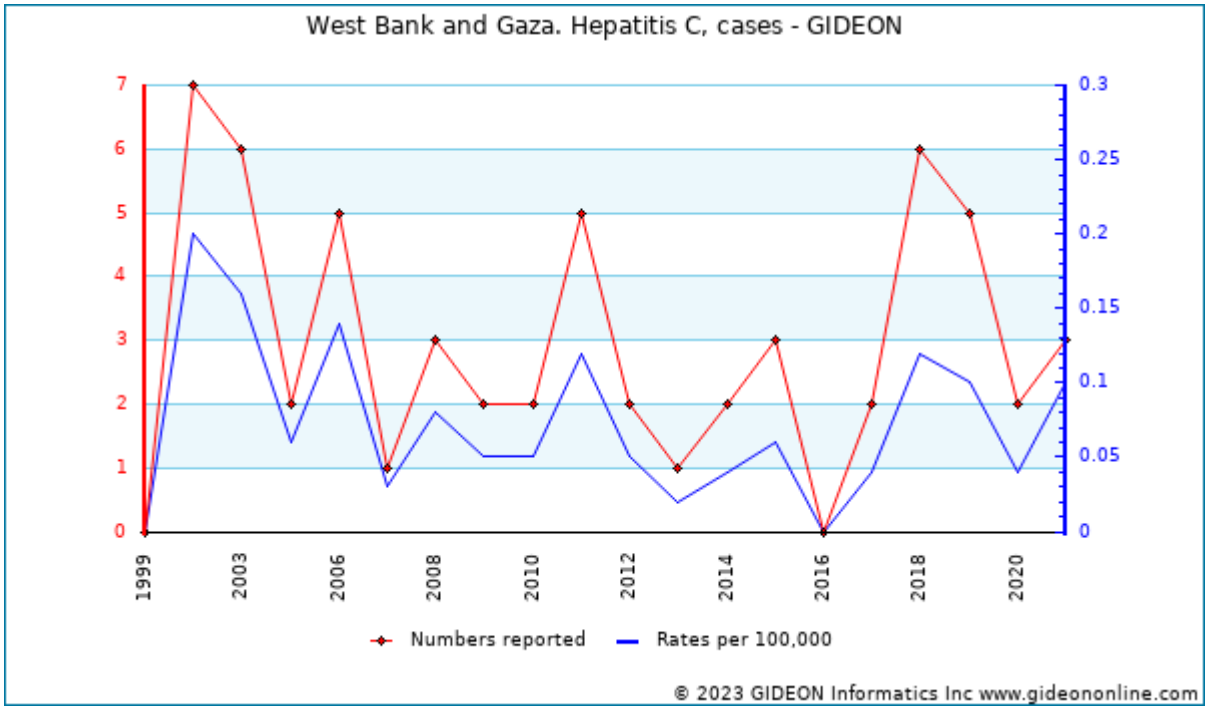
Seroprevalence surveys

Years	Region	Study Group	%	Notes
1990 - 1991		immigrants	1.3	1.33% of immigrants from the former Soviet Union (1990 to 1991) [12]
1997*	Jerusalem	immigrants	26.5	26.5% of Bukharian immigrants (1997 publication) [13]
1994*	Jerusalem	injecting drug users	54	54% of IDU in Jerusalem (1994 publication) [14]
2003 - 2005	Multiple locations	injecting drug users	35.7	35.7% of IDU (2003 to 2005) [15]
2012*	Jerusalem	injecting drug users	40.3	40.3% of Arab IDU in Jerusalem (2012 publication) [16]
2013	West Bank	injecting drug users	41	41% of IDU in Ramallah, Hebron, and Bethlehem governorates (2013) [17]
2009	Southern Region	women	8.2	8.2% of HIV-positive women (southern Israel, 2009)

Years	Region	Study Group	%	Notes
2018 - 2019	Tel Aviv	homeless	54.72	A study of HCV seroprevalence among homeless people who use drugs. [18]
2009*		patients	8.7	8.7% of patients with autoimmune diseases, vs. 0.4% of matched controls (2009 publication) [19]
2019*	Nationwide	patients	1.23	1.23% of patients with systemic sclerosis [20]
2010*	Gaza	patients - dialysis	22	22% of hemodialysis patients in Gaza (2010 publication) [21]
2014*	West Bank	patients - dialysis	27	27% of hemodialysis patients in Tulkarem and Jenin (2014 publication) [22]
2016*	West Bank	patients - dialysis	7.4	7.4% of hemodialysis patients in the West Bank (2016 publication) [23]
2009*	Multiple locations	health care workers	0.33	0.33% of dentists (2009 publication) [24]
2006*	Beer Sheva	sex workers	9	9% of female sex workers working illegally in Israel (Beer-Sheva, 2006 publication) [25]
1998*		alcoholics	7.6	7.6% of alcoholics (1998 publication) [26]
1992	Multiple locations	blood donors	0.55-0.66	0.66% male and 0.55% female blood donors (1992) [27]
2014 - 2015	West Bank	patients - thalassemia	5	[28]
1993 - 1995		patients - psychiatric	4.1	4.1% of high risk psychiatric inpatients (1993 to 1995) [29]
1999 - 2020		patients - eye	0.8	0.8% of patients with uveitis [30]
2018*	Tel Aviv	risk groups	3.1	Survey of high-risk Emergency Room patients [31]
2010*	Multiple locations	patients - lichen planus	1.9	1.9% of patients with lichen planus vs. 0.4% of controls (2010 publication) [32]
2002 - 2018	Tel Aviv	patients - HIV / AIDS	16.5	Among 1,660 patients with HIV, hepatitis C virus antibodies were detected in 274 (16.5%) samples. [33]

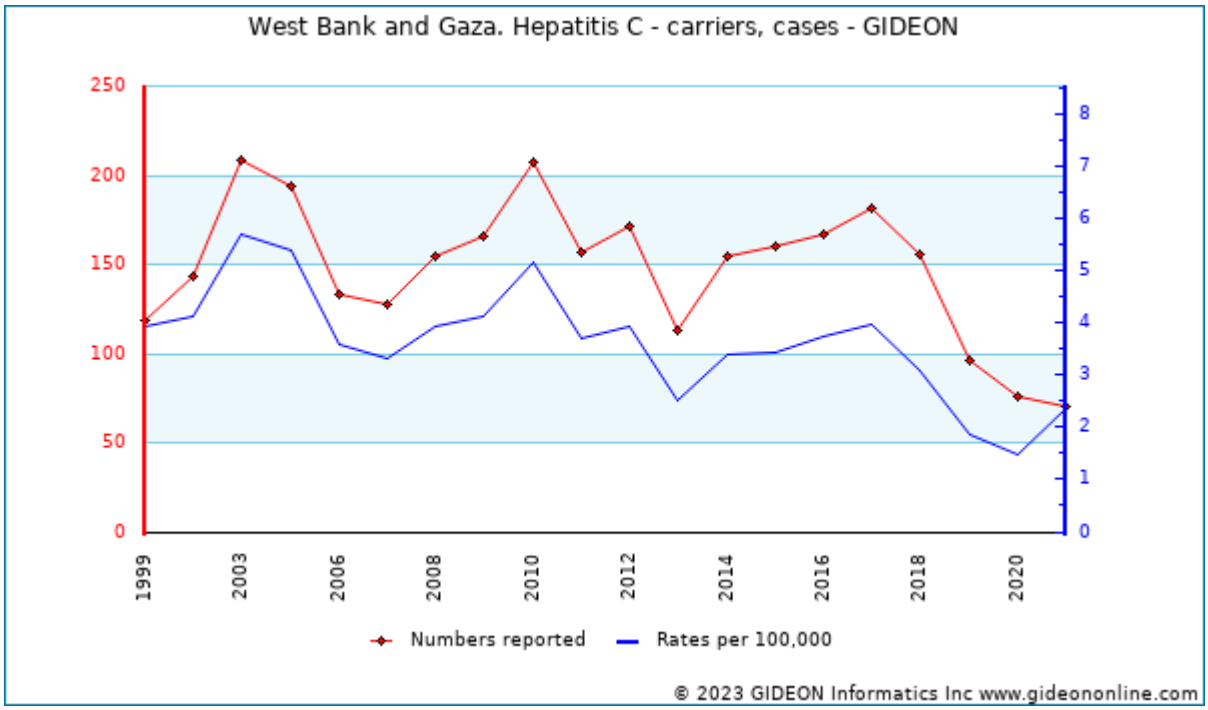
* indicates publication year (not necessarily year of survey)

West Bank and Gaza:



Graph: West Bank and Gaza. Hepatitis C, cases

Notes:
Individual years:
2011 - 23 cases were reported in Gaza



Graph: West Bank and Gaza. Hepatitis C - carriers, cases

Notable outbreaks

Years	Region	Setting	Cases	Source	Notes
2001 - 2003	Beer Sheva		33	physician	Outbreak related to an infected anesthesiologist. [34]
2016	Jerusalem	hospital	12	contrast material	Outbreak associated with injected contrast material used for computerized tomography. [35] [36]

References

1. World J Hepatol 2018 Oct 27;10(10):670-684.
2. Gastroenterology 2018 Oct 17;
3. Expert Rev Anti Infect Ther 2018 08 ;16(8):599-610.
4. Clin Infect Dis 2023 May 25;
5. Harefuah 2014 Jul ;153(7):392-3, 433.
6. J Gastroenterol Hepatol 2007 Feb ;22(2):158-64.
7. J Med Virol 2016 Jun ;88(6):1044-50.
8. Immunol Res 2017 04 ;65(2):477-481.
9. J Viral Hepat 2020 Apr 09;
10. Ethn Health 2022 Feb 18;:1-10.
11. Can J Infect Dis Med Microbiol 2018 ;2018:1039423.
12. Infection 1999 May-Jun;27(3):212-7.
13. J Clin Gastroenterol 1997 Jan ;24(1):30-3.
14. Addiction 1994 Jul ;89(7):869-74.
15. Isr Med Assoc J 2008 Nov ;10(11):775-8.
16. J Urban Health 2012 Aug ;89(4):677.
17. AIDS Care 2016 09 ;28(9):1159-65.
18. Subst Abuse 2022 ;16:11782218221095871.
19. J Autoimmun 2009 May-Jun;32(3-4):261-6.
20. Curr Opin Rheumatol 2019 Sep ;31(5):493-498.
21. Virol J 2010 Sep 01;7:210.
22. J Med Virol 2014 Oct ;86(10):1694-9.
23. BMC Infect Dis 2016 Feb 01;16:41.
24. Community Dent Health 2009 Jun ;26(2):99-103.
25. Sex Health 2006 Dec ;3(4):301-3.
26. Eur J Epidemiol 1998 Jun ;14(4):333-7.
27. J Viral Hepat 1995 ;2(3):139-44.
28. Can J Infect Dis Med Microbiol 2018 ;2018:1039423.
29. Int J Risk Saf Med 1997 ;10(3):207-10.
30. Eye (Lond) 2022 Mar 29;
31. World J Gastroenterol 2020 Aug 28;26(32):4878-4888.
32. J Eur Acad Dermatol Venereol 2011 Apr ;25(4):436-40.
33. Int J Environ Res Public Health 2022 Nov 18;19(22)
34. Clin Infect Dis 2007 Aug 15;45(4):e32-8.
35. PLoS One 2019 ;14(1):e0210173.
36. ProMED <promedmail.org> archive: 20160510.4213170

Hepatitis D

Agent	VIRUS - RNA. Deltavirus: Hepatitis D virus - a 'satellite' virus which is encountered as infection with a co-virus (Hepatitis B)
Reservoir	Human
Vector	None
Vehicle	Infected secretions, Blood, Sexual contact
Incubation Period	4w - 8w (range 2w - 20w)
Diagnostic Tests	Serology. Nucleic acid amplification.
Typical Adult Therapy	Needle precautions; supportive Bulevirtide 2 mg SC daily Interferon alfa 2-a has been used. Foscarnet has been used. 1
Typical Pediatric Therapy	Needle precautions; supportive
Clinical Hints	- Vomiting and jaundice - Biphasic course often noted - Occurs as a coinfection or superinfection of hepatitis B - May be chronic or fulminant - Hepatitis D coinfection worsens prognosis of Hepatitis B
Synonyms	Epatite D, Hepatitis delta. ICD9: 070.41,070.52 ICD10: B17.0

Hepatitis D in Israel

Seroprevalence surveys

Years	Region	Study Group	%	Notes
2000 - 2019	Nationwide	patients - hepatitis	4.9	4.9% of chronic hepatitis B patients [2]
1988*	Jerusalem	HBsAg-positives	20	20% of HBsAg-positive patients with advanced liver disease (1988 publication) [3]
1993*	Tel Aviv	HBsAg-positives	18	18% of HBsAg-positive IDU and 3% of HBsAg-negative IDU (1993 publication) [4]
2010 - 2015	Multiple locations	HBsAg-positives	6.5	[5]

* indicates publication year (not necessarily year of survey)

References

1. Prog Clin Biol Res 1987 ;234:309-20.
2. Ethn Health 2022 Feb 18;:1-10.
3. Isr J Med Sci 1988 Mar ;24(3):156-9.
4. Int J Epidemiol 1993 Feb ;22(1):140-3.
5. BMC Infect Dis 2018 Feb 27;18(1):97.

Hepatitis E

Agent	VIRUS - RNA. Hepeviridae: Hepatitis E virus
Reservoir	Human, Rodent, Pig, Rabbit, Zoonotic
Vector	None
Vehicle	Fecal-oral, Water, Shellfish, Blood, Meat
Incubation Period	30d - 40d (range 10d - 70d)
Diagnostic Tests	Identification of virus by immune electron microscopy (stool). Serology. Nucleic acid amplification.
Typical Adult Therapy	Stool precautions; supportive Ribavirin 300-500 mg PO BID has been used successfully in patients with Genotype 3[1]
Typical Pediatric Therapy	Stool precautions; supportive Ribavirin 15 mg/kg BID has been used successfully in patients with Genotype 3
Vaccine	Hepatitis E vaccine
Clinical Hints	- Clinically similar to hepatitis A - Chronic residua are rare - Severe or fatal if acquired during pregnancy (10% to 24% case-fatality rate).
Synonyms	Epatite E, HEV-C, Non-A, non-B enteric hepatitis, Rat Hepatitis E. ICD9: 070.43,070.53 ICD10: B17.2

Hepatitis E in Israel

- 1993 to 2013 - 68 cases of acute Hepatitis E virus infection *5 with fulminant hepatitis) were reported. 41% of infections were autochthonous, 44% travel-related and 15% imported by foreign workers. [2] [3]

- 1997 to 2012 - Nineteen Israelis were treated for travel-related hepatitis E at two medical centers. [4]
- 1999 (publication year) - Five Israeli travelers acquired hepatitis E overseas (India and Nepal) - all recovered. [5]

Prevalence surveys

Years	Region	Study Group	%	Notes
2016 - 2017	Multiple locations	pigs	22.8	Survey of farmed pigs
2016*	Multiple locations	sewage	8.3	8.3% of sewage samples (2016 publication) [6]
2016*	Multiple locations	patients - hepatitis	6.1	6.1% of patients with acute hepatitis (2016 publication) [7]
2017 - 2020		patients - hepatitis	2	Survey of patients suspected of having hepatitis E [8]

* indicates publication year (not necessarily year of survey)

Seroprevalence surveys

Years	Region	Study Group	%	Notes
		immigrants	9.6	9.6% of Ethiopian immigrants
2016 - 2017	Multiple locations	pigs	75.9	Survey of farmed pigs [9]
2000*		travelers	0	0% of Israeli back-packers traveling overseas (2000 publication) [10]
2009 - 2016	Southern Region	various	3.1-68.6	3.1% of Jews, 21.6% of Bedouins, 15.0% of non-Bedouin Arabs and 68.6% of dromedary camels [11]
2009 - 2016		general population	13	13% of Bedouin

Years	Region	Study Group	%	Notes
1995*	Multiple locations	general population	1.81-2.81	2.81% of Jews and 1.81% of Arabs (1995 publication) [12]
2009 - 2010	Multiple locations	general population	10.6	10.6% of the general population, with highest rates among persons ages >=60, Arabs and in-migrants from Africa and Asia (2009 to 2010) [13]
2015 - 2017	West Bank	general population	3.7	[14]
1995*		patients - hemophilia	9	9% of hemophiliacs (1995 publication) [15]

* indicates publication year (not necessarily year of survey)

References

1. J Viral Hepat 2016 Feb ;23(2):68-79.
2. J Clin Virol 2015 Dec ;73:20-24.
3. World J Gastroenterol 2016 Jun 28;22(24):5568-77.
4. J Travel Med 2013 Jul-Aug;20(4):232-6.
5. Clin Infect Dis 1999 Nov ;29(5):1312-4.
6. Am J Trop Med Hyg 2016 07 06;95(1):216-20.
7. Am J Trop Med Hyg 2016 07 06;95(1):216-20.
8. Viruses 2021 Nov 22;13(11)
9. Euro Surveill 2018 Dec ;23(49)
10. J Travel Med 2000 Jul-Aug;7(4):208-10.
11. Epidemiol Infect 2019 Jan ;147:e92.
12. J Med Virol 1995 Mar ;45(3):316-20.
13. Emerg Infect Dis 2015 Apr ;21(4):692-4.
14. Can J Infect Dis Med Microbiol 2022 ;2022:4935811.
15. J Med Virol 1995 Jun ;46(2):153-6.

Herpes B infection

Agent	VIRUS - DNA. Herpesviridae, Alphaherpesviridae, Simplexvirus: Cercopithecine herpesvirus 1 (Herpes B virus)
Reservoir	Monkey (*Macaca species* and *Cynomolgus*), Zoonotic
Vector	None
Vehicle	Contact or bite, Respiratory or pharyngeal acquisition
Incubation Period	10d - 20d (range 2d - 60d)
Diagnostic Tests	Biosafety level 4. Viral culture (skin exudates). Nucleic acid amplification.
Typical Adult Therapy	Therapy: Acyclovir 10 mg/kg IV q8h. OR Ganciclovir 5 mg/kg IV q12h for 14-21d Follow with prolonged Acyclovir 800 mg PO 5X daily OR Valacyclovir 1 g PO TID. Postexposure prophylaxis: Valacyclovir 1g PO q8h X 14 days. OR Acyclovir 800 mg PO X 14 days[1] [2]
Typical Pediatric Therapy	Acyclovir or Ganciclovir as for adult.
Clinical Hints	- Skin vesicles, lymphadenopathy, myalgia, singultus, major neurological signs - Usually onset within one month of contact with monkey - Case-fatality rates exceed 80% - Permanent neurological residua are common
Synonyms	Cercopithecine herpesvirus 1, Herpes B, Herpesvirus simiae, Macacine herpesvirus 1, McHV-1. ICD9: 078.89 ICD10: B00.4

References

1. J Occup Med Toxicol 2009 Nov 26;4:29.

2. Sante 2008 Jan-Mar;18(1):3-8.

Herpes simplex encephalitis

Agent	VIRUS - DNA. Herpesviridae, Alphaherpesvirinae, Simplexvirus: Human herpesvirus (usually type I)
Reservoir	Human
Vector	None
Vehicle	Infected secretions, Sexual contact
Incubation Period	Unknown
Diagnostic Tests	Viral culture CSF usually negative. CT brain. Compare CSF/blood antibody levels. Nucleic acid amplification.
Typical Adult Therapy	Acyclovir 10 mg/kg IV Q8h[1] [2]
Typical Pediatric Therapy	Acyclovir 10 mg/kg IV Q8h
Clinical Hints	- Rapidly-progressive severe encephalitis - Exanthem not evident in most cases - Often unilateral, with temporal and parietal lobe predominance - Permanent residua and high case-fatality rate in untreated cases
Synonyms	ICD9: 054.3 ICD10: B00.4

Herpes simplex encephalitis in Israel

References

1. Med Lett Drugs Ther 2018 Sep 24;60(1556):153-157.
2. Curr Infect Dis Rep 2017 Mar ;19(3):13.
3. Acta Neurol Scand 1996 Feb-Mar;93(2-3):149-55.
4. Arch Dis Child 1999 Jan ;80(1):69-71.
5. Epilepsy Res 2023 May ;192:107137.

Herpes simplex infection

Agent	VIRUS - DNA. Herpesviridae, Alphaherpesvirinae, Simplexvirus: Human herpesvirus I and II
Reservoir	Human
Vector	None
Vehicle	Infected secretions, Sexual contact, Breastfeeding, Respiratory or pharyngeal acquisition
Incubation Period	1d - 14d
Diagnostic Tests	Viral culture or microscopy of lesions. Serology. Nucleic acid amplification.
Typical Adult Therapy	Skin / lesion precautions Famciclovir 1,500 mg PO once OR Valacyclovir 1 g PO BID X 1d OR Acyclovir 400 mg PO X 5 per day X 5d Dosage and duration may vary for initial vs. recurrent vs. suppressive regimens.[1] [2]
Typical Pediatric Therapy	Skin / lesion precautions Acyclovir 10 mg/kg PO QID X 7 d
Clinical Hints	- Recurring localized crops of painful vesicles on a red base - Regional adenopathy often present - May follow a prodrome of neuropathy or hyperesthesia
Synonyms	Herpes gladiatorum, Herpes rugbiorum, Herpes simplex, Scrum pox. ICD9: 054.0,054.1,054.2,054.4,054.5,054.6,054.7,054.8,054.9 ICD10: A60,B00

Herpes simplex infection in Israel

The incidence of genital herpes infection was 32.4/1,000 in 1990 (21% of these due to HSV-1).

74 cases of genital herpes were confirmed during 1973 to 1979; 24 in 1980. [3]

Prevalence surveys

Years	Region	Study Group	%	Notes
2023*	Jerusalem	transplant donors	0-5.7	A retrospective, interventional case series of 88 donor corneoscleral buttons (CSBs) collected from the conjunctiva, iris, and endothelium was done. Transplanted eyes were evaluated and followed up. Herpes simplex virus (HSV)-1 DNA was detected in 5 (5.7%) of 88 CSBs. Herpes simplex virus (HSV)-2 was not detected in any CSB. Among the recipients, 1 (16.7%) developed dendritic epitheliopathy and keratouveitis typical of HSV 12 months after transplantation. The graft remained clear after treatment. One cornea was used for a tectonic graft and stayed edematous at the 20-month follow-up. The remaining corneas remained clear. [4]
2016 - 2020	Northern Region	patients - CNS	2.9	Survey of CSF specimens collected from patients admitted to hospital in Safed with suspected meningitis or encephalitis. HSV-1 DNA was detected in 1.9%, and HSV-2 DNA in 1.0% of all test-positive specimens. [5]

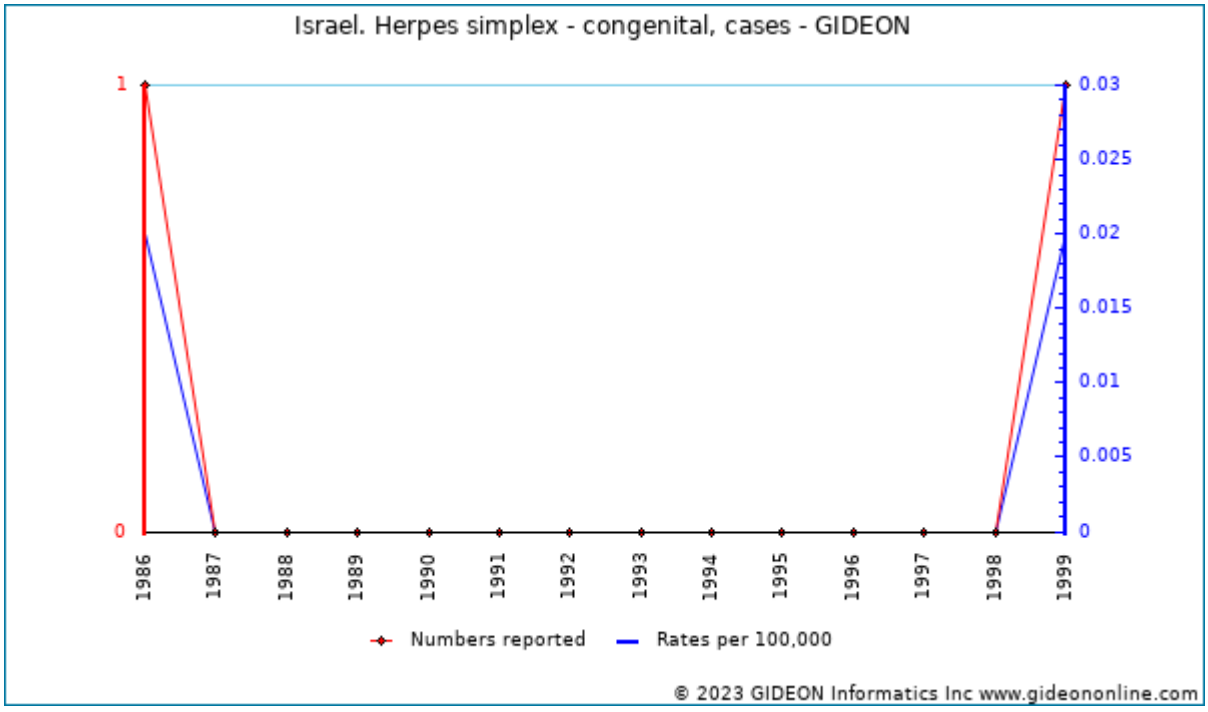
***** indicates publication year (not necessarily year of survey)

Seroprevalence surveys

Years	Region	Study Group	%	Notes
		children	22	22% of children ages 6 to 12 months (HSV-1)
1986 - 1990		women	2-3	2 to 3% of healthy women were seropositive (HSV-2) during 1986 to 1990 [6]

Years	Region	Study Group	%	Notes
1998 - 1999		women	4-5	4 to 5% of healthy women, during 1998 to 1999 [7]
2009	Southern Region	women	1.2	1.2% of HIV-positive women (HSV-2, southern Israel, 2009)
2011*	Central Region	patients	14	14% of patients with vestibular neuritis and 6% of controls (HSV-1 in saliva, 2011 publication) [8]
2011*		general population	60	60% by age 21 years
1998 - 1999		general population	87	87% by age 70 years (1998 to 1999)
2000 - 2001		general population	50	50% (HSV-1) by age of 14 years (2000 to 2001) [9]
2000 - 2001	Multiple locations	general population	9.2-59.8	9.2% (HSV-2) and 59.8% (HSV-1) in the general population (2000 to 2001) [10]
2000 - 2001	Tel Aviv	sex workers	61	61% of CSW in the Tel Aviv region (HSV-2)
2008*	Tel Aviv	sex workers	60	60% of brothel-based CSW in Tel Aviv (HSV-2, 2008 publication) [11]
2003*		pregnant women	13.3	13.3% of pregnant women (HSV-2) (2003 publication) [12]
2013 - 2015	Foreign Country	blood donors	80.5	Serosurvey of expatriate blood donors from West Bank and Gaza, residing in Qatar [13]
1998 - 1999	Haifa	patients - STD	9.33	9.33% of STD patients (HSV-2) (1998 to 1999) [14]

***** indicates publication year (not necessarily year of survey)

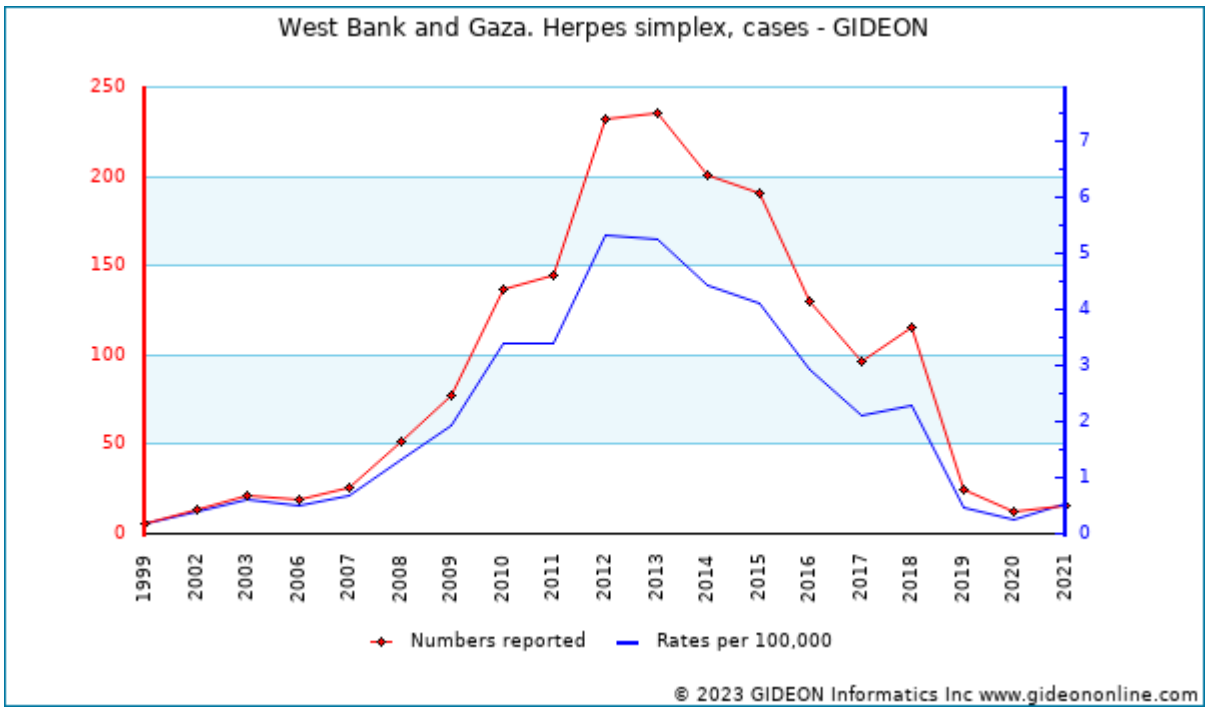


Graph: Israel. Herpes simplex - congenital, cases

Notes:
Individual years:
1986 - Nonfatal infection.

- 1993 to 2002 - Herpes simplex 1 accounted for 66.3% of genital herpes infections in the Tel Aviv area. [15]
- 2001 to 2007 - 22 cases of neonatal Herpes simplex infection were identified among five centers - 8.4 per 100,000

live births. Ritual circumcision was the source for infection in 7 cases (31.8%). [16]



Graph: West Bank and Gaza. Herpes simplex, cases

Notes:
Individual years:
1999 - 37 cases of genital herpes were reported.

References

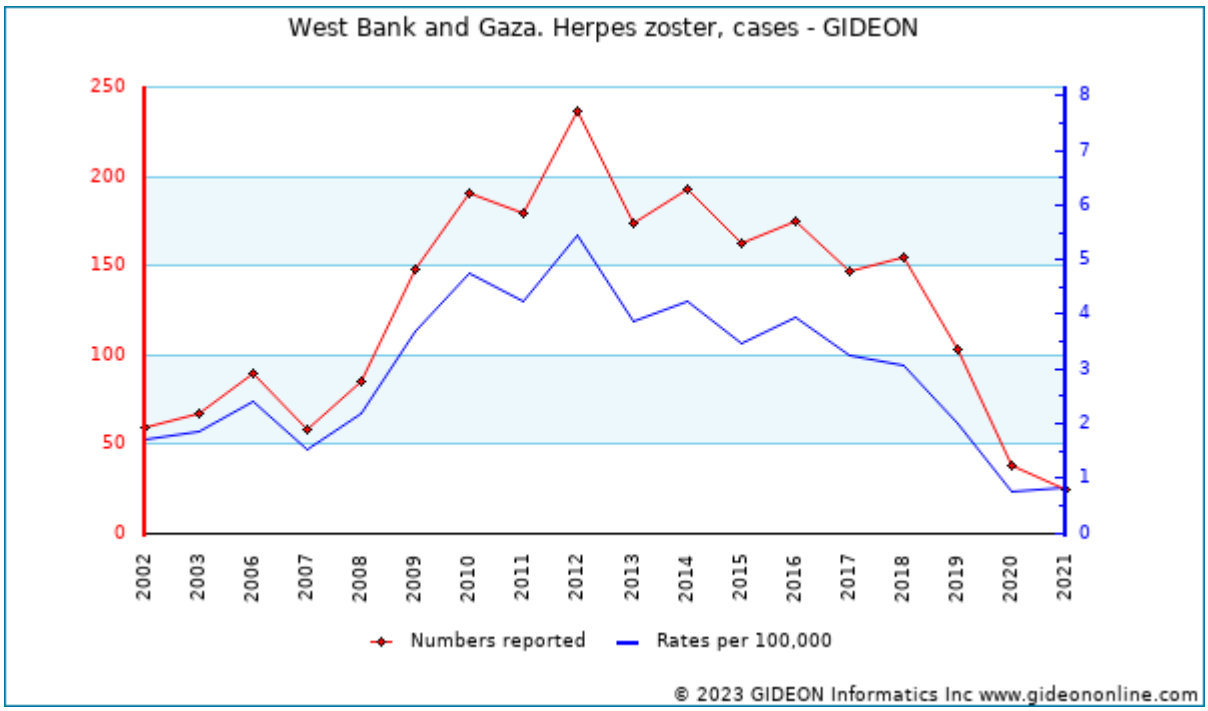
1. 2016 ;
2. Med Lett Drugs Ther 2018 Sep 24;60(1556):153-157.
3. Isr J Med Sci 1982 Sep ;18(9):941-6.
4. Cornea 2023 Apr 01;42(4):412-415.
5. Diagn Microbiol Infect Dis 2022 Jul 18;104(3):115769.
6. Isr J Med Sci 1994 May-Jun;30(5-6):379-83.
7. J Clin Virol 2002 Feb ;24(1-2):85-92.
8. Neurologist 2011 Nov ;17(6):330-2.
9. Eur J Epidemiol 2007 ;22(9):641-6.
10. J Infect 2006 May ;52(5):367-73.
11. Int J STD AIDS 2008 Oct ;19(10):656-9.
12. Sex Transm Dis 2003 Nov ;30(11):835-8.
13. J Med Virol 2018 Jan ;90(1):184-190.
14. Isr Med Assoc J 2003 Sep ;5(9):626-8.
15. Sex Transm Dis 2003 Oct ;30(10):794-6.
16. Pediatr Infect Dis J 2013 Feb ;32(2):120-3.

Herpes zoster

Agent	VIRUS - DNA. Herpesviridae, Alphaherpesvirinae: Varicella-zoster virus
Reservoir	Human
Vector	None
Vehicle	Air, Direct contact
Incubation Period	Unknown
Diagnostic Tests	Viral culture (vesicles). Serology. Nucleic acid amplification.
Typical Adult Therapy	Skin / lesion precautions Acyclovir 800 mg PO X 5 daily X 7d. OR Famciclovir 500 PO TID X 7d. OR Valacyclovir 1 g PO TID X 7d[1] [2]
Typical Pediatric Therapy	Skin / lesion precautions Acyclovir 20 mg/kg PO QID X 7 d
Vaccine	Herpes zoster - live vaccine
Clinical Hints	- Patients usually above age 50 - Unilateral dermatomal pain, tenderness and paresthesia - Rash appears after 3 to 5 days - macular, erythematous lesions which evolve into vesicles - Trunk and chest wall most commonly involved; but eyes, extremities and other areas also affected - Recurrence is common
Synonyms	Fuocodi Saint'Antonio, Shingles, Zona, Zoster. ICD9: 053 ICD10: B02

Herpes zoster in Israel

2006 to 2008 - The rate of herpes zoster among children in Central Israel was 130 per 100,000 person-life-years. [3]



Graph:

West Bank and Gaza. Herpes zoster, cases

References

1. Cutis 2017 Nov ;100(5):321;324;330.
2. Med Lett Drugs Ther 2018 Sep 24;60(1556):153-157.
3. Pediatr Infect Dis J 2012 Sep ;31(9):906-9.

Histoplasmosis

Agent	FUNGUS. Ascomycota, Euascomycetes, Onygenales: *Histoplasma capsulatum* var. *capsulatum* A dimorphic fungus
Reservoir	Soil, Caves, Chicken roosts, Bat, Zoonotic
Vector	None
Vehicle	Air, Respiratory or pharyngeal acquisition
Incubation Period	10d - 14d (range 5d - 25d)
Diagnostic Tests	Fungal culture. Serologic tests less helpful. Antigen tests currently under study. Nucleic acid amplification.
Typical Adult Therapy	Itraconazole 200 mg PO TID X 3 days, then 1-2 daily X 6-12w For severe or immunocompromised patients: Liposomal Amphotericin B 3 to 5 mg/kg/d OR Amphotericin B deoxycholate 0.7 to 1 mg/kg/d, followed by Itraconazole as above[1]
Typical Pediatric Therapy	Itraconazole 2 to 5 mg/kg PO TID X 3 days, then BID daily X 12w. For severe or immunocompromised patients: Liposomal Amphotericin B 3 to 5 mg/kg/d X 2w, followed by Itraconazole as above
Clinical Hints	- Fever, cough, myalgia - Pulmonary infiltrates and calcifying hilar lymphadenopathy - Chronic multisystem infection is often encountered
Synonyms	Darling's disease, Histoplasma capsulatum, Histoplasmose, Ohio River Valley Fever, Ohio Valley disease, Reticuloendothelial cytomycosis. ICD9: 115.0 ICD10: B39.0,B39.1,B39.2,B39.3,B39.4

Although Histoplasmosis is not endemic to Israel, imported, expatriate or other presentations of the disease have been associated with this country.

Histoplasmosis in Israel

- 2015 (publication year) - 22 of 23 cases of histoplasmosis among returning Israeli travelers were acquired in Central or South America and one in North America. [2]

- 1977 (publication year) - *Histoplasma capsulatum* was identified in a bat cave in the Galilee. [3]

References

1. Clin Infect Dis 2007 Oct 01;45(7):807-25.
2. Am J Trop Med Hyg 2015 Jun ;92(6):1168-72.
3. Am J Trop Med Hyg 1977 Jan ;26(1):140-7.

HIV infection - initial illness

Agent	VIRUS - RNA. Retroviridae, Lentivirinae: Human Immunodeficiency Virus
Reservoir	Human
Vector	None
Vehicle	Blood, Semen, Sexual contact, Transplacental, Breastfeeding
Incubation Period	1w - 6w
Diagnostic Tests	HIV antibody (ELISA, Western blot). HIV or HIV antigen assays. Nucleic acid amplification.
Typical Adult Therapy	Antiretroviral therapy - most experts will initiate treatment even if no symptoms + normal CD4 count.
Typical Pediatric Therapy	Antiretroviral therapy - most experts will initiate treatment even if no symptoms + normal CD4 count.
Clinical Hints	- Most common among "high risk" patients (illicit drug use, commercial sex work, men who have sex with men, etc) - Fever, diarrhea, sore throat and a mononucleosis-like illness - Symptoms subside within two weeks; but may persist for as long as ten weeks
Synonyms	HIV, HIV infection, HTLV-III infection. ICD9: 042 ICD10: B20,B21,B22,B23,B24

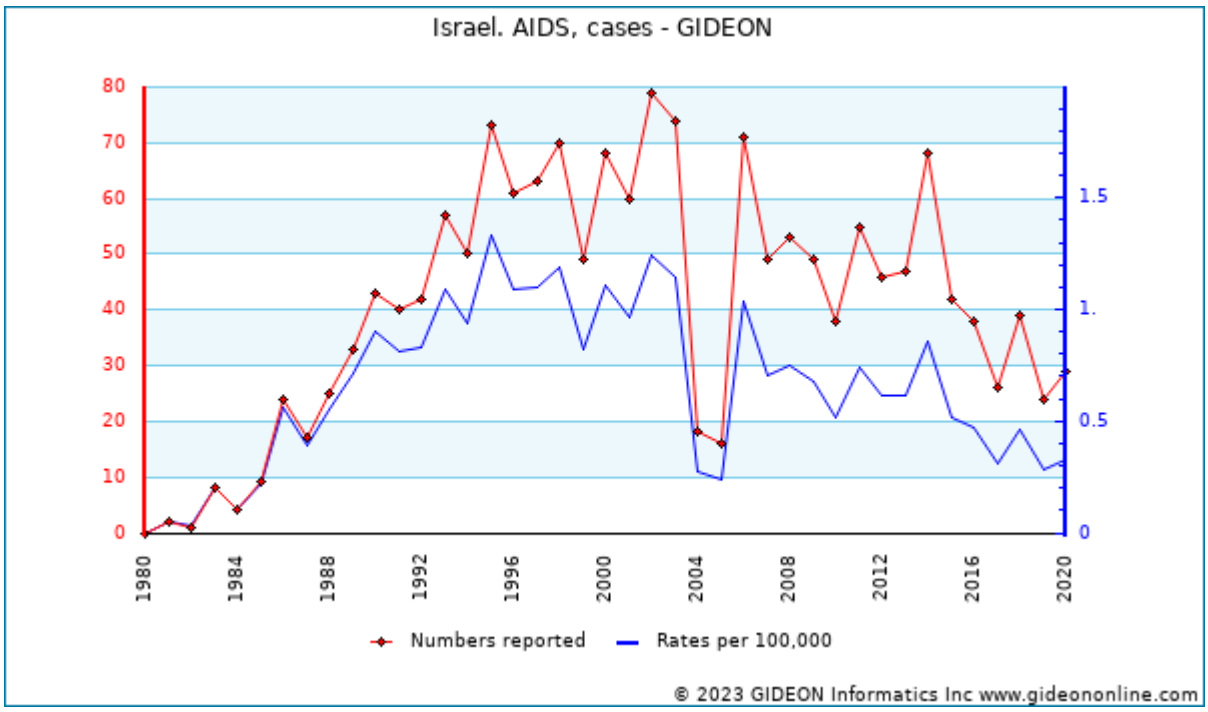
HIV/AIDS

Agent	VIRUS - RNA. Retroviridae, Lentivirinae: Human Immunodeficiency Virus, HIV
Reservoir	Human
Vector	None
Vehicle	Blood, Semen, Sexual, Transplacental, Breastfeeding
Incubation Period	2m - 10y (50% within 10y)
Diagnostic Tests	HIV antibody (ELISA, Western blot). Nucleic acid amplification. Tests for HIV antigen & viral load as indicated.
Typical Adult Therapy	Regimens vary - in general: Two Nucleoside/nucleotide reverse transcriptase inhibitors + A Non-nucleoside reverse transcriptase inhibitor OR a Protease Inhibitor OR an Integrase strand transfer inhibitor
Typical Pediatric Therapy	As for adult
Vaccine	Ibalizumab
Clinical Hints	- Most often associated with drug abuse, blood products, men who have sex with men, hemophilia - Severe and multiple episodes of infection (herpes simplex, moniliasis, candidiasis, etc) - Chronic cough, diarrhea, weight loss, lymphadenopathy, retinitis, encephalitis or Kaposi's sarcoma
Synonyms	AIDS, ARC, GRID, HIV-1, HIV-2, HIV-AIDS, SIDA, Slim disease. ICD9: 042 ICD10: B20,B21,B22,B23,B24

HIV/AIDS in Israel

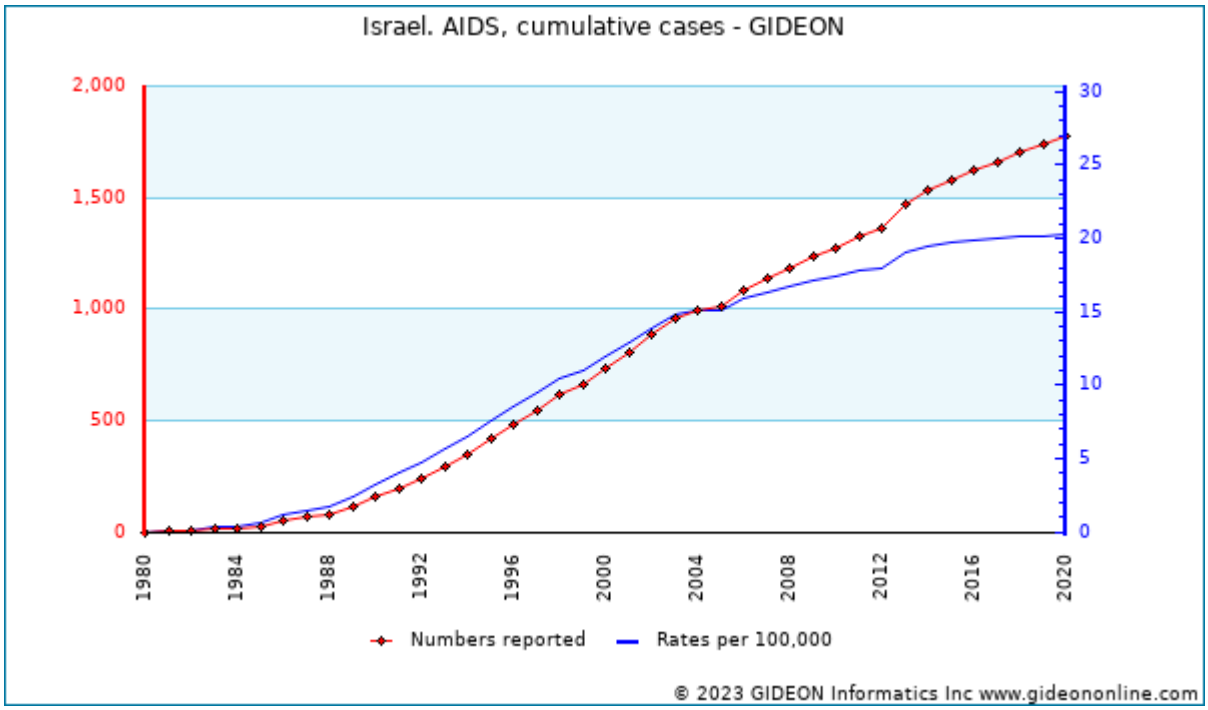
The first case of AIDS was reported in 1982 - a heterosexual male. [1]

- 2021 - A total of 367 new cases were reported, showing an increase of 0.8% from that in 2020. The incidence rate of HIV/AIDS was reported as 3.9 new cases per 100,000 population.



Graph: Israel. AIDS, cases

Notes:
1. 35 cases were reported during 1982 to January 1988. [2]



Graph: Israel. AIDS, cumulative cases

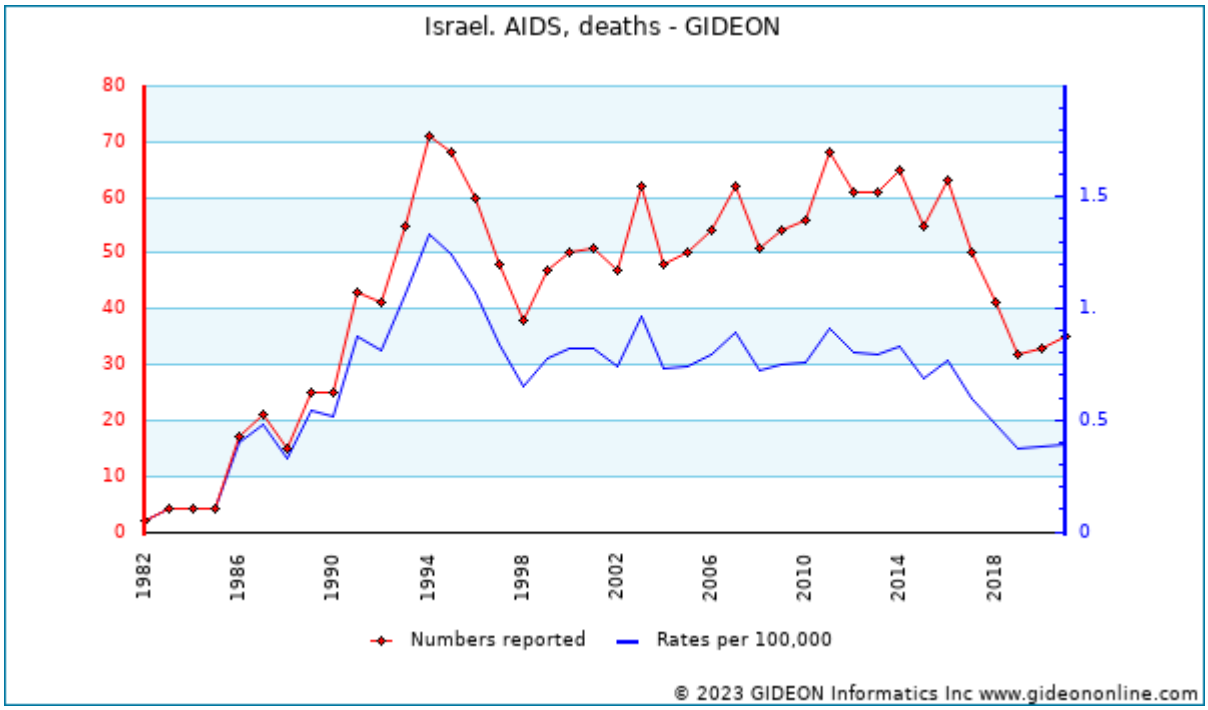
Cases to March 1997: 83% ages 15 to 49; m/f = 2.57/1.

25 cases of AIDS and 51 HIV-positives were reported among Israeli Arabs during 1985 to 2002 - 10.1 per 100,000 (vs. 37.8 per 100,000 among Israeli Jews). [3]

Demography and risk factors
Cases reported to December 2013: 72.7% males; 20.3% men who have sex with men; 15.1% IDU; 4.0% transfusion/ hemophilia; 2.6% mother to infant.

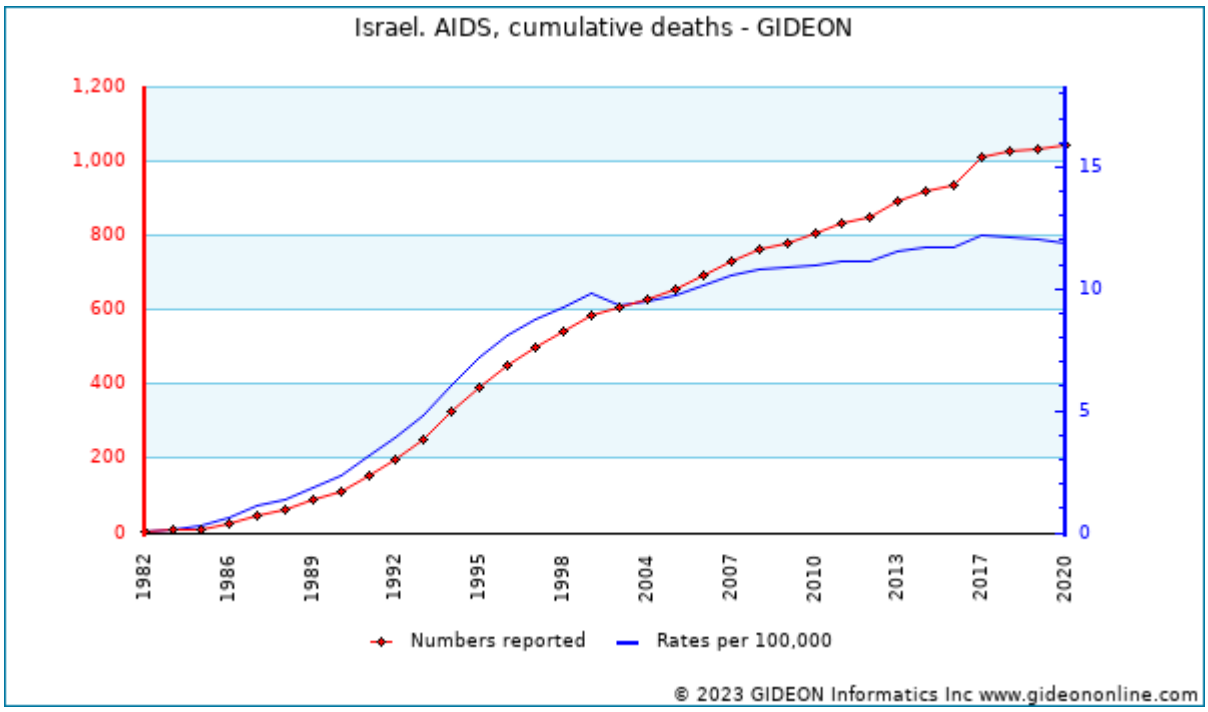
- Cases reported during 2010 to 2018 - 3,639 people were diagnosed with HIV in Israel. In 39.1%, HIV transmission was through heterosexual contact, 34.3% were men who have sex with men, and 10.4% were people who inject drugs. [4]
- Cases reported to December 2010: 72.7% males; 60.0% heterosexual; 20.9% men who have sex with men; 14.6% IDU; 4.4% transfusion/hemophilia; 2.7% mother to infant.
- Cases reported to January 1988: 53% men who have sex with men (all except 1 infected abroad); 47% transfusion/ hemophilia. [5]
- Cases reported to December 1990: 93.6% males; 45.9% men who have sex with men; 14.5% IDU; 13.4% hemophiliacs. [6]
- Cases reported to December 2009: 73.2% males; 54.7% heterosexual; 21.5% men who have sex with men [7] ; 15.3% IDU; 5% transfusion/hemophilia; 2.6% mother to infant.
- Cases reported to December 1997: 36% men who have sex with men; 17% IDU; 13% transfusion-related; 2% mother to infant. 14.1% of patients were immigrants from countries with a predominance of heterosexual AIDS. Approximately 19% of patients are non-citizens at the time of diagnosis.
- Cases during 1996 to 1998: 83% ages 15 to 49; 74% males; 60% heterosexual; 21% men who have sex with men; 12% IDU; 5% transfusion-related; 3% mother to infant.
- Cases during 1997 to 1999: 84% ages 15 to 49; 69% males; 71% heterosexual; 15% men who have sex with men; 9% IDU; 2% transfusion/hemophilia; 4% mother to infant.
- Cases during 1997 to 2001: 81% ages 15 to 49; 69% males; 60% heterosexual; 17% men who have sex with men; 14% IDU; 5% transfusion/hemophilia; 5% mother to infant.

Migrant workers accounted for 584 cases (16.9% of total AIDS) during 2000 to 2009.

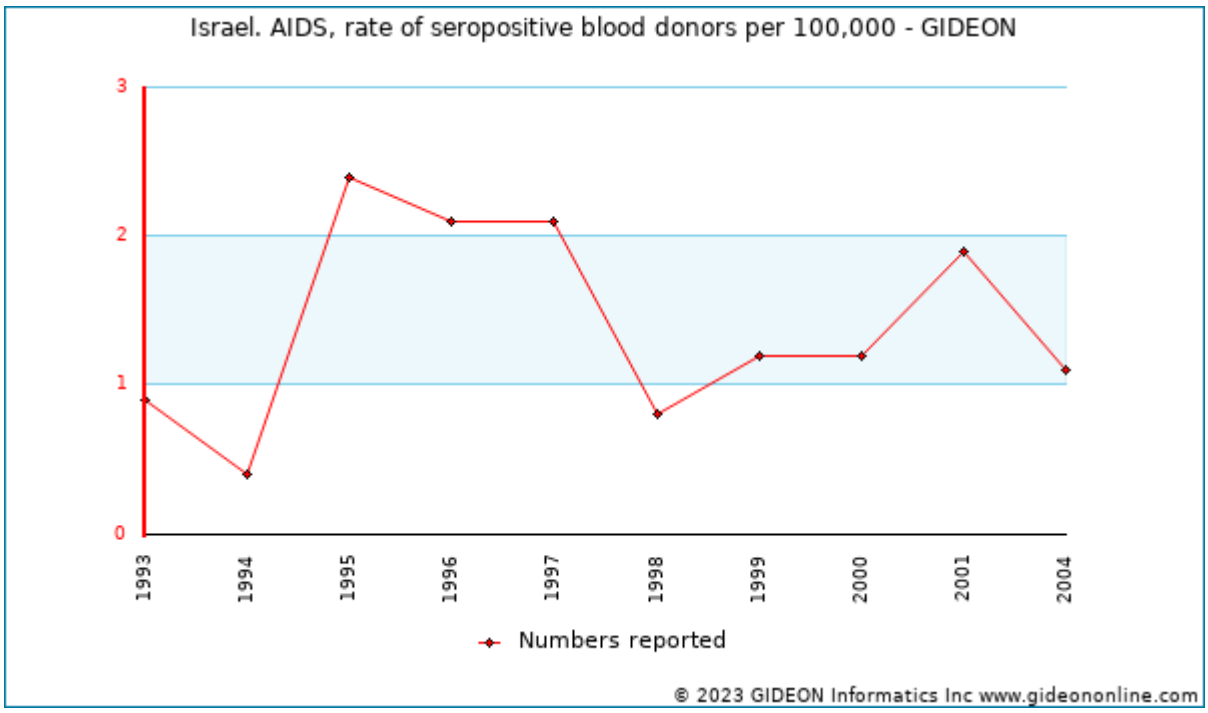


Graph: Israel. AIDS, deaths

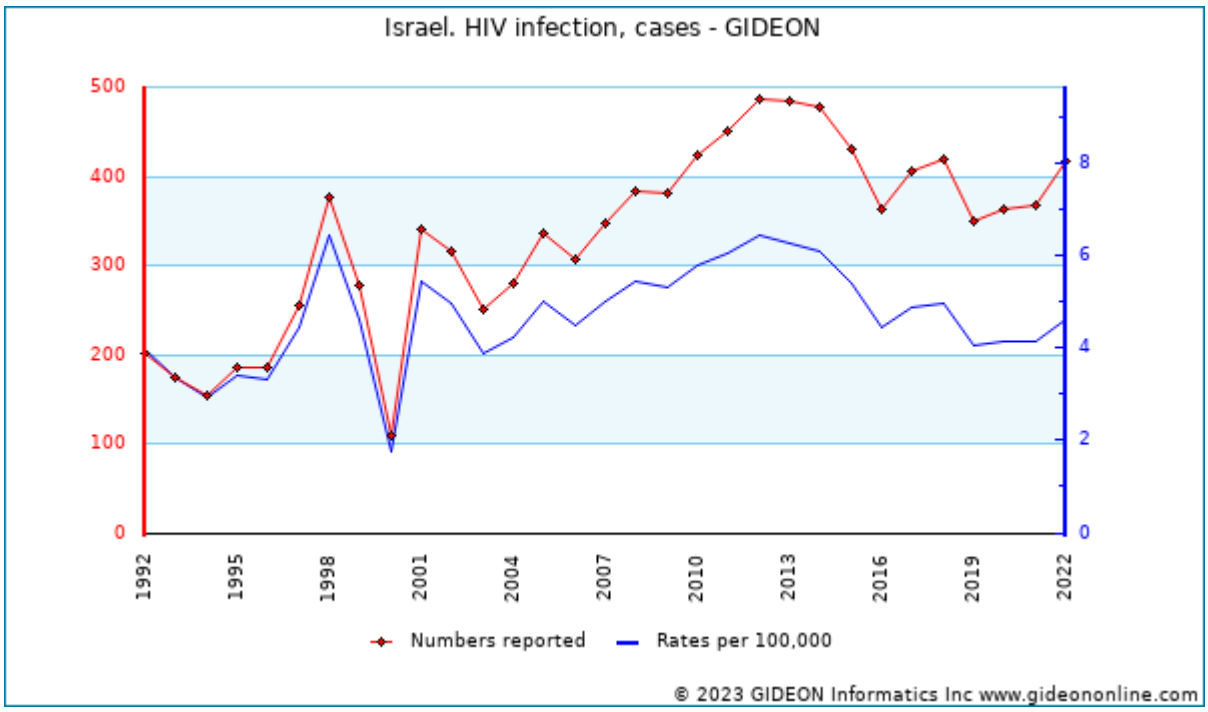
Notes:
1. There were no deaths reported in 1981.
2. 14 AIDS-related deaths were reported from 1981 to 1985.
3. 526 AIDS-related deaths were reported to December 2002; 569 to December 2003; 607 to December 2004; 696 to December 2007; 790 to December 2010.
4. 813 AIDS patients had either died or left Israel as of December 2009; 905 as of December 2013.
5. The Ministry of Health reported 1,746 AIDS-related deaths between 1981 and 2021.
6. 71 deaths were reported in 1994 alone.



Graph: Israel. AIDS, cumulative deaths

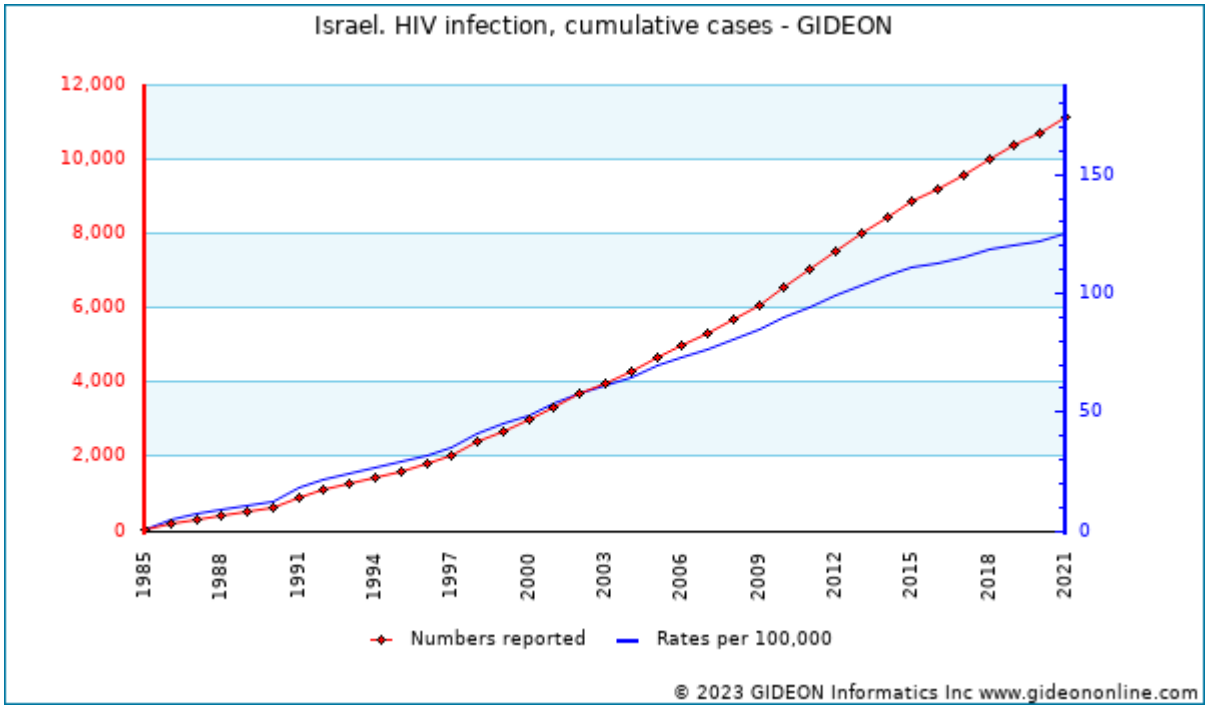


Graph: Israel. AIDS, rate of seropositive blood donors per 100,000



Graph: Israel. HIV infection, cases

Notes:
Individual years:
2004 - 0.7 per 100,000 in Haifa District [8]



Graph: Israel. HIV infection, cumulative cases

Notes:
1. 37.2% of seropositives identified to November 1996 were heterosexuals, and 12.7% men who have sex with men.
2. m/g ratio to 1997 was 2.80/1

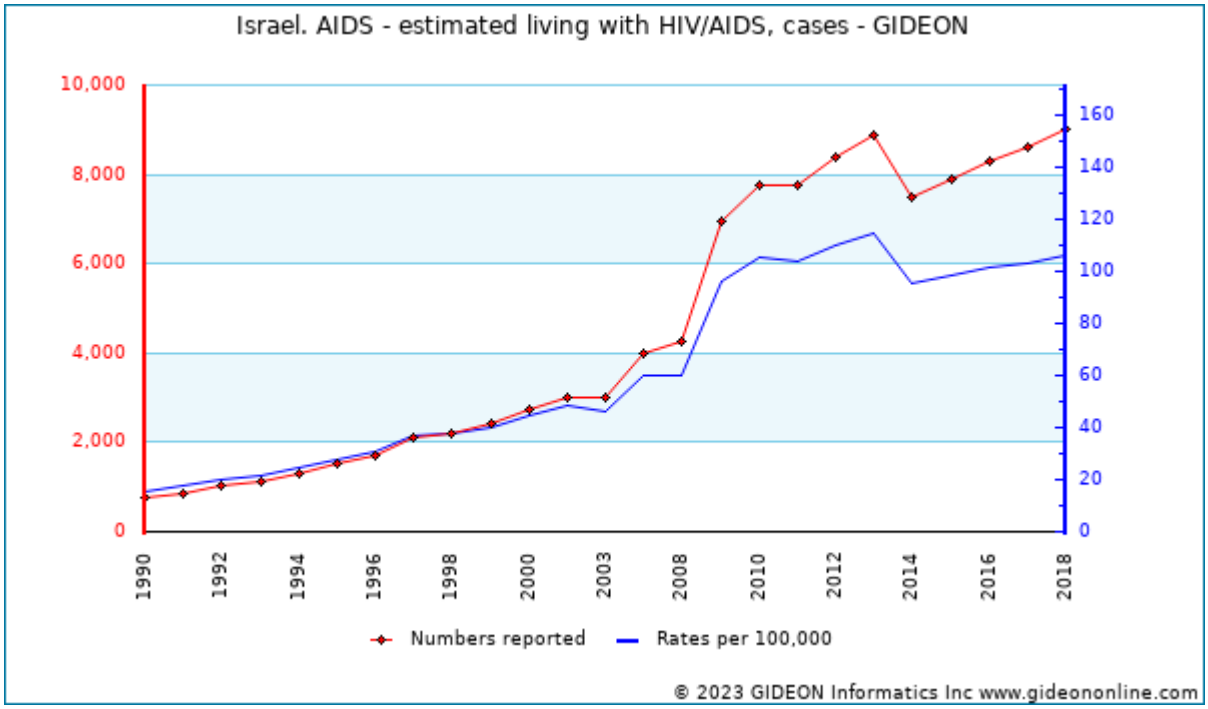
3. 1,814 seropositives were living in Israel as of 1998.
4. 47% of seropositives reported during 1990 to 1999 were immigrants from Ethiopia.

The mother-to-child transmission rate among HIV-positive mothers is 3.6% (2000 to 2005). [9]
- 204 vertically-infected infants were reported during 1985 to 2010 - 42.4% of these born in Israel.

Seroprevalence surveys

Years	Region	Study Group	%	Notes
2002 - 2008	Tel Aviv	MSM	2.5	2.5% of MSM vs. 0.6% of heterosexual males visiting an STD clinic [10]
1998*		immigrants	10	10% of Ethiopian immigrants [11]
1999 - 2002		immigrants	5.8	5.8% of Ethiopian immigrants [12]
2003 - 2005		injecting drug users	0.9	[13]
2012*	Jerusalem	injecting drug users	0	0% of Arab IDU [14]
2013	Multiple locations	injecting drug users	0	0% of IDU in Ramallah, Hebron, and Bethlehem governorates [15]
1992*	Tel Aviv	sex workers	3.8	[16]
2008*	Tel Aviv	sex workers	0.3	0.3% of brothel-based CSW in Tel Aviv (1 of 300 tested) [17]

* indicates publication year (not necessarily year of survey)



Graph: Israel. AIDS - estimated living with HIV/AIDS, cases

Notes:
1. Figure for 1997 represented 0.07% of adults ages 15 to 49; 0.09% in 2001; 0.1% in 2003.

Associated Infections

Miscellaneous
- 1991 (publication year) - Anti-CMV antibody was found in 87% of HIV-negative and 100% of HIV-positive MSM. [18]
- 2006 (publication year) - Intestinal leishmaniasis was reported in an Ethiopian immigrant with AIDS. [19]

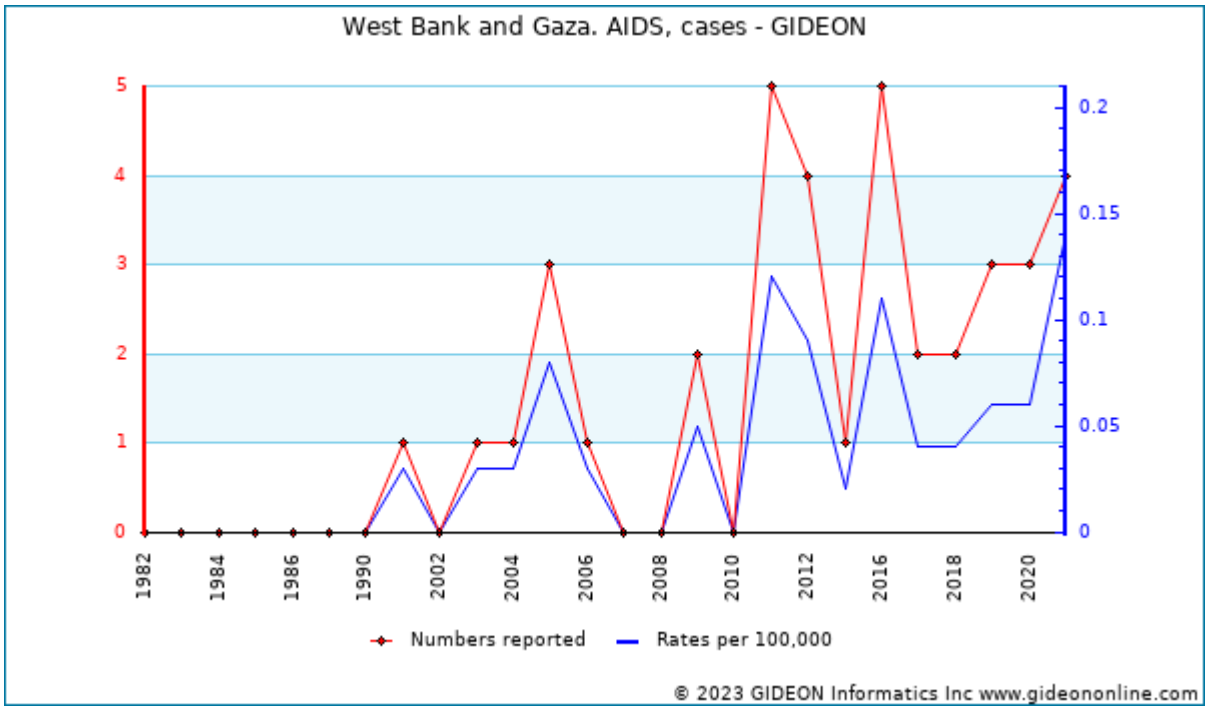
STD
- 1963 to 1987 - A declining gonorrhea incidence during the 1980's was ascribed to the global AIDS epidemic. [20]

- 2000 to 2005 - A positive syphilis serology was found in 14.2% of HIV-positive patients. [21]
- 2009 - *Ureaplasma urealyticum* infection was found in 29.4% of HIV-positive women, *Mycoplasma hominis* 5.9%, HSV-2 1.2%, gonorrhea 0%, syphilis 2.4% and Hepatitis C 8.2% (southern Israel) [22]

Tuberculosis

- 1990 to 1993 - 15 cases of AIDS-tuberculosis coinfection were reported.
- 2000 to 2006 - 8.8% of patients hospitalized for tuberculosis were HIV-positive - 61.2% of the latter immigrants from Ethiopia and 20.4% from the former Soviet Union. [23]

West Bank and Gaza:



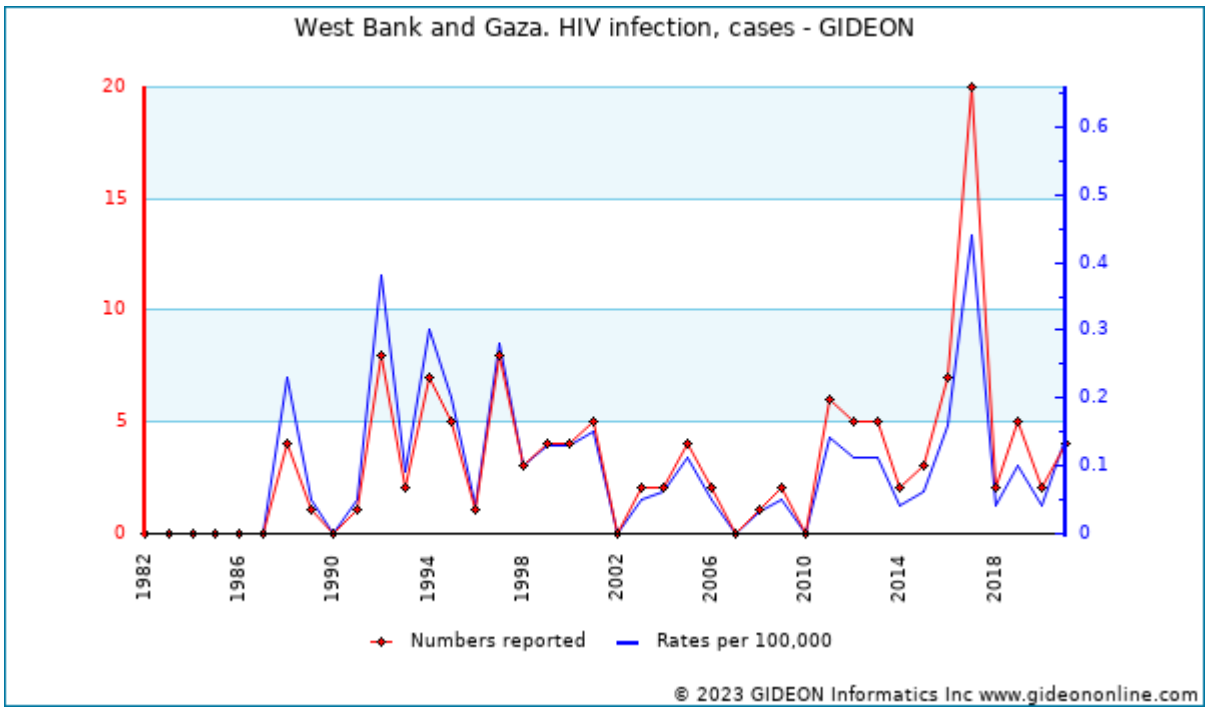
Graph: West Bank and Gaza. AIDS, cases

Notes:
1. 33 cases of AIDS were officially reported in the West Bank and Gaza Strip as of August 1999 (note above reporting for "UNRWA'); 41 to December 2004; 51 (and 48 AIDS deaths) to December 2010; 72 (and 48 AIDS deaths) to December 2011; 77 to December 2012

Demography

- 1988 to 2019: 59.1% of patients with HIV/AIDS were heterosexuals, 4.6% homosexual, 2.7% IDS, 2.7% mother-to-child
- 1988 to 2014: 56% of patients with HIV/AIDS were heterosexual, 2.4% homosexual, 3.6% IDU, 3.6% mother-to-child
- 1988 to 2013: 56% of patients with HIV/AIDS were heterosexual, 2% homosexual, 4% IDU, 4% mother-to-child
- 1988 to 2012: 54.5% of patients with HIV/AIDS were heterosexual, 1.3% homosexual, 3.9% IDU, 3.9% mother-to-child.
- 1988 to 2011: 55.6% of patients with HIV/AIDS were heterosexual, 1.4% homosexual, 4.2% IDU, 2.8% mother-to-child.
- 1997 to 1999: 83% of cases reported to UNRWA are in the age group 15 to 49; 92% males; 87% heterosexual; 3% men who have sex with men; 4% IDU; 4% transfusion/hemophilia; 3% mother to infant.
- 1988 to 2004: 56.1% of HIV/AIDS in the West Bank and Gaza were acquired through heterosexual sex, 17.5% blood and blood products, 5.3% homosexual/bisexual, 5.3% IDU.

- 24 AIDS-related deaths were reported to December 2004.



Graph: West Bank and Gaza. HIV infection, cases

Notes:
1. 16 cases of HIV infection were reported to December 2004
2. 82 cases of HIV/AIDS were reported to December 2013; 87 to December 2015
Notes:
Individual years:
2011 - 1 case of AIDS/HIV was reported in Gaza

Notable outbreaks

Years	Region	Population	Notes
2012 - 2013	Tel Aviv	injecting drug users	Outbreak of primary HIV infection associated with injection of cathinone derivatives [24]

References

1. Ann Ophthalmol 1984 Dec ;16(12):1136-8.
3. Isr J Med Sci 1988 Mar ;24(3):131-6.
4. Public Health 2005 Feb ;119(2):138-43.
5. Viruses 2021 Dec 31;14(1)
6. Isr J Med Sci 1988 Mar ;24(3):131-6.
7. Public Health Rev 1989-1990;17(4):269-77.
8. Clin Infect Dis 2011 Jun ;52(11):1363-70.
9. Harefuah 2007 Jun ;146(6):425-8, 503, 502.
10. Int J STD AIDS 2009 Jul ;20(7):473-6.
11. Isr Med Assoc J 2012 Mar ;14(3):147-51.
12. J Acquir Immune Defic Syndr Hum Retrovirol 1998 Apr 15;17(5):465-9.
13. Isr Med Assoc J 2014 Jul ;16(7):427-30.
14. Isr Med Assoc J 2008 Nov ;10(11):775-8.
15. J Urban Health 2012 Aug ;89(4):677.
16. AIDS Care 2016 09 ;28(9):1159-65.
17. Am J Public Health 1992 Apr ;82(4):590-2.
18. Int J STD AIDS 2008 Oct ;19(10):656-9.
19. J Med Virol 1991 Nov ;35(3):174-9.
20. Isr Med Assoc J 2006 Oct ;8(10):714-5.
21. Isr J Med Sci 1988 Mar ;24(3):137-40.
22. Int J STD AIDS 2010 Apr ;21(4):249-52.
23. Harefuah 2013 Apr ;152(4):204-6, 248.
24. Isr Med Assoc J 2010 Feb ;12(2):100-3.
25. Clin Microbiol Infect 2017 May ;23(5):336.e5-336.e8.

Hookworm

Agent	PARASITE - Nematoda. Secernentea: *Necator americanus*, *Ancylostoma duodenale*, *A. ceylonicum* (in Kolkata and the Philippines)
Reservoir	Human, Non-human primates, Zoonotic
Vector	None
Vehicle	Soil, Contact
Incubation Period	7d - 2y
Diagnostic Tests	Examination of stool for ova. Ancylostoma duodenale adult: female - 10 to 13 mm; male - 8 to 11 mm Necator americanus adult: female - 9 to 11 mm; male - 5 to 9 mm
Typical Adult Therapy	Albendazole 400 mg X 1 dose. OR Mebendazole 100 mg BID X 3d. OR Pyrantel pamoate 11 mg/kg (max 3g) X 3d[1] [2]
Typical Pediatric Therapy	Albendazole 200 mg PO single dose OR Mebendazole 100 mg BID X 3 d (> age 2).
Clinical Hints	- Pruritic papules, usually on feet - Later cough and wheezing - Abdominal pain and progressive iron-deficiency anemia - Eosinophilia is common - Dyspnea and peripheral edema in heavy infections
Synonyms	Anchilostoma, Ancylostoma ceylanicum, Ancylostoma duodenale, Ancylostomiasis, Anquilostomiasis, Cyclodontostomum, Eosinophilis enteritis, Hakenwurmer-Befall, Miner's anemia, Necator americanus, Necator gorillae, Necatoriasis. ICD9: 126.0,126.1 ICD10: B76.0,B76.1,B76.8

Hookworm in Israel

Hookworm was first described in Israel during the 1920's.

Prevalence surveys

Years	Region	Study Group	%	Notes
1991*	Multiple locations	immigrants	54.2	54.2% of Ethiopian immigrants (1991 publication) [3]
1994*		foreign workers	44.1	44.1% of Thai workers in Israel (1994 publication) [4]
1994*	Multiple locations	general population	90	As many as 90% of the populations of Arab villages in the areas of Petah Tikva and Hadera were infested during the 1920's.
1968	Netanya	general population	10	10% in some villages in the Netanya area (1968)

***** indicates publication year (not necessarily year of survey)

74 cases were officially reported in 1955, and 81 in 1956.

Notable outbreaks

Years	Setting	Notes
1982*	closed institution	[5]

* indicates publication year (not necessarily year of outbreak)

References

1. BMJ 2017 Sep 25;358:j4307.
2. PLoS One 2011 ;6(9):e25003.
3. Isr J Med Sci 1991 May ;27(5):278-83.
4. Harefuah 1994 May 01;126(9):507-9, 563.
5. Harefuah 1982 ;103(12):346-7.

HTLV infections

Agent	VIRUS - RNA Retroviridae. Deltaretrovirus Human T-lymphotrophic virus I to IV (disease limited to I and II)
Reservoir	Human, Non-human primate
Vector	None
Vehicle	Blood, Needles, Semen, Sexual contact, Transplacental, Breastfeeding, Meat (bush-meat)
Incubation Period	6 months to 20 years
Diagnostic Tests	Serology Nucleic acid amplification Cerebrospinal fluid (CSF) provirus analysis
Typical Adult Therapy	Specific therapy not available. Advanced symptomatic disease has been treated with Mogamulizumab and interferon OR Zidovudine + Interferon, Cyclosporine, or anti-neoplastic agents[1] [2]
Typical Pediatric Therapy	As of adult
Clinical Hints	- Overt disease is evident in only 1% to 5% of infections - Increased susceptibility to pyodermas, sepsis, bronchiectasis - Keratoconjunctivitis sicca or uveitis - Late development of tropical spastic paraparesis or T-cell leukemia/lymphoma
Synonyms	Adult T-cell leukemia / lymphoma, HTLV-1, HTLV-1/2, HTLV-2, HTLV-4, HTLV-I, HTLV-I/II, HTLV-II, HTLV-IV, Human T-cell lymphotropic virus, Human T-lymphotropic virus, Primate T-lymphotropic virus, PTLV-1, Tropical spastic paraparesis. ICD9: 204.0,208.9 ICD10: C83,C88,G04.1

HTLV infections in Israel

High rates of HTLV-I seropositivity are found among Falasha Jews who emigrated to Israel from Gondar, Ethiopia. [3] ; and among Mashhadi Jews who emigrated from Iran. [4] [5]

Seroprevalence surveys

Years	Region	Study Group	%	Notes
1990*		immigrants	12	12% of Iranian immigrants to Israel, from Khurusan (1990 publication) [6]
1986 - 1987	Tel Aviv	injecting drug users	1.3	1.3% of IDU in Tel Aviv - all HTLV1 (1986 to 1987) [7]
1994*	Jerusalem	injecting drug users	2	2% of IDU and 0% of non-IDU in Jerusalem (1994 publication) [8]
1993*		general population	18	18% of Iranian-born Mashhadi Jews in Israel -spastic paraparesis was identified in 68% of this group (HTLV-!, 1993 publication) [9]
1998*		general population	20	20% of Mashhadi Jews and 0.2% of non-Iranian Jews (1998 publication) [10]
1995 - 2009	Multiple locations	blood donors	0.0057	0.0057% of blood donors (1995 to 2009) [11]
2009*	Multiple locations	blood donors	0.001	0.001% of blood donors (2009 publication) [12]

* indicates publication year (not necessarily year of survey)

References

1. N Engl J Med 2018 02 08;378(6):529-538.
2. J Neurovirol 2007 Aug ;13(4):364-72.
3. Nature 1985 Jun 20-26;315(6021):665-6.
4. Ann Neurol 1993 Nov ;34(5):670-5.
5. J Med Virol 1998 Nov ;56(3):269-74.
6. Lancet 1990 Dec 22-29;336(8730):1533-5.
7. Int J Epidemiol 1992 Oct ;21(5):995-7.
8. Addiction 1994 Jul ;89(7):869-74.
9. Ann Neurol 1993 Nov ;34(5):670-5.
10. J Med Virol 1998 Nov ;56(3):269-74.
11. Int J Infect Dis 2013 Nov ;17(11):e1022-4.
12. Emerg Infect Dis 2009 Jul ;15(7):1116-8.

Human herpesvirus 6 infection

Agent	VIRUS - DNA. Herpesviridae, Betaherpesvirinae, Roseolovirus: Herpesvirus 6 (Herpesvirus 7 is also implicated)
Reservoir	Human
Vector	None
Vehicle	Droplet, Contact, Respiratory or pharyngeal acquisition
Incubation Period	10d - 15d
Diagnostic Tests	Viral isolation and serologic tests rarely indicated. Nucleic acid amplification has been used
Typical Adult Therapy	Supportive Ganciclovir and Foscarnet have been used in unusual and severe cases.[1] [2]
Typical Pediatric Therapy	As for adult
Clinical Hints	- High fever followed by sudden defervescence and fleeting rash - Most patients are below the age of 2 years - Note that only 10% to 20% of Herpesvirus 6 infections are associated with a rash
Synonyms	Dreitagefieber, Exanthem criticum, Exanthem subitum, Herpesvirus 6, HHV-6, Pseudorubella, Roseola, Roseola infantilis, Roseola subitum, Sixth disease, Zahorsky's disease. ICD9: 057.8 ICD10: B08.2

Human herpesvirus 6 infection in Israel

Prevalence surveys

Years	Region	Study Group	%	Notes
2012*	Haifa	patients	35	35% of multiple myeloma patients undergoing autologous stem cell transplantation (reactivation, 2012 publication) [3]
2016 - 2020	Northern Region	patients - CNS	13.3	Survey of CSF specimens collected from patients admitted to hospital in Safed with suspected meningitis or encephalitis. Percentage reflects proportion of all test-positive specimens. [4]

* indicates publication year (not necessarily year of survey)

References

1. Clin Infect Dis 2005 Mar 15;40(6):887-9.
2. Am J Transplant 2004 Jul ;4(7):1200-3.
3. Bone Marrow Res 2012 ;2012:409765.
4. Diagn Microbiol Infect Dis 2022 Jul 18;104(3):115769.

Human papillomavirus infection

Agent	VIRUS - DNA Papillomaviridae, Human papillomavirus
Reservoir	Human
Vector	None
Vehicle	Sexual, Infected secretions, Inanimate objects
Incubation Period	1 to 3 months
Diagnostic Tests	Submit for histological testing and identification of viral type when malignant transformation is suspected. Type-specific HPV serology is available in many institutions.
Typical Adult Therapy	Removal of local lesions through excision or a variety of topical preparations. No specific antiviral agents are available.
Typical Pediatric Therapy	As of adult.
Vaccine	Human papillomavirus vaccine
Clinical Hints	- Verrucous, flat or papillary skin lesion(s) - Commonly involve skin of the extremities, face or genital regions - Mucosal lesions may occur in the mouth, larynx or uterine cervix
Synonyms	Common wart, Condyloma accuminata, HPV, Verruca vulgaris, Wart. ICD9: 079.4 ICD10: Z11.51

Human papillomavirus infection in Israel

Vaccine Schedule:

DTaP - 2,4,6,12 months
DTaPHibIPV - 2,4,6,12 months
HPV - 13 years; +6 months
HepA - 18, 24 months
HepB - birth; 1,6 months
IPV - 7 years
MMRV - 12 months; 6 years
OPV - 6,18 months
Pneumo ps - >=65 years
Pneumo-conj - 2,4,12 months
Rotavirus - 2,4,6 months
Td - every 10 years (adults)
TdaP - 13 years
TdaPIPV - 7 years

Prevalence surveys

Years	Region	Study Group	%	Notes
2006 - 2014	Northern Region	women	46.4	Survey of women under investigation for atypical cervical squamous cells of undetermined significance [1]
2018*		women	65.2	HPV infection was identified in 65.2% of women with abnormal pap tests. [2]
2019*		women	90.3	HPV infection was identified in 90.3% of women with cervical intraepithelial neoplasia [3]
2007 - 2018	Haifa	patients - cancer	92	HPV was detected in 92% of women with cervical cancer. [4]

* indicates publication year (not necessarily year of survey)

References

1. Isr Med Assoc J 2017 Oct ;19(10):635-639.
2. Isr Med Assoc J 2018 Mar ;20(3):172-175.
3. J Low Genit Tract Dis 2019 Oct ;23(4):248-252.
4. J Low Genit Tract Dis 2022 Apr 01;26(2):115-121.

Human pegivirus infection

Agent	VIRUS - RNA. Flaviviridae, Pegivirus GB virus C (Hepatitis G virus)
Reservoir	Human
Vector	None
Vehicle	Blood, Vertical transmission, Sexual contact suspected
Incubation Period	Unknown
Diagnostic Tests	Serology. Nucleic acid amplification.
Typical Adult Therapy	Supportive. Alpha interferon has been shown to ? transiently eliminate the carrier state[1]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Acute or chronic hepatitis acquired from blood (needles, etc) - Clinically milder than hepatitis C - Most cases limited elevation of hepatic enzyme levels, without jaundice - Viremia has been documented for as long as 10 years
Synonyms	Epatite G, GB virus C, GBV-C, Hepatitis G, Hepatitis GB, HPgV, HPgV-2, Human hepegivirus, Human Pegivirus 2. ICD9: 070,59 ICD10: B17.8

Human pegivirus infection in Israel

Prevalence surveys

Years	Region	Study Group	%	Notes
1999*	Northern Region	patients - dialysis	5.2	5.2% of hemodialysis patients [2]
1998*		patients - thalassemia	19.4	19.4% of multi-transfused patients with thalassemia [3]

* indicates publication year (not necessarily year of survey)

References

1. Acta Virol 2017;61(4):401-412.
2. Harefuah 1999 Nov 01;137(9):361-3, 432.
3. Transfusion 1998 Mar ;38(3):301-6.

Hymenolepis diminuta infection

Agent	PARASITE - Platyhelminthes, Cestoda. Cyclophyllidea, Hymenolepididae: *Hymenolepis diminuta*
Reservoir	Rodent, Various insects, Zoonotic
Vector	None
Vehicle	Arthropod ingestion
Incubation Period	2w - 4w
Diagnostic Tests	Identification of ova in stool Adult worm may measure 20 to 60 cm.
Typical Adult Therapy	Praziquantel 25 mg/kg as single dose. OR Niclosamide 2g, then 1g/d X 6d[1]
Typical Pediatric Therapy	Praziquantel 25 mg/kg as single dose. OR Niclosamide 1g, then 0.5g/d X 6d (1.5g, then 1g for weight >34kg)
Clinical Hints	- Nausea, abdominal pain and diarrhea - Eosinophilia may be present - Primarily a disease of children, in rodent-infested areas - Infestation resolves spontaneously within 2 months
Synonyms	Hymenolepis diminuta, Mathevotaenia, Rat tapeworm. ICD9: 123.6 ICD10: B71.0

Hymenolepis diminuta infection in Israel

Prevalence surveys

Years	Region	Study Group	%	Notes
2013*	Gaza	rodents	36.6	36.6% of *Rattus rattus* in Khan Younis and Jabalia, Gaza (2013 publication) [2]

* indicates publication year (not necessarily year of survey)

References

1. MedGenMed 2004 Apr 22;6(2):7.

2. J Egypt Soc Parasitol 2013 Apr ;43(1):259-68.

Hymenolepis nana infection

Agent	PARASITE - Platyhelminthes, Cestoda. Cyclophyllidea, Hymenolepididae: *Hymenolepis* (*Rodentolepis*) *nana*
Reservoir	Human, Rodent (hamster)
Vector	None
Vehicle	Food, Water, Fecal-oral
Incubation Period	2w - 4w
Diagnostic Tests	Identification of ova in stool Adult worm may measure 15 to 40 mm.
Typical Adult Therapy	Praziquantel 25 mg/kg once. OR Nitazoxanide 500 mg BID X 3d OR Niclosamide 2g/d X 1[1] [2]
Typical Pediatric Therapy	Praziquantel 25 mg/kg once. OR Nitazoxanide 100 mg (age 1 to 3 years) to 200 mg (age 4 to 11 years) BID X 3d OR Niclosamide 1g/d X 1 (weight 11-34 kg) to 1.5g/d X 1 (weight >34 kg)
Clinical Hints	- Nausea, abdominal pain, diarrhea, irritability and weight loss - Eosinophilia may be present - Continued infestation maintained by autoinfection (worm reproduces within the intestinal lumen)
Synonyms	Dwarf tapeworm, Hymenolepis nana, Rodentolepis microstoma, Rodentolepis nana, Rodentolepsiasis, Vampirolepis nana. ICD9: 123.6 ICD10: B71.0

Hymenolepis nana infection in Israel

Prevalence surveys

Years	Region	Study Group	%	Notes
1992*	Multiple locations	children	3	3% of children in the West Bank and Gaza (1992 publication) [3]
1994*	Southern Region	children	0.1	0.1% of Bedouin children in southern Israel (1994 publication) [4]
2004*	Gaza	children	1	1.0% of children in Khan Younis (Gaza, 2004 publication) [5]
2007 - 2011	Southern Region	children	0.04-2.6	0.04% of non-Ethiopian Jewish children, 2.6% of Bedouin children and 0.5% of Ethiopian Jewish children in southern Israel (2007 to 2011) [6]
1991*	Multiple locations	immigrants	21.3	21.3% of Ethiopian immigrants (1991 publication) [7]
1934	Jerusalem	general population	1.04	1.04% of the population of Jerusalem in 1934
1955	Jerusalem	general population	1.4	1.40% in 1955
2015 - 2016	West Bank	general population	9	Survey of marginalized rural communities [8]

* indicates publication year (not necessarily year of survey)

References

1. Am J Trop Med Hyg 1980 Mar ;29(2):320-1.
2. Trans R Soc Trop Med Hyg 1984 ;78(2):280-1.

3. Riv Inferm 1992 Oct-Dec;11(4):247-52.
4. Int J Parasitol 1994 May ;24(3):409-11.
5. Parasitol Res 2004 Dec ;94(6):449-51.
6. Parasitol Int 2014 Apr ;63(2):456-62.
7. Isr J Med Sci 1991 May ;27(5):278-83.
8. BMC Public Health 2019 Dec 11;19(1):1667.

Infection of wound, puncture, IV line, etc

Agent	BACTERIUM. *Staphylococcus aureus*, streptococci, facultative or aerobic gram negative bacilli, anaerobes, et al
Reservoir	Human, Soil, Water, Air (spores), Various animals and plants
Vector	None
Vehicle	Trauma, Water, Medications, Bandages, Autoinoculation
Incubation Period	Variable
Diagnostic Tests	Smear and culture of catheter, material from wound.
Typical Adult Therapy	Drainage, remove catheter, debridement and antibiotics appropriate to infecting species
Typical Pediatric Therapy	As for adult
Clinical Hints	- Source (ie, venous line, postoperative, marine, animal bite) may suggest species - Onset within 24 hrs = group A *Streptococcus* or *Cl. perfringens* - Onset within 2 to 7 days = *S. aureus* - Onset after more than 7 days = gram negative bacilli - Foul odor = mixed infection or anaerobic bacteria
Synonyms	Intravenous catheter infection, Line infection, Surgical wound infection, Wound infection. ICD9: 686.9,451 ICD10: T79.3,I80.0, Y95

Infectious mononucleosis or EBV infection

Agent	VIRUS - DNA. Herpesviridae. Gammaherpesvirinae, Lymphocryptovirus: Human herpesvirus 4 (Epstein Barr virus)
Reservoir	Human
Vector	None
Vehicle	Saliva, Blood transfusion, Breastfeeding, Respiratory or pharyngeal acquisition
Incubation Period	28d - 42d
Diagnostic Tests	Serology. Nucleic acid amplification.
Typical Adult Therapy	Supportive
Typical Pediatric Therapy	As for adult
Clinical Hints	- Exudative pharyngitis - Symmetrical cervical lymphadenopathy, splenomegaly and hepatic dysfunction - Atypical lymphocytes and positive serology appear after 10 to 14 days - Acute illness resolves in 2 to 3 weeks, but malaise and weakness may persist for months
Synonyms	EBV, Epstein-Barr, Febbre ghiandolare, Filatov's disease, Glandular fever, Infectious mononucleosis, Monocytic angina, Mononucleose, Mononucleosi, Mononucleosis - infectious, Mononukleose, Pfeiffer's disease. ICD9: 075 ICD10: B27.0

Infectious mononucleosis or EBV infection in Israel

Prevalence surveys

Years	Region	Study Group	%	Notes
2021*	Petah Tikva	transplant recipients	9	9% of pediatric kidney transplant recipients developed EBV infection. [1]

* indicates publication year (not necessarily year of survey)

Seroprevalence surveys

Years	Study Group	%	Notes
1994 - 2004	military personnel	87	87% of male military recruits (1994 to 2004) [2]
1975*	patients	50	50% of patients with subacute sclerosing panencephalitis and 0% of controls (1975 publication) [3]
2012*	patients	44	44% of patients with primary biliary cirrhosis vs. 12% of controls (EBV early antigen, 2012 publication) [4]

* indicates publication year (not necessarily year of survey)

References

1. Pediatr Transplant 2021 Nov 24;:e14199.
2. Ann Epidemiol 2012 Nov ;22(11):783-8.
3. Eur Neurol 1975 ;13(5):418-21.
4. Exp Mol Pathol 2012 Dec ;93(3):386-90.

Influenza

Agent	VIRUS - RNA. Orthomyxoviridae, Orthomyxovirus: Influenza virus There are four genera of Influenza virus: Influenza A virus, genus *Alphainfluenzavirus* Influenza B virus, genus *Betainfluenzavirus* Influenza C virus, genus *Gammainfluenzavirus* Influenza D virus, genus *Deltainfluenzavirus* Human disease is caused by influenza viruses A, B, and C. Rare instances of colonization by influenza D virus have been reported in humans with animal contact.
Reservoir	Human, Ferret, Bird, Pig, Zoonotic
Vector	None
Vehicle	Droplet, Respiratory or pharyngeal acquisition
Incubation Period	1d - 3d
Diagnostic Tests	Viral culture (respiratory secretions). Serology. Nucleic acid amplification techniques are available.
Typical Adult Therapy	Respiratory precautions. Influenza A or B: Oseltamivir 75 mg PO BID X 5d OR Zanamivir 10 mg BID X 5 days[1] [2] [3] [4]
Typical Pediatric Therapy	Respiratory precautions. Influenza A or B: Oseltamivir 2 mg/kg (max 75 mg) PO BID X 5d OR Zanamivir (age > 5 years) 10 mg BID X 5 days Alternative drugs: Amantadine, Baloxavir, Favipiravir, Peramivir, Rimantadine, Umifenovir
Vaccine	Influenza - inactivated vaccine Influenza - live vaccine
Clinical Hints	- Myalgia, headache, cough and fever - Pharyngitis and conjunctivitis often present - Usually encountered in the setting of an outbreak - Leucocytosis, chest pain and lobar infiltrate herald bacterial (pneumococcal or staphylococcal) pneumonia
Synonyms	Asian flu, Aviaire influenza, Avian flu, Avian influenza, Bird flu, Epidemic catarrh, Grippe, H10N8, H1N1, H2N2, H3N2, H5N1, H7N9, Hong Kong flu, LPAI, Spanish influenza, Swine flu, Swine influenza. ICD9: 487 ICD10: J09,J10,J11

Influenza in Israel

Prevalence surveys

Years	Region	Study Group	%	Notes
2005 - 2006	Northern Region	children	1	1% of children ages <= 2 years hospitalized with acute bronchiolitis (as sole pathogen, 2005 to 2006) [5]
2004 - 2006	Beer Sheva	patients	4.9	14.1% of patients hospitalized with lower respiratory tract infections (Beer Sheva, winter seasons, 2004 to 2006) [6]
2011 - 2016	West Bank	patients	81.8	[7]
2012 - 2015	Nationwide	specimens	19.5	19.5% of respiratory samples from patients hospitalized with respiratory symptoms [8]

Years	Region	Study Group	%	Notes
2009*	Beer Sheva	children - respiratory	2.9	2.9% of children below age 5 years with community-acquired alveolar pneumonia (Beer Sheva, 2009 publication) [9]

* indicates publication year (not necessarily year of survey)

Notable outbreaks

Years	Region	Setting	Deaths	Pathogen	Notes
		farm		H5N1	An outbreak of H5N1 was reported in a coop at a broiler farm near Kibbutz Mishmar Hasharon in the Emek Hefer regional council on December 21. The facility housed 128,000 poultry and all the birds were killed and disposed. [10]
	Multiple locations			H5N1	Outbreaks of avian influenza at farms in Be'er Tuvia, southern Israel (25,000 broiler breeding stock), and Magal, central Israel (20,000 turkeys) were reported on January 3, 2023. All were infected with the H5N1 strain of the virus. About 25,000 turkeys were housed in Magal and about 25,000 chickens in the Be'er Tuvia farm. These outbreaks were the 5th and 6th detected in Israel in 2022. [11]
2009 - 2010			113	H1N1	An outbreak was reported. 113 fatal cases were reported, including Gaza and the West Bank. For comprehensive analyses of the H1N1 pdm09 pandemic see the Worldwide note. [12] [13] [14] [15] [16] [17] [18] [19] [20] [21] [22] [23] [24] [25] [26] [27] [28] [29]
2022		farm		H5N1	An outbreak of H5N1 (clade 2.3.4.4b) was reported in a flock of 19-week-old turkeys on November 23 (started on November 18). There were 200 cases reported, 120 deaths, and 4000 susceptibles, while 3,880 birds were slaughtered before the diagnosis of the disease. [30]
2022	Central	farm		H5N1	An H5N1 avian influenza case was reported in a turkey flock in Beit Halevi (Central Israel) on December 15, 2022. The flock was 10.5 weeks old and had about 15,000 birds. The flock was destroyed. The suspicion arose following mortality and morbidity with nervous signs in the female house. The same turkey farm was diagnosed as infected In 2015. [31]
2022	Central	farm			An outbreak of avian influenza H5N1 was reported at a broiler farm in Kfar Monash on December 15, 2022. The flock was 5.5 weeks old and the entire flock was expected to be culled as reported on December 17, 2022. The farm had 70,000 birds. [32]
2022		park		H5N1	An fatal case of H5N1 (clade 2.3.4.4b, lineage: fully Eurasian) was reported in a wild bird (Dunlin) on December 22 (started on November 27). [33]

Avian influenza - chronology

- 2006 - Avian influenza H5N1 was reported in birds. [34] [35] [36] [37]
- 2008 - Avian influenza H5N1 was reported in birds. [38] [39]
- 2010 - Avian influenza H5N1 was reported in birds. [40] [41] [42] [43] [44]
- 2012 - Avian influenza H5N1 was reported in birds. [45] [46] [47] Infected cats were also reported. [48] [49]
- 2015 - Avian influenza H5N1 was reported in birds. [50] [51] [52] [53] [54] [55]
- 2016 - Avian influenza H5N8 was reported in poultry. [56] [57]
- 2017 - Avian influenza H5N8 was reported in poultry. [58]
- 2018 - Avian influenza H5N8 was reported in birds. [59]
- 2019 - Avian influenza H5N8 was reported in poultry. [60]
- 2020 - Avian influenza H5N8 was reported in poultry. [61]
- 2021 - Avian influenza H5N1 was reported in poultry. [62] [63] [64] and wild birds. [65] [66] [67] [68]
- 2022 - Avian influenza H5N1 was reported in poultry, [69] [70] [71] [72] [73] [74] and H5N8 was reported in both poultry [75] and wild birds. [76]

West Bank and Gaza Strip

- 2006 - Avian influenza H5N1 was reported in birds in the Gaza Strip. [77] [78] [79]
- 2010 - Avian influenza H5N1 was reported in birds in the Gaza Strip. [80] [81]
- 2011 - Avian influenza H5N1 was reported in birds in the West Bank. [82] [83] [84] [85] [86] [87] [88]
- 2015 - Avian influenza H5N1 was reported in birds in the West Bank and Gaza Strip and [89] [90] [91] [92] [93] [94] [95] [96] [97]

References

1. Front Immunol 2018 ;9:1946.
2. Clin Ther 2018 Aug 01;
3. Arch Virol 2018 Apr ;163(4):831-844.
4. Antiviral Res 2022 Apr ;200:105281.
5. Pediatr Infect Dis J 2010 Jan ;29(1):e7-e10.
6. J Clin Microbiol 2009 Nov ;47(11):3439-43.
7. Can J Infect Dis Med Microbiol 2021 ;2021:5643134.
8. J Clin Virol 2018 Aug 13;107:19-24.
9. J Pediatr 2010 Jan ;156(1):115-20.
10. ProMED <promedmail.org> archive: 20221223.8707425
11. ProMED <promedmail.org> archive: 20230105.8707631
12. Biosecur Bioterror 2009 Dec ;7(4):399-404.
13. Harefuah 2009 Nov ;148(11):738-42, 795.
14. Harefuah 2009 Sep ;148(9):577-82, 659.
15. Int J Tuberc Lung Dis 2010 Feb ;14(2):130.
16. Harefuah 2009 Dec ;148(12):799-803, 857.
17. Emerg Infect Dis 2010 Apr ;16(4):720-1.
18. J Public Health Policy 2010 Jul ;31(2):256-69.
19. Arch Pediatr Adolesc Med 2010 Nov ;164(11):1015-22.
20. BMC Infect Dis 2011 Apr 14;11:92.
21. Infection 2011 Oct ;39(5):399-404.
22. Emerg Infect Dis 2011 Sep ;17(9):1740-3.
23. Clin Infect Dis 2011 Dec ;53(12):1199-207.
24. Influenza Other Respir Viruses 2013 Sep ;7(5):838-46.
25. Harefuah 2013 Sep ;152(9):524-8, 564.
26. Disaster Med Public Health Prep 2014 Apr 11;:1-8.
27. Infect Control Hosp Epidemiol 2014 Jun ;35(6):709-16.
28. Isr Med Assoc J 2016 Dec ;18(12):729-734.
29. ProMED <promedmail.org> archive: 20091215.4255
30. ProMED <promedmail.org> archive: 20221125.8706912
31. ProMED <promedmail.org> archive: 20221216.8707312
32. ProMED <promedmail.org> archive: 20221216.8707312
33. ProMED <promedmail.org> archive: 20221228.8707501
34. Emerg Infect Dis 2007 Oct ;13(10):1601-3.
35. ProMED <promedmail.org> archive: 20060317.0827
36. ProMED <promedmail.org> archive: 20060323.0897
37. ProMED <promedmail.org> archive: 20060610.1621
38. ProMED <promedmail.org> archive: 20080103.0023
39. ProMED <promedmail.org> archive: 20080108.0100
40. ProMED <promedmail.org> archive: 20100127.0290
41. ProMED <promedmail.org> archive: 20100202.0355
42. ProMED <promedmail.org> archive: 20100203.0364
43. ProMED <promedmail.org> archive: 20100507.1486
44. ProMED <promedmail.org> archive: 20100515.1594
45. ProMED <promedmail.org> archive: 20120309.1065592
46. ProMED <promedmail.org> archive: 20120312.1068423
47. ProMED <promedmail.org> archive: 20120331.1086593
48. ProMED <promedmail.org> archive: 20120315.1071618
49. ProMED <promedmail.org> archive: 20120416.1103257
50. Vet Res 2016 11 04;47(1):109.
51. ProMED <promedmail.org> archive: 20150117.3099260
52. ProMED <promedmail.org> archive: 20150119.3102962
53. ProMED <promedmail.org> archive: 20150128.3126983
54. ProMED <promedmail.org> archive: 20150203.3139304
55. ProMED <promedmail.org> archive: 20150512.3357484
56. ProMED <promedmail.org> archive: 20161113.4626408
57. ProMED <promedmail.org> archive: 20161206.4678915
58. ProMED <promedmail.org> archive: 20170201.4808044
59. ProMED <promedmail.org> archive: 20180208.5614001
60. ProMED <promedmail.org> archive: 20190425.6439824
61. ProMED <promedmail.org> archive: 20201013.7859214
62. ProMED <promedmail.org> archive: 20211016.8699057
63. ProMED <promedmail.org> archive: 20211031.8699372
64. ProMED <promedmail.org> archive: 20220102.8700634
65. ProMED <promedmail.org> archive: 20211203.8700041
66. ProMED <promedmail.org> archive: 20211221.8700388
67. ProMED <promedmail.org> archive: 20211227.8700508
68. ProMED <promedmail.org> archive: 20220108.8700740
69. ProMED <promedmail.org> archive: 20230105.8707631
70. ProMED <promedmail.org> archive: 20221216.8707312
71. ProMED <promedmail.org> archive: 20220105.8700668
72. ProMED <promedmail.org> archive: 20220116.8700909
73. ProMED <promedmail.org> archive: 20221125.8706912
74. ProMED <promedmail.org> archive: 20221223.8707425
75. ProMED <promedmail.org> archive: 20220503.8703005
76. ProMED <promedmail.org> archive: 20220603.8703641
77. ProMED <promedmail.org> archive: 20060322.0892
78. ProMED <promedmail.org> archive: 20060324.0902
79. ProMED <promedmail.org> archive: 20060706.1859
80. ProMED <promedmail.org> archive: 20100519.1647
81. ProMED <promedmail.org> archive: 20100522.1698
82. ProMED <promedmail.org> archive: 20110303.0695
83. ProMED <promedmail.org> archive: 20110305.0719
84. ProMED <promedmail.org> archive: 20110306.0737
85. ProMED <promedmail.org> archive: 20110307.0749
86. ProMED <promedmail.org> archive: 20110412.1158
87. PLoS One 2014 ;9(1):e86973.
88. ProMED <promedmail.org> archive: 20110511.1445
89. ProMED <promedmail.org> archive: 20150121.3108879
90. ProMED <promedmail.org> archive: 20150131.3134313
91. ProMED <promedmail.org> archive: 20150326.3256159
92. ProMED <promedmail.org> archive: 20150330.3264974
93. ProMED <promedmail.org> archive: 20150403.3275578
94. ProMED <promedmail.org> archive: 20150414.3297762
95. ProMED <promedmail.org> archive: 20150416.3302128
96. ProMED <promedmail.org> archive: 20150515.3364585
97. ProMED <promedmail.org> archive: 20150618.3447479

Intestinal spirochetosis

Agent	BACTERIUM. *Brachyspira pilosicoli* and *B. aalborgi* Anaerobic gram-negative spirochetes
Reservoir	Human, Fowl, Pig
Vector	None
Vehicle	Endogenous
Incubation Period	Unknown
Diagnostic Tests	Spirochetes resemble "brush border' on bowel biopsy; identification of Brachyspira by PCR
Typical Adult Therapy	Metronidazole appears to be effective in some cases.[1]
Typical Pediatric Therapy	As for adult.
Clinical Hints	- Chronic diarrhea and abdominal pain in the absence of other identifiable etiology
Synonyms	Human intestinal spirochetosis. ICD9: 009.1 ICD10: A04.8

References

1. Dig Dis Sci 2013 Jan ;58(1):202-8.

Intra-abdominal abscess

Agent	BACTERIUM. Mixed anaerobic / aerobic, staphylococci, *Neisseria gonorrhoeae*, *Chlamydia trachomatis*, etc
Reservoir	Human
Vector	None
Vehicle	None
Incubation Period	Variable
Diagnostic Tests	Various imaging techniques (CT, Gallium scan, ultrasound, etc).
Typical Adult Therapy	Percutaneous or open drainage + antibiotics directed at known or suspected pathogen(s)
Typical Pediatric Therapy	As for adult
Clinical Hints	- Fever, chills and localizing pain (e.g., chest pain in subphrenic abscess) - Setting of prior surgery, biliary or colonic disease, appendicitis, vaginal discharge (PID) - FUO, subdiaphragmatic gas or limited diaphragmatic motion may be present
Synonyms	Abscess - Abdominal, Acute appendicitis, Appendicitis, Infected pancreatic necrosis, Intraabdominal abscess, Intraperitoneal abscess, P.I.D., Pancreatic abscess, Pelvic abscess, Pelvic inflammatory disease, Pylephlebitis, Subhepatic abscess, Subphrenic abscess, Suppurative pancreatitis, Tuboovarian abscess. ICD9: 614,577.0 ICD10: K35,N73,K75.1,K85

Intracranial venous thrombosis

Agent	BACTERIUM. Oral anaerobes, streptococci, et al
Reservoir	Human
Vector	None
Vehicle	Endogenous
Incubation Period	Variable
Diagnostic Tests	Culture (blood, CSF if indicated). Ophthalmoscopy. Roentgenographic studies of skull & sinuses.
Typical Adult Therapy	Antibiotic(s) directed at known or suspected pathogens[1] [2]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Headache, seizures and fever - Cranial nerve dysfunction may be present - Usually occurs in the setting of ongoing facial, otic or sinus infection
Synonyms	Cavernous sinus thrombosis, Cerebral sinus thrombosis, Cortical vein thrombosis, Internal cerebral vein thrombosis, Lateral sinus thrombosis, Straight sinus thrombosis, Superior sinus thromobosis, Transverse sinus thrombosis. ICD9: 325 ICD10: G08

References

1. J Neurol Sci 2016 Mar 15;362:221-7.

2. Curr Cardiol Rep 2014 Sep ;16(9):523.

Israeli spotted fever

Agent	BACTERIUM. *Rickettsia conorii* Israeli tick typhus strain (*R. conorii* subsp. *Israelensis*)
Reservoir	Dog, Rodent, Tick, Zoonotic
Vector	Tick (*Rhipicephalus sanguineus*)
Vehicle	None
Incubation Period	7d - 8d (range 3d - 18d)
Diagnostic Tests	Serology. Demonstration of rickettsiae by immunofluorescence or culture. Nucleic acid amplification.
Typical Adult Therapy	Doxycycline 100 mg PO BID X 3 to 5d. OR Chloramphenicol 500 mg PO QID X 3 to 5d[1]
Typical Pediatric Therapy	Doxycycline 2 mg/kg PO BID X 3 to 5d (maximum 200 mg/day). OR Chloramphenicol 10 mg/kg PO QID X 3 to 5d
Clinical Hints	- Clinically similar to Mediterranean spotted fever; however, an eschar is not seen - The rash is often centripetal - Hepatosplenomegaly is present in 30%
Synonyms	Rickettsia "sharoni", Rickettsia conorii subsp israelensis. ICD9: 082.1 ICD10: A77.8

Israeli spotted fever in Israel

See note for "Spotted fevers - Old World"

References

1. Expert Rev Anti Infect Ther 2012 Dec ;10(12):1425-37.

Japanese encephalitis

Agent	VIRUS - RNA. Flaviviridae, Flavivirus: Japanese encephalitis virus
Reservoir	Pig, Bird, Zoonotic
Vector	Mosquito (*Aedes* spp., *Anopheles barbirostris* and *hyrcanus* groups, *Culex tritaeniorhynchus* group and *Cu. annulus*)
Vehicle	Blood (rare)
Incubation Period	6d - 8d (range 4d - 15d)
Diagnostic Tests	Biosafety level 3. Viral culture (blood, CSF, brain tissue). Serology. Nucleic acid amplification.
Typical Adult Therapy	Supportive
Typical Pediatric Therapy	As for adult
Vaccine	Japanese encephalitis vaccine
Clinical Hints	- Myalgia, headache, vomiting, diarrhea, seizures, paralysis and leukocytosis - Polymorphonuclear leukocytes may predominate in cerebrospinal fluid - Case-fatality rates of 10% to 40% are reported; with neurological residua in 80%
Synonyms	Alfuy, Encefalite giapponse, Nam Dinh, Russian autumnal encephalitis, Summer encephalitis. ICD9: 062.0 ICD10: A83.0

Although Japanese encephalitis is not endemic to Israel, imported, expatriate or other presentations of the disease have been associated with this country.

Japanese encephalitis in Israel

Cross-border events

Years	Acquired by**	Originated in**	Setting	Cases	Notes
1989	Israel	Thailand	travel	1	1 2

** Country or Nationality

References

1. Am J Trop Med Hyg 2010 May ;82(5):930-6.

2. MMWR Recomm Rep 1993 Jan 08;42(RR-1):1-15.

Kawasaki disease

Agent	UNKNOWN
Reservoir	Unknown
Vector	None
Vehicle	Unknown
Incubation Period	Unknown
Diagnostic Tests	Diagnosis is based on clinical criteria only.
Typical Adult Therapy	Intravenous gamma globulin 2.0 g/kg over 10 to 12h X 1 dose. Plus aspirin 100 mg/kg/day X 14d (or until defervescence) - then 5 to 10 mg/kg/day until normal ESR Infliximab (a chimeric monoclonal antibody) 5 mg/kg has been successful in some studies. Glucocorticoids in addition to IVIG have been successful in some studies.[1] [2] [3] [4]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Disease most common among children - Fever, conjunctivitis, stomatitis and an erythematous rash which desquamates - Occasionally complicated by coronary artery occlusion - Case-fatality rates of 1% to 4% are reported
Synonyms	Kawasaki's disease, Mucocutaneous lymph node syndrome. ICD9: 446.1 ICD10: M30.3

Kawasaki disease in Israel

685 children below age 18 years were hospitalized for Kawasaki disease during 1996 to 2009 - 88% below age 5 years. [5]

- Most cases occurred during late winter-early spring.
- Rates among male infants below age 1 year were 5.8 per 100,000 during 1996 to 1998; 11.9 per 100,000 during 1999 to 2009
- During 1996 to 2012, rates among children below age 18 years were 2.03 per 100,000 per year. [6]

References

1. J Pediatr 1997 Dec ;131(6):888-93.
2. Cochrane Database Syst Rev 2003 ;(4):CD004000.
3. JAMA Pediatr 2016 Dec 01;170(12):1156-1163.
4. Pediatr Infect Dis J 2023 May 18;
5. Pediatr Infect Dis J 2011 Jul ;30(7):589-92.
6. Harefuah 2014 Dec ;153(12):709-12, 754, 753.

Kikuchi's disease and Kimura disease

Agent	UNKNOWN
Reservoir	Unknown
Vector	None
Vehicle	Unknown
Incubation Period	Unknown
Diagnostic Tests	Biopsy.
Typical Adult Therapy	Supportive Hydroxychloroquine and corticosteroids have been successful for Kikuchi's disease in some cases. Radiotherapy has been used in the treatment of Kimura's disease[1] [2] [3]
Typical Pediatric Therapy	As for adult
Clinical Hints	Most patients of Asian origin Kikuchi disease: - Prolonged (1 to 12 months) cervical lymphadenopathy (rubbery, non-matted - may be tender) - Fever (40%), weight loss, "sweats', leukopenia Kimura disease: - Similar to Kikuchi disease - Salivary gland involvement, glomerulitis, painless subcutaneous masses and eosinophilia suggest Kimura disease - May be misdiagnosed as filariasis
Synonyms	Angiolymphoid hyperplasia, Angiolymphoid hyperplasia-eosinophia, Eosinophilic follicular lymphadenitis, Histiocytic necrotizing lymphadenitis, Kikuchi's disease, Kikuchi-Fujimoto disease, Kimura disease. ICD9: 289.3 ICD10: I89.8

Kikuchi's disease and Kimura disease in Israel

19 cases of Kikuchi's disease were reported (from 7 medical centers) in Israel as of 2009. [4] [5] [6] [7]

References

1. Clin Infect Dis 2004 Dec 15;39(12):e124-6.
2. Indian J Cancer 2021 Aug 07;
3. Cutis 2022 Aug ;110(2):E32-E34.
4. Semin Arthritis Rheum 2010 Jun ;39(6):515-20.
5. Otolaryngol Head Neck Surg 2004 Mar ;130(3):391-4.
6. Eur J Pediatr Surg 1996 Feb ;6(1):32-4.
7. Acta Haematol 1988 ;79(2):99-102.

Kingella infection

Agent	BACTERIUM. *Kingella kingae*, et al A facultative gram-negative coccobacillus
Reservoir	Human
Vector	None
Vehicle	Endogenous
Incubation Period	Unknown
Diagnostic Tests	Culture of blood, joint fluid, CSF, etc. Alert laboratory if these organisms are suspected.
Typical Adult Therapy	Ampicillin usually effective For resistant organisms : Ampicillin/Sulbactam OR Amoxicillin/Clavulanate OR Cefazolin Dosage per severity/site[1] [2] [3]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Most cases reported among young children - May present as septic arthritis, endocarditis, meningitis and other localized or systemic infections
Synonyms	ICD9: 041.85 ICD10: A48.8

Kingella infection in Israel

1997 (publication year) - The incidence of *Kingella kingae* infection among children below age 24 months is 27.4 per 100,000 (southern Israel). [4]

Rates appear to be highest among children in the southern portion of the country. [5] [6]

2009 (publication year) - Asymptomatic pharyngeal carriage is common among children in southern Israel. [7]

Prevalence surveys

Years	Region	Study Group	%	Notes
2005 - 2014	Southern Region	children	11.4	11.4% of occult bacteremia cases [8]

Notable outbreaks

Years	Region	Setting	Cases	Clinical	Pathogen	Notes
2005	Negev	day-care center	3	osteoarticular infection	*Kingella kingae*	[9]
2012 - 2013		day-care center	4		*Kingella kingae*	[10]
2014					*Kingella kingae*	2 outbreaks reported. [11]
2015*	Multiple locations		9		*Kingella kingae*	9 cases in 4 outbreaks, reported in 3 military basis and a kibbutz [12]

***** indicates publication year (not necessarily year of outbreak)

References

1. BMC Infect Dis 2015 Jul 07;15:260.
2. Pediatr Infect Dis J 2012 Feb ;31(2):212.
3. Diagn Microbiol Infect Dis 1999 May ;34(1):73-6.
4. Clin Infect Dis 1997 May ;24(5):860-6.
5. J Clin Microbiol 2002 Nov ;40(11):4180-4.
6. Emerg Infect Dis 2000 Jan-Feb;6(1):85-7.
7. Pediatr Infect Dis J 2009 Aug ;28(8):707-10.
8. Int J Environ Res Public Health 2016 07 19;13(7)
9. Pediatr Infect Dis J 2006 Jun ;25(6):526-32.
10. Emerg Infect Dis 2014 May ;20(5):746-53.
11. Pediatr Infect Dis J 2016 Mar ;35(3):340-6.
12. J Pediatr 2016 Feb ;169:135-9.e1.

Laryngotracheobronchitis

Agent	VIRUS OR BACTERIUM. Parainfluenza virus, Influenza virus, *Mycoplasma*, et al
Reservoir	Human
Vector	None
Vehicle	Droplet, Respiratory or pharyngeal acquisition
Incubation Period	3d - 8d
Diagnostic Tests	Viral culture (respiratory secretions). Serology. Nucleic acid amplification.
Typical Adult Therapy	Supportive
Typical Pediatric Therapy	As for adult
Clinical Hints	- Most cases are in young children - Usually encountered in the setting of bronchiolitis, laryngitis or croup following a minor upper respiratory infection
Synonyms	Bronchitis, Croup, Laringitis, Laryngite, Laryngitis, Laryngotracheitis. ICD9: 464,466 ICD10: J04,J05,J20,J21

Lassa fever

Agent	VIRUS - RNA. Arenaviridae, Mammarenavirus: Lassa virus
Reservoir	Multimammate rat (*Mastomys natalensis*), Zoonotic
Vector	None
Vehicle	Rodent secretions, Contact, Dust, Food, Patient secretions, Respiratory or pharyngeal acquisition
Incubation Period	8d - 14d (range 3d - 21d)
Diagnostic Tests	Biosafety level 4. Viral culture (blood, urine, throat, liver, spleen). Serology. Nucleic acid amplification.
Typical Adult Therapy	Strict isolation. Ribavirin 2g IV (effectiveness not well established) Then 1g q6h IV X 4d Then 0.5g IV q8h X 6d[1] [2] [3]
Typical Pediatric Therapy	Strict isolation. Ribavirin 30 mg/kg IV Then 15 mg/kg IV q6h X 4d Then 7.5 mg/kg IV q8h X 6d
Clinical Hints	- Gastrointestinal symptoms, cough, pharyngitis, conjunctivitis and retrosternal pain - Leukopenia, proteinuria and hepatic dysfunction may be present - Case-fatality rates of 15% to 25% are reported
Synonyms	Lassa-Fieber, Luna virus. ICD9: 078.89 ICD10: A96.2

Although Lassa fever is not endemic to Israel, imported, expatriate or other presentations of the disease have been associated with this country.

Lassa fever in Israel

Cross-border events

Years	Acquired by**	Setting	Cases	Notes
1987	Israel	travel	1	Lassa fever diagnosed in engineer who had worked in Liberia and Sierra Leone [4]

** Country or Nationality

No cases have been reported since 1987.

References

1. N Engl J Med 1986 Jan 02;314(1):20-6.
2. PLoS Negl Trop Dis 2022 Mar 30;16(3):e0010289.
3. Emerg Infect Dis 2022 Aug ;28(8):1559-1568.
4. Harefuah 1988 Jan 01;114(1):12-4.

Legionellosis

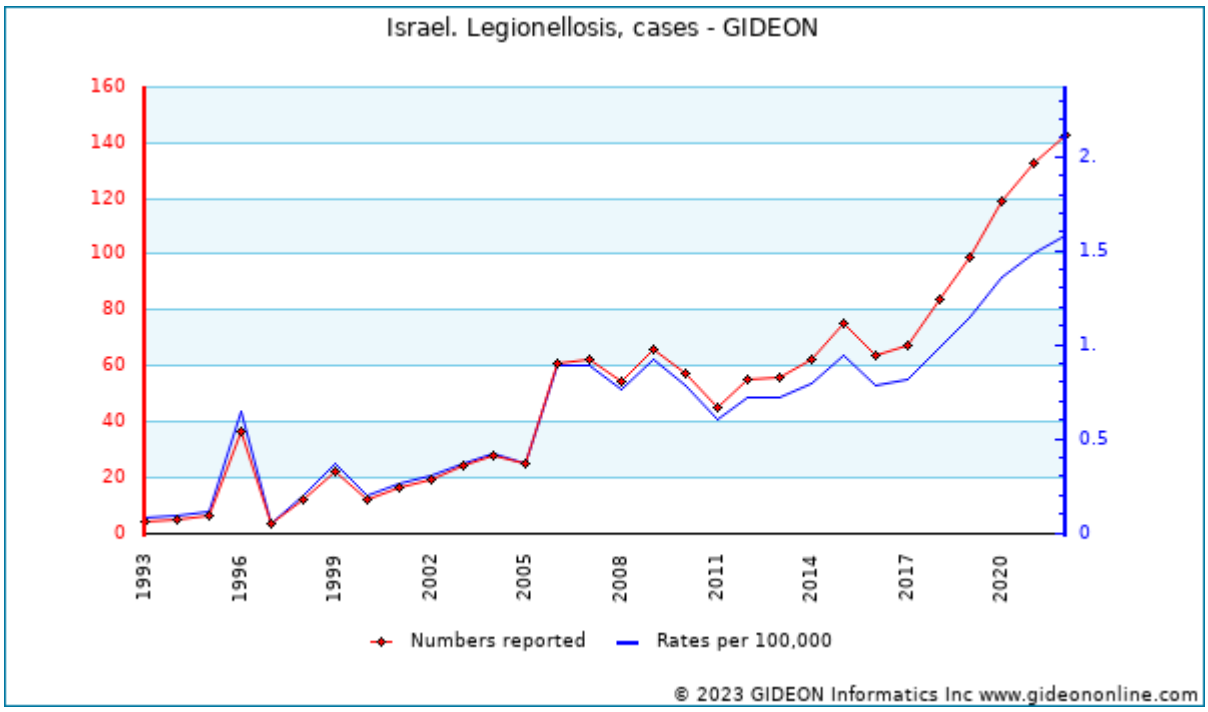
Agent	BACTERIUM. *Legionella pneumophila*, et al An aerobic gram-negative bacillus
Reservoir	Water
Vector	None
Vehicle	Water, Aerosols, Droplet, Respiratory or pharyngeal acquisition
Incubation Period	5- 6d (range 2-12d); Pontiac fever = 1-2d
Diagnostic Tests	Serology. Culture. Urine antigen (certain types). Nucleic acid amplification. Alert lab if organism suspected.
Typical Adult Therapy	Fluoroquinolone (Levofloxacin, Trovafloxacin, Pefloxacin, Sparfloxacin or Moxifloxacin). OR Azithromycin. OR Erythromycin + Rifampin OR Clarithromycin[1] [2] [3]
Typical Pediatric Therapy	Azithromycin. OR Erythromycin + Rifampin OR Clarithromycin
Clinical Hints	- Respiratory illness with extrapulmonary manifestations - Diarrhea, confusion, renal or hepatic dysfunction, relative bradycardia, etc. - Most cases reported during summer in temperate areas - Case-fatality rates of 5% to 25% are reported
Synonyms	Doenca dos legionarios, Legionarsjuka, Legionarssjuka, Legionella, Legionellose, Legionellosi, Legionnaire's disease, Pontiac fever. ICD9: 482.84 ICD10: A48.1,A48.2

Legionellosis in Israel

Time and Place

Legionellosis was first reported in Israel in 1979 (in a tourist from France). [4]

- The first case report of nosocomially-acquired Legionellosis was published in 1982. [5]
- No deaths were ascribed to legionellosis during 1991 to 1995.
- The predominant strain in Israel is *Legionella pneumophila* serotype 3.



Graph: Israel. Legionellosis, cases

Notes:
Individual years:
2012 - Included fatal infection in an infant, acquired from a humidifier.

- 2015 to 2017 - A nationwide survey of *Legionella pneumophila* in the water systems of Israeli hotels [6]

Prevalence surveys

Years	Region	Study Group	%	Notes
1993 - 1997		patients	5-9	5% to 9% of pneumonia (1993 to 1997) [7]
1995*		patients	6.2	Survey of patients with atypical respiratory infections [8]
1997*	Negev	patients	16.2	Patients with community-acquired pneumonia [9]
1998*	Southern Region	patients	12	12% of winter respiratory tract infections in an outpatient setting (1998 publication) [10]
1999	Beer Sheva	patients	11.2	11.2% of febrile adult respiratory tract infection treated in emergency rooms (Beer Sheva, winter of 1999)
1999 - 2000	Northern Region	patients	3.3	3.3% of community-acquired pneumonia in patients above age 60 requiring hospitalization (northern Israel, 1999 to 2000) [11]
2015 - 2017	Nationwide	environmental - water	17	*Legionella* was identified in 17% of hotel water systems. [12]

* indicates publication year (not necessarily year of survey)

Seroprevalence surveys

Years	Region	Study Group	%	Notes
1986*		adults - elderly	0	0% of old people living in their own households (1986 publication) [13]
2002*		adults - elderly	9.1	9.1% of day club attendants [14]
2002*		patients	8.3	8.3% of hospitalized patients
1982*		patients	6.3	6.3% of hemodialysis patients (1982 publication) [15]
1986*		patients	12.1-17.2	12.1% of patients and 17.2% of staff members in a hospital [16]

Years	Region	Study Group	%	Notes
2002*	Beer Sheva	patients	16.7	16.7% of patients with exacerbation of chronic obstructive pulmonary disease (2002 publication) [17]
2002*		various	30.5-35.7	30.5% of patients and 35.7% of staff members in one hospital [18]

* indicates publication year (not necessarily year of survey)

Notable outbreaks

Years	Region	Setting	Cases	Notes
2002*	Haifa	bone marrow transplant unit	4	Outbreak of *Legionella pneumophila* serogroup 3 pneumonia [19]

* indicates publication year (not necessarily year of outbreak)

References

1. Infect Dis Clin North Am 2017 03 ;31(1):179-191.
2. Lancet Infect Dis 2014 Oct ;14(10):1011-21.
3. Curr Opin Infect Dis 2010 Apr ;23(2):152-7.
4. Isr J Med Sci 1979 Mar ;15(3):227-30.
5. Isr J Med Sci 1982 Aug ;18(8):873-7.
6. Pathogens 2020 May 27;9(6)
7. Harefuah 1999 Feb 15;136(4):257-61, 340.
8. Harefuah 1995 Oct ;129(7-8):229-32, 296.
9. J Infect 1997 Jan ;34(1):41-8.
10. Eur J Clin Microbiol Infect Dis 1998 Oct ;17(10):685-9.
11. Harefuah 2002 Aug ;141(8):680-2, 763.
12. Pathogens 2020 May 27;9(6)
13. Isr J Med Sci 1986 Oct ;22(10):728-32.
14. Isr J Med Sci 1986 Oct ;22(10):728-32.
15. Isr J Med Sci 1982 Jun ;18(6):667-70.
16. Isr J Med Sci 1986 Oct ;22(10):728-32.
17. Eur Respir J 2002 Mar ;19(3):392-7.
18. Isr J Med Sci 1986 Oct ;22(10):728-32.
19. Bone Marrow Transplant 2002 Aug ;30(3):175-9.

Leishmaniasis - cutaneous

Agent	PARASITE - Protozoa. Euglenozoa, Kinetoplastea. Flagellate: *Leishmania tropica*, et al
Reservoir	Human, Hyrax, Rodent, Marsupial, Dog, Sloth, Anteater, Armadillo, Bat, Zoonotic
Vector	Sandfly (*Phlebotomus* for Old-world; *Lutzomyia* or *Psychodopygus* for New-world)
Vehicle	None
Incubation Period	2w - 8w (range 1w - months)
Diagnostic Tests	Identification of organism on smear or specialized culture. Nucleic acid amplification
Typical Adult Therapy	Local therapy: Cryotherapy; Laser ablation Pentavalent antimonials or Paromomycin. For complicated disease: Fluconazole or Miltefosine, PO Alternatives: Amphotericin B deoxycholate, Liposomal Amphotericin B, Pentavalent antimony IV, Pentamidine[1] [2] [3]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Chronic ulcerating skin nodule - May be painless (*Leishmania tropica*) or painful (*L. major*) - Diffuse infection or regional lymphadenopathy are occasionally encountered
Synonyms	Aleppo button, Antep boil, Baghdad boil, Bay sore, Bejuco, Biskra boil, Boessie-Yassi, Bolho, Boschyaws, Bosjaws, Bush yaws, Busi-yasi, Chiclero ulcer, Crithidia, Cutaneous leishmaniasis, Delhi ulcer, Domal, El-Mohtafura, Forest yaws, Gafsa boil, Granuloma endemicum, Hashara, Jericho boil, Kaal Daana, Kandahar sore, Leishmania aehiopica, Leishmania enriettii, Leishmania garnhami, Leishmania guyanensis, Leishmania killicki, Leishmania lainsoni, Leishmania lindenbergi, Leishmania macropodum, Leishmania major, Leishmania martiniquensis, Leishmania mexicana, Leishmania naiffi, Leishmania orientalis, Leishmania panamensis, Leishmania peruviana, Leishmania shawi, Leishmania tropica, Leishmania turanica, Leishmania venezuelensis, Leishmania waltoni, Leishmaniasis, Leishmaniose: Kutane, Leishmaniosi cutanea, Lepra de montana, Liana, Mundinia enriettii, Mundinia martiniquensis, Mundinia orientalis, Okhet, One-year boil, Oriental sore, Pendjeh sore, Pian bois, Saldana, Ulcera de Bejuco, Urfa boil, Uta, Yatevi, Year boil. ICD9: 085.1,085.2,085.3,085.4 ICD10: B55.1

Leishmaniasis - cutaneous in Israel

Time and Place

Cutaneous leishmaniasis is endemic to the Jordan Valley, Dead Sea shore, central Negev, and Sinai border. [4] [5] [6] [7] [8] [9]

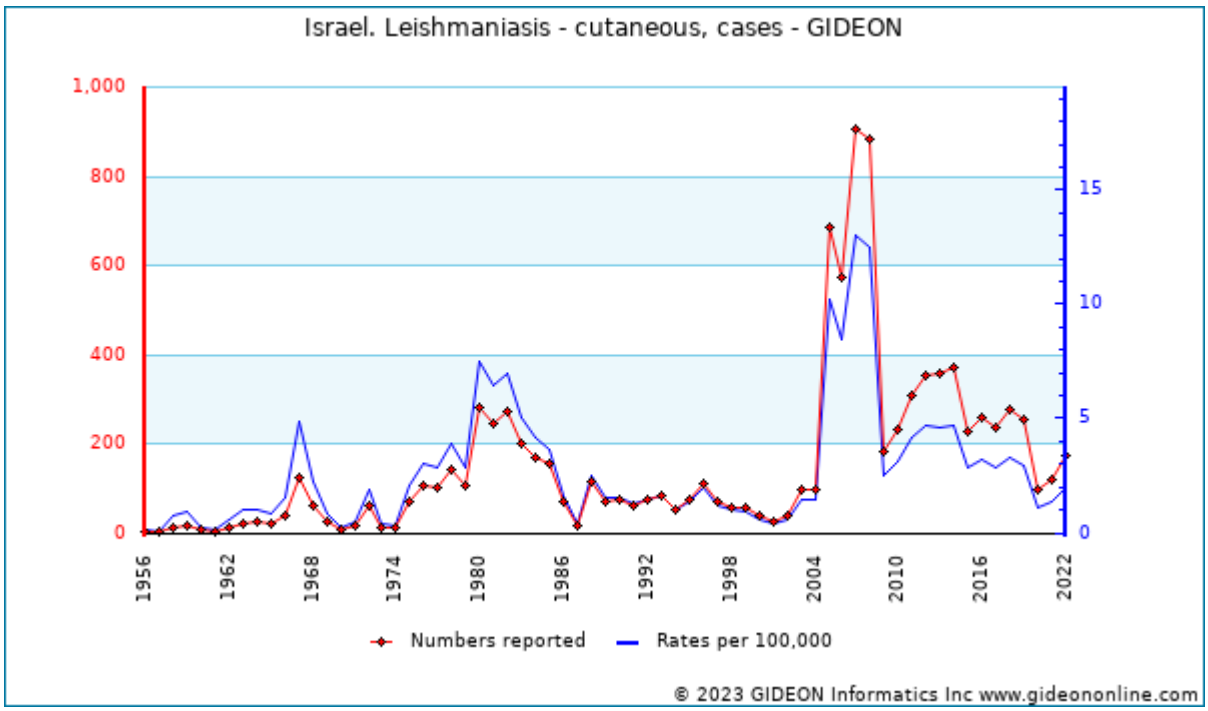
- 165 cases of New World cutaneous leishmaniasis were diagnosed at a hospital in Ramat Gan during 1993 and 2021. All cases were acquired in Bolivia's Amazon region, where *Leishmania braziliensis* is known to be endemic. [10]
- Emerging foci have been identified in the areas of Nizzana (western Negev) and Yerucham. [11] Nizzana accounts for 55% of cases among military personnel. (1996 to 2006) [12]
- Fifteen cases of cutaneous leishmaniasis due to *Leishmania major* were reported from Sde Eliyahu (Beit She'an Valley) in 2007; 99 cases during 2008 to 2011.

Increasing rates (106 cases of *Leishmania major* infection) were reported in Sde She'an, Beit She'an Valley, during 2007 to 2011. [13]

- Rates increased after the Six-day war of 1967, due to acquisition of Judea and Samaria.
- Increasing rates of leishmaniasis were reported in northern Israel during 1999 to 2003 (62.5 per 100,000 in Tiberias in 2003). [14] [15]
- Increasing rates of leishmaniasis were reported in Israel during 2001 to 2012. [16]
- A mean of 77 cases per year were reported by a reference laboratory in southern Israel during 2007 to 2010; 178 in

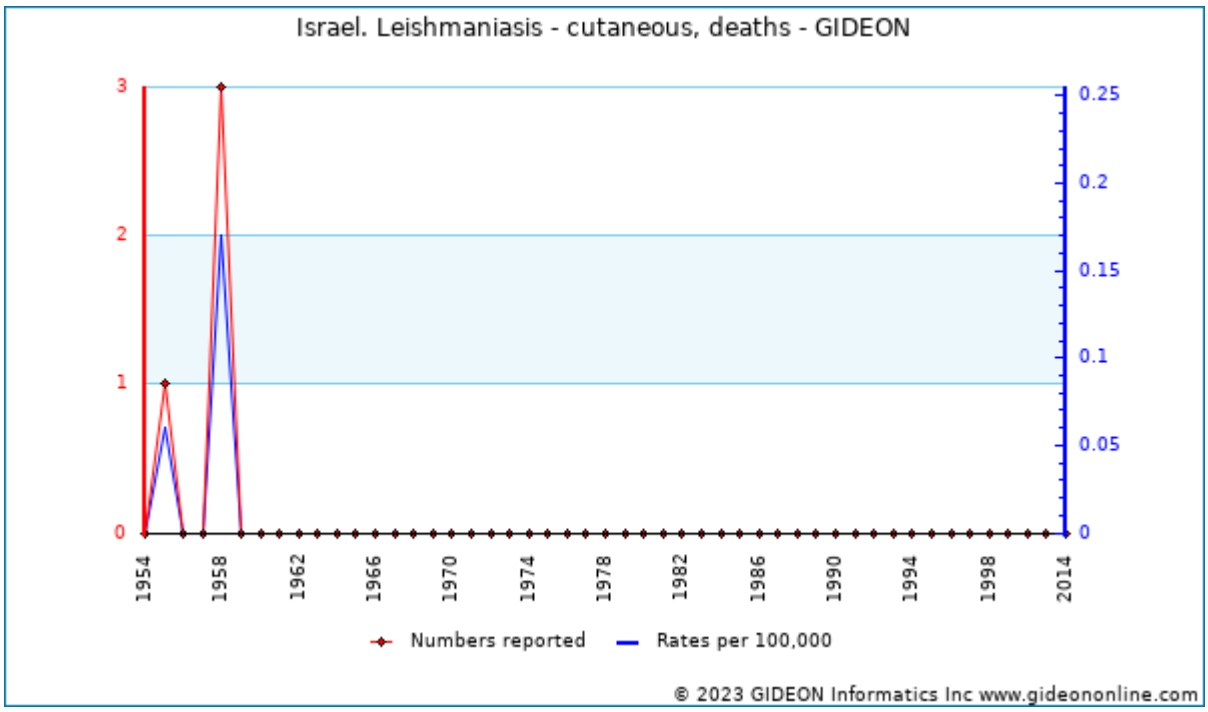
2011; 327 in 2012 and 528 in 2013. [17]

- In a survey of 25% of the population of the village of Peduel, Samaria during 2008 to 2012, 278 cases of cutaneous leishmaniasis were detected. 41% of cases occurred in males and 59% in females. [18]
- In a house-to-house survey of the total population of three kibbutzes in the Negev in southern Israel during 2013 to 2016, 330 patients with *L. major* cutaneous leishmaniasis were identified. 49.6% of cases occurred in males and 50.4% in females. [19]



Graph: Israel. Leishmaniasis - cutaneous, cases

Notes:
1. Cutaneous leishmaniasis has been a reportable disease since 1956.
2. The highest incidence is encountered during June to October.
3. Rates among military personnel were 0.11 per 100,000 in 2002, increasing to 196 per 100,000 in 2006.
4. 371 cases were reported from a university clinic in Jerusalem during 1988 to 1992. [20]
5. A mean of 579 cases per year were reported during 2003 to 2007 (true number estimated at 1,600 to 2,700 per year). [21]



Graph: Israel. Leishmaniasis - cutaneous, deaths

Infecting Species

Most cases are due to *Leishmania major*, with sporadic infections by *L. tropica*.

- 1996 to 2002 - 33 cases of *Leishmania tropica* infection were documented in Tiberias and four nearby villages. [22] [23]
- 2004 to 2005 - 161 cases of *Leishmania tropica* infection were reported in the Jerusalem district, including 127 in Ma'ale Adumim. [24]
- 2006 to 2008 - 72 cases of *Leishmania major* infection were reported from rural areas near Beit She'an.
- 2012 to 2016 - 382 cases of *Leishmania major* infection were reported to the Ministry of Health. 53% of cases occurred in males, and 47% in females. [25]
- 2016 (publication year) - A case of cutaneous leishmaniasis caused by *Leishmania infantum* was reported from Southern Israel. [26]
- 2018 to 2021 - Eight cases of cutaneous leishmaniasis attributable to *L. infantum* were reported. The infections were acquired in endemic areas for other forms of leishmaniasis in the southern and central regions of the country. [27]

Reservoirs

- The local reservoirs are *Psammomys obesus* (Jordan Valley, Arava and southern Israel) and *Meriones crassus* (western Negev).
- The rock hyrax (*Procavia capensis*) is a proven reservoir in northern Galilee, including areas of *Leishmania tropica* adjacent to the Sea of Galilee. [28] [29] In recent years, rock hyraxes have been implicated in transmission of leishmaniasis in suburbs of Jerusalem [30] and the West Bank. [31]
- Voles (*Microtus guentheri*) and jirds (*Meriones tristrami*) in the Beit She'an region are infected by *Leishmania major*. [32]
- Sporadic infection has also been documented in gerbils (*Gerbillus dasyurus*).

Prevalence surveys

Years	Region	Study Group	%	Notes
2010*	Multiple locations	foxes	7.8-8	7.8% of golden jackals (*Canis aureus*) and 8% of red foxes *Vulpes vulpes*) (*Leishmania tropica*, 2010 publication) [33]
2011*	Beit She'an	various	16.5-18	18% of *Phlebotomus papatasi* sand flies and 16.5% of voles (*Microtus guentheri*) in Sde Eliyahu (Beit She'an Valley, 2011 publication)
2010 - 2012	West Bank	flies	18.5	Leishmanial DNA was identified in 18.5% of phlebotomine sand flies [34]

Years	Region	Study Group	%	Notes
2018 - 2020	Negev	flies	2.5	Of 5,019 female phlebotomus sand flies (*P. alexandri*, *P. kazeruni*, *P. sergenti*, *P. papatasi*, and *P. syriacus*) collected in the southern Negev desert, 2.5% were *Leishmania* DNA-positive. Additionally, 92% of infections were identified as *L. donovani*. The authors concluded that *L. donovani* is a cause of authochthonous cutaneous leishmaniasis in Israel. [35]
2019	West Bank	flies	3.9-14.9	*Leishmania* spp. were detected in 14.9% of*Phlebotomus* spp. sandflies collected from hyrax dens in Tayasir village, Tubas district prior to Permethrin thermal fogging, and 3.9% after fogging. [36]
2007 - 2008	Negev	rodents	3-13	13% of sand rats in the Zin Wadi and 3% in the Zin Plateau, Negev highlands (*Leishmania major*, 2007 to 2008) [37]
2008 - 2011		rodents	3-49	49% of *Psammomys obesus*, 43% of *Meriones crassus*, 33% of *Paraechinus aethiopicus*, 3% of *Gerbillus dasyurus*, 23% of *Erinaceus concolor* and 14% of *Meriones tristrami* (2008 to 2011)
2013*	Beit She'an	small mammals	16.5-58.3	16.5% of Levant voles (*Microtus guentheri*), and 58.3% of Tristram's jirds (*Meriones tristrami*) in an endemic area of the Beit She'an Valley (2013 publication) [38]
2008 - 2010		hyraxes	19	19% of rock hyraxes (*Procavia capensis*, 2008 to 2010)
2010*	Ma'ale Adumim	hyraxes	58	58% of rock hyraxes (*Procavia capensis*) in Ma'ale Adumim (PCR, 2010 publication) [39]
2018 - 2020	Central Region	dogs and cats	0.5-3.3	*Leishmania tropica* was detected in 0.5% of dogs and 3.3% of cats receiving veterinary care in Alfei Menashe, Shomron region. [40]

***** indicates publication year (not necessarily year of survey)

Vectors

The local vectors are *Phlebotomus papatasi* (for *Leishmania major*) and *Ph. (Paraphlebotomus) sergenti* (for *Leishmania tropica*).

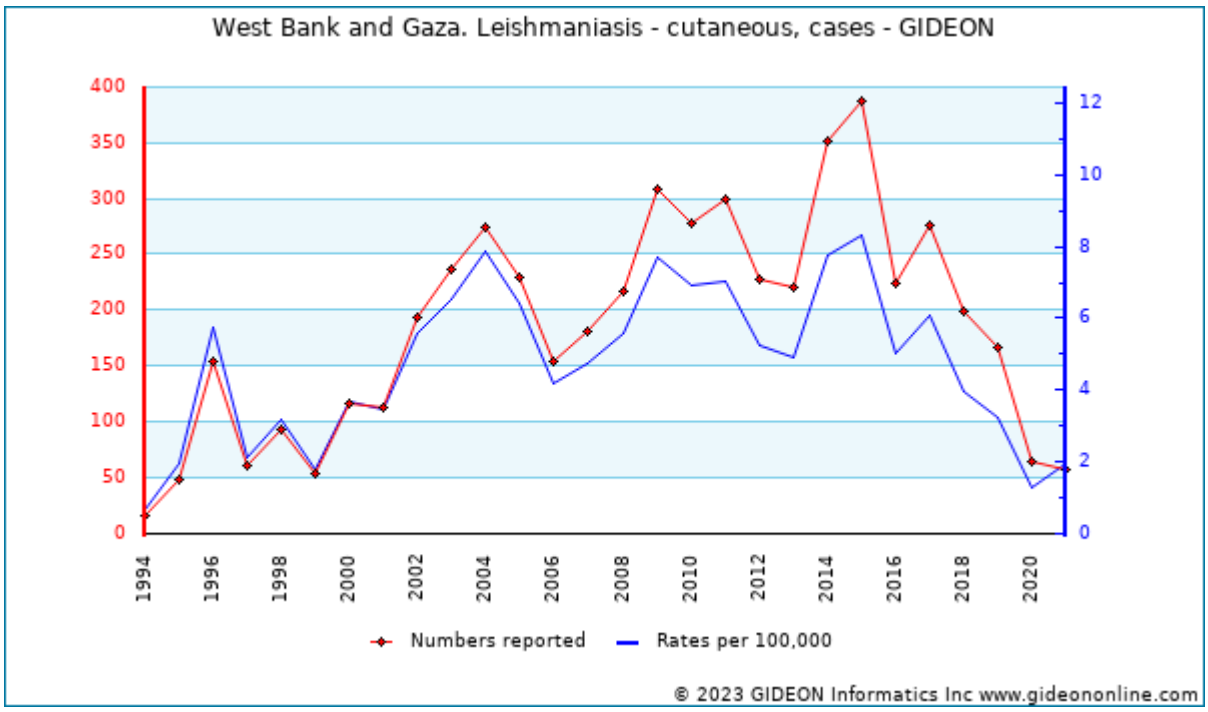
- *Ph. (Adlerius) arabicus* is a proven vector of *Leishmania tropica* in the Northern Galilee.
- *Ph. sergenti* is implicated in transmission of *L. tropica* in the area of Tiberias; *Ph. arabicus* in the area of Karzim, Karkom and Amhun. [41]
- Species found in the Judean Desert include *Ph. (Paraphlebotomus) sergenti*, *Ph. papatasi*, *Ph. syriacus* and *Ph. Tobbi* [42]

Notable outbreaks

Years	Region	Cases	Pathogen	Population	Notes
1994	Yerucham	32			[43]
2009*	Jerusalem Region		multiple pathogens		Outbreak of *Leishmania tropica* and *Leishmania major* infections was reported in Kfar Adumim, Jerusalem region [44]
2011 - 2013	Southern Region	1,033			[45]
2015	Negev	3	*Leishmania major*	tourists	Three Dutch students acquired leishmaniasis in Israel. [46]
2016	Tzofim	50			[47]
2016*				tourists	Outbreak was reported among American teenagers visiting Israel. [48]

***** indicates publication year (not necessarily year of outbreak)

West Bank and Gaza:



Graph: West Bank and Gaza. Leishmaniasis - cutaneous, cases

Notes:
1. 5,855 cases of cutaneous leishmaniasis were reported in the West Bank, and no cases reported in the Gaza Strip, during 1990 to 2020. [49]
2. 28 cases of *L. tropica* infection were confirmed in Jericho during 1997 to 2002, accounting for 48.5% of cutaneous leishmaniasis. [50]
3. 466 cases of cutaneous leishmaniasis were reported in Jenin District during 2002 to 2009 (23 per 100,000 per year) - 93.6% due to *Leishmania tropica* [51] and 6.4% *Leishmania major*. Cases of cutaneous infection by *Leishmania infantum* were also identified. [52]
4. 218 cases per year were reported during 2005 to 2009 (true number estimated at 610 to 1,000 per year). [53]

- 26.3% of individuals in the vicinity of Jericho are seropositive. [54]
- Cutaeneous leishmaniasis in the West Bank and Gaza increases in December and peaks during March and April of the following year (1990 to 2020). [55]

The principal vectors in the West Bank (Jenin) region are *Phlebotomus papatasi* (for *Leishmania major*) and *Ph. sergenti* (*L. tropica*).

References

1. Lancet 2018 09 15;392(10151):951-970.
2. Cochrane Database Syst Rev 2017 12 01;12:CD005067.
3. Cochrane Database Syst Rev 2017 11 17;11:CD005067.
4. Trans R Soc Trop Med Hyg 1994 Nov-Dec;88(6):649-50.
5. Harefuah 1978 Jul 02;95(1):8-9.
6. Harefuah 1984 Aug ;107(3-4):57-9.
7. Trop Geogr Med 1985 Dec ;37(4):298-303.
8. ProMED <promedmail.org> archive: 20120925.1308324
9. Harefuah 2016 Oct ;155(10):626-631.
10. Trop Med Infect Dis 2022 Aug 12;7(8)
11. Int J Parasitol 2002 Feb ;32(2):133-43.
12. Int J Dermatol 2009 Jun ;48(6):611-3.
13. PLoS Negl Trop Dis 2013 ;7(2):e2058.
14. Isr Med Assoc J 2010 Nov ;12(11):652-6.
15. ProMED <promedmail.org> archive: 20120902.1277142
16. Emerg Infect Dis 2014 Oct ;20(10):1605-11.
17. Infect Dis (Lond) 2015 Mar ;47(3):161-7.
18. Trop Med Infect Dis 2022 Aug 12;7(8)
19. Trop Med Infect Dis 2022 Aug 12;7(8)
20. Trans R Soc Trop Med Hyg 1994 Nov-Dec;88(6):649-50.
21. PLoS One 2012 ;7(5):e35671.
22. J Infect Dis 2003 Oct 01;188(7):1065-73.
23. J Am Acad Dermatol 2005 Nov ;53(5):810-5.
24. Emerg Infect Dis 2008 Sep ;14(9):1424-6.
25. Trop Med Infect Dis 2022 Aug 12;7(8)
26. Acta Parasitol 2016 Dec 01;61(4):855-858.
27. Emerg Infect Dis 2023 May ;29(5):988-991.
28. Emerg Infect Dis 2006 Dec ;12(12):1860-8.
29. Isr Med Assoc J 2010 Nov ;12(11):652-6.
30. ProMED <promedmail.org> archive: 20151223.3887577
31. PLoS Negl Trop Dis 2022 Sep ;16(9):e0010628.
32. PLoS Negl Trop Dis 2013 ;7(2):e2058.
33. Emerg Infect Dis 2010 Dec ;16(12):1973-5.
34. PLoS Negl Trop Dis 2020 Oct 05;14(10):e0008748.
35. Emerg Infect Dis 2023 May ;29(5):945-955.
36. PLoS Negl Trop Dis 2022 Sep ;16(9):e0010628.

37. Vector Borne Zoonotic Dis 2014 Aug ;14(8):592-600.
38. PLoS Negl Trop Dis 2013 ;7(2):e2058.
39. Am J Trop Med Hyg 2010 May ;82(5):814-8.
40. Parasit Vectors 2022 May 10;15(1):147.
41. Emerg Infect Dis 2006 Dec ;12(12):1860-8.
42. J Med Entomol 2010 May ;47(3):319-28.
43. Harefuah 1997 Mar 16;132(6):385-7, 448.
44. Trans R Soc Trop Med Hyg 1994 Nov-Dec;88(6):649-50.
45. Infect Dis (Lond) 2015 Mar ;47(3):161-7.
46. Emerg Infect Dis 2016 11 ;22(11):2022-2024.
47. ProMED <promedmail.org> archive: 20160528.4250881
48. Pediatr Dermatol 2016 Sep ;33(5):e276-7.
49. PLoS One 2022 ;17(6):e0268264.
50. Trop Med Int Health 2004 Jul ;9(7):812-6.
51. Parasit Vectors 2012 Jun 18;5:121.
52. Trans R Soc Trop Med Hyg 2012 Sep ;106(9):554-62.
53. PLoS One 2012 ;7(5):e35671.
54. East Mediterr Health J 2003 Jul ;9(4):805-15.
55. PLoS One 2022 ;17(6):e0268264.

Leishmaniasis - mucocutaneous

Agent	PARASITE - Protozoa. Euglenozoa, Kinetoplastea. Flagellate: *Leishmania braziliensis*, et al
Reservoir	Rodent, Human, Sloth, Marsupial, Zoonotic
Vector	Sandfly (*Lutzomyia* or *Psychodopygus*)
Vehicle	None
Incubation Period	2w - 8w (range 1w - 6m)
Diagnostic Tests	Microscopy (culture in specialized laboratories). Serology. Nucleic acid amplification.
Typical Adult Therapy	Pentavalent antimonials (Stibogluconate) 20 mg/kg/d IV/IM X 28d. OR Amphotericin B deoxycholate 0.5 mg/kg/d X 4 to 8w OR Liposomal Amphotericin B 3 mg/kg/d X 1 to 3w OR Miltefosine 0.8 mg/kg TID X 28d OR Pentamidine 2-4 mg/kg/d X 2w[1] [2]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Skin ulceration or nasopharyngitis associated with purulent, mucoid exudate - The process may extend to underlying soft tissues - Metastatic lesions often involve the palate and pharynx
Synonyms	Agla, Espundia, Mucocutaneous leishmaniasis. ICD9: 085.5 ICD10: B55.2

Although Leishmaniasis - mucocutaneous is not endemic to Israel, imported, expatriate or other presentations of the disease have been associated with this country.

Leishmaniasis - mucocutaneous in Israel

- 1993 to 2015 - 17 cases of mucosal leishmaniasis due to *Leishmania braziliensis* were diagnosed among travelers returning from Bolivia. [3]

- 1993 to 2021 - 19 (11.5%) patients were diagnosed with mucocutaneous leishmaniasis at a hospital in Ramat Gan, among a cohort of 165 travelers returning from Latin America with leishmaniasis. [4]

- 2003 (publication year) - Mucosal leishmaniasis due to *Leishmania braziliensis* was reported in an Israeli traveler who had visited South America. [5]

References

1. Lancet 2018 09 15;392(10151):951-970.
2. Rev Soc Bras Med Trop 2018 May-Jun;51(3):318-323.
3. Emerg Infect Dis 2019 Apr ;25(4):642-648.
4. Trop Med Infect Dis 2022 Aug 12;7(8)
5. Clin Infect Dis 2003 Sep 15;37(6):e83-7.

Leishmaniasis - visceral

Agent	PARASITE - Protozoa. Euglenozoa, Kinetoplastea. Flagellate: *Leishmania donovani*, *L. infantum*, *L. cruzi*; rarely, *L. tropica*
Reservoir	Human, Rodent, Dog, Cat, Fox, Hares, Zoonotic
Vector	Sandfly (*Phlebotomus* for Old-world; *Lutzomyia* for New-world)
Vehicle	Blood
Incubation Period	2m - 6m (10d - 12m)
Diagnostic Tests	Smear / culture of bone marrow, splenic aspirate, lymph nodes. Serology. Nucleic acid amplification.
Typical Adult Therapy	Liposomal Amphotericin B 3 mg/kg/d on days 1, 5, 14, 21 OR Miltefosine 0.8 mg/kg TID X 28d OR Pentavalent antimonials (Stibogluconate) 20 mg/kg/d X 28d. OR Paromomycin 15 mg/kg/d IM or IV X 21 days[1] [2] [3]
Typical Pediatric Therapy	Pentavalent antimonials (Stibogluconate) 20 mg/kg/d X 28d. OR Amphotericin B 1 mg/kg/QOD X 8w (or lipid complex 3 mg/kg/d X 5d) OR Paromomycin 11 mg/kg IM QD X 21 days OR Miltefosine 2.5 mg/kg daily (maximum 150 mg) X 28d
Clinical Hints	- Chronic fever, weight loss, diaphoresis - Hepatosplenomegaly, lymphadenopathy and pancytopenia - Grey pigmentation (Kala Azar = "black disease') may appear late in severe illness - Case-fatality rates vary from 5% (treated) to 90% (untreated)
Synonyms	Burdwan fever, Cachectic fever, Dum Dum fever, Kala azar, Leishmania donovani, Leishmania infantum, Leishmania siamensis, Leishmania tarentolae, Leishmaniose: Viszerale, Leishmaniosi viscerale, Ponos, Visceral leishmaniasis, Visceral leishmaniosis. ICD9: 085.0 ICD10: B55.0

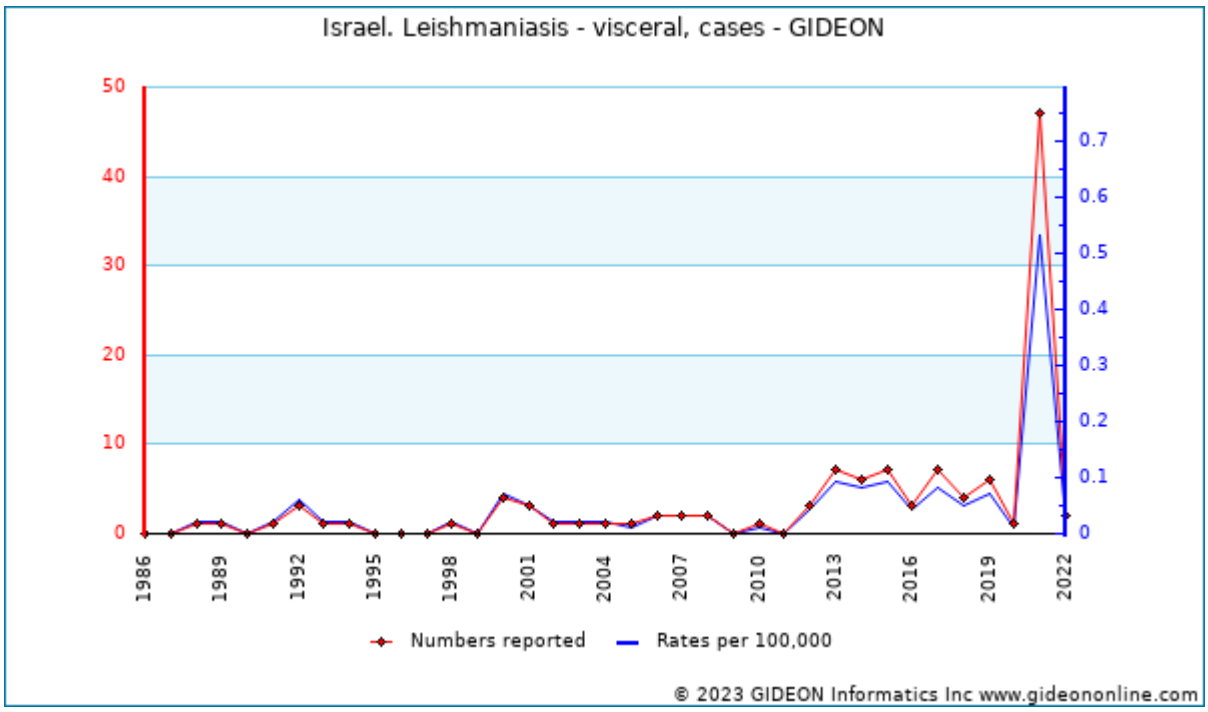
Leishmaniasis - visceral in Israel

Time and Place

Visceral leishmaniasis was first reported in Israel in 1929.

- Sporadic cases are encountered, notably from the Western Galilee area.
- The first case of infection in the Central region was reported in 1993.
- Since 1994, this area has accounted for over 90% of all cases of human infection in Israel. [4]

- Approximately 113 cases were reported in the Galilee during 1950 to 1993.
- 76 of 87 cases reported during 1960 to 2000 were in children.



Graph: Israel. Leishmaniasis - visceral, cases

Notes:
1. 45 cases were diagnosed in the western Galilee during the 1960's.
2. 68 cases were documented during 1960 to 1989, of whom most were children from Arab villages in the western Galilee. These figures include 54 cases during 1960 to 1969; 5 during 1970 to 1979; 11 during 1980 to 1989. [5]
3. 17 cases were documented during 1990 to 2000, 9 from the Central region, 6 from the North, 1 from the South and 1 imported (from Thailand).
4. 2 cases per year were reported during 2003 to 2007 (true number estimated at 3 to 4 per year). [6]
5. No deaths were ascribed to visceral leishmaniasis during 1986 to 1995.

- 2006 (publication year - Intestinal leishmaniasis was reported in an Ethiopian immigrant with AIDS. [7]

Prevalence surveys

Years	Region	Study Group	%	Notes
2018	Northern Region	animals	16-25	25% of dogs and 16% of cats [8]
2010 - 2012	West Bank	flies	18.5	Leishmanial DNA was identified in 18.5% of phlebotomine sand flies [9]
2018 - 2020	Negev	flies	2.5	Of 5,019 female phlebotomus sand flies (*P. alexandri*, *P. kazeruni*, *P. sergenti*, *P. papatasi*, and *P. syriacus*) collected in the southern Negev desert, 2.5% were *Leishmania* DNA-positive. Additionally, 92% of infections were identified as *L. donovani*. The authors concluded that *L. donovani* is a cause of authochthonous cutaneous leishmaniasis in Israel. [10]
2018 - 2020	Central Region	dogs and cats	3.3-3.9	*Leishmania infantum* DNA was detected in 3.3% of dogs and 3.9% of cats receiving veterinary care in Alfei Menashe, Shomron region. [11]

Seroprevalence surveys

Years	Region	Study Group	%	Notes
	Ramallah	dogs	5.5	5.5% of stray dogs in the Jenin and Ramallah districts
2011*	West Bank	dogs	7.4	7.4% of dogs (*Canis lupus familiaris*) in the West Bank (2011 publication)
2012*	West Bank	dogs	7.5	7.5% of domestic dogs in the West Bank (ELISA, 2012 publication) [12]
2018	Northern	animals	43-79	43% of dogs and 79% of cats [13]

Years	Region	Study Group	%	Notes
	Region			
2011 - 2013	Multiple locations	horses	1.4	1.4% of horses (2011 to 2013) [14]
2008*	Jerusalem	cats	6.7	6.7% of cats in the Jerusalem region (2008 publication) [15]
1989	Yirka	general population	10	10% in Yirka in 1989
1994 - 1996		general population	1.5	1.5% during 1994 to 1996.
2003*	Northern Region	general population	1.01-2.97	2.97% of individuals in endemic areas and 1.01% in non-endemic areas (2003 publication) [16]

***** indicates publication year (not necessarily year of survey)

Reservoirs

Canine infection by *Leishmania infantum* was common before 1948.

- Although canine infection was confined to the northern region prior to 1994, it has recently emerged in the center.
- Only two reports of dogs infected with *Leishmania* were published during 1948 to 1994 - from Wadi Hamam and Avtalion. [17]
- The disease reappeared during 1995 to 1996 (30 infected dogs in the Judean Hills and western Galilee).
- 43 domestic pets in central Israel and 14 from the north were found to be infected during 1996 to 1998.
- Infected jackals (7.6% of those examined) and foxes (4.5%) have also been identified in recent years.

Vectors

- The identity of the local vector has not been established; however, *Phlebotomus neglectus* and *Phlebotomus (Larroussius) major syriacus* have been implicated.
- *Ph. tobbi* and *Ph. perfiliewi* have also been identified in the Jenin region, but are not proven vectors.
- 2018 to 2020 - *L. donovani*, a cause of visceral leishmaniasis, is circulating in phlebotomus spp. sand flies in southern Israel, with *P. alexandri* being the primary vector. [18]

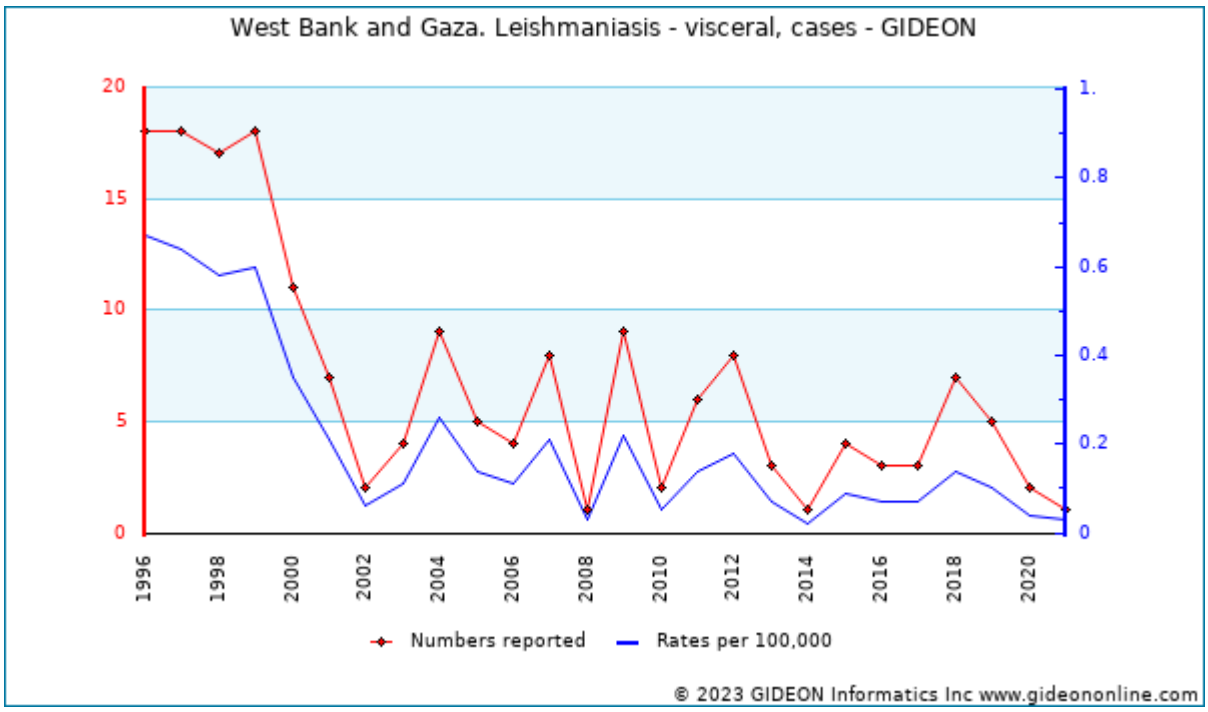
Notable outbreaks

Years	Region	Setting	Cases	Notes
2005*	Central Region			[19]
2018	Northern Region	animal shelter	72	Outbreak among dogs and cats in an animal shelter [20]

***** indicates publication year (not necessarily year of outbreak)

West Bank and Gaza:

Visceral leishmaniasis is prevalence in the West Bank, primarily in the western region. No cases are reported from Gaza (2019 publication) [21]



Graph: West Bank and Gaza. Leishmaniasis - visceral, cases

Notes:
1. 127 cases were reported among Arabs in the West Bank during 1990 to 1999 - 50 of these in Jenin, 32 Hebron, 17 Tulkarm and 15 Ramallah.
2. 176 cases were reported among Arabs in the West Bank during 1990 to 2004.
3. 343 cases were reported in the West Bank and Gaza during 1990 to 2017 (0.73 pere 100,000 population) - 93.3% ages<=5 years. [22]
4. 5 cases per year were reported during 2004 to 2008 (true number estimated at 10 to 20 per year). [23]
5. 50 cases (2.79 per 100,000; 2 fatal) were diagnosed in the Jenin district during 1989 to 1998 - including 49 below the age of 6 years. During this same period, 32 cases were reported in Hebron, 17 in Tulkarm and 15 in Ramallah. [24]
6. 76 cases of visceral leishmaniasis due to *Leishmania infantum* were reported in the Arab sector of Hebron during 1993 to 2007 - all below age 9 years. [25]

Vectors

- The principal vectors are *Phlebotomus tobbi*, *Ph. perfiliewi* and *Ph. syriacus*.
- The principal vector in the Jenin (West Bank) and Hebron is *Ph. syriacus*.

References

1. Lancet 2018 09 15;392(10151):951-970.
2. Clin Microbiol Infect 2018 Jun ;24(6):591-598.
3. Ther Adv Infect Dis 2016 Jun ;3(3-4):98-109.
4. Am J Trop Med Hyg 1998 Nov ;59(5):722-5.
5. Isr Med Assoc J 2004 Apr ;6(4):205-8.
6. PLoS One 2012 ;7(5):e35671.
7. Isr Med Assoc J 2006 Oct ;8(10):714-5.
8. Parasit Vectors 2020 Mar 20;13(1):115.
9. PLoS Negl Trop Dis 2020 Oct 05;14(10):e0008748.
10. Emerg Infect Dis 2023 May ;29(5):945-955.
11. Parasit Vectors 2022 May 10;15(1):147.
12. Parasit Vectors 2012 Aug 31;5:183.
13. Parasit Vectors 2020 Mar 20;13(1):115.
14. Vector Borne Zoonotic Dis 2015 Dec ;15(12):726-31.
15. Vet Parasitol 2008 Dec 20;158(4):364-9.
16. Emerg Infect Dis 2003 Mar ;9(3):397-8.
17. Am J Trop Med Hyg 1998 Nov ;59(5):722-5.
18. Emerg Infect Dis 2023 May ;29(5):945-955.
19. J Clin Microbiol 2005 Dec ;43(12):6054-9.
20. Parasit Vectors 2020 Mar 20;13(1):115.
21. Int J Infect Dis 2019 Nov 05;
22. Int J Infect Dis 2019 Nov 05;
23. PLoS One 2012 ;7(5):e35671.
24. Am J Trop Med Hyg 2002 Apr ;66(4):329-33.
25. Trans R Soc Trop Med Hyg 2009 Jul ;103(7):731-6.

Leprosy

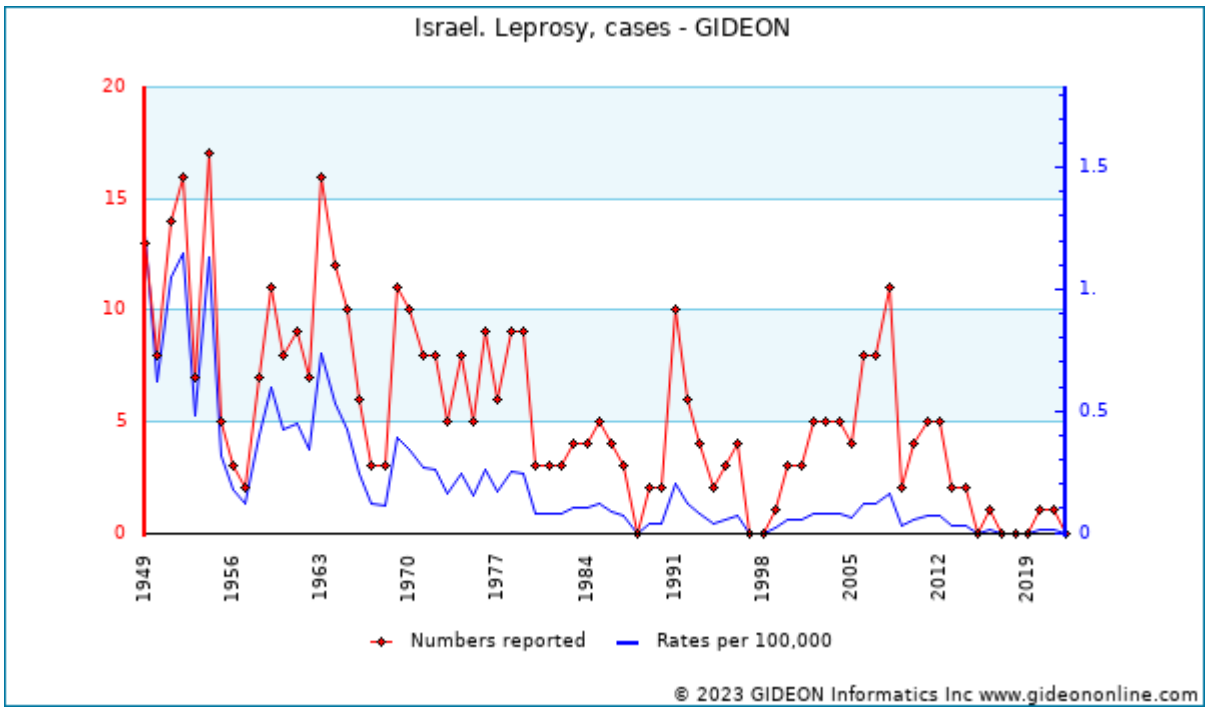
Agent	BACTERIUM. *Mycobacterium leprae* *Mycobacterium lepromatosis* An acid-fast bacillus
Reservoir	Human, Armadillo, Squirrel, Zoonotic
Vector	None
Vehicle	Secretions
Incubation Period	3y - 5y (range 3m - 40y)
Diagnostic Tests	Visualization of organisms in exudate, scrapings or biopsy. Nucleic acid amplification.
Typical Adult Therapy	Multibacillary: One year therapy Daily: Dapsone 100 mg po + Clofazimine 50 mg po + Monthly: Rifampin 600 mg + Clofazimine 300 mg po Paucibacillary: Six month therapy Daily: Dapsone 100 mg po + Monthly: Rifampin 600 mg po[1] [2] [3]
Typical Pediatric Therapy	Multibacillary: One year therapy Daily: Dapsone 1 to 2 mg/kg + Clofazimine 1 mg/kg + Monthly: Rifampin 10 mg/kg + Clofazimine 1 mg/kg Paucibacillary: Six month therapy Daily: Dapsone 1 to 2 mg/kg po + Monthly: Rifampin 10 mg/kg po
Clinical Hints	- Anesthetic, circinate hypopigmented skin lesions - Thickened peripheral nerves (tuberculoid leprosy) - Diffuse, destructive papulonodular infection (lepromatous leprosy) - Combined/intermediate forms are encountered
Synonyms	Aussatz, Doence de Hansen, Hansen's disease, Lebbra, Lepra, Mycobacterium leprae, Mycobacterium lepromatosis. ICD9: 030 ICD10: A30

Leprosy in Israel

Time and Place

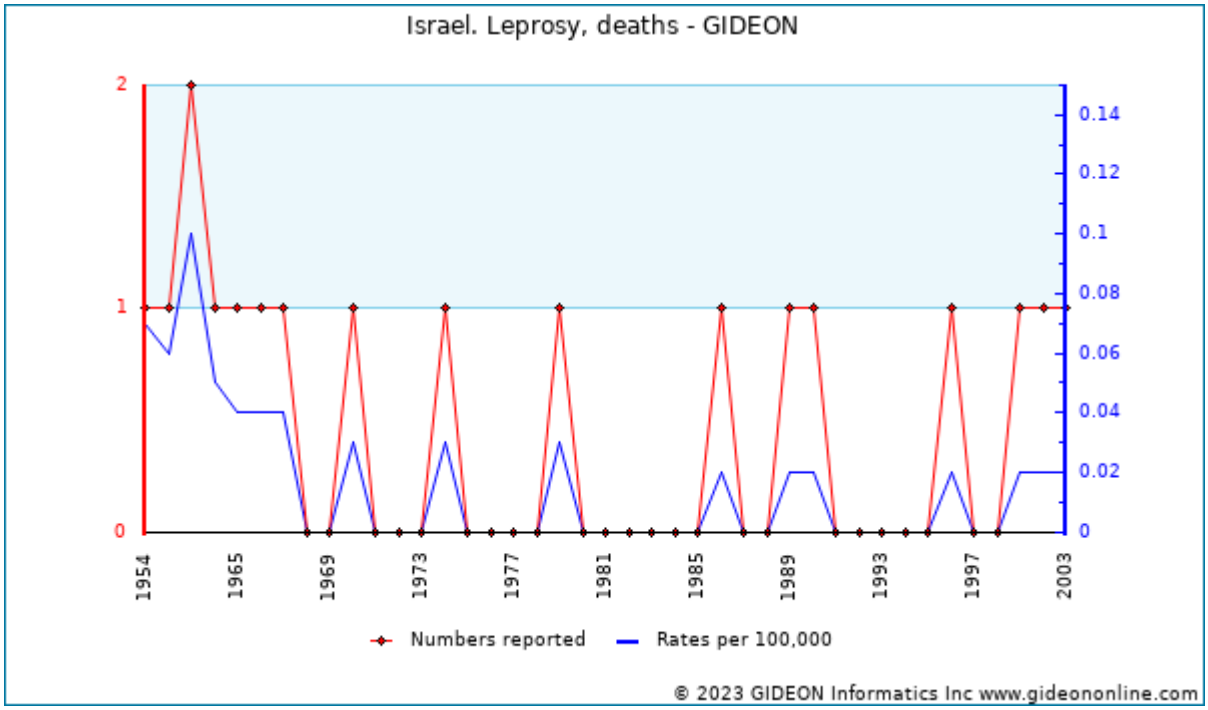
The first leprosarium in Israel was established in 1886, in Jerusalem.

- Leprosy became an officially-reportable disease in 1940.
- In 1948, an in-patient leprosarium (Hansen Hospital) was established in Jerusalem. The last inpatients were discharged in 2000, and the hospital converted into a facility for outpatients with leprosy.
- Since the 1950's, the vast majority of cases have been imported.
- During 1949 to 1990, immigrants from India accounted for 20% of cases, Morocco 16% and Yemen 8%.
- During 1991 to 2012, immigrants from Ethiopia accounted for 70% of cases, and Filipino workers for 8%.
- The disease prevalence in Israel was 0.025 per 100,000 as of 2011.



Graph: Israel. Leprosy, cases

Notes:
1. There is no autochthonous transmission.
2. 292 cases were reported during 1948 to 1978, and approximately 500 cases to 2013.
3. One-to-two imported cases were reported yearly during the 1980's, and 2 in 1990.



Graph: Israel. Leprosy, deaths

200 patients were under follow-up as of 1993, and 212 registered as of 1994. [4]

West Bank and Gaza:

West Bank and Gaza. Leprosy - registered prevalence, cases: None reported between 2005 and 2021

West Bank and Gaza. Leprosy, cases: None reported between 1999 and 2021

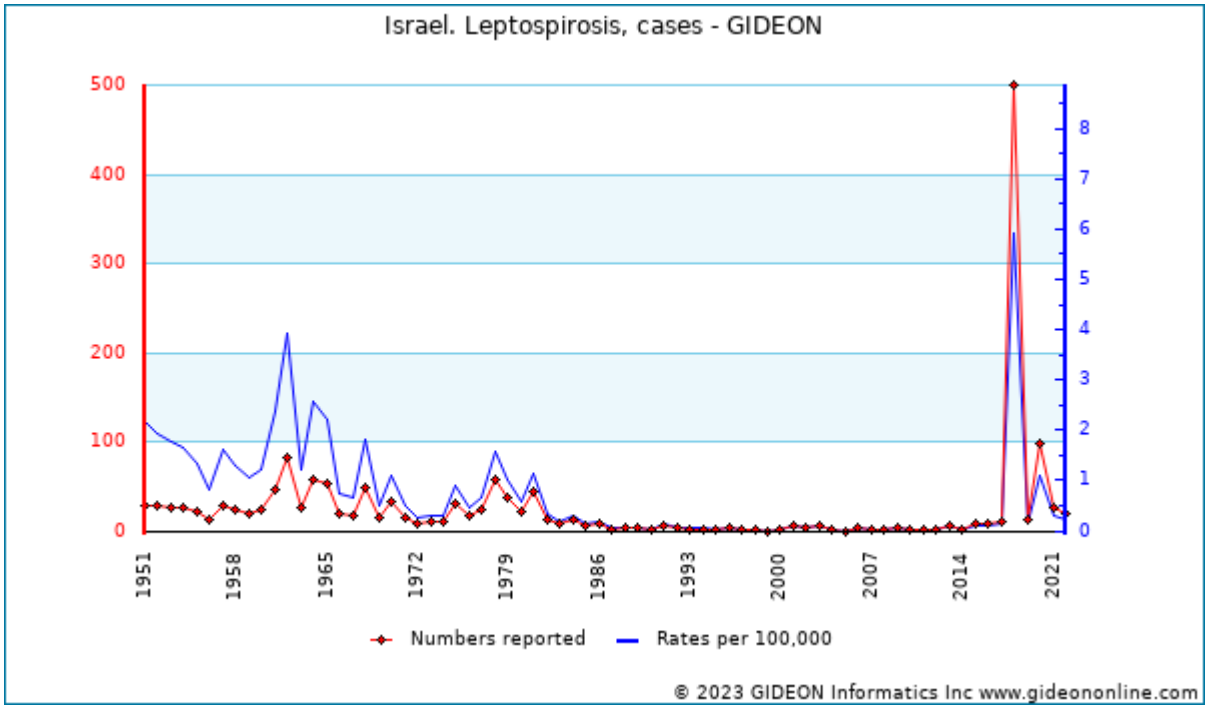
References

1. Lepr Rev 2015 Dec ;86(4):307-15.
2. Med Mal Infect 2015 Sep ;45(9):383-93.
3. Clin Microbiol Rev 2015 Jan ;28(1):80-94.
4. Harefuah 1993 Aug ;125(3-4):65-8, 128.

Leptospirosis

Agent	BACTERIUM. *Leptospira interrogans*, et al. An aerobic non-gram staining spirochete
Reservoir	Cattle, Sheep, Dog, Horse, Deer, Rodent, Fox, Marine mammal, Cat, Marsupial, Frog, Zoonotic
Vector	None
Vehicle	Water, Soil, Urine contact, Breastfeeding
Incubation Period	7d - 12d (range 2d - 26d)
Diagnostic Tests	Culture on specialized media. Dark field microscopy of urine, CSF. Serology.
Typical Adult Therapy	Penicillin G 1.5 million units Q6h iv OR Doxycycline 100 mg BID X 5 to 7d OR Ceftriaxone 1g IV daily[1] [2] [3]
Typical Pediatric Therapy	Penicillin G 50,000u/kg q6h iv X 5 to 7d Age >= 8y: Doxycycline 2.2 mg/kg BID X 5 to 7d may also be used
Clinical Hints	- Often follows recent skin contact with fresh water in rural or rodent-infested areas - "Sterile" meningitis, nephritis, hepatitis, myositis and conjunctivitis - Case-fatality rates of 5% to 40% are reported
Synonyms	Andaman hemorrhagic fever, Canefield fever, Canicola fever, Field fever, Fish handler's disease, Fort Bragg fever, Japanese autumnal fever, Kelsch's disease, Leptospira, Leptospirose, Leptospirosen, Leptospirosi, Mud fever, Pre-tibial fever, Rat fever, Rice field fever, Swamp fever, Swineherd disease, Weil's disease. ICD9: 100 ICD10: A27

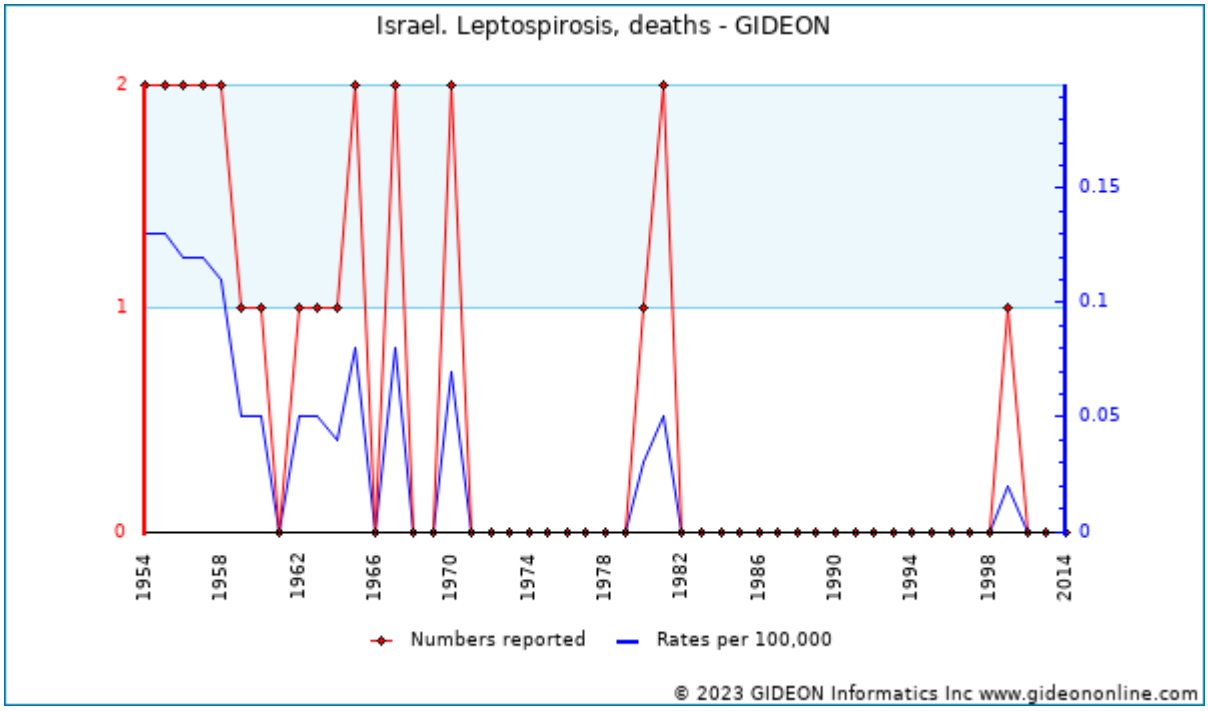
Leptospirosis in Israel



Graph: Israel. Leptospirosis, cases

Notes:

1. Leptospirosis is most common in agricultural settlements of the Galilee during June to September. [4]
2. 48 cases were reported during 2002 to 2008 - including 20 travel-related cases (15 of these acquired in southeast Asia). [5]



Graph: Israel. Leptospirosis, deaths

Seroprevalence surveys

Years	Region	Study Group	%	Notes
2018	Golan Heights	animals	27.6-53.8	27.6% of grazing beef cattle and 53.8% of wild boars were found to be seropositive for *Leptospira* serovar Pomona [6]
2017 - 2018	Northern Region	horses	54	[7]

Cross-border events

Years	Acquired by**	Originated in**	Setting	Cases	Notes
2002 to 2008	Israel		travel	15	During 2002 to 2008, 15 Israeli travelers acquired leptospirosis [8]
2018	Germany	Israel	travel	1	[9]
2018	United States	Israel	trailer park	3	Three suspect cases, 1 confirmed in a youth group traveling to Israel [10]

** Country or Nationality

Infecting species

- During 1970 to 1973, the main infecting serotypes were Grippotyphosa (41%) and Hebdomadis (31%). [11]
- Serovars Hardjo, Hebdomadis and Grippotyphosa accounted for 79% of cases during the 1970's, and 32% during 1985 to 1999.
- *Leptospira borgpetersenii Hardjo-bovis* was the principal serovar infecting cattle during the late 20th century. [12]
- Serovar Pomona emerged among cattle during the 21st century. [13]

- *L. interrogans* serovar. Icterohaemorrhagiae accounted for 2% during the 1970's, and 29% during 1985 to 1999. [14]
- *L. interrogans* serovar. Pomona was identified in dairy cows in the Jezreel Valley in 2017. [15]

Notable outbreaks

Years	Region	Cases	Source	Pathogen	Population	Notes
1948*						Outbreak of "bovine" leptospirosis was reported in humans. [16] [17]
1964*	Beisan					[18]
1970*	Galilee					Outbreak in the Upper Galilee [19]
1997*				serovar Canicola		Outbreak among feedlot calves [20]
2006*		7		serovar Hardjo	military personnel	Outbreak among soldiers on maneuvers near the Jordan River. [21]
2018	Northern Region	619	swimming	serovar Pomona		Case count to August 31. 619 suspected cases, 36 confirmed. Outbreak associated with swimming in local streams [22] [23] [24] [25] [26] [27] [28] [29]

* indicates publication year (not necessarily year of outbreak)

References

1. Cochrane Database Syst Rev 2012 Feb 15;(2):CD008264.
2. J Crit Care 2018 Feb ;43:361-365.
3. Microb Pathog 2020 Feb 09;:104050.
4. Eur J Clin Microbiol Infect Dis 2002 Jan ;21(1):50-2.
5. Am J Trop Med Hyg 2010 Mar ;82(3):459-63.
6. One Health 2022 Jun ;14:100372.
7. Pathogens 2021 Apr 01;10(4)
8. Am J Trop Med Hyg 2010 Mar ;82(3):459-63.
9. ProMED <promedmail.org> archive: 20180817.5970939
10. ProMED <promedmail.org> archive: 20181030.6120496
11. Am J Epidemiol 1982 Mar ;115(3):352-8.
12. ProMED <promedmail.org> archive: 20180818.5973544
13. ProMED <promedmail.org> archive: 20180818.5973544
14. Emerg Infect Dis 2001 Nov-Dec;7(6):990-2.
15. ProMED <promedmail.org> archive: 20170202.4811833
16. Harefuah 1948 Apr 01;34(7):83.
17. Harefuah 1948 Apr 01;34(7):81-3.
18. Dapim Refuiim 1964 Apr ;23:157-61.
19. Am J Epidemiol 1970 Jan ;91(1):52-8.
20. J S Afr Vet Assoc 1997 Sep ;68(3):105-7.
21. Am J Trop Med Hyg 2006 Jan ;74(1):127-31.
22. Euro Surveill 2018 Sep ;23(38)
23. One Health 2022 Jun ;14:100372.
24. ProMED <promedmail.org> archive: 20180815.5966453
25. ProMED <promedmail.org> archive: 20180818.5973544
26. ProMED <promedmail.org> archive: 20180827.5989589
27. ProMED <promedmail.org> archive: 20180923.6047216
28. ProMED <promedmail.org> archive: 20190607.6508897
29. ProMED <promedmail.org> archive: 20190609.6511457

Listeriosis

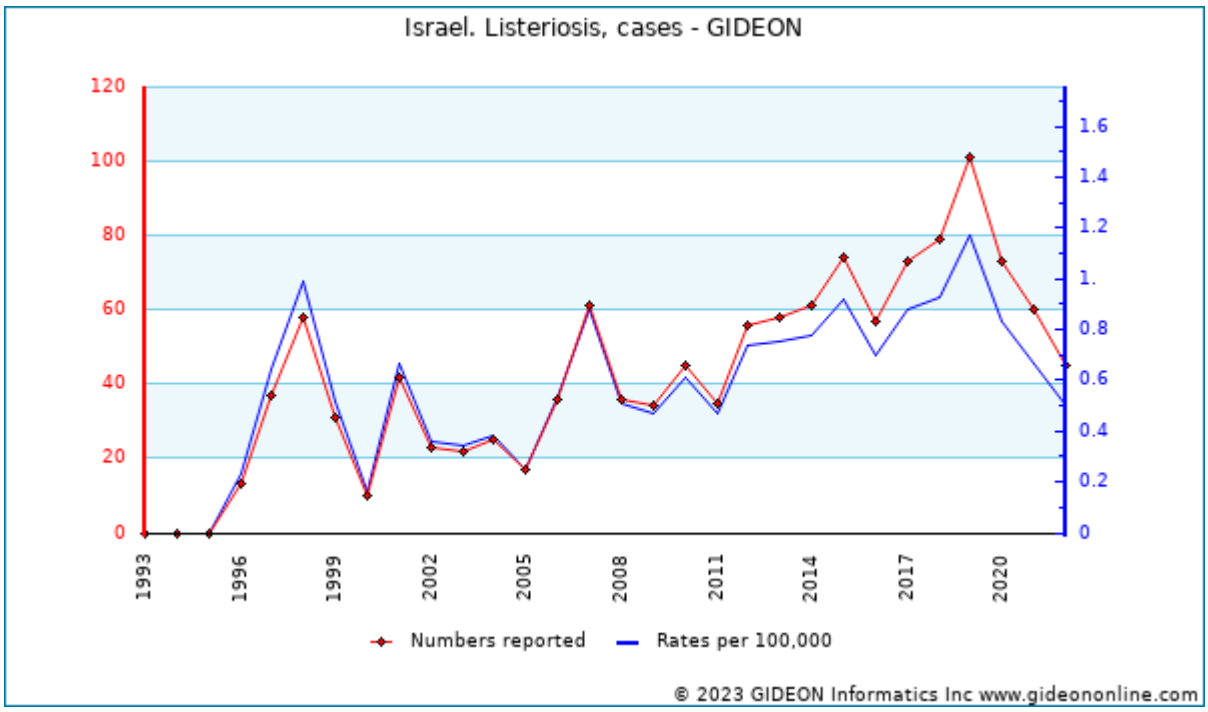
Agent	BACTERIUM. *Listeria monocytogenes* A facultative gram-positive bacillus
Reservoir	Mammal, Human, Bird, Soil, Water, Zoonotic
Vector	None
Vehicle	Transplacental, Dairy products (eg, soft cheeses), Infected secretions, Vegetables, Poultry, Water, Fish, Shellfish
Incubation Period	3d - 21d (60d post-ingestion)
Diagnostic Tests	Culture of blood or CSF.
Typical Adult Therapy	Ampicillin 2g IV q6h X 2w (higher dosage in meningitis) + Gentamicin. Sulfamethoxazole / Trimethoprim recommended for Penicillin-allergic patients[1] [2]
Typical Pediatric Therapy	Ampicillin 50 mg/kg IV Q6h X 2w (higher dosage in meningitis). Sulfamethoxazole / Trimethoprim recommended for Penicillin-allergic patients
Clinical Hints	- Meningitis or sepsis, often in immune-suppressed patients (lymphoma, AIDS, etc) - Gastroenteritis - may follow ingestion of "over-the-counter" foods - Neonatal septicemia occasionally encountered
Synonyms	Listeria monocytogenes, Listeriose, Listeriosi. ICD9: 027.0 ICD10: A32

Listeriosis in Israel

Time and Place

In recent years, the incidence of listeriosis has been underreported in this country

- 1997 - A central *Listeria* laboratory was established.
- 1997 to 2007 - 321 isolates were identified by the central laboratory - 113 from perinatal sources and 208 from non-perinatal sources. [3]
- 1995 to 1999 - 161 cases were reported - 70 (43%) classified as perinatal infection, with a mortality rate of 45%. [4]
- 1998 to 2007 - 166 pregnancy-associated cases (5 to 25 per 100,000 live births, one maternal mortality) were identified. [5]
- 2003 to 2012 - 52 cases were reported in the Haifa District.
- 2010 to 2015 - 102 cases (26 fatal) were reported in the Tel Aviv District - 23% pregnancy associated and 21% neuroinvasive. [6]
- 2023 - A case of listeriosis associated food poisoning was reported in a pregnant woman in Tel Aviv in May. [7]



Graph: Israel. Listeriosis, cases

Notes:
Individual years:
1998 - Included 2 fatal and 10 congenital cases

- 2008 to 2014 - A multi-center study of invasive nonpregnancy-associated listeriosis 190 cases (39 fatal) [8]

41 infected animals were identified between 1974 and 1978.

Vehicles
- 1998 - *L. monocytogenes* was found in 22.8% of humus (chick-pea paste) samples tested, 42.8% of smoked salmon, 17.9% of processed meat, 7.8% of smoked meat, 0% of dairy products and 7.2% of salad dips.
- 1999 - *L. monocytogenes* was found in 4% of humus samples tested, 2.1% of salad dips, 34.3% of smoked salmon, 5.7% of fish products, 13.5% of processed meat and 3% of dairy products.
- 2000 - *L. monocytogenes* was found in 26.6% of humus samples tested, 5.2% of salad dips, 10.8% of smoked salmon, 12.5% of fish products, 8.3% of processed meat and 1.3% of dairy products.
- 2001 - *L. monocytogenes* was found in 9.1% of humus samples tested, 0% of salad dips, 23.0% of smoked salmon, 3.8% of fish products, 4.5% of processed meat and 0% of dairy products.

- 2006 (publication year) - A case of human infection by *Listeria ivanovii* was reported. [9]

References

1. Clin Microbiol Infect 2016 Aug ;22(8):725-30.
2. Expert Rev Anti Infect Ther 2015 Mar ;13(3):395-403.
3. Epidemiol Infect 2009 Apr ;137(4):577-80.
4. Emerg Infect Dis 2002 Mar ;8(3):305-10.
5. Clin Infect Dis 2014 Oct ;59(7):953-61.
6. Epidemiol Infect 2018 02 ;146(3):283-290.
7. ProMED <promedmail.org> archive: 20230510.8709957
8. Eur J Clin Microbiol Infect Dis 2019 Aug 10;
9. Eur J Intern Med 2006 Jul ;17(4):286-7.

Liver abscess - bacterial

Agent	BACTERIUM. Various species from portal (Bacteroides, mixed aerobe-anaerobe) or biliary (*Escherichia coli*, etc) source
Reservoir	Human
Vector	None
Vehicle	Endogenous
Incubation Period	Variable
Diagnostic Tests	Ultrasonography, CT or radionucleotide scan. If amoebic abscess suspected, perform Entamoeba serology
Typical Adult Therapy	Intravenous antibiotic(s) directed at likely or suspected pathogens. Percutaneous or open drainage[1] [2] [3]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Tender liver and prolonged fever in a patient - Often associated with diverticulosis, cholecystitis, appendicitis, etc - Clinically similar to amoebic abscess, but often multiple
Synonyms	Ascesso fegato, Bacterial liver abscess, Hepatic abscess - bacterial, Liver abscess. ICD9: 572.0 ICD10: K75.0

Liver abscess - bacterial in Israel

References

1. Medicine (Baltimore) 2018 May ;97(19):e0628.
2. Viszeralmedizin 2014 Oct ;30(5):334-41.
3. J Visc Surg 2015 Sep ;152(4):231-43.
4. Isr J Med Sci 1980 Nov ;16(11):761-6.
5. Postgrad Med J 1994 Jun ;70(824):436-9.
6. Isr J Med Sci 1990 Oct ;26(10):564-7.
7. Abdom Imaging 1995 Sep-Oct;20(5):452-5.

Loiasis

Agent	PARASITE - Nematoda. Secernentea: *Loa loa*
Reservoir	Human
Vector	Deer fly (*Chrysops* spp.)
Vehicle	None
Incubation Period	4m - 3y
Diagnostic Tests	Microfilariae in blood (take during daylight hours). Adult worm recovered. Serology. Nucleic acid amplification. Loa loa adult female - 40 to 70 mm; male -30 to 34 mm
Typical Adult Therapy	Diethylcarbamazine: 50 mg PO day 1 50 mg PO TID day 2 100 mg PO TID day 3 3 mg/kg PO TID days 4 to 21. Notes: Ivermectin may cause encephalopathy if dual infection with Onchocerca. Albendazole 200 mg PO BID X 3w for refractory disease[1] [2] [3]
Typical Pediatric Therapy	Diethylcarbamazine: 1 mg/kg PO day 1 1 mg/kg PO TID day 2 2 mg/kg PO TID day 3 3 mg/kg PO TID days 4 to 21. Notes: Ivermectin may cause encephalopathy if dual infection with Onchocerca. Alternative: Albendazole for refractory disease
Clinical Hints	- Migrating pruritic or painful subcutaneous nodules (Calibar swellings) - Fever and eosinophilia - Adult worms may migrate through the subconjunctival space
Synonyms	Calabar swellings, Filaria lacrimalis, Filaria loa, Filaria oculi humani, Filaria subconjunctivalis, Fugitive swellings, Loa loa, Microfilaria diurna. ICD9: 125.2 ICD10: B74.3

Although Loiasis is not endemic to Israel, imported, expatriate or other presentations of the disease have been associated with this country.

Loiasis in Israel

1983 (publication year) - An imported case (from Nigeria) of loiasis was reported in Israel. [4]

1987 - An Israeli traveler acquired loiasis in Cameroon. [5]

1993 (publication year) - An Israeli expatriate acquired loiasis in West Africa. [6]

References

1. Am J Trop Med Hyg 2018 02 ;98(2):382-388.

2. Cochrane Database Syst Rev 2016 Jan 15;(1):CD011146.

3. Clin Microbiol Infect 2011 Jul ;17(7):977-85.
4. Isr J Med Sci 1988 Nov ;24(11):690-1.
5. Isr J Med Sci 1988 Nov ;24(11):690-1.
6. Isr J Med Sci 1993 Apr ;29(4):219-21.

Lyme disease

Agent	BACTERIUM. *Borrelia* spp.: *Borrelia burgdorferi*; *B. afzelii* and *B. garinii* are also encountered (in Eurasia) A microaerophilic spirochete
Reservoir	Tick, Deer, Rodent, Bird, Zoonotic
Vector	Tick (*Ixodes*, *Amblyomma*)
Vehicle	None
Incubation Period	7d - 14d (range 2d - 180d)
Diagnostic Tests	Serology. Nucleic acid amplification. Culture of blood and body fluids available in some laboratories.
Typical Adult Therapy	Doxycycline, Ceftriaxone, Amoxicillin or Cefuroxime Dosage, route and duration according to nature and severity of disease Prophylactic antibiotics are often used in Lyme-endemic regions for disease prevention following tick-bite. [1] [2] [3] [4] [5]
Typical Pediatric Therapy	>= Age 8 years: As for adult < Age 8 years: Ceftriaxone, Cefuroxime or Amoxicillin. Dosage, route and duration according to nature and severity of disease
Vaccine	Lyme disease vaccine
Clinical Hints	- Patient may recall recent tick bite - Fever, circular erythematous skin lesion, arthralgia and lymphadenopathy - Later meningitis or myocarditis, and eventual destructive polyarthritis
Synonyms	Arcodermatitis chronica atrophicans, Baggio-Yoshinari syndrome, Borrelia A 14S, Borrelia afzelii, Borrelia americana, Borrelia bavariensis, Borrelia bissettii, Borrelia burgdorferi, Borrelia carolinensis, Borrelia garinii, Borrelia lonestari, Borrelia lusitaniae, Borrelia mayonii, Borrelia spielmanii, Borrelia valaisiana, Borrelial lymphocytoma, Doenca de Lyme, Erythema chronicum migrans, Erythema migrans, Garin-Bujadoux-Bannwarth syndrome, LD imitator syndrome, LD-like syndrome, Lyme borreliose, Lyme borreliosis, Master's disease, Neuroborreliosis, Southern tick-associated rash illness, STARI, TAPOS, Tick-associated poly-organic syndrome. ICD9: 088.81 ICD10: A69.2

Lyme disease in Israel

Sporadic imported cases are reported.

- 1993 (publication year) - One autochthonous case of Lyme disease has been described to date - acquired on a northern kibbutz. [6]

Seroprevalence surveys

Years	Study Group	%	Notes
1998*	dogs	10	10% of dogs with suspected tick-borne disease (1998 publication) [7]

* indicates publication year (not necessarily year of survey)

References

1. Expert Rev Anti Infect Ther 2018 01 ;16(1):5-11.
2. Cochrane Database Syst Rev 2016 12 08;12:CD006978.
3. JAMA 2016 Apr 26;315(16):1767-77.
4. BMC Infect Dis 2021 Nov 08;21(1):1141.
5. Microbiol Spectr 2021 12 22;9(3):e0076121.
6. Isr J Med Sci 1993 Aug ;29(8):464-5.

7. Vet Parasitol 1998 Jan 31;74(2-4):133-42.

Lymphocytic choriomeningitis

Agent	VIRUS - RNA. Arenaviridae, Mammarenavirus: Lymphocytic choriomeningitis virus
Reservoir	House mouse, Guinea pig, Hamster, Monkey, Zoonotic
Vector	None
Vehicle	Urine, Saliva, Feces, Food, Dust, Respiratory or pharyngeal acquisition
Incubation Period	8d - 12d (range 6d - 14d)
Diagnostic Tests	Biosafety level 3. Viral culture (blood, throat, CSF). Serology. Nucleic acid amplification.
Typical Adult Therapy	Supportive
Typical Pediatric Therapy	As for adult
Clinical Hints	- Headache, myalgia, meningitis and encephalitis - Photophobia or pharyngitis may be present - Preceding exposure to rodents - Infection resolves within 2 weeks, however convalescence may require an additional 2 months
Synonyms	ICD9: 049.0 ICD10: A87.2

Lymphocytic choriomeningitis in Israel

- 2022 (publication date) - The first case of human infection with lymphocytic choriomeningitis virus in Israel was reported. [1]

References

1. J Med Virol 2022 Mar 29;

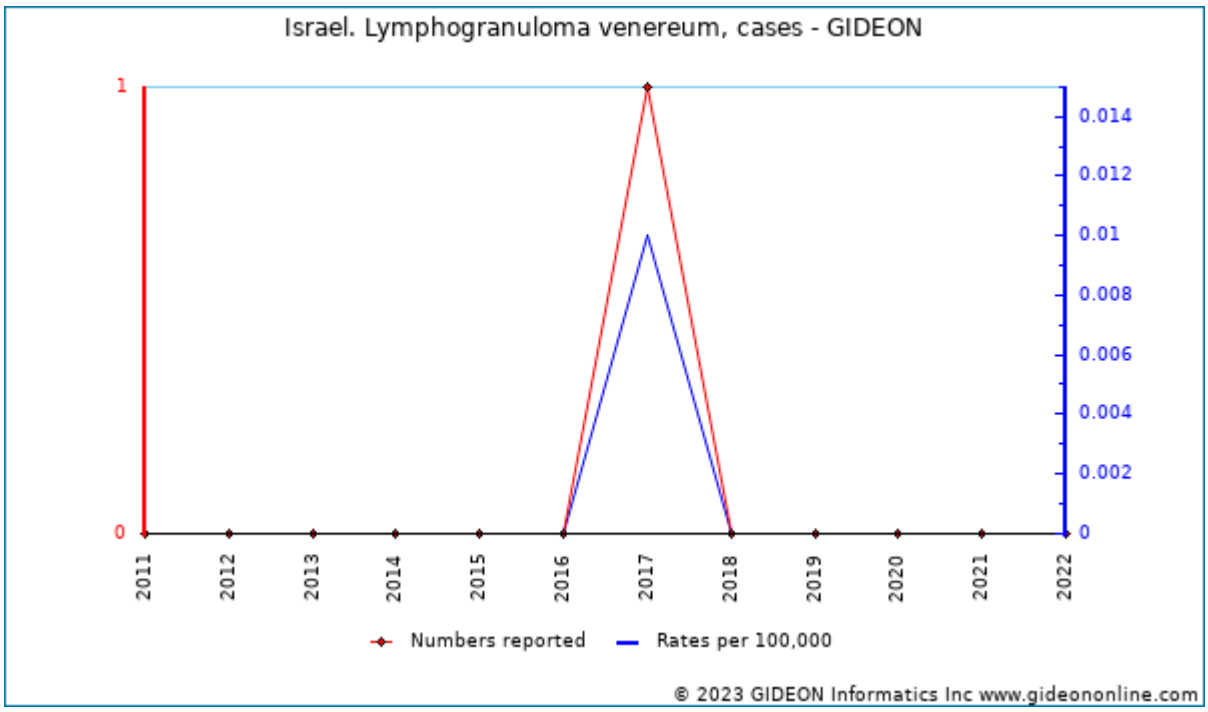
Lymphogranuloma venereum

Agent	BACTERIUM. Chlamydiaceae, Chlamydiae, *Chlamydia trachomatis*, types L1, L2, L3
Reservoir	Human
Vector	None
Vehicle	Sexual contact
Incubation Period	7d - 12d (range 3d - 30d)
Diagnostic Tests	Serology. Culture of pus performed in specialized laboratories.
Typical Adult Therapy	Doxycycline 100 mg PO BID X 3w. OR Erythromycin 500 mg QID X 3w OR Azithromycin 1g po weekly X 3w[1]
Typical Pediatric Therapy	Age < 8 years: Erythromycin 10 mg/kg PO QID X 2 to 4w. Age >= 8 years: Doxycycline 2 mg/kg PO BID X 2 to 4w
Clinical Hints	- Genital nodule or vesicle with large, suppurating regional nodes - Generalized lymphadenopathy or proctitis may be present - Late complications include genital edema, rectal strictures and perianal abscesses
Synonyms	Bubonulus, Durand-Nicolas-Favre disease, Linfogranuloma venereo, Lymphogranuloma inguinale, Lymphopathia venereum, Maladie de Nicolas et Favre, Tropical bubo, Venereal bubo, Venerisk lymfogranulom. ICD9: 099.1 ICD10: A55

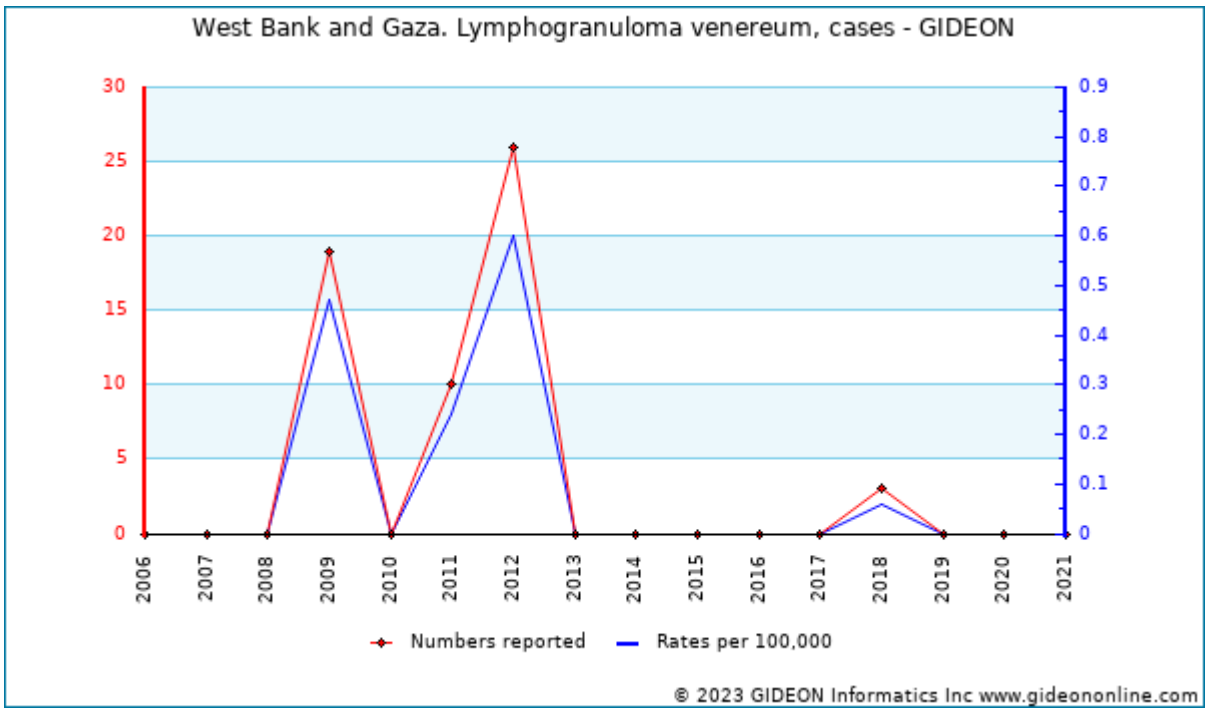
Lymphogranuloma venereum in Israel

1931 - Lymphogranuloma venereum was first reported in Israel, in an Arab resident of Jerusalem.

1991 (publication year) - Lymphogranuloma venereum was reported in a bisexual individual. [2]



Graph: Israel. Lymphogranuloma venereum, cases



Graph:
West Bank and Gaza. Lymphogranuloma venereum, cases

References

1. MMWR Recomm Rep 2015 Jun 05;64(RR-03):1-137.

2. Microbiologica 1991 Apr ;14(2):161-4.

Malaria

Agent	PARASITE - Protozoa. Apicomplexa, Haemosporida: *Plasmodium* spp.
Reservoir	Human Primate (*Plasmodium knowlesi*, *P. cynomolgi*, *P. simium*), Zoonotic
Vector	Mosquito (*Anopheles*)
Vehicle	Blood
Incubation Period	7d -30d
Diagnostic Tests	Examination of blood smear. Serology, antigen & microscopic techniques. Nucleic acid amplification.
Typical Adult Therapy	Therapy: Resistant falciparum: Lumefantrine / Artemether OR Quinine + Doxycycline or Clindamycin OR Atovaquone / Proguanil OR Artesunate IV (severe malaria) If sens., Chloroquine 1g, then 500 mg 6, 24 & 48 hrs. If P. ovale or P. vivax - follow with Primaquine Severe malaria: Artesunate: 2.4 mg/kg IV at 0, 12, 24 and 48 hours Prophylaxis: Atovaquone / Proguanil, Chloroquine, Doxycycline, Mefloquine, Tafenoquine (see Drugs module for dosages)[1] [2] [3]
Typical Pediatric Therapy	Therapy: Resistant falciparum: Lumefantrine / Artemether OR Quinine + Clindamycin OR Atovaquone / Proguanil OR Artesunate (>age 8) IV (severe malaria) If sens, Chloroquine 10 mg/kg, then 5 mg/kg 6, 24, & 48 hrs. If P. ovale or P. vivax - follow with Primaquine Severe malaria, weight <20 kg: Artesunate: 3.0 mg/kg IV at 0, 12 , 24 and 48 hours Prophylaxis: Atovaquone / Proguanil, Chloroquine, Mefloquine, Tafenoquine (see Drugs module for dosages)
Vaccine	Malaria (R21/Matrix-M) Malaria (RTS,S)
Clinical Hints	- Fever, headache, rigors ("shaking chills"), vomiting, myalgia, diaphoresis and hemolytic anemia - Fever pattern (every other or every third day) and splenomegaly may be present - Clinical disease may relapse after 7 (*ovale* and *vivax*) to 40 (*malariae*) years
Synonyms	Ague, Bilious remittent fever, Chagres fever, Estiautumnal fever, Marsh fever, Paludism, Paludismo, Plasmodium brasilianum, Plasmodium coatneyi, Plasmodium cynomolgi, Plasmodium falciparum, Plasmodium fieldi, Plasmodium inui, Plasmodium knowlesi, Plasmodium malariae, Plasmodium ovale, Plasmodium simiovale, Plasmodium simium, Plasmodium vivax. ICD9: 084 ICD10: B50,B51,B52,B53,B54

Chloroquine resistant falciparum malaria endemic to 80 countries. Chloroquine-sensitive malaria endemic to 21 countries.
Although Malaria is not endemic to Israel, imported, expatriate or other presentations of the disease have been associated with this country.

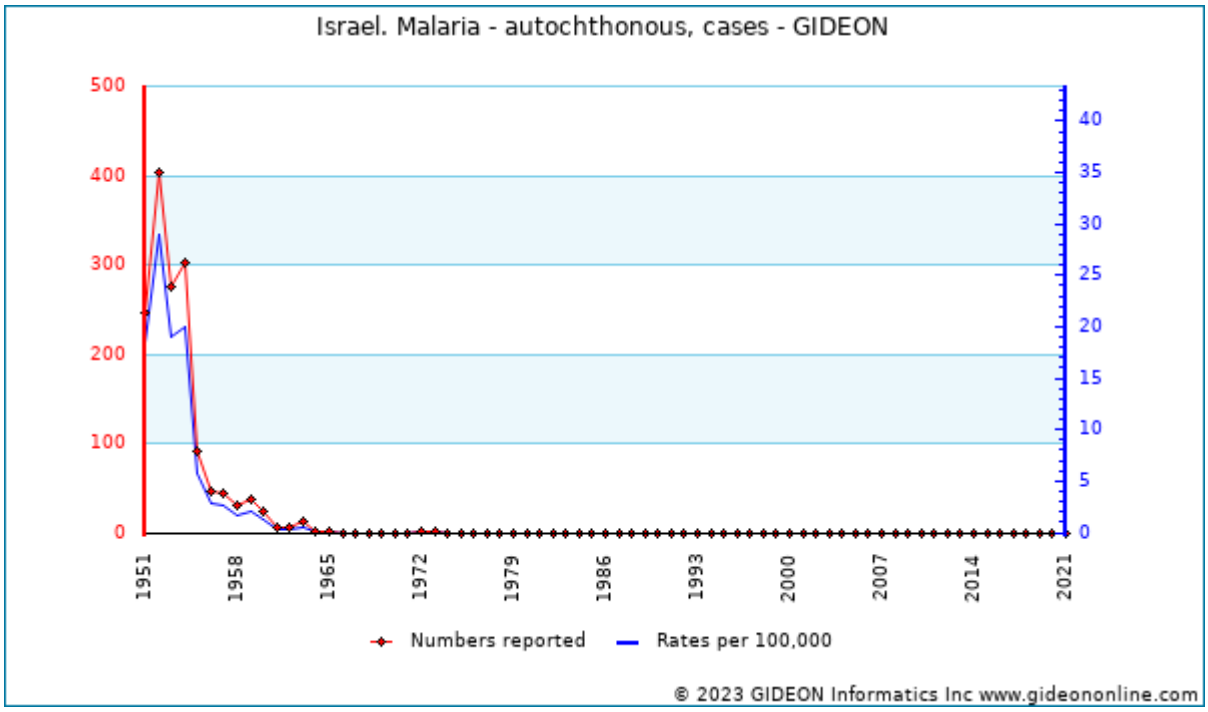
Malaria in Israel

Time and Place

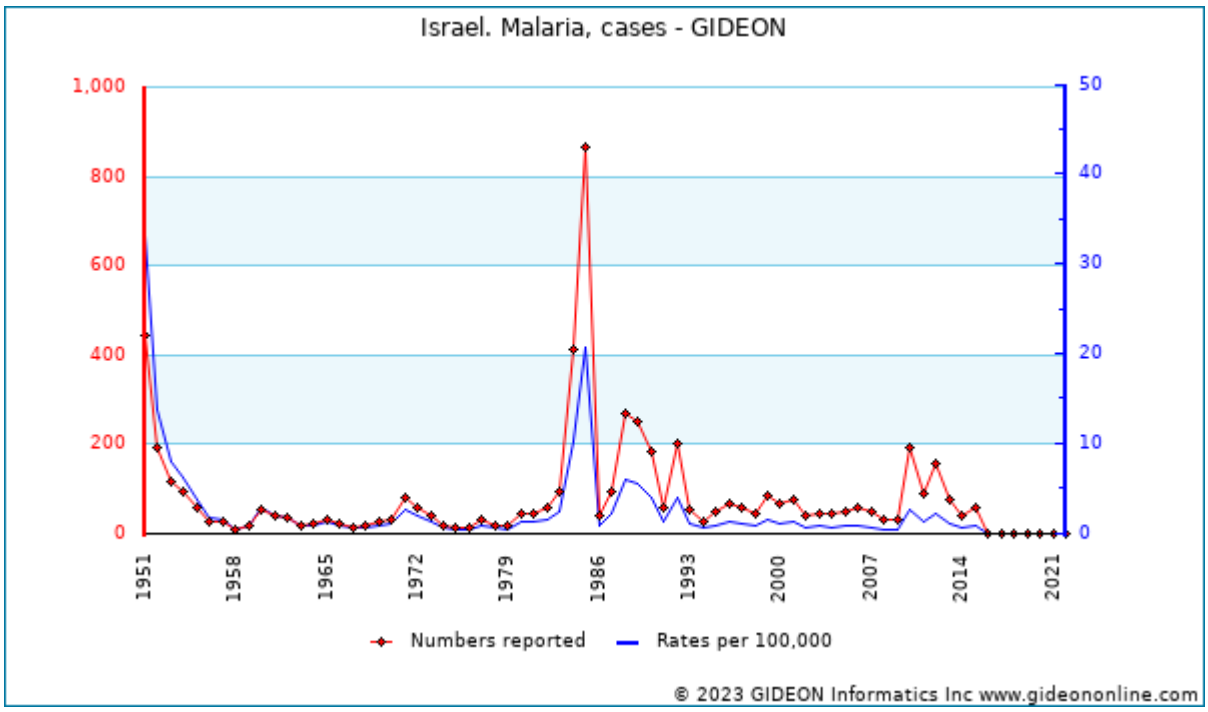
51,580 cases of malaria were officially registered by governmental clinics during 1929 to 1934.

- 13 fatal cases were reported in 1946, and 43 during 1950 to 1964.
- The disease rate for 1948 was 152.3 per 100,000.
- Autochthonous disease was eradicated during the 1950's. [4]

- *Plasmodium vivax* predominated among endemic cases during the first half of the 20th century.
- Chloroquine-resistant *Plasmodium falciparum* predominates among imported cases most recent years; however, *P. vivax* was the most common species in 1995, 1996 and 1998.
- Large numbers of malaria cases were reported among immigrant refugees from Sudan and Eritrea during recent years - most infected by *Plasmodium vivax*, [5]
- 18 cases of *Plasmodium malariae* infection were confirmed among returning travelers during January 2008 to January 2017 - all acquired in Africa. [6]
- 51 cases of *Plasmodium ovale* infection were confirmed during 2008 to 2020, accounting for 10% of total malaria cases. [7]



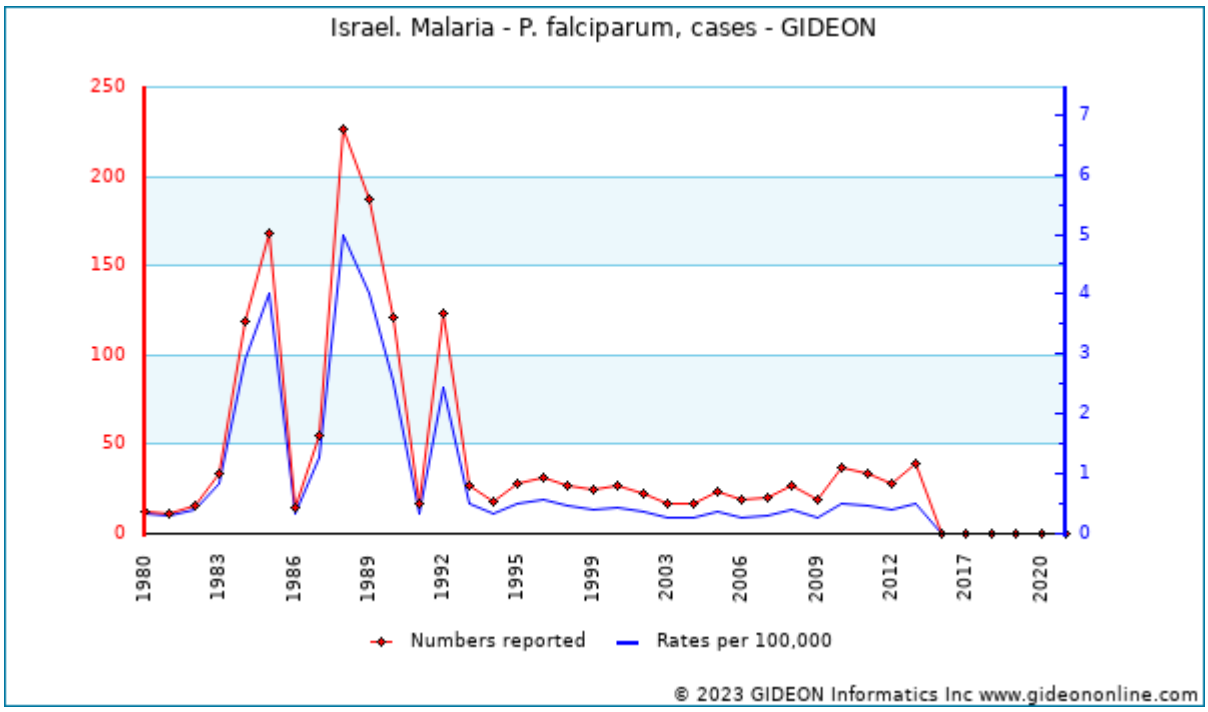
Graph: Israel. Malaria - autochthonous, cases



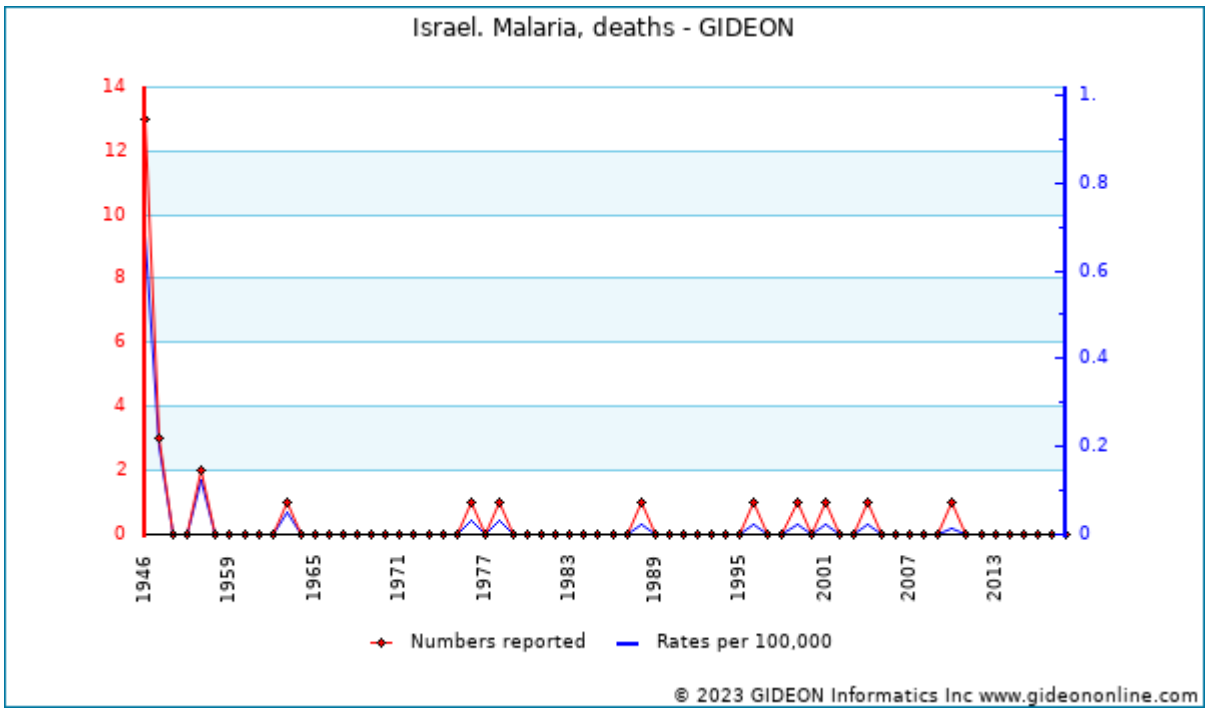
Graph: Israel. Malaria, cases

Notes:
1. Imported or relapsed cases
2. Malaria has been a reportable disease since 1951.
3. No cases of locally acquired disease (with the exception of introduced and "airport" malaria) have been reported since 1974.
4. Most patients in recent years have been immigrants from Ethiopia and returning tourists.
5. 683 cases of imported malaria were reported during 1995 to 2005 - 467 from Africa, 90 Asia, 36 from Latin America (0.64 per 100,000 Israeli travelers to this area) and 17 Oceania.
Individual years:

1988 - Included one case of "airport malaria" [8]
2004 - Included one case of malaria acquired by a worker unloading ships in Haifa port.



Graph: Israel. Malaria - P. falciparum, cases



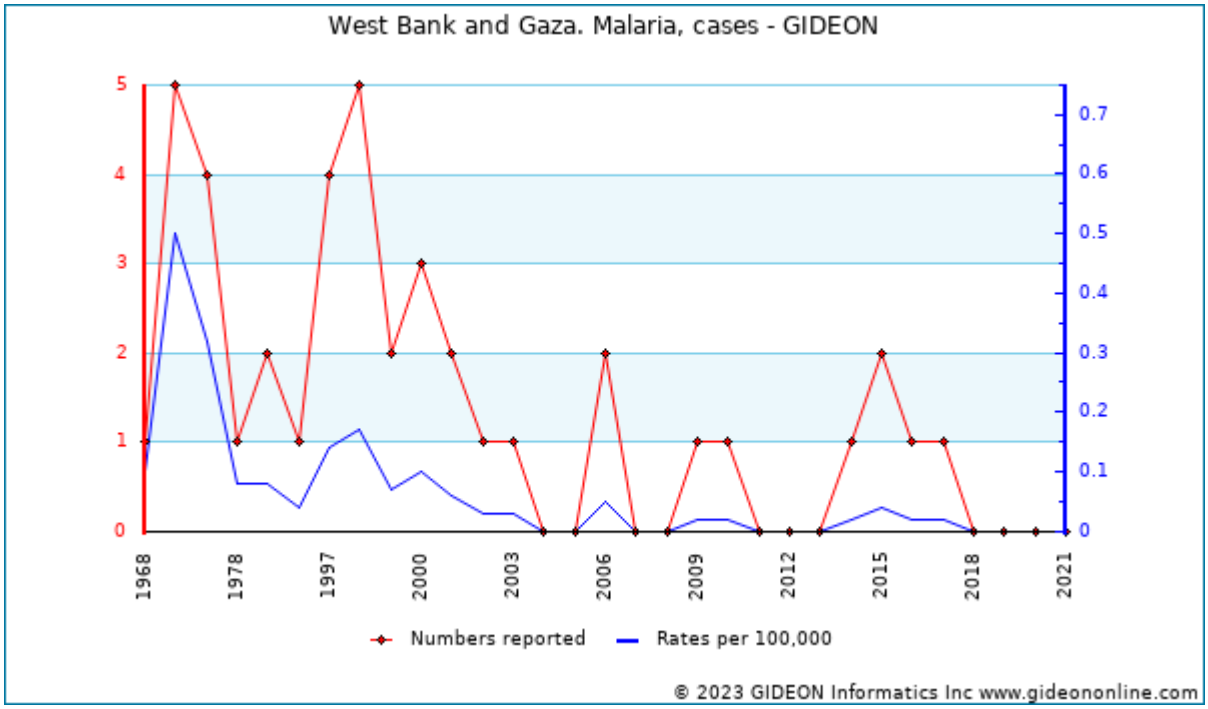
Graph: Israel. Malaria, deaths

Vectors

- The local potential vectors are *Anopheles superpictus*, *An. sacharovi*, *An. sergenti*, *An. claviger* and *An. pharoensis*. [9] [10] [11]
- *An. sergenti* and *An. claviger* predominate in the north (1996 to 1998)
- *An. claviger* predominates in the south
- *An. sergenti* predominated in the area of Jerusalem. [12] [13] [14]

Notable outbreaks

Years	Cases	Pathogen	Population	Notes
2010	120	*Plasmodium vivax*	refugees	Outbreak of relapsing *P. vivax* malaria among Eritrean refugees who had transited Sudan en-route to Israel [15]



Graph:

West Bank and Gaza. Malaria, cases

References

1. Lancet 2018 Apr 06;
2. Br J Pharmacol 2023 May 17;
3. Bioorg Med Chem 2023 Jun 06;88-89:117339.
4. Isr J Med Sci 1978 May ;14(5):518-20.
5. Travel Med Infect Dis 2011 Nov ;9(6):303-5.
6. Clin Infect Dis 2017 Oct 16;65(9):1516-1522.
7. J Travel Med 2021 Dec 16;
8. Harefuah 1988 Sep ;115(5-6):117-9.
9. Am J Trop Med Hyg 2003 Aug ;69(2):195-9.
10. Isr J Med Sci 1985 Oct ;21(10):850-2.
11. Isr J Med Sci 1994 Apr ;30(4):296-7.
12. Isr J Med Sci 1994 Apr ;30(4):287-8.
13. Isr J Med Sci 1991 May ;27(5):284-7.
14. J Med Entomol 1985 Sep 20;22(5):536-43.
15. Euro Surveill 2010 Jul 01;15(26)

Malignant otitis externa

Agent	BACTERIUM. *Pseudomonas aeruginosa*: aerobic gram-negative bacillus (virtually all cases)
Reservoir	Human
Vector	None
Vehicle	Endogenous
Incubation Period	Variable
Diagnostic Tests	Culture of otic exudate and biopsy material. Careful roentgenographic and neurological examinations.
Typical Adult Therapy	Early debridement Ciprofloxacin 400 mg iv Q8h Alternatives: Imipenem, Meropenem, Ceftazidime, Cefepime, Piperacillin Early debridement[1]
Typical Pediatric Therapy	Early debridement Early debridement Ciprofloxacin 10-15 mg/kg IV Q12h Alternatives: Imipenem, Meropenem, Ceftazidime, Cefepime, Piperacillin
Clinical Hints	- Over 80% of patients are diabetics above age 50 - Otic pain, swelling and discharge - Infection of bony and cartilaginous ear canal - Cranial nerve (usually VII) signs in 50% - Case-fatality rate > 55%
Synonyms	ICD9: 380.2 ICD10: H60.2

Malignant otitis externa in Israel

30 cases of malignant otitis externa were treated at a tertiary medical center in Petah Tikva during 1987 to 1991 [2] ; 60 during 1990 to 2008 [3] [4] [5] (? 75 cases by the same center during 1990 to 2003). [6]

91 cases were reported at a center in Kfar Saba during a 16-year period [7] [8] ; 42 during 1994 to 2002. [9]

28 cases were reported at a center in Holon during 1988 to 2001. [10]

References

1. Am J Med 1989 Nov 30;87(5A):138S-141S.
2. Ann Otol Rhinol Laryngol 1993 Nov ;102(11):870-2.
3. Otolaryngol Head Neck Surg 2011 May ;144(5):758-62.
4. J Infect 2011 Mar ;62(3):226-31.
5. Arch Otolaryngol Head Neck Surg 2007 Oct ;133(10):1002-4.
6. Otol Neurotol 2008 Apr ;29(3):339-43.
7. Am J Med 1989 Nov 30;87(5A):138S-141S.
8. J Laryngol Otol 1989 Apr ;103(4):366-8.
9. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2003 Oct ;96(4):398-403.
10. Laryngoscope 2002 Sep ;112(9):1619-22.

Measles

Agent	VIRUS - RNA. Mononegavirales Paramyxoviridae, Paramyxovirinae, Morbillivirus: Measles virus
Reservoir	Human
Vector	None
Vehicle	Droplet, Respiratory or pharyngeal acquisition
Incubation Period	8d - 14d
Diagnostic Tests	Viral culture (difficult and rarely indicated). Serology. Nucleic acid amplification.
Typical Adult Therapy	Respiratory isolation; supportive. Ribavirin 20 to 35 mg/kg/day X 7 days has been used for severe adult infection[1] [2]
Typical Pediatric Therapy	Respiratory isolation; supportive. Ribavirin 7.5-10 mg/kg PO BID X 5-7 d has been used for severe infection
Vaccine	Measles vaccine Measles-Mumps-Rubella vaccine Measles-Rubella vaccine
Clinical Hints	- Coryza, fever, headache, conjunctivitis, photophobia and a maculopapular rash after 3 to 5 days - Koplik's spots (bluish-grey lesions on buccal mucosa, opposite second molars) often precede rash - Encephalitis or viral pneumonia occasionally encountered
Synonyms	Masern, Massling, Mazelen, Meslinger, Morbilli, Morbillo, Rubeola, Rugeole, Sarampion, Sarampo. ICD9: 055 ICD10: B05

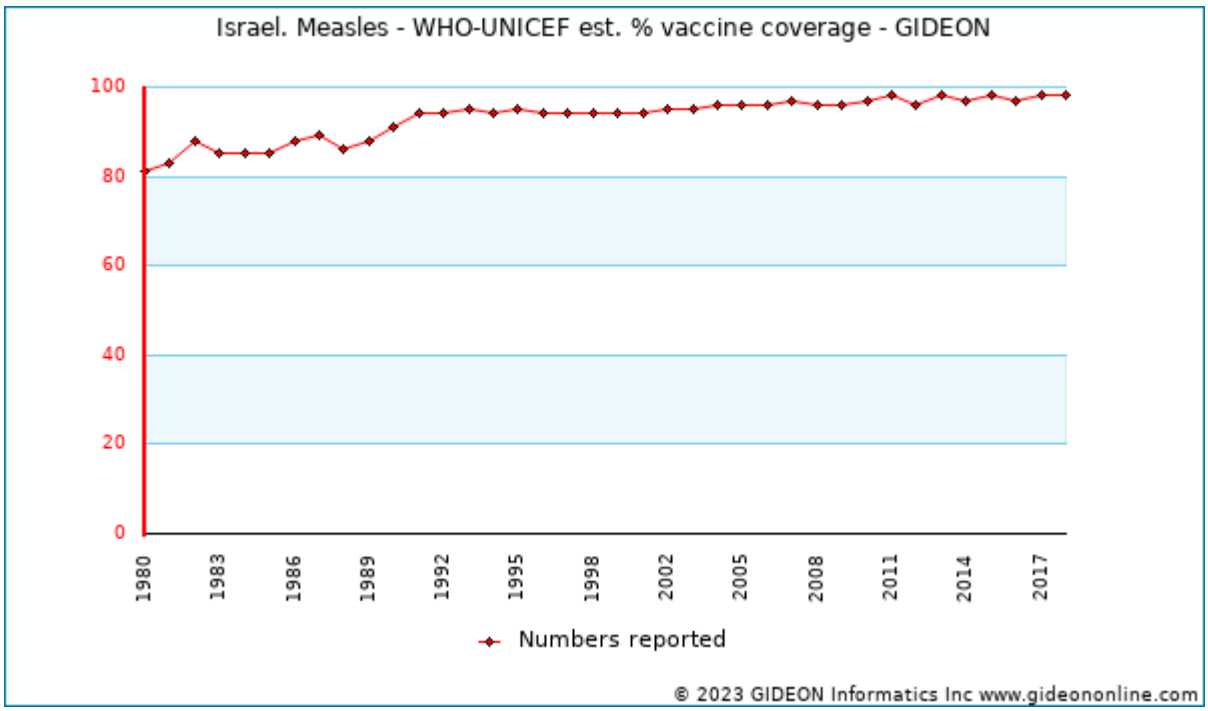
Measles in Israel

Vaccine Schedule:

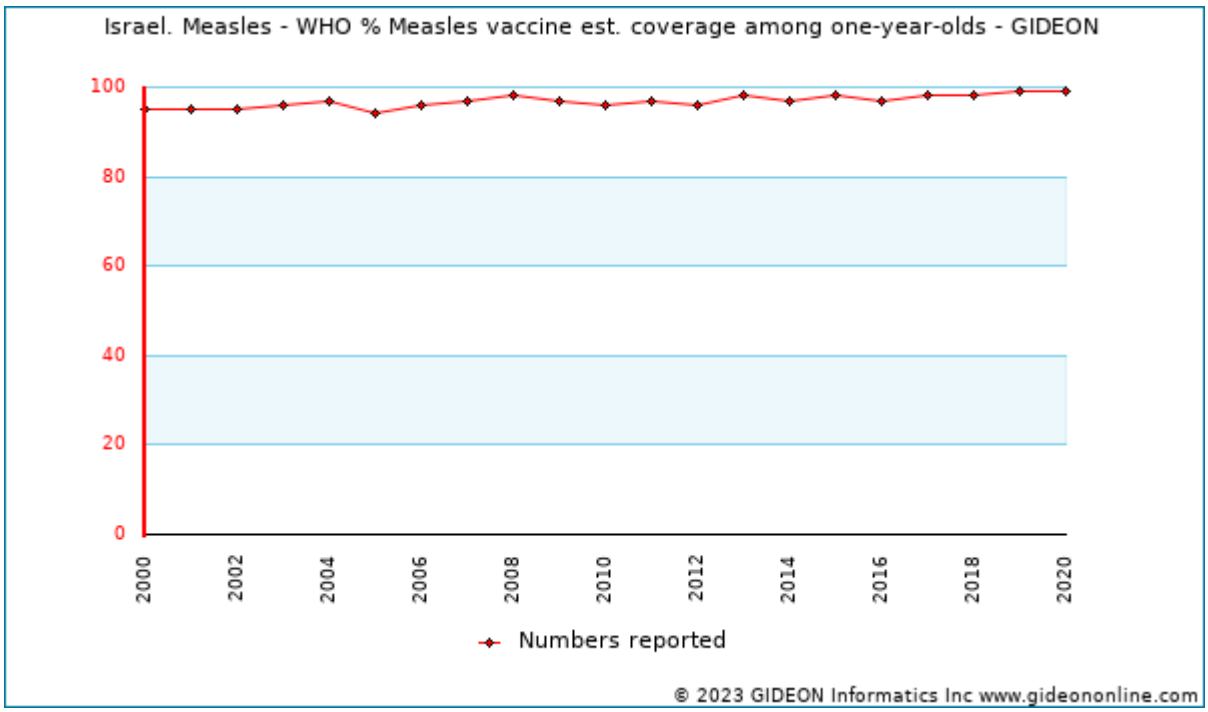
DTaP - 2,4,6,12 months
DTaPHibIPV - 2,4,6,12 months
HPV - 13 years; +6 months
HepA - 18, 24 months
HepB - birth; 1,6 months
IPV - 7 years
MMRV - 12 months; 6 years
OPV - 6,18 months
Pneumo ps - >=65 years
Pneumo-conj - 2,4,12 months
Rotavirus - 2,4,6 months
Td - every 10 years (adults)
TdaP - 13 years
TdaPIPV - 7 years

Israel:

- Live attenuated measles vaccine was introduced in 1967 [3] , and MMR in 1988. [4] [5]
- A second dose of MMR was added to the standard regimen in 1994.
- Since 1990, a "catch-up" dose has been employed at age 13 years. [6]



Graph: Israel. Measles - WHO-UNICEF est. % vaccine coverage



Graph: Israel. Measles - WHO % Measles vaccine est. coverage among one-year-olds

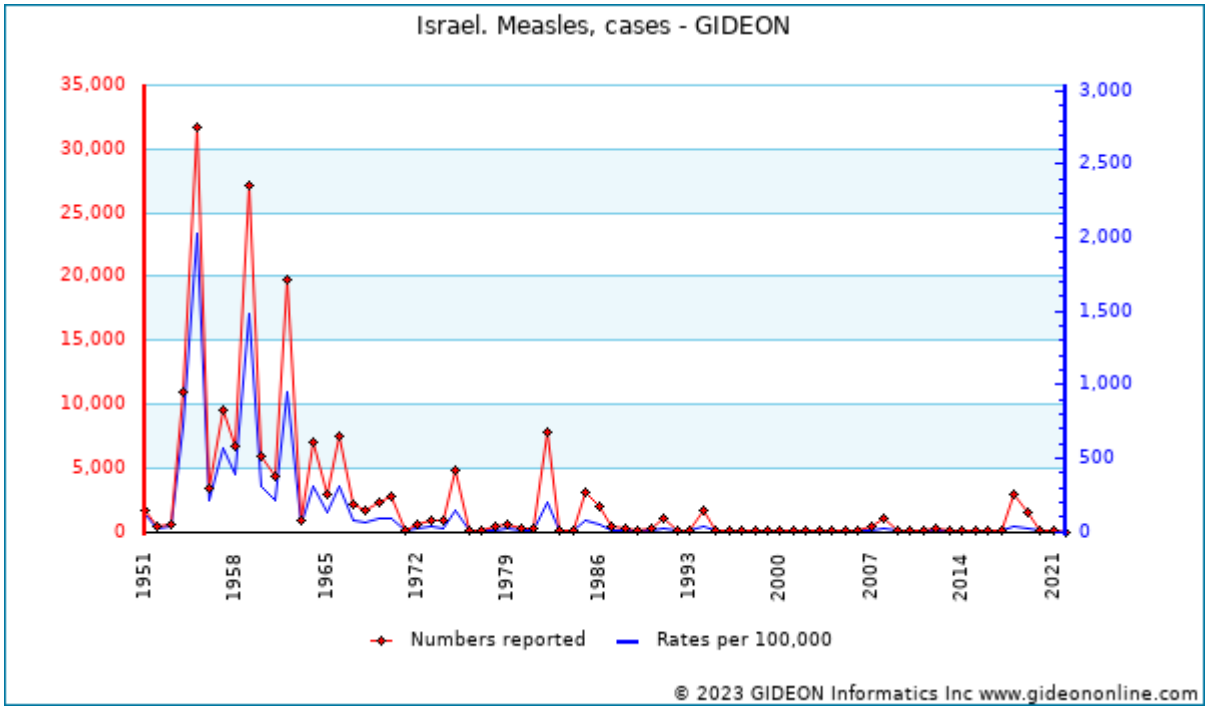
Prevalence surveys

Years	Region	Study Group	%	Notes
2018 - 2019	Ramla	children	39.2	39.2% of children tested during an outbreak were diagnosed with measles [Z]

Seroprevalence surveys

Years	Region	Study Group	%	Notes
1998	Nationwide	children	93.1	93.1% at 5 to 9 years [8]
1998	Nationwide	children	90.9	90.9% at age 2 to 4 years [9]
1987		military personnel	73.3	73.3% of Army recruits in 1987 [10]
1996*		military personnel	84.1	84.1% of Army recruits before a mass immunization campaign, and 96.5% following the campaign (1996 publication) [11]
1996		military personnel	95.6	95.6% in 1996 (99% of females and 93.5% of males) [12]
2007		military personnel	85.7	85.7% in 2007 [13]
1998	Nationwide	adolescents	94.8	94.8% at 10 to 19 years [14]
1998		women	85.8-93.3	85.8% of females ages 1 to 4, 97.1% ages 5 to 9, 93.3% ages 10 to 14, 91.7% ages 15 to 19, 85.1% ages 20 to 39, 92.9% ages 40 to 65 (1998)
1990		general population	84.6	84.6% in 1990 [15]
1998	Nationwide	general population	98.6	98.6% at 40+ years (1998) [16]
1998	Nationwide	general population	93	93.0% at 20 to 39 years [17]
2015	Multiple locations	general population	90.7	[18]
1998			84.6-93.3	84.6% of males ages 1 to 4, 92.2% ages 5 to 9, 92.5% ages 10 to 14, 87.1% ages 15 to 19, 83.9% ages 20 to 39, 93.3% ages 40 to 65 (1998)

* indicates publication year (not necessarily year of survey)



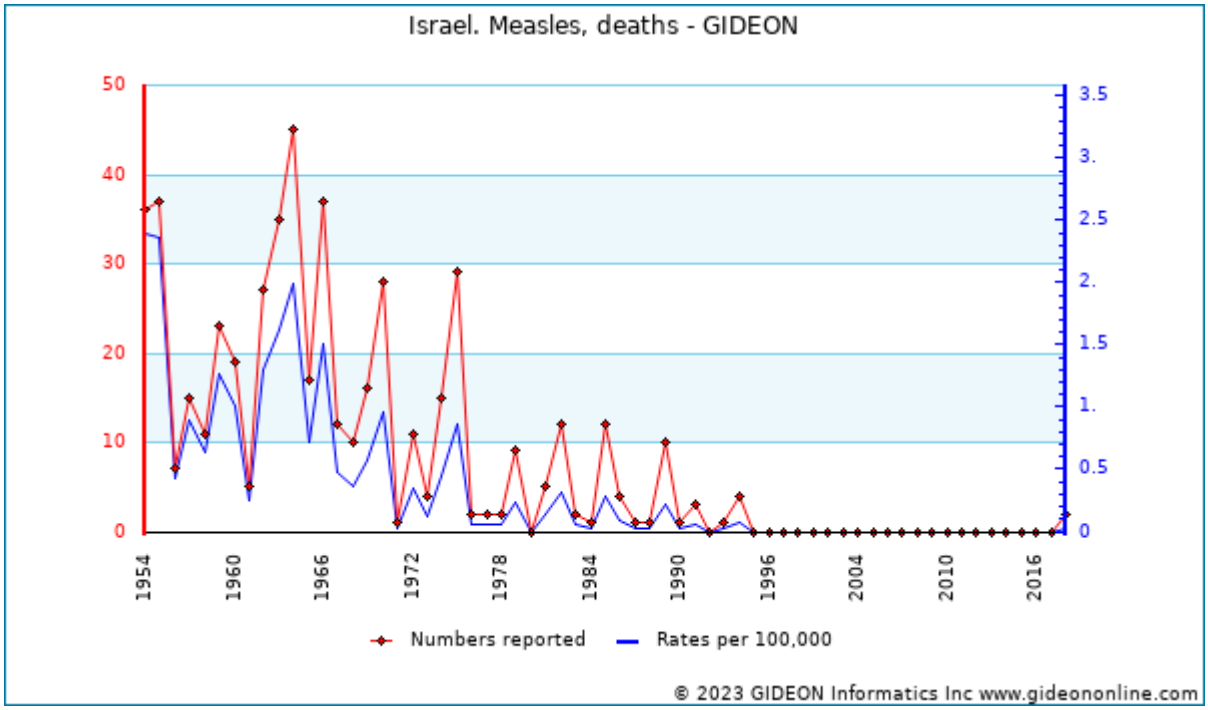
Graph: Israel. Measles, cases

Notes:
1. During 1961 to 1966, only cases in the age group 1 to 4 years were reported.
2. Review of cases reported during 1990 to 1999 - see reference [19]
3. Detailed analyses of an outbreak in Jerusalem during 2018 to 2019 - see references [20] [21]

Individual years:

2017 - Seven cases were reported to June 11 - all in Jerusalem District.
2018 - 83 cases were reported to June 16. Two Israeli travelers acquired measles, in Thailand and in India. [22]

2014 - Belarus reported an imported case from Israel. [23]

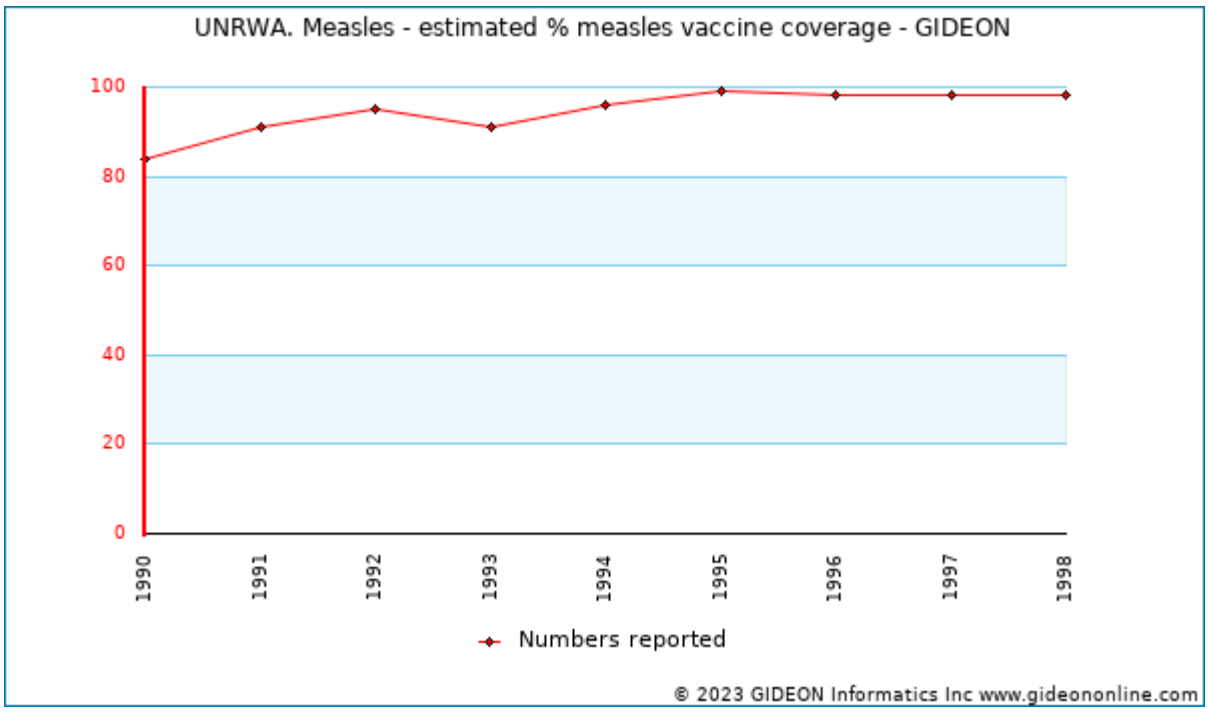


Graph: Israel. Measles, deaths

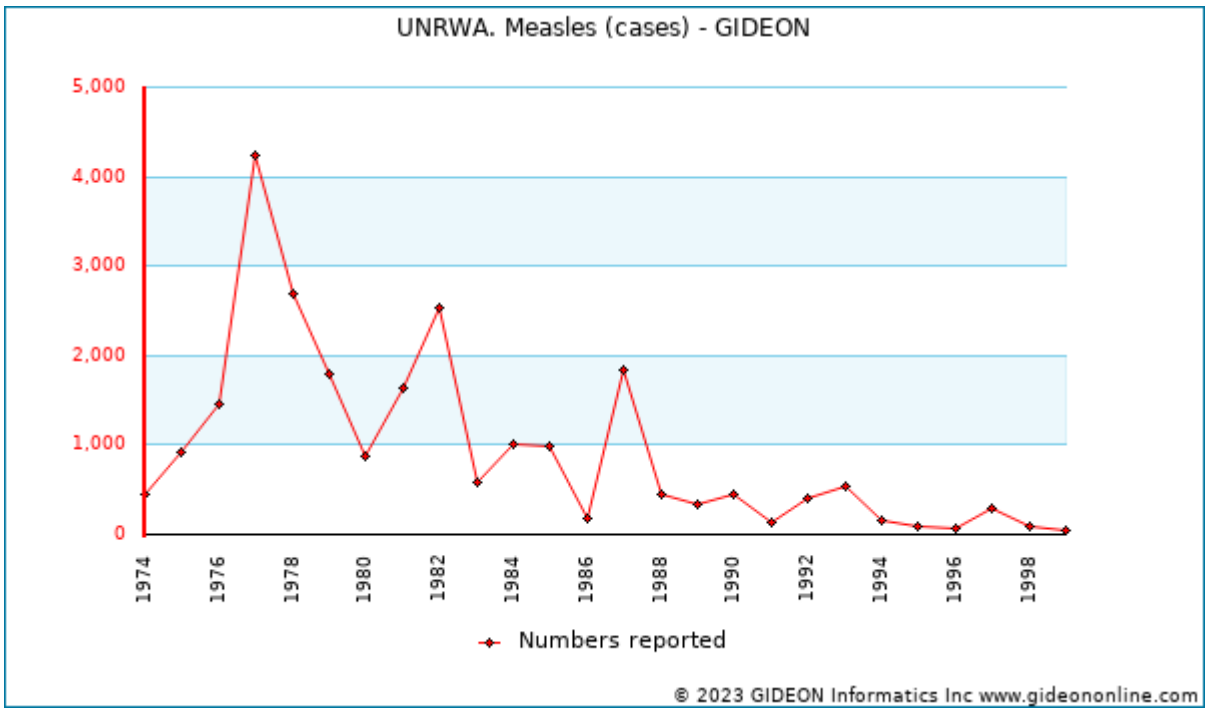
Notes:
Individual years:
2018 - These were the first measles fatalities reported in Israel in 15 years. [24]

Subacute sclerosing panencephalitis (SSPE)
The rate for SSPE among Sephardic Jews and Arabs is 8.6-fold that for Ashkenazi Jews.
- 1966 to 1979 - 110 cases of SSPE were reported (70 Jews and 40 Arabs)
- 1993 to 1998 - Five cases of SSPE were reported.

UNRWA, West Bank and Gaza:



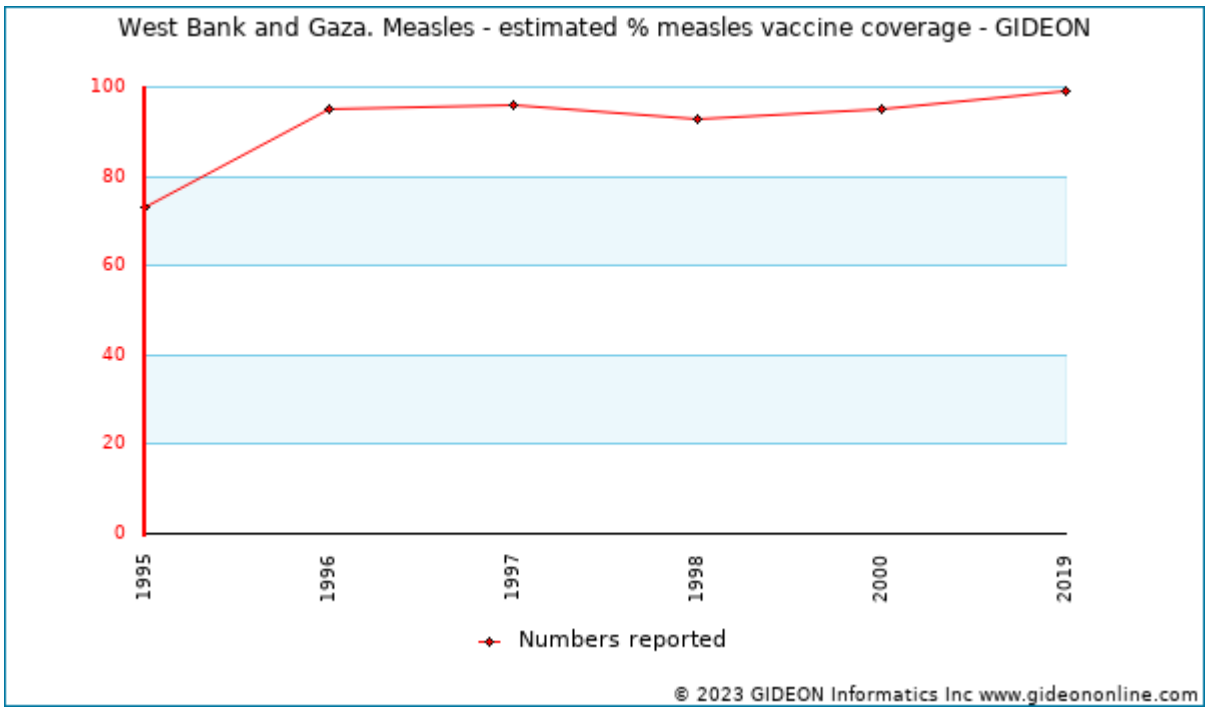
Graph: UNRWA. Measles - estimated % measles vaccine coverage



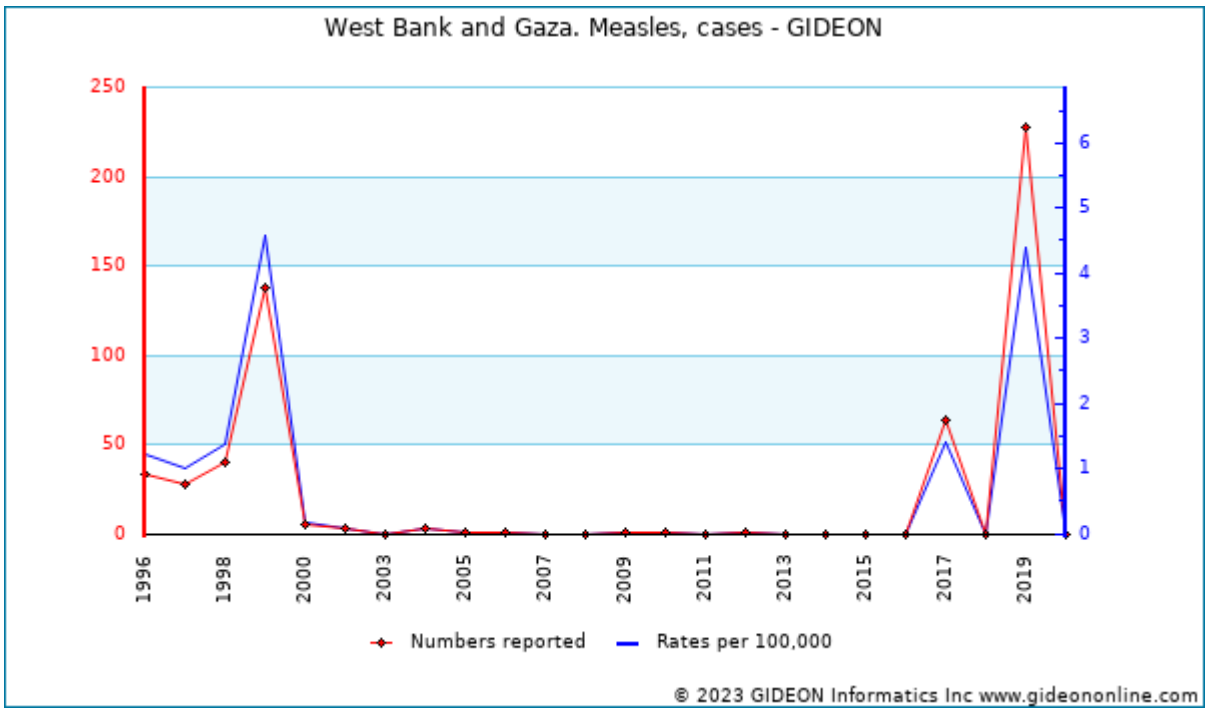
Graph: UNRWA. Measles (cases)

Notes:
1. 1998 - 2.1 per 100,000.

West Bank and Gaza
- Measles vaccine is administered at age 9 months; or MMR at 15 months.



Graph: West Bank and Gaza. Measles - estimated % measles vaccine coverage



Graph: West Bank and Gaza. Measles, cases

Notes:
1. 1999 - Included 122 cases in Hebron.
2. 1.5 per 100,000 in 1998, and 0.2 per 100,000 in 2000.

Talking Points

- The peak reporting year for measles in Israel was 1950.
- Subsequent epidemics with rates over 750 per 100,000 occurred in 1955, 1959 and 1962.

Cross-border events

Single cases included if associated with outbreaks

Years	Acquired by**	Originated in**	Setting	Cases	Notes
2003	Israel	Switzerland		107	Outbreak (107 cases) in an unvaccinated religious community in Israel followed introduction of an index patient from Switzerland. [25]
2012	Israel		migrants	99	Outbreak (99 cases to May) in Israel was associated with 49 Eritrean and 15 Sudanese migrants. [26] [27] [28]
2017	Israel	Ukraine	travel	9	Soldiers in a clinic were infected by an index patient who appears to have acquired the infection while visiting Ukraine [29]
2018	United Kingdom	Israel	travel	70	Outbreak in an Orthodox Jewish community in London associated with index cases who were infected in Israel [30]
2018 to 2019	United States	Israel	travel	423	Case count to April 29, 2019. Four clusters of measles in the United States were ascribed to index patients from the Orthodox Jewish Community who had acquired the infection in Israel [31] [32] [33] [34] [35] [36] [37] [38] [39] [40] [41] [42] [43] [44] [45] [46]

** Country or Nationality

Notable outbreaks

Years	Region	Setting	Cases	Deaths	Population	Notes
1982	Multiple locations		8,000			Outbreak included 2,940 military personnel [47] [48]
1985			40		military personnel	[49]
1991	Ramallah		1,036	7		Outbreak included 433 cases (7 fatal) in Ramallah District, in the West Bank. [50] [51] [52] [53]
2003 - 2004	Jerusalem	religious community	107			Outbreak in an unvaccinated religious community followed introduction of an index patient from Switzerland. [54]
2007 - 2008	Multiple locations		1,467	0		Included 992 cases in Jerusalem. Outbreak-related cases were subsequently reported in Canada and the United States. [55] [56]
2007	Jerusalem	religious community	491			Outbreaks among "Irish Travelers" in Europe resulted in infection of 3 exposed Israelis. A subsequent outbreak (491 cases) was reported in an ultra-orthodox community in Jerusalem. [57] [58] [59] [60] [61] [62] [63] [64] [65] [66] [67] [68] [69] [70]
2011			12			[71]
2012	Tel Aviv		99			Outbreak associated with infection in 49 Eritrean and 15 Sudanese migrants [72] [73] [74] [75]
2017		clinic or medical office	9	0	military personnel	Soldiers in a clinic were infected by an index patient who appears to have acquired the infection while visiting Ukraine [76] [77]
2018 - 2019	Multiple locations		4,311	2		Included 2,202 cases (2 fatal) in Jerusalem district; and 413 cases in Tel Aviv District. Children accounted for 75% of cases. [78] [79] [80] [81] [82] [83] [84] [85] [86] [87] [88] [89] [90] [91] [92] [93] [94] [95]
2018	Foreign Country	religious community	70			Outbreak in an Orthodox Jewish community in England associated with index cases who were infected in Israel [96]
2018 - 2019	Foreign Country	religious community	204			Case count to February 11, 2019. Three clusters of measles in the United States (New York and New Jersey) were ascribed to index patients from the Orthodox Jewish Community who had acquired the infection in Israel [97] [98] [99] [100] [101] [102] [103] [104] [105] [106] [107] [108] [109]
2019	Gaza		124	2		[110]

References

1. Clin Respir J 2016 Sep ;10(5):673-5.
2. Expert Opin Pharmacother 2001 Aug ;2(8):1317-24.
3. Public Health Rep 1984 May-Jun;99(3):272-7.
4. Isr J Med Sci 1991 Jan ;27(1):19-21.
5. Isr J Med Sci 1991 Jan ;27(1):22-9.
6. Public Health Rev 1999 ;27(1-3):235-41.
7. J Pediatric Infect Dis Soc 2022 Apr 27;
8. Bull World Health Organ 2008 Mar ;86(3):197-204.
9. Bull World Health Organ 2008 Mar ;86(3):197-204.
10. Hum Vaccin Immunother 2015 ;11(6):1400-5.
11. J Med Virol 1996 Nov ;50(3):249-53.
12. Am J Infect Control 2002 May ;30(3):165-9.
13. Hum Vaccin Immunother 2015 ;11(6):1400-5.
14. Bull World Health Organ 2008 Mar ;86(3):197-204.
15. Infection 1993 May-Jun;21(3):154-7.
16. Bull World Health Organ 2008 Mar ;86(3):197-204.
17. Bull World Health Organ 2008 Mar ;86(3):197-204.
18. Hum Vaccin Immunother 2020 Oct 29;:1-5.
19. Public Health Rev 1999 ;27(1-3):235-41.
20. Clin Microbiol Infect 2019 Sep 06;
21. Am J Public Health 2019 Oct 17;:e1-e3.
22. ProMED <promedmail.org> archive: 20180419.5756685
23. ProMED <promedmail.org> archive: 20150307.3214998
24. ProMED <promedmail.org> archive: 20190418.6429834
25. Epidemiol Infect 2008 Feb ;136(2):207-14.
26. Euro Surveill 2012 Sep 13;17(37)
27. ProMED <promedmail.org> archive: 20120513.1131857
28. ProMED <promedmail.org> archive: 20120610.1163399
29. ProMED <promedmail.org> archive: 20170821.5263535
30. ProMED <promedmail.org> archive: 20181209.6200560
31. ProMED <promedmail.org> archive: 20190119.6266885
32. ProMED <promedmail.org> archive: 20181019.6101105
33. ProMED <promedmail.org> archive: 20181102.6124542
34. ProMED <promedmail.org> archive: 20181106.6128235
35. ProMED <promedmail.org> archive: 20181115.6146626
36. ProMED <promedmail.org> archive: 20181125.6163324
37. ProMED <promedmail.org> archive: 20181220.6216069
38. ProMED <promedmail.org> archive: 20190131.6288456
39. ProMED <promedmail.org> archive: 20190214.6316885
40. ProMED <promedmail.org> archive: 20190303.6346095
41. ProMED <promedmail.org> archive: 20190311.6360308
42. ProMED <promedmail.org> archive: 20190328.6390316
43. ProMED <promedmail.org> archive: 20190406.6408070
44. ProMED <promedmail.org> archive: 20190410.6414559
45. ProMED <promedmail.org> archive: 20190414.6422351
46. ProMED <promedmail.org> archive: 20190430.6449873
47. Isr J Med Sci 1985 Apr ;21(4):351-5.
48. Isr J Med Sci 1983 Nov ;19(11):987-8.
49. Arch Intern Med 1987 Jun ;147(6):1111-3.
50. Public Health Rev 1992-1993;20(1-2):41-51.
51. Public Health Rev 1992-1993;20(3-4):280-4.
52. Proc Biol Sci 1993 May 22;252(1334):81-4.
53. Public Health Rev 1992-1993;20(3-4):285-96.
54. Epidemiol Infect 2008 Feb ;136(2):207-14.
55. J Infect 2009 Oct ;59(4):252-8.
56. Epidemiol Infect 2012 Sep ;140(9):1578-88.
57. Euro Surveill 2007 Jun 14;12(6):E070614.1.
58. Epidemiol Infect 2009 Dec ;137(12):1759-65.
59. ProMED <promedmail.org> archive: 20070622.2019
60. Euro Surveill 2007 Jun 14;12(6):E070614.2.
61. Euro Surveill 2007 May 24;12(5):E070524.1.
62. ProMED <promedmail.org> archive: 20070525.1673
63. ProMED <promedmail.org> archive: 20070622.2020
64. Euro Surveill 2007 Nov 15;12(11):E071115.3.
65. ProMED <promedmail.org> archive: 20071117.3723
66. Euro Surveill 2007 Nov 29;12(11):E071129.1.
67. ProMED <promedmail.org> archive: 20071202.3880
68. Euro Surveill 2007 Sep 20;12(9):E070920.1.
69. ProMED <promedmail.org> archive: 20070922.3148
70. Euro Surveill 2008 Feb 21;13(8)
71. ProMED <promedmail.org> archive: 20111009.3027
72. Euro Surveill 2012 Sep 13;17(37)
73. Vaccine 2020 Jul 17;
74. ProMED <promedmail.org> archive: 20120513.1131857
75. ProMED <promedmail.org> archive: 20120610.1163399
76. MMWR Morb Mortal Wkly Rep 2018 Oct 26;67(42):1186-1188.
77. ProMED <promedmail.org> archive: 20170821.5263535
78. Clin Microbiol Infect 2019 Sep 06;
79. Am J Public Health 2019 Oct 17;:e1-e3.
80. MMWR Morb Mortal Wkly Rep 2020 May 08;69(18):562-563.
81. Clin Infect Dis 2020 Jul 03;
82. Vaccine 2020 Jul 17;
83. Hum Vaccin Immunother 2021 Jan 22;:1-5.
84. PLoS One 2021 ;16(9):e0255663.
85. J Infect 2021 Oct 06;
86. J Pediatric Infect Dis Soc 2022 Apr 27;
87. ProMED <promedmail.org> archive: 20181004.6069532
88. ProMED <promedmail.org> archive: 20181017.6095283
89. ProMED <promedmail.org> archive: 20181112.6140598
90. ProMED <promedmail.org> archive: 20181128.6168366
91. ProMED <promedmail.org> archive: 20181201.6174755
92. ProMED <promedmail.org> archive: 20181223.6221389
93. ProMED <promedmail.org> archive: 20190108.6248575
94. ProMED <promedmail.org> archive: 20190720.6578339
95. ProMED <promedmail.org> archive: 20200531.7412542
96. ProMED <promedmail.org> archive: 20181209.6200560
97. J Pediatric Infect Dis Soc 2022 Apr 27;
98. ProMED <promedmail.org> archive: 20181019.6101105
99. ProMED <promedmail.org> archive: 20181102.6124542
100. ProMED <promedmail.org> archive: 20181106.6128235
101. ProMED <promedmail.org> archive: 20181115.6146626
102. ProMED <promedmail.org> archive: 20181125.6163324
103. ProMED <promedmail.org> archive: 20181213.6207900
104. ProMED <promedmail.org> archive: 20181220.6216069
105. ProMED <promedmail.org> archive: 20190102.6240858
106. ProMED <promedmail.org> archive: 20190131.6288456
107. ProMED <promedmail.org> archive: 20190214.6316885
108. ProMED <promedmail.org> archive: 20190303.6346095
109. ProMED <promedmail.org> archive: 20200531.7412542
110. ProMED <promedmail.org> archive: 20200110.6882684

Melioidosis

Agent	BACTERIUM. *Burkholderia pseudomallei* An aerobic gram-negative bacillus
Reservoir	Soil, Water, Sheep, Goat, Horse, Pig, Rodent, Monkey, Marsupial, Zoonotic
Vector	None
Vehicle	Water (contact, ingestion, aerosol), Breastfeeding, Sexual contact, Respiratory or pharyngeal acquisition
Incubation Period	3d - 21d (range 2d - 1y)
Diagnostic Tests	Culture of blood, sputum, tissue. Serology. Nucleic acid amplification.
Typical Adult Therapy	Ceftazidime or Meropenem or Imipenem IV X at least 14 days May be combined with Sulfamethoxazole / Trimethoprim PO Follow with Sulfamethoxazole / Trimethoprim +/- Doxycycline X at least 3 months.[1] [2] [3]
Typical Pediatric Therapy	Ceftazidime or Meropenem or Imipenem IV X at least 14 days May be combined with Sulfamethoxazole / Trimethoprim PO Follow with Sulfamethoxazole / Trimethoprim X at least 3 months.
Clinical Hints	- Lymphangitis with septicemia - Fever, cough and chest pain - Diarrhea or infection of bone, central nervous system, liver and parotid are occasionally encountered - Chest roentgenogram findings and clinical course may mimic tuberculosis - Case-fatality rate 10% to over 50% (septicemic form)
Synonyms	Burkholderia pseudomallei, Burkholderia thailandensis, Melioidose, Nightcliff Gardeners' Disease, Whitmore disease. ICD9: 025 ICD10: A24.1,A24.2,A24.3,A24.4

Although Melioidosis is not endemic to Israel, imported, expatriate or other presentations of the disease have been associated with this country.

Melioidosis in Israel

Cross-border events

Years	Acquired by**	Originated in**	Setting	Cases	Notes
2008	Israel	Thailand	foreign workers	1	[4] [5]
2016*	Israel	Eritrea	refugees	1	[6]
2018	Israel	India	travel	1	[7] [8]

* indicates publication year (not necessarily year of event)
** Country or Nationality

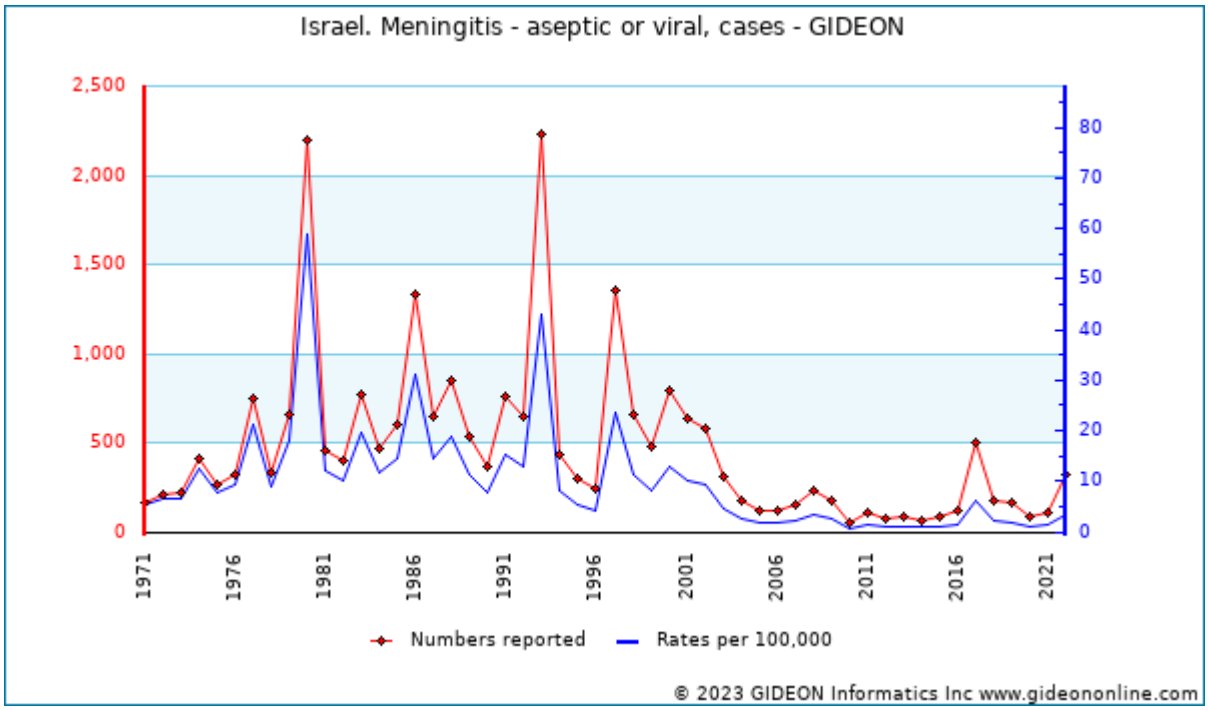
References

1. PLoS Negl Trop Dis 2015 Mar ;9(3):e0003586.
2. Semin Respir Crit Care Med 2015 Feb ;36(1):111-25.
3. Int J Antimicrob Agents 2014 Apr ;43(4):310-8.
4. Emerg Infect Dis 2009 Nov ;15(11):1809-11.
5. ProMED <promedmail.org> archive: 20080819.2588
6. Am J Trop Med Hyg 2016 Nov 02;95(5):997-998.
7. Microbiol Resour Announc 2019 May 09;8(19)
8. Am J Trop Med Hyg 2019 Jul 08;

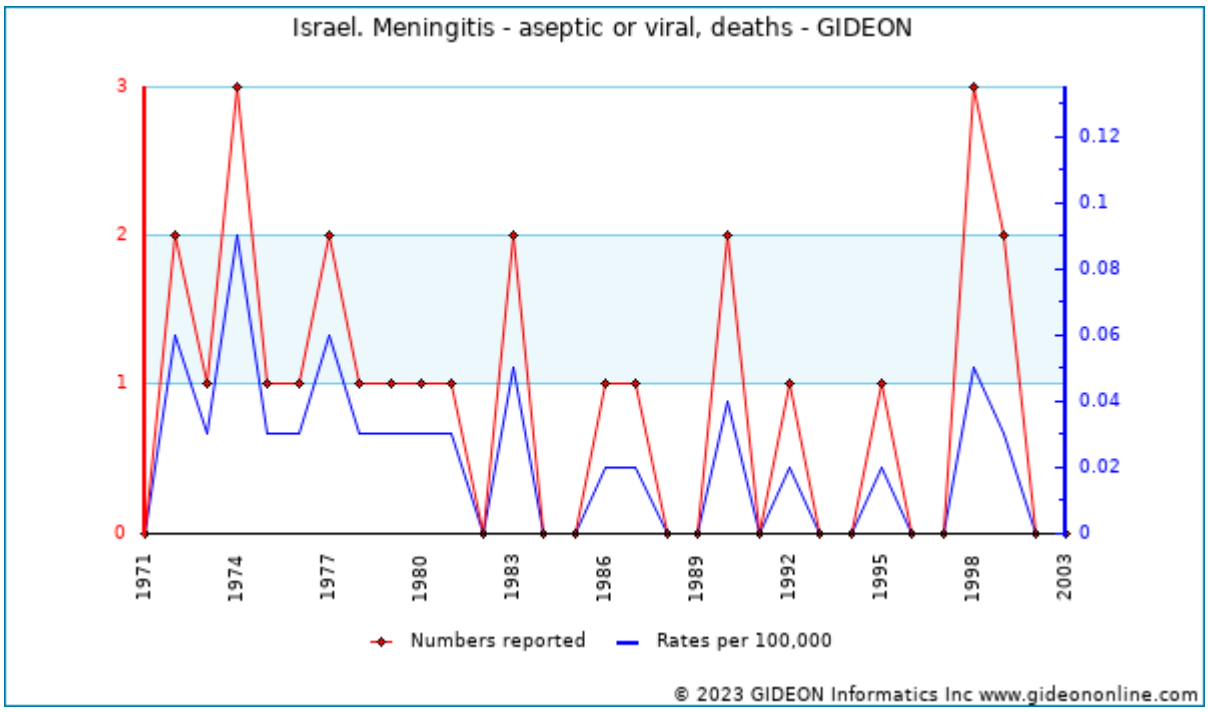
Meningitis - aseptic (viral)

Agent	VIRUS - RNA. Picornaviridae, enteroviruses
Reservoir	Human
Vector	None
Vehicle	Fecal-oral, Droplet
Incubation Period	Variable
Diagnostic Tests	Viral isolation (stool, CSF, throat). Serology.
Typical Adult Therapy	Supportive[1]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Lymphocytic meningitis, with normal CSF glucose level - Often follows sore throat - Typically occurs during late summer and early autumn in temperate regions
Synonyms	Aseptic meningitis, Encephalitis - viral, Meningite virale, Meningitis, viral, Meningo-encefalite virale, Viral encephalitis, Viral meningitis. ICD9: 047,048,049,320.2 ICD10: A87,G03.0

Meningitis - aseptic (viral) in Israel



Graph: Israel. Meningitis - aseptic or viral, cases



Graph: Israel. Meningitis - aseptic or viral, deaths

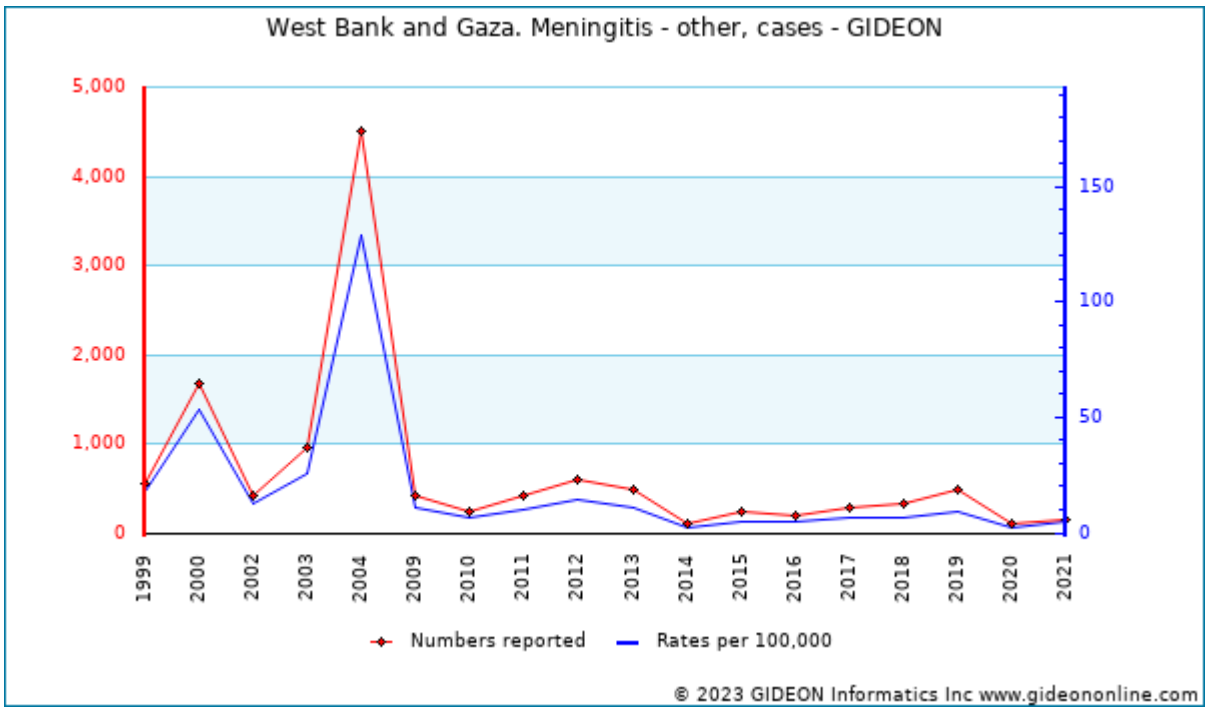
- 2016 to 2020 - Among all test-positive CSF specimens collected from patients admitted to hospital in Safed with suspected meningitis or encephalitis, enterovirus was detected in 62%, human herpesvirus 6 in 13.3%, varicella-zoster virus in 5.7%, human parechovirus in 4.8%, cytomegalovirus in 2.9%, HSV-1 in 1.9%, and HSV-2 in 1.0%. [2]

Notable outbreaks

Years	Region	Setting	Cases	Deaths	Pathogen	Notes
1970*	Jerusalem				multiple pathogens	Outbreak due to Echovirus 4 and Echovirus 9 [3] [4]
1986 - 1988	Tel Aviv	nursery	14	2	multiple pathogens	Outbreak due to Coxsackie B 1,2 and 3
1993						Outbreak reported - additional details unavailable. [5]
1997	Gaza		350			[6]
1997	Multiple locations				Echovirus 4	This was the first time that Echovirus 4 had been encountered in the area since 1980. [7] [8]
1999		children's home	16		Echovirus 11	[9]
2000	Central Region		91		Echovirus 13	[10]
2001					Echovirus 4	[11]

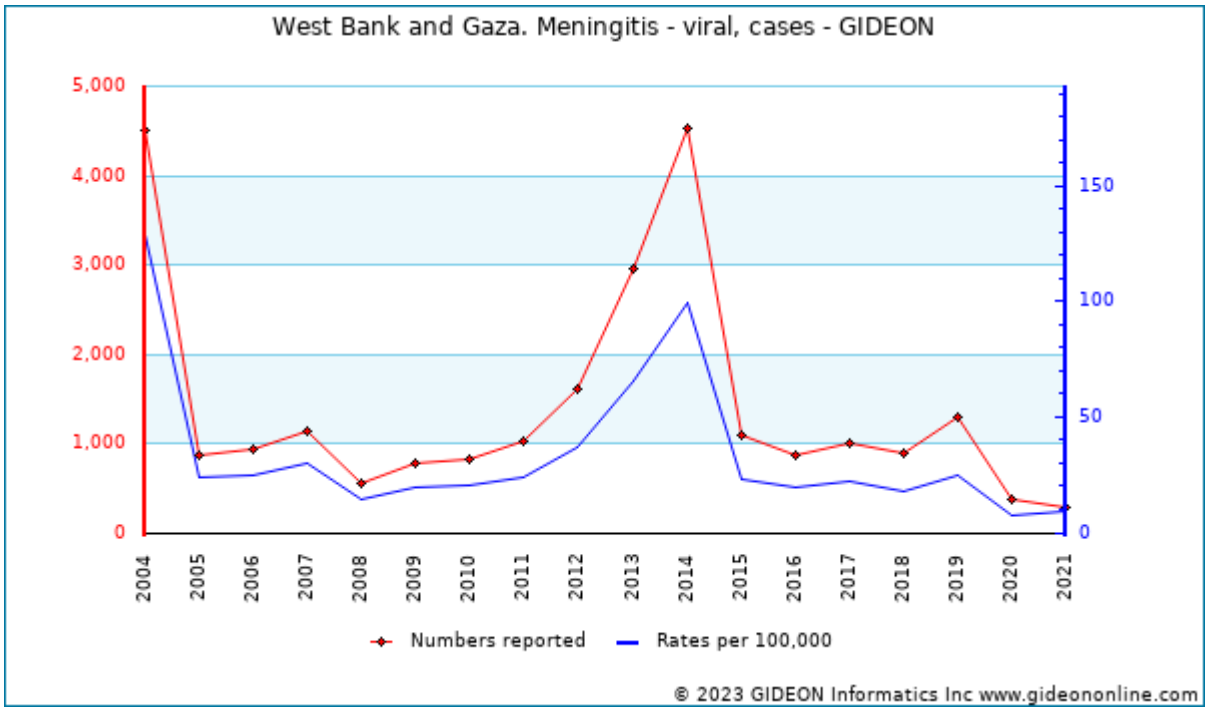
* indicates publication year (not necessarily year of outbreak)

- 121 cases of "meningitis" were reported in Gaza during January to May 1996; 180 during January to May 1997 (126 of these viral).



Graph: West Bank and Gaza. Meningitis - other, cases

Notes:
Individual years:
2004 - Included 4,375 cases in the Gaza Strip.



Graph: West Bank and Gaza. Meningitis - viral, cases

Notes:
2021: 191 cases were reported in Gaza Strip whereas 90 were in West Bank.

Prevalence surveys

Years	Region	Study Group	%	Notes
2010 - 2019	Haifa	infants	16.2	Non-polio enterovirus aseptic meningitis was diagnosed in 16.2% of 1,278 febrile infants. [12]

References

1. Curr Opin Infect Dis 2017 Apr ;30(2):248-256.
2. Diagn Microbiol Infect Dis 2022 Jul 18;104(3):115769.
3. Scand J Infect Dis 1970 ;2(2):87-93.
4. Isr J Med Sci 1971 Nov ;7(11):1240-7.
5. Pediatr Emerg Care 1999 Oct ;15(5):314-7.
6. ProMED <promedmail.org> archive: 19970617.1283
7. J Clin Virol 1999 Jun ;13(1-2):29-36.
8. ProMED <promedmail.org> archive: 19980214.0290
9. Epidemiol Infect 2001 Jun ;126(3):441-4.
10. Epidemiol Infect 2003 Apr ;130(2):257-62.
11. Pediatr Neurol 2003 Oct ;29(4):312-6.
13. J Clin Virol 2023 Mar 24;162:105427.

Meningitis - bacterial

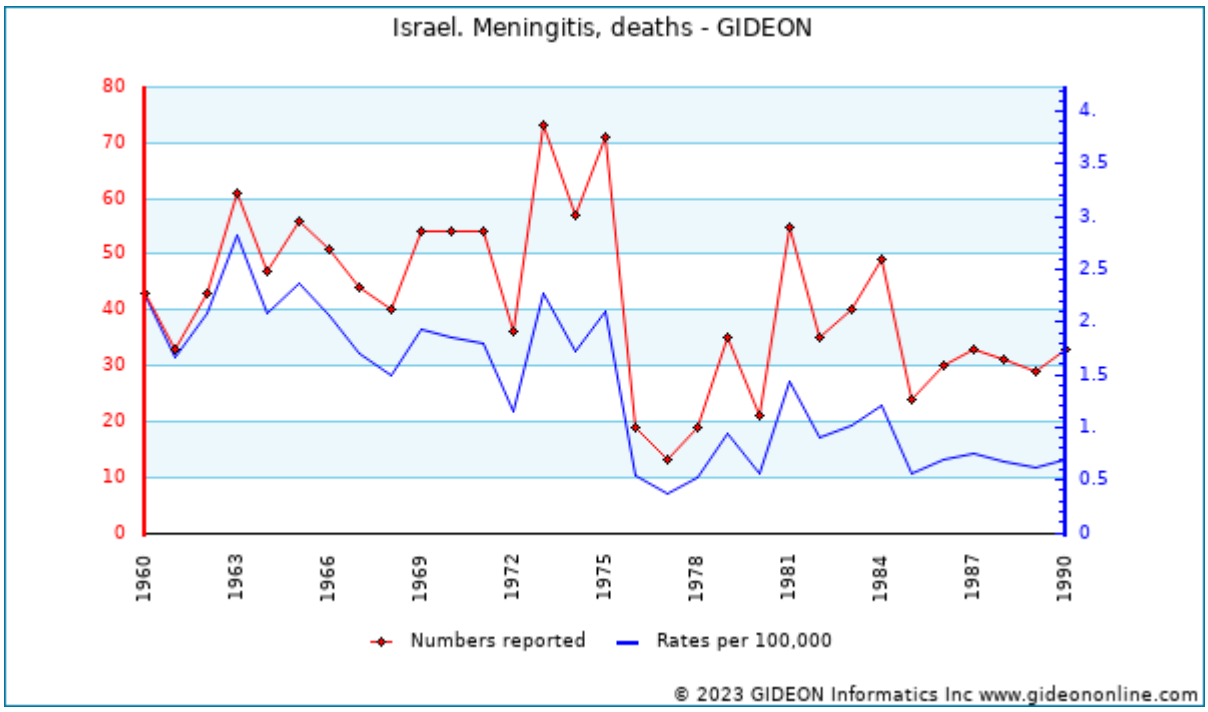
Agent	BACTERIUM. *Neisseria meningitidis*, *Streptococcus pneumoniae*, *Haemophilus influenzae*, et al
Reservoir	Human
Vector	None
Vehicle	Air, Secretions
Incubation Period	Variable
Diagnostic Tests	CSF microscopy and culture. Blood culture. Note: Antigen detection is non-specific and rarely useful.
Typical Adult Therapy	If meningococcal meningitis is confirmed or suspected - respiratory isolation Bactericidal agent(s) appropriate to known or suspected pathogen + dexamethasone[1] [2] [3]
Typical Pediatric Therapy	As for adult
Vaccines	H. influenzae (HbOC-DTP or -DTaP) vaccine Haemophilus influenzae (HbOC) vaccine Haemophilus influenzae (PRP-D) vaccine Haemophilus influenzae (PRP-OMP) vaccine Haemophilus influenzae (PRP-T) vaccine Meningococcal vaccine
Clinical Hints	- Headache, stiff neck, obtundation, high fever and leukocytosis - Macular or petechial rash and preceding sore throat suggest meningococcal infection
Synonyms	Bacterial meningitis, Enfermedad meningococica, Haemophilus influenzae, Haemophilus influenzaes, HIB meningitis, HIBs, Infections a meningocoque, Meningite batterica, Meningite meningococcica, Meningococcal, Meningococcal infection - invasive, Meningokokken Erkr., Meningokokkose. ICD9: 036.0,320 ICD10: A39,G00,G01,G02

Meningitis - bacterial in Israel

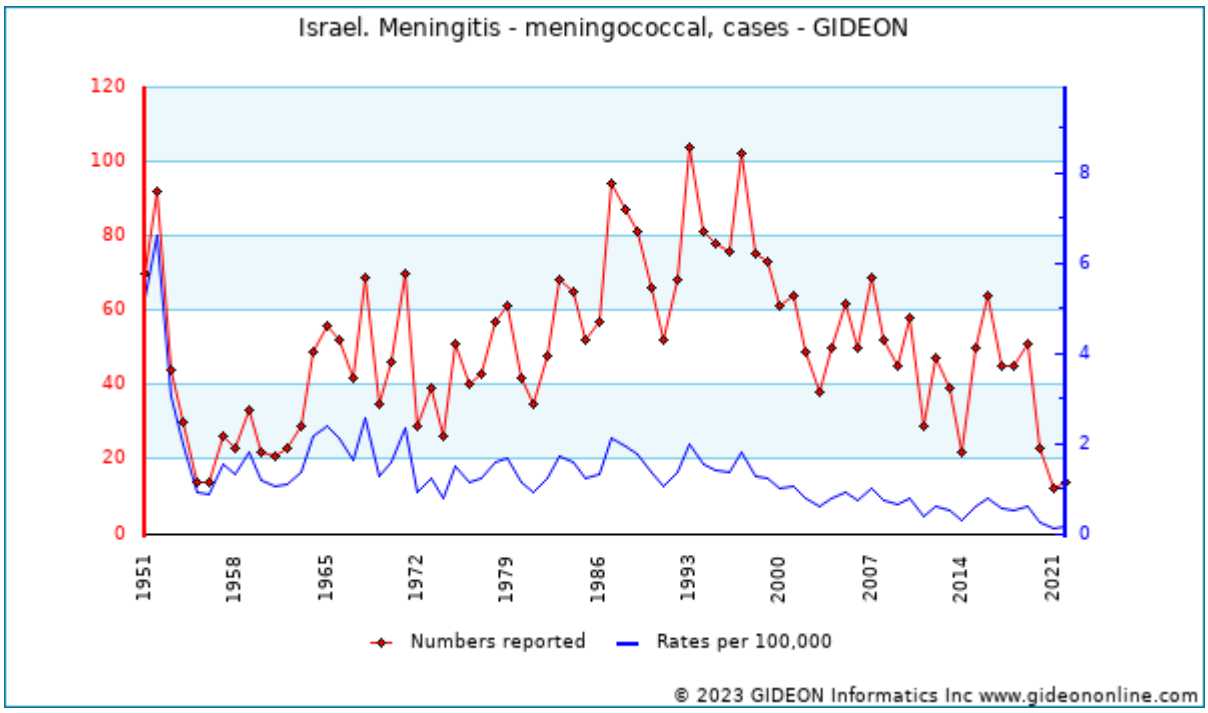
Vaccine Schedule:

DTaP - 2,4,6,12 months
DTaPHibIPV - 2,4,6,12 months
HPV - 13 years; +6 months
HepA - 18, 24 months
HepB - birth; 1,6 months
IPV - 7 years
MMRV - 12 months; 6 years
OPV - 6,18 months
Pneumo ps - >=65 years
Pneumo-conj - 2,4,12 months
Rotavirus - 2,4,6 months
Td - every 10 years (adults)
TdaP - 13 years
TdaPIPV - 7 years

Israel:



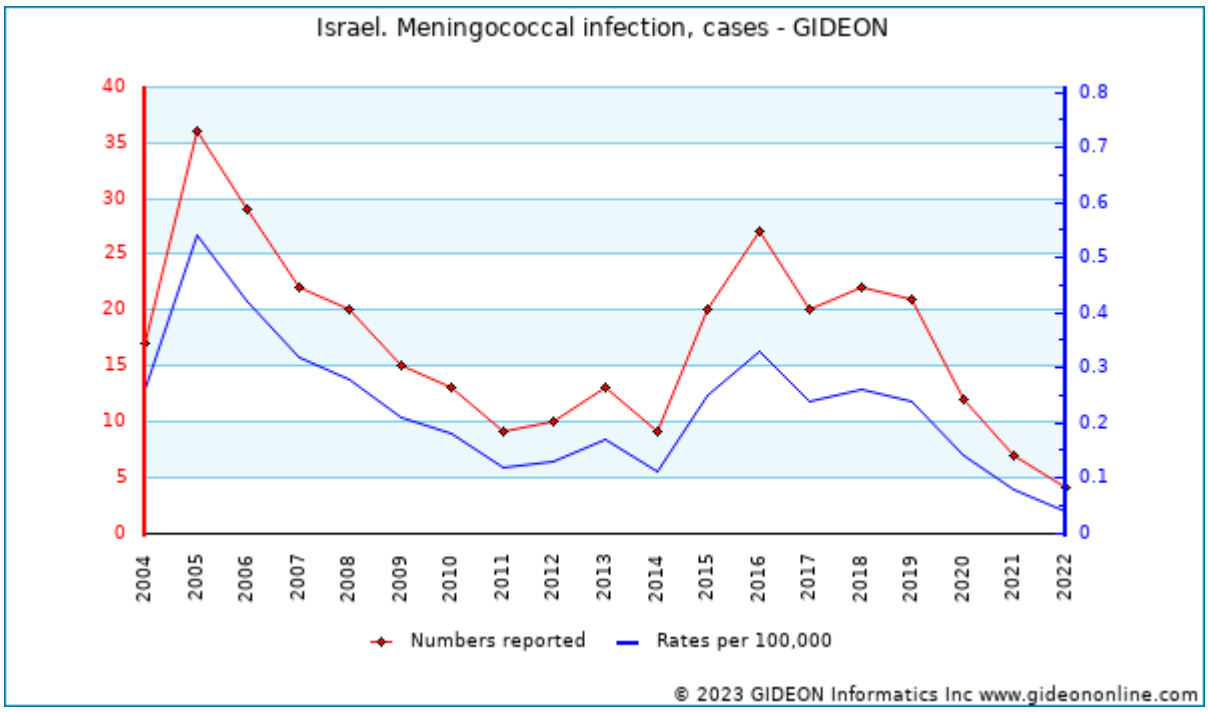
Graph: Israel. Meningitis, deaths



Graph: Israel. Meningitis - meningococcal, cases

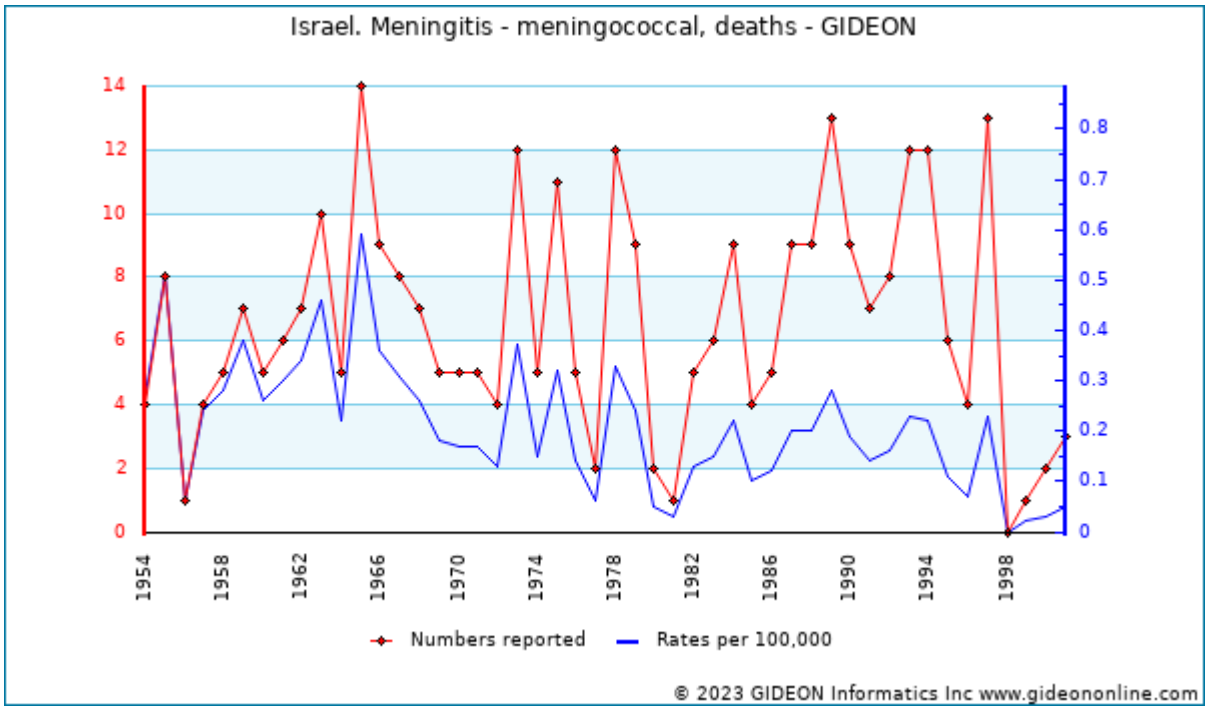
Notes:

1. Meningococcal meningitis has been a reportable disease since 1951. [4]



Graph: Israel. Meningococcal infection, cases

Notes:
1. 133 cases of invasive meningococcal infection were reported in Jerusalem during 1999 to 2005 (2.45 per 100,000) [5]



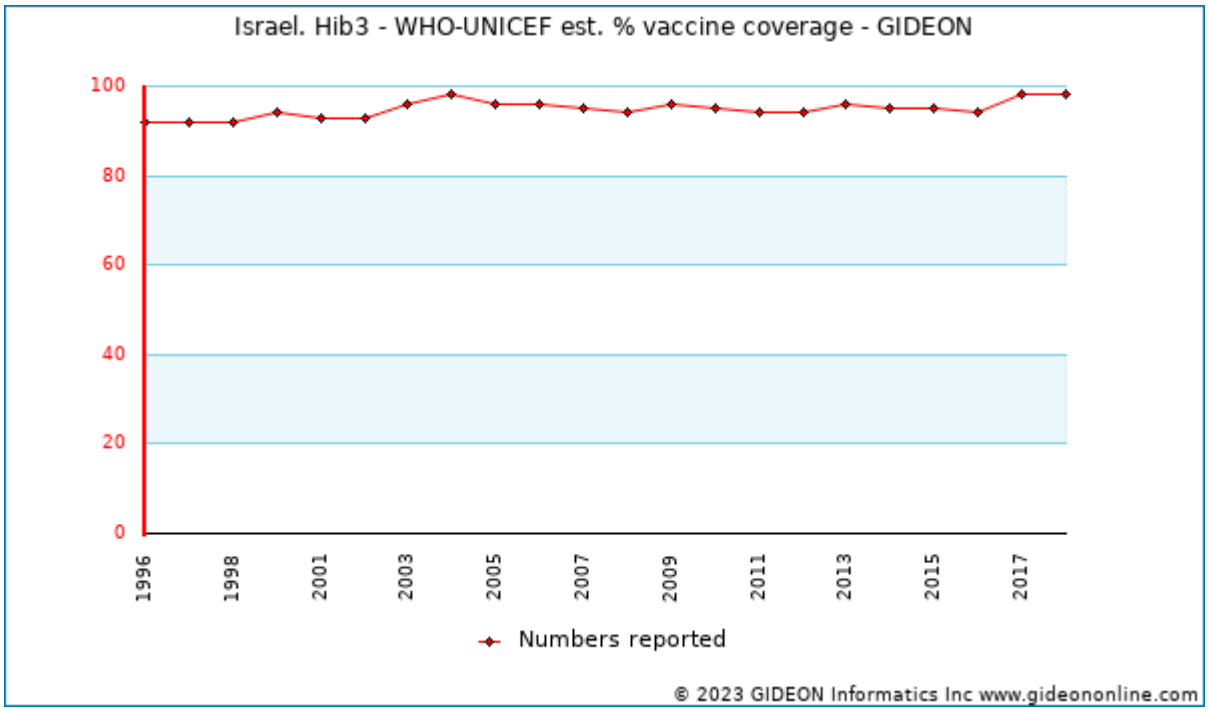
Graph: Israel. Meningitis - meningococcal, deaths

- 48 of 68 meningococci submitted to the Central Laboratory during 1992 were type B.
- There has been a marked increase in group C meningococci (including rifampicin-resistant strains) in recent years.

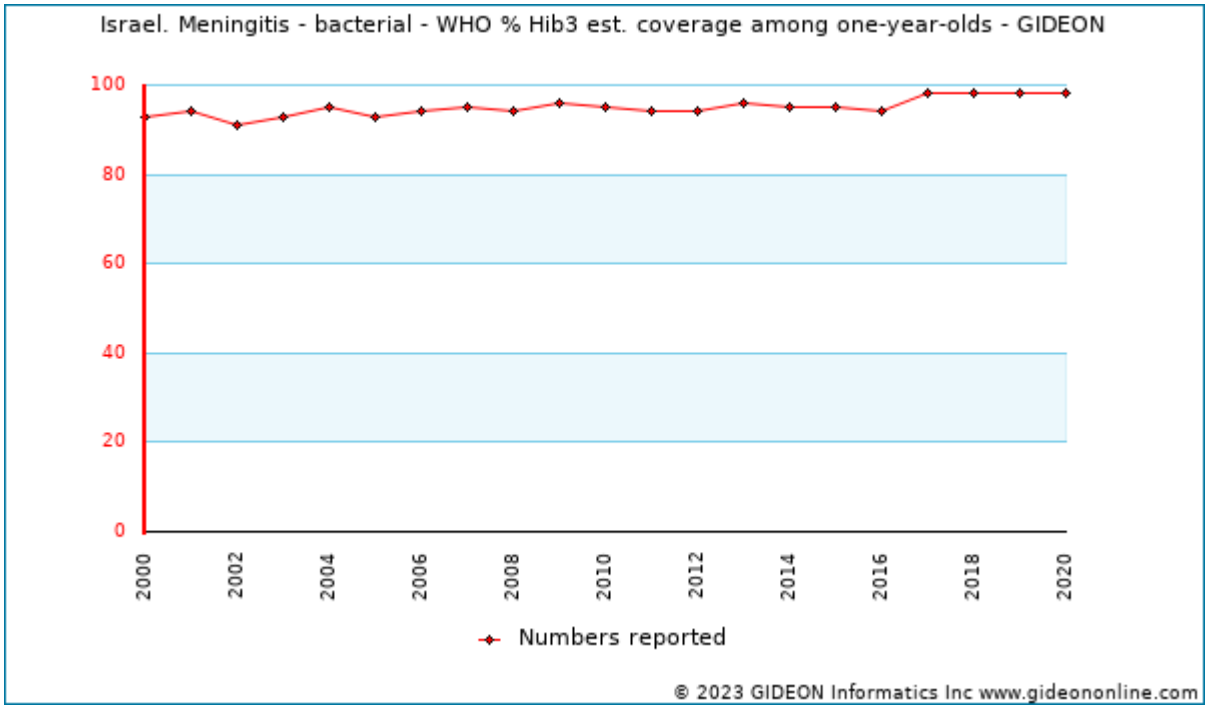
Haemophilus influenzae meningitis has been a reportable disease since 1970.

- Routine vaccination was introduced in 1994.
- *Haemophilus influenzae* rates have declined since the introduction of universal vaccination.

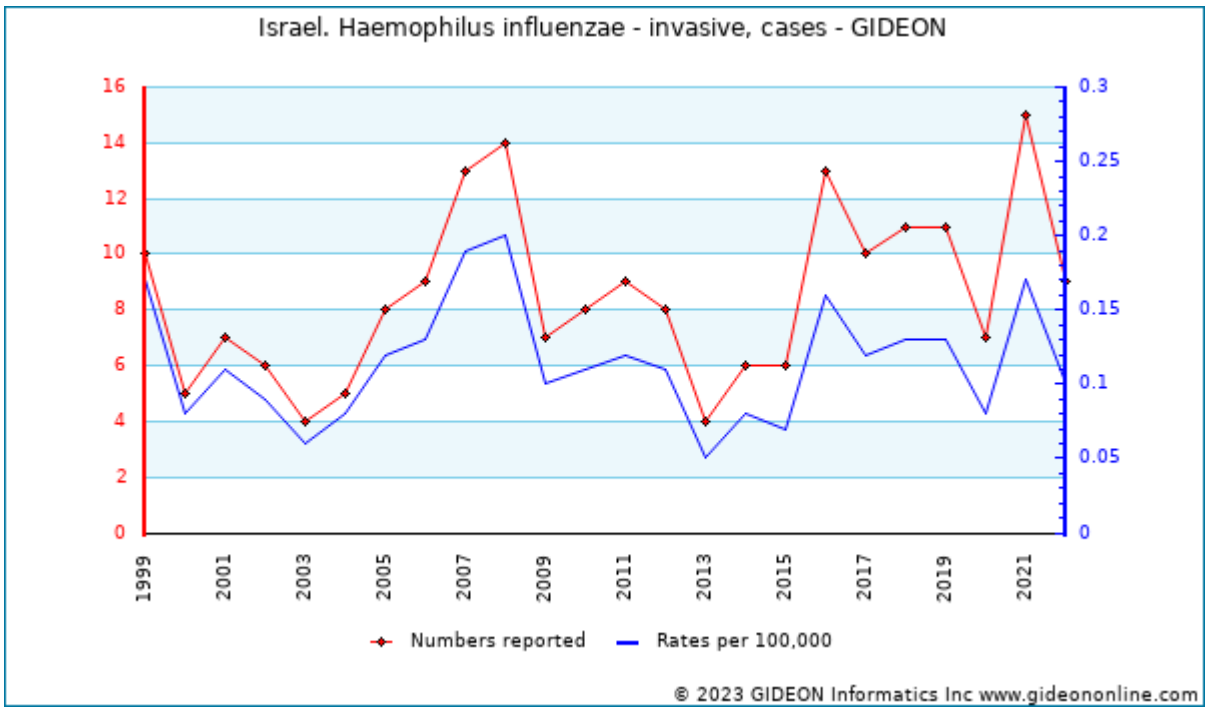
- 2016 to 2020 - Among all test-positive CSF specimens collected from patients admitted to hospital in Safed with suspected meningitis or encephalitis, *Streptococcus pneumoniae* was detected in 2.9%, *Streptococcus agalactiae* in 2.9%, *Haemophilus influenzae* in 1.9%, and *Escherichia coli* K1 in 1%. [6]



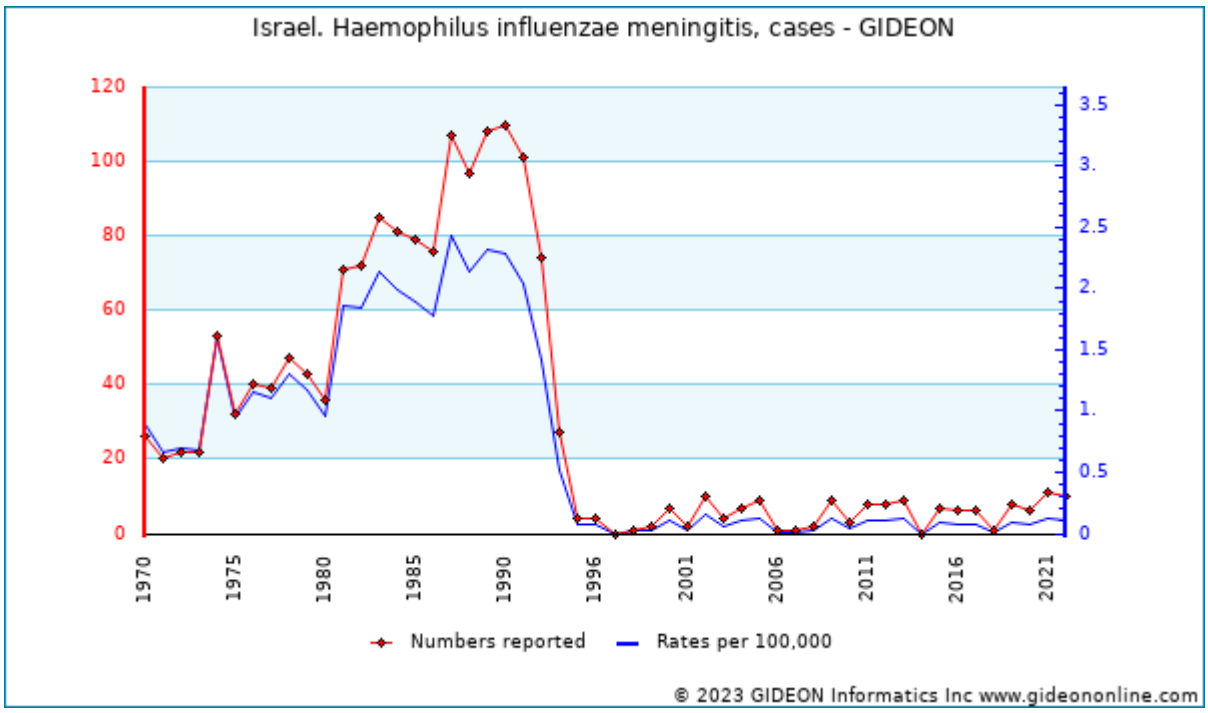
Graph: Israel. Hib3 - WHO-UNICEF est. % vaccine coverage



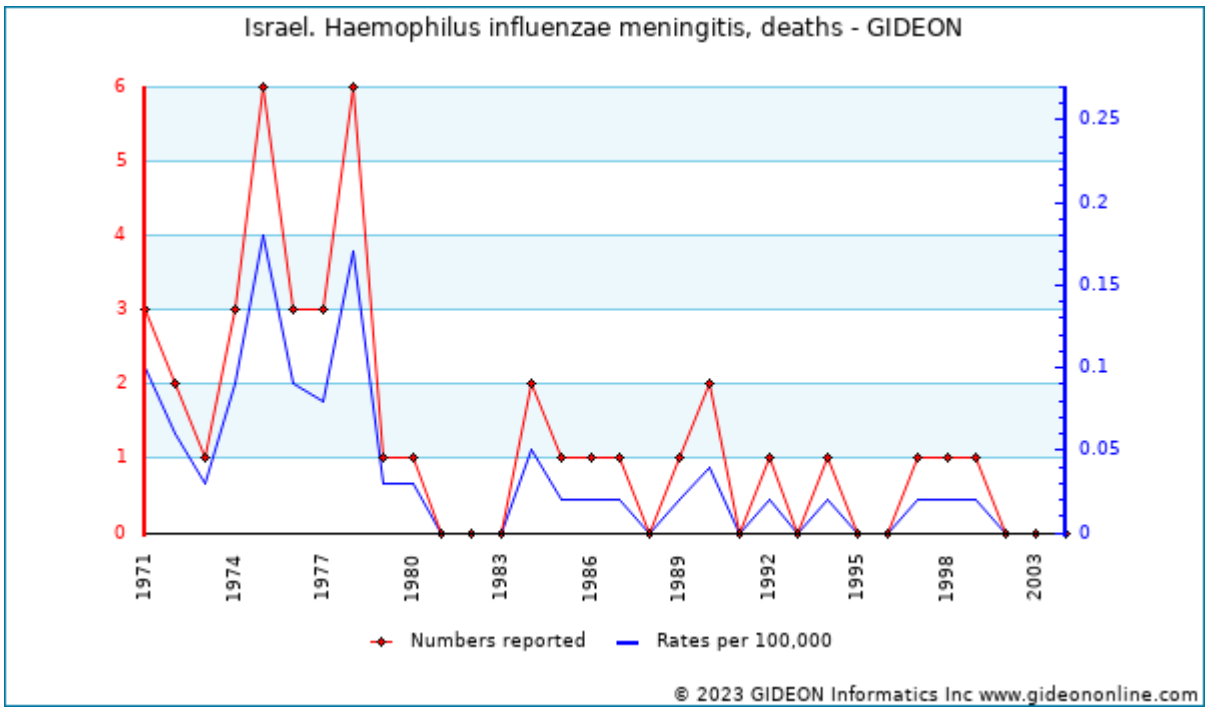
Graph: Israel. Meningitis - bacterial - WHO % Hib3 est. coverage among one-year-olds



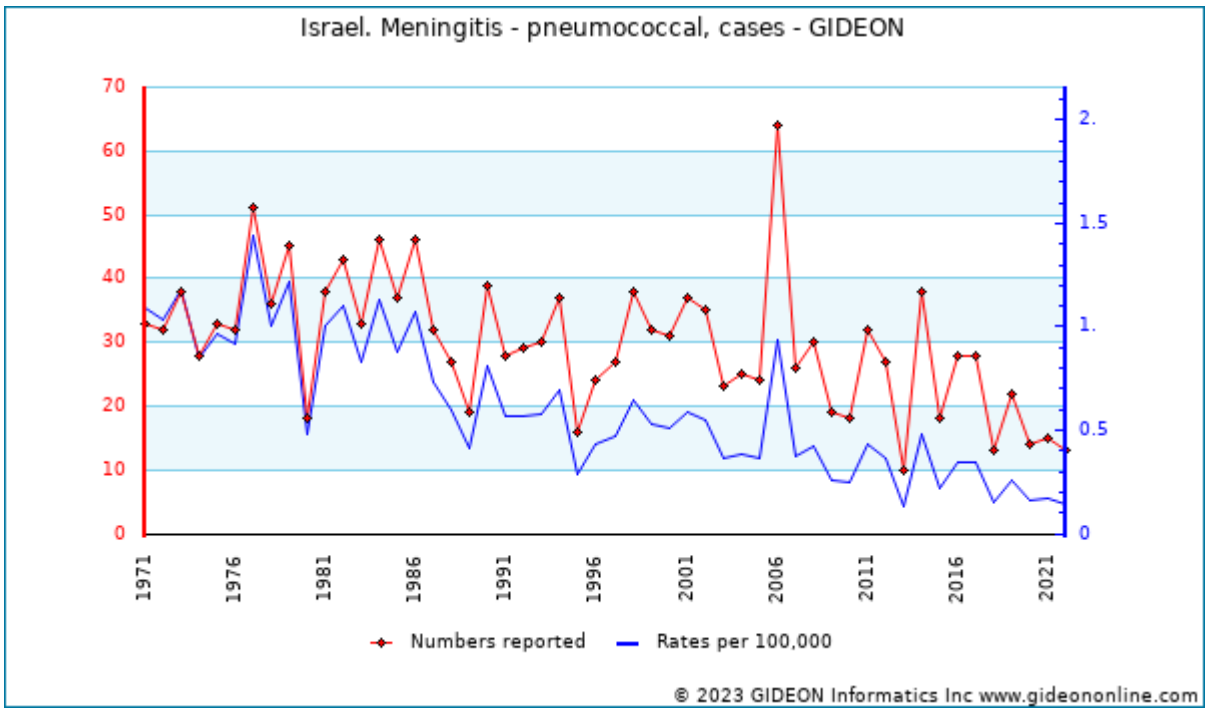
Graph: Israel. Haemophilus influenzae - invasive, cases



Graph: Israel. Haemophilus influenzae meningitis, cases

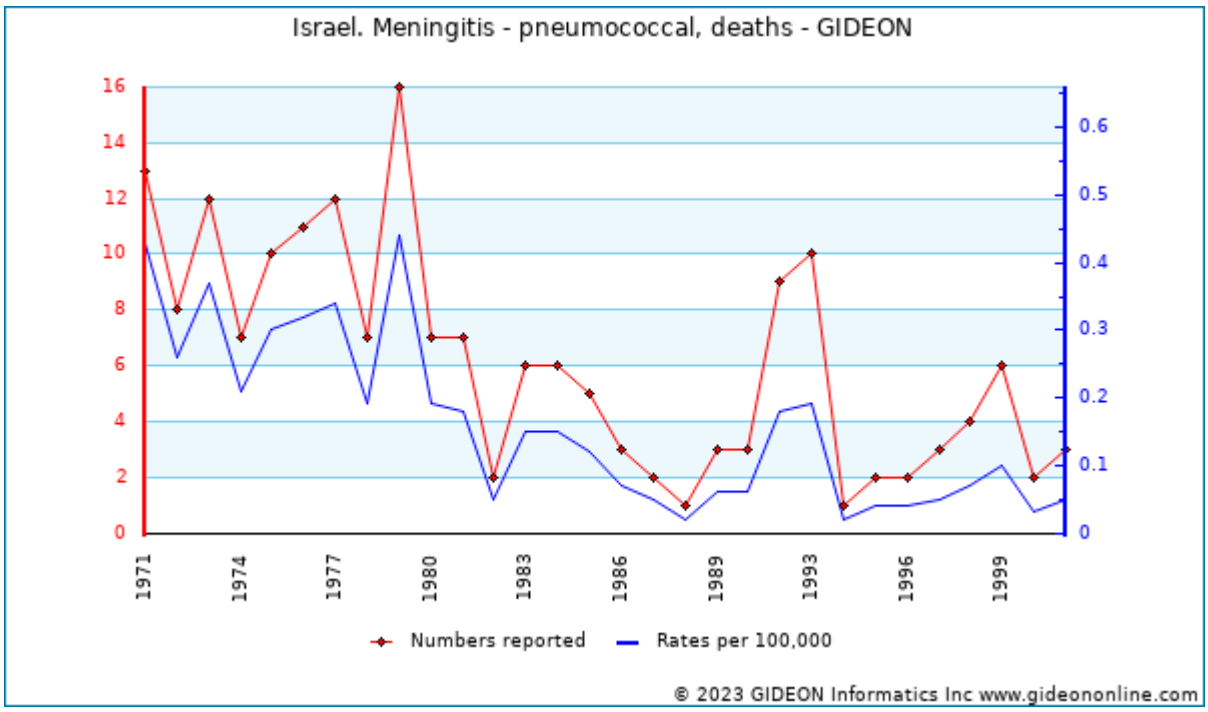


Graph: Israel. Haemophilus influenzae meningitis, deaths



Graph: Israel. Meningitis - pneumococcal, cases

Notes:
1. Pneumococcal meningitis has been a reportable disease since 1971.



Graph: Israel. Meningitis - pneumococcal, deaths

Notable outbreaks

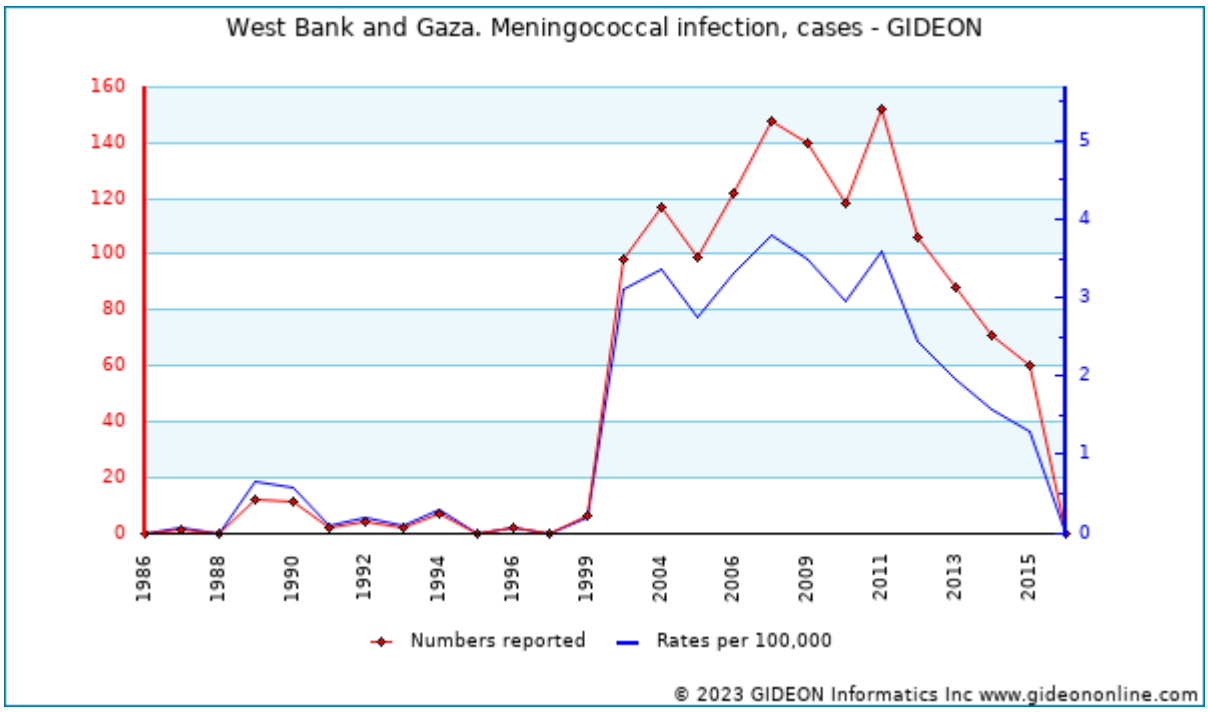
Years	Region	Setting	Cases	Pathogen	Population	Notes
1992 - 1993			8		military personnel	[7] [8]
1996 - 1999	Tamra	village	16	meningococcus group Cmeningococcus		Outbreak in an Israeli Arab village. [9]
2007*	Gaza	day-care center	3	meningococcus group B		Outbreak in Netzarim [10]

***** indicates publication year (not necessarily year of outbreak)

West Bank and Gaza:

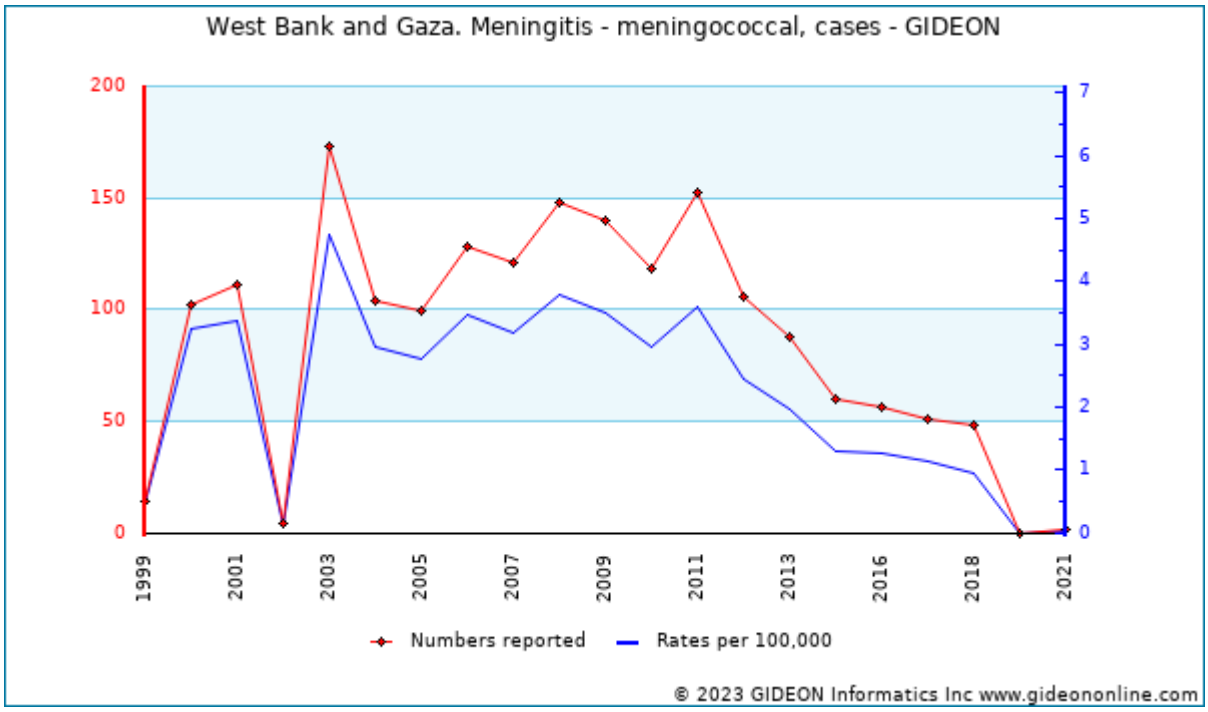
Incidence

- 1996 - 121 cases of "meningitis" were reported in Gaza during January to May
- 1997 - 180 cases of "meningitis" were reported in Gaza during January to May - 54 of these bacterial.
- 1999 - 233 cases of bacterial meningitis (non-meningococcal, non-*Haemophilus influenzae*) were reported in the West Bank and Gaza.
- 2004 - 470 cases (14 fatal) of bacterial meningitis were reported in the West Bank and Gaza.



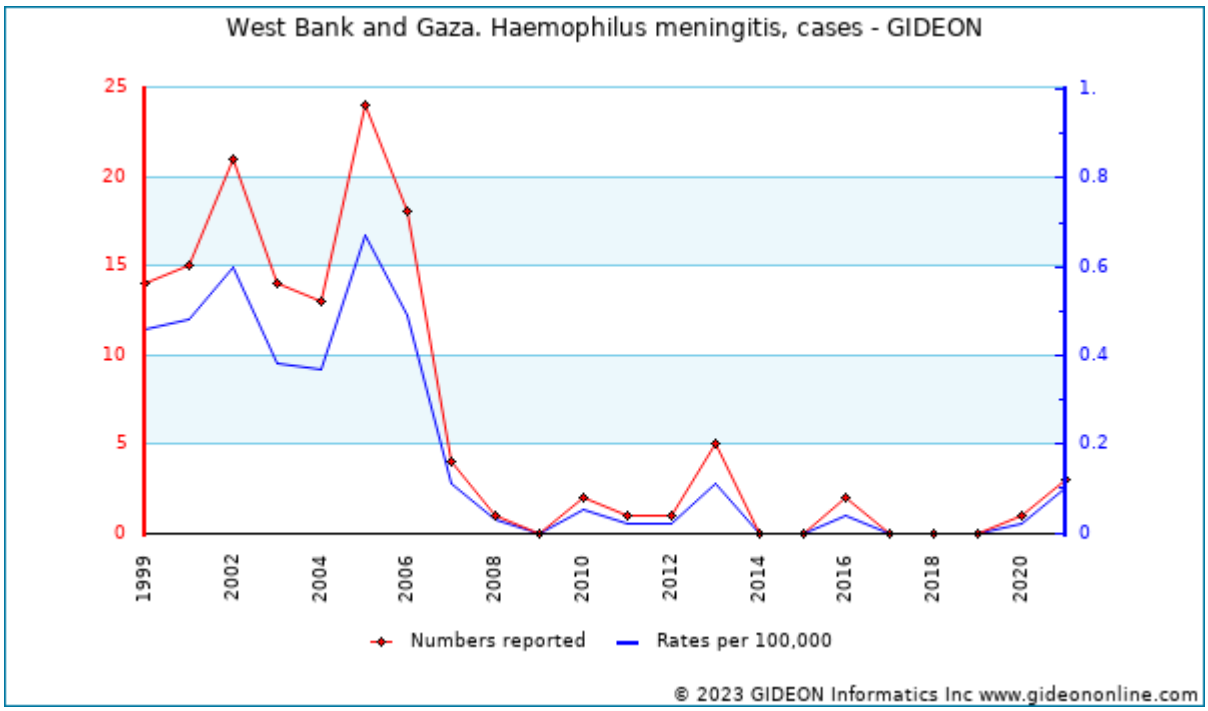
Graph: West Bank and Gaza. Meningococcal infection, cases

Notes:
Individual years:
2011 - 32 cases were reported in Gaza



Graph: West Bank and Gaza. Meningitis - meningococcal, cases

Notes:
1. 2004 - 13 fatal



Graph:

West Bank and Gaza. Haemophilus meningitis, cases

References

1. Prim Care 2018 Sep ;45(3):505-518.
2. 2018 01 ;
3. 2018 01 ;
4. Clin Infect Dis 1993 Jul ;17(1):126-32.
5. Epidemiol Infect 2008 Jun ;136(6):782-9.
6. Diagn Microbiol Infect Dis 2022 Jul 18;104(3):115769.
7. Infection 1994 Mar-Apr;22(2):69-71.
8. Isr J Med Sci 1995 Jan ;31(1):54-8.
9. J Clin Microbiol 2002 Oct ;40(10):3565-71.
10. Clin Microbiol Infect 2007 Sep ;13(9):943-6.

MERS Coronavirus infection

Agent	Virus - RNA. Coronaviridae, Betacoronavirus.
Reservoir	Camel, Human, Bat, Zoonotic
Vector	None
Vehicle	Droplet, Fecal-oral, Respiratory or pharyngeal acquisition
Incubation Period	Mean 5.2 days (range 3d - 15d)
Diagnostic Tests	Identification of virus through PCR and direct immunofluorescence. Serology (ELISA)
Typical Adult Therapy	Isolation (respiratory and other secretions). Supportive.[1]
Typical Pediatric Therapy	Supportive. Isolation (respiratory and other secretions). Preliminary studies suggest that a combination of recombinant interferon beta-1b and lopinavir-ritonavir may be effective.
Clinical Hints	- Exposure in an endemic area or contact with known case - Fever, cough, respiratory difficulty or severe overt pneumonia
Synonyms	Betacoronavirus England 1, HCoV-EMC, Human betacoronavirus 2c EMC, Human betacoronavirus 2c England-Qatar, Human betacoronavirus 2C Jordan-N3, Human coronavirus Erasmus Medical Centre, London1 novel CoV 2012, MERS, Middle East respiratory syndrome, Novel CoV 2012, Novel human coronavirus. ICD9: 079.82 ICD10: U04.9

Although MERS Coronavirus infection is not endemic to Israel, imported, expatriate or other presentations of the disease have been associated with this country.

MERS Coronavirus infection in Israel

Prevalence surveys

Years	Region	Study Group	%	Notes
2015 - 2016	Negev	camels	0	[2]
2012 - 2017	Multiple locations	camelids	0	0% of camelids (nasal swab, PCR) [3]
2012 - 2017		camelids	0	[4]

Seroprevalence surveys

Years	Region	Study Group	%	Notes
2018*	Multiple locations	camels	71.8	71.8% of dromedary camels [5]
2012 - 2017	Multiple locations	camelids	60.6	60.6% of camelids (neutralizing antibody assay) [6]
2012 - 2017		camelids	60.5	Results included 29.4% seropositivity among alpacas and 31.5% among llamas. [7]

* indicates publication year (not necessarily year of survey)

References

1. N Engl J Med 2020 10 22;383(17):1645-1656.
2. ProMED <promedmail.org> archive: 20171105.5425773
3. One Health 2018 Jun ;5:65-68.
4. ProMED <promedmail.org> archive: 20180506.5787312
5. Zoonoses Public Health 2018 May 31;
6. One Health 2018 Jun ;5:65-68.
7. ProMED <promedmail.org> archive: 20180506.5787312

Microsporidiosis

Agent	FUNGUS. Microsporidia: Enterocytozoon, *Encephalitozoon* (*Septata*), *Vittaforma* (*Nosema*), *Pleistophora*,*Trachipleistophora*, et al.
Reservoir	Mammal, Cat, Bat, Rabbit, Rodent, Carnivore, Non-human primate, Fish, Dog, Bird, Zoonotic
Vector	None
Vehicle	Fecal-oral
Incubation Period	Unknown
Diagnostic Tests	Microscopy of duodenal aspirates. Inform laboratory if this organism is suspected. Nucleic acid amplification.
Typical Adult Therapy	Albendazole 400 mg PO BID X 3 weeks. Add Fumagillin for ocular disease S. intestinalis may respond to Albendazole and Fumagillin Nitazoxanide has been used for E. bieneusi.[1]
Typical Pediatric Therapy	Albendazole 200 mg PO BID X 3 weeks. Add Fumagillin for ocular disease S. intestinalis may respond to Albendazole and Fumagillin Nitazoxanide has been used for E. bieneusi.
Clinical Hints	- Self-limited diarrhea, traveler's diarrhea or asymptomatic carriage - Immunocompromised patients present with chronic diarrhea, cholangitis, cholecystitis, sinusitis or pneumonia - Ocular microsporidiosis is associated with keratoconjunctivitis - Hepatitis or myositis are reported in some cases
Synonyms	Anncaliia, Brachiola, Encephalitozoon, Enterocytozoon, Enterocytozoon bieneusi, Microsporidium, Nosema, Pleistophora, Trachipleistophora, Tubulinosema, Vittaforma. ICD9: 136.8 ICD10: A07.8

Microsporidiosis in Israel

Seroprevalence surveys

Years	Region	Study Group	%	Notes
2004*	Multiple locations	horses	60	60% of asymptomatic and 80% of symptomatic horses (*Encephalitozoon cuniculi*, 2004 publication) [2]

***** indicates publication year (not necessarily year of survey)

Notable outbreaks

Years	Region	Setting	Cases	Clinical	Source	Population	Notes
2022	Galilee	lake	29	keratoconjunctivitis	water	swimmers	An outbreak of microsporidial eye infections was reported among persons swimming in the Sea of Galilee

References

1. Drug Resist Updat 2000 Dec ;3(6):384-399.

2. Ann Agric Environ Med 2004 ;11(2):265-7.

Molluscum contagiosum

Agent	VIRUS - DNA. Poxviridae. Molluscipoxvirus. Molluscum contagiosum virus
Reservoir	Human
Vector	None
Vehicle	Contact, Sexual contact, Vertical transmission
Incubation Period	2-7 w (range 14 to 180d)
Diagnostic Tests	Histology of excised material. Nucleic acid amplification
Typical Adult Therapy	Cryotherapy; excision Topical Catharidin and Podophyllotoxin have been used successfully in children[1] [2] [3]
Typical Pediatric Therapy	As for adult
Clinical Hints	- One or more raised, flesh-colored skin lesions with depressed center - Lesions persist for 6 to 12 weeks - Disseminated and indolent forms encountered, particularly in immune-suppressed patients
Synonyms	Water warts. ICD9: 078.0 ICD10: B08.1

Molluscum contagiosum in Israel

1995 to 2014 - 30 cases of peri-ocular molluscum contagiosum were treated at one hospital. [4]

Notable outbreaks

Years	Setting	Cases	Notes
1991*	kibbutz	34	[5]

* indicates publication year (not necessarily year of outbreak)

References

1. J Am Acad Dermatol 2000 Sep ;43(3):503-7.
2. Dermatology 1994 ;189(1):65-8.
3. J Med Chem 2023 Apr 13;66(7):4468-4490.
4. Curr Opin Pediatr 2016 Apr ;28(2):250-7.
5. Infection 1991 May-Jun;19(3):159-61.

Mpox

Agent	VIRUS - DNA. Poxviridae, Orthopoxvirus: Monkeypox virus
Reservoir	Monkey, Squirrel, Rodent, Zoonotic
Vector	None
Vehicle	Contact, Respiratory or pharyngeal acquisition, Sexual (MSM), Needlestick injury
Incubation Period	6d - 13d (range 5d - 21d)
Diagnostic Tests	Biosafety level 2. Viral culture (vesicle fluid, serum). Serology. Nucleic acid amplification.
Typical Adult Therapy	Strict isolation Supportive. Cidofovir Tecovirimat Vaccinia immune globulin and Brincidofovir have been suggested as alternatives in the treatment of mpox (monkeypox). Topical trifluridine has been used to treat ocular infection. Treatment with tecovirimat in gestational cases of mpox may be beneficial. [1] [2] [3] [4] [5] [6] [7] [8] [9] [10]
Typical Pediatric Therapy	As for adult
Vaccine	Smallpox + Mpox vaccine
Clinical Hints	- Vesiculopustular rash and painful lymphadenopathy - Onset 1 to 3 weeks after contact with a squirrel or monkey - Case clusters have involved young males (often MSM or bisexual) - Infection resolves within 2 to 4 weeks - The reported case-fatality rate is 10% to 15%
Synonyms	Monkeypox. ICD9: 057.8 ICD10: B04

Mpox in Israel

- 2022 - Israel reported a case of mpox (monkeypox) on May 19 [11] and a second case on May 27. [12]

Cross-border events

Years	Acquired by**	Originated in**	Setting	Cases	Notes
2018	Israel	Nigeria	foreign workers	1	An Israeli working in Nigeria developed mpox (monkeypox) after returning to Jerusalem, Israel [13] [14] [15] [16]
2022	Israel		travel	2	Two Israeli travelers acquired mpox (monkeypox) in Western Europe [17] [18]

** Country or Nationality

Notable outbreaks

Years	Region	Cases	Notes
2022 - 2023	Nationwide	262	Case count as of January 4, 2023. Between May 16th and September 13, 2022, a total of 203 cases of mpox (monkeypox) were reported in the Tel Aviv District. Local spread of mpox cases was evident a few weeks after the Tel Aviv gay pride parade, and cases peaked approximately 2

Years	Region	Cases	Notes
			months thereafter. Among all cases, 61 (30%) were acquired during trips outside of Israel, mostly in Europe. All cases were men. Among all cases, 195 (96%) cases were among MSM, all of whom had reported having sexual contact as the source of infection in the 3 weeks prior to disease onset. Post-exposure prophylaxis with the MVA- BN vaccine was administered to 12 children and 3 adults who were house contacts of mpox cases. During the gay pride weekend, mass gatherings and parties included anonymous sexual contacts (including tourists) who could not be reached. 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36

References

1. Nature 2006 Feb 09;439(7077):745-8.
2. Antimicrob Agents Chemother 2009 Jun ;53(6):2620-5.
3. Drugs 2022 Jun 28;
4. Antimicrob Agents Chemother 2022 Nov 14;:e0122622.
5. Int J Infect Dis 2022 Dec ;125:135-137.
6. Biomedicines 2023 Jan 19;11(2)
7. MMWR Morb Mortal Wkly Rep 2023 Mar 03;72(9):232-243.
8. J Med Chem 2023 Apr 13;66(7):4468-4490.
9. Infez Med 2023 ;31(2):186-194.
10. ProMED <promedmail.org> archive: 20220526.8703477
11. ProMED <promedmail.org> archive: 20220530.8703569
12. Emerg Infect Dis 2019 May 17;25(5)
13. Microbiol Resour Announc 2020 Mar 05;9(10)
14. J Infect Dis 2020 Sep 03;
15. ProMED <promedmail.org> archive: 20181013.6088822
17. ProMED <promedmail.org> archive: 20220524.8703425
18. ProMED <promedmail.org> archive: 20220530.8703569
19. Int J Infect Dis 2022 Dec 22;
20. ProMED <promedmail.org> archive: 20220607.8703721
21. ProMED <promedmail.org> archive: 20220610.8703793
22. ProMED <promedmail.org> archive: 20220618.8703943
23. ProMED <promedmail.org> archive: 20220622.8704003
24. ProMED <promedmail.org> archive: 20220625.8704069
25. ProMED <promedmail.org> archive: 20220630.8704136
26. ProMED <promedmail.org> archive: 20220704.8704226
27. ProMED <promedmail.org> archive: 20220707.8704281
28. ProMED <promedmail.org> archive: 20220709.8704318
29. ProMED <promedmail.org> archive: 20220712.8704375
30. ProMED <promedmail.org> archive: 20220713.8704398
31. ProMED <promedmail.org> archive: 20220715.8704451
32. ProMED <promedmail.org> archive: 20220718.8704495
33. ProMED <promedmail.org> archive: 20220720.8704536
34. ProMED <promedmail.org> archive: 20220722.8704591
35. ProMED <promedmail.org> archive: 20220729.8704747
36. ProMED <promedmail.org> archive: 20220806.8704878

Mucormycosis

Agent	FUNGUS. Zygomycota, Zygomycetes, Mucorales: *Mucor* spp., *Rhizopus* spp., *Lichtheimia* (formerly *Absidia*) spp, *Saksenaea* spp, et al
Reservoir	Saprophytes
Vector	None
Vehicle	Air, Bandages, Contact, Respiratory or pharyngeal acquisition
Incubation Period	Variable
Diagnostic Tests	Fungal smear and culture.
Typical Adult Therapy	Liposomal Amphotericin B 5 mg/kg/d IV OR Amphotericin B deoxycholate 1 mg/kg/d IV Followed by Posaconazole 300 mg PO BID X 1 day, then 300 mg PO daily OR Isavuconazole 200 mg PO TID X 2 days, then 200 mg PO daily Excision as indicated[1] [2]
Typical Pediatric Therapy	Liposomal Amphotericin B 5 mg/kg/d IV OR Amphotericin B deoxycholate 1 mg/kg/d IV Excision as indicated
Clinical Hints	- Occurs in the setting of preexisting acidosis (diabetes, uremia) - Periorbital pain, sinusitis, and palatal, nasal or cerebral infarcts - Pulmonary infection may complicate leukemia
Synonyms	Absidia, Actinomucor, Apophysomyces, Black fungus, Cokeromyces, Cunninghamella, Hormographiella, Lichtheimia, Mucor, Mycocladus, Phycomycosis, Rhizomucor, Rhizopus, Saksenaea, Syncephalastrum, Zygomycosis. ICD9: 117.7 ICD10: B46

Mucormycosis in Israel

The incidence of zygomycosis in Israel appears to peak during fall and early winter. [3] [4]

2019 (publication year) - Six cases of mucormycosis in lung transplant recipients were treated at an instituion in Petach Tikva. [5]

References

1. Infect Dis Clin North Am 2016 Mar ;30(1):143-63.
2. Lancet Infect Dis 2019 Dec ;19(12):e405-e421.
3. Otolaryngol Head Neck Surg 2002 Jul ;127(1):22-31.
4. Ann Otol Rhinol Laryngol 2005 Sep ;114(9):695-8.
5. Isr Med Assoc J 2015 Jun ;17(6):374-9.

Mumps

Agent	VIRUS - RNA. Mononegavirales Paramyxoviridae, Paramyxovirinae, Rubulavirus: Mumps virus
Reservoir	Human
Vector	None
Vehicle	Aerosol, Respiratory or pharyngeal acquisition
Incubation Period	14d - 24d (range 12d - 24d)
Diagnostic Tests	Viral culture (saliva, urine, CSF) indicated only in complicated cases. Serology. Nucleic acid amplification.
Typical Adult Therapy	Respiratory isolation Supportive
Typical Pediatric Therapy	As for adult
Vaccine	Measles-Mumps-Rubella vaccine Mumps vaccine Rubella - Mumps vaccine
Clinical Hints	- Fever and parotitis - Orchitis (20% of post-pubertal males) - Meningitis (clinically apparent in 1% to 10%) - Oophoritis, or encephalitis (0.1%) - Most cases resolve within 1 to 2 weeks
Synonyms	Bof, Epidemic parotitis, Fiebre urliana, Infectious parotitis, Kusma, Oreillons, Paperas, Parotidite epidemica, Parotiditis, Parotite epidemica, Passjuka. ICD9: 072 ICD10: B26

Mumps in Israel

Vaccine Schedule:

DTaP - 2,4,6,12 months
DTaPHibIPV - 2,4,6,12 months
HPV - 13 years; +6 months
HepA - 18, 24 months
HepB - birth; 1,6 months
IPV - 7 years
MMRV - 12 months; 6 years
OPV - 6,18 months
Pneumo ps - >=65 years
Pneumo-conj - 2,4,12 months
Rotavirus - 2,4,6 months
Td - every 10 years (adults)
TdaP - 13 years
TdaPIPV - 7 years

Israel:

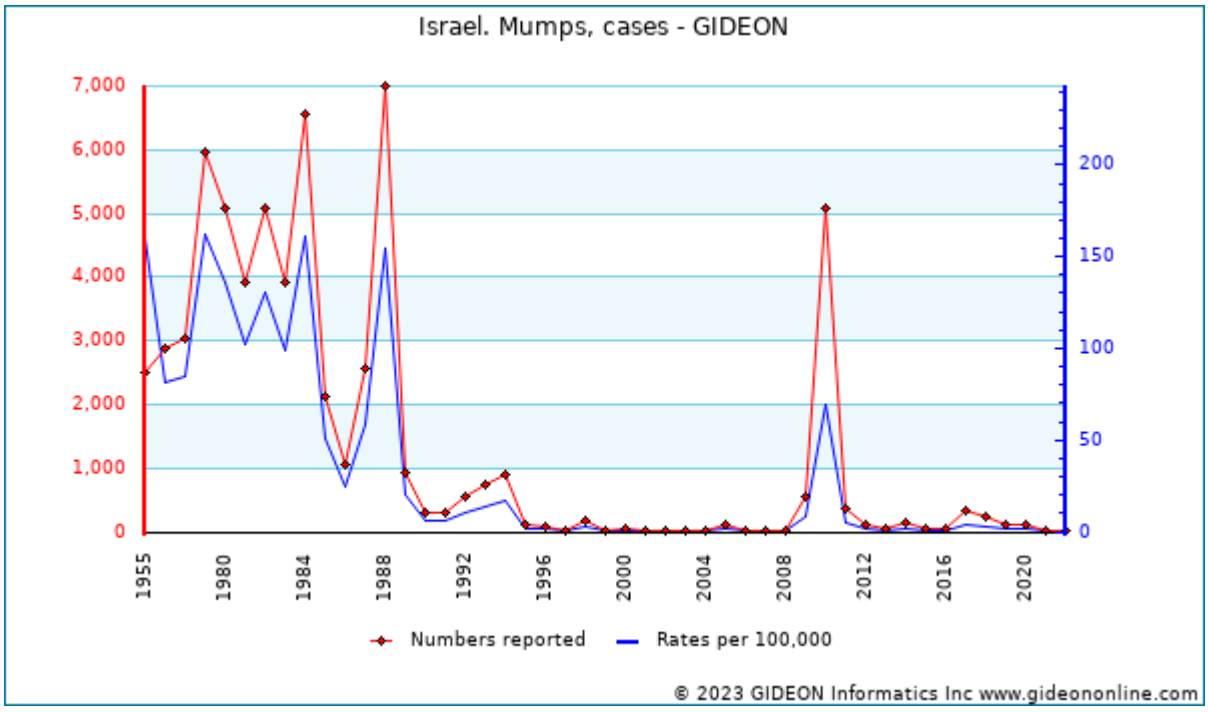
- Mumps vaccine was introduced in 1984, and replaced by MMR in 1988. [1]
- A second dose of MMR was added to the standard regimen in 1994.

Estimated vaccine coverage (%) was 95% in 2003.

Seroprevalence surveys

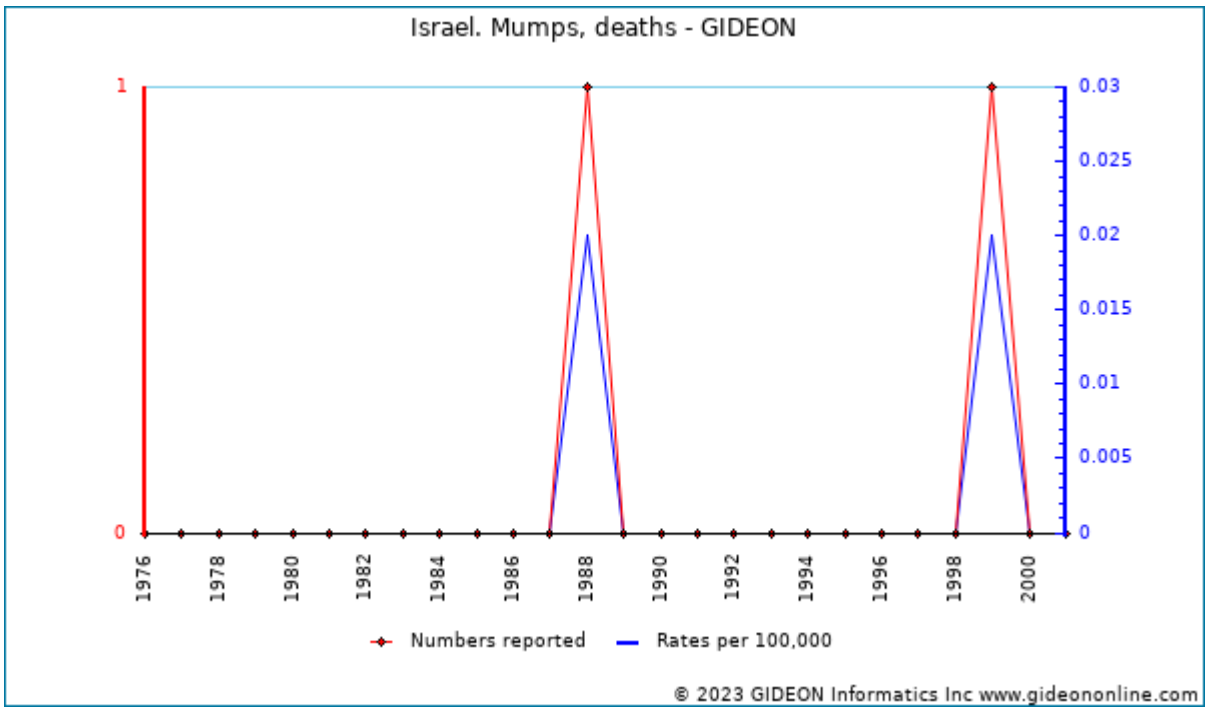
Years	Region	Study Group	%	Notes
1987		military personnel	94.1	94.1% of military recruits in 1987 [2]
1999		military personnel	83.3	83.3% of military recruits in 1999 [3]
1998		women	71.8-96	76.1% of females ages 1 to 4, 80.4% ages 5 to 9, 71.8% ages 10 to 14, 84.0% ages 15 to 19, 88.2% ages 20 to 39, 96.0% ages 40 to 65 (1998)
1997 - 1998	Multiple locations	general population	77	77.0% of the general population (1997 to 1998) [4]
1998		general population	69.9-92.2	69.9% of males ages 1 to 4, 76.5% ages 5 to 9, 70.5% ages 10 to 14, 82.7% ages 15 to 19, 92.2% ages 20 to 39, 94.1% ages 40 to 65 (1998)
2007		general population	83.7	83.7% in 2007 [5]
2007		general population	62.3-87	87.0% / 62.3% of measles seropositives / seronegatives in 2007 [6]
2011*	Jerusalem	general population	51.8-56.5	51.8% of individuals in ultra orthodox communities in Jerusalem and 56.5% and Bnei Brak [7]
2011*	Multiple locations	general population	68.1	68.1% in the general population (2011 publication) in ultra-orthodox communities [8]
2015	Nationwide	general population	84.8	Samples from the Israel National Sera Bank; concordant sero-positivity for both mumps and rubella viruses was observed in 83.9% of the tested samples [9]

* indicates publication year (not necessarily year of survey)



Graph: Israel. Mumps, cases

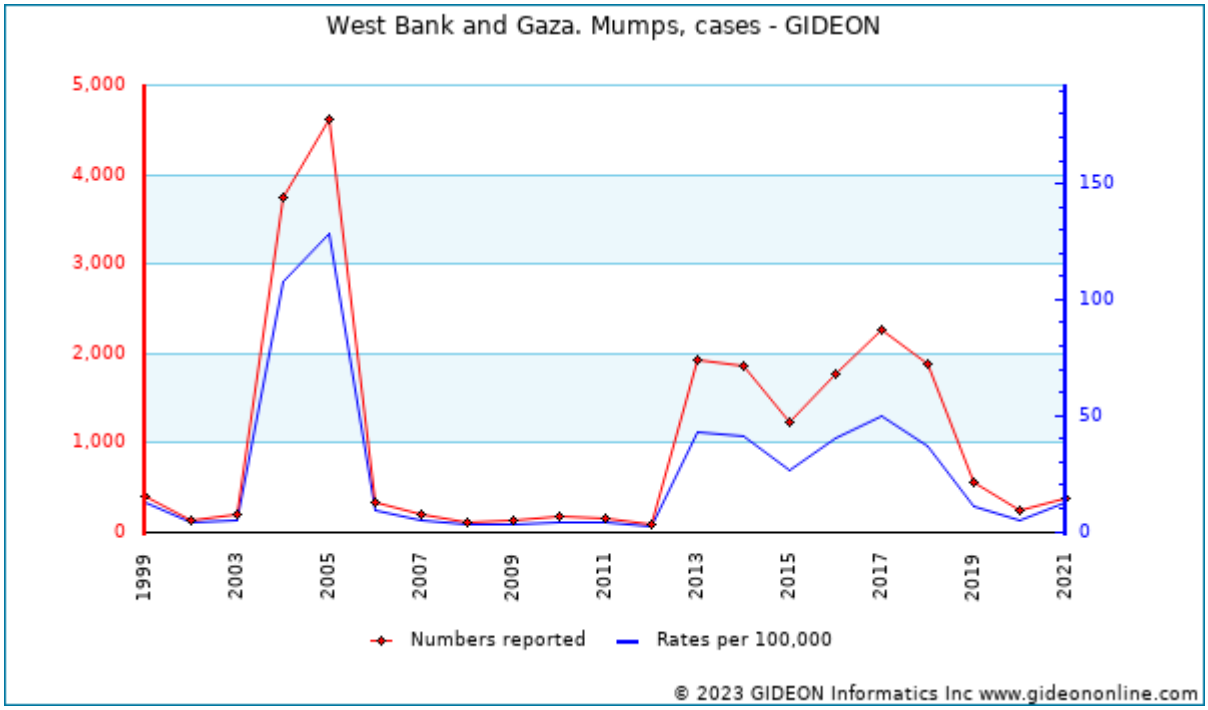
Notes:
1. Mumps has been a reportable disease since 1977.
2. Virtually all patients are between the ages of one and nine.
3. Approximately 60% of cases are reported during March to July.
4. 474 cases of mumps meningitis or encephalitis were reported during 1971 to 1976.
Individual years:
1955 - Reported for Jewish population only.
1974 - The peak reporting year for mumps - 784 per 100,000



Graph: Israel. Mumps, deaths

Notes:
1. 16 fatal cases were reported during 1963 to 1975.

West Bank and Gaza:



Graph: West Bank and Gaza. Mumps, cases

Notes:
Individual years:

2011 - 33 cases were reported in Gaza

Notable outbreaks

Years	Region	Cases	Notes
1987 - 1988			Outbreak reported - additional details unavailable. [10] [11]
2003 - 2005	West Bank	3,871	[12]
2009 - 2010	Multiple locations	5,633	Yeshiva students in Jerusalem accounted for the majority of cases. [13] [14] [15] [16] [17] [18] [19] [20] [21] [22] [23] [24]
2017		262	Case count to August 28 [25]

References

1. Public Health Rev 1990-1991;18(1):88-93.
2. Vaccine 2011 Mar 24;29(15):2785-90.
3. Vaccine 2011 Mar 24;29(15):2785-90.
4. Epidemiol Infect 2008 May ;136(5):688-93.
5. Vaccine 2011 Mar 24;29(15):2785-90.
6. Hum Vaccin Immunother 2015 ;11(6):1400-5.
7. Vaccine 2011 May 17;29(22):3878-82.
8. Vaccine 2011 May 17;29(22):3878-82.
9. Vaccines (Basel) 2022 Jun 22;10(7)
10. Am J Dis Child 1992 Aug ;146(8):930-1.
11. Eur J Pediatr 1995 Sep ;154(9):732-4.
12. J Clin Microbiol 2009 Mar ;47(3):560-5.
13. Euro Surveill 2009 Dec 17;14(50)
14. Vaccine 2011 May 17;29(22):3878-82.
15. Epidemiol Infect 2012 Mar ;140(3):439-46.
16. Hum Vaccin Immunother 2015 ;11(6):1413-7.
17. ProMED <promedmail.org> archive: 20091119.3990
18. ProMED <promedmail.org> archive: 20091120.3996
19. ProMED <promedmail.org> archive: 20100106.0059
20. ProMED <promedmail.org> archive: 20100126.0287
21. ProMED <promedmail.org> archive: 20100517.1609
22. ProMED <promedmail.org> archive: 20100723.2472
23. ProMED <promedmail.org> archive: 20100814.2799
24. ProMED <promedmail.org> archive: 20100816.2838
25. Euro Surveill 2017 Aug 31;22(35)

Myalgic encephalomyelitis

Agent	UNKNOWN
Reservoir	Unknown
Vector	None
Vehicle	Unknown
Incubation Period	Unknown
Diagnostic Tests	Clinical diagnosis; ie, discount other diseases.
Typical Adult Therapy	Supportive; ? immune modulators (experimental)
Typical Pediatric Therapy	As for adult
Clinical Hints	- Unexplained depression, fatigue, cognitive disorders and sleep disturbance - Recurrent bouts of pharyngitis and adenopathy - Rheumatological symptoms and fever persist more than six months
Synonyms	Akureyri disease, Atypical poliomyelitis, Chronic fatigue syndrome, Effort syndrome, Epidemic neuromyasthenia, Fabricula, Iceland disease, Royal Free disease, Systemic exercise intolerance disease, Tapanui disease. ICD9: 780.71 ICD10: G93.3

Myalgic encephalomyelitis in Israel

This was one of only eight countries which specifically reported Chronic Fatigue Syndrome as of 1991. [1]

References

1. Am J Med 1991 Jun ;90(6):730-9.

Mycetoma

Agent	BACTERIUM OR FUNGUS. *Nocardia* spp, *Madurella mycetomatis*, *Actinomadura pellitieri*, *Streptomyces somaliensis*, et al
Reservoir	Soil, Vegetation
Vector	None
Vehicle	Contact, Wound, Soil
Incubation Period	2w - 2y
Diagnostic Tests	Bacterial and fungal culture of material from lesion.
Typical Adult Therapy	Antimicrobial or antifungal agent as determined by culture. Excision as indicated[1] [2] [3]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Most patients are males age 20 to 40 (ie, occupational exposure) - Painless, chronic, draining, fistulous subcutaneous nodule - usually involving lower extremity - Osteolytic lesions may be noted on x-ray - Usually no fever
Synonyms	Actinomadura, Chaetomium atrobrunneum, Coelomycetes, Curvularia lunata, Cyphellophora, Diaporthe, Emarellia, Fusarium chlamydosporum, Fusarium subglutinans, Gloniopsis, Gordonia westfalica, Leptosphaeria tompkinsii, Madura foot, Madura-Fuss, Madurella, Medicopsis, Mycetom, Nigrograna, Paraconiothyrium, Peyronellaea, Pleurostomophora, Trematospheria, White grain eumycetoma. ICD9: 039.4,117.4 ICD10: B47

Mycetoma in Israel

Sporadic imported cases are reported. [4] [5] [6] [7] [8]

- 1942 to 2015 - 21 cases of mycetoma were diagnosed in Israel, including five autochthonous cases. 15 of the patients had immigrated from Yemen, Ethiopia, and Sudan. [9]

Etiology

- 1992 (publication year) - Autochthonous infection by *Madurella mycetomatis* was reported. [10]
- 1988 (publication year) - Autochthonous infection by *Actinomadura madurae* was reported. [11]
- 2009 (publication year) - Eumycetoma caused by *Madurella mycetomatis* was reported in a mare (2009 publication) [12]

References

1. JBI Database System Rev Implement Rep 2018 Jul ;16(7):1519-1536.
2. Cutis 2017 Feb ;99(2):E11-E15.
3. JBI Database System Rev Implement Rep 2016 11 ;14(11):91-98.
4. J Travel Med 2004 Sep-Oct;11(5):331-2.
5. Isr J Med Sci 1986 May ;22(5):397-9.
6. Mycopathologia 1986 Mar ;93(3):185-7.
7. Int J Dermatol 1980 Jun ;19(5):260-2.
8. Isr Med Assoc J 2015 Jul ;17(7):418-20.
9. Am J Trop Med Hyg 2017 Jun ;96(6):1355-1361.
10. Hautarzt 1992 Jul ;43(7):446-7.
11. Mycopathologia 1988 Jul ;103(1):55-7.
12. Med Mycol 2010 Jun ;48(4):639-42.

Mycobacteriosis - M. marinum

Agent	BACTERIUM. Actinomycetes, *Mycobacterium marinum* An aerobic acid-fast bacillus
Reservoir	Fresh and salt water (swimming pools, aquaria), Fish (ornamental, salmon, sturgeon, bass), Zoonotic
Vector	None
Vehicle	Water (per areas of minor skin trauma), Contact
Incubation Period	5d - 270d (median 21d)
Diagnostic Tests	Mycobacterial culture from lesion. Alert laboratory when this organism is suspected.
Typical Adult Therapy	Clarithromycin 500 mg BID X 3-4m AND. OR Rifampin 600 mg/day OR Ethambutol 15 mg/kg/day X 3-4m OR Rifampin 600 mg/d + Ethambutol 15 mg/kg/d X 3-4m OR Minocycline 100 mg /day X 3m OR Sulfamethoxazole / Trimethoprim 160/800 mg BID X 3-4m[1]
Typical Pediatric Therapy	Sulfamethoxazole / Trimethoprim 5 mg-25 mg/kg BID X 6w. Alternative Minocycline (Age >= 8)
Clinical Hints	- Onset weeks after exposure to swimming pool, aquarium, other water source - Violaceous papule, ulcer, plaque, psoriaform lesion - Commonly involves the elbow, knee, hand or foot
Synonyms	Aquarium granuloma, Fish fanciers' finger syndrome, Fish tank granuloma, Mariner's TB, Mycobacterium balnei, Mycobacterium marinum, Mycobacterium scrofulaceum, Spam, Swimming pool granuloma. ICD9: 031.1 ICD10: A31.1

Mycobacteriosis - M. marinum in Israel

Sporadic cases of *Mycobacterium marinum* infection are reported. [2] [3]

1976 - A series (ten cases) was published - most acquired from bathing pools along the Dead Sea. [4]

References

1. Expert Opin Pharmacother 2009 Dec ;10(17):2787-99.
2. J Clin Microbiol 2005 Feb ;43(2):892-5.
3. Harefuah 1974 Nov 01;87(9):413-6.
4. Br J Dermatol 1976 Apr ;94(4):435-42.

Mycobacteriosis - M. scrofulaceum

Agent	BACTERIUM. Actinomycetes, *Mycobacterium scrofulaceum* An aerobic acid-fast bacillus
Reservoir	Water (lakes, rivers), Soil, Raw milk, Plant material
Vector	None
Vehicle	Water, Soil, Areas of minor trauma, Contact
Incubation Period	Unknown
Diagnostic Tests	Culture of tissue or aspirates.
Typical Adult Therapy	Excision. Drugs (Isoniazid - Rifampin - Streptomycin - Cycloserine) are rarely indicated[1] [2] [3]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Most common during early childhood. - Painless lymphadenopathy, most commonly unilateral and submandibular - In contrast, true tuberculosis involves the lower neck and produces a strongly positive tuberculin reaction and/or suggestive chest X ray
Synonyms	ICD9: 017.2 ICD10: A18.4

Mycobacteriosis - M. scrofulaceum in Israel

Sporadic cases of *Mycobacterium scrofulaceum* infection are reported. [4] [5]

References

1. Biomed Res Int 2017 ;2017:1584658.
2. Expert Opin Pharmacother 2012 May ;13(7):967-86.
3. Expert Opin Pharmacother 2009 Dec ;10(17):2787-99.
4. Ann Otol Rhinol Laryngol 1995 May ;104(5):409-12.
5. Clin Infect Dis 2001 Nov 15;33(10):1786-8.

Mycobacteriosis - miscellaneous nontuberculous

Agent	BACTERIUM. Actinomycetes, *Mycobacterium* spp. - over 130 species as of 2016 An aerobic acid-fast bacillus
Reservoir	Water, Soil, Fish, Mammal, Bird, Zoonotic
Vector	None
Vehicle	Air, Water, Milk (*M. bovis*), Contact, Ingestion, Trauma, Respiratory or pharyngeal acquisition
Incubation Period	Variable
Diagnostic Tests	Microscopy & culture of tissue, secretions, blood. Nucleic acid amplification. Inform laboratory if suspected
Typical Adult Therapy	Drug, route and duration appropriate to clinical setting and species (in Drugs module, scroll through upper left box)[1] [2] [3]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Pneumonia, or chronic granulomatous infection of various tissues - Systemic disease may complicate immune suppression - *Mycobacterium avium-intracellulare* infection characterized by aggressive course and resistance to most antimycobacterial drugs
Synonyms	Mycobacterioides abscessus, Mycobacterium abscessus, Mycobacterium avium, Mycobacterium avium-intracellulare, Mycobacterium chimaera, Mycobacterium franklinii, Mycobacterium immunogenum, Mycobacterium jacussii, Mycobacterium kyorinense, Mycobacterium xenopi, Segniliparus. ICD9: 031.9,031.2 ICD10: A31.0,A31.1,A31.8

Mycobacteriosis - miscellaneous nontuberculous in Israel

- 2001 to 2003 - *Mycobacterium simiae* accounted for 40.5% of non-tuberculous mycobacterial infections among cystic fibrosis patients, *M. abscessus* 31.0%, and *M. avium* complex 14.3%. [4]

Notable outbreaks

Years	Region	Setting	Cases	Clinical	Source	Pathogen	Notes
2003		surgery clinic	15			*Mycobacterium jacuzzii*	Outbreak associated with breast implant surgery [5]
2008*	Petah Tikva	pediatric hematology unit	8	bacteremia	water	*Mycobacterium mucogenicum*	Outbreak related to a contaminated faucet [6] [7]

* indicates publication year (not necessarily year of outbreak)

References

1. Semin Respir Crit Care Med 2018 Jun ;39(3):351-361.
2. Biomed Res Int 2017 ;2017:1584658.
3. Expert Opin Pharmacother 2009 Dec ;10(17):2787-99.
4. Emerg Infect Dis 2008 Mar ;14(3):378-84.
5. Clin Infect Dis 2006 Oct 01;43(7):823-30.
6. J Hosp Infect 2008 Nov ;70(3):253-8.
7. Pediatr Infect Dis J 2011 Jan ;30(1):30-2.

Mycoplasma (miscellaneous) infection

Agent	BACTERIUM. Mycoplasmatales *Mycoplasma genitalium*, *Mycoplasma hominis*, *Mycoplasma fermentans*, *Mycoplasma penetrans*, *Mycoplasma parvum*, *Ureaplasma urealyticum* *Spiroplasma* spp.
Reservoir	Human
Vector	None
Vehicle	Secretion, Sexual contact, Respiratory or pharyngeal acquisition
Incubation Period	Unknown
Diagnostic Tests	Culture (urine, pharynx). Serology. Nucleic acid amplification.
Typical Adult Therapy	Azithromycin 1 g PO once OR Moxifloxacin 400 mg PO daily X 7 days OR Doxycycline 100 mg PO BID X 7 days OR Pristinamycin 1 g PO Q6h X 10 days[1] [2]
Typical Pediatric Therapy	Azithromycin 10 mg/kg PO once
Clinical Hints	- Urethritis, vaginitis - Neonatal pneumonia - Rarely stillbirth, prematurity or infertility
Synonyms	Acholeplasma laidlawii, Candidatus Mycoplasma haemohominis, Epirythrozoon, Hemotrophic Mycoplasma, Mycoplasma amphoriforme, Mycoplasma buccale, Mycoplasma faucium, Mycoplasma felis, Mycoplasma fermentans, Mycoplasma genitalium, Mycoplasma hominis, Mycoplasma lipophilum, Mycoplasma orale, Mycoplasma penetrans, Mycoplasma pirum, Mycoplasma primatum, Mycoplasma salivarium, Mycoplasma spermatophilum, Spiroplasma infection, T Mycoplasmas, T strains, Ureaplasma parvum, Ureaplasma urealyticum. ICD9: 041.81 ICD10: A49.3

Mycoplasma (miscellaneous) infection in Israel

Prevalence surveys

Years	Region	Study Group	%	Notes
1991*	Multiple locations	neonates	22	22% of mechanically-ventilated preterm infants (1991 publication) [3]
1991*	Multiple locations	neonates	24	24% of preterm infants had respiratory tract colonization with *Mycoplasma hominis* [4]
1987	Tel Aviv	women	57-65	57% of women attending a methadone clinic were found to carry *Mycoplasma hominis*, 65% *Ureaplasma urealyticum* (1987) [5]
2009	Southern Region	women	5.9-29.4	29.4% of HIV-positive women were found to be infected by *Ureaplasma urealyticum*, and 5.9% by *Mycoplasma hominis* (southern Israel, 2009)
2016 - 2019	Kfar Saba	patients	2.1-39.4	*Ureaplasma parvum* accounted for 39.4% of pathogens identified in women with pelvic inflammatory disease, *Mycoplasma hominis* 17.2%, *Mycoplasma genitalium* 2.1% and *Ureaplasma urealyticum* 15.7% [6]
2006*		sex workers	7-26.8	26.8% of illegal CSW were infected by *Ureaplasma* and 7% *Mycoplasma* (2006 publication) [7]
1988*		patients - STD	0-18.5	18.5% of clinical specimens from patients with urogenital inflammation contained *Ureaplasma urealyticum*, 7.2% *Mycoplasma hominis*, 0.4% Mycoplasma fermentans,

Years	Region	Study Group	%	Notes
				0% *Mycoplasma genitalium* (1988 publication) [8]
1996 - 1998	Haifa	patients - STD	13.2-45.6	45.6% of male STD patients with non-gonococcal urethritis were infected by *Ureaplasma urealyticum* and 13.2% *Mycoplasma hominis* (1996 to 1998) [9]
2006 - 2007	Gaza	patients - STD	1-5	*Mycoplasma hominis* was found in 5% of patients with sterile pyuria in Gaza, *Mycoplasma genitalium* 3% and *Ureaplasma urealyticum* 1% (2006 to 2007) [10]
2008 - 2010	Tel Aviv	patients - STD	2.1-11.9	*Mycoplasma genitalium* was found in 6.6% / 11.9% / 2.1% of male patients / male patients with urethritis / asymptomatic men, in an STD clinic in Tel Aviv (2008 to 2010) [11]
2022*	Northern	patients - STD	1.9	Out of 3,753 assays performed on 2,407 patients screened for STD from a secondary referral hospital and 2 STD clinics in Northern Israel, *Mycoplasma genitalium* was detected in 1.9% of the patients. [12]
2013*	Beer Sheva	patients - HIV / AIDS	29.4	*Ureaplasma urealyticum* was found in 29.4% of HIV-positive women in Beer Sheva (2013 publication) [13]

***** indicates publication year (not necessarily year of survey)

References

1. J Eur Acad Dermatol Venereol 2016 Oct ;30(10):1650-1656.
2. MMWR Recomm Rep 2015 Jun 05;64(RR-03):1-137.
3. Eur J Pediatr 1991 Sep ;150(11):804-7.
4. Eur J Pediatr 1991 Sep ;150(11):804-7.
5. Genitourin Med 1991 Apr ;67(2):133-6.
6. J Gynecol Obstet Hum Reprod 2021 Jun 01;:102176.
7. Sex Health 2006 Dec ;3(4):301-3.
8. Eur J Clin Microbiol Infect Dis 1988 Feb ;7(1):49-51.
9. Isr Med Assoc J 2003 Jan ;5(1):24-7.
10. Adv Med Sci 2008 ;53(1):80-6.
11. Int J STD AIDS 2017 02 ;28(2):127-132.
12. J Low Genit Tract Dis 2022 Nov 30;
13. Harefuah 2013 Apr ;152(4):204-6, 248.

Mycoplasma pneumoniae infection

Agent	BACTERIUM. Mollicutes. *Mycoplasma pneumoniae*
Reservoir	Human
Vector	None
Vehicle	Droplet, Respiratory or pharyngeal acquisition
Incubation Period	6d - 23d
Diagnostic Tests	Culture (sputum, throat). Serology. Nucleic acid amplification (sputum, blood).
Typical Adult Therapy	Azithromycin 500 mg, followed by 250 mg PO daily X 5 days. OR Doxycycline 100 mg PO BID X 7d OR Levofloxacin 750 mg PO X 7 d[1] [2] [3] [4] [5]
Typical Pediatric Therapy	Azithromycin 10 mg/kg PO day 1; 5 mg/kg PO days 2 to 5 OR Erythromycin 10 mg/kg PO QID X 10 d OR Clarithromycin 7.5 mg/kg PO BID X 10 d OR Doxycycline 2 mg/kg PO BID (maximum 200 mg/d) X 10 d
Clinical Hints	- Coryza, "hacking" cough and subsegmental pulmonary infiltrate - Bullous otitis media is often present - Most patients below age 30 - Cold agglutinins neither sensitive nor specific, and appear only during second week
Synonyms	Mycoplasma pneumoniae, Primary atypical pneumonia. ICD9: 041.81,483.0 ICD10: B96.0

Mycoplasma pneumoniae infection in Israel

Prevalence surveys

Years	Region	Study Group	%	Notes
1995*		patients	6.9	Survey of patients with atypical respiratory infections [6]
1997*	Negev	patients	29.2	Patients with community-acquired pneumonia [7]
1998*	Southern Region	patients	11	11% of winter respiratory tract infections in an outpatient setting (1998 publication) [8]
2011*	Northern Region	patients	18.3	18.3% of patients with community-acquired pneumonia in Afula, northern Israel (2011 publication) [9]

* indicates publication year (not necessarily year of survey)

- 2007 to 2017 - 353 children were treated for *Mycoplasma pneumoniae* infection at a hospital in Jerusalem. [10]

Notable outbreaks

Years	Region	Setting	Cases	Population	Notes
1971*					Outbreak reported - additional details unavailable. [11]
1988*		kibbutz	125		Outbreaks on 2 kibbutzim. [12]
2004			41	military trainees	[13]
2010 - 2011	Jerusalem				[14] [15]

Years	Region	Setting	Cases	Population	Notes
2015	Dimona	residential aged care facility	23	adults - elderly	16

* indicates publication year (not necessarily year of outbreak)

References

1. Clin Microbiol Rev 2017 Jul ;30(3):747-809.
2. Clin Respir J 2017 Jul ;11(4):419-429.
3. Cochrane Database Syst Rev 2015 Jan 08;1:CD004875.
4. Infect Dis Rep 2021 Sep 02;13(3):811-820.
5. J Comp Pathol 2022 Jul ;195:34-50.
6. Harefuah 1995 Oct ;129(7-8):229-32, 296.
7. J Infect 1997 Jan ;34(1):41-8.
8. Eur J Clin Microbiol Infect Dis 1998 Oct ;17(10):685-9.
9. Isr Med Assoc J 2010 Aug ;12(8):477-82.
10. Pediatr Infect Dis J 2019 Apr 10;
11. Harefuah 1971 Jan 15;80(2):65-7.
12. Isr J Med Sci 1988 Feb ;24(2):88-92.
13. Clin Infect Dis 2006 Nov 15;43(10):1239-45.
14. Euro Surveill 2012 Feb 23;17(8)
15. ProMED <promedmail.org> archive: 20120226.1053193
16. Front Public Health 2017 ;5:366.

Myiasis

Agent	PARASITE - Insecta (Diptera) larvae
Reservoir	Mammal, Zoonotic
Vector	Arthropod
Vehicle	Fly eggs deposited by biting arthropod
Incubation Period	1w - 3m
Diagnostic Tests	Identification of extracted maggot. Dermatobia hominis larvae: length - 13 to 25 mm Cordylobia anthropophaga larvae: length - 11 to 15 mm
Typical Adult Therapy	Removal of maggot
Typical Pediatric Therapy	As for adult
Clinical Hints	- Fly larvae seen in various body regions - Pruritic or painful draining nodule - Fever and eosinophilia may be present - Instances of brain, eye, middle ear and other deep infestations are described.
Synonyms	Calliphora, Cayor Worm, Chrysomya, Chrysomyia, Clogmia, Cochliomyia, Cordylobia, Cuterebrosis, Dermatobia, Eristalis, Fannia, Furuncular myiasis, Gasterophilus, Hypoderma, Lucilia, Lund's fly, Maggot infestation, Megaselia, Musca, Muscina, Oedemagena, Oestrus, Ophthalmomyiasis, Palpada, Parasarcophaga, Psychoda, Rectal myiasis, Sarcophaga, Screw worm, Telmatoscopus, Urinary myiasis, Vaginal myiasis, Wohlfarthia. ICD9: 134.0 ICD10: B87

Myiasis in Israel

Autochthonous cases of myiasis in humans have been ascribed to *Lucilia* sp. [1] , *Calliphora* sp., *Clogmia albipunctata* [2] , *Eristalis* sp. [3] , *Wohlfahrtia magnifica* [4] , *Sarcophaga* sp. [5] and *Oestrus ovis*. [6] [7]

1999 to 2014 - 90 cases of myiasis were diagnosed among travelers attending post-travel clinics. 54% of these originated from Madidi National Park, Amazonas Basin, Bolivia and 20% from Africa. [8]

Imported cases of furuncular myiasis due to *Dermatobia hominis* [9] , and *Cordylobia anthropophaga* are encountered.

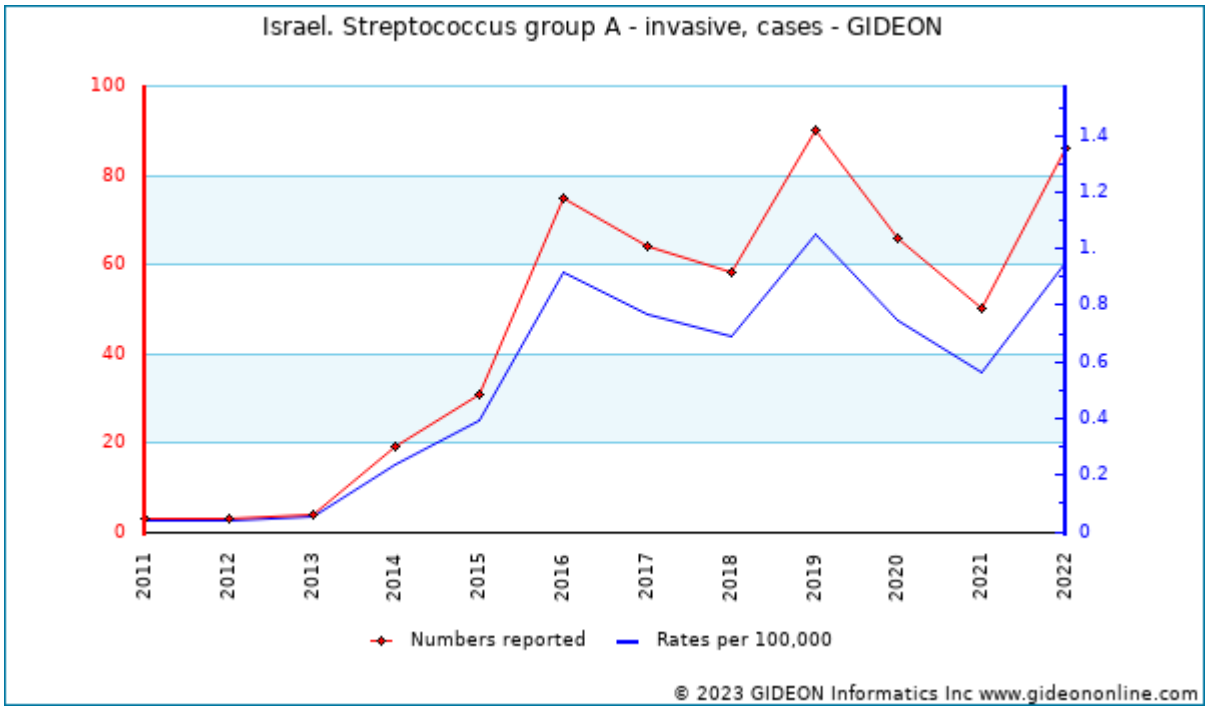
References

1. Pediatr Infect Dis J 1998 Nov ;17(11):1056-7.
2. Bull Soc Pathol Exot 2018 ;111(3):148-151.
3. Nephrol Dial Transplant 1993 ;8(9):874-6.
4. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2007 Jan ;103(1):92-6.
5. J Otolaryngol 1994 Jun ;23(3):204-5.
6. Isr J Med Sci 1989 Mar ;25(3):162-3.
7. Acta Trop 1997 Dec ;68(3):361-3.
8. J Travel Med 2015 Jul-Aug;22(4):232-6.
9. J Travel Med 2002 Mar-Apr;9(2):97-9.

Necrotizing skin/soft tissue infx.

Agent	BACTERIUM. *Streptococcus pyogenes*, *Clostridium perfringens*, mixed anaerobic and/or gram-negative bacilli
Reservoir	Human
Vector	None
Vehicle	Endogenous
Incubation Period	Variable
Diagnostic Tests	Clinical features. Smear and culture (including anaerobic culture) of exudate.
Typical Adult Therapy	Debridement and parenteral antibiotics directed by smear and culture results. Hyperbaric oxygen in more severe infections
Typical Pediatric Therapy	As for adult
Clinical Hints	- At least seven distinct syndromes are described - Local pain and swelling, skin discoloration or edema - Gas formation, foul odor and variable degrees of systemic toxicity
Synonyms	Anaerobic cellulitis, Chancrum oris, Clostridial cellulitis, Clostridium novyi, Fasciitis, Fournier's gangrene, Gangrenous cellulitis, Gangrenous stomatitis, Invasive group A strep. Infections, Meleney's synergistic gangrene, Necrotizing fasciitis, Noma, Streptococcal fasciitis, Synergistic necrotizing cellulitis. ICD9: 686.8,528.1 ICD10: M72.6,A69.0

Necrotizing skin/soft tissue infx. in Israel



Graph: Israel. Streptococcus group A - invasive, cases

Notes:

1. 258 cases of invasive soft tissue infection due to group A streptococci were identified during 1997 to 1998 [1]

- 2008 to 2021 - Among 143,750 deliveries, 66 (0.04%) had pregnancy associated group A *Streptococcus* (GAS) infections. Fifty-seven patients presented postpartum. The most common manifestations in these patients were postpartum pyrexia (72%); abdominal pain (33%); and tachycardia (22%). Streptococcal toxic shock syndrome was observed in 12 women. [2]

References

1. Emerg Infect Dis 2002 Apr ;8(4):421-6.

2. J Matern Fetal Neonatal Med 2023 Dec ;36(1):2196363.

Neutropenic typhlitis

Agent	BACTERIUM. *Clostridium septicum* (occasionally *Clostridium tertium*, *Clostridium sporogenes*, *Paeniclostridium sordellii*, *Clostridium tertium*, or *Candida parapsilosis*)
Reservoir	Human
Vector	None
Vehicle	Endogenous
Incubation Period	Unknown
Diagnostic Tests	Typical findings in the setting of neutropenia. Ultrasonography may be helpful.
Typical Adult Therapy	Broad spectrum antimicrobial coverage, which should include clostridia and *Pseudomonas aeruginosa*; ie Piperacillin / Tazobactam (or Imipenem or Meropenem) OR Cefepime + Metronidazole Role of surgery is controversial[1] [2]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Condition affects neutropenic (leukemic, genetic, etc) patients - Fever, abdominal pain, diarrhea (occasionally bloody) and right lower quadrant signs - Infection may spread hematogenously to the extremities - Case-fatality rate is 50% to 75%
Synonyms	Neutropenic enterocolitis. ICD9: 540.0 ICD10: A04.8

Neutropenic typhlitis in Israel

Sporadic cases are reported. [3] [4]

Prevalence surveys

Years	Region	Study Group	%	Notes
1995 - 2005	Central Region	children	5	5% of children with cancer treated at a single institution in central Israel (1995 to 2005) [5]

References

1. World J Gastroenterol 2017 Jan 07;23(1):42-47.
2. Acta Paediatr 2012 Mar ;101(3):308-12.
3. Bone Marrow Transplant 1992 Jan ;9(1):63-4.
4. Isr Med Assoc J 2002 Feb ;4(2):146-7.
5. J Pediatr Hematol Oncol 2009 Sep ;31(9):630-4.

Nocardiosis

Agent	BACTERIUM. Actinomycetes, *Nocardia* spp. An aerobic gram positive bacillus (acid-fast using special technique)
Reservoir	Soil
Vector	None
Vehicle	Air, Dust, Wound, Contact, Respiratory or pharyngeal acquisition
Incubation Period	Days to weeks
Diagnostic Tests	Culture and gram stain of exudates, sputa, tissue specimens. Advise laboratory when Nocardia suspected.
Typical Adult Therapy	Lymphadenitis or skin / soft tissue: Sulfamethoxazole / Trimethoprim OR Minocycline Pneumonia: Sulfamethoxazole / Trimethoprim + Imipenem; OR Imipenem + Amikacin Brain abscess: Sulfamethoxazole / Trimethoprim + Imipenem; OR Linezolid + Meropenem[1] [2] [3]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Pneumonia, lung abscess, brain abscess, or other chronic suppurative infection - Often occurs in the setting of immune suppression.
Synonyms	Nocardia, Nocardiose. ICD9: 039 ICD10: A43

Nocardiosis in Israel

References

1. Antimicrob Agents Chemother 2014 ;58(2):795-800.
2. Expert Opin Pharmacother 2013 Dec ;14(17):2387-98.
3. Mayo Clin Proc 2012 Apr ;87(4):403-7.
4. Isr J Med Sci 1989 Jun ;25(6):324-7.
5. Am J Med Sci 2012 Apr ;343(4):286-90.
6. Eur J Intern Med 2013 Sep ;24(6):552-7.
7. Sci Rep 2020 Aug 31;10(1):14272.

Onchocerciasis

Agent	PARASITE - Nematoda. Secernentea: *Onchocerca volvulus*
Reservoir	Human
Vector	Black fly (*Simulium* spp.)
Vehicle	None
Incubation Period	12m - 18m
Diagnostic Tests	Identification of microfilariae in skin snips or on ophthalmoscopy. Nucleic acid amplification.
Typical Adult Therapy	Excision of nodules. Ivermectin 150ug/kg PO once. Repeat every 3-6 months Doxycycline 100 mg PO BID for 6 weeks prior to Ivermectin improves cure rate If eye involved, administer corticosteroid for several days prior to ivermectin[1] [2] [3]
Typical Pediatric Therapy	Excision of nodules. Ivermectin 150ug/kg PO once. Repeat every 6 months Age > 8 years: Doxycycline, as for adult
Clinical Hints	- Macular, papular or dyschromic skin lesions - Pruritus is common - Lymphadenopathy and eosinophilia - Keratitis or uveitis - Firm nodules palpable over bony prominences - Adult worms may survive for 15 years in the human host
Synonyms	Aswad, Craw-craw, Erysipelas de la Costa, Flussblindheit, Jur blindness, Lichenified onchodermatitis, Nakalanga syndrome, Nodding syndrome, Onchocerca volvulus, Onchozerkose, River blindness, Robles' disease, Sowda. ICD9: 125.3 ICD10: B73

Although Onchocerciasis is not endemic to Israel, imported, expatriate or other presentations of the disease have been associated with this country.

Onchocerciasis in Israel

Several imported cases have been described, notably among immigrants from the Kuwara highlands of northwestern Ethiopia. [4] [5] [6] [7] [8]

References

1. Med Microbiol Immunol 2008 Sep ;197(3):295-311.
2. Am J Trop Med Hyg 2018 02 ;98(2):382-388.
3. Cochrane Database Syst Rev 2016 Jan 15;(1):CD011146.
4. Isr Med Assoc J 2003 Jul ;5(7):485-8.
5. Harefuah 1998 Jan 01;134(1):31-2, 78.
6. Harefuah 1995 Jan 15;128(2):80-2, 128, 127.
7. Arch Dermatol 1984 Apr ;120(4):505-7.
8. Br J Dermatol 2014 Nov ;171(5):1078-83.

Onchocerciasis - zoonotic

Agent	PARASITE - Nematoda. Secernentea: *Onchocerca lupi*, et. al.
Reservoir	Cattle, Horse, Deer, Boar, Dog, Wolf, Zoonotic
Vector	Black fly (*Simulium* spp.)
Vehicle	None
Incubation Period	Unknown
Diagnostic Tests	Identification of excised worm Moniliformis moniliformis adult female - size unknown; male - 43 to 50 mm
Typical Adult Therapy	Excision
Typical Pediatric Therapy	As of adult
Clinical Hints	- May be history of animal contact - Subcutaneous or subconjunctival nodule, or eye-worm
Synonyms	Dipetalonema arbuta, Dipetalonema sprenti, Onchocerca cervicalis, Onchocerca dewittei, Onchocerca guttarosa, Onchocerca jakutensis, Onchocerca japonica, Onchocerca lupi, Onchocerca retuculata, Pelecitus. ICD9: 123.8 ICD10: B71.1.

Opisthorchiasis

Agent	PARASITE - Platyhelminthes, Trematoda. Plagiorchiida, Opisthorchiidae: *Opisthorchis felineus*, *O. guayaquilensis*, *O. viverrini*
Reservoir	Cat, Civet, Dog, Fish-eating mammal, Snail (*Bythinia*), Zoonotic
Vector	None
Vehicle	Fresh-water fish
Incubation Period	21d - 28d (range 7d - years)
Diagnostic Tests	Identification of ova in stool or duodenal aspirate. PCR examination of stool.
Typical Adult Therapy	Praziquantel 25 mg/kg TID X 2d[1] [2] [3]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Initial symptoms appear 3 to 4 weeks after ingestion of undercooked fresh-water fish - Right upper quadrant abdominal pain, hepatomegaly, cholangitis and eosinophilia - Chronic infection is associated with development of cholangiocarcinoma
Synonyms	Amphimerus, Cat liver fluke, Centrocestus, Opisthorchis, Opisthorchis felenius, Opisthorchis guayaquilensis, Opisthorchis viverrini, Siberian river fluke. ICD9: 121.0 ICD10: B66.0

Although Opisthorchiasis is not endemic to Israel, imported, expatriate or other presentations of the disease have been associated with this country.

Opisthorchiasis in Israel

Cross-border events

Does not include individual case reports

Years	Acquired by**	Originated in**	Setting	Cases	Notes
2004*	Israel	Russian Federation	imported goods	4	An outbreak (4 cases, two symptomatic) in Israel was caused by ingestion of contaminated carp imported from Siberia. [4]

* indicates publication year (not necessarily year of event)
** Country or Nationality

Prevalence surveys

Years	Study Group	%	Notes
1994*	foreign workers	51.6	51.6% of Thai workers in Israel (*Opisthorchis viverrini*, 1994 publication) [5]

* indicates publication year (not necessarily year of survey)

Notable outbreaks

Years	Region	Cases	Source	Notes
2004*	Holon	4	seafood - fish	Outbreak associated with contaminated carp imported from Siberia [6]

* indicates publication year (not necessarily year of outbreak)

References

1. PLoS Negl Trop Dis 2012 ;6(7):e1726.
2. Infect Chemother 2013 Mar ;45(1):32-43.
3. Arzneimittelforschung 1984 ;34(9B):1127-9.
4. Emerg Infect Dis 2004 Dec ;10(12):2122-6.
5. Harefuah 1994 May 01;126(9):507-9, 563.
6. Emerg Infect Dis 2004 Dec ;10(12):2122-6.

Orbital and eye infection

Agent	BACTERIUM OR FUNGUS. *Streptococcus pyogenes*, oral anaerobes, *Aspergillus* spp., facultative gram-negative bacilli, et al
Reservoir	Endogenous, Introduced flora (trauma, surgery)
Vector	None
Vehicle	Trauma, Surgery, Contiguous (sinusitis), Hematogenous
Incubation Period	Variable
Diagnostic Tests	Imaging techniques (CT or MRI). Culture of aspirates or surgical material.
Typical Adult Therapy	Local and systemic antimicrobial agents appropriate for species and severity[1] [2] [3]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Proptosis, chemosis, extraocular palsy, or hypopyon - Associated with sinusitis, bacteremia, eye trauma or surgery - Infection may involve the eye (endophthalmitis); periosteum (periorbital infection); orbit (orbital cellulitis); or multiple structures (panophthalmitis).
Synonyms	Bacterial keratitis, Ceratite, Cheratite, Endophthalmitis, Eye infection, Keratite, Keratitis, Orbital infection, Panopthalmitis, Queratitis. ICD9: 360.0 ICD10: H05.0

Orbital and eye infection in Israel

2011 (publication year) - *Pythium insidiosum* keratitis was reported in an Israeli contact lens user. [4]

Cases of amebic keratitis have been reported. [5]

Notable outbreaks

Years	Region	Setting	Cases	Clinical	Pathogen	Population	Notes
1937 - 1938	Multiple locations			keratoconjunctivitis			[6]
1974*		kibbutz		pharyngoconjunctivitis	multiple pathogens		Outbreak associated with Adenovirus types 2 and 7 [7]
1993*		neonatal intensive care unit		conjunctivitis	Adenovirus 8		[8]
1994				conjunctivitis - acute hemorrhagic	Enterovirus 70		[9]
2010		residential facility	8		Adenovirus 7	handicapped	Outbreak among disabled children in a residential facility [10]
2016*					Adenovirus 55		[11]

* indicates publication year (not necessarily year of outbreak)

Prevalence surveys

Years	Region	Study Group	%	Notes
2023*	Jerusalem	transplant recipients	16.7	A retrospective, interventional case series of 88 donor corneoscleral buttons (CSBs) collected from the conjunctiva, iris, and endothelium was done. Transplanted eyes were evaluated and followed up. Herpes simplex virus (HSV)-1 DNA was detected in 5 (5.7%) of 88 CSBs. Herpes simplex virus (HSV)-2 was not detected in any CSB, and varicella-zoster virus (VZV) was found in 1 (1.2%) of the 82 examined CSBs. Among the 6 exposed recipients, 1 (16.7%) developed dendritic epitheliopathy and keratouveitis typical of HSV

Years	Region	Study Group	%	Notes
				12 months after transplantation. The graft remained clear after treatment. One cornea was used for a tectonic graft and stayed edematous at the 20-month follow-up. The remaining corneas remained clear. [12]

* indicates publication year (not necessarily year of survey)

References

1. 2018 01 ;
2. Pharmaceutics 2018 May 29;10(2)
3. Clin Microbiol Rev 2017 07 ;30(3):597-613.
4. Eye Contact Lens 2011 Mar ;37(2):96-8.
5. Harefuah 2006 Mar ;145(3):194-8, 246.
6. Br J Ophthalmol 1945 Aug ;29(8):389-406.
7. Isr J Med Sci 1974 Dec ;10(12):1505-9.
8. Arch Dis Child 1993 May ;68(5 Spec No):610-1.
9. J Clin Microbiol 1997 Aug ;35(8):2145-9.
10. Pediatr Infect Dis J 2011 Nov ;30(11):948-52.
11. J Clin Virol 2016 May ;78:31-5.
12. Cornea 2023 Apr 01;42(4):412-415.

Orf

Agent	VIRUS - DNA. Poxviridae, Parapoxvirus: Orf virus
Reservoir	Sheep, Goat, Reindeer, Musk ox, Zoonotic
Vector	None
Vehicle	Contact, Secretions, Fomite, Cat-scratch
Incubation Period	3d - 6d (range 2d - 7d)
Diagnostic Tests	Biosafety level 3. Viral culture (skin lesion or exudate). Serology. Nucleic acid amplification.
Typical Adult Therapy	Skin / lesion contact precautions Supportive[1]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Skin pustule or ulcer following contact with sheep or goats - Most lesions are limited to finger or hand - Heals without scarring within 6 weeks
Synonyms	Contagious ecthyma, Contagious pustular dermatitis, Ecthyma contagiosum, Ovine pustular dermatitis, Scabby mouth. ICD9: 078.89 ICD10: B08.0

Orf in Israel

Sporadic cases are reported in humans [2] [3] and animals. [4] [5] [6]

Notable outbreaks

Years	Notes
2001*	[7]

* indicates publication year (not necessarily year of outbreak)

References

1. J Med Chem 2023 Apr 13;66(7):4468-4490.
2. Isr J Med Sci 1988 Jan ;24(1):54-6.
3. Arch Dermatol 1993 Aug ;129(8):1043, 1046.
4. J Vet Intern Med 2002 May-Jun;16(3):287-92.
5. Vet J 2000 Jul ;160(1):74-6.
6. J Wildl Dis 1994 Apr ;30(2):260-2.
7. Vet Rec 2001 Feb 03;148(5):150-1.

Ornithosis

Agent	BACTERIUM. Chlamydiaceae, Chlamydiae, *Chlamydia* (*Chlamydophila*) *psittaci*
Reservoir	Parakeet, Parrot, Pigeon, Turkey, Duck, Cat, Sheep, Goat, Cattle, Dog, Zoonotic
Vector	None
Vehicle	Bird droppings, Dust, Air, Aerosol from cat, Respiratory or pharyngeal acquisition
Incubation Period	7d - 14d (range 4d - 28d)
Diagnostic Tests	Serology. Culture (available in special laboratories) rarely indicated.
Typical Adult Therapy	Doxycycline 100 mg PO BID X 10d. OR Azithromycin 1 g, then 0.5 g daily X 4 days OR Clarithromycin 0.5 g BID OR Erythromycin 500 mg PO QID X 10d. OR Levofloxacin 750 mg PO X 7 days[1] [2] [3]
Typical Pediatric Therapy	Azithromycin 10 mg/kg PO day 1; 5 mg/kg PO days 2 to 5 OR Erythromycin 10 mg/kg QID X 10d Alternative (Age >=8 years): Doxycycline 100 mg PO BID X 10d.
Clinical Hints	- Headache, myalgia and pneumonia - Relative bradycardia is common - Hepatomegaly or splenomegaly common - Onset 1 to 4 weeks following contact with pigeons, psittacine birds or domestic fowl - Case-fatality rate without treatment is 20%
Synonyms	Chlamydia abortus, Chlamydia gallinacea, Chlamydia pecorum, Chlamydophila abortus, Chlamydophila psittaci, Ornitose, Papegojsjuka, Parrot fever, Psitacosis, Psittacosis, Psittakose. ICD9: 073 ICD10: A70

Ornithosis in Israel

99 cases were reported during 1976 to 1983; 37 in 1987.

Notable outbreaks

Years	Cases	Notes
1988*	30	Outbreaks in eight families related to contact with two sick birds [4] [5]

***** indicates publication year (not necessarily year of outbreak)

References

1. Infect Dis Clin North Am 2010 Mar ;24(1):7-25.
2. Clin Microbiol Infect 2009 Jan ;15(1):11-7.
3. Semin Respir Infect 1997 Mar ;12(1):7-11.
4. Lancet 1988 Sep 10;2(8611):615-8.
5. Isr J Med Sci 1992 Oct ;28(10):739-41.

Osteomyelitis

Agent	BACTERIUM OR FUNGUS. *Staphylococcus aureus*, facultative gram-negative bacilli, *Candida albicans*, etc
Reservoir	Endogenous
Vector	None
Vehicle	Trauma, Surgery, Hematogenous
Incubation Period	Variable
Diagnostic Tests	Radiography, including bone scan. Culture of biopsy material.
Typical Adult Therapy	Systemic antimicrobial agent(s) appropriate to known or suspected pathogen. Surgery as indicated[1] [2]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Limb pain or gait disturbance, often associated with obscure fever - May be preceded by infection of skin, soft tissues or joint; or result from bacteremia - X-ray changes are not apparent for at least 10 days in acute infection
Synonyms	Osteomielite, Osteomielitis, Osteomyelite, Paravertebral abscess. ICD9: 015,730.9 ICD10: M86

References

1. Rev Recent Clin Trials 2017 ;12(4):260-268.
2. Infect Dis Clin North Am 2017 06 ;31(2):325-338.

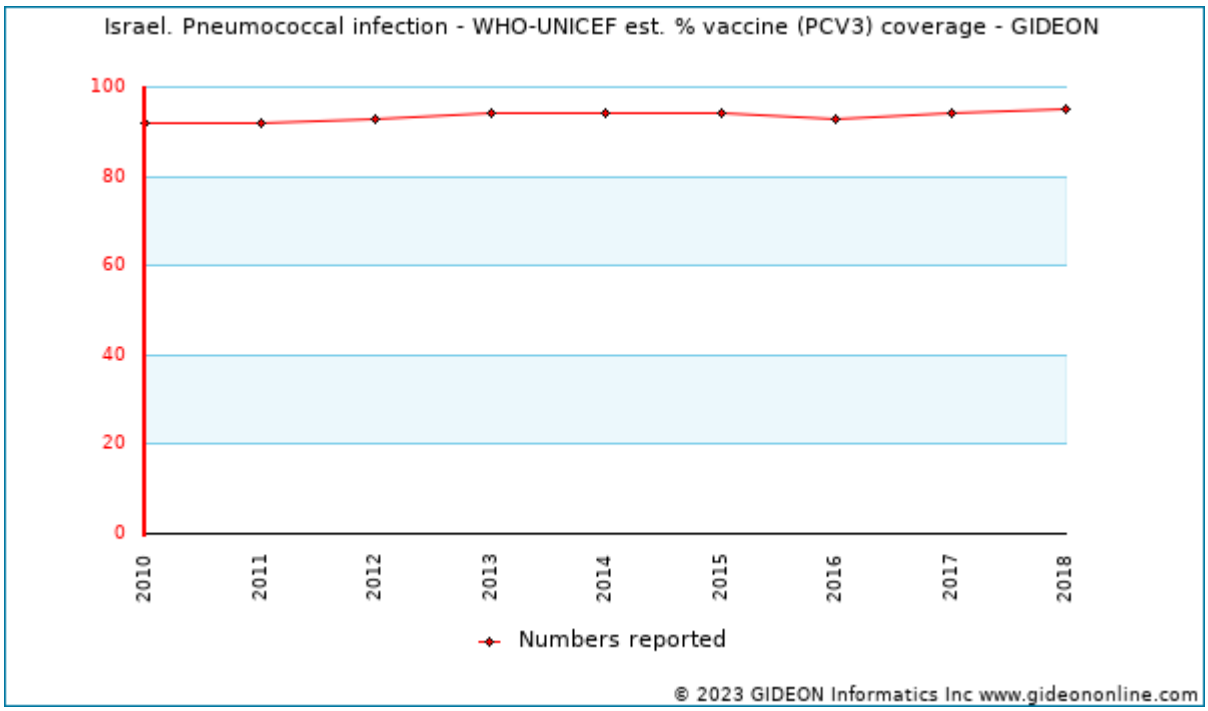
Otitis media

Agent	BACTERIUM OR VIRUS. *Haemophilus influenzae* & *Streptococcus pneumoniae* in most acute cases; RSV, parainfluenza, *Moraxella. catarrhalis* in acute cases of children, et al
Reservoir	Human
Vector	None
Vehicle	None
Incubation Period	Variable
Diagnostic Tests	Clinical findings. Culture of middle ear fluid if available.
Typical Adult Therapy	If evidence of bacterial infection (severe otalgia >48 hours / fever >39 C): Amoxicillin / Clavulanate 1,000/62.5 mg BID X 3 days Alternatives: Cefdinir, Cefpodoxime, Cefprozil, fluoroquinolone[1] [2] [3] [4]
Typical Pediatric Therapy	If evidence of bacterial infection (severe otalgia >48 hours / fever >39 C): Amoxicillin / Clavulanate 45/3.2 mg/kg BID X 3 days
Vaccine	Pneumococcal conjugate vaccine
Clinical Hints	- Acute bacterial otitis media often represents the final stage in a complex of anatomic, allergic or viral disorders of the upper airways - Recurrent or resistant infections may require surgical intervention.
Synonyms	Otitis media aguda. ICD9: 382.0 ICD10: H65,H66

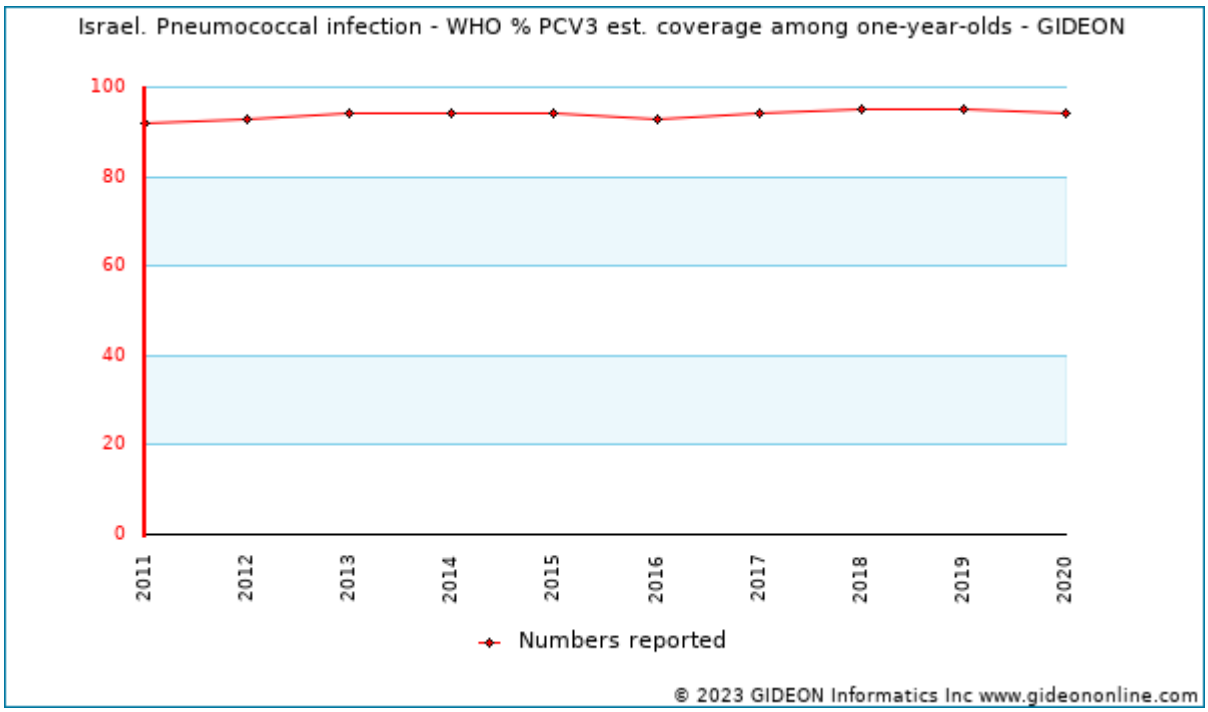
Otitis media in Israel

Vaccine Schedule:

DTaP - 2,4,6,12 months
DTaPHibIPV - 2,4,6,12 months
HPV - 13 years; +6 months
HepA - 18, 24 months
HepB - birth; 1,6 months
IPV - 7 years
MMRV - 12 months; 6 years
OPV - 6,18 months
Pneumo ps - >=65 years
Pneumo-conj - 2,4,12 months
Rotavirus - 2,4,6 months
Td - every 10 years (adults)
TdaP - 13 years
TdaPIPV - 7 years



Graph: Israel. Pneumococcal infection - WHO-UNICEF est. % vaccine (PCV3) coverage



Graph: Israel. Pneumococcal infection - WHO % PCV3 est. coverage among one-year-olds

References

1. J Med Microbiol 2018 Oct ;67(10):1417-1425.
2. BMJ Open 2018 Jun 08;8(6):e021133.
3. Pediatr Clin North Am 2018 02 ;65(1):105-123.
4. 2018 01 ;
5. Isr Med Assoc J 2023 Jan ;25(1):42-46.

Paragonimiasis

Agent	PARASITE - Platyhelminthes, Trematoda. *Paragonimus westermani*, *P. heterotremus*, *P. skrjabini*, *P. miyazakii*, *P. africanus*, et al.
Reservoir	Human, Dog, Cat, Pig, Wild carnivore, Deer, Snail (*Semisulcospira*, *Thiara*), Zoonotic
Vector	None
Vehicle	Fresh-water crab (at least 8 species), Crayfish (*Cambaroides*), raw meat (venison)
Incubation Period	6w - 6m
Diagnostic Tests	Identification of ova in sputum or stool. Serologic and skin tests are available.
Typical Adult Therapy	Praziquantel 25 mg/kg TID X 3d. OR Triclabendazole 10 mg/kg/d X 2d OR Bithionol 30-50 mg/kg/d on alternating days X 3-4 weeks[1] [2] [3]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Pulmonary infection with bloody or "rusty" sputum - Meningitis or seizures - Eosinophilia - Subcutaneous nodules in some cases - Parasite may survive for decades in the human host
Synonyms	Alaria, Endemic hemoptysis, Lung fluke, Oriental lung fluke, Paragonimus, Poikilorchis, Pulmonary distomiasis. ICD9: 121.2 ICD10: B66.4

Although Paragonimiasis is not endemic to Israel, imported, expatriate or other presentations of the disease have been associated with this country.

Paragonimiasis in Israel

Cross-border events

Years	Acquired by**	Originated in**	Setting	Cases	Notes
1994*	Israel	Thailand	foreign workers	1	[4]

* indicates publication year (not necessarily year of event)
** Country or Nationality

1997 (publication year) - *Paragonimus kellicotti* infection has been reported in a dog. [5]

Prevalence surveys

Years	Study Group	%	Notes
1994*	foreign workers	1	1% of Thai workers in Israel (1994 publication) [6]

* indicates publication year (not necessarily year of survey)

References

1. Infect Chemother 2013 Mar ;45(1):32-43.
2. Infect Dis Clin North Am 2012 Jun ;26(2):399-419.
3. Clin Microbiol Rev 2009 Jul ;22(3):466-83.
4. Harefuah 1994 May 01;126(9):507-9, 563.
5. Vet Parasitol 1997 Jul 15;71(1):59-63.
6. Harefuah 1994 May 01;126(9):507-9, 563.

Parainfluenza virus infection

Agent	VIRUS - RNA. Paramyxoviridae: Respirovirus - Human Parainfluenza virus 1 and 3. Rubulavirus - Human Parainfluenza virus 2 and 4.
Reservoir	Human
Vector	None
Vehicle	Droplet, Respiratory or pharyngeal acquisition
Incubation Period	3d - 8d
Diagnostic Tests	Viral culture (respiratory secretions). Serology. Nucleic acid amplification.
Typical Adult Therapy	Respiratory precautions Supportive
Typical Pediatric Therapy	As for adult
Clinical Hints	- Upper respiratory infection - often croup or laryngitis - Most common during infancy - Older children develop a "cold-like" illness - Complicated by pneumonia in 7% to 17% of cases
Synonyms	Human respirovirus, Human rubulavirus, Parainfluenza, Respirovirus, Rubulavirus, Sendai. ICD9: 078.89,480.2 ICD10: J12.2

Parainfluenza virus infection in Israel

Prevalence surveys

Years	Region	Study Group	%	Notes
2004 - 2006	Beer Sheva	patients	1.1	1.1% of patients hospitalized with lower respiratory tract infections (Beer Sheva, winter seasons, 2004 to 2006) [1]
2011*	Northern Region	patients	10.3	10.3% of patients with community-acquired pneumonia in Afula, northern Israel (2011 publication) [2]
2001 - 2011	Southern Region	children - respiratory	7	7.0% of children below age 5 years with community-acquired pneumonia admitted to a Pediatric Intensive Care unit [3]
2009*	Beer Sheva	children - respiratory	2.9	2.9% of children below age 5 years with community-acquired alveolar pneumonia (Beer Sheva, 2009 publication) [4]

* indicates publication year (not necessarily year of survey)

Notable outbreaks

Years	Region	Setting	Pathogen	Notes
2012*	Beer Sheva	neonatal nursery	Parainfluenza type 3	[5]

* indicates publication year (not necessarily year of outbreak)

References

1. J Clin Microbiol 2009 Nov ;47(11):3439-43.
2. Isr Med Assoc J 2010 Aug ;12(8):477-82.
3. Pediatr Neonatol 2020 Apr 10;
4. J Pediatr 2010 Jan ;156(1):115-20.
5. Clin Pediatr (Phila) 2013 Sep ;52(9):866-70.

Parvovirus B19 infection

Agent	VIRUS - DNA. Parvoviridae, Parvovirinae: Erythrovirus B19
Reservoir	Human
Vector	None
Vehicle	Droplet, Breastfeeding, Respiratory or pharyngeal acquisition
Incubation Period	4d - 14d (range 3d - 21d)
Diagnostic Tests	Serology. Nucleic acid amplification (testing should be reserved for the rare instance of complicated infection).
Typical Adult Therapy	Supportive[1]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Erythema infectiosum (erythema of cheeks; lacelike or morbilliform rash on extremities) - Febrile polyarthralgia - Bone marrow aplasia/hypoplasia may be present
Synonyms	Duke's disease, Erythema infantum febrile, Erythema infectiosum, Erythema simplex marginatum, Erythrovirus B19, Fifth disease, Fourth disease, Funfte Krankheit, Parascarlatina, Parvovirus 4, Parvovirus B19, Sticker's disease. ICD9: 057.0 ICD10: B08.3

Parvovirus B19 infection in Israel

2008 to 2013 - Rates of Parvovirus B19 infection peak during June. [2]

Prevalence surveys

Years	Region	Study Group	%	Notes
2002 - 2004	Multiple locations	children	9-44	27% of children hospitalized with acute exanthema, 9% with acute arthropathy, 10% with fever >1 week, and 44% with transient pancytopenia or aplastic anemia (2002 to 2004) [3]
2002 - 2004	Northern Region	children	22	22% of hospitalized children ages 1.5 to 9 years (2002 to 2004) [4]

Seroprevalence surveys

Years	Region	Study Group	%	Notes
2008 - 2013	Multiple locations	general population	61.4	61.4% of the general population (2008 to 2013) [5]

References

1. Rev Med Interne 2023 Jan ;44(1):19-26.
2. Epidemiol Infect 2016 Jan ;144(1):207-14.
3. Pediatr Infect Dis J 2006 Oct ;25(10):898-901.
4. Isr Med Assoc J 2010 May ;12(5):277-9.
5. Epidemiol Infect 2016 Jan ;144(1):207-14.

Pediculosis

Agent	PARASITE - Insecta. Anoplura: *Pediculus humanus humanus* (body louse) *Pediculus humanus capitis* (head louse) *Pthirus pubis* (pubic louse)
Reservoir	Human
Vector	None
Vehicle	Contact
Incubation Period	7d
Diagnostic Tests	Identification of adults and "nits" with the help of a louse comb
Typical Adult Therapy	Permethrin 1%; or Malathion 0.5%; or Lindane OR Ivermectin 200 mcg/kg PO[1] [2] [3] [4]
Typical Pediatric Therapy	Permethrin 1%; or Malathion 0.5% OR Ivermectin 200 mcg/kg PO (> 15 kg body weight)
Clinical Hints	- Pruritus - Adult insects or nits may be visible - Body louse (rarely the head louse) transmits such diseases as epidemic typhus, trench fever and relapsing fever
Synonyms	Crab louse, Kopflaus, Lausebefall, Pediculose, Pediculosis corporis, Pediculus capitis, Pediculus corporis, Pediculus humanis corporis, Pedikulose, Pidocci, Pou de tete, Pthirus pubis. ICD9: 132 ICD10: B85

Pediculosis in Israel

Time and Place

A leg from a body louse (*Pediculus humanus*) was found in a textile store-room from the period of King Herod the Great (66 to 73 C.E.) [5]

- Pediculosis capitis is more frequent in the warmer months, and Phthirus pubis is more dominant in the cooler months. [6] [7]
- The incidence of head louse infestation among military personnel was 5.2 per 1,000 in 1977, 18.1 per 1,000 in 1979, and 3.6 per 1000 in 1987.
- The incidence of pubic louse infestation was 7 per 1,000 in 1977, 14.9 per 1,000 in 1983, and 4.6 per 1,000 in 1987. [8]
- Outbreaks of pediculosis capitis were reported among military personnel between 1973 and 1985; and outbreaks of pediculosis pubis between 1972 to 1987. [9]
- Annual sales of pediculicides by a large pharmacy chain in Israel increased from 281,986 in 2010, to 498,107 in 2019. [10]

Prevalence surveys

Years	Region	Study Group	%	Notes
1988*	Southern Region	children	55	55% of school children ages 6 to 15 years (Southern Israel, 1988 publication) [11]
1990*	Jerusalem	children	34.6	34.6% of children in a medium-sized community near Jerusalem (1990 publication) [12]
1991*		children	19	19% of children (1991 publication) [13]
1995*	Ma'ale Adumim	children	34.9	34.9% of children ages 3 to 12, in Maale Adumim (1995 publication) [14]
2001*		children	56.7	56.7% of children ages 7 to 10 years (2001 publication) [15]
1993*		immigrants	39-65.1	65.1% of Ethiopian immigrants were found to be infested by head lice and 65.1% by

Years	Region	Study Group	%	Notes
				body lice (1993 publication) [16]

* indicates publication year (not necessarily year of survey)

References

1. J Eur Acad Dermatol Venereol 2017 Sep ;31(9):1425-1428.
2. Pediatr Dermatol 2016 Sep ;33(5):466-72.
3. Pediatrics 2015 May ;135(5):e1355-65.
4. Clin Dermatol 2015 May-Jun;33(3):347-54.
5. J Med Entomol 2003 Jul ;40(4):585-7.
6. J Eur Acad Dermatol Venereol 2002 May ;16(3):257-9.
7. Arch Dermatol 1990 May ;126(5):638-41.
8. Arch Dermatol 1990 May ;126(5):638-41.
9. Int J Dermatol 2001 Oct ;40(10):637-9.
10. Acta Trop 2022 May 22;:106503.
11. Pediatr Infect Dis J 1988 Mar ;7(3):176-9.
12. Int J Dermatol 1990 Sep ;29(7):502-6.
13. J Am Acad Dermatol 1991 Aug ;25(2 Pt 1):248-51.
14. Med Vet Entomol 1995 Oct ;9(4):427-32, 447.
15. Pediatr Dermatol 2001 Jan-Feb;18(1):9-12.
16. Isr J Med Sci 1993 Jun-Jul;29(6-7):371-3.

Pentastomiasis - Linguatula

Agent	PARASITE - Pentastomid worm. *Linguatula serrata*
Reservoir	Herbivore, Zoonotic
Vector	None
Vehicle	Meat (liver or lymph nodes of sheep/goat)
Incubation Period	Unknown
Diagnostic Tests	Identification of parasite in nasal discharge. Linguatula serrata adult: female - 80 to 120 mm; male - 18 to 25 mm
Typical Adult Therapy	No specific therapy available[1]
Typical Pediatric Therapy	As for adult
Clinical Hints	- May follow ingestion of undercooked liver. - Pharyngeal or otic itching - Cough, rhinitis or nasopharyngitis
Synonyms	Linguatula, Marrara syndrome. ICD9: 128.8 ICD10: B83.8

Pentastomiasis - Linguatula in Israel

1987 (publication year) - Ocular pentastomiasis presumably due to *Linguatula serrate* was reported in an Israeli Arab child. [2]

References

1. Med Mal Infect 2016 Sep ;46(6):269-75.

2. Br J Ophthalmol 1987 May ;71(5):391-5.

Pericarditis - bacterial

Agent	BACTERIUM. *Streptococcus pneumoniae*, *Staphylococcus aureus*, et al
Reservoir	Human
Vector	None
Vehicle	Endogenous
Incubation Period	Variable
Diagnostic Tests	Ultrasonography and cardiac imaging techniques. Culture of pericardial fluid (include mycobacterial culture).
Typical Adult Therapy	Antimicrobial agent(s) appropriate to known or anticipated pathogen. Drainage as indicated[1] [2]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Fever, chest pain and dyspnea - Patients are acutely ill and have overt signs such as venous distention - Enlarged cardiac "shadow" - Concurrent pneumonia or upper respiratory infection may be present - Case-fatality rate is 20%
Synonyms	Bacterial pericarditis, Pericardite. ICD9: 074.23,074.2,115.03,420 ICD10: I30

References

1. Cardiol Clin 2017 Nov ;35(4):615-622.

2. JAMA 2015 Oct 13;314(14):1498-506.

Perinephric abscess

Agent	BACTERIUM OR FUNGUS. *Escherichia coli*, other facultative gram negative bacilli, *Candida albicans*, et al
Reservoir	Human
Vector	None
Vehicle	None
Incubation Period	Variable
Diagnostic Tests	Urine and blood culture. Renal imaging (CT, etc).
Typical Adult Therapy	Antimicrobial agent(s) appropriate to known or anticipated pathogen. Surgery as indicated[1] [2]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Unexplained fever, leukocytosis and flank pain - Patients are typically over age 50, and often diabetic - Consider in the patient with nonresponsive "pyelonephritis" or a renal mass
Synonyms	ICD9: 590.2 ICD10: N15.1

References

1. Urologia 2014 Jul-Sep;81(3):144-7.

2. BJU Int 2011 Apr ;107 Suppl 3:20-3.

Perirectal abscess

Agent	BACTERIUM. Various (often mixed anaerobic and aerobic flora)
Reservoir	Human
Vector	None
Vehicle	Endogenous
Incubation Period	Variable
Diagnostic Tests	Culture of drainage material.
Typical Adult Therapy	Surgical drainage and antibiotics effective against fecal flora[1] [2]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Anal or perianal pain with fever and a tender mass - Granulocytopenic patients commonly develop small, soft and less overt abscesses - often due to *Pseudomonas aeruginosa*.
Synonyms	ICD9: 566 ICD10: K61

References

1. Med Clin North Am 2014 May ;98(3):609-23.

2. Clin Colon Rectal Surg 2007 May ;20(2):102-9.

Peritonitis - bacterial

Agent	BACTERIUM. Various (often mixed anaerobic and aerobic flora)
Reservoir	Human
Vector	None
Vehicle	Endogenous
Incubation Period	Variable
Diagnostic Tests	Culture of blood and peritoneal fluid. Peritoneal fluid cell count may also be useful.
Typical Adult Therapy	Antimicrobial agent(s) appropriate to known or anticipated pathogens. Surgery as indicated[1] [2]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Abdominal pain and tenderness - Vomiting, absent bowel sounds, guarding and rebound - Diarrhea may be present in children - Underlying visceral infection or perforation, trauma, hepatic cirrhosis (spontaneous peritonitis) etc.
Synonyms	Acute peritonitis, Bacterial peritonitis, Peritonite. ICD9: 567 ICD10: K65

References

1. BMJ 2018 06 18;361:k1407.

2. World J Emerg Surg 2017 ;12:29.

Pertussis

Agent	BACTERIUM. *Bordetella pertussis* An aerobic gram-negative coccobacillus
Reservoir	Human
Vector	None
Vehicle	Air, Infected secretions, Respiratory or pharyngeal acquisition
Incubation Period	7d - 10d (range 5d - 21d)
Diagnostic Tests	Culture & direct fluorescence (nasopharynx). Alert laboratory when suspected. Serology.
Typical Adult Therapy	Respiratory precautions. Azithromycin 500 mg PO X 1, then 250 mg daily X 4 days OR Clarithromycin 500 mg PO BID X 7 days OR Sulfamethoxazole / Trimethoprim 800/160 mg PO BID X 14 days[1]
Typical Pediatric Therapy	Respiratory precautions: Azithromycin (age 6 mo): 10 mg/kg PO X 1, then 5 mg/kg daily X 4 days OR Clarithromycin 15/mg/kg PO BID X 7 days OR Sulfamethoxazole / Trimethoprim TMP 4 mg/kg PO BID X 14 days
Vaccine	DTaP vaccine DTP vaccine
Clinical Hints	- Coryza, paroxysmal cough - May be associated with pneumonia or otitis - Prominent lymphocytosis - Most often diagnosed in young children, but may present as indolent cough in adults - Epistaxis and subconjunctival hemorrhage often noted - Seizures (below age 2) - Case-fatality rate is 0.5%
Synonyms	Bordetella holmesii, Bordetella parapertussis, Bordetella pertussis, Chincofe, Chyncough, Coqueluche, Keichhusten, Keuchhusten, Kichhosta, Kikhosta, Kikhoste, Kinkhoest, Kinkhost, Kirkhosta, Parapertussis, Pertosse, Syndrome coqueluchoide, Tos convulsa, Tos farina, Tosse convulsa, Tussis convulsa, Whooping cough. ICD9: 033 ICD10: A37

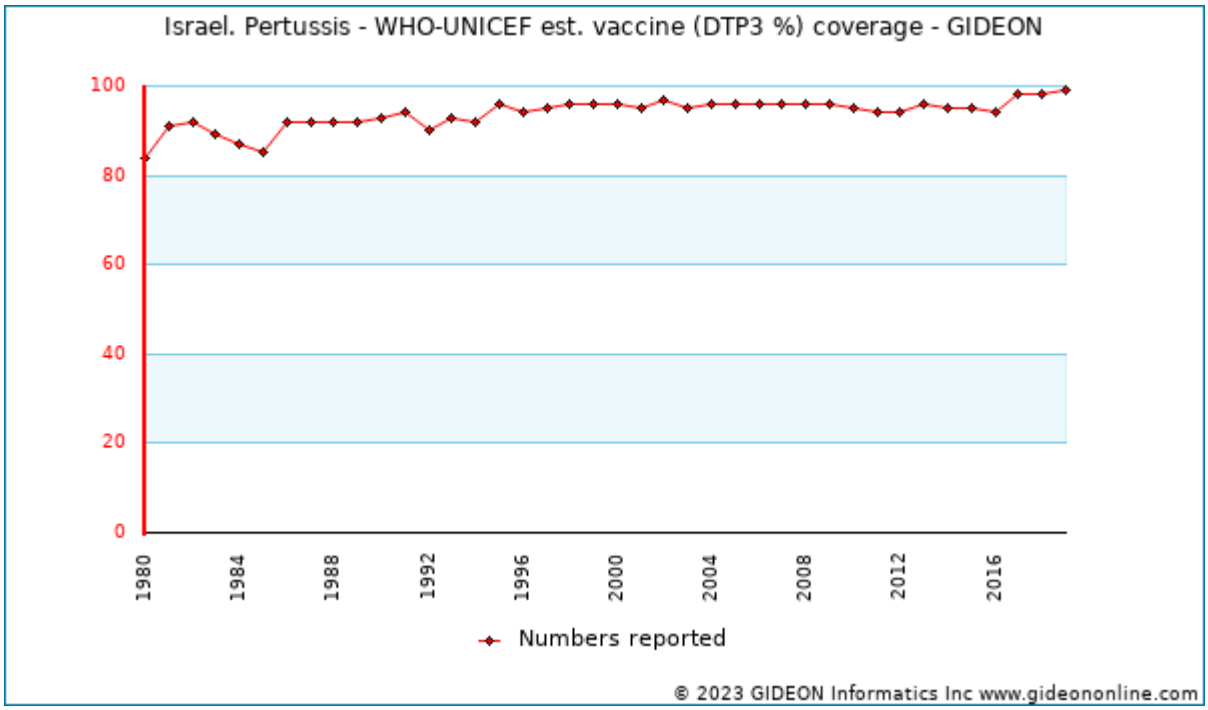
Pertussis in Israel

Vaccine Schedule:

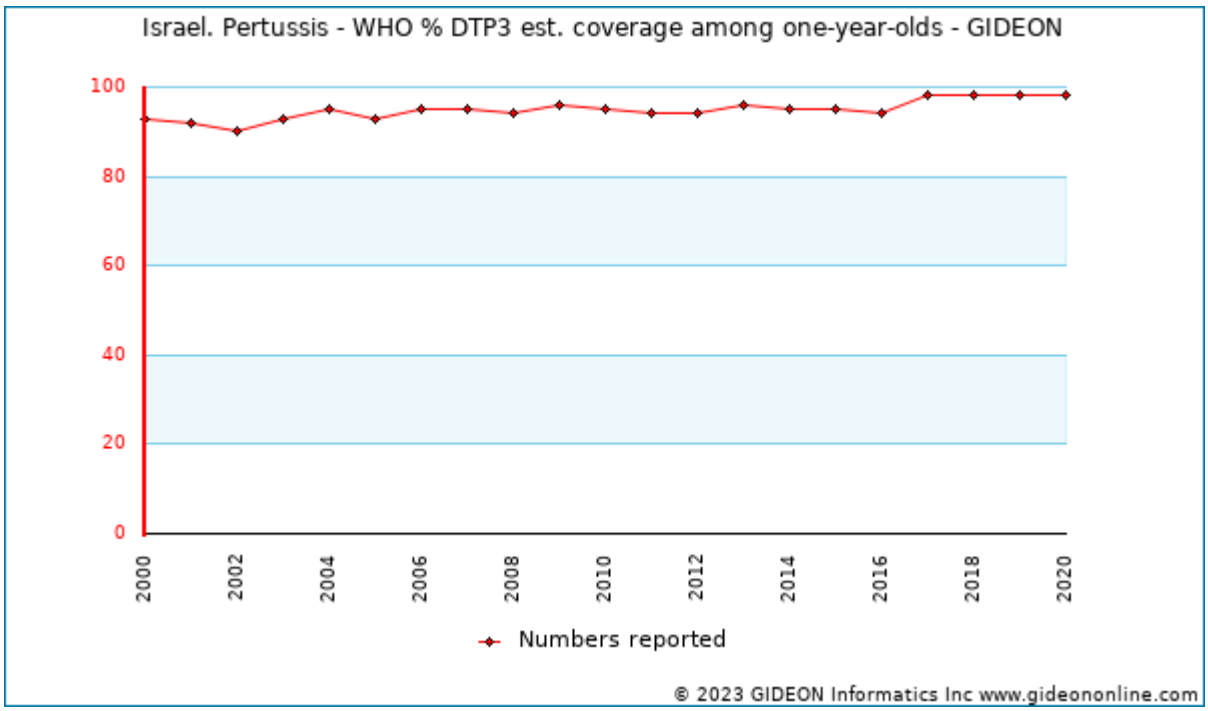
DTaP - 2,4,6,12 months
DTaPHibIPV - 2,4,6,12 months
HPV - 13 years; +6 months
HepA - 18, 24 months
HepB - birth; 1,6 months
IPV - 7 years
MMRV - 12 months; 6 years
OPV - 6,18 months
Pneumo ps - >=65 years
Pneumo-conj - 2,4,12 months
Rotavirus - 2,4,6 months
Td - every 10 years (adults)
TdaP - 13 years
TdaPIPV - 7 years

Israel:

- Routine immunization was introduced in 1957.
- Tdap-IPV was vaccination of elementary school students was introduced in 2005.
- Two pertussis vaccine boosters were added, in 2005 for 7-year-olds and in 2011 for 13-year-olds. [2]



Graph: Israel. Pertussis - WHO-UNICEF est. vaccine (DTP3 %) coverage



Graph: Israel. Pertussis - WHO % DTP3 est. coverage among one-year-olds

Prevalence surveys

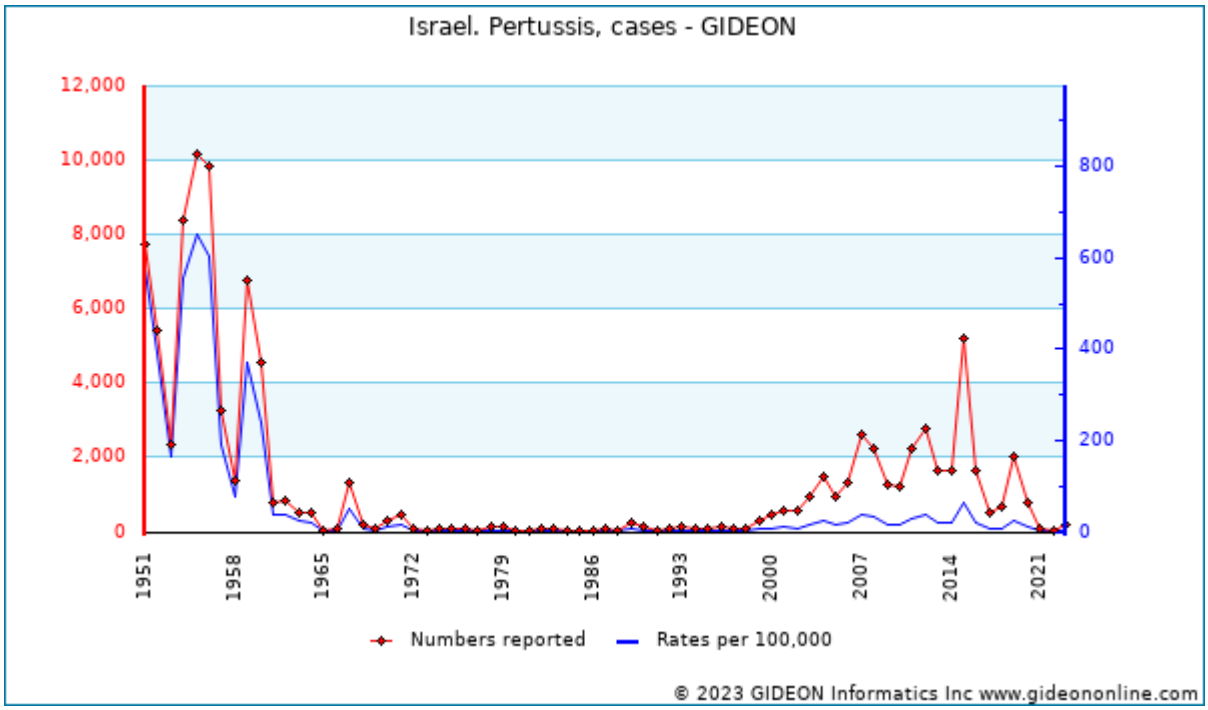
Years	Region	Study Group	%	Notes
2005 - 2006	Northern Region	children	0.6	0.6% of children ages <= 2 years hospitalized with acute bronchiolitis (as sole pathogen, 2005 to 2006) [3]
2007*	Southern Region	children	15	15% of infants <1year admitted to a pediatric ICU in southern Israel (2007 publication) [4]
1998*	Southern Region	patients	7	7% of winter respiratory tract infections in an outpatient setting (1998 publication) [5]
2011 - 2016	West Bank	patients	7.3	[6]

* indicates publication year (not necessarily year of survey)

Seroprevalence surveys

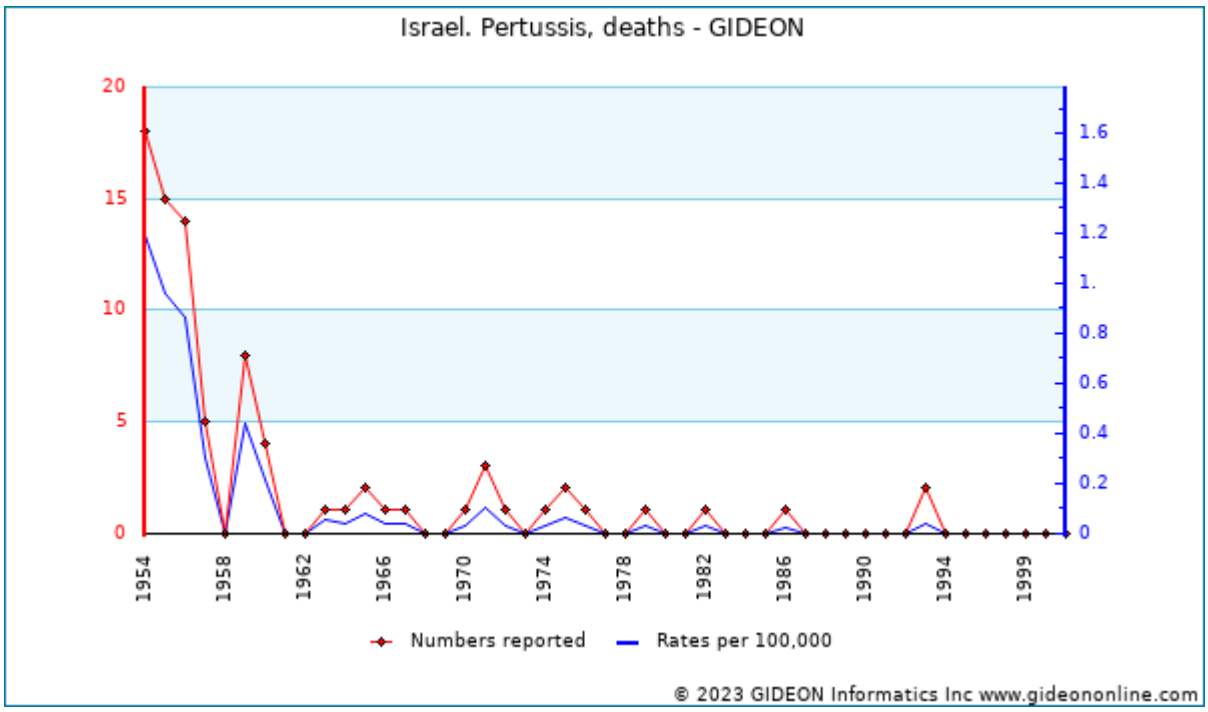
Years	Study Group	%	Notes
2005*	military personnel	58.6	58.6% of military recruits. Pertussis is a common cause of persistent cough among Israeli soldiers (2005 publication) [7]

* indicates publication year (not necessarily year of survey)



Graph: Israel. Pertussis, cases

Notes:
1. Pertussis has been a reportable disease since 1951.
2. During 1961 to 1966, only cases in the age group 0 to 4 years were reportable.
3. Serosurveys suggested a rate of 2,448 per 100,000 during 2000 to 2001, as opposed to the officially reported disease rate of 5.6 per 100,000. [8]
4. 1,736 cases were reported in Jerusalem during 1990 to 2009 - rates per 100,000 = 2.6 in 1990, 10 in 2000, 28.8 in 2006, 22 in 2008 and 15.7 in 2009. [9]
5. 2023 - There were at least 215 cases reported to June. [10]



Graph: Israel. Pertussis, deaths

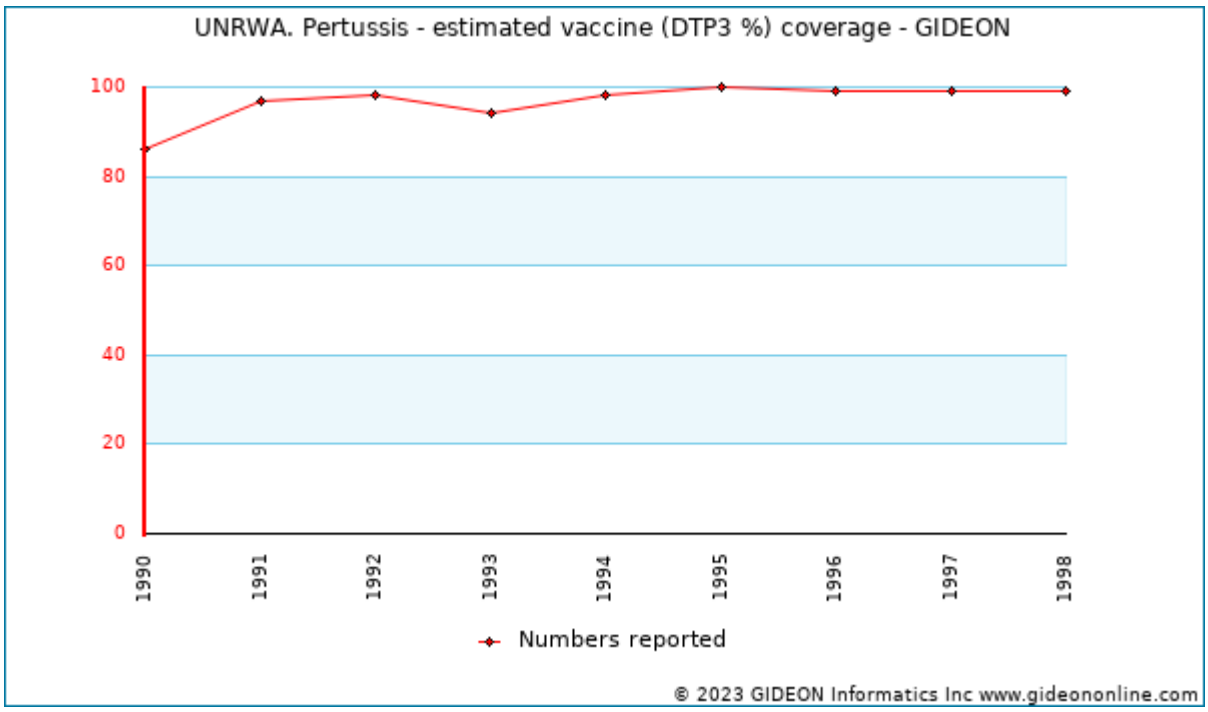
Notes:
1. 38 deaths were ascribed to pertussis during 1951 to 1952

Notable outbreaks

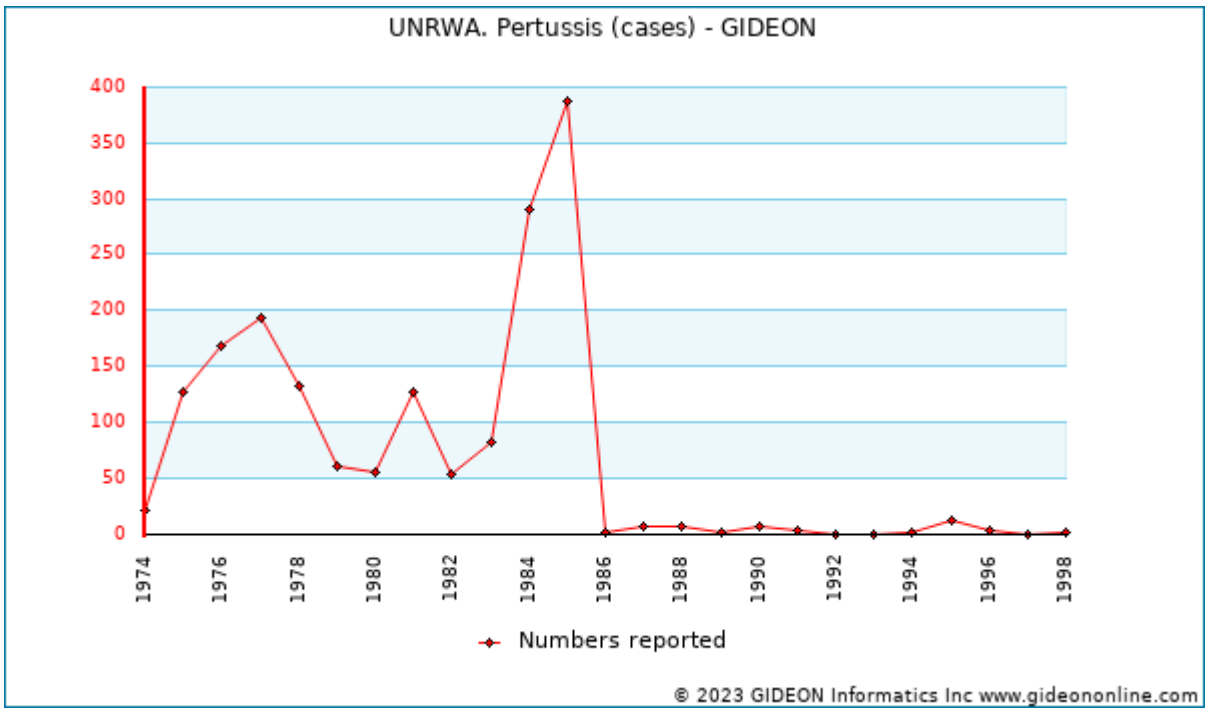
Years	Region	Setting	Cases	Deaths	Population	Notes
1991		kibbutz	91			11
2001		military unit	75			12
2007 - 2008	Multiple locations		4,475			13 14
2010*		day-care center			children	15
2015	Jerusalem		1,084	3	infants	Infants accounted for most cases and all of the deaths 16
2015	Northern Region	military training base	61		military personnel	17
2023	Multiple locations	community	215		general population	An unusual increase in the number of cases was reported since January. The majority of the cases were in Jerusalem and among Haredim (an ultra-orthodox group in Israel). At least 215 cases were reported from January until June 1, a 12-fold increase over the same period in 2022. Tel Aviv reported 9 cases. The outbreak is attributed to low vaccination rates in the community. 18

* indicates publication year (not necessarily year of outbreak)

UNRWA, West Bank and Gaza:

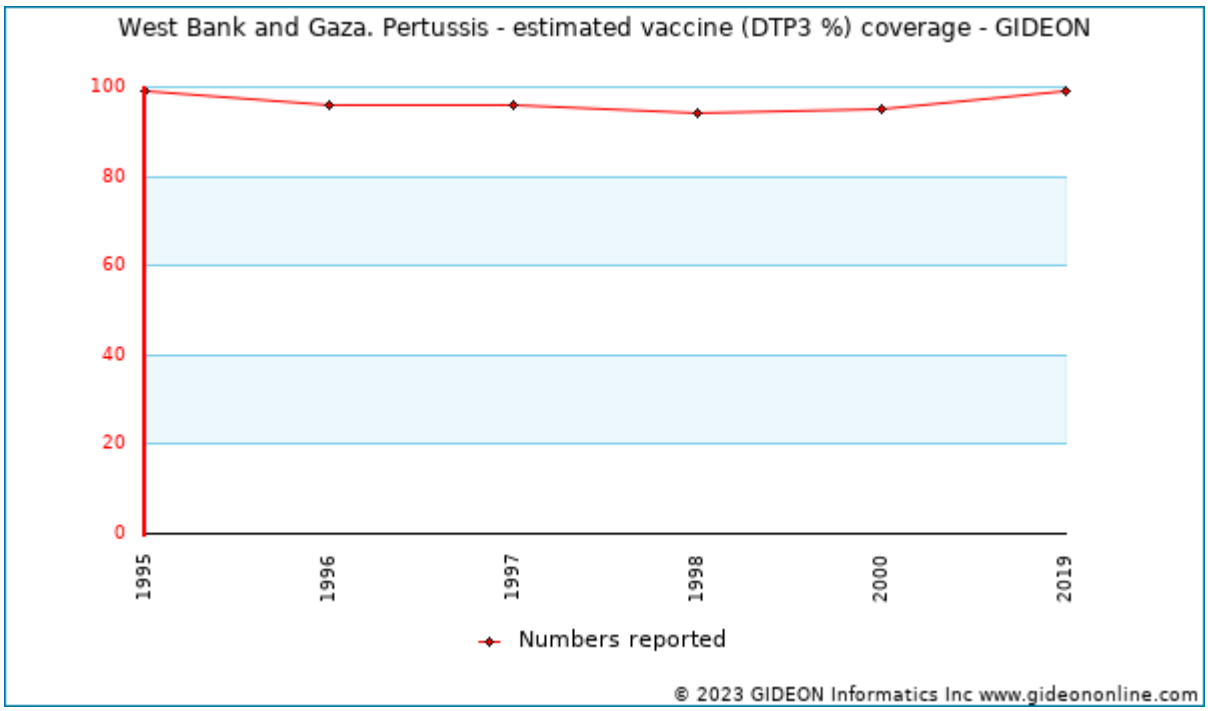


Graph: UNRWA. Pertussis - estimated vaccine (DTP3 %) coverage

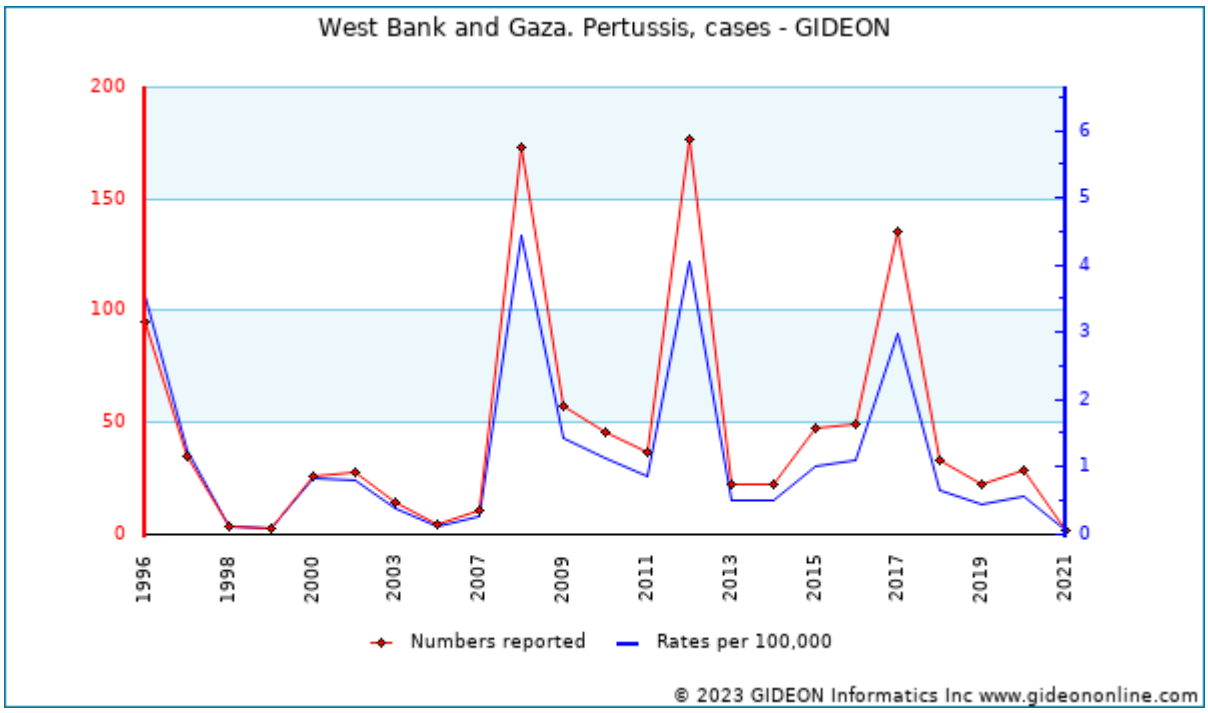


Graph: UNRWA. Pertussis (cases)

In the West Bank and Gaza, routine vaccination (DTP) is administered at ages 2, 4, 6 and 12 months.



Graph: West Bank and Gaza. Pertussis - estimated vaccine (DTP3 %) coverage



Graph:

West Bank and Gaza. Pertussis, cases

References

1. MMWR Recomm Rep 2005 Dec 09;54(RR-14):1-16.
2. J Public Health Policy 2018 May 28;
3. Pediatr Infect Dis J 2010 Jan ;29(1):e7-e10.
4. Med Sci Monit 2007 Nov ;13(11):CR475-480.
5. Eur J Clin Microbiol Infect Dis 1998 Oct ;17(10):685-9.
6. Can J Infect Dis Med Microbiol 2021 ;2021:5643134.
7. Emerg Infect Dis 2005 Mar ;11(3):506-8.
8. Vaccine 2010 Apr 26;28(19):3285-90.

9. Vaccine 2010 Dec 16;29(2):207-11.
10. ProMED <promedmail.org> archive: 20230603.8710382
11. Isr J Med Sci 1991 Mar ;27(3):137-40.
12. Epidemiol Infect 2003 Dec ;131(3):1049-54.
13. Pediatr Infect Dis J 2012 Jul ;31(7):761-2.
14. J Infect 2017 02 ;74(2):204-207.
15. Isr Med Assoc J 2010 May ;12(5):283-6.
16. Pediatr Infect Dis J 2019 Mar ;38(3):e63-e64.
17. Mil Med 2017 Mar ;182(S1):355-359.
18. ProMED <promedmail.org> archive: 20230603.8710382

Pharyngeal and cervical space infx.

Agent	BACTERIA. *Streptococcus pyogenes*, mixed oral anaerobes, etc. FUNGUS. *Blastomyces dermatitidis*
Reservoir	Human
Vector	None
Vehicle	Endogenous
Incubation Period	Variable
Diagnostic Tests	Careful examination of region and X-ray (or CT scan). Smear and culture of pus if available.
Typical Adult Therapy	Surgical drainage and parenteral antibiotics effective against oral flora[1] [2]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Fever, painful swelling and displacement of the tongue, fauces and other intraoral structures - Dysphagia, dyspnea or jugular phlebitis may ensue in more virulent infections
Synonyms	Cervical space infection, Descending necrotizing mediastinitis, Lemmier's syndrome, Ludwig's angina, Post-anginal septicemia, Quinsy. ICD9: 682.0,682.1 ICD10: J36,J39.0,J39.1

References

1. Eur Arch Otorhinolaryngol 2009 Mar ;266(3):315-23.

2. Infect Dis Clin North Am 2007 Jun ;21(2):523-41, viii.

Pharyngitis - bacterial

Agent	BACTERIUM. Most often *Streptococcus pyogenes*; *Streptococcus* groups B, C, F and G are occasionally isolated
Reservoir	Human
Vector	None
Vehicle	Droplet, Rarely food, Respiratory or pharyngeal acquisition
Incubation Period	1d - 5d
Diagnostic Tests	Throat swab for culture, nucleic acid detection (e.g. PCR)I I , or antigen detection (group A Streptococcus) ASLO titer may not indicate current infection
Typical Adult Therapy	Penicillin G or Penicillin V or other antistreptococcal antibiotic to maintain serum level for 10 days[1]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Purulent pharyngitis and cervical lymphadenopathy usually indicate streptococcal etiology - Viruses (mononucleosis, Enteroviruses) and other bacteria (gonorrhea, diphtheria) should also be considered
Synonyms	Acute pharyngitis, Bacterial pharyngitis, Mal di gola batterica, Oral thrush, Streptococcal pharyngitis, Tonsillitis - bacterial, Vincent's angina. ICD9: 034.0,462 ICD10: J02,J03

Pharyngitis - bacterial in Israel

Notable outbreaks

Years	Setting	Cases	Source	Pathogen	Population	Notes
1976*			food			2
1982*	military training base		food		military personnel	3
1983	military camp	50		*Streptococcus* group G		4
1987 - 1988	kibbutz	200				5
1988	military base		food			6
1992	Air Force base	197	food			7 8
1994*		75			military personnel	9
2003	company	83	vegetable - corn			Outbreak associated with eating corn 10
2003	factory	212	food		workers	11

* indicates publication year (not necessarily year of outbreak)

References

1. PLoS Negl Trop Dis 2018 03 ;12(3):e0006335.
2. Harefuah 1976 Oct 15;91(8):248-50.
3. Mil Med 1982 Apr ;147(4):318-9.
4. Epidemiol Infect 1987 Oct ;99(2):249-55.
5. J Chemother 1990 Jun ;2(3):182-4.
6. Mil Med 1992 Jun ;157(6):282-3.
7. Scand J Infect Dis 1996 ;28(6):563-6.
8. Arch Intern Med 1992 Apr ;152(4):853-5.
9. Isr J Med Sci 1994 Apr ;30(4):275-8.
10. Isr Med Assoc J 2008 Aug-Sep;10(8-9):617-20.

11. Isr Med Assoc J 2006 Sep ;8(9):618-21.

Philophthalmosis

Agent	PARASITE - Platyhelminthes, Trematoda. *Philophthalmus gralli*, *Ph. lucipetus*, *Ph. lacrimosus*
Reservoir	Bird, Snail, Zoonotic
Vector	None
Vehicle	Aquatic plants
Incubation Period	Unknown Less than 24 hours in birds
Diagnostic Tests	Identification of excised worm Philophthalmus gralli adult length - 2.5 to 3.4 mm
Typical Adult Therapy	Removal of worm
Typical Pediatric Therapy	As for adult
Clinical Hints	- Conjunctivitis and lacrimation - Presence of an adult worm in the conjunctival sac
Synonyms	Oriental avian eye fluke, Oriental eye fluke, Philophthalmus. ICD9: 121.8 ICD10: B66.8

Philophthalmosis in Israel

1993 (publication year) - A case of philophthalmosis was reported - presumably due to *Philophthalmus lucipetus*. [1] [2] [3] [4]

A second species, *Philophthalmus distomatosa*, has also been identified in Israel. [5]

References

1. Parasitol Res 1993 ;79(5):372-7.
2. J Helminthol 1993 Jun ;67(2):107-11.
3. J Parasitol 1999 Apr ;85(2):291-4.
4. J Parasitol 2000 Apr ;86(2):255-61.
5. J Parasitol 2000 Aug ;86(4):773-6.

Phleboviruses - Old World

Agent	VIRUS - RNA. Bunyaviridae, Phlebovirus: Sandfly fever virus (at least three types) Dabie Mountain virus (tentative designation)
Reservoir	Rodent, Sandfly (*Phlebotomus*), Rodent
Vector	Sandfly (*Phlebotomus papatasi*, *Ph. perfilewi*, et al)
Vehicle	None
Incubation Period	3d - 4d (range 2d - 9d)
Diagnostic Tests	Biosafety level 3. Viral culture (blood, CSF). Serology. Nucleic acid amplification.
Typical Adult Therapy	Supportive
Typical Pediatric Therapy	As for adult
Clinical Hints	- Disease is most common during summer in temperate regions - Myalgia, eye pain, arthralgia, vomiting, facial flush and leukopenia - Gastrointestinal symptoms common in Dabie Mountain virus infection - Fever resolves within 5 days; fatality and sequelae are not reported
Synonyms	Adana, Adria, Dabie Mountain virus, Grenada virus, Karimabad, Medjerda valley, Naples sandfly fever, Olbia virus, Pappataci fever, Phlebotomus fever, Provencia virus, Punique, Saddaguia, Salehabad, Sandfly fever, Sandfly fever Turkey virus, Sicilian virus, Three-day fever, Toscana. ICD9: 066.0 ICD10: A93.1

Phleboviruses - Old World in Israel

Time and Place

- 1946 (publication year) - A review of the clinical features of sandfly fever in Palestine was published. [1]
- 2008 to 2013 - Nine cases of sandfly fever associated with neurological disease were treated at a hospital in Jerusalem. [2]
- 2014 (publication year) - An Israeli woman acquired sandfly fever in the Negev desert. [3]

Cross-border events

Years	Acquired by**	Originated in**	Cases	Notes
2013*	Israel	Netherlands	1	A patient developed Toscana virus infection in Israel following travel to the Netherlands. [4]

* indicates publication year (not necessarily year of event)
** Country or Nationality

Seroprevalence surveys

Years	Study Group	%	Notes
1999*	adults	2.8-30.8	2.8% of adults ages 18 to 20, and 30.8% ages 40 to 55 (Naples virus) [5]
1999*	adults	23.7	23.7% of adults ages 40 to 55 (Sicilian virus, 1999 publication) [6]

* indicates publication year (not necessarily year of survey)

References

1. Med J Aust 1946 Jun 08;1(23):789-96.
2. Neurol Neuroimmunol Neuroinflamm 2016 Feb ;3(1):e184.
3. Travel Med Infect Dis 2014 Nov-Dec;12(6 Pt A):680-1.
4. J Neurovirol 2013 Oct ;19(5):508-10.
5. Public Health Rev 1999 ;27(1-3):217-30.
6. Public Health Rev 1999 ;27(1-3):217-30.

Pityriasis rosea

Agent	UNKNOWN. Human herpesvirus 7 has been implicated
Reservoir	Unknown
Vector	Unknown
Vehicle	Unknown
Incubation Period	Unknown
Diagnostic Tests	Clinical features.
Typical Adult Therapy	Supportive; ultraviolet B exposure is suggested Acyclovir 400 mg PO TID X 7 days has been used in severe cases[1]
Typical Pediatric Therapy	Supportive; ultraviolet B exposure is suggested
Clinical Hints	- Herald patch followed by crops of pruritic, salmon-colored macules and papules - Systemic symptoms are rare - Illness resolves after 3 to 8 weeks
Synonyms	ICD9: 696.3 ICD10: L42

References

1. J Eur Acad Dermatol Venereol 2011 Jan ;25(1):24-6.

Plague

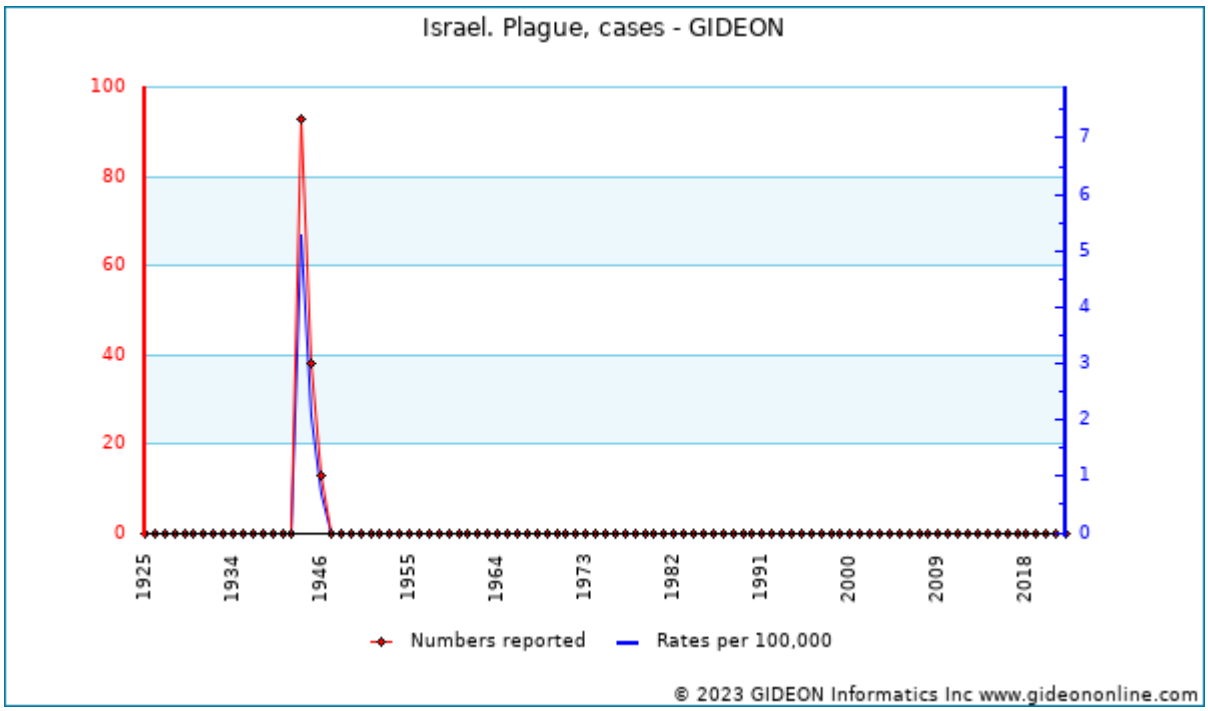
Agent	BACTERIUM. *Yersinia pestis* A facultative gram-negative bacillus
Reservoir	Rodent, Rabbit, Cat, Dog, Sheep, Wild carnivore, Zoonotic
Vector	Flea (*Pulex*; *Xenopsylla*)
Vehicle	Air, Contact, Respiratory or pharyngeal acquisition
Incubation Period	2d - 7d (range 1d - 14d)
Diagnostic Tests	Culture (blood, sputum, pus). Fluorescent (DFA) staining of pus. Nucleic acid amplification.
Typical Adult Therapy	Strict isolation. Ciprofloxacin 400 mg Q8h IV or 750 mg Q12h PO OR Gentamicin 2 mg/kg IV loading dose, then 1.7 mg/kg Q8h. OR Streptomycin 15 mg/kg q12h X 10d. OR Doxycycline 100 mg PO BID X 10d. OR Chloramphenicol 15 mg/kg PO QID[1] [2] [3]
Typical Pediatric Therapy	Strict Isolation. Ciprofloxacin 10 mg/kg Q8h or Q12h IV or 15 mg/kg Q8h or Q12h PO OR Gentamicin 2 mg/kg IV loading dose, then 1.7 mg/kg Q8h OR Streptomycin 10 mg/kg q8h X 10d. OR Chloramphenicol 15 mg/kg PO QID X 10d
Vaccine	Plague vaccine
Clinical Hints	- History of rodent contact or exposure to other cases - Suppurative lymphadenitis with septicemia - Hemorrhagic pneumonia in some cases - Case-fatality rates for bubonic plague without therapy are 50% to 60%
Synonyms	Black death, Black plague, Bubonic plague, Glandular plague, Hemorrhagic plague, Peste, Pneumonic plague, Saint Roch's disease, Yersinia pestis. ICD9: 020 ICD10: A20

Although Plague is not endemic to Israel, imported, expatriate or other presentations of the disease have been associated with this country.

Plague in Israel

287 cases of plague (94 fatal) were reported in Israel during the twentieth century.

198 cases (65 fatal) were reported in Tel Aviv, Afula, Haifa and Jaffa during 1941 to 1947 (including 144 cases during 1944 to 1946). [4]



Graph: Israel. Plague, cases

Notable outbreaks

Years	Region	Cases	Deaths	Notes
1914	Jaffa			
1921 - 1924	Multiple locations			Outbreaks in Jaffa and Haifa.
1941	Haifa	10		[5]
1943	Jaffa	30	8	
1947	Haifa	19	1	[6]

References

1. J Clin Microbiol 2018 Jan ;56(1)
2. Expert Rev Anti Infect Ther 2013 Aug ;11(8):817-29.
3. Clin Infect Dis 2020 May 21;70(Supplement_1):S3-S10.
4. Isr J Med Sci 1973 Aug ;9(8):969-79.
5. Bull World Health Organ 1951 ;4(4):475-533.
6. Trans R Soc Trop Med Hyg 1948 Mar ;41(5):647-56.

Plesiomonas infection

Agent	BACTERIUM. *Plesiomonas shigelloides* A facultative gram-negative bacillus
Reservoir	Fish Animal, Soil, Reptile, Bird, Zoonotic
Vector	None
Vehicle	Water, Food
Incubation Period	1d - 2d
Diagnostic Tests	Stool culture - alert laboratory when this organism is suspected. Nucleic acid amplification.
Typical Adult Therapy	Stool precautions. Ciprofloxacin 400 mg IV or 750 mg PO, BID Alternatives: Sulfamethoxazole / Trimethoprim, Amoxicillin / Clavulanate, Ceftriaxone[1] [2] [3]
Typical Pediatric Therapy	Stool precautions. Sulfamethoxazole / Trimethoprim, Amoxicillin / Clavulanate, Ceftriaxone
Clinical Hints	- In many cases, follows ingestion of shellfish or recent travel to developing countries - Fever, abdominal pain, vomiting and severe diarrhea - Symptoms often persist for 2 to 4 weeks
Synonyms	Plesiomonas shigelloides. ICD9: 008.8 ICD10: A04.8

Plesiomonas infection in Israel

1990 (publication year) - Rare instances of *Plesiomonas shigelloides* infection are reported. [4]

Prevalence surveys

Years	Region	Study Group	%	Notes
2006 - 2007	Gaza	children - gastrointestinal	1.3	1.3% of childhood diarrhea in Gaza (2006 to 2007) [5]
2018 - 2020	Tel Aviv	children - gastrointestinal	1	In the stool samples collected from 118 hospitalized children at the Schneider Children's Medical Center of Israel, *Plesiomonas* was detected in 1% of the samples. [6]

References

1. Antimicrob Agents Chemother 1989 Sep ;33(9):1609-10.
2. Comp Immunol Microbiol Infect Dis 2004 Mar ;27(2):129-39.
3. J Antimicrob Chemother 2001 Dec ;48(6):803-11.
4. Harefuah 1990 Jul ;119(1-2):13-5.
5. Indian J Pediatr 2011 Feb ;78(2):165-70.
6. Acta Paediatr 2022 Nov 29;

Pleurodynia

Agent	VIRUS - RNA. Picornaviridae: Coxsackievirus
Reservoir	Human
Vector	None
Vehicle	Air, Fecal-oral, Fomite, Respiratory or pharyngeal acquisition
Incubation Period	3d - 5d
Diagnostic Tests	Viral culture (throat, stool). Serology. Nucleic acid amplification.
Typical Adult Therapy	Supportive
Typical Pediatric Therapy	As for adult
Clinical Hints	- A late summer illness in temperate regions - Sore throat followed by pleuritic chest pain - Pain is often recurrent and appears in "waves" - local pressure on affected area may elicit the pain - Usually resolves within one week.
Synonyms	Balme disease, Bamble disease, Bamie disease, Bornholm disease, Devil's grip, Drangedal disease, Epidemic benign dry pleurisy, Epidemic myalgia, Sylvest's disease. ICD9: 074.1 ICD10: B33.0

Pleurodynia in Israel

Notable outbreaks

Years	Setting	Cases	Pathogen	Notes
1975	kibbutz	148	Coxsackie B1	Outbreak characterized by fever, gastrointestinal and upper respiratory symptoms, pleurodynia and myocarditis [1]

References

1. J Fam Pract 1977 Aug ;5(2):201-7.

Pneumocystis pneumonia

Agent	FUNGUS. Ascomycota, Archiascomycetes, Pneumocystidales: *Pneumocystis jiroveci* (now distinct from *Pneumocystis carinii*)
Reservoir	Human
Vector	None
Vehicle	Air, Respiratory or pharyngeal acquisition
Incubation Period	4d - 8w
Diagnostic Tests	Identification of organisms in induced sputum, bronchial washings, tissue. Serology. Nucleic acid amplification.
Typical Adult Therapy	Therapy: Sulfamethoxazole / Trimethoprim 25 mg/5 mg/kg QID X 14d. OR Pentamidine 4 mg/kg/d X 14d. OR Dapsone + Trimethoprim. OR Atovaquone OR Primaquine + Clindamycin Prophylaxis - similar, but at altered dosage. Dapsone also used.[1] [2] [3] [4]
Typical Pediatric Therapy	Therapy: Sulfamethoxazole / Trimethoprim 25 mg/5 mg/kg QID X 14d. OR Pentamidine 4 mg/kg/d X 14d. OR Dapsone + Trimethoprim. OR Atovaquone OR Primaquine + Clindamycin Prophylaxis - similar, but at altered dosage.
Clinical Hints	- Dyspnea, hypoxia and interstitial pneumonia - Usually encountered in the setting of severe immune suppression (AIDS, leukemia, etc) - Roentgenographic findings (typically bilateral alveolar pattern) may appear after several days
Synonyms	PCP, Pneumocystis carinii, Pneumocystis jiroveci. ICD9: 136.3 ICD10: B59

Pneumocystis pneumonia in Israel

Prevalence surveys

Years	Region	Study Group	%	Notes
2014*	Haifa	patients	0	0% of immunocompetent patients (BAL, 2014 publication) [5]

***** indicates publication year (not necessarily year of survey)

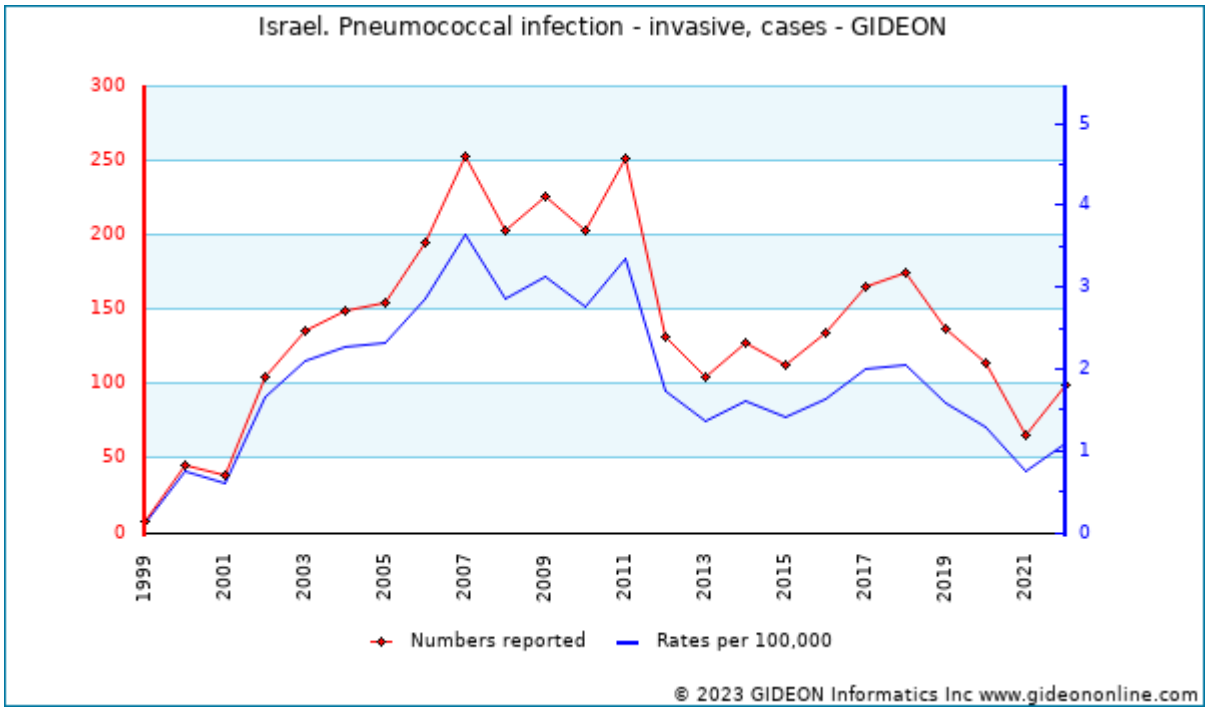
References

1. 2018 01 ;
2. Clin Chest Med 2017 Sep ;38(3):465-477.
3. Expert Rev Anti Infect Ther 2017 09 ;15(9):873-892.
4. Open Forum Infect Dis 2020 May ;7(5):ofaa112.
5. Lung 2014 Dec ;192(6):875-9.

Pneumonia - bacterial

Agent	BACTERIUM. *Streptococcus pneumoniae*, *Klebsiella pneumoniae* ssp *pneumoniae*, other aerobic and facultative gram-negative bacilli. The most common bacteria causing community acquired pneumonia in adults include *S. pneumoniae*, *Haemophilus influenzae*, *Moraxella catarrhalis*, and *Mycoplasma pneumoniae*. In children ≥5 years old, *S. pneumoniae* and *M. pneumoniae* are most common.
Reservoir	Human
Vector	None
Vehicle	Droplet, Endogenous, Respiratory or pharyngeal acquisition
Incubation Period	1d - 3d
Diagnostic Tests	Culture of sputum, blood. Analyze ("grade") sputum cytology to assess significance of culture.
Typical Adult Therapy	Antimicrobial agent(s) appropriate to known or suspected pathogen
Typical Pediatric Therapy	As for adult
Vaccine	Pneumococcal conjugate vaccine Pneumococcal vaccine
Clinical Hints	- Rigors, pleuritic pain, hemoptysis, lobar infiltrate and leukocytosis - Empyema and lung abscess suggest etiology other than pneumococcus - Foul sputum with mixed flora may herald anaerobic (aspiration) pneumonia
Synonyms	Bacterial pneumonia, Empiema, Empyeem, Empyem, Empyema, Empyeme, Lung abscess, Neumonia, Pleurisy, Pneumococcal infection - invasive, Pneumococcal pneumonia, Polmonite batterica, Streptococcus pneumoniae, Streptococcus pneumoniae - invasive. ICD9: 481,482,483,484 ICD10: J13,J14,J15,J17,J18,J85,J86

Pneumonia - bacterial in Israel



Graph: Israel. Pneumococcal infection - invasive, cases

1997 (publication year) - Analysis of etiology among patients hospitalized for community-acquired pneumonia revealed Pneumococcus in 42.8%, *Mycoplasma pneumoniae* 29.2%, *Chlamydia (Chlamydophila) pneumoniae* 17.9%, *Legionella* 16.2%, viruses 10.1%, *Coxiella burnetii* 5.8%. *Haemophilus influenzae* 5.5% and other bacteria 6.1%. [1]

References

1. J Infect 1997 Jan ;34(1):41-8.

Poliomyelitis and acute flaccid paralysis

Agent	VIRUS - RNA. Picornaviridae, Picornavirus: Polio virus
Reservoir	Human
Vector	None
Vehicle	Fecal-oral, Dairy products, Food, Water, Fly, Respiratory or pharyngeal acquisition
Incubation Period	7d - 14d (range 3d - 35d)
Diagnostic Tests	Viral culture (pharynx, stool). Serology. Nucleic acid amplification.
Typical Adult Therapy	Stool precautions Supportive
Typical Pediatric Therapy	As for adult
Vaccine	Poliomyelitis - injectable vaccine Poliomyelitis - oral vaccine
Clinical Hints	- Sore throat, headache, vomiting and myalgia followed by flaccid paralysis - Meningeal involvement in 1% of cases - Paralysis in only 0.1% of cases - Paralysis tends to be more extensive in adult patients
Synonyms	Acute flaccid paralysis, Heine-Medin disease, Infantile paralysis, Kinderlahmung, Kinderverlamming, Paralisi infantile, Paralisis flaccida, Paralisis flacida aguda, PFA (Paralisis Flacidas Agudas), Polio, Poliomyelite, Poliomyelitt. ICD9: 045 ICD10: A80

Although Poliomyelitis and acute flaccid paralysis is not endemic to Israel, imported, expatriate or other presentations of the disease have been associated with this country.

Poliomyelitis and acute flaccid paralysis in Israel

- 2023 - On 5 March 2023, the Israel Ministry of Health reported that 2 additional contacts of the initial AFP case tested positive for poliovirus, bringing the total number of asymptomatic contacts to 5.

Vaccine Schedule:

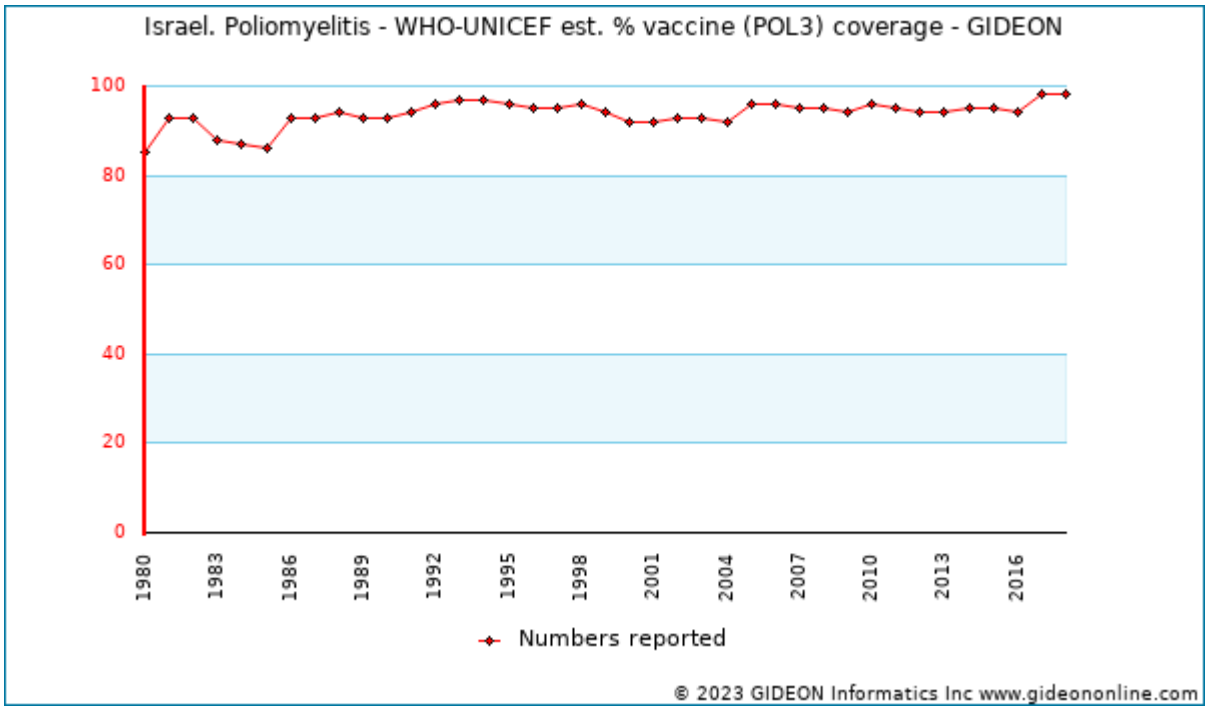
DTaP - 2,4,6,12 months
DTaPHibIPV - 2,4,6,12 months
HPV - 13 years; +6 months
HepA - 18, 24 months
HepB - birth; 1,6 months
IPV - 7 years
MMRV - 12 months; 6 years
OPV - 6,18 months
Pneumo ps - >=65 years
Pneumo-conj - 2,4,12 months
Rotavirus - 2,4,6 months
Td - every 10 years (adults)
TdaP - 13 years
TdaPIPV - 7 years

Israel:

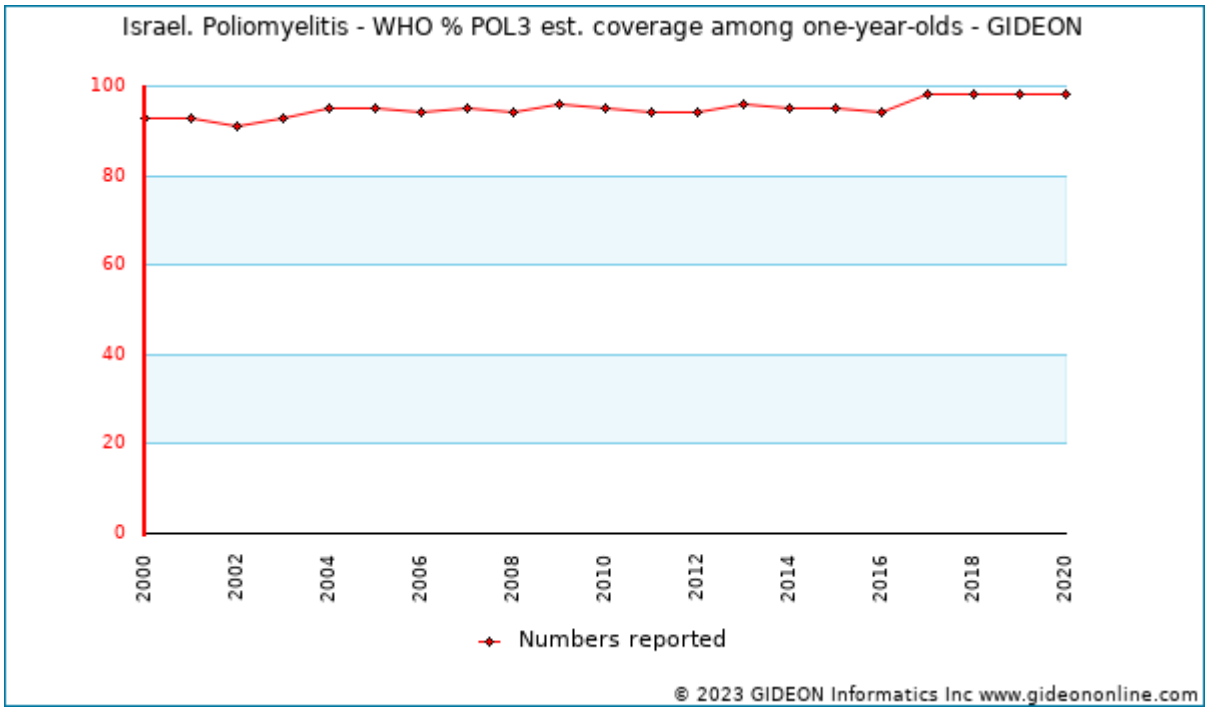
Routine use of Salk vaccine was introduced in 1957, and replaced by Sabin vaccine in 1961. [1] [2]

- OPV was previously administered at 4, 6, 12 months; 6, 13 years

- OPV was discontinued in 2005.
- Bivalent OPV vaccine (at ages 6 and 18 months) was reintroduced in 2014, following detection of wild Poliovirus type 1 in sewage. [3] A bivalent oral polio vaccine campaign was initiated in April 2022, following reports of illness and envornmental contamination due to vaccine-derived poliovirus type 3 (cVDPV3) in the Jerusalem region.



Graph: Israel. Poliomyelitis - WHO-UNICEF est. % vaccine (POL3) coverage



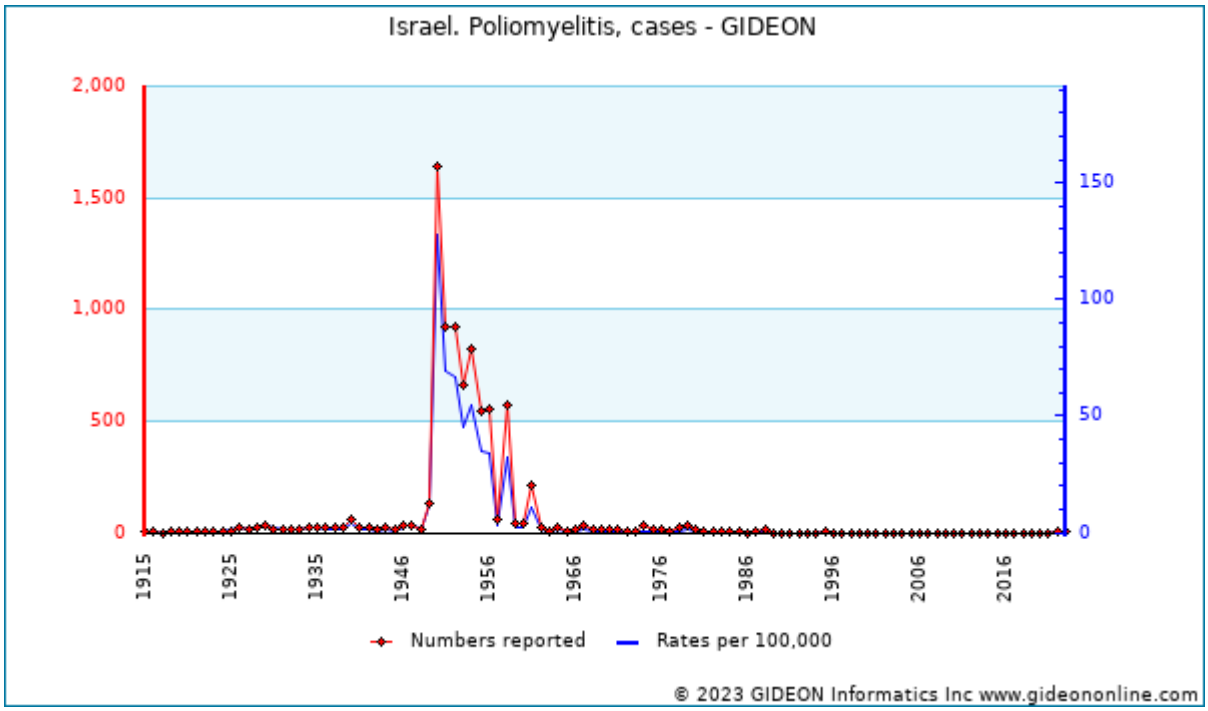
Graph: Israel. Poliomyelitis - WHO % POL3 est. coverage among one-year-olds

Poliomyelitis - WHO-UNICEF est. % vaccine (IPV1) coverage was 99% in 2017.

Seroprevalence surveys

Years	Region	Study Group	%	Notes
1997		military personnel	96.4-99.6	98.7% toward type 1, 99.6% toward type 2 and 96.4% toward type 3 (Army recruits, 1997) [4]
2005*		foreign workers	98.6-99.3	99.3% toward type 1, 98.6% toward type 2 and 99.3% toward type 3 (foreign workers, 2005 publication) [5]
1980 - 1981	Multiple locations	general population	79-90	90% toward type 1, 84% type 2 and 79% type 2 (kibbutz residents, 1980 to 1981) [6]

* indicates publication year (not necessarily year of survey)



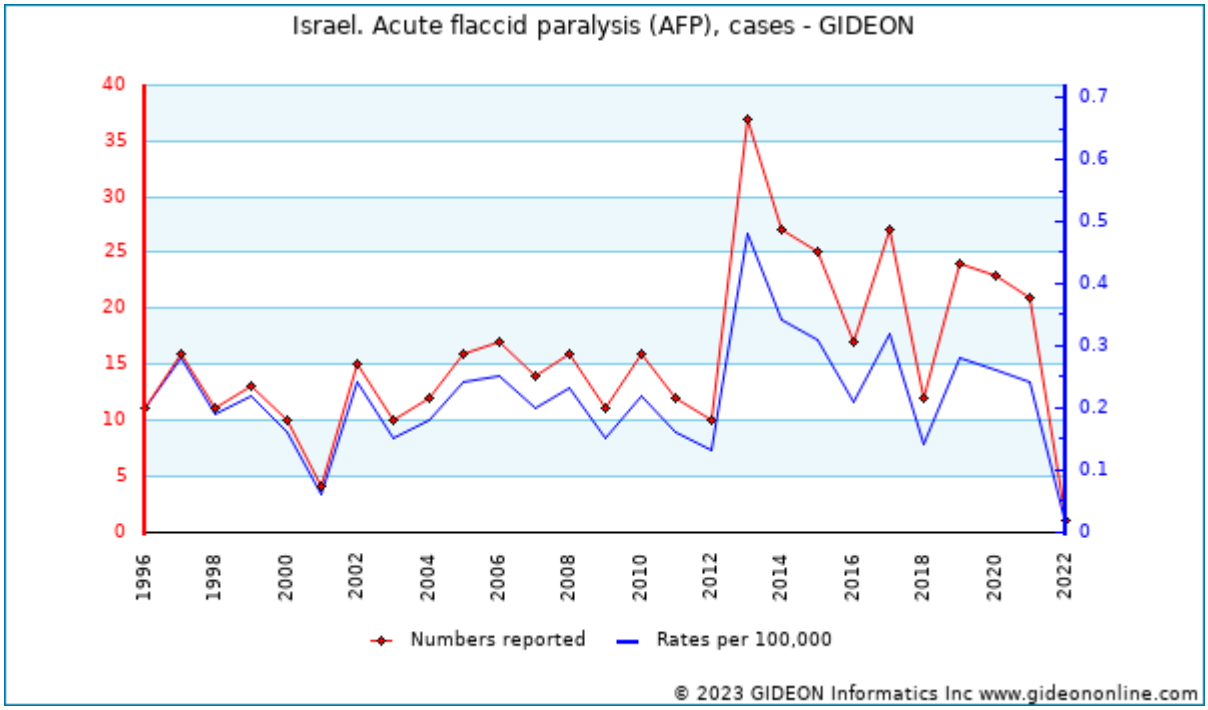
Graph: Israel. Poliomyelitis, cases

Notes:
1. Poliomyelitis has been a reportable disease since 1951.
2. Type 1 virus has predominated during years of high incidence.
3. 2,539 cases of paralytic disease were reported during the epidemic of 1950 to 1951. [7]
4. A total of 4,700 cases were reported during 1950 to 1954, with 760 deaths and 3,200 cases of permanent paralysis.
5. Also see reference [8]

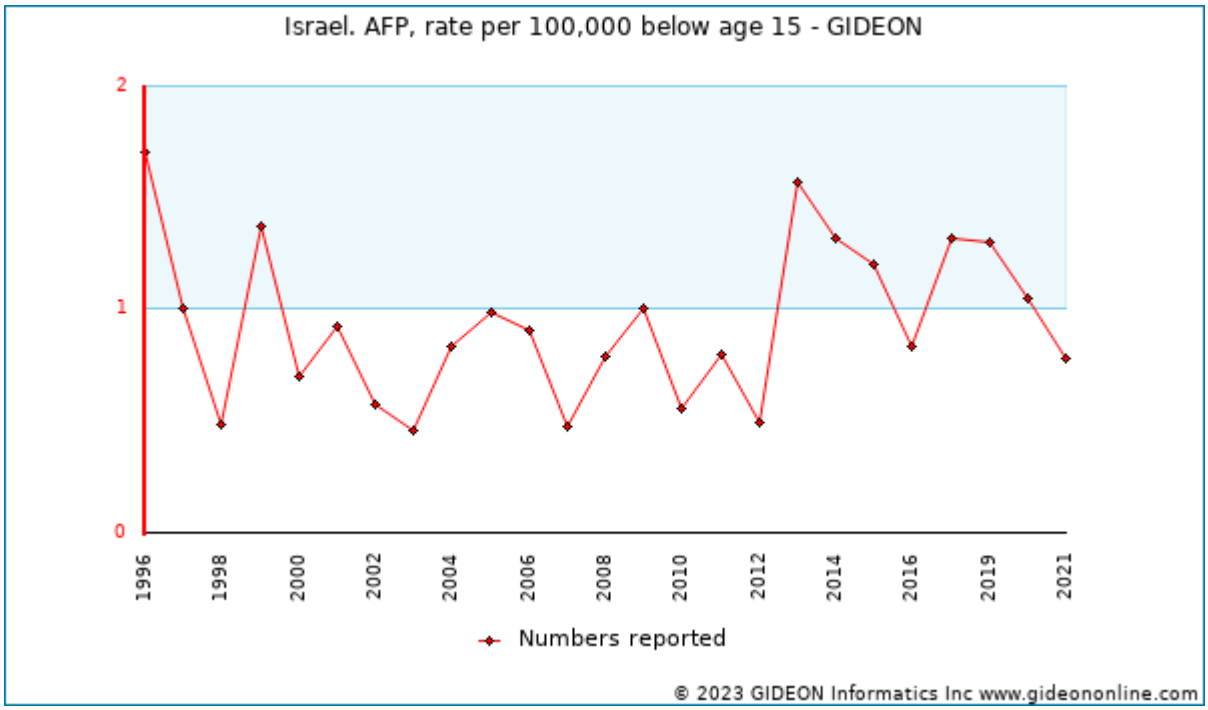
Individual years:
1988 - Included 12 cases from Or Akiva. A subsequent mass vaccination program resulted in virtually 100% coverage (94% to 100% for children) - see references below.
1995 - Two suspect cases (including a single case of vaccine-associated disease = the ninth such case since 1972) were reported.
2013 - Wild Poliovirus virus type 1 was identified in sewage from sampling sites. Mass vaccination of children was instituted using OPV types 1 and 3. [9] [10] [11] [12] [13] [14] [15] [16] [17] [18] [19] [20] [21] [22] [23] [24] [25] [26]
2014 - Wild Poliomyelitis type 1 was identified in sewage from sampling sites. [27]
2022 - As of November 1, one case of AFP due to vaccine-derived poliomyelitis type 3 was reported, in addition to six asymptomatic children with confirmed VDPV3 infection. [28] [29] [30]
2022 - Poliomyelitis caused by wild-type poliovirus and vaccine derived poliovirus were reported to be zero.
2023 - As of February 27, one case of cVDPV2 was reported. Polio virus was found in 3 children who came in contact with the infected case.All the 3 contacts were asymptomatic. [31] [32] [33]

- 2022 - One case of poliomyelitis caused by cVDPV3 was reported. A total of 25 cVDPV3 positive environmental samples were reported. [34]
- 2023 - A case of poliomyelitis caused by cVDPV2 was diagnosed in an unvaccinated 8-year-old child in the North

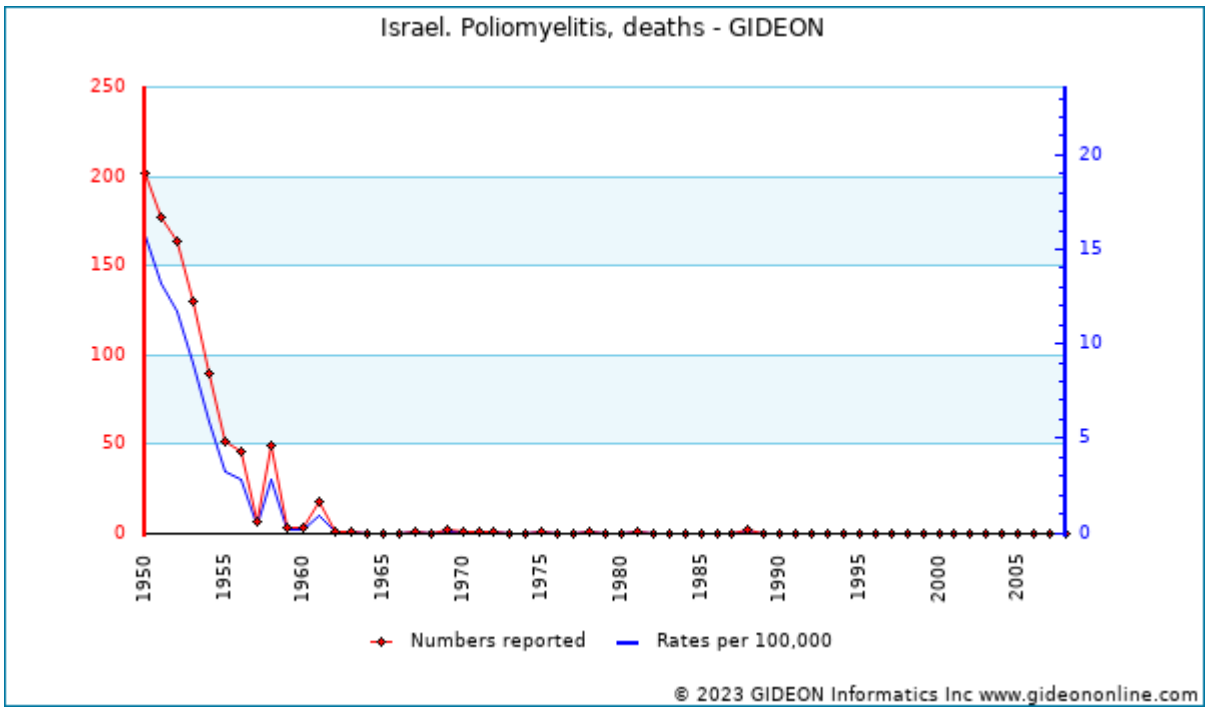
province of Safed in February who presented with limb weakness. [35] [36] [37] On March 2, the Israel ministry of health reported 3 additional cases of polio in children who had been in contact with the infected child. All 3 children were asymptomatic with unknown vaccination status. [38] [39]



Graph: Israel. Acute flaccid paralysis (AFP), cases



Graph: Israel. AFP, rate per 100,000 below age 15



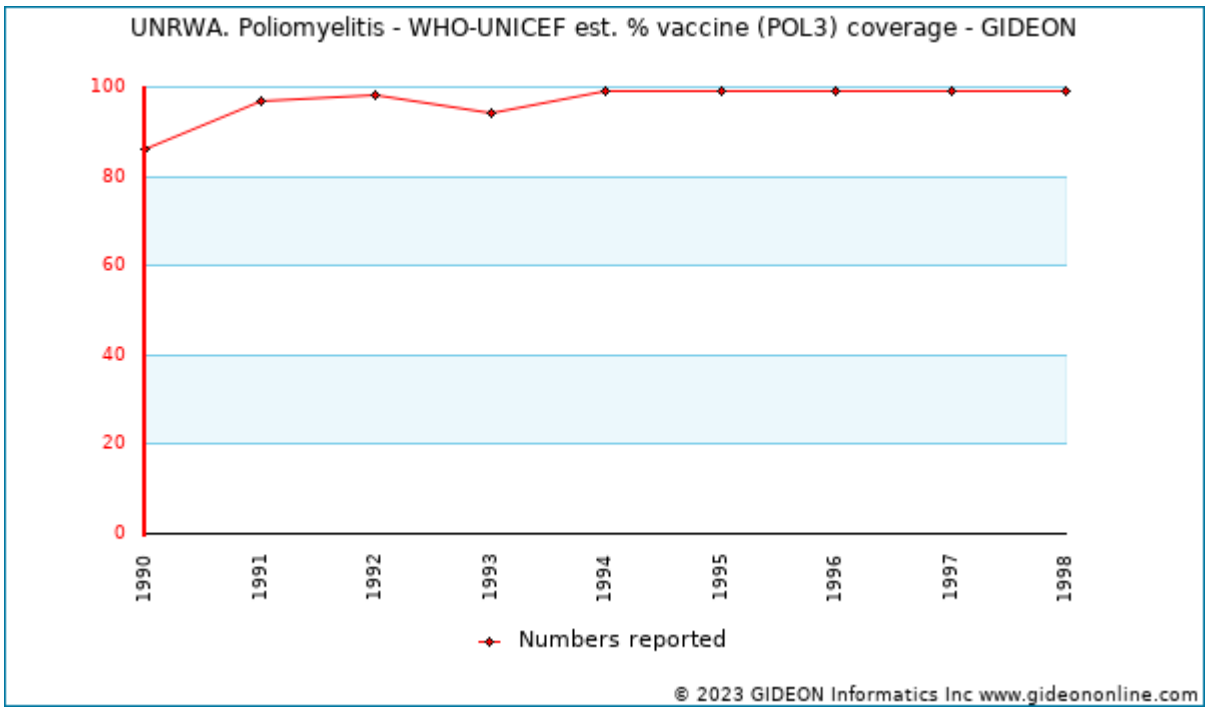
Graph: Israel. Poliomyelitis, deaths

Notes:
1. 10 deaths were ascribed to poliomyelitis during 1925 to 1929; 12 during 1930 to 1934; 12 during 1935 to 1939; 13 during 1940 to 1944; 5 during 1945 to 1948.

Notable outbreaks

Years	Region	Cases	Deaths	Pathogen	Population	Notes
1950 - 1951		2,444	26			[40] [41] [42] [43] [44] [45] [46]
1958		633				[47] [48]
1961						Outbreak reported - additional details unavailable. [49]
1974 - 1976	Gaza	152				152 cases in 2 outbreaks. [50] [51] [52]
1988	Multiple locations	16				Outbreak included 12 cases in Or Akiva. A subsequent mass vaccination program resulted in virtually 100% coverage (94% to 100% for children). [53] [54] [55] [56] [57] [58] [59] [60] [61] [62] [63]
2022		7	0	Poliovirus 3 vaccine-derived		As of March 29, 2022 one case of AFP due to vaccine-derived poliomyelitis type 3 was reported - in addition to six asymptomatic children with confirmed VDPV3 infection [64] [65] [66] [67] [68]
2023		6			children	On February 27, 2023, Israel's Ministry of Health issued an official alert describing a case of acute flaccid paralysis (AFP) that is highly suspicious for poliomyelitis. The case was an unvaccinated 8-year-old from the Safed area. Laboratory and epidemiological investigations are still ongoing. On March 2, 2023, the Israel Ministry of Health reported 3 additional children testing positive for polio virus. On March 5, 2023, the Israel Ministry of Health reported that 2 additional contacts of the an initial AFP case tested positive for poliovirus, bringing the total number of asymptomatic contacts to five. [69] [70]

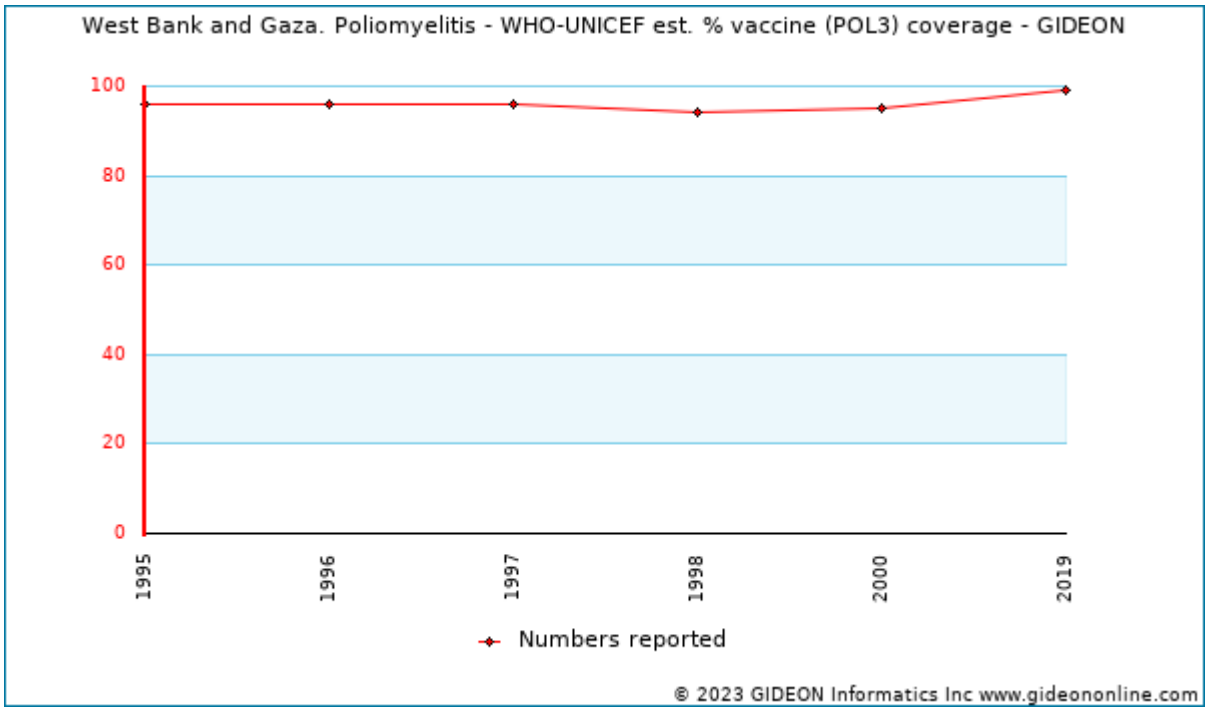
UNRWA, West Bank and Gaza:



Graph: UNRWA. Poliomyelitis - WHO-UNICEF est. % vaccine (POL3) coverage

Notes:
1. Also see reference [71]

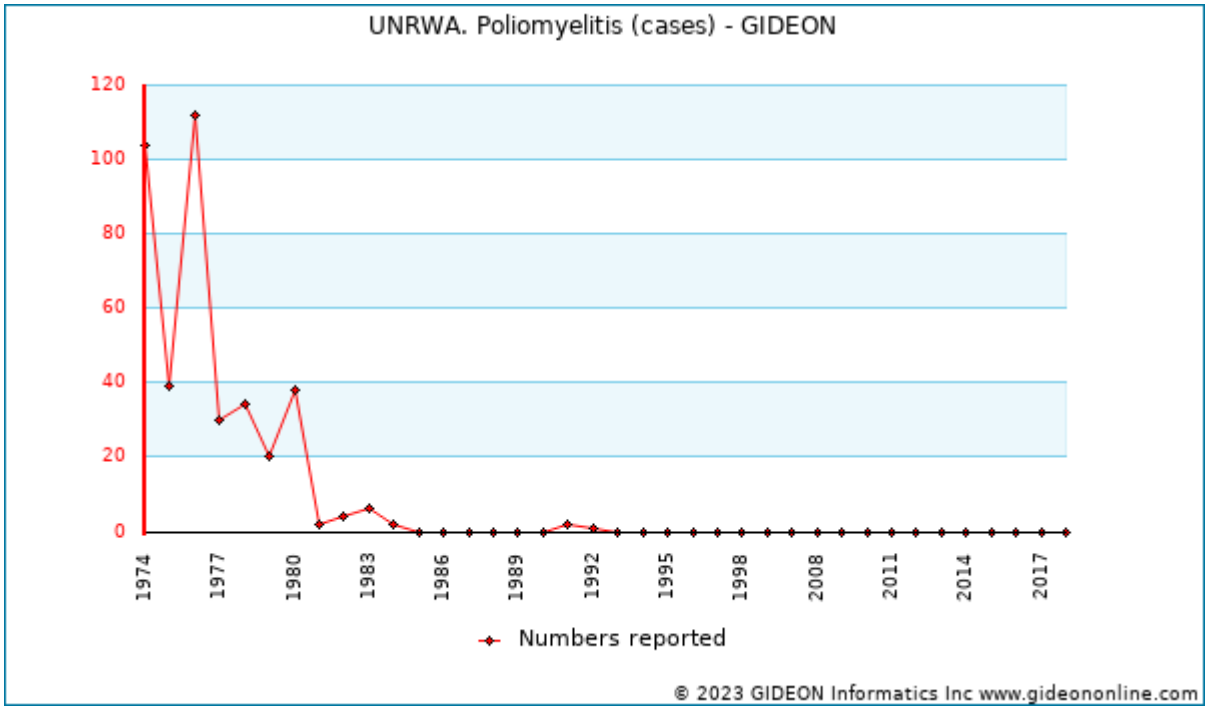
The population of the Gaza Strip and West Bank is given OPV at ages 2, 4, 6 and 12 months; and 6 years; or IPV at ages 1 and 2 months.



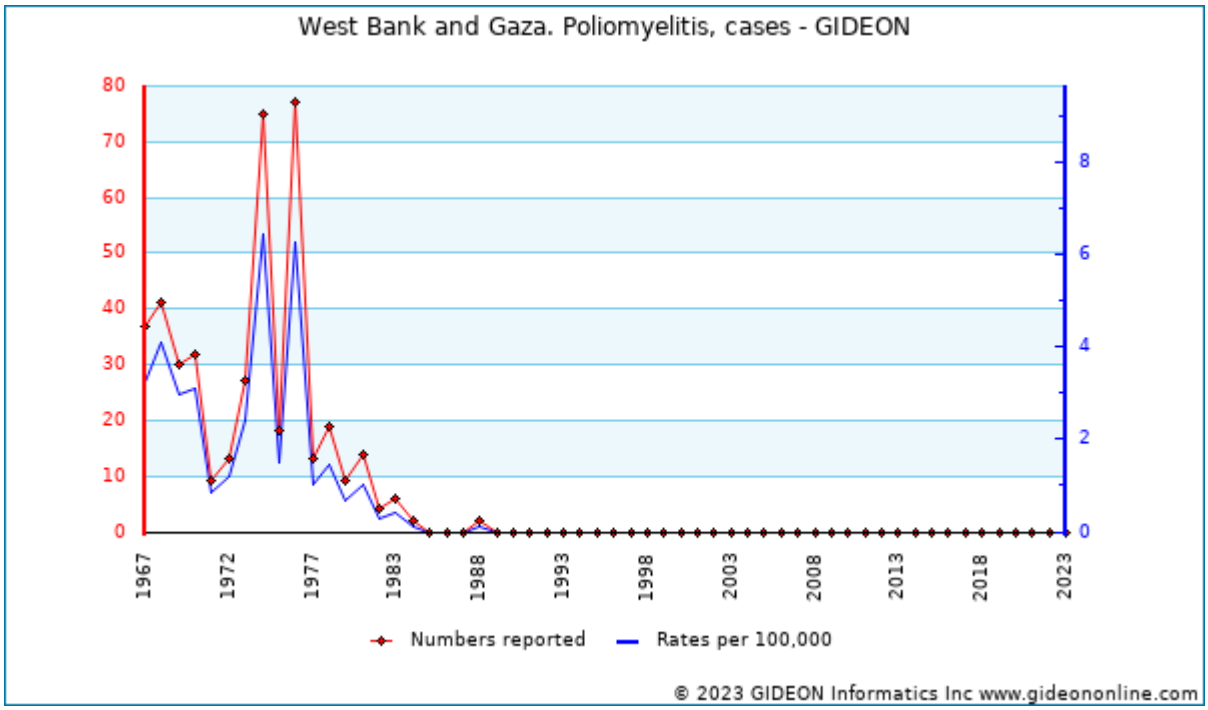
Graph: West Bank and Gaza. Poliomyelitis - WHO-UNICEF est. % vaccine (POL3) coverage

Epidemics were reported from the Gaza Strip in 1974 and 1976, with attack rates of 18 per 100,000. [72] [73] [74]

- Over 220 cases were reported from Judea, Samaria and the Gaza Strip during 1984 to 1990.
- Wild Poliovirus I was identified in sewage samples during 2013 to 2014 [75] [76]
- Vaccine-derived poliovirus type 3 was identified in environmental samples from the West Bank in 2022. [77]

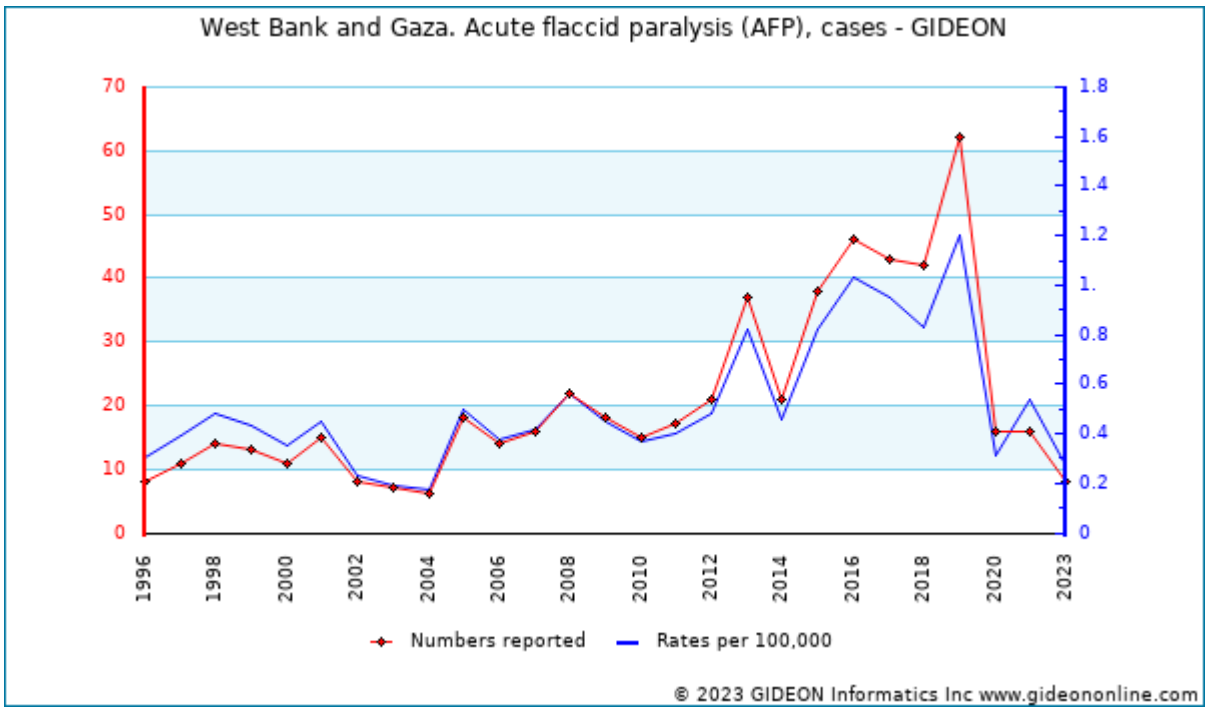


Graph: UNRWA. Poliomyelitis (cases)



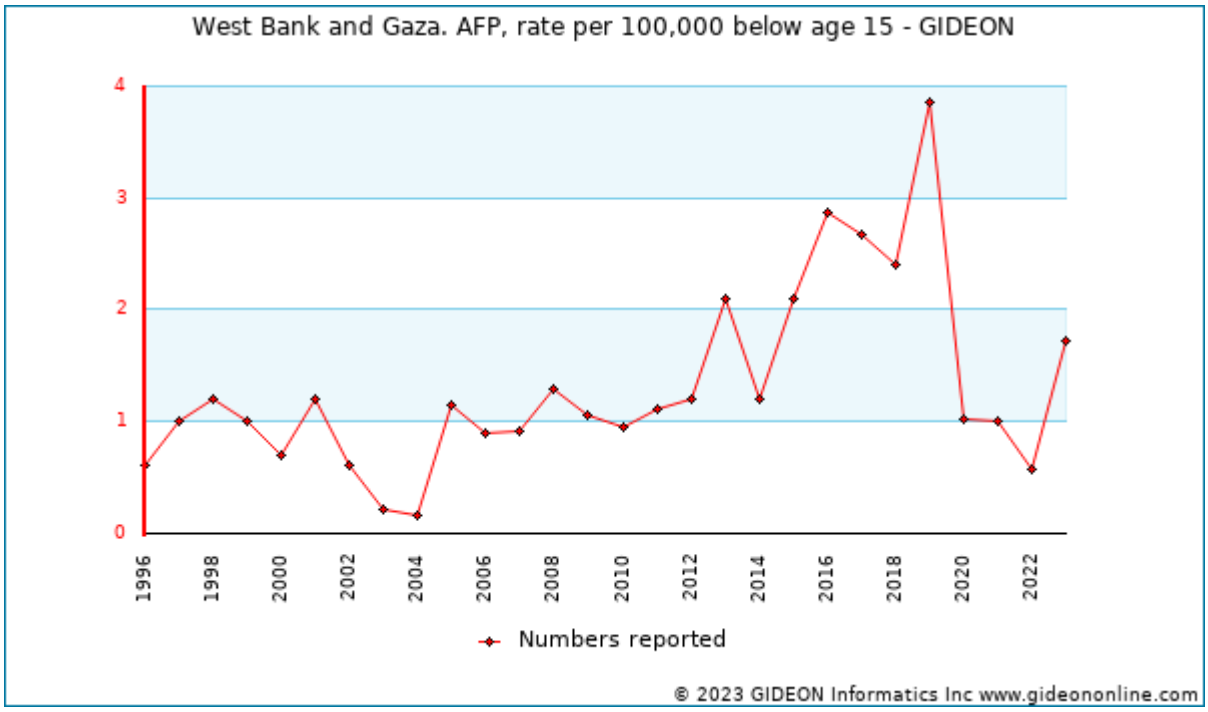
Graph: West Bank and Gaza. Poliomyelitis, cases

Notes:
1. 320 cases were reported during 1973 to 1977; 77 during 1978 to 1982; 13 during 1983 to 1987.



Graph: West Bank and Gaza. Acute flaccid paralysis (AFP), cases

Notes:
Individual years:
2011 - 1 case was reported in Gaza



Graph:
West Bank and Gaza. AFP, rate per 100,000 below age 15

References

1. Rev Infect Dis 1984 May-Jun;6 Suppl 2:S313-7.
2. Bull World Health Organ 1994 ;72(5):783-96.
3. Isr Med Assoc J 2016 Oct ;18(10):590-593.
4. Vaccine 2001 Jul 20;19(30):4162-6.
5. Prev Med 2005 Jun ;40(6):685-9.
6. J Med Virol 1990 Jan ;30(1):68-72.
7. Bull World Health Organ 1955 ;12(4):651-76.
8. Prog Med Virol 1984 ;29:115-23.
9. Euro Surveill 2013 Sep 19;18(38)
10. Euro Surveill 2014 Feb 20;19(7):20703.
11. Euro Surveill 2014 Feb 20;19(7):20708.
12. Euro Surveill 2014 Feb 20;19(7):20709.
13. Euro Surveill 2014 Feb 20;19(7):20710.
14. Health Commun 2017 Feb ;32(2):169-179.
15. BMC Med 2016 06 23;14(1):95.
16. Vaccine 2018 Feb 10;
17. Proc Natl Acad Sci U S A 2018 Oct 18;
18. ProMED <promedmail.org> archive: 30603.1753099
19. ProMED <promedmail.org> archive: 20130604.1754766
20. ProMED <promedmail.org> archive: 20130605.1756289
21. ProMED <promedmail.org> archive: 20130614.1772461
22. ProMED <promedmail.org> archive: 20130715.1826123
23. ProMED <promedmail.org> archive: 20130801.1854632
24. ProMED <promedmail.org> archive: 20130817.1884992
25. ProMED <promedmail.org> archive: 20130829.1911713
26. ProMED <promedmail.org> archive: 20130930.1976296
27. ProMED <promedmail.org> archive: 20140312.2328674
28. ProMED <promedmail.org> archive: 20220307.8701864
29. ProMED <promedmail.org> archive: 20220311.8701925
30. ProMED <promedmail.org> archive: 20221104.8706551
32. ProMED <promedmail.org> archive: 20230311.8708880
33. ProMED <promedmail.org> archive: 20230304.8708724
34. ProMED <promedmail.org> archive: 20230305.8708745
35. ProMED <promedmail.org> archive: 20230602.8710355
36. ProMED <promedmail.org> archive: 20230311.8708880
37. ProMED <promedmail.org> archive: 20230304.8708724
38. ProMED <promedmail.org> archive: 20230228.8708638
39. ProMED <promedmail.org> archive: 20230305.8708745
40. ProMED <promedmail.org> archive: 20230317.8708985
41. Bull World Health Organ 1955 ;12(4):651-76.
42. Harefuah 1950 Jun 01;38(11):185-7.
43. Bull World Health Organ 1955 ;12(4):651-76.
44. Am J Public Health 2007 Feb ;97(2):218.
45. Harefuah 1951 Jul 01;41(1):1-9.
46. Acta Med Orient 1952 Apr ;11(4):61-77.
47. Harefuah 2019 Nov ;158(11):755-759.
48. Bull World Health Organ 1960 ;23:53-72.
49. Rev Infect Dis 1984 May-Jun;6 Suppl 2:S313-7.
50. Am J Hyg 1962 Nov ;76:225-38.
51. Isr J Med Sci 1983 Nov ;19(11):1021-3.
52. Dev Biol Stand 1986 ;65:137-43.
53. Dev Biol Stand 1978 ;41:173-7.
54. Lancet 1990 May 19;335(8699):1192-5; discussion 1196-8.
55. Int J Epidemiol 1991 Mar ;20(1):284-9.
56. Can Dis Wkly Rep 1988 Nov 12;14(45):208.
57. JAMA 1988 Nov 11;260(18):2640.
58. MMWR Morb Mortal Wkly Rep 1988 Oct 14;37(40):624-5.
59. Viral Immunol 1989 ;2(2):57-60.
60. Health Policy 1989 ;13(3):177-88.
61. Ned Tijdschr Geneeskd 1991 Apr 20;135(16):692-3.
62. Vaccine 1993 ;11(1):75-81.
63. Bull World Health Organ 1994 ;72(5):783-96.
64. Vaccine 1994 Apr ;12(5):476.
65. ProMED <promedmail.org> archive: 20220331.8702310
66. ProMED <promedmail.org> archive: 20220326.8702235
67. ProMED <promedmail.org> archive: 20220321.8702116
68. ProMED <promedmail.org> archive: 20220309.8701883
69. ProMED <promedmail.org> archive: 20230317.8708985
70. ProMED <promedmail.org> archive: 20230311.8708880
71. ProMED <promedmail.org> archive: 20230317.8708985
72. Isr J Med Sci 1994 May-Jun;30(5-6):489-94.
73. Dev Biol Stand 1978 ;41:173-7.
74. Isr J Med Sci 1979 Jan ;15(1):12-3.
75. Rev Infect Dis 1984 May-Jun;6 Suppl 2:S467-70.
76. BMC Med 2016 06 23;14(1):95.
77. ProMED <promedmail.org> archive: 20130930.1976296
78. ProMED <promedmail.org> archive: 20220311.8701925

Protothecosis and chlorellosis

Agent	ALGA. *Prototheca wickerhamii*; rarely *Pr. zopfii*, *Pr. cutis* Achloric algae Chlorella spp. contain chloroplasts
Reservoir	Rare animal pathogens (cat, dog, cattle wild mammals), Zoonotic
Vector	None
Vehicle	Water, Sewage, Food, Skin trauma
Incubation Period	Unknown
Diagnostic Tests	Culture on fungal media. Biopsy. Nucleic acid amplification.
Typical Adult Therapy	Surgical excision. There are anecdotal reports of successful therapy with Amphotericin B, Ketoconazole and Itraconazole (latter 200 mg/day X 2 months) or Voriconazole[1] [2]
Typical Pediatric Therapy	As for adult (Itraconazole 2 mg/kg/day X 2 months)
Clinical Hints	- May follow immune suppression or skin trauma - Dermal papules, plaques, eczematoid or ulcerated lesions - Olecranon bursitis is common - Systemic infection reported in some cases
Synonyms	Chlorellosis, Prototheca, Prototheca blaschkeae, Prototheca bovis, Prototheca cutis, Prototheca miyajii, Prototheca wickerhamii, Prototheca zopfii, Protothecosis. ICD9: 136.8 ICD10: B99

Protothecosis and chlorellosis in Israel

1996 - A case of intestinal protothecosis was reported. [3]

2006 (publication year) - A case of *Prototheca wickerhamii* hand infection was reported. [4]

References

1. Mycopathologia 2018 Aug 16;
2. Front Immunol 2022 ;13:880196.
3. Clin Infect Dis 1998 Aug ;27(2):399-400.
4. J Travel Med 2006 Sep-Oct;13(5):321-3.

Pseudocowpox

Agent	VIRUS - DNA. Poxviridae, Parapoxvirus: Pseudocowpox virus
Reservoir	Cattle, Zoonotic
Vector	None
Vehicle	Contact
Incubation Period	5d - 14d
Diagnostic Tests	Biosafety level 3. Viral culture (skin lesion or exudate). Serology. Nucleic acid amplification.
Typical Adult Therapy	Skin / lesion precautions Supportive[1]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Umbilicated nodule on the hand following contact with cattle - Mild regional lymphadenopathy
Synonyms	Bovine papular stomatitis, Farmyard pox, Milker's nodule, Noduli mulgentinum, Paravaccinia, Sealpox. ICD9: 051.1 ICD10: B08.0

Pseudocowpox in Israel

Milkers' nodules were first described in Israel in 1936.

References

1. J Med Chem 2023 Apr 13;66(7):4468-4490.

Pseudorabies virus infection

Agent	VIRUS - DNA Herpesviridae, Alphaherpesvirinae: Suid herpesvirus 1
Reservoir	Pig, Panther, Raccoon, Coyote, Cattle, Deer, Mink, Fox, Zoonotic
Vector	None
Vehicle	Aerosol or secretions from animal
Incubation Period	3d-14d
Diagnostic Tests	Serology, Nucleic acid amplification.
Typical Adult Therapy	Supportive
Typical Pediatric Therapy	As for adult
Clinical Hints	- Disease follows contact (ie, occupational injury) associated with pigs - Headache, fever, seizures, coma. - Lymphocytic pleocytosis of CSF - Severe pneumonia during hospitalization is common - Endophthalmitis or retinitis in some cases.
Synonyms	Aujeszky's disease, Suid herpesvirus type 1. ICD9: 078.89 ICD10: B33.8

Pyodermas (impetigo, abscess, etc)

Agent	BACTERIUM. Various (*Staphylococcus aureus* & *Streptococcus pyogenes* predominate)
Reservoir	Human
Vector	None
Vehicle	Endogenous, Secretions, Contact, Trauma
Incubation Period	Variable
Diagnostic Tests	Clinical diagnosis usually sufficient. Aspiration of lesion for smear and culture may be helpful in some cases.
Typical Adult Therapy	Skin / lesion precautions Antibiotic directed at likely pathogens (Group A Streptococcus and Staphylococcus aureus)
Typical Pediatric Therapy	Skin / lesion precautions As for adult
Clinical Hints	- Impetigo is characterized by vesicles which progress to pustules ("honey-colored pus"') - Highly contagious - May be complicated by acute glomerulonephritis
Synonyms	Acne vulgaris, Carbonchio, Carbuncle, Folicolite, Follicolite, Folliculite, Folliculitis, Follikulitis, Foroncolosi, Foronculose, Foruncolosi, Furunculosis, Furunkulose, Furunulose, Hydradenitis, Impetigine, Impetigo, Paronychia, Pyoderma. ICD9: 680,684,686 ICD10: L01,L02,L08.0,L73.2

Pyodermas (impetigo, abscess, etc) in Israel

Notable outbreaks

Years	Region	Setting	Cases	Clinical	Source	Pathogen	Notes
2004 - 2005			128	ecthyma		*Streptococcus pyogenes*	military personnel. [1]
2010 - 2011	Northern Region	whirlpool	25	folliculitis	water	*Pseudomonas aeruginosa*	Outbreak associated with 2 whirlpools. [2]
2017		military base	200	impetigo			military personnel.

References

1. Clin Infect Dis 2009 May 01;48(9):1213-9.

2. Harefuah 2012 Jul ;151(7):381-7, 437.

Pyomyositis

Agent	BACTERIUM. Usually *Staphylococcus aureus*
Reservoir	Human
Vector	None
Vehicle	Endogenous
Incubation Period	Variable
Diagnostic Tests	Ultrasonography or CT scan.
Typical Adult Therapy	Antibiotic directed at confirmed or suspected pathogen (usually Staphylococcus aureus); drainage[1]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Pain, swelling and "woody" induration of a large muscle (usually lower limb or trunk) - Associated with fever and leukocytosis - Often follows trauma to the involved region - Lymphadenopathy uncommon; leucocytosis in most cases.
Synonyms	Purulent infectious myositis, Tropical pyomyositis. ICD9: 040.81 ICD10: M60.0

References

1. Clin Microbiol Rev 2008 Jul ;21(3):473-94.

Pythiosis

Agent	PROTOCTISTA. Oomycota, Peronosporales: *Pythium insidiosum*
Reservoir	Horse, Cattle, Dog, Cat, Human, Aquatic plants, Zoonotic
Vector	None
Vehicle	Direct inoculation, Trauma, Contact
Incubation Period	Unknown
Diagnostic Tests	Biopsy, Culture in fungal media. Nucleic acid amplification.
Typical Adult Therapy	Excision. Terbinafine + Itraconazole has been used successfully. Minocycline; Tigecycline; and combinations of Terbinafine + Caspofungin or an Azole antifungal are effective in-vitro. Azithromycin, Linezolid, Clarithromycin and Doxycycline have been effective in some cases. Immune therapy (injection of Pythium antigens) has been successful in animal models[1] [2] [3]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Gradual onset of soft tissue infection and arterial necrosis or obstruction - Usually involves the lower extremities in tropical or semitropical climate - Most common in patients with thalassemia or aplastic anemia - Infection may also present as destructive keratitis
Synonyms	Bursattee, Equine phycomycosis, Florida horse leech, Hyphomycosis destruens, Kunkers, Lagenidium, Pythium aphanidermatum, Pythium insidiosum, Swamp cancer. ICD9: 136.8 ICD10: B99

Pythiosis in Israel

2011 (publication year) - *Pythium insidiosum* keratitis was reported in an Israeli contact lens user. [4]

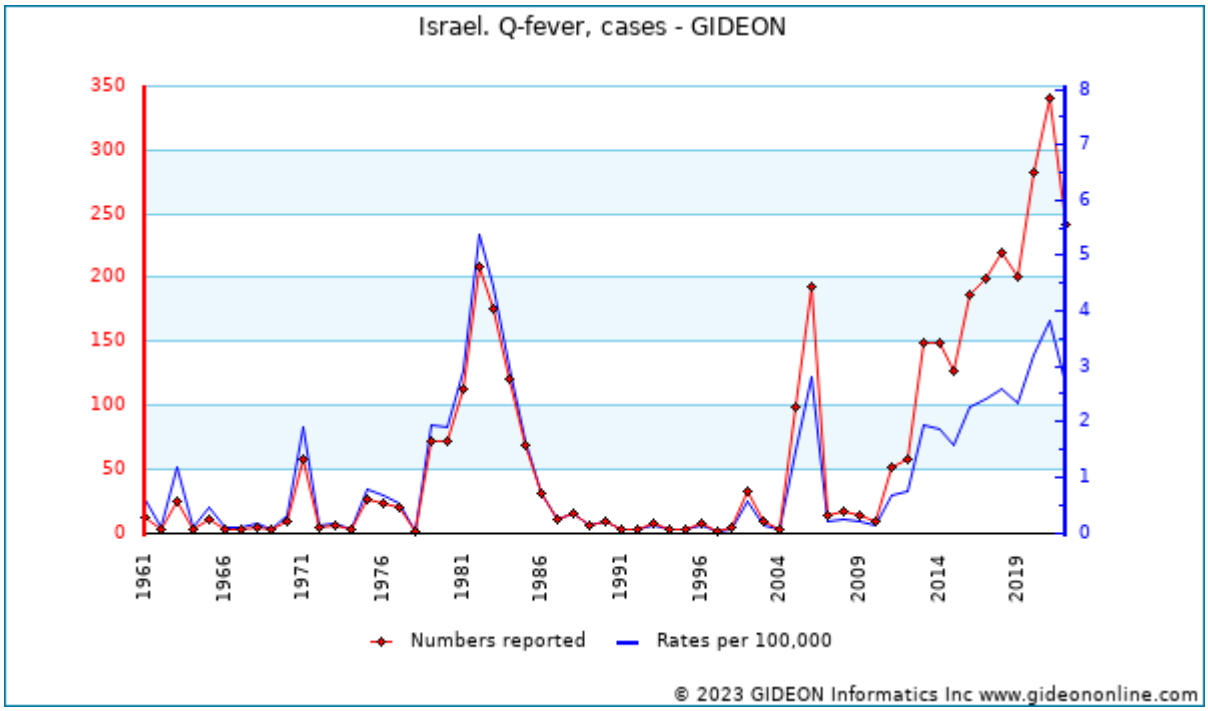
References

1. Int J Infect Dis 2018 Apr 10;
2. Mycopathologia 2019 Dec 16;
3. Antimicrob Agents Chemother 2020 Feb 03;
4. Eye Contact Lens 2011 Mar ;37(2):96-8.

Q-fever

Agent	BACTERIUM. *Coxiella burnetii* Intracellular organism related to Rickettsiae
Reservoir	Cattle, Sheep, Goat, Bird, Fish, Rodent, Rabbit, Tick, Bandicoot, Marsupial, Dog, Cat, Horse, Zoonotic
Vector	None
Vehicle	Air, Dust, Secretions, Dairy products, Respiratory or pharyngeal acquisition
Incubation Period	18d - 21d (range 4d - 40d)
Diagnostic Tests	Serology. Culture possible in specialized laboratories. Nucleic acid amplification.
Typical Adult Therapy	Doxycycline 100 mg BID X 2w OR Trimethoprim/Sulfamethoxazole 160/800 mg PO BID X 2w Add Hydroxychloroquine 600 mg per day if endocarditis[1] [2] [3]
Typical Pediatric Therapy	Age < 8 years: Trimethoprim/Sulfamethoxazole TMP 4-6 mg/kg PO BID X 2 weeks Age >= 8 years: Doxycycline 100 mg BID X 2 weeks
Vaccine	Q fever vaccine
Clinical Hints	- Proximity to farming or animals during 2 to 4 weeks preceding illness - Headache, myalgia, cough and hepatic dysfunction - Hepatosplenomegaly, "F.U.O." and endocarditis are encountered - Most infections resolve in 1 to 2 weeks - Case-fatality rate is 1.5%
Synonyms	Balkan grippe, Candidatus Coxiella massiliensis, Coxiella burnetii, Febbre australiana, Febre Q, Nine Mile fever, Q fever, Q-Fieber, Q-koorts, Query fever, Red River fever. ICD9: 083.0 ICD10: A78

Q-fever in Israel



Graph: Israel. Q-fever, cases

Notes:
1. Q-fever has been a reportable disease since 1961.
2. The mean age of hospitalized patients is 42.7 years, with a male/ female ratio of 1.6/1.
Individual years:
1992 - Although only two cases were reported, 109 cases were confirmed by the Central Laboratory.

- 2006 to 2016 - 38 cases of acute Q-fever were treated at a hospital in Kfar Saba. [4]

Cross-border events

Years	Acquired by**	Originated in**	Setting	Cases	Notes
2000*	Israel	Kenya	travel	4	An outbreak (4 cases) was reported among Israelis on safari in Kenya. [5]
2005	Belgium	Israel	school	9	An outbreak (144 cases confirmed) in a school in Israel may have been caused by aerosolized material originating from an infected cat. The group included 9 exchange students from Belgium. [6] [7]

* indicates publication year (not necessarily year of event)
** Country or Nationality

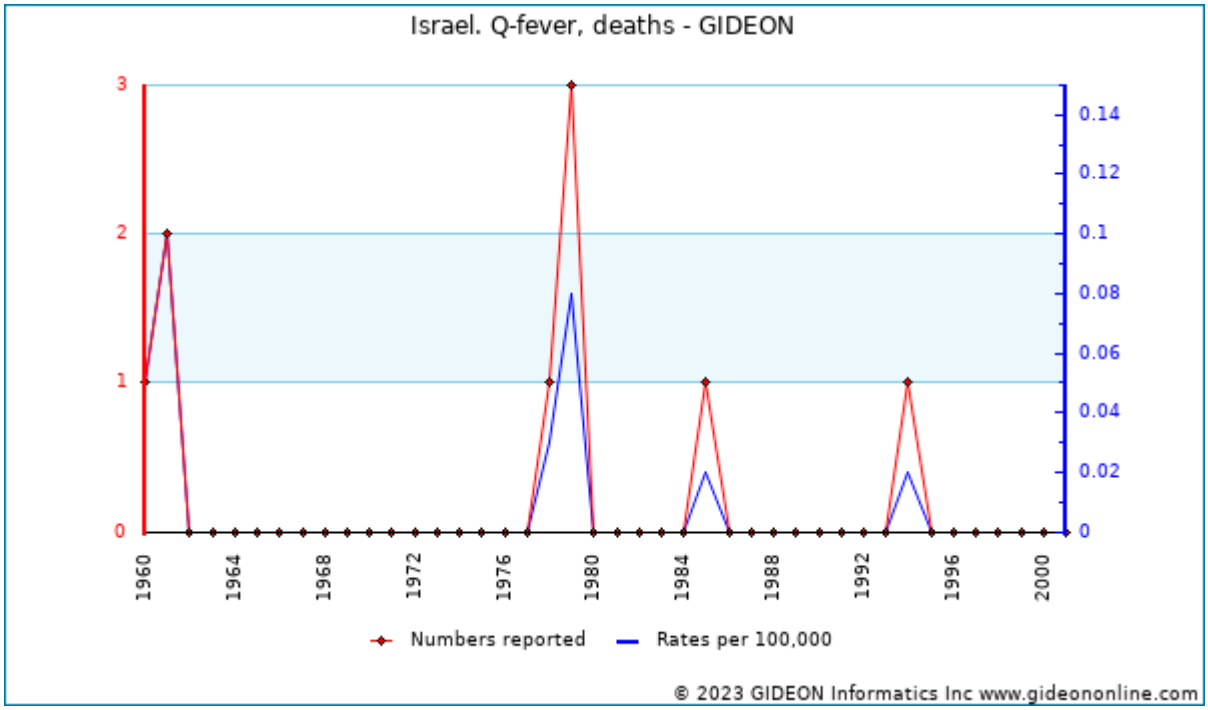
Prevalence surveys

Years	Region	Study Group	%	Notes
1997*	Negev	patients	5.8	Patients with community-acquired pneumonia [8]
1998*	Southern Region	patients	0	Q-fever was not identified among adult outpatients with respiratory tract infection [9]
2011*	Northern Region	patients	6.3	6.3% of patients with community-acquired pneumonia in Afula, northern Israel (2011 publication) [10]
2015*	Jerusalem	fleas	0	Survey of *Ctenocephalides felis* fleas removed from feral cats [11]

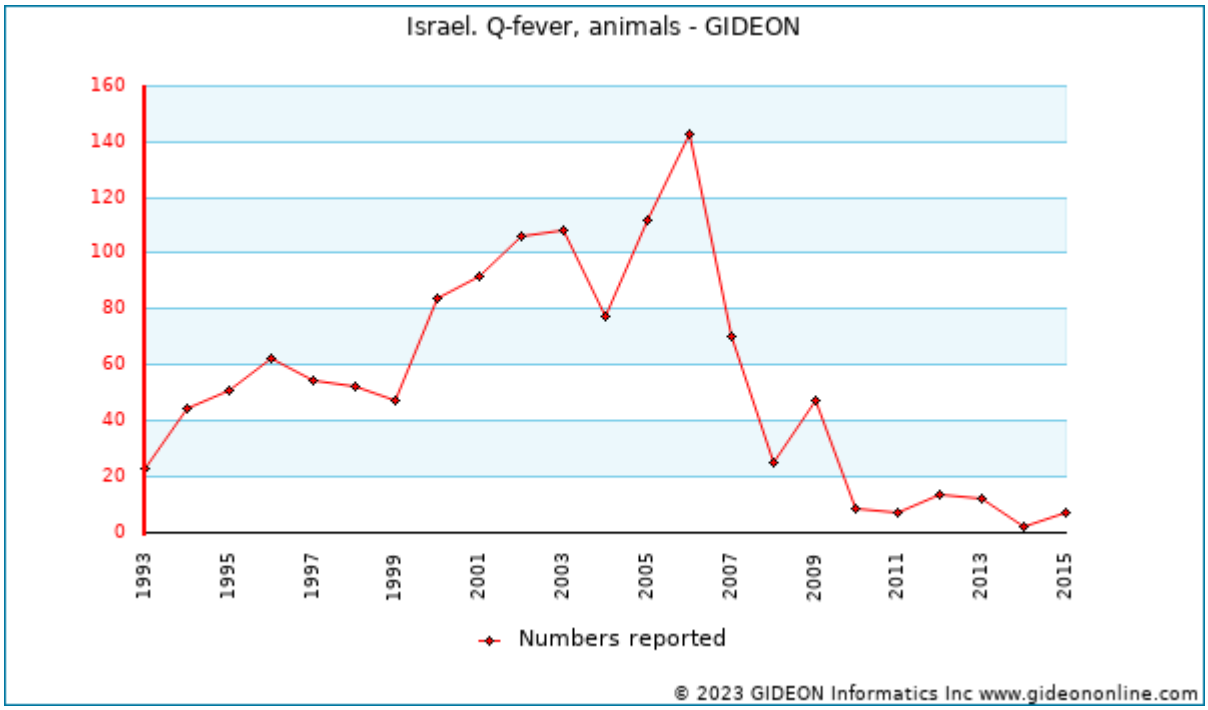
* indicates publication year (not necessarily year of survey)

Seroprevalence surveys

Years	Region	Study Group	%	Notes
2017 - 2019	Haifa	pregnant women	4.1	Out of 386 pregnant women with pre-term delivery screened for anti-*C. burnetii* antibodies, 16 (4.1%) were seropositive, of whom three were diagnosed with past, 12 with acute, and one with chronic infection. A higher percentage of seropositive women were immunosuppressed, 2/16 (12.5%) compared with 7/370 (1.9%) in seronegative women. [12]



Graph: Israel. Q-fever, deaths



Graph: Israel. Q-fever, animals

As of 2007, Israel was the only country which routinely vaccinated small ruminants (26,957 vaccinations in 2007). [13]

West Bank and Gaza:

West Bank and Gaza. Q-fever, cases: None reported between 1999 and 2004

Notable outbreaks

Years	Region	Setting	Cases	Source	Population	Notes
1949	Haifa		75			[14] [15]
1999	Jerusalem	hospital kitchen	16			[16]
2000*	Foreign Country		4			Outbreak among Israelis on safari in Kenya [17]
2001	Haifa		21			[18]
2005	Tel Aviv		144	cat		Outbreak in a school may have been caused by aerosolized material originating from an infected cat. The group included 9 exchange students from Belgium. [19] [20]
2015*			4		family members	[21]

* indicates publication year (not necessarily year of outbreak)

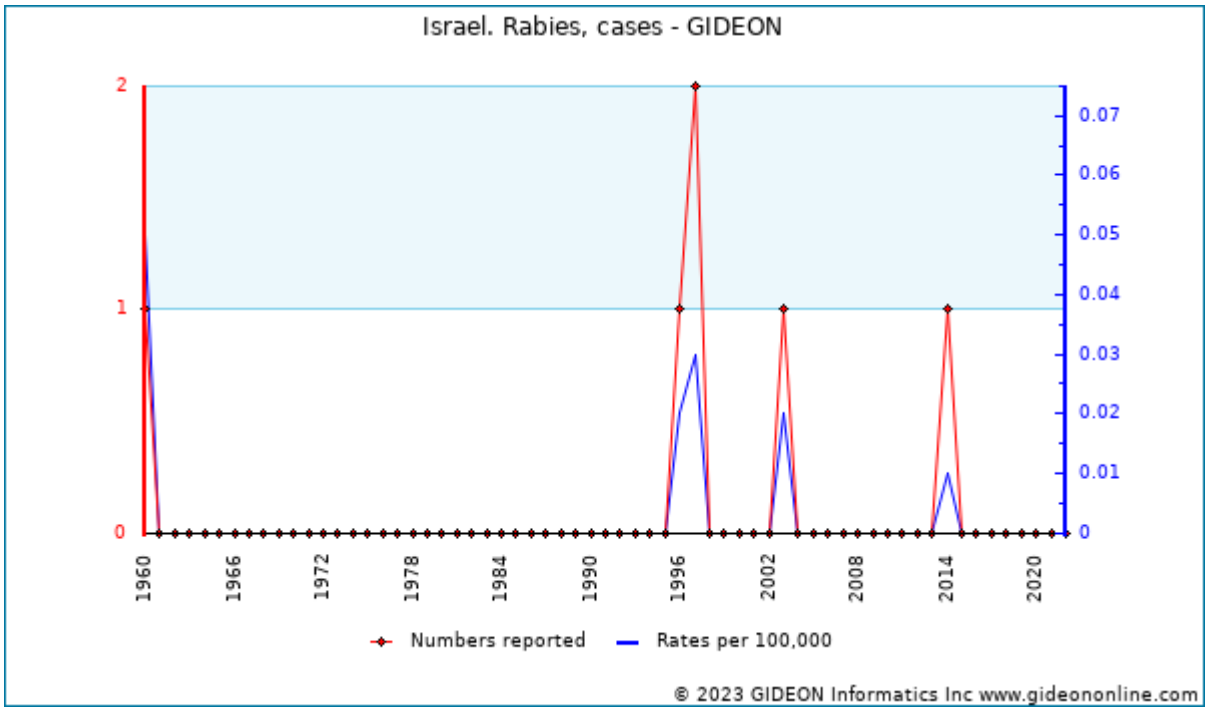
References

1. Expert Rev Anti Infect Ther 2013 Nov ;11(11):1207-14.
2. J Infect 2015 Jun ;71 Suppl 1:S2-9.
3. Recent Pat Antiinfect Drug Discov 2014 ;9(2):104-11.
4. Epidemiol Infect 2019 Jan ;147:e131.
5. Clin Infect Dis 2000 Jan ;30(1):214-5.
6. Clin Infect Dis 2010 Jun 01;50(11):1433-8.
7. ProMED <promedmail.org> archive: 20050814.2378
8. J Infect 1997 Jan ;34(1):41-8.
9. Eur J Clin Microbiol Infect Dis 1998 Oct ;17(10):685-9.
10. Isr Med Assoc J 2010 Aug ;12(8):477-82.
11. Vet Parasitol Reg Stud Reports 2015 Dec ;1-2:59-64.
12. Zoonoses Public Health 2022 Oct 12;
13. ProMED <promedmail.org> archive: 20081023.3352
14. Harefuah 1949 Jul 01;37(1):1.
15. Bull World Health Organ 1950 ;2(4):563-79.
16. Eur J Clin Microbiol Infect Dis 2001 Dec ;20(12):898-900.
17. Clin Infect Dis 2000 Jan ;30(1):214-5.
18. Eur J Clin Microbiol Infect Dis 2005 May ;24(5):338-41.
19. Clin Infect Dis 2010 Jun 01;50(11):1433-8.
20. ProMED <promedmail.org> archive: 20050814.2378
21. Clin Microbiol Infect 2015 May ;21(5):459-63.

Rabies

Agent	VIRUS - RNA. Rhabdoviridae, Mononegavirales, Lyssavirus: Rabies virus. Other human Lyssaviruses = Mokola, Duvenhage, European Bat (EBL)
Reservoir	Dog, Fox, Skunk, Jackal, Wolf, Cat, Raccoon, Mongoose, Bat, Rodent, Rabbit, Zoonotic, Badger
Vector	None
Vehicle	Saliva, Bite, Transplants, Air (bat aerosol), Respiratory or pharyngeal acquisition
Incubation Period	1m - 3m (range 4d to 19 years !)
Diagnostic Tests	Viral culture & direct immunofluorescence of saliva, CSF, corneal smears. Serology. Nucleic acid amplification.
Typical Adult Therapy	Strict isolation Supportive. The Milwaukee protocol (prolonged deep sedation and support) was apparently successful in some cases, but has since been abandoned.. See Vaccines module for pre- and post-exposure schedules[1] [2] [3] [4] [5]
Typical Pediatric Therapy	As for adult
Vaccine	Rabies immune globulin Rabies vaccine
Clinical Hints	- Follows animal bite (rarely lick) - often after months - Agitation, confusion, seizures, painful spasms of respiratory muscles - Progressive paralysis, coma and death - Case-fatality rate exceeds 99.9%
Synonyms	Aravan, Australian bat lyssavirus, Ballina, BBLV, Bokeloh bat lyssavirus, Duvenhage, EBL, European bat 1 Lyssavirus, European bat 2 Lyssavirus, European bat Lyssavirus, Gannorow bat lyssavirus, Hondsdolheid, Hydrophobia, Ikoma lyssavirus, Irkut, Khujand, Kotolahti bat lyssavirus, Lleida bat lyssavirus, Lyssa, Matlo bat lyssavirus, Mokola, Pteropus lyssavirus, Rabia, Rage, Raiva, Saint Hubert's disease, Shimoni bat virus, Taiwan bat lyssavirus, Tollwut, West Caucasian bat, Wutkrankheit. ICD9: 071 ICD10: A82

Rabies in Israel



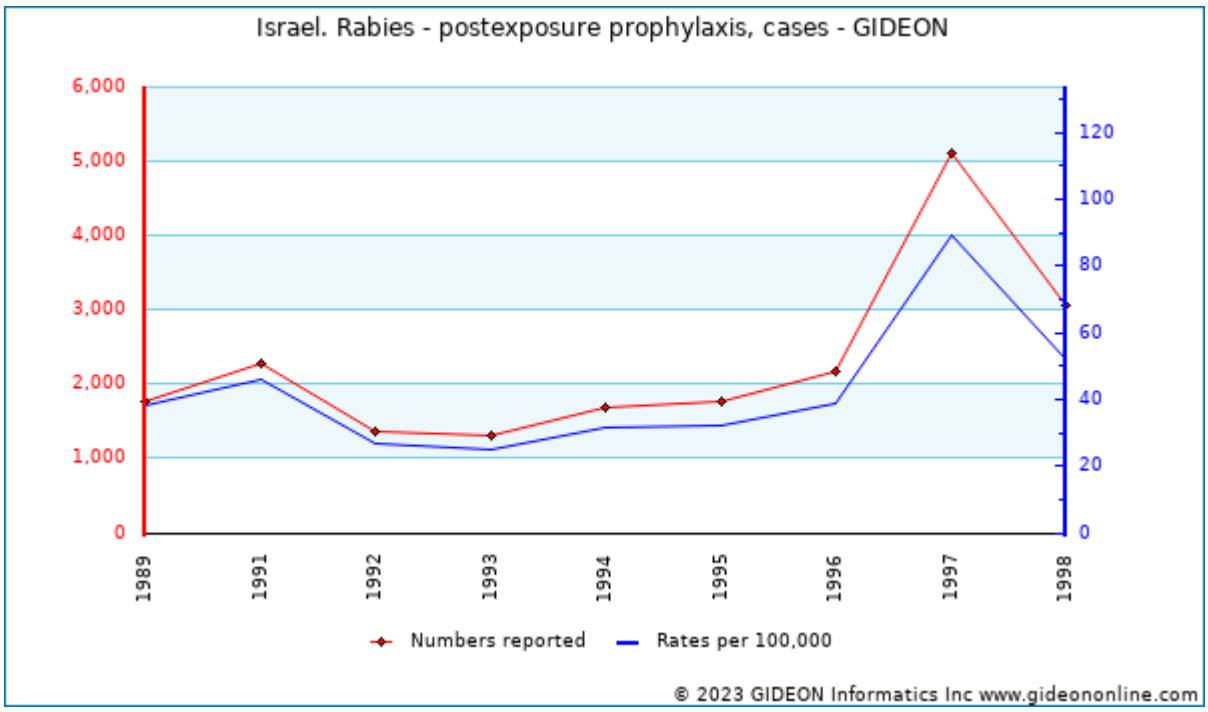
Graph: Israel. Rabies, cases

Notes:
1. 89 cases of human rabies were reported during 1921 to 1948.
2. 23 cases were reported during 1948 to 1957 (14 of these from dogs and 5 from jackals)
Individual years:
1960 - Case reported in the Negev.
1996 - A single autochthonous case following the bite of an unidentified animal. [6] [7]
1997 - Two unrelated autochthonous cases were reported - both had been "scratched" by unidentified animals. [8] [9]
2003 - A single autochthonous case was reported in the Negev following the bite of a rabid cat. [10]
2014 - A migrant worker from Indian died of rabies in Israel.

Cross-border events
Includes rabies in imported animals

Years	Acquired by**	Originated in**	Setting	Cases	Deaths	Notes
2012	Israel	India	travel	1	1	An Israeli traveler died in China of rabies contracted in India. [11]
2014	Israel	India		1	1	

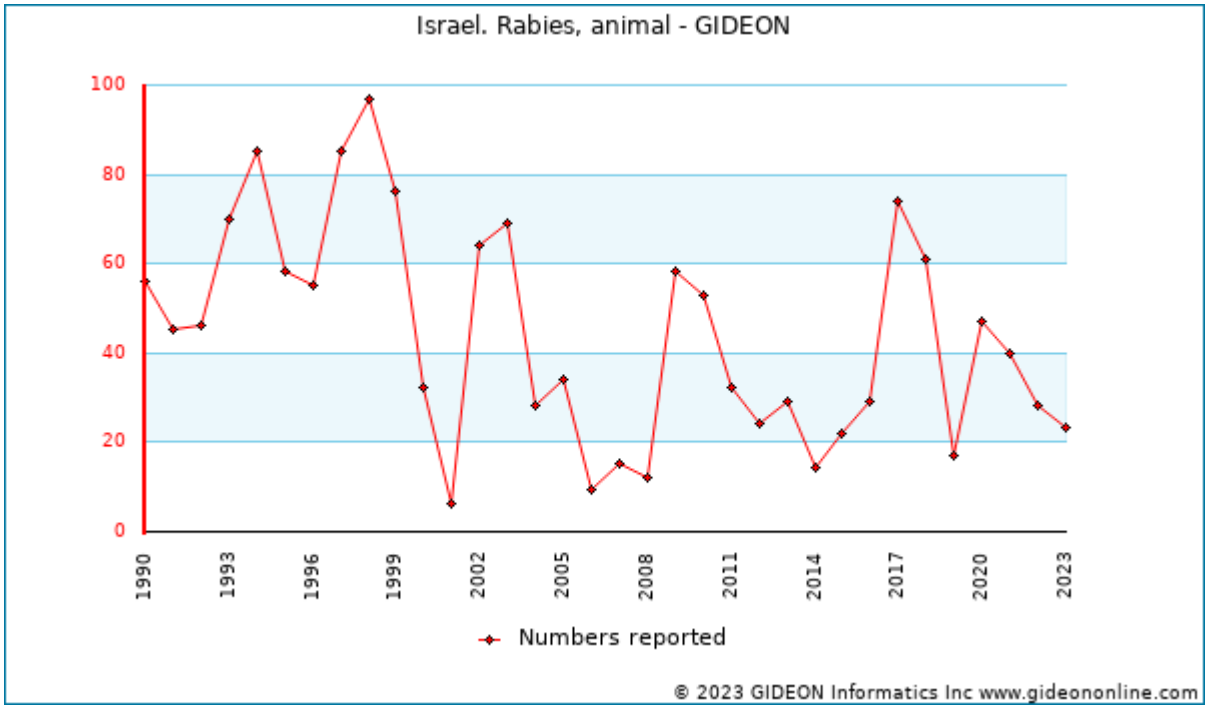
** Country or Nationality



Graph: Israel. Rabies - postexposure prophylaxis, cases

Notes:
1. During 1999 to 2016, post-exposure consultations varied from 13,800 to 17,450 per year. 18% received vaccine in 1999, and 31% in 2016.

- 2004 - The risk of rabies among Israelis traveling overseas for >= 1 month is estimated at 2.66 per 1,000 travelers per month. [12]



Graph: Israel. Rabies, animal

Notes:
1. 1952 to 1957 - 765 rabid animals were reported.
2. 1958 to 1963 - 221 rabid animals were reported.
3. 1978 to 1983 - 95 rabid animals were reported.
4. 1982 to 1989 - 215 rabid animals were reported (52 of these in 1989).
5. 1997 to 2006 - 41 rabid animals were reported in border areas - 32 of these along the border with Jordan.

Individual years:

1949 - Included 39 golden jackals. [13]

1999 - Included 21 ruminants.

2004 - A rabid jackal was identified in the area of Ramat Hasharon.

2009 - 36 rabid animals were reported to October - including 22 dogs. [14] [15]

2010 - 17 rabid animals were reported to March - including 10 dogs. [16] [17] ; 53 rabid animals to December, including 23 dogs [18]

2010 - 19 rabid animals were reported to April - all in the northern region. [19]

2014 - A rabid wolf bit 11 humans in the area of Tiberias. [20]

2016 - Included 5 golden jackals. [21] [22] [23] [24]

2017 - Included 47 golden jackals. [25] [26] [27] [28] [29] [30]

2018 - 59 rabid animals were reported to October 27, including 43 jackals, 6 dog and 7 cattle. [31] [32] [33] [34]

2019 - Five rabid animals were reported in northern Israel as of March - four dogs and one jackal. [35]

2020 - 47 rabid animals were reported: 24 jackals, 15 dogs, 6 cattle, 2 wolves. [36] [37]

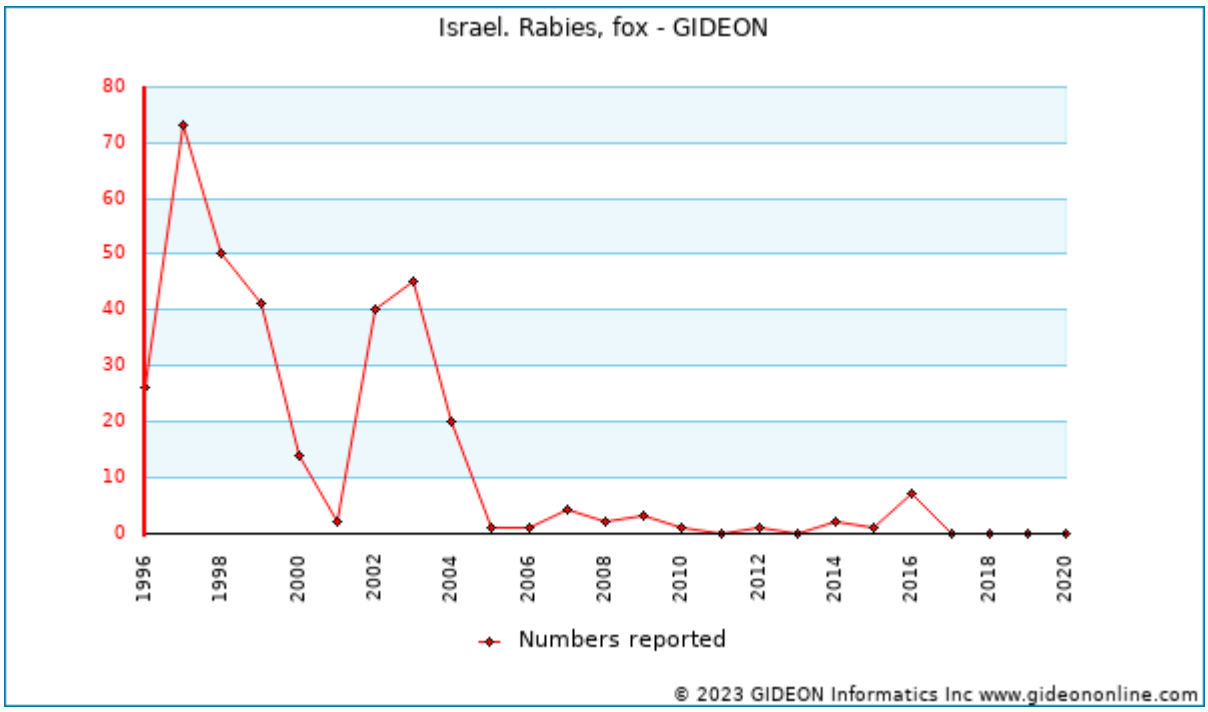
2021 - 40 rabid animals were reported to April 21: 18 dogs, 5 jackals and 2 sheep and a badger. [38] [39]

2022 - 28 rabid animals were reported to December 5: 18 jackals, 6 dogs, 3 cattle and one cat [40] [41] [42]

2023 - 23 rabid animals were reported to May 31:14 jackals, 4 dogs, and 5 cattle. [43]

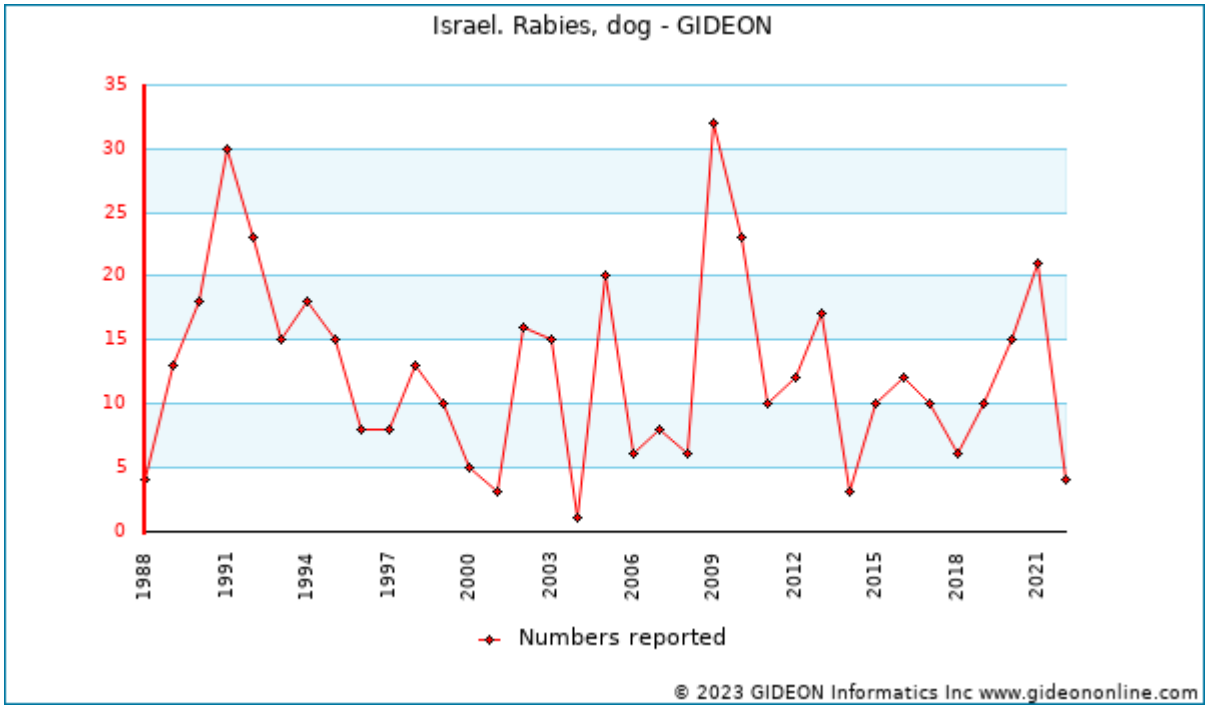
Reservoirs

- Dogs accounted for 72% of animal rabies during 1948 to 1957; 19.4% during 1958 to 1966; 21.6% during 2002 to 2006; 44.6% during 2010 to 2013.
- Since 1956, red foxes (*Vulpes vulpes*) and golden jackals (*Canis aureus*), have been the primary vectors maintaining endemic wildlife rabies in Israel. [44] [45]
- Foxes accounted for 46% of rabid animals in 1991; and foxes and jackals accounted for 61% in 1993. Foxes predominated among rabid animals reported during 1979 to 2000 [46] , and accounted for 65.6% of rabid animals reported during 2002 to 2004.
- Rabies was eradicated from northern Israel following implementation of the fox-targeted oral vaccination program in 1998. Stray dogs then emerged as the principal reservoir in this area during 2004 to 2007. [47]
- Cattle accounted for 24.5% of rabid animals reported during 2010 to 2013.
- 13 rabid cats were reported during 1996 to 2011; 0 during 2012 to 2014; 1 in February 2015. [48]
- No infections have been found among bats to date.
- Infected mongooses, badgers and stone martens are occasionally trapped.
- Rabies was reported in a golden jackal (*Canis aureus*) in Kibbutz Hamadia in May. [49]



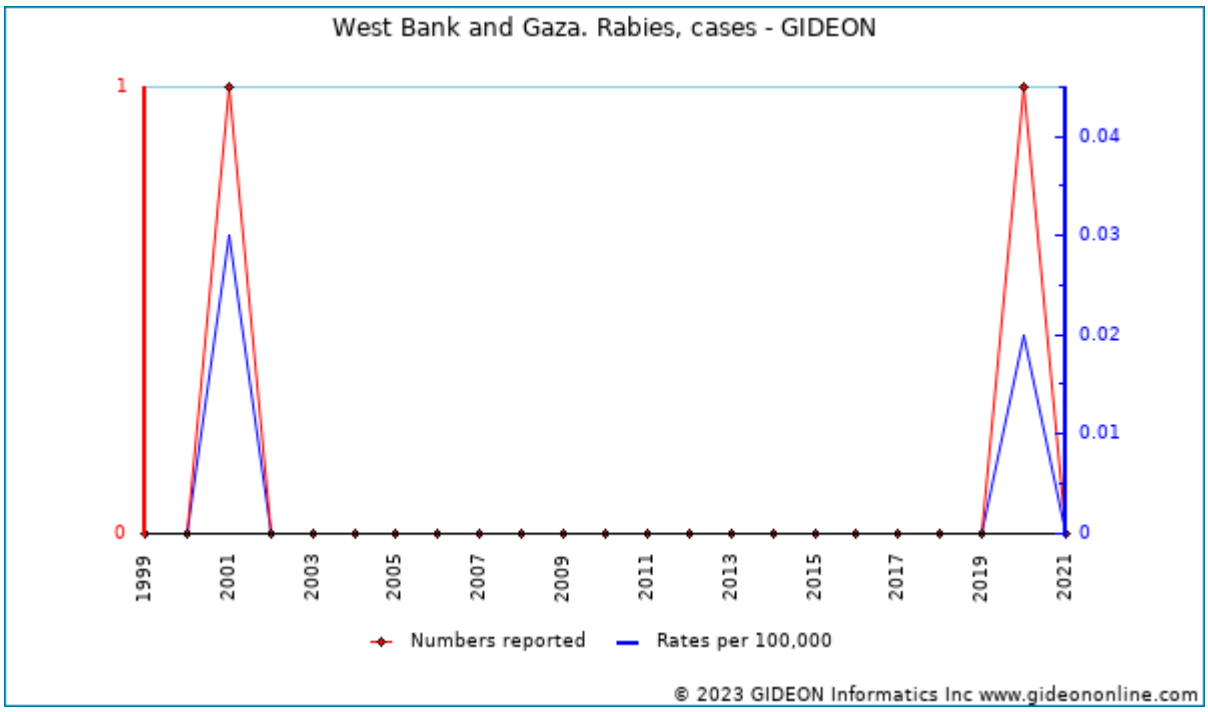
Graph: Israel. Rabies, fox

Notes:
1. Clusters of fox rabies were previously registered in the areas of Beer-Sheva, Arad, Jerusalem and Nazareth.



Graph: Israel. Rabies, dog

West Bank and Gaza:



Graph: West Bank and Gaza. Rabies, cases

Notable outbreaks

Years	Region	Notes
2017 - 2018	Northern Region	82 rabid jackals were identified to June 2, 2018 - including 58 during 2018 [50] [51] [52] [53] [54] [55] [56]

References

1. N Engl J Med 2005 Jun 16;352(24):2508-14.
2. Curr Infect Dis Rep 2009 Jul ;11(4):296-301.
3. Clin Infect Dis 2011 Sep ;53(6):572-4.
4. Curr Infect Dis Rep 2016 Nov ;18(11):38.
5. Am J Trop Med Hyg 2018 Nov 05;
6. Public Health 2000 Nov ;114(6):484-7.
7. ProMED <promedmail.org> archive: 19980113.0093
8. Emerg Infect Dis 1999 Mar-Apr;5(2):306-8.
9. ProMED <promedmail.org> archive: 19980115.0109
10. ProMED <promedmail.org> archive: 20040110.0108
11. ProMED <promedmail.org> archive: 20120921.1304335
12. Travel Med Infect Dis 2008 Jan-Mar;6(1-2):12-6.
13. ProMED <promedmail.org> archive: 20180104.5537455
14. ProMED <promedmail.org> archive: 20090827.3020
15. ProMED <promedmail.org> archive: 20091018.3583
16. ProMED <promedmail.org> archive: 20100326.0962
17. ProMED <promedmail.org> archive: 20100401.1039
18. ProMED <promedmail.org> archive: 20101231.4607
19. ProMED <promedmail.org> archive: 20110501.1357
20. ProMED <promedmail.org> archive: 20140307.2320500
21. ProMED <promedmail.org> archive: 20160212.4015862
22. ProMED <promedmail.org> archive: 20160923.4510261
23. ProMED <promedmail.org> archive: 20170112.4761705
24. ProMED <promedmail.org> archive: 20180104.5537455
25. Harefuah 2018 Jan ;157(1):4.
26. ProMED <promedmail.org> archive: 20171106.5427113
27. ProMED <promedmail.org> archive: 20171227.5524689
28. ProMED <promedmail.org> archive: 20180104.5537455
29. ProMED <promedmail.org> archive: 20180109.5548270
30. ProMED <promedmail.org> archive: 20180110.5550871
31. ProMED <promedmail.org> archive: 20180203.5604913
32. ProMED <promedmail.org> archive: 20180321.5701731
33. ProMED <promedmail.org> archive: 20180505.5786343
34. ProMED <promedmail.org> archive: 20181027.6115565
35. ProMED <promedmail.org> archive: 20190301.6344617
36. ProMED <promedmail.org> archive: 20200219.7005843
37. ProMED <promedmail.org> archive: 20200606.7433999
38. ProMED <promedmail.org> archive: 20210425.8327732
39. ProMED <promedmail.org> archive: 20210827.8626789
40. ProMED <promedmail.org> archive: 20221206.8707113
41. ProMED <promedmail.org> archive: 20220910.8705507
42. ProMED <promedmail.org> archive: 20221001.8705891
43. ProMED <promedmail.org> archive: 20230602.8710366
44. Dev Biol (Basel) 2006 ;125:133-40.
45. ProMED <promedmail.org> archive: 20171118.5452455
46. ProMED <promedmail.org> archive: 20091018.3583
47. Epidemiol Infect 2009 Apr ;137(4):544-8.
48. ProMED <promedmail.org> archive: 20150211.3159708
49. ProMED <promedmail.org> archive: 20230602.8710366
50. Harefuah 2018 Jan ;157(1):4.
51. ProMED <promedmail.org> archive: 20171227.5524689
52. ProMED <promedmail.org> archive: 20171106.5427113
53. ProMED <promedmail.org> archive: 20180203.5604913
54. ProMED <promedmail.org> archive: 20180321.5701731
55. ProMED <promedmail.org> archive: 20180505.5786343
56. ProMED <promedmail.org> archive: 20180929.6061040

Rat bite fever - spirillary

Agent	BACTERIUM. *Spirillum minus* An aerobic gram-negative spirochete
Reservoir	Rat, Mouse, Cat, Zoonotic
Vector	None
Vehicle	Bite
Incubation Period	7d - 21d (range 5d - 40d)
Diagnostic Tests	Dark-field exam of wound. Animal inoculation.
Typical Adult Therapy	Amoxicillin / Clavulanate 875 / 125 mg PO BID X 7d. OR Procaine Penicillin G 600,000u IM q12h X 7d. OR Doxycycline 200 mg BID X 7d
Typical Pediatric Therapy	Amoxicillin / Clavulanate 10 mg/kg PO BID X 7d OR Procaine Penicillin G 25,000u/kg IM q12h X 7d
Clinical Hints	- Symptoms begin 1 to 3 weeks following rat bite - Lymphadenopathy, myalgia, maculopapular rash and recurrent fever - Infection resolves after 3 to 6 days - Case-fatality rate is 6%
Synonyms	Sodoku, Spirillosis, Spirillum minor, Spirillum minus. ICD9: 026.0 ICD10: A25.0

Rat bite fever - streptobacillary

Agent	BACTERIUM. *Streptobacillus moniliformis* A facultative gram-negative bacillus
Reservoir	Rat, Squirrel, Weasel, Turkey, Zoonotic
Vector	None
Vehicle	Secretions, Bite, Dairy products
Incubation Period	3d - 10d (range 1d - 22d)
Diagnostic Tests	Culture of blood or joint fluid. Nucleic acid amplification.
Typical Adult Therapy	Amoxicillin / Clavulanate 875 /1 25 mg PO BID X 7d. OR Doxycycline 100 mg PO BID X 7d[1] [2]
Typical Pediatric Therapy	Amoxicillin / Clavulanate 10 mg/kg TID X 7d. OR (if age>8 years) Doxycycline 2 mg/kg PO BID X 7 days (maximum 200 mg/day)
Clinical Hints	- History of a rat bite during the preceding 1 to 3 weeks in most cases - Headache, myalgia, maculopapular rash and arthralgia or arthritis - Infection has also been acquired from contaminated milk - The case-fatality rate is 10%.
Synonyms	Haverhill fever, Streptobacillosis, Streptobacillus moniliformis, Streptobacillus notomytis. ICD9: 026.1 ICD10: A25.1

Rat bite fever - streptobacillary in Israel

2011 (publication year) - A case of *Streptobacillus moniliformis* infection was reported. [3]

References

1. Clin Microbiol Rev 2007 Jan ;20(1):13-22.
2. Vet Microbiol 2009 Jan 13;133(3):211-28.
3. Clin Infect Dis 2011 Nov ;53(10):1007, 1037-8.

Relapsing fever

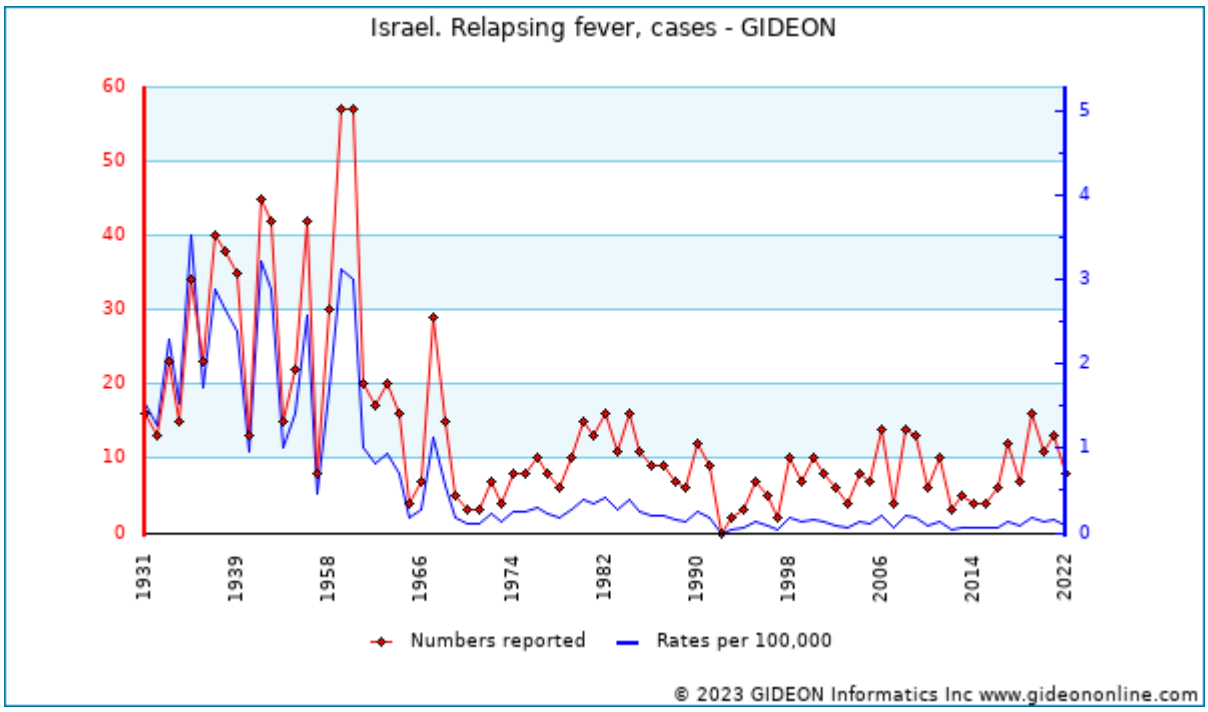
Agent	BACTERIUM. *Borrelia* spp. A microaerophilic spirochete
Reservoir	Human, Tick, Rodent, Zoonotic
Vector	Tick (*Ornithodoros*), Louse (*Pediculus*)
Vehicle	Blood, Blood products
Incubation Period	7d - 8d (range 2d - 18d)
Diagnostic Tests	Examination of blood smears (thick and thin smears).- less sensitive for B. miyamotoi infection Some species (B. hermsii) may grow in BSK II medium.
Typical Adult Therapy	Doxycycline 100 mg PO BID X 10d. OR Ceftriaxone 2 g IV daily X 10d Louse-borne infection: A single dose of Procaine Penicillin G 800000 units IM OR Tetracycline 500 mg PO OR Erythromycin 500 mg PO may suffice for louse-borne infection[1] [2] [3]
Typical Pediatric Therapy	>8 years Doxycycline 100 mg PO BID X 10d OR Ceftriaxone 50-75 mg/kg/d IV X 10d OR Penicillin G 50-100000 units/kg IV QID X 10d
Clinical Hints	- Headache, myalgia, hepatosplenomegaly and rash - Relapsing illness Louse-borne (vs. tick borne) infection characterized by: - higher case-fatality rate - fewer relapses - higher incidence of hepatosplenomegaly, jaundice and neurological complications
Synonyms	Bilious typhoid, Borrelia anserina, Borrelia braziliensis, Borrelia caucasica, Borrelia coriaceae, Borrelia crocidurae, Borrelia dipodilli, Borrelia duttonii, Borrelia graingeri, Borrelia hispanica, Borrelia latyschewii, Borrelia mazzottii, Borrelia merionesi, Borrelia microti, Borrelia miyamotoi, Borrelia parkeri, Borrelia persica, Borrelia queenslandica, Borrelia recurrentis, Borrelia theileri, Borrelia turicatae, Borrelia uzbekistana, Borrelia venezuelensis, Borreliosis, Candidatus Borrelia algerica, Candidatus Borrelia fainii, Candidatus Borrelia kalaharica, Famine fever, Febbre recidiva, Febbre ricorrente, Febris recurrens, Fiebre recurrente, Lauseruckfallfieber, Mianeh fever, Persistent syndrome, Ruckfall fieber, Tilbakefallsfeber, Tilbakefallsfever, Vagabond fever, Yellow famine fever, Yellow plague. ICD9: 087.9,087.0,087.1 ICD10: A68

Relapsing fever in Israel

- Tick-borne infection is due to *Borrelia persica* [4] [5] , and is most often acquired in caves and bunkers.

- 1966 to 1976 - Most cases among civilians are reported from the central region, and most cases in military personnel from the south. [6]

- 2013 (publication year) - An analysis of three outbreaks, affecting 35 exposed military personnel [7]



Graph: Israel. Relapsing fever, cases

Notes:
1. Relapsing fever has been officially reportable since 1951.
2. Two fatal cases (1973 and 1976) were reported during 1954 to 2000.
3. The mean rate among military personnel is 6.4 per 100,000 per year (1983 to 2003). [8]

Cross-border events

Years	Acquired by**	Originated in**	Setting	Cases	Notes
1988*	United States	Israel	travel	1	[9]

***** indicates publication year (not necessarily year of event)
****** Country or Nationality

- The local vector, *Ornithodoros tholozani* is widely distributed in the northern highlands, coastal plain and Negev desert.
- Approximately 10% of caves in Israel are infested.

- 2013 to 2015 - Five cats and five dogs were treated for *Borrelia persica* infection at a veterinary institute. [10]

Prevalence surveys

Years	Region	Study Group	%	Notes
2009 - 2014	Multiple locations	hyraxes	8	8% of rock hyrax (*Procavia capensis*) [11]
2017 - 2019	Central Region	dogs and cats	1.9-2.9	*Borrelia persica* DNA was detected in 1.9% of dogs and 2.9% of cats brought for veterinary care. [12]

Seroprevalence surveys

Years	Region	Study Group	%	Notes
2017 - 2019	Central Region	dogs and cats	11.5-17.5	*Borrelia persica* antibodies were detected in 11.5% of dogs and 17.5% of cats brought for veterinary care. [13]

Notable outbreaks

Years	Region	Cases	Population	Notes
1945		582		[14]
2000	Negev	9	military personnel	Outbreak among soldiers. [15]

References

1. Curr Opin Infect Dis 2009 Oct ;22(5):443-9.
2. Clin Lab Med 2015 Dec ;35(4):867-82.
3. Infect Dis Clin North Am 2008 Sep ;22(3):449-68, viii.
4. Emerg Infect Dis 2006 Nov ;12(11):1740-3.
5. PLoS One 2010 Nov 24;5(11):e14105.
6. Harefuah 1978 Dec 01;95(11):367-70.
7. Vector Borne Zoonotic Dis 2013 Nov ;13(11):791-7.
8. Emerg Infect Dis 2005 Nov ;11(11):1784-6.
9. J Adolesc Health Care 1988 Sep ;9(5):421-3.
10. Parasit Vectors 2016 05 10;9(1):244.
11. Ticks Tick Borne Dis 2018 02 ;9(2):382-388.
12. Parasit Vectors 2022 May 10;15(1):102.
13. Parasit Vectors 2022 May 10;15(1):102.
14. Bull World Health Organ 1948 ;1(1):93-101.
15. ProMED <promedmail.org> archive: 20000423.0602

Respiratory syncytial virus infection

Agent	VIRUS - RNA. Paramyxoviridae, Pneumovirinae: Human respiratory syncytial virus
Reservoir	Human
Vector	None
Vehicle	Droplet, Infected secretions (hands), Respiratory or pharyngeal acquisition
Incubation Period	2d - 8d
Diagnostic Tests	Viral culture or DFA (nasal and other respiratory secretions). Serology. Nucleic acid amplification.
Typical Adult Therapy	Respiratory precautions Ribavirin aerosol 20 mg/ml for 12h/d X 3 to 5d (has been used in severe infections). Effectiveness not proven[1] [2] [3] [4] [5]
Typical Pediatric Therapy	As for adult
Vaccine	Respiratory syncytial virus (RSV) vaccine, adjuvanted RSV immune globulin
Clinical Hints	- Most cases occur during infancy - Rhinorrhea, cough, wheezing, bronchiolitis and respiratory distress
Synonyms	Chimpanzee coryza agent, Human orthopneumovirus, Respiratory syncytial virus, RSV. ICD9: 079.6,480.1 ICD10: B97.4,J12.1

Respiratory syncytial virus infection in Israel

Time and Place

- 1996 to 2001 - Yearly outbreaks of RSV infection were reported, with peak rates during the months of January to March.
- 2015 to 2021 - At the Hadassah-Hebrew university medical center, a 17% decrease in pediatric respiratory admissions was observed during the COVID-19 era (March 2020 to August 2021) compared to the pre-COVID-19 era (January 2015 to February 2020). The decreased admissions percentages were primarily attributed to bronchiolitis and pneumonia cases, likely due to a significant decrease in the detection of respiratory viruses, particularly RSV and influenza. [6]
- 2000 to 2001 - 105 cases (5 fatal) were treated for RSV bronchiolitis in pediatric intensive care units during November 2000 to March 2001. [7]
- 2000 to 2017 - 39,156 hospitalizations for RSV infection were recorded (1,218.4 per 100,000 infants below age 12 months, per year). [8]
- 2020 to 2021 - A study that involved 429 hospitalized RSV patients, 2,593 COVID-19 patients, and 2,041 influenza patients found that the patients with RSV were older, had more comorbidities, and presented with higher rates of acute kidney injuries at admission. [9]

Additional Geographic Notes

- 1987 - The incidence of RSV infection among children below age 12 months in the Negev region was 10 per 1,000 child years. [10]
- 2008 to 2011 - The annual rates of RSV hospitalization in Hadera were 5.4 per 1,000 among Arab children, and 6.8 per 1,000 among Jewish children. [11]

Prevalence surveys

Years	Region	Study Group	%	Notes
1993*	Southern Region	children	69	69% of children below age 2 years hospitalized for bronchiolitis in southern Israel (1993 publication) [12]
2002 - 2005	Jerusalem	children	7-9	7% to 9% of pediatric hospital admissions (Jerusalem, 2002 to 2005) [13]
2005 - 2006	Northern Region	children	76	76% of children ages <= 2 years hospitalized with acute bronchiolitis (as sole pathogen, 2005 to 2006) [14]
2005 - 2006	Northern Region	children	75	75% of children ages <= 2 years hospitalized with acute bronchiolitis (2005 to 2006) [15]
2012*	Multiple locations	children	77.5	77.5% of children ages < 2 years with acute bronchiolitis (2012 publication) [16]
2004 - 2012	Beer Sheva	infants	59-61.2	71.6% late preterm infants and 72.8% term infants hospitalized with bronchiolitis [17]
2023*	Beer Sheva	infants	34	Respiratory syncytial virus was detected in 34% of 211 nasopharyngeal swabs from 99 infants with community acquired alveolar pneumonia. [18]
2004 - 2006	Beer Sheva	patients	4.9	4.9% of patients hospitalized with lower respiratory tract infections (Beer Sheva, winter seasons, 2004 to 2006) [19]
2011 - 2016	West Bank	patients	10.2	[20]
2001 - 2011	Southern Region	children - respiratory	50	RSV was were identified in 50.0% of children below age 5 years with community-acquired pneumonia admitted to a Pediatric Intensive Care unit [21]
2009*	Beer Sheva	children - respiratory	23.1	23.1% of children below age 5 years with community-acquired alveolar pneumonia (Beer Sheva, 2009 publication) [22]

* indicates publication year (not necessarily year of survey)

Seroprevalence surveys

Years	Study Group	%	Notes
1984*	children	27-78	27% of healthy infants aged 6 to 12 months are seropositive, 37% children ages 1 to 2 years, 54% ages 2 to 4 years, 78% adults above age 20 years (1984 publication) [23]

* indicates publication year (not necessarily year of survey)

Notable outbreaks

Years	Region	Setting	Cases	Notes
1984*		neonatal intensive care unit		[24]
1993 - 1994	Northern Region			[25]
2012*	Haifa	pediatric hematology-oncology department	12	[26]
2013 - 2014	Jerusalem	neonatal intensive care unit		[27]
2021			70	70 hospitalized patients were identified. This seasonal outbreak was delayed by the regional COVID-19 epidemic [28]

* indicates publication year (not necessarily year of outbreak)

References

1. Clin Infect Dis 2018 Sep 08;
2. Curr Opin Infect Dis 2017 Dec ;30(6):573-578.
3. Clin Ther 2018 Aug 01;
4. Transplant Proc 2021 Oct 06;
5. Influenza Other Respir Viruses 2022 Feb 12;
6. Pediatr Pulmonol 2023 Apr 25;
7. Pediatrics 2003 Sep ;112(3 Pt 1):548-52.
8. J Infect 2020 Jun 03;
9. J Nephrol 2023 Mar 27;:1-11.
10. Pediatr Infect Dis J 1993 May ;12(5):381-6.
11. PLoS One 2019 ;14(4):e0214197.
12. Pediatr Infect Dis J 1993 May ;12(5):381-6.
13. Isr Med Assoc J 2009 Sep ;11(9):533-6.
14. Pediatr Infect Dis J 2010 Jan ;29(1):e7-e10.
15. Harefuah 2009 Nov ;148(11):748-51, 795, 794.
16. Eur J Clin Microbiol Infect Dis 2012 Dec ;31(12):3323-30.
17. Clin Microbiol Infect 2019 Jun 07;
18. Pediatr Infect Dis J 2023 Mar 08;

19. J Clin Microbiol 2009 Nov ;47(11):3439-43.
20. Can J Infect Dis Med Microbiol 2021 ;2021:5643134.
21. Pediatr Neonatol 2020 Apr 10;
22. J Pediatr 2010 Jan ;156(1):115-20.
23. Isr J Med Sci 1984 Dec ;20(12):1146-9.
24. Isr J Med Sci 1984 Dec ;20(12):1199-201.
25. Harefuah 1996 Feb 01;130(3):161-4; 224, 223.
26. J Pediatr Hematol Oncol 2013 Mar ;35(2):124-8.
27. Harefuah 2016 Jan ;155(1):20-3, 68.
28. Euro Surveill 2021 Jul ;26(29)

Respiratory viruses - miscellaneous

Agent	VIRUS - RNA and DNA Paramyxoviridae: Mononegavirales Human Metapneumovirus Coronaviridae: New Haven Coronavirus, HKU1 Human coronavirus OC43 Human coronavirus 229 E Human coronavirus NL63 Parvovirinae: Human Bocavirus
Reservoir	Human Mammal
Vector	None
Vehicle	Droplet, Secretions (on hands), Respiratory or pharyngeal acquisition
Incubation Period	Unknown
Diagnostic Tests	Viral culture. Serology. Nucleic acid amplification.
Typical Adult Therapy	Respiratory precautions NA
Typical Pediatric Therapy	NA
Clinical Hints	- Rhinorrhea, cough, wheezing, bronchiolitis and respiratory distress - Age distribution and prominence of specific signs / symptoms vary among the specific viruses in this category
Synonyms	Acanthamoeba polyphaga mimivirus, Bat reovirus, Bocaparvovirus, Bocavirus, Bradford coccus, Canine coronavirus, Cardiovirus, Coronavirus HKU1, Coronavirus NL63, Encephalomyocarditis Virus, HCoV-HKU1, HCoV-NL63, HCoV-OC43, HK23629/07, HKU1, HRV-A, HRV-B, HRV-C, Human Bocavirus, Human coronavirus NL63, Human CoV 229E, Human CoV OC43, Human metapneumovirus, Human rhinovirus, Kampar, Karolinska Institutet virus, KI virus, Mamamalian orthoreovirus, Melaka, Metapneumovirus, Mimivirus, Nelson Bay orthoreovirus, New Haven coronavirus, Porcine delta coronavirus, Pteropine orthoreovirus, Pulau, Rhinovirus, Small Anellovirus, Sosuga, Tioman virus, Torque tenovirus, Torquetenovirus, Washington University virus, WU polyomavirus, WU virus. ICD9: 079.89 ICD10: B34.2,J12.8

Respiratory viruses - miscellaneous in Israel

Prevalence surveys

Years	Region	Study Group	%	Notes
2002 - 2003	Central Region	children	10.8	hMPV was found in 10.8% of hospitalized children below age 5 years submitted for viral testing (2002 to 2003) [1]
2005 - 2006	Northern Region	children	0.2-2.1	hMPV was found in 2.1% of children ages <= 2 years hospitalized with acute bronchiolitis, Human Bocavirus (HBoV) 0.6%, Adenovirus 0.2% (as sole pathogen, 2005 to 2006) [2]
2023*	Beer Sheva	infants	77	A viral infection was detected in 77% of 211 nasopharyngeal swabs from 99 infants with community acquired alveolar pneumonia. Rhinovirus/enterovirus was detected in 45% of infants, and RSV was found 34% of this same group. [3]

Years	Region	Study Group	%	Notes
2023*		patients	10.3	HBoV was found in 10.3% of children below age 10 hospitalized for respiratory infection. 70.3% of these patients were coinfected with Adenovirus.
1997*	Negev	patients	10.1	Viruses were identified in 10.,1% of patients with community-acquired pneumonia [4]
2004 - 2006	Beer Sheva	patients	0.7-4.9	hMPV was found in 0.9% of patients hospitalized with lower respiratory tract infections, RSV 4.9%, Adenovirus 0.7%, Parainfluenza virus 1.1%, Coronavirus NL63 1.1%, 22E 2.0%, OC43 6.5% and HKU1 0.9% (Beer Sheva, winter seasons, 2004 to 2006) [5]
2019 - 2021	Ramat Gan	patients	3.78	Human metapneumovirus was identified in 3.78% of specimens from patients hospitalized for respiratory illness [6]
2012 - 2015	Nationwide	specimens	3.4	Parainfluenza virus 3 was found in 3.4% of respiratory samples from patients hospitalized with respiratory symptoms [7]
2001 - 2011	Southern Region	children - respiratory	61.2	Viruses were identified in 59.0% of children below age 5 years with community-acquired pneumonia admitted to a Pediatric Intensive Care unit; RSV in 50.0%, HMPV 1.0%, Parainfluenza virus 7.0% [8]
2006*		children - respiratory	13	Human metapneumovirus (hMPV) was found in 13% of children hospitalized for lower respiratory tract infection (2006 publication) [9]
2006		children - respiratory	11.3	HBoV was found in 11.3% of children below age 10 hospitalized for respiratory infection (2006) [10]
2007 - 2012	Multiple locations	children - respiratory	6-54	Viruses were found in 54% / 16% of children with upper respiratory infection / controls, and Rhinovirus in 35% / 6.0% (2007 to 2012) [11]
2009*	Beer Sheva	children - respiratory	2.9-23.1	hMPV was found in 8.3% of children below age 5 years with community-acquired alveolar pneumonia, Respiratory syncytial virus 23.1%, Adenovirus 3.4% and Parainfluenzavirus 2.9% (Beer Sheva, 2009 publication) [12]

***** indicates publication year (not necessarily year of survey)

Seroprevalence surveys

Years	Region	Study Group	%	Notes
2003*	Southern Region	children	13-55	13% of healthy children in southern Israel were seropositive toward human metapneumovirus (hMPV) by age 7 months, 23% by age 13 months, and 55% by age 24 months (2003 publication) [13]

***** indicates publication year (not necessarily year of survey)

2015 to 2016 - Human coronaviruses were detected in 1,910 specimens submitted to the Central Virology Laboratory. 43.43% were identified as HCoV-OC43, 44.96% HCoV-NL63, and 11.62% HCoV-229E. [14]

References

1. J Clin Microbiol 2006 Apr ;44(4):1484-9.
2. Pediatr Infect Dis J 2010 Jan ;29(1):e7-e10.
3. Pediatr Infect Dis J 2023 Mar 08;
4. J Infect 1997 Jan ;34(1):41-8.
5. J Clin Microbiol 2009 Nov ;47(11):3439-43.
6. Int J Infect Dis 2022 Apr 23;
7. J Clin Virol 2018 Aug 13;107:19-24.
8. Pediatr Neonatol 2020 Apr 10;
9. Pediatr Infect Dis J 2006 Apr ;25(4):320-4.
10. J Clin Microbiol 2008 Jan ;46(1):334-7.
11. Pediatr Infect Dis J 2015 May ;34(5):476-81.
12. J Pediatr 2010 Jan ;156(1):115-20.
13. J Infect Dis 2003 Dec 15;188(12):1865-7.
14. Viruses 2018 Sep 21;10(10)

Reye's syndrome

Agent	UNKNOWN
Reservoir	Unknown
Vector	None
Vehicle	Unknown
Incubation Period	Unknown
Diagnostic Tests	Clinical diagnosis.
Typical Adult Therapy	Management of increased intracranial pressure, fluid and electrolyte balance as appropriate[1]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Follows viral infection; aspirin ingestion is often implicated. - Vomiting, lethargy, coma, seizures - Hepatomegaly, hypoglycemia and elevated blood ammonia concentration - Patients are usually anicteric
Synonyms	Reye syndrome. ICD9: 331.81 ICD10: G93.7

Reye's syndrome in Israel

1974 (publication year) - Sporadic cases of Reye's syndrome were previously reported in Israel. [2]

References

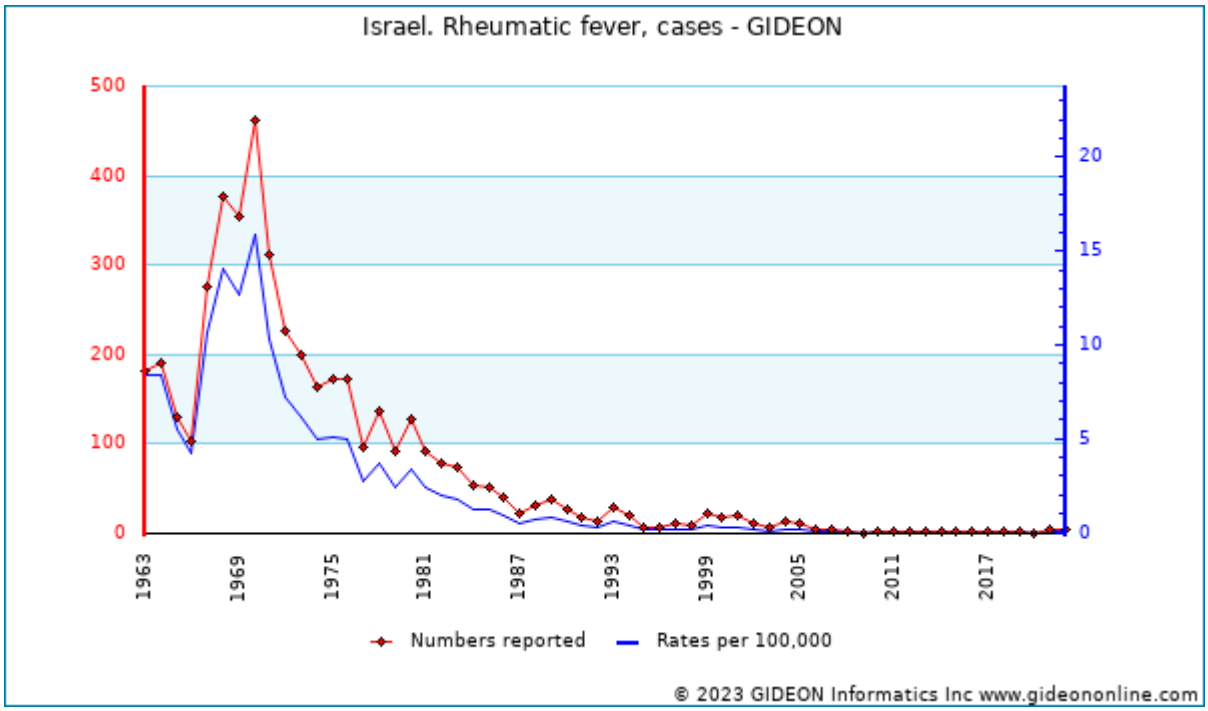
1. Ann Neurol 1980 Jan ;7(1):2-4.

2. Isr J Med Sci 1974 Sep ;10(9):1117-25.

Rheumatic fever

Agent	BACTERIUM. *Streptococcus pyogenes* A facultative gram-positive coccus
Reservoir	Human
Vector	None
Vehicle	Droplet
Incubation Period	1w - 5w
Diagnostic Tests	Clinical diagnosis.
Typical Adult Therapy	Supportive; NSAIDs Eradication of GAS colonization: Benzathine Penicillin G 1.2 million units IM once OR Penicillin V 500 mg PO BID X 10d OR Azithromycin 500 mg PO daily X 3d[1] [2] [3]
Typical Pediatric Therapy	Supportive; NSAIDs Eradication of GAS colonization: Benzathine Penicillin G 50000 units/kg IM once OR Penicillin V 25 mg/kg PO TID X 10d
Clinical Hints	- In most cases, illness follows overt pharyngitis, after 1 to 5 weeks - Migratory arthritis, fever, carditis, chorea - Subcutaneous nodules, erythema marginatum and leukocytosis - An attack of rheumatic fever will persist for approximately 3 months
Synonyms	Febbre reumatica. ICD9: 390,391 ICD10: I00,I01,I02

Rheumatic fever in Israel



Graph: Israel. Rheumatic fever, cases

Notes:

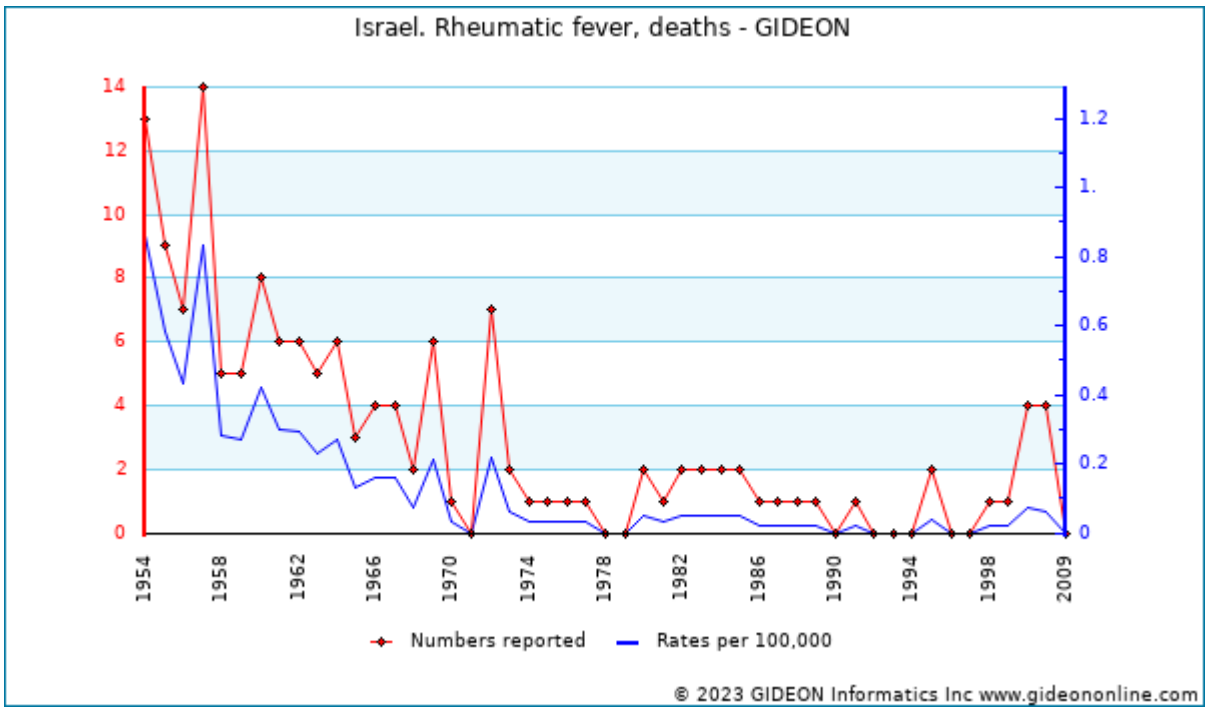
1. 222 cases were reported in Southern Israel during 1974 to 1983 [4] ; 144 during 1977 to 1987 (6.5 per 100,000 in 1977 and 0.8 per 100,000 in 1987). [5]

2. 44 cases were reported in Nazareth during 1988 to 1997 (5 per 100,000 per year). [6]

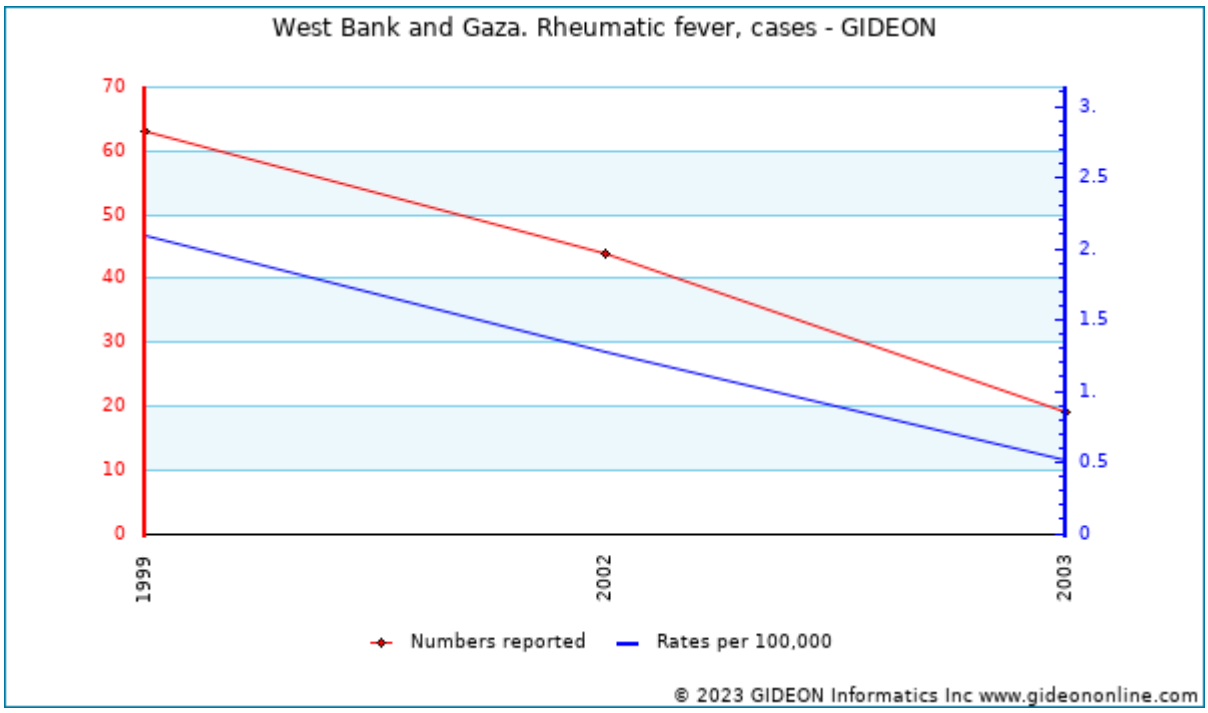
3. 180 cases were identified in the Jerusalem area during 1985 to 2002 - 24 with Sydenham's chorea. [7]

4. 44 cases were identified among health fund recipients in the Central district during 2000 to 2005 - 3.2 per 100,000 persons aged 0 to 30 years.

5. During 1996 to 2012, rates among children below age 18 years were 2 per 100,000 per year. [8]



Graph: Israel. Rheumatic fever, deaths



Graph:
West Bank and Gaza. Rheumatic fever, cases

References

1. Lancet 2018 07 14;392(10142):161-174.
2. PLoS Negl Trop Dis 2018 03 ;12(3):e0006335.
3. Curr Treat Options Cardiovasc Med 2017 Feb ;19(2):15.
4. Pediatr Cardiol 1986 ;7(4):199-201.
5. Public Health Rev 1990-1991;18(3):239-49.
6. Isr Med Assoc J 2000 Jun ;2(6):433-7.
7. Isr Med Assoc J 2004 Aug ;6(8):460-2.
8. Harefuah 2014 Dec ;153(12):709-12, 754, 753.

Rhinoscleroma and ozena

Agent	BACTERIUM. *Klebsiella pneumoniae* ssp *ozaenae* and *Klebsiella pneumoniae* ssp *rhinoscleromatis* Facultative gram-negative bacilli
Reservoir	Human
Vector	None
Vehicle	Secretions, Contact, Respiratory or pharyngeal acquisition
Incubation Period	Unknown
Diagnostic Tests	Culture. Biopsy. Nucleic acid amplification. Advise laboratory when this diagnosis is suspected.
Typical Adult Therapy	Rhinoscleroma: Ciprofloxacin 750 mg PO BID X 3 months Ozena: Ciprofloxacin 750 mg PO BID X 3 months or Sulfamethoxazole / Trimethoprim X 3 months[1] [2]
Typical Pediatric Therapy	Ciprofloxacin or Sulfamethoxazole / Trimethoprim for 3 months. Amoxicillin/Clavulanate has been used successfully.
Clinical Hints	Rhinoscleroma: - Chronic fetid nasal discharge - A crusting mass may develop in the nose - Infection may extend to the larynx, trachea of paranasal sinuses Ozena: - Chronic rhinitis progressing to atrophy of the nasal mucosa - Extension to the larynx and systemic infection have been reported
Synonyms	Atrophic catarrh, Atrophic rhinitis, Coryza foetida, Klebsiella pneumoniae ssp ozaenae, Ozaena, Ozena, Respiratory scleroma, Rhinoscleroma, Sclerotic rhintis. ICD9: 040.1 ICD10: J31.0

Rhinoscleroma and ozena in Israel

Sporadic cases of rhinoscleroma have been reported. [3] [4] [5]

1976 (publication year) - Two cases of rhinoscleroma were reported in Gaza. [6]

References

1. Arch Pathol Lab Med 2018 Aug 31;
2. Pediatr Infect Dis J 2014 Jul ;33(7):774-5.
3. Chest 2000 Jun ;117(6):1795-8.
4. J Am Med Dir Assoc 2002 Mar-Apr;3(2):71-2.
5. Acta Cytol 1993 Sep-Oct;37(5):732-4.
6. Isr J Med Sci 1977 Jan ;13(1):62-4.

Rhinosporidiosis

Agent	PROTOCTISTA *Rhinosporidium seeberi* (may in fact be *Microcystis*, a cyanobacterium)
Reservoir	Water, Soil, Vegetation
Vector	None
Vehicle	Aerosol from soil or water, Respiratory or pharyngeal acquisition
Incubation Period	2w - 6m
Diagnostic Tests	Histology of resected material (organism does not grow in-vitro).
Typical Adult Therapy	Excision Dapsone has been used in cases of disseminated disease, in some cases combined with Cycloserine and Ketoconazole[1]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Friable, painless vascular masses of nose, conjunctivae and larynx - Recurrence is common
Synonyms	Oculosporidiosis, Rhinosporidium seeberi. ICD9: 117.0 ICD10: B48.1

Although Rhinosporidiosis is not endemic to Israel, imported, expatriate or other presentations of the disease have been associated with this country.

Rhinosporidiosis in Israel

Cross-border events

Years	Acquired by**	Originated in**	Cases	Notes
1996*	Israel	Malawi	10	10 cases of conjunctival rhinosporidiosis were treated at a medical center in Israel - imported from Malawi [2] [3]
1996*	Israel	Kenya	4	4 cases of conjunctival rhinosporidiosis were treated at a medical center in Israel - imported from Kenya [4] [5]

* indicates publication year (not necessarily year of event)
** Country or Nationality

References

1. Trop Doct 2013 Jul ;43(3):110-2.
2. Arch Pathol Lab Med 1996 Sep ;120(9):854-8.
3. Arch Pathol Lab Med 1996 Sep ;120(9):854-8.
4. Arch Pathol Lab Med 1996 Sep ;120(9):854-8.
5. Arch Pathol Lab Med 1996 Sep ;120(9):854-8.

Rhodococcus equi infection

Agent	BACTERIUM. *Rhodococcus equi* An aerobic gram-positive coccobacillus
Reservoir	Farm animal, Farm soil, Zoonotic
Vector	None
Vehicle	Inhalation, Contact, Ingestion
Incubation Period	Unknown
Diagnostic Tests	Culture of blood, body fluids and secretions. Advise laboratory when these organisms are suspected.
Typical Adult Therapy	Two drugs from the following, administered for two months: Levofloxacin, Rifampin, Azithromycin, Ciprofloxacin, Imipenem, Vancomycin[1] [2]
Typical Pediatric Therapy	Two drugs from the following, administered for two months: Levofloxacin, Rifampin, Azithromycin, Imipenem, Vancomycin
Clinical Hints	- 40% of patients recall recent contact with farm or farm animals - Most often presents as pleuropulmonary infection in an immune-suppressed individual
Synonyms	Rhodococcus. ICD9: 027.9 ICD10: A92.8

Rhodococcus equi infection in Israel

1999 - The first case reports of *Rhodococcus equi* infection (two horses) in Israel were published. [3]

References

1. Antimicrob Agents Chemother 2019 Jan ;63(1)
2. J Antimicrob Chemother 2014 Apr ;69(4):1045-9.
3. Harefuah 1999 Sep ;137(5-6):202-4, 262.

Rickettsia felis infection

Agent	BACTERIUM. *Rickettsia felis*
Reservoir	Opossum (*Didelphis marsupialis*), Flying squirrel, Raccoon, Cat, Flea, Dog, Zoonotic
Vector	Flea (*Ctenocephalides felis*, *Pulex irritans*)
Vehicle	None
Incubation Period	Unknown
Diagnostic Tests	Serology (IFA). Nucleic acid amplification. Note that Weil-Felix reaction may be positive (OX-19).
Typical Adult Therapy	Doxycycline 100 mg PO BID X 3 to 5d. OR Chloramphenicol 500 mg PO QID X 3 to 5d[1]
Typical Pediatric Therapy	Doxycycline 2 mg/kg PO BID X 3 to 5d (maximum 200 mg/day). OR Chloramphenicol 10 mg/kg PO QID X 3 to 5d
Clinical Hints	- Patient may recall recent contact with opossum or other small mammal - Disease mimics endemic typhus - Fever, headache and myalgia - Macular rash present in 20% to 50% of patients, and is most prominent on the trunk and abdomen
Synonyms	California pseudotyphus, Candidatus Rickettsia asemboensis, Cat flea typhus, ELB agent, Flea-born spotted fever, Rickettsia asembonensis. ICD9: 081.1 ICD10: A79.8

Rickettsia felis infection in Israel

2006 (publication year) - *Rickettsia felis* was identified in cat fleas (*Ctenocephalides felis*) collected from dogs in Israel. [2] [3]

Prevalence surveys

Years	Region	Study Group	%	Notes
2015*	Jerusalem	fleas	0.2	Survey of *Ctenocephalides felis* fleas removed from feral cats [4]

* indicates publication year (not necessarily year of survey)

References

1. Am J Trop Med Hyg 2008 Dec ;79(6):907-10.
2. Am J Trop Med Hyg 2006 Mar ;74(3):444-8.
3. Emerg Infect Dis 2008 Jul ;14(7):1019-23.
4. Vet Parasitol Reg Stud Reports 2015 Dec ;1-2:59-64.

Rickettsia sibirica mongolotimonae infection

Agent	BACTERIUM. *Rickettsia sibirica mongolotimonae*
Reservoir	Unknown
Vector	Tick
Vehicle	None
Incubation Period	3d - 6d
Diagnostic Tests	Serology. Culture of dermal eschar. Nucleic acid amplification.
Typical Adult Therapy	Doxycycline 100 mg PO BID X 3 to 5d. OR Chloramphenicol 500 mg PO QID X 3 to 5d[1] [2]
Typical Pediatric Therapy	Doxycycline 2 mg/kg PO BID X 3 to 5d (maximum 200 mg/day). OR Chloramphenicol 10 mg/kg PO QID X 3 to 5d
Clinical Hints	- May be a history of recent tick bite - Fever, headache, myalgia, maculopapular rash, and one or more dermal eschars - Painful lymphadenopathy and lymphangitis are common
Synonyms	Lymphangitis-associated rickettsiosis, Rickettsia mongolotimonae, Rickettsia sibirica mongolotimonae. ICD9: 082.2 ICD10: A77.8

Rickettsia sibirica mongolotimonae infection in Israel

Rickettsia sibirica mongolotimonae has been identified in ticks: *Hyalomma* sp. [3] , *Hyalomma turanicum* [4] and *Rhipicephalus (Boophilus) annulatus* [5] .

References

1. Ann Dermatol Venereol 2013 Aug-Sep;140(8-9):521-7.
2. Emerg Infect Dis 2008 Mar ;14(3):528-9.
3. Clin Microbiol Infect 2011 Feb ;17(2):176-80.
4. Vector Borne Zoonotic Dis 2013 Dec ;13(12):851-6.
5. Am J Trop Med Hyg 2014 May ;90(5):920-2.

Rift Valley fever

Agent	VIRUS - RNA. Bunyaviridae, Phlebovirus: Rift Valley fever virus
Reservoir	Sheep, Ruminant, Zoonotic
Vector	Mosquito (*Culex*, *Aedes*, *Anopheles*, *Eretmapodites*, *Mansonia*, *Culicoides*, *Coquillettidia* spp.)
Vehicle	Respiratory or pharyngeal acquisition
Incubation Period	3d - 5d (range 2d - 7d)
Diagnostic Tests	Biosafety level 3. Viral culture (blood, CSF). Serology. Nucleic acid amplification.
Typical Adult Therapy	Supportive. Animal studies suggest a possible role for Ribavirin.[1] [2]
Typical Pediatric Therapy	As for adult
Vaccine	Rift Valley fever vaccine
Clinical Hints	- May be history of contact with sheep or cattle during the preceding week - Headache, myalgia, photophobia, arthralgia and a maculopapular rash - Jaundice, hemorrhagic fever or retinitis with blindness in some cases - Case fatality rate is below 1%
Synonyms	Arumowot, Enzootic hepatitis, Gabek Forest, Gordil, Ntepes, Riftvalleykoorts, Zinga. ICD9: 066.3 ICD10: A92.4

Although Rift Valley fever is not endemic to Israel, imported, expatriate or other presentations of the disease have been associated with this country.

Rift Valley fever in Israel

Rift Valley fever became a notifiable disease in Israel in 2001.

Israel. Rift Valley fever, cases: None reported between 1975 and 2022

Seroprevalence surveys

Years	Region	Study Group	%	Notes
1977 - 1978	Sinai	military personnel	2.3-3	3.0% of Israeli soldiers and 2.3% of rodents in the northern Sinai (1977 to 1978) [3]
2020	Palestine	various	0	None of the blood samples collected from 280 Assaf sheep (or the 100 veterinarians in close contact with sheep) from West Bank tested positive for the Rift Valley virus. The testing was done with ELISA. [4]

References

1. J Antimicrob Chemother 1984 Aug ;14 Suppl A:27-41.
2. Antimicrob Agents Chemother 1985 Jun ;27(6):903-7.
3. Trans R Soc Trop Med Hyg 1982 ;76(4):427-30.
4. Vet World 2022 Aug ;15(8):1990-1995.

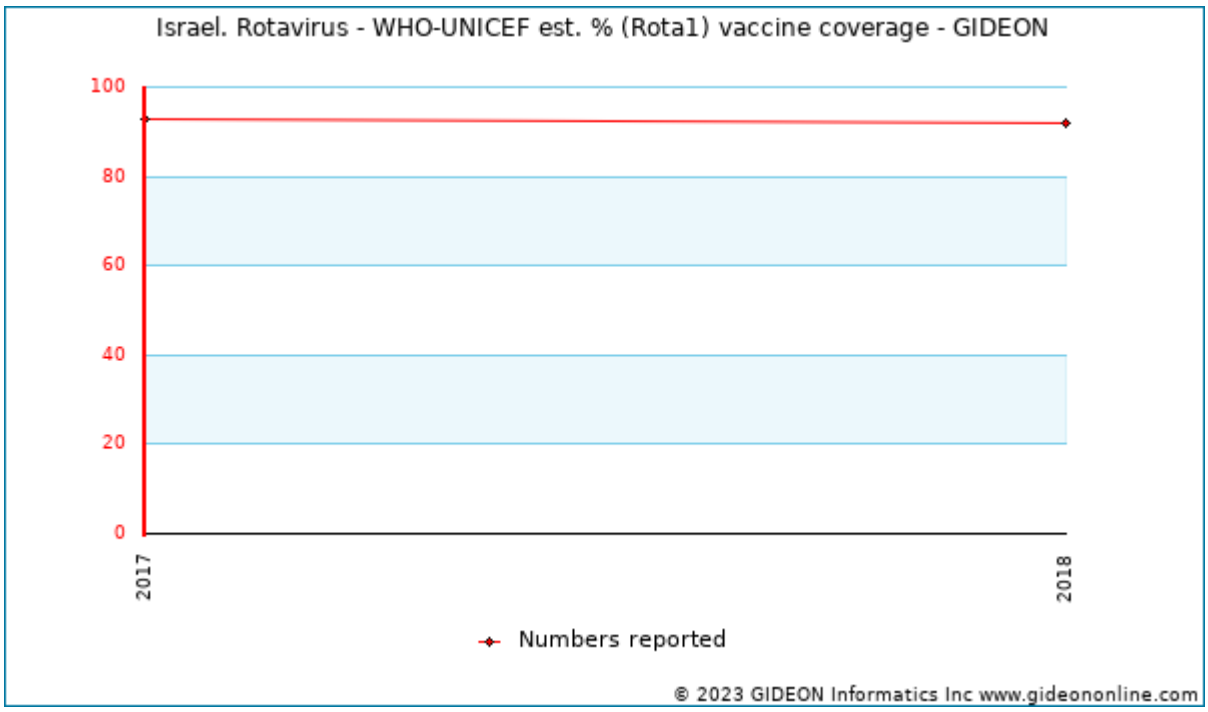
Rotavirus infection

Agent	VIRUS - RNA. Reoviridae: Rotavirus
Reservoir	Human, Pig, Zoonotic
Vector	None
Vehicle	Fecal-oral, Water
Incubation Period	2.0 d (range 12h - 3d)
Diagnostic Tests	Stool assay for viral antigen. Serology. Nucleic acid amplification.
Typical Adult Therapy	Stool precautions Supportive
Typical Pediatric Therapy	As for adult
Vaccine	Rotavirus vaccine
Clinical Hints	- Vomiting, diarrhea and mild fever - The illness lasts approximately 1 week, and is most severe in infancy - Fatal cases are associated with dehydration and electrolyte imbalance
Synonyms	Rotavirus. ICD9: 008.61 ICD10: A08.0

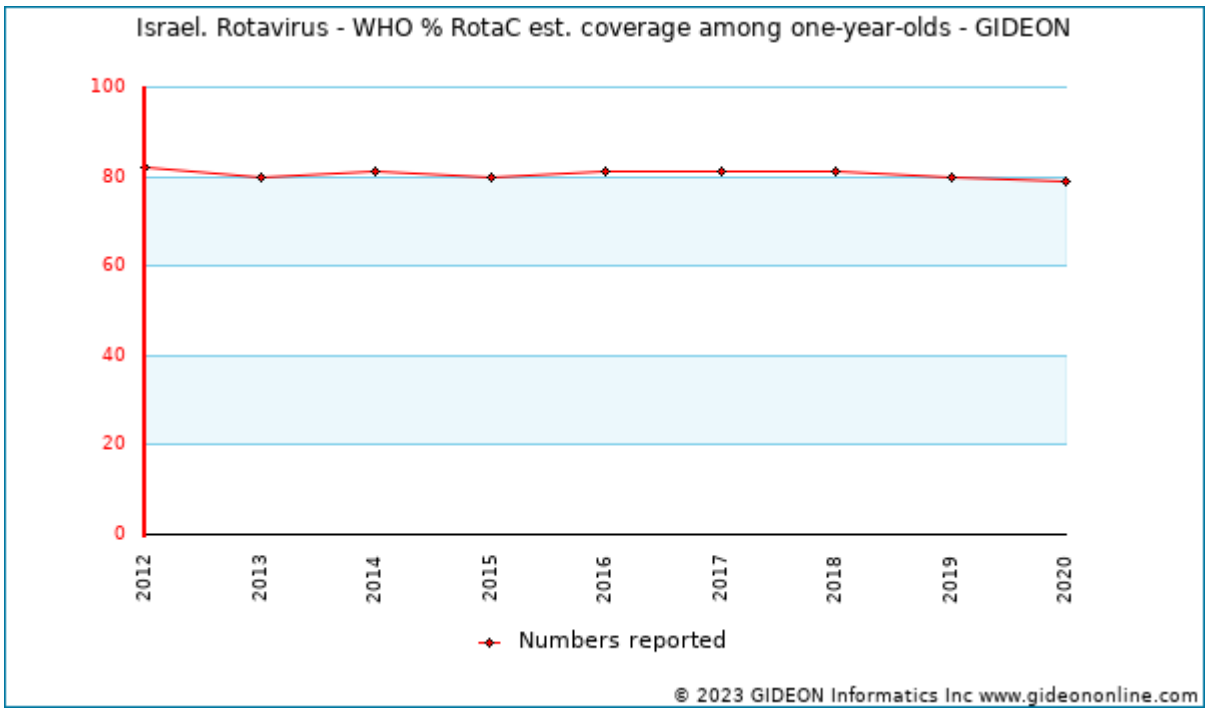
Rotavirus infection in Israel

Vaccine Schedule:

DTaP - 2,4,6,12 months
DTaPHibIPV - 2,4,6,12 months
HPV - 13 years; +6 months
HepA - 18, 24 months
HepB - birth; 1,6 months
IPV - 7 years
MMRV - 12 months; 6 years
OPV - 6,18 months
Pneumo ps - >=65 years
Pneumo-conj - 2,4,12 months
Rotavirus - 2,4,6 months
Td - every 10 years (adults)
TdaP - 13 years
TdaPIPV - 7 years



Graph: Israel. Rotavirus - WHO-UNICEF est. % (Rota1) vaccine coverage



Graph: Israel. Rotavirus - WHO % RotaC est. coverage among one-year-olds

- Rotavirus vaccines were licensed in Israel in 2007
- Introduction of routine immunization of pentavalent-vaccine into the Israeli National Immunization schedule (2010) was followed by significant reduction in rates of Rotavirus gastroenteritis. [1] [2] [3] [4] [5] [6] [7] [8]

Time and Place
Rotavirus infection is the second most common cause of diarrhea, accounting for 8.5% of cases (17% of pediatric cases).

- Highest disease rates are reported during November to January.
- The Rotavirus gastroenteritis hospitalization rate declined from 16.9 per 10,000 children ages 0 to 59 months during the pre-vaccine era (2002 to 2008) ; to 1.84 per 10,000 during 2011 to 2017. [9]
- 2007 to 2008 - An estimated 4,099 children below age 5 years (5.7 per 1,000) were hospitalized for Rotavirus gastroenteritis yearly. [10]
- 2007 to 2019 - During the pre-vaccination period (2007 to 2009), 114 infants and young children of age <=72 months were hospitalized for rotavirus gastroenteritis at a hospital in Haifa, with a rate of 11.71 positive gastroenteritis tests per 1,000 emergency department visits. In the post vaccination period, 168 infants and young children <=84 months were hospitalized for a rate of 4.18 positive rotavirus tests per 1,000 emergency department visits. [11]
- 2009 (publication year) - Rotavirus infection accounts for 1% of pediatric hospital admissions. [12]

Prevalence surveys

Years	Region	Study Group	%	Notes
1990*	Negev	children - gastrointestinal	14	14% of pediatric diarrhea in the Negev region (1990 publication) [13]
1994*	Gaza	children - gastrointestinal	6.8	6.8% of diarrhea among children below age 5 years, in Gaza (1994 publication) [14]
2002 - 2017	Israel	children - gastrointestinal	10	Survey of children ages 0 to 59 months, hospitalized for acute gastroenteritis. [15]
2004 - 2006	Central Region	children - gastrointestinal	37.9	37.9% of children ages 0 to 18 years hospitalized with acute gastroenteritis (Zerifin, 2004 to 2006) [16]
2005		children - gastrointestinal	22.5	22.5% of outpatient children ages 0 to 59 months with gastroenteritis, in 2005
2006		children - gastrointestinal	25.7	25.7% of outpatient children ages 0 to 59 months with gastroenteritis in 2006
2007		children - gastrointestinal	24.3	24.3% outpatient children ages 0 to 59 months with gastroenteritis in 2007
2007 - 2008	Northern Region	children - gastrointestinal	29.1	29.1% of hospitalizations for gastroenteritis among children below age 5 years (northern Israel, 2007 to 2008) [17]
2008*	Gaza	children - gastrointestinal	28	28% of diarrhea among children below age 5 years, in Gaza (2008 publication) [18]
2008		children - gastrointestinal	19.2	19.2% of outpatient children ages 0 to 59 months with gastroenteritis in 2008
2009		children - gastrointestinal	13.3	13.3% of outpatient children ages 0 to 59 months with gastroenteritis in 2009
2010*	Central Region	children - gastrointestinal	49	49% of children below age 3 years with acute gastrointestinal symptoms (2010 publication) [19]
2010		children - gastrointestinal	19.6	19.6% of outpatient children ages 0 to 59 months with gastroenteritis in 2010
2011		children - gastrointestinal	13.9	13.9% of outpatient children ages 0 to 59 months with gastroenteritis in 2011
2012		children - gastrointestinal	5.3	5.3% of outpatient children ages 0 to 59 months with gastroenteritis in 2012
2013		children - gastrointestinal	7	7.0% of outpatient children ages 0 to 59 months with gastroenteritis in 2013.
2015*	Gaza	children - gastrointestinal	3.1	3.1% of diarrhea among kindergarten children below age 5 in Gaza (2015 publication) [20]
2018 - 2020	Tel Aviv	children - gastrointestinal	11	In the stool samples collected from 118 hospitalized children at the Schneider Children's Medical Center in Israel, *Rotavirus* was detected in 11% of the samples. [21]

***** indicates publication year (not necessarily year of survey)

Antibody is present in 62% of the population.

West Bank and Gaza

- 1990 (publication year) - 10% of infants in Gaza experience Rotavirus diarrhea during the first year of life. [22]
- 2009 (publication year) - The rate of Rotavirus infection among children below age 5 years in Gaza is 10,000 per 100,000 per year. [23]

Notable outbreaks

Years	Region	Setting	Cases	Notes
1986*	Southern Region	kibbutz	32	24
1988*		day-care center		25
1988*	Negev	kibbutz	45	26
1994*		pediatric ward		27

* indicates publication year (not necessarily year of outbreak)

References

1. Vaccine 2015 Apr 15;33(16):1934-40.
2. Euro Surveill 2015 ;20(42)
3. Clin Infect Dis 2016 May 01;62 Suppl 2:S155-60.
4. Vaccine 2016 11 21;34(48):5916-5922.
5. Hum Vaccin Immunother 2017 Jul 03;13(7):1722-1727.
6. Clin Microbiol Infect 2018 Jan ;24(1):53-59.
7. Vaccine 2020 Feb 03;
8. World J Pediatr 2022 Apr 07;
9. Vaccine 2020 Feb 03;
10. J Infect Dis 2009 Nov 01;200 Suppl 1:S254-63.
11. World J Pediatr 2022 Apr 07;
12. Am J Infect Control 2009 Aug ;37(6):465-9.
13. Pediatr Infect Dis J 1990 May ;9(5):314-21.
14. Ann Trop Med Parasitol 1994 Apr ;88(2):175-82.
15. Vaccine 2020 Feb 03;
16. Isr Med Assoc J 2011 May ;13(5):274-7.
17. J Infect Dis 2009 Nov 01;200 Suppl 1:S254-63.
18. Med Princ Pract 2008 ;17(4):296-301.
19. Isr Med Assoc J 2010 Mar ;12(3):168-71.
20. J Biomed Res 2015 Jan ;29(1):61-8.
21. Acta Paediatr 2022 Nov 29;
22. Int J Epidemiol 1990 Mar ;19(1):160-3.
23. PLoS One 2020 ;15(2):e0228506.
24. J Med Virol 1986 Apr ;18(4):317-26.
25. Harefuah 1988 Oct ;115(7-8):181-2.
26. J Infect Dis 1988 Oct ;158(4):814-22.
27. Isr J Med Sci 1994 Mar ;30(3):240-2.

Rubella

Agent	VIRUS - RNA. Togaviridae: Rubivirus, Rubella virus
Reservoir	Human
Vector	None
Vehicle	Contact, Air, Transplacental, Breastfeeding, Respiratory or pharyngeal acquisition
Incubation Period	16d - 18d (range 14d - 23d)
Diagnostic Tests	Viral culture (throat, urine). Serology. Nucleic acid amplification.
Typical Adult Therapy	Respiratory precautions. Supportive
Typical Pediatric Therapy	As for adult
Vaccines	Measles-Mumps-Rubella vaccine Measles-Rubella vaccine Rubella - Mumps vaccine Rubella vaccine
Clinical Hints	- Maculopapular rash following a one-day prodrome of coryza and headache - Post auricular lymphadenopathy - Arthralgia and arthritis are encountered in adults - Severe thrombocytopenia or encephalitis may follow acute infection - Congenital rubella characterized by hearing loss, congenital heart disease, cataracts, mental retardation and other abnormalities
Synonyms	Epidemic roseola, German measles, Roda hund, Rode hond, Rode hunder, Rodehond, Rosolia, Roteln, Rubeola [Spanish], Three-day measles. ICD9: 056 ICD10: B06

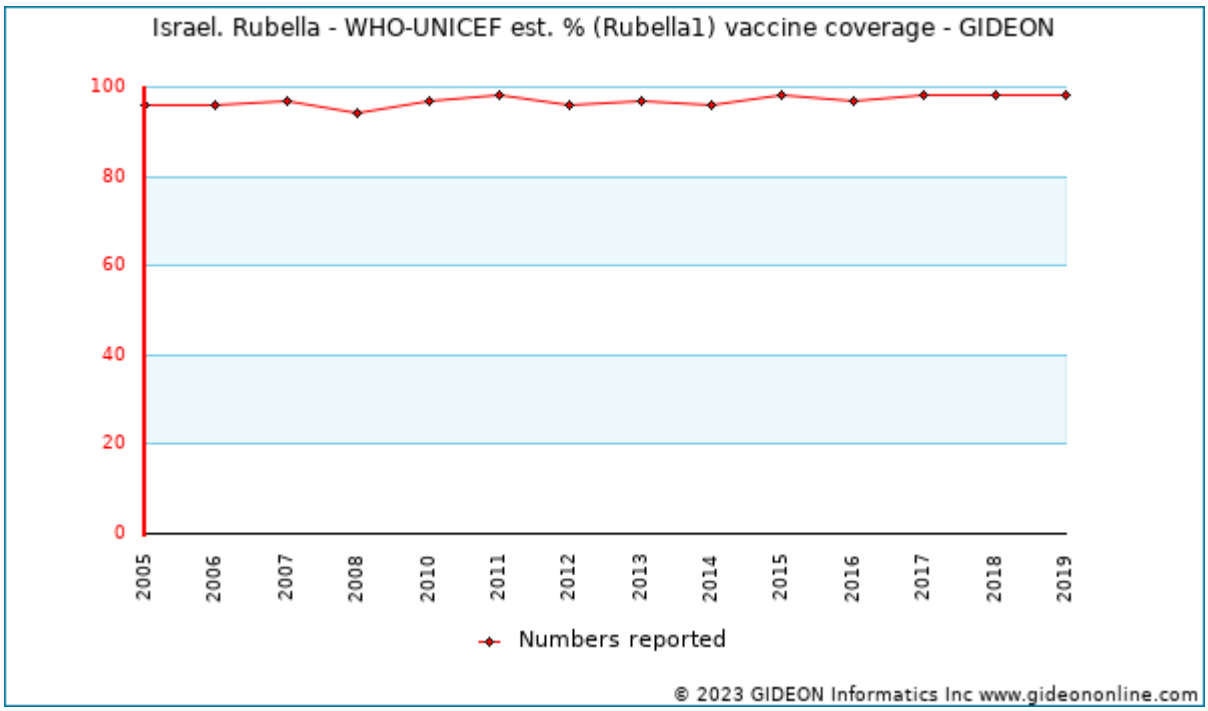
Rubella in Israel

Vaccine Schedule:

DTaP - 2,4,6,12 months
DTaPHibIPV - 2,4,6,12 months
HPV - 13 years; +6 months
HepA - 18, 24 months
HepB - birth; 1,6 months
IPV - 7 years
MMRV - 12 months; 6 years
OPV - 6,18 months
Pneumo ps - >=65 years
Pneumo-conj - 2,4,12 months
Rotavirus - 2,4,6 months
Td - every 10 years (adults)
TdaP - 13 years
TdaPIPV - 7 years

Israel:

- Vaccination of girls was introduced in 1973, extended to women of childbearing age in 1980, and replaced by universal use of MMR in 1988. [1]
- A second dose of MMR was added to the standard regimen in 1994.



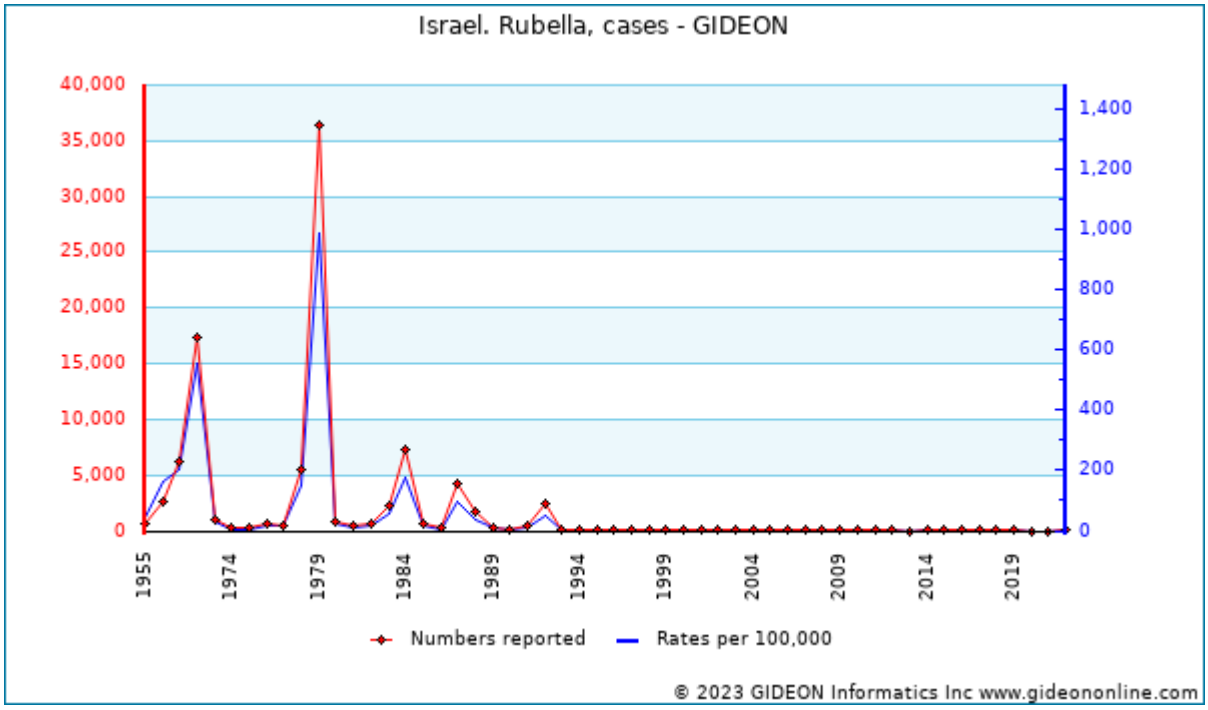
Graph: Israel. Rubella - WHO-UNICEF est. % (Rubella1) vaccine coverage

Seroprevalence surveys

Years	Region	Study Group	%	Notes
1972		children	21.9	21.9% of babies born following an epidemic in 1972 [2]
1996 - 2003		children	93.2	93.2% ages 2 to 14 years [3]
1987		military personnel	98.1	98.1% of female military recruits in 1987 [4]
2007		military personnel	72.1-90.4	90.4% / 72.1% of measles seropositive / seronegative military recruits (2007) [5]
2007		military personnel	87.7	87.7% of military recruits born during 1988 to 1989 (2007) [6]
1991 - 1994		women	84.6-93.1	84.6% of women of childbearing age in 1980, 93% in 1988, 90.4% during 1991 to 1992, 93.1% during 1993 to 1994 [7]
1994		women	93.1	93.1% of women of childbearing age in 1994.
1996 - 2003		women	95	95.0% of women of childbearing age (1996 to 2003) [8]
1998		women	82.6-94.9	83.0% of females ages 1 to 4, 82.6% ages 5 to 9, 91.2% ages 10 to 14, 94.9% ages 15 to 19, 93.1% ages 20 to 39, 88.9% ages 40 to 65 (1998)
1999		women	90.8	90.8% of female military recruits in 1999 [9]
2000 - 2005	Gaza	women	7	7% of infertile women in Gaza (IgM, 2000 to 2005) [10]
2012*		patients	11.7	11.7% of patients with autoimmune diseases vs. 5.4% of healthy controls (2012 publication) [11]
1996 - 2003		general population	90.2	90.2% ages 15 to 39 years [12]
1998		general population	70.6-90.5	85.3% of males ages 1 to 4, 83.9% ages 5 to 9, 85.3% ages 10 to 14, 70.6% ages 15 to 19, 84.7% ages 20 to 39, 90.5% ages 40 to 65 (1998)
2015	Nationwide	general population	95.2	Samples from the Israel National Sera Bank; concordant sero-positivity for both mumps and rubella viruses was observed in 83.9% of the tested samples [13]
1972		pregnant	75-84	75% of pregnant women at the onset of an epidemic, and 84% following the

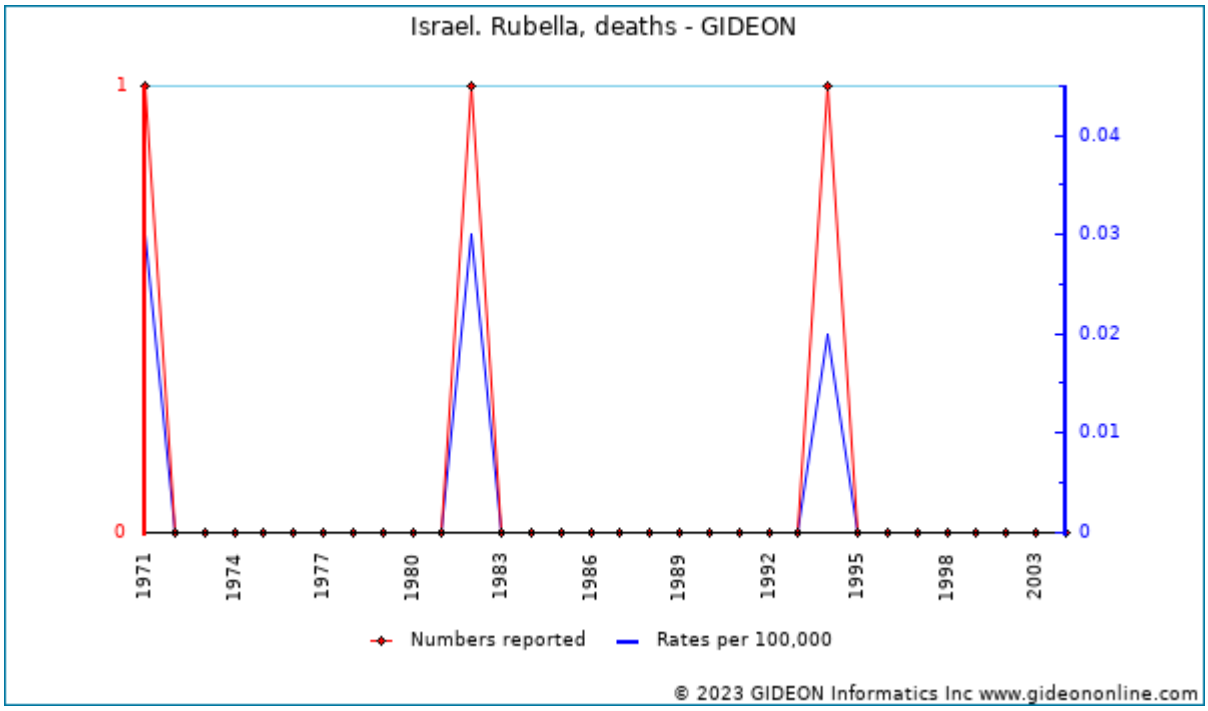
Years	Region	Study Group	%	Notes
		women		epidemic (1972) [14]

* indicates publication year (not necessarily year of survey)

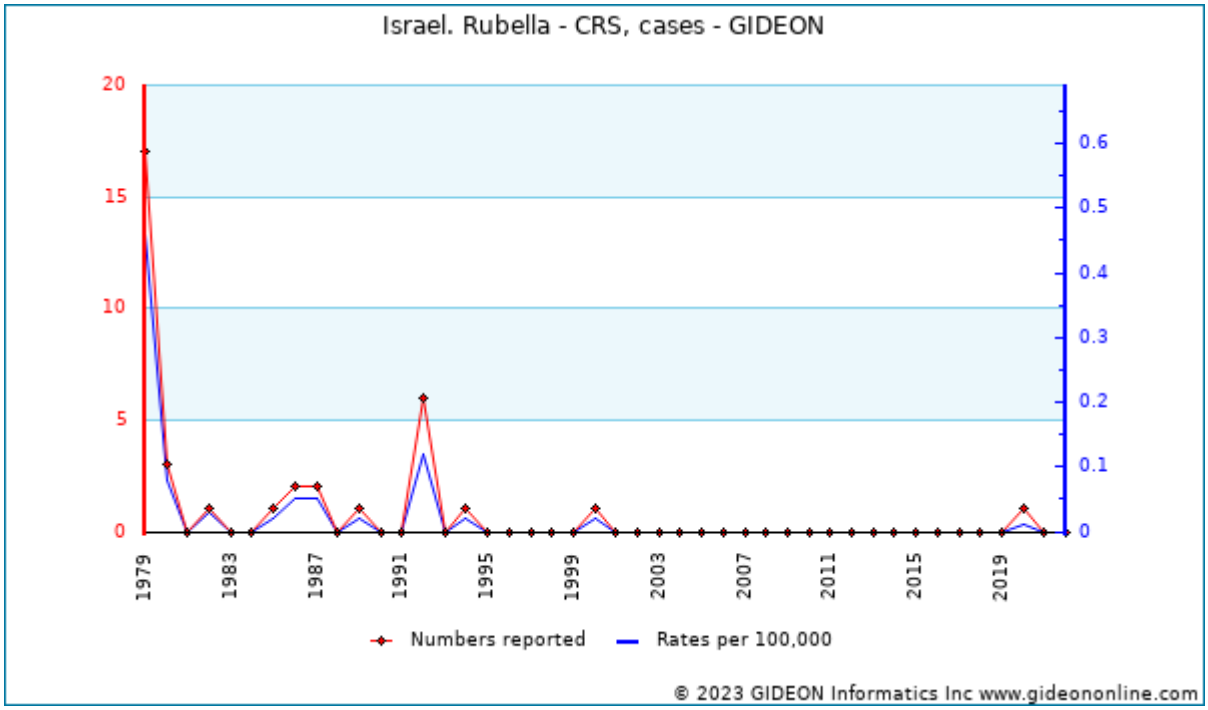


Graph: Israel. Rubella, cases

Notes:
1. Rubella has been officially reportable since 1971.



Graph: Israel. Rubella, deaths



Graph: Israel. Rubella - CRS, cases

Notes:
1. One death (in 1987) was ascribed to congenital rubella during 1986 to 1995.

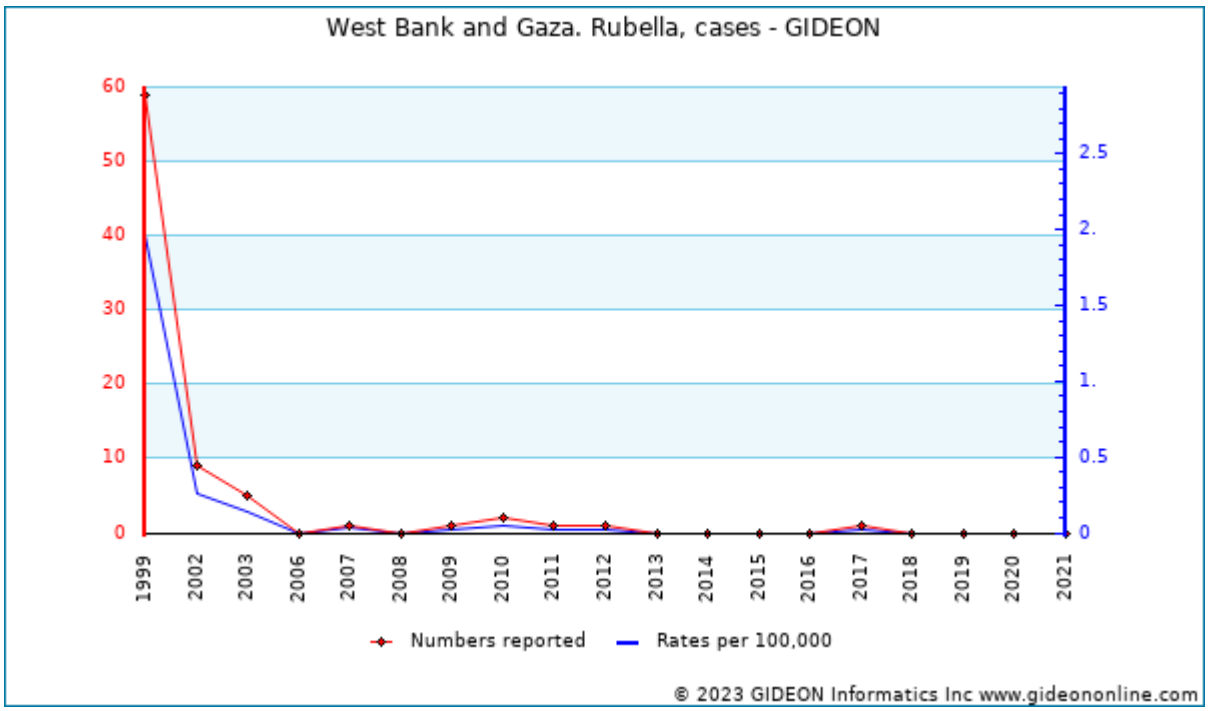
- 2021 (publication year) - The first case of congenital rubella syndrome reported in Israel in twenty years was treated at a hospital in Haifa. The mother was a foreign worker (from the Philippines). [15]

Talking Points
- Major rubella epidemics occurred in Israel during 1961 to 1962, 1972 and 1979.

Notable outbreaks

Years	Region	Cases	Population	Notes
1961 - 1962	Multiple locations			Outbreak reported - additional details unavailable. [16]
1972		3,150		[17] [18] [19] [20] [21] [22]
1978 - 1979				Outbreak resulted in 54 cases of CRS. [23] [24] [25]
2000			military personnel	[26]

West Bank and Gaza:



Graph:

West Bank and Gaza. Rubella, cases

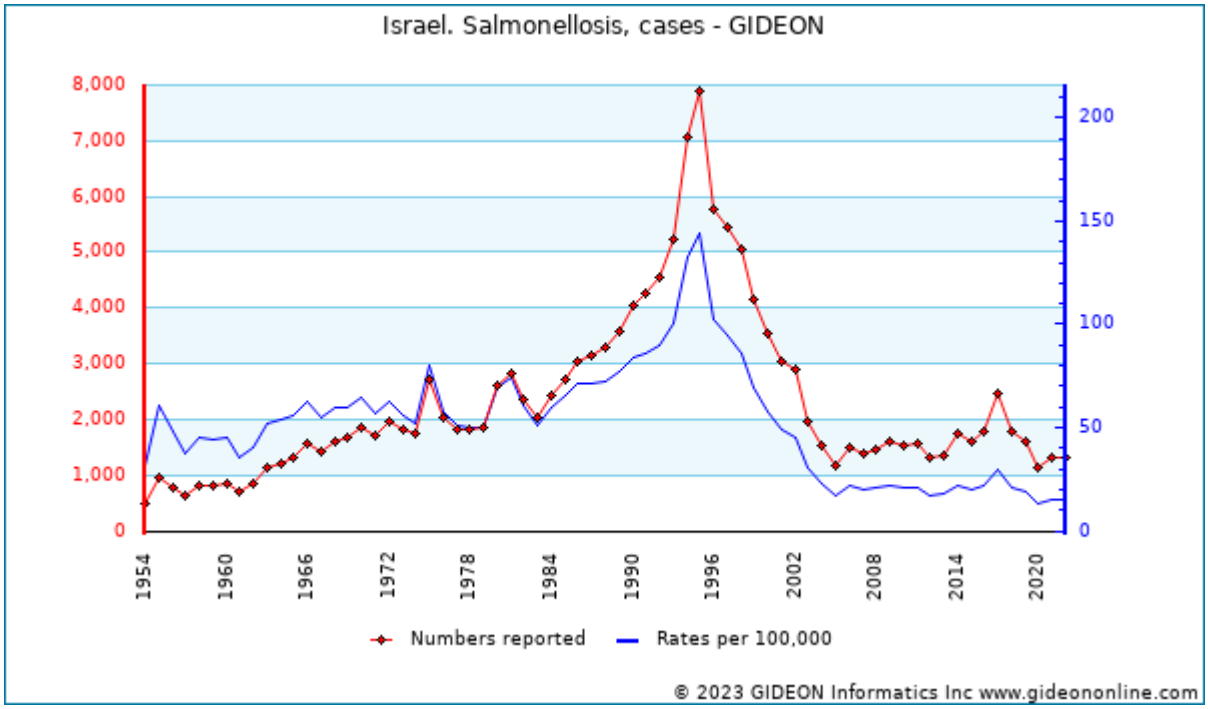
References

1. Rev Infect Dis 1985 Mar-Apr;7 Suppl 1:S42-6.
2. Isr J Med Sci 1978 Sep ;14(9):954-61.
3. Bull World Health Organ 2008 Feb ;86(2):118-25.
4. Prev Med 2004 Dec ;39(6):1223-6.
5. Hum Vaccin Immunother 2015 ;11(6):1400-5.
6. Vaccine 2012 Nov 26;30(50):7260-4.
7. Isr J Med Sci 1996 May ;32(5):300-5.
8. Bull World Health Organ 2008 Feb ;86(2):118-25.
9. Prev Med 2004 Dec ;39(6):1223-6.
10. J Egypt Soc Parasitol 2010 Aug ;40(2):451-8.
11. Rev Bras Reumatol 2012 May-Jun;52(3):307-18.
12. Bull World Health Organ 2008 Feb ;86(2):118-25.
13. Vaccines (Basel) 2022 Jun 22;10(7)
14. Am J Epidemiol 1976 Jan ;103(1):51-9.
15. J Pediatric Infect Dis Soc 2021 Jul 26;
16. Am J Epidemiol 1976 Jan ;103(1):60-6.
17. Am J Epidemiol 1976 Jan ;103(1):60-6.
18. Am J Epidemiol 1976 Jan ;103(1):51-9.
19. Isr J Med Sci 1978 Sep ;14(9):954-61.
20. Harefuah 1975 Feb 02;88(3):105-7.
21. Int J Epidemiol 1975 Dec ;4(4):331-5.
22. Isr J Med Sci 1976 Oct ;12(10):1189-93.
23. Isr J Med Sci 1983 Oct ;19(10):925-8.
24. Dev Biol Stand 1979 ;43:355-60.
25. J Neurol 1982 ;226(4):283-7.
26. Prev Med 2004 Dec ;39(6):1223-6.

Salmonellosis

Agent	BACTERIUM. *Salmonella* A facultative gram-negative bacillus
Reservoir	Mammal, Bird, Reptile, Zoonotic
Vector	None
Vehicle	Food, Milk, Eggs, Poultry Shellfish, Meat, Vegetables, Fruit, Fecal-oral Breastfeeding, Fly
Incubation Period	12h - 36h (range 6h - 6d)
Diagnostic Tests	Culture (stool, blood, infected tissue). Serology.
Typical Adult Therapy	Stool precautions. Therapy not indicated for uncomplicated diarrhea; if necessary, treat per antibiogram[1] [2] [3]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Onset 12 to 24 hours after ingestion of eggs, meat, poultry - Fever, chills and watery diarrhea - Fecal leucocytes present - Fever resolves in 2 days; but diarrhea may persist for up to 7 days (occasionally weeks)
Synonyms	Salmonellosen, Salmonellosi. ICD9: 003 ICD10: A02

Salmonellosis in Israel

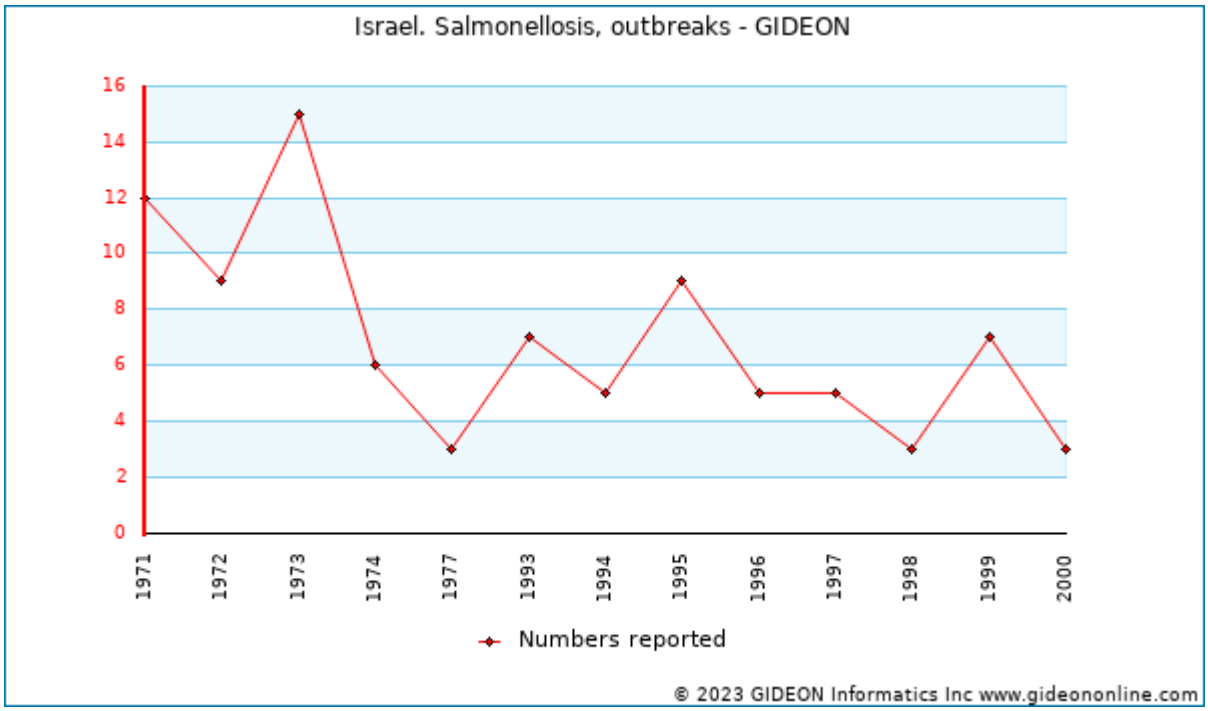


Graph: Israel. Salmonellosis, cases

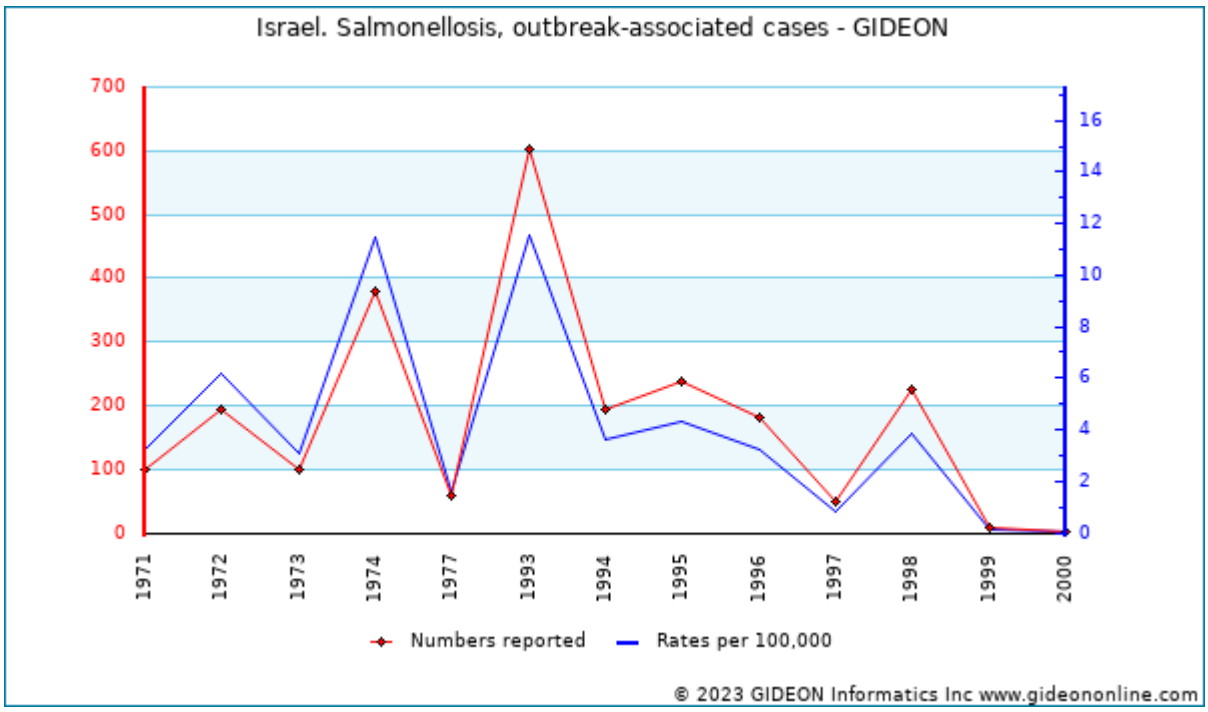
Notes:

1. Salmonellosis has been a reportable disease since 1954.
2. *Salmonella* was the second most common cause of bacterial diarrhea in Israel prior to 1991; rates of Campylobacteriosis, Salmonellosis and Shigellosis have been similar since that year.

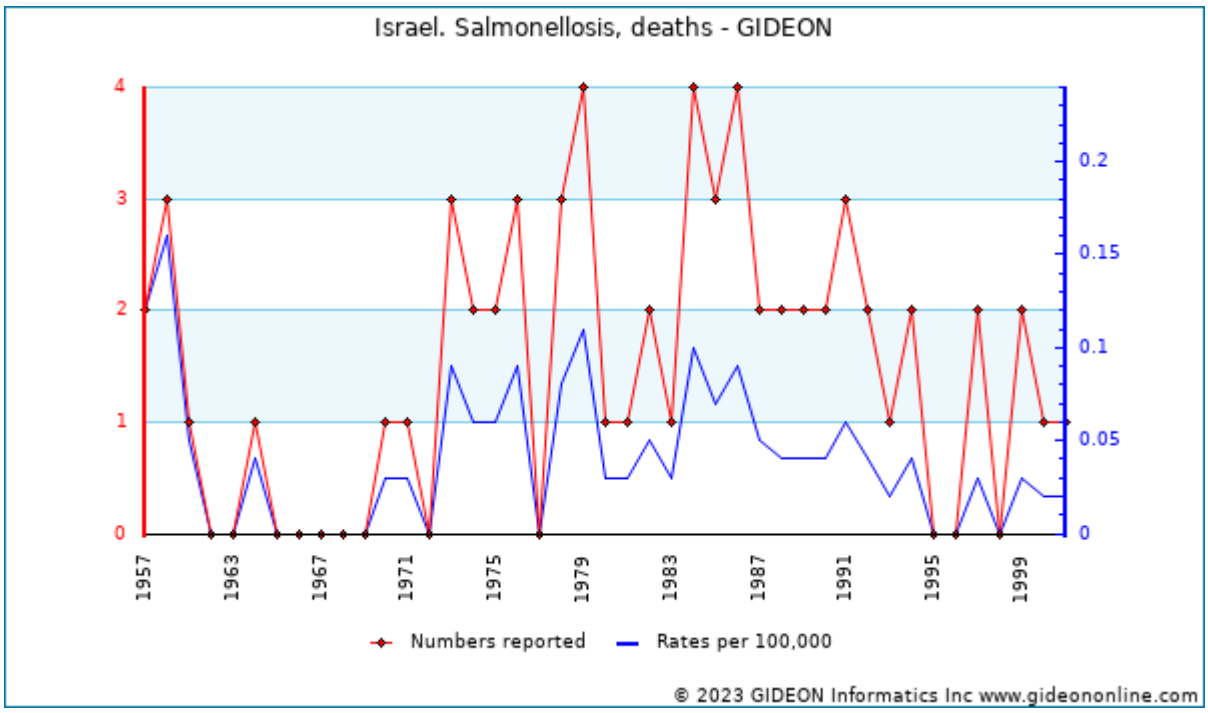
- Rates of non-typhoid salmonellosis were 70·5 per 100 000 in 1999, 21·6 per 100 000 in 2005, and 30·3 per 100 000 in 2009. In 2009 *Salmonella infantis* emerged as the most common *Salmonella* serotype in Israel [4]
- During 1990 to 2008, *Salmonella* accounted for 34.4% of enteric infections in Jerusalem - with rates of 74.2 per 100,000 in 1990, 199.6 per 100,000 in 1995 and 39.4 per 100,000 in 2008. [5]
- 2010 to 2021 - A total of 11,645 cases of non-typhoidal salmonellosis (NTS) were reported. Of the cases reported, 55.5% were infants aged 0 to 4 years, and 7.9% were people aged ≥65 years. In 2010, the age-adjusted incidence rate of salmonellosis was 23.6 per 100,000, which decreased to 16.1 per 100,000 in 2014 and then started to increase peaking at 39.1 per 100,000 in 2017 due to outbreaks associated with *Salmonella* serotype Enteritidis. From 2017 to 2021, the incidence of NTS decreased to 21.4 per 100,000 in 2021. [6]



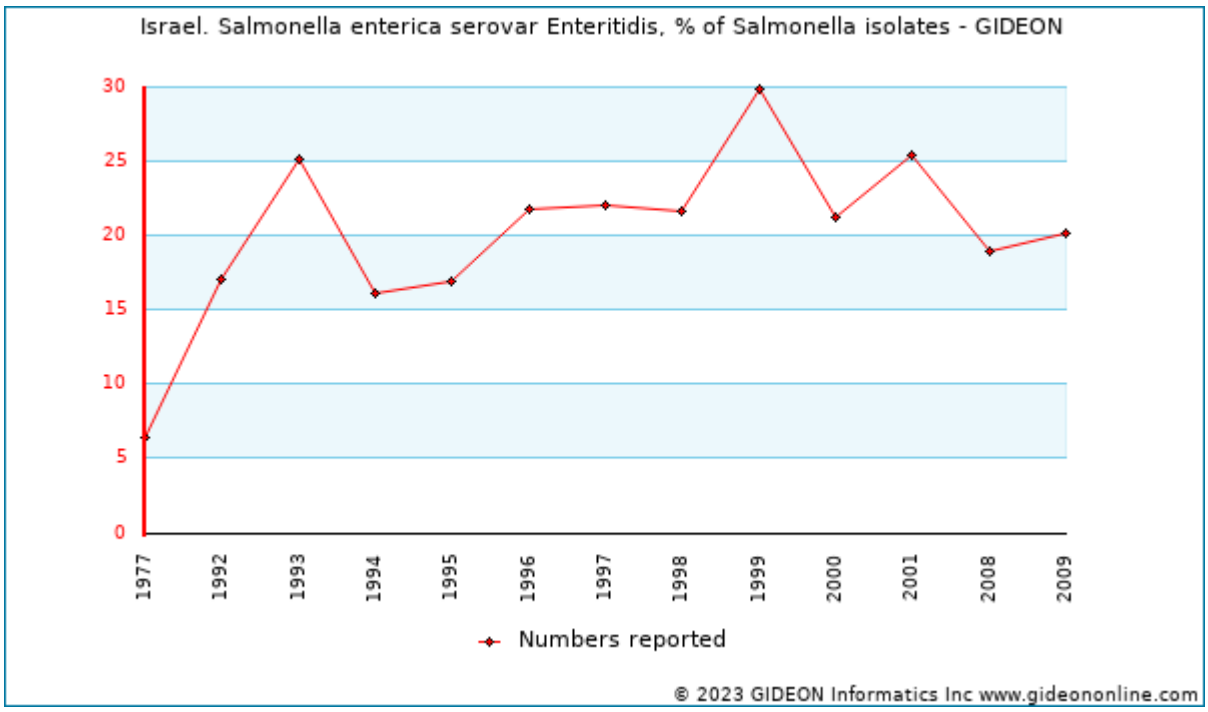
Graph: Israel. Salmonellosis, outbreaks



Graph: Israel. Salmonellosis, outbreak-associated cases

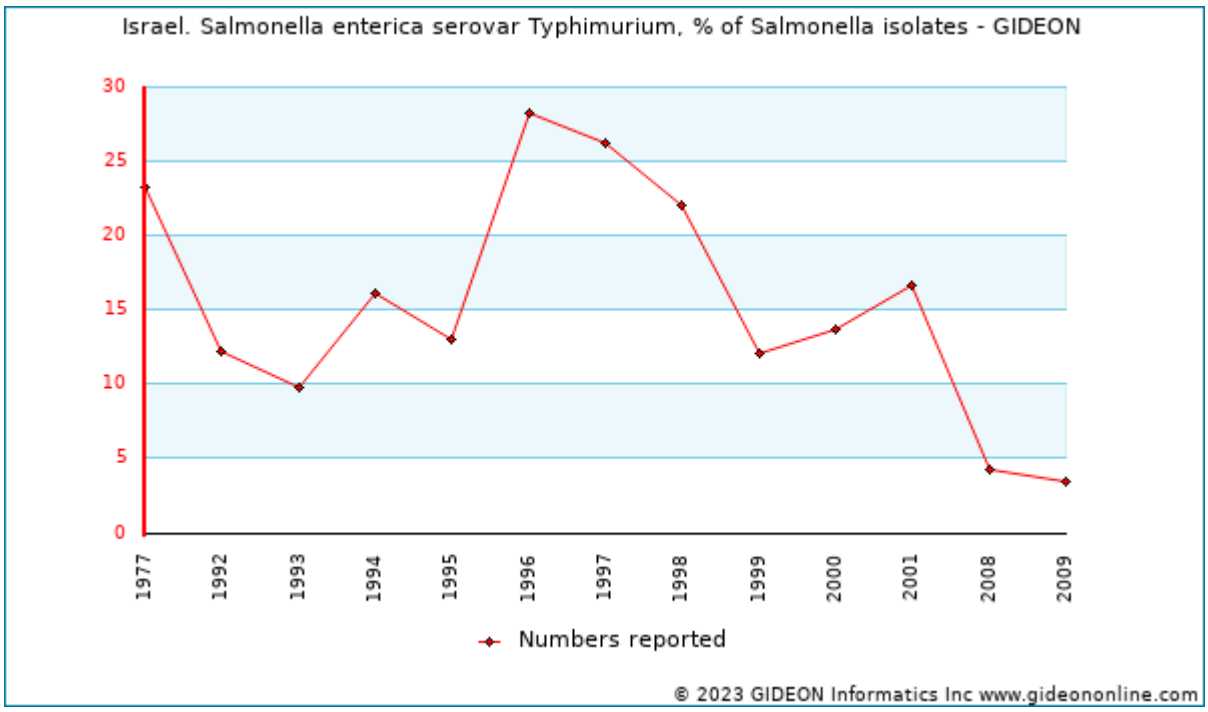


Graph: Israel. Salmonellosis, deaths



Graph: Israel. Salmonella enterica serovar Enteritidis, % of Salmonella isolates

Notes:
1. The incidence of *S. enteritidis* in both poultry and humans increased during 1992 to 1995.



Graph: Israel. Salmonella enterica serovar Typhimurium, % of Salmonella isolates

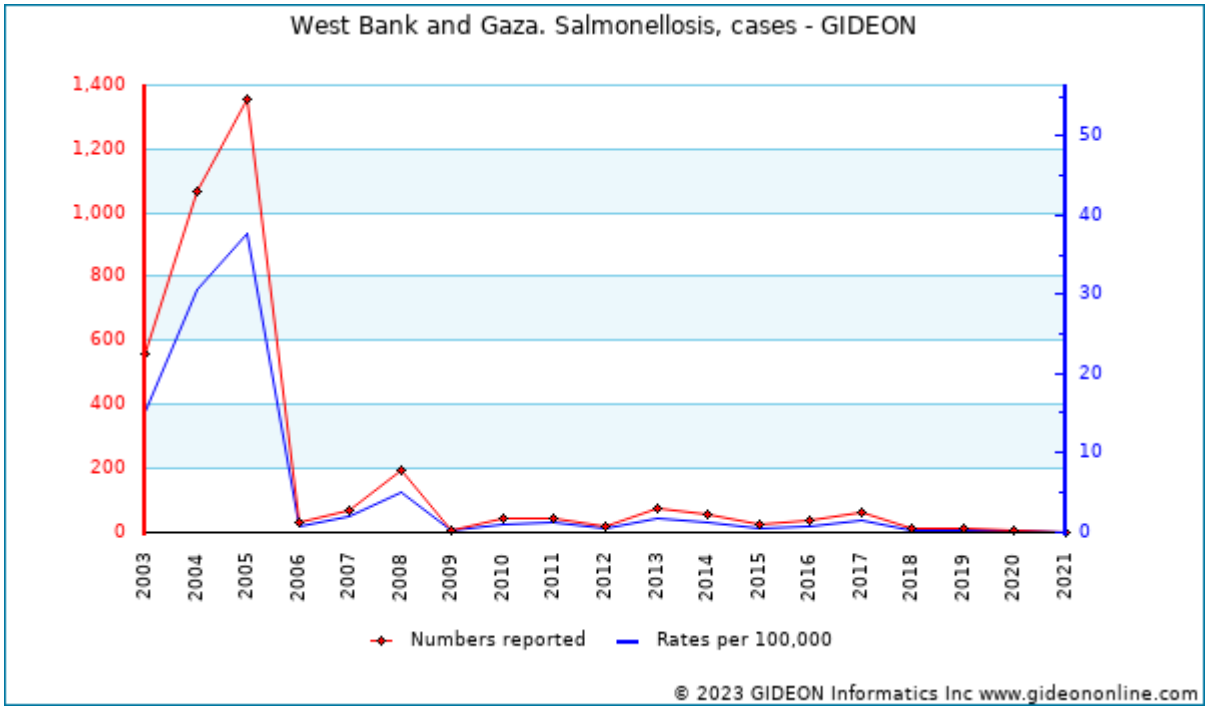
Notes:
1. Multidrug-resistant *S. typhimurium* DT 104 was first isolated in 1994, and was the most common serotype isolated from humans in 1996. [Z]

Other species - percent of total isolates

During 1996 to 2006, serotypes Enteritidis, Virchow [8] [9] and Typhimurium accounted for 66.3% of *Salmonella* isolates. [10]

- 1992 - 10.3% *S. blockley*
- 1993 - 21.9% *S. virchow*.
- 1994 - 2,200 isolates of *Salmonella agona* related to a food snack outbreak. *S. agona* was the most common species, accounting for 36.7% of human isolates that year. *S. virchow* 15.9%.
- 1995 - 19.5% *S. agona*.
- 1996 - 15.4% *S. virchow*, 11.1% *S. hadar*.
- 1997 - 10.8% *S. virchow*, 13.3% *S. hadar*.
- 1998 - 12.8% *S. virchow*, 16.3% *S. hadar*.
- 1999 - 12.2% *S. virchow*, 14.9% *S. hadar*.
- 2000 - 22.2% *S. virchow*, 11.4% *S. hadar*.
- 2001 - 17.61% *S. virchow*, 7.80% *S. hadar*.
- 2008 - 9.0% *S. virchow*, 8.0% *S. hadar*, and 17% *S. infantis* (the most common strain isolated from human sources). [11]
- 2009 - 32.54% *S. infantis*, the most common strain isolated from human sources.

West Bank and Gaza:



Graph: West Bank and Gaza. Salmonellosis, cases

Prevalence surveys

Years	Region	Study Group	%	Notes
1990 - 2008	Jerusalem	patients	34.4	Bacterial enteric infections [12]
1990 - 1999		patients	31	Reported food poisoning cases
1994*	Gaza	children - gastrointestinal	18.5	Diarrhea among children below age 5 years [13]
1998 - 1992		children - gastrointestinal	4	Diarrhea in a communal settlement [14]
1999 - 2006	Gaza	children - gastrointestinal	1.8	Diarrhea [15]
2003 - 2012	Afula	children - gastrointestinal	21.2	Survey of children hospitalized for gastroenteritis [16]
2006 - 2007	Gaza	children - gastrointestinal	4	Childhood diarrhea [17]

Years	Region	Study Group	%	Notes
2007*	Gaza	children - gastrointestinal	2	Diarrhea in children less than 5 years of age [18]
2008*	Gaza	children - gastrointestinal	2	Diarrhea among children below age 5 [19]
2010*	Multiple locations	children - gastrointestinal	2.1	Outpatient diarrhea among children below age 17 years [20]
2015*	Gaza	children - gastrointestinal	0	Diarrhea among kindergarten children below age 5 [21]
2015 - 2020	Kfar Saba	children - gastrointestinal	28.3	In this study, stool culture tests of 276 patients with acute gastroenteritis (AGE) and positive bacterial culture, as well as 560 control patients (negative bacterial cultures), who visited the pediatric emergency department in Meir Medical Center were evaluated. *Salmonella* spp. were detected in 79 (28.3%) of the culture-positive samples. [22]
2015 - 2018	Jerusalem	children - gastrointestinal	17	Out of 162 children who were diagnosed with clinical dysentery during the study period at Shaare Zedek Medical Center, 17% had a stool culture positive for *Salmonella* spp. [23]
2016 - 2019	Netanya	children - gastrointestinal	18	Non-typhoid *Salmonella* was detected in 18% of 135 hospitalized children with clinical dysentery. Testing was done on stool cultures. [24]
2018 - 2020	Tel Aviv	children - gastrointestinal	7	In the stool samples collected from 118 hospitalized children at the Schneider Children's Medical Center of Israel, *Salmonella* was detected in 7% of the samples. [25]

***** indicates publication year (not necessarily year of survey)

Cross-border events

Imported disease vehicles are included; individual case reports not listed

Years	Acquired by**	Originated in**	Setting	Cases	Notes
1995	United Kingdom	Israel	imported goods	27	An outbreak (27 cases in the U.K.) of *Salmonella agona* infection was caused by a savoury snack imported from Israel. [26] [27] [28] [29]
2007		Israel	imported goods	63	An outbreak (63 cases) of *Salmonella* senftenberg infection in England and Wales (51 cases), Denmark (11) and the Netherlands (2) was ascribed to contaminated basil imported from Israel. [30] [31] [32] [33] [34] [35]
2018	United States	Israel	imported goods	5	Outbreak in the United States associated with tahini imported from Israel [36] [37]

****** Country or Nationality

Notable outbreaks

Years	Region	Setting	Cases	Deaths	Source	Pathogen	Notes
1982*		hospital					[38]
1983 - 1984	Negev	pediatric ward	200			Typhimurium PT R-9	Outbreak on two adjacent pediatric wards [39]
1995	Foreign Country					Agona	Outbreak (27 cases) in the U.K. caused by a savoury snack imported from Israel. [40] [41] [42] [43]
1999	Kariat Malachi	mourning ceremony	60	1			[44]
2001			25		meat - beef	Typhimurium DT 104	workers. Outbreak among foreign workers associated with consumption of raw beef.
2005*	Multiple locations	school	43		baked goods	Enteritidis	children. Outbreak among first-graders in Or Akiva, Hadera was caused by contaminated cream cake. [45]
2007	Multinational				basil	Senftenberg	Outbreak (63 cases) in England and Wales (51 cases), Denmark (11) and the Netherlands (2) ascribed to contaminated basil imported from Israel [46] [47] [48] [49] [50] [51]
2009*	Jerusalem	banquet	75			Enteritidis	[52]
2015	Multiple locations						A nationwide outbreak of *Salmonella enterica* serovar Enteritidis infection was reported. [53]

Years	Region	Setting	Cases	Deaths	Source	Pathogen	Notes
2017	Multiple locations					Enteritidis	Multiple outbreaks and clusters reported in kindergartens, hostels, and restaurants - ascribed to contaminated eggs [54] [55] [56]
2017	Jerusalem	day care center	30		chicks		children. Outbreak suspected to be related to contact with chicks [57]
2018			38		tahini	Concord	Outbreak in Israel (38 cases) and the United States (5 cases) associated with tahini manufactured in Israel [58]
2022	Multiple locations	meat processing plant	4		poultry - chicken	Mbandaka	general population. A cross-border outbreak of Salmonella (enterica serotype) Mbandaka ST413 was reported from the EU/EEA, Israel, and the United Kingdom in September 2021. By November 8, 2022, 196 cases had been reported in Czechia (5), Estonia (3), Finland (89), France (10), Germany (2), Ireland (1), the Netherlands (1), the UK (81), and Israel (4). A total of 19 cases were hospitalized and 5 cases had septicemia. One case in the UK died. Ready-to-eat (RTE) chicken products and/or fresh chicken meat were the likely vehicles of infection. A total of 15 cases in Finland reported consumption of 6 RTE products from 3 brands. All 15 cases had consumed at least one RTE chicken product. Two products were marketed under the same brand name, which was adopted by Estonian Company A and Finnish Company B. However, the source has not been verified officially as of November 30. [59]

* indicates publication year (not necessarily year of outbreak)

References

1. N Engl J Med 1969 Sep 18;281(12):636-40.
2. Cochrane Database Syst Rev 2000 ;(2):CD001167.
3. Expert Rev Anti Infect Ther 2016 ;14(2):193-206.
4. Epidemiol Infect 2012 Aug ;140(8):1446-53.
5. Epidemiol Infect 2009 Nov ;137(11):1531-7.
6. Int J Environ Res Public Health 2023 Apr 24;20(9)
7. Epidemiol Infect 1998 Dec ;121(3):555-9.
8. Clin Microbiol Infect 2006 Oct ;12(10):999-1005.
9. Curr Opin Infect Dis 2005 Dec ;18(6):513-21.
10. Eur J Clin Microbiol Infect Dis 2010 Sep ;29(9):1103-9.
11. ProMED <promedmail.org> archive: 20090310.0987
12. Epidemiol Infect 2009 Nov ;137(11):1531-7.
13. Ann Trop Med Parasitol 1994 Apr ;88(2):175-82.
14. Pediatr Infect Dis J 1994 Feb ;13(2):116-22.
15. J Gastroenterol Hepatol 2008 Aug ;23(8 Pt 2):e330-3.
16. Sci Rep 2020 Apr 02;10(1):5823.
17. Indian J Pediatr 2011 Feb ;78(2):165-70.
18. Int J Infect Dis 2007 Nov ;11(6):501-7.
19. Med Princ Pract 2008 ;17(4):296-301.
20. Epidemiol Infect 2011 Sep ;139(9):1379-87.
21. J Biomed Res 2015 Jan ;29(1):61-8.
22. Clin Pediatr (Phila) 2022 Dec 01;:99228221140772.
23. Isr Med Assoc J 2023 Jan ;25(1):5-7.
24. Acta Paediatr 2023 Feb 18;
25. Acta Paediatr 2022 Nov 29;
26. BMJ 1996 Nov 02;313(7065):1105-7.
27. BMJ 1996 Nov 02;313(7065):1107-9.
28. Emerg Infect Dis 1996 Apr-Jun;2(2):130-2.
29. Commun Dis Rep CDR Wkly 1995 Feb 17;5(7):29, 32.
30. Foodborne Pathog Dis 2008 Oct ;5(5):661-8.
31. Euro Surveill 2007 Jun 14;12(6):E070614.3.
32. Int J Food Microbiol 2009 Aug 31;134(1-2):83-8.
33. Genome Announc 2017 Oct 12;5(41)
34. ProMED <promedmail.org> archive: 20070605.1819
35. ProMED <promedmail.org> archive: 20070615.1960
36. ProMED <promedmail.org> archive: 20181201.6173732
37. ProMED <promedmail.org> archive: 20181209.6191986
38. J Hosp Infect 1982 Jun ;3(2):185-7.
39. Pediatr Infect Dis J 1990 Aug ;9(8):551-5.
40. BMJ 1996 Nov 02;313(7065):1105-7.
41. BMJ 1996 Nov 02;313(7065):1107-9.
42. Emerg Infect Dis 1996 Apr-Jun;2(2):130-2.
43. Commun Dis Rep CDR Wkly 1995 Feb 17;5(7):29, 32.
44. ProMED <promedmail.org> archive: 19990902.1543
45. Harefuah 2005 Jan ;144(1):8-10, 72, 71.
46. Foodborne Pathog Dis 2008 Oct ;5(5):661-8.
47. Euro Surveill 2007 Jun 14;12(6):E070614.3.
48. Int J Food Microbiol 2009 Aug 31;134(1-2):83-8.
49. Genome Announc 2017 Oct 12;5(41)
50. ProMED <promedmail.org> archive: 20070605.1819
51. ProMED <promedmail.org> archive: 20070615.1960
52. Isr Med Assoc J 2009 Feb ;11(2):94-7.
53. Front Microbiol 2016 ;7:1468.
54. ProMED <promedmail.org> archive: 20170907.5300478
55. ProMED <promedmail.org> archive: 20170905.5296449
56. ProMED <promedmail.org> archive: 20170505.5015945
57. ProMED <promedmail.org> archive: 20170505.5015945
58. ProMED <promedmail.org> archive: 20181209.6191986
59. ProMED <promedmail.org> archive: 20221203.8707063

Sarcocystosis

Agent	PARASITE - Protozoa. Coccidea, Eimeriida: *Sarcocystis bovihominis* or *S. suihominis*
Reservoir	Cattle, Pig, Zoonotic
Vector	None
Vehicle	Meat, Water
Incubation Period	9d - 39d
Diagnostic Tests	Identification of cysts in stool.
Typical Adult Therapy	Supportive[1]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Diarrhea and abdominal pain of varying severity - Muscle pain and eosinophilia occasionally encountered
Synonyms	Isospora hominis, Kudoa, Sarcocystiasis, Sarcocystis, Sarcocystis bovihominis, Sarcocystis cruzi, Sarcocystis fayeri, Sarcocystis hominis, Sarcocystis nesbitti, Sarcocystis suihominis, Sarcosporidiosis. ICD9: 136.5 ICD10: A07.8

References

1. Clin Microbiol Rev 2015 Apr ;28(2):295-311.

Scabies

Agent	PARASITE - Arthropod. Arachnid, Acari (Mite), Sarcoptidae: *Sarcoptes scabiei*
Reservoir	Human
Vector	None
Vehicle	Contact, Sexual contact
Incubation Period	1d - 42d
Diagnostic Tests	Identification of mites in skin scrapings. Dermoscopy PCR of skin flakes
Typical Adult Therapy	Isolation until treated. Towel, bedding precautions Permethrin 5% as single application OR Ivermectin 150 to 200 mcg/kg PO as single dose OR Ivermectin 1% as single application Second treatment course may be necessary[1] [2]
Typical Pediatric Therapy	Permethrin 5% as single application OR Ivermectin 200 mcg/kg PO (> 15 kg body weight) OR Ivermectin 1% as single application
Clinical Hints	- Intensely pruritic papules, vesicles and burrows - Nodular and bullous lesions are also encountered - Lesions prominent at interdigital webs, wrists, elbows, axillae, perineal region, buttocks and penis - Pruritus is most intense at night - Severe psoriaform infestation (Norwegian scabies) may affect debilitated and immunosuppressed individuals
Synonyms	Anthrenus dermatitis, Carpet beetle, Cheyletiella, Cheyletiella infestation, Escabiose, Escabiosis, Histiostomatid mites, Itch mite, Kraetze, Kratze, Mange, Ornithonyssus, Pyemotes, Sarcoptes scabiei, Sarna, Scabbia, Skabies, Tropical rat mite. ICD9: 133 ICD10: B86

Scabies in Israel

Scabies rates among military personnel are highest during winter. [3]

Prevalence surveys

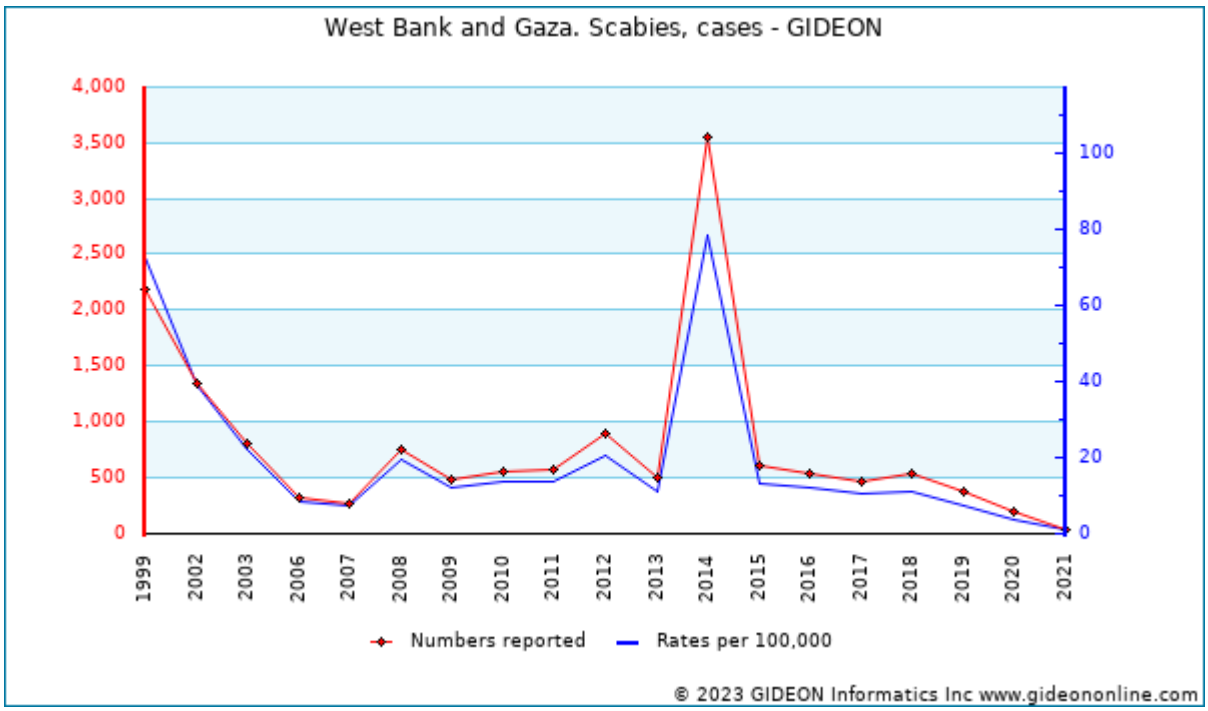
Years	Study Group	%	Notes
1993*	immigrants	10	10% of Ethiopian immigrants (1993 publication) [4]

* indicates publication year (not necessarily year of survey)

Notable outbreaks

Years	Region	Cases	Population	Notes
1969 - 1973			military personnel	[5]
1976*	Western Galilee	225		Outbreak reported in a single village [6]
1982 - 1986			military personnel	[7]

* indicates publication year (not necessarily year of outbreak)



Graph: West Bank and Gaza. Scabies, cases

2005 to 2010 - The average yearly rate of scabies among Dermatology clinics in the West Bank was 17 per 100,000 - highest in the age group <=10 years.

References

1. Indian J Dermatol Venereol Leprol 2012 Sep-Oct;78(5):605-10.
2. PLoS Med 2021 11 ;18(11):e1003849.
3. Br J Dermatol 2003 Jul ;149(1):157-9.
4. Isr J Med Sci 1993 Jun-Jul;29(6-7):371-3.
5. Int J Dermatol 1989 Apr ;28(3):180-2.
6. Am J Public Health 1976 Jun ;66(6):564-7.
7. Int J Dermatol 1989 Apr ;28(3):180-2.

Scarlet fever

Agent	BACTERIUM. *Streptococcus pyogenes* A facultative gram-positive coccus
Reservoir	Human
Vector	None
Vehicle	Secretions, Food, Respiratory or pharyngeal acquisition
Incubation Period	1d - 4d
Diagnostic Tests	Typical clinical features associated with group A streptococcal pharyngitis.
Typical Adult Therapy	Benzathine Penicillin G 1.2 million units IM as single dose[1]
Typical Pediatric Therapy	Benzathine Penicillin G : Weight <14kg: 300,000 units IM Weight 14 to 28kg: 600,000 units IM Weight >28kg: 1.2 million units IM
Clinical Hints	- Overt exudative pharyngitis - Appearance of a florid desquamative erythematous rash within 24 to 48 hours - Facial flushing and circum-oral pallor - Lingual desquamation ("strawberry tongue")
Synonyms	Escarlatina, Lanhousha, Scarlattina, Scharlach. ICD9: 034.1 ICD10: A38

Scarlet fever in Israel

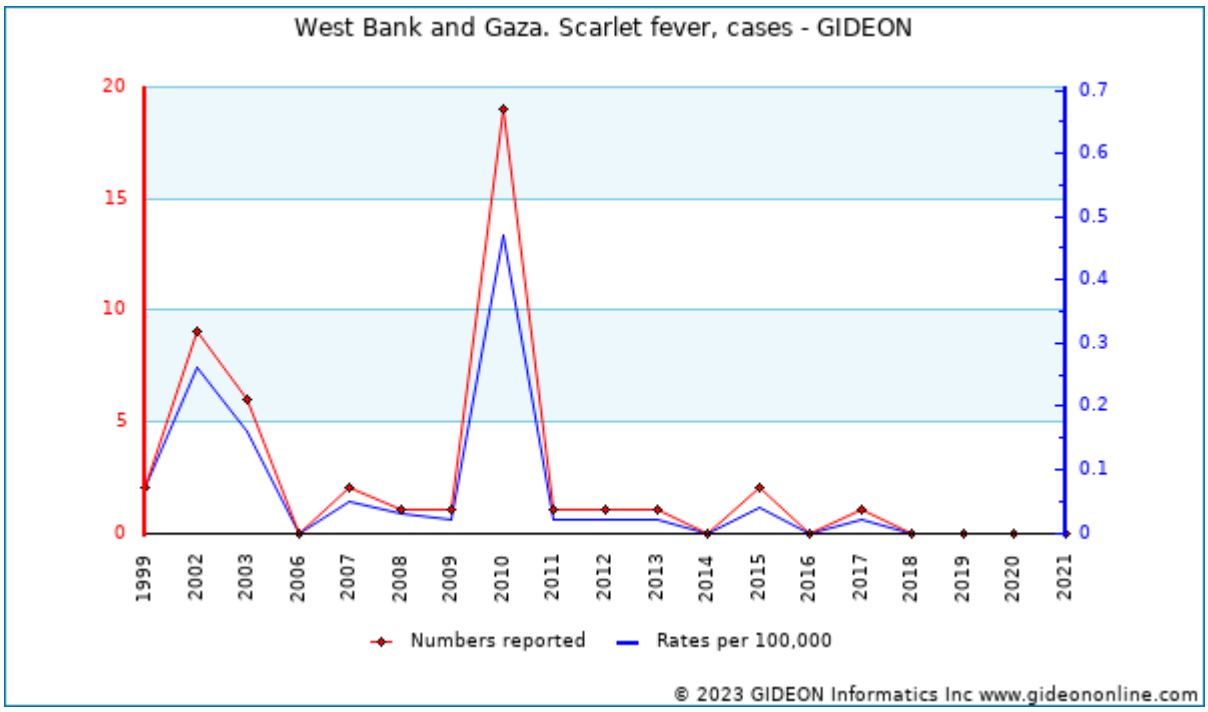
556 cases (0 fatal) were reported in 1944, and 478 (1 fatal) in 1945.

3,432 cases were reported during 1955 to 1956.

The reported annual rate during the 1970's was 15 to 40 per 100,000.

Mandatory reporting was discontinued after 1977.

West Bank and Gaza:



Graph:

West Bank and Gaza. Scarlet fever, cases

References

1. Drug Ther Bull 2017 Sep ;55(9):102.

Schistosomiasis - haematobium

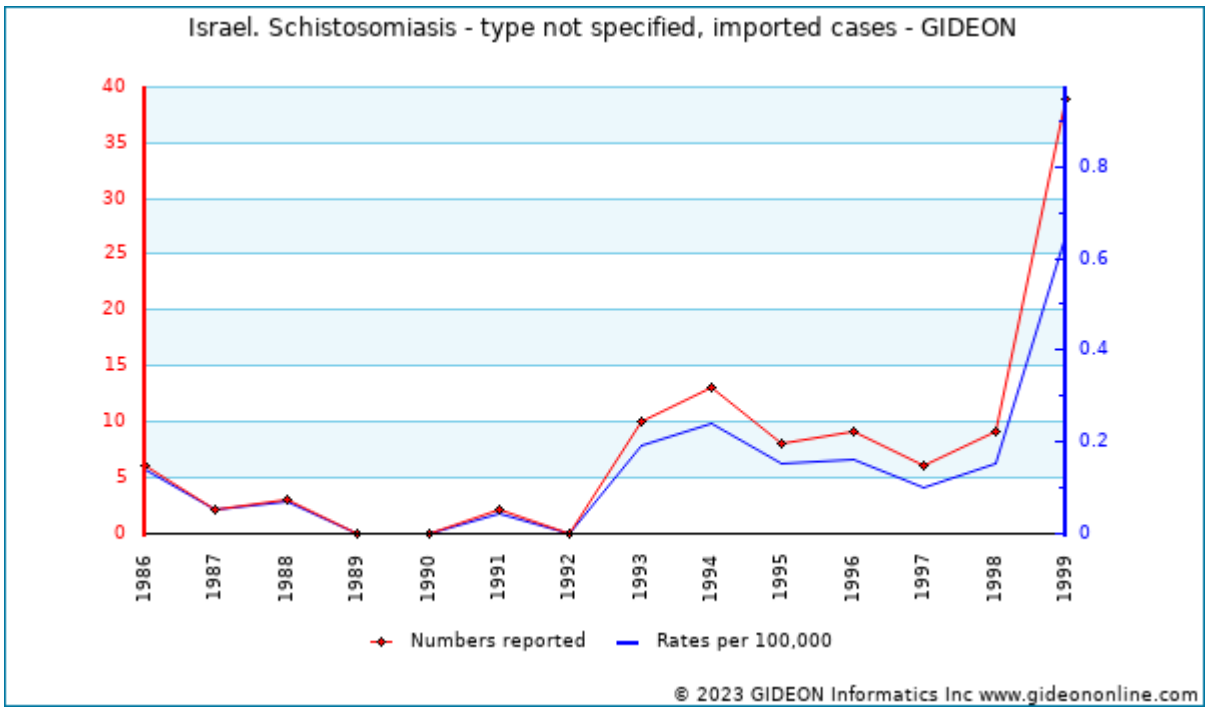
Agent	PARASITE - Platyhelminthes, Trematoda. Strigeida, Schistosomatidae: *Schistosoma haematobium*
Reservoir	Snail (*Bulinus*, *Planorbarius*, *Ferrissia*), Baboon or monkey, Zoonotic
Vector	None
Vehicle	Water (skin contact)
Incubation Period	2w - 12w (acute illness)
Diagnostic Tests	Identification of ova in urine or stool. Serology. Antigen detection.
Typical Adult Therapy	Praziquantel 20 mg/kg PO BID X 1 day[1] [2]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Early urticaria, fever and eosinophilia - Chronic disease associated with dysuria, hematuria and obstructive nephropathy - May evolve to bladder cancer in advanced cases - Parasite survives for decades in human host
Synonyms	Bilharziasis, urinary, Egyptian hematuria, Katayama fever [1], Schistosoma guineensis, Schistosoma haematobium, Schistosomal hematuria, Schistosomiasis, Vesicle bilharziasis. ICD9: 120.0 ICD10: B65.0

Although Schistosomiasis - haematobium is not endemic to Israel, imported, expatriate or other presentations of the disease have been associated with this country.

Schistosomiasis - haematobium in Israel

- 97 cases were reported among school children in 1955.
- No cases of endemic disease have been reported since 1955. [3]

Sporadic importations are encountered, often among Israelis returning from Malawi [4] and immigrants from Ethiopia. [5]



Graph: Israel. Schistosomiasis - type not specified, imported cases

Notes:
1. 137 cases schistosomiasis were reported among returning travelers during 1993 to 2005 - 39.4% *S. haematobium* and 29.9% *S. mansoni*. [6]

No deaths were ascribed to schistosomiasis during 1986 to 1993; 1 in 1994; 0 in 1995.

No cases of "bilharzia" were reported in the West Bank and Gaza in 2002; 0 in 2003.

Cross-border events
Does not include individual case reports

Years	Acquired by**	Originated in**	Setting	Cases	Notes
2007	Israel	Tanzania	travel	23	An outbreak (23 cases - 21 *S. mansoni* + 2 *S. haematobium*) among Israeli tourists was associated with swimming in an artificial lake in Tanzania. Several cases were also reported among German tourists. [7] [8]

** Country or Nationality

Notable outbreaks

Years	Region	Cases	Population	Notes
1955*	Beth-Shean			[9]
2007	Foreign Country	23	tourists	Outbreak (23 cases - 21 *S. mansoni* + 2 *S. haematobium*) among Israeli tourists was associated with swimming in an artificial lake in Tanzania. Several cases were also reported among German tourists [10] [11]

* indicates publication year (not necessarily year of outbreak)

References

1. PLoS Negl Trop Dis 2014 ;8(11):e3286.
2. J Trop Med 2022 ;2022:1413711.
3. Trop Geogr Med 1979 Jun ;31(2):175-84.
4. Harefuah 1995 Jan 15;128(2):82-5, 127.
5. Medicine (Baltimore) 2019 Dec ;98(52):e18481.
6. Emerg Infect Dis 2006 Nov ;12(11):1696-700.

7. Clin Infect Dis 2008 Dec 15;47(12):1499-506.
8. ProMED <promedmail.org> archive: 20070904.2912
9. Harefuah 1955 Jul 01;49(1):9-11.
10. Clin Infect Dis 2008 Dec 15;47(12):1499-506.
11. ProMED <promedmail.org> archive: 20070904.2912

Schistosomiasis - mansoni

Agent	PARASITE - Platyhelminthes, Trematoda. Strigeida, Schistosomatidae: *Schistosoma mansoni*
Reservoir	Snail (*Biomphalaria*), Dog, Cat, Pig, Cattle, Rodent, Horse, Non-human primate, Zoonotic
Vector	None
Vehicle	Water (skin contact)
Incubation Period	2w - 6w (acute illness)
Diagnostic Tests	Identification of ova in stool or biopsy specimens. Serology. Antigen detection.
Typical Adult Therapy	Praziquantel 20 mg/kg PO BID X one day OR Oxamniquine 15 mg PO X one dose[1] [2]
Typical Pediatric Therapy	Praziquantel 20 mg/kg PO BID X one day OR Oxamniquine 10 mg PO BID X one day
Clinical Hints	- Early urticaria, fever and eosinophilia - Later, hepatosplenomegaly and portal hypertension - Parasite may survive for decades in human host
Synonyms	Bilharziasis, intestinal, Katayama fever [3], Schistosoma mansoni. ICD9: 120.1 ICD10: B65.1

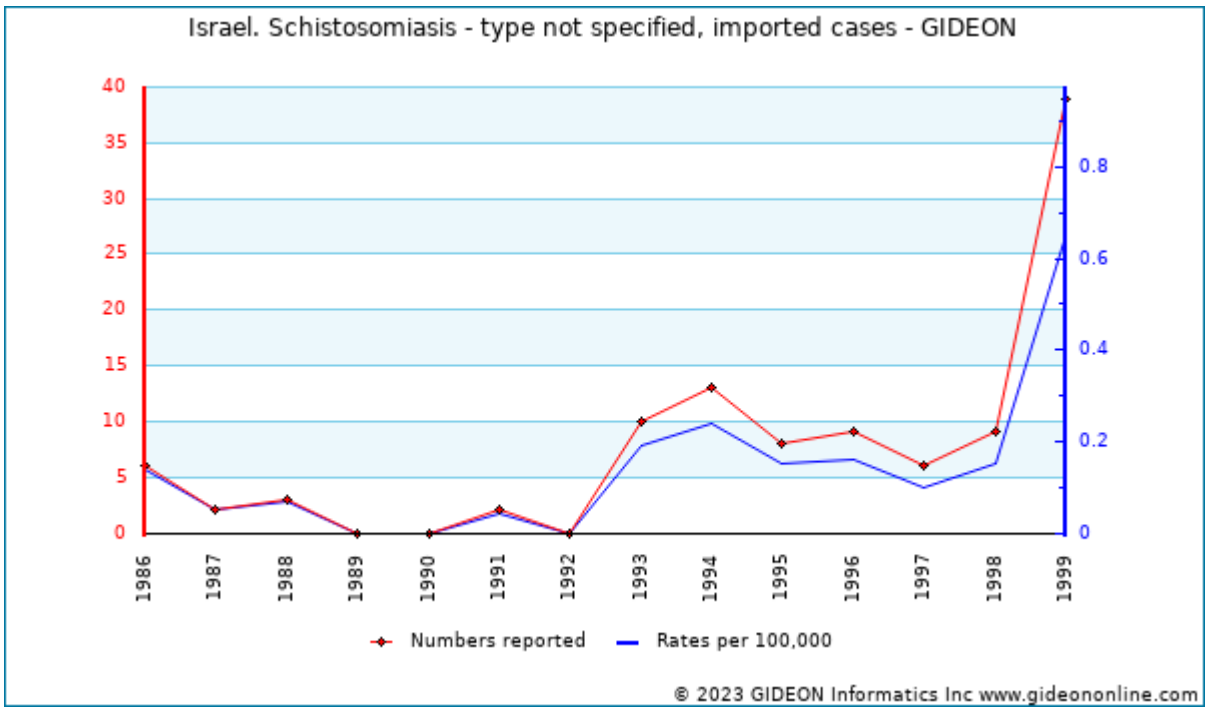
Although Schistosomiasis - mansoni is not endemic to Israel, imported, expatriate or other presentations of the disease have been associated with this country.

Schistosomiasis - mansoni in Israel

Time and Place

19 cases of autochthonous schistosomiasis were reported among school children in 1951

- Endemic disease has not been reported since 1951. [3]
- Schistosomiasis was common among immigrants from Yemen [4] , and more recently Ethiopia. [5] [6]



Graph: Israel. Schistosomiasis - type not specified, imported cases

Notes:
1. 137 cases schistosomiasis were reported among returning travelers during 1993 to 2005 - 39.4% *S. haematobium* and 29.9% *S. mansoni*. [7]

Prevalence surveys

Years	Region	Study Group	%	Notes
1991*	Multiple locations	immigrants	46.6	46.6% of Ethiopian immigrants (1991 publication). [8]

***** indicates publication year (not necessarily year of survey)

Cross-border events

Does not include individual case reports

Years	Acquired by**	Originated in**	Setting	Cases	Notes
1997	Israel	Ethiopia	travel	18	Outbreaks (10 cases and 8 cases) were reported among Israeli tourists in Ethiopia. [9]
2007	Israel	Tanzania	travel	21	An outbreak (23 cases - 21 *S. mansoni* + 2 *S. haematobium*) among Israeli tourists was associated with swimming in an artificial lake in Tanzania. Several cases were also reported among German tourists. [10] [11]
2013*	Israel	Uganda	travel	10	An outbreak (10 cases) was reported among Israeli tourists in Uganda [12] [13]

***** indicates publication year (not necessarily year of event)
****** Country or Nationality

No deaths were ascribed to schistosomiasis during 1986 to 1993; 1 in 1994; 0 in 1995.

- 2002 to 2003 - No cases of "bilharzia" were reported in the West Bank and Gaza.
- 1979 (publication year) - *Biomphalaria alexandrina*, the snail reservoir of *S. mansoni*, has been eradicated through ecological factors (salinity and pollution by sewage) and human activities. [14]

Notable outbreaks

Years	Region	Cases	Pathogen	Population	Notes
1997	Foreign Country	20		tourists	Outbreak among Israeli tourists who were infected while rafting on the Omo

Years	Region	Cases	Pathogen	Population	Notes
					River, Ethiopia. [15]
2007	Foreign Country	23	multiple pathogens	tourists	An outbreak (23 cases - 21 *S. mansoni* + 2 *S. haematobium*) among Israeli tourists swimming in an artificial lake in Tanzania. Several cases were also reported among German tourists. [16] [17]
2013*	Foreign Country	10		tourists	Outbreak among Israeli tourists in Uganda. [18] [19]

***** indicates publication year (not necessarily year of outbreak)

References

1. PLoS Negl Trop Dis 2014 ;8(11):e3286.
2. Cochrane Database Syst Rev 2013 Feb 28;(2):CD000528.
3. Trop Geogr Med 1979 Jun ;31(2):175-84.
4. Isr J Med Sci 1990 Jul ;26(7):386-9.
5. Isr J Med Sci 1991 May ;27(5):278-83.
6. Medicine (Baltimore) 2019 Dec ;98(52):e18481.
7. Emerg Infect Dis 2006 Nov ;12(11):1696-700.
8. Isr J Med Sci 1991 May ;27(5):278-83.
9. Am J Trop Med Hyg 1998 Oct ;59(4):504.
10. Clin Infect Dis 2008 Dec 15;47(12):1499-506.
11. ProMED <promedmail.org> archive: 20070904.2912
12. Clin Infect Dis 2013 Nov ;57(10):1461-4.
13. ProMED <promedmail.org> archive: 20131123.2070772
14. Trop Geogr Med 1979 Jun ;31(2):175-84.
15. J Travel Med 2005 Jan-Feb;12(1):3-8.
16. Clin Infect Dis 2008 Dec 15;47(12):1499-506.
17. ProMED <promedmail.org> archive: 20070904.2912
18. Clin Infect Dis 2013 Nov ;57(10):1461-4.
19. ProMED <promedmail.org> archive: 20131123.2070772

Schistosomiasis - mekongi

Agent	PARASITE - Platyhelminthes, Trematoda. Strigeida, Schistosomatidae: *Schistosoma mekongi*
Reservoir	Snail (*Neotricula aperta*), Dog
Vector	None
Vehicle	Water (skin contact)
Incubation Period	2w - 6w (acute illness)
Diagnostic Tests	Identification of ova in stool or biopsy specimens. Serology. Antigen detection.
Typical Adult Therapy	Praziquantel 20 mg/kg PO TID X 1 day[1] [2] [3]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Early urticaria, fever and eosinophilia - Later, hepatosplenomegaly and portal hypertension - Parasite may survive for decades in human host
Synonyms	Schistosoma mekongi. ICD9: 120.8 ICD10: B65.8

Although Schistosomiasis - mekongi is not endemic to Israel, imported, expatriate or other presentations of the disease have been associated with this country.

Schistosomiasis - mekongi in Israel

1993 to 2005 - One case of presumed *Schistosoma mekongi* infection was reported, in a returning traveler.

2008 - An Israeli traveler acquired probable *Schistosoma mekongi* infection in Laos. [4]

Cross-border events

Does not include individual case reports

Years	Acquired by**	Originated in**	Setting	Cases	Notes
2003 to 2007	Israel	Laos	travel	12	12 Israelis acquired probable *Schistosoma mekongi* infection in Laos during 2003 to 2007 [5]

** Country or Nationality

References

1. Am J Trop Med Hyg 1982 Sep ;31(5):977-82.
2. PLoS Negl Trop Dis 2012 ;6(7):e1726.
3. Parasitol Int 2004 Jun ;53(2):135-42.
4. J Travel Med 2015 Mar-Apr;22(2):94-8.
5. Emerg Infect Dis 2009 Nov ;15(11):1823-6.

Septic arthritis

Agent	BACTERIUM or FUNGUS. Gram positive cocci most common; gram negative bacilli, gonococci, mycobacteria, fungi, et al
Reservoir	Human
Vector	None
Vehicle	Endogenous
Incubation Period	Variable
Diagnostic Tests	Smear and culture of joint fluid. Cytological and chemical analysis of joint fluid also useful.
Typical Adult Therapy	Antimicrobial agent(s) directed at known or likely pathogen[1]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Fever (60% to 80%) associated with swelling, erythema and tenderness - Usually involves a single joint, most commonly knee (elbow or ankle in children) - Mean fluid leukocyte count in acute bacterial forms is 50,000 per cu mm
Synonyms	ICD9: 015 ICD10: M00

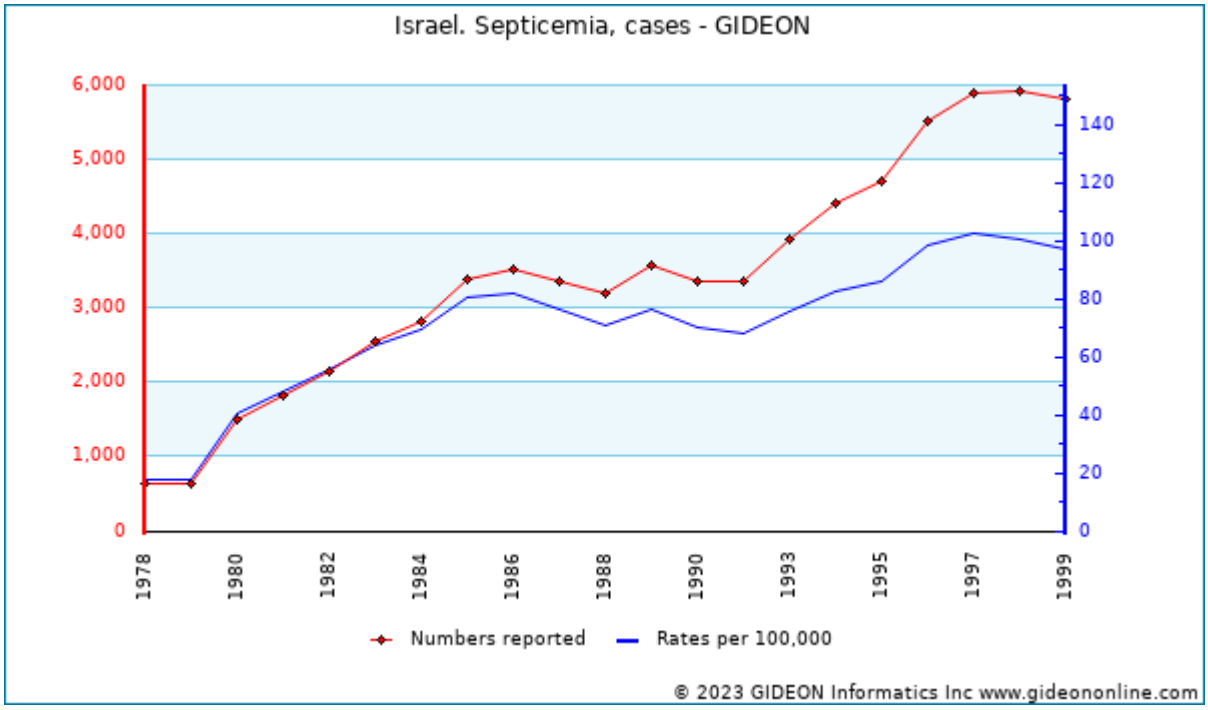
References

1. Pediatric Health Med Ther 2017 ;8:65-68.

Septicemia - bacterial

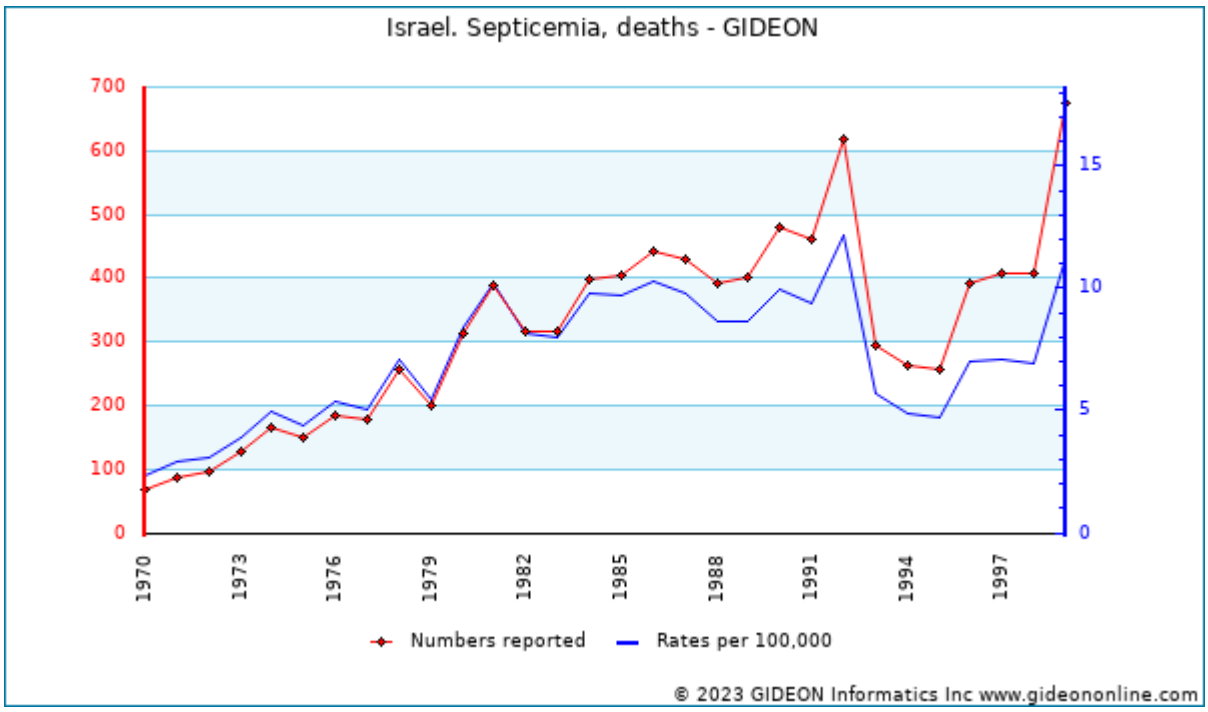
Agent	BACTERIUM. *Escherichia coli*, *Staphylococcus aureus*, facultative gram negative bacilli, et al
Reservoir	Human
Vector	None
Vehicle	Endogenous
Incubation Period	Variable
Diagnostic Tests	Culture of blood and sepsis source.
Typical Adult Therapy	Antimicrobial agent(s) directed at known or likely pathogen
Typical Pediatric Therapy	As for adult
Clinical Hints	- Fever, rigors, leukocytosis, tachypnea, mental changes - Hypotension, acidosis and bleeding diathesis herald septic shock - Additional signs (eg, urinary infection, phlebitis, etc) may point to the source of infection
Synonyms	Sepsis, Septicaemia, Septicemia, Septicemie, Septikemie, Setticemia. ICD9: 036.2,036.3,038 ICD10: A40,A41

Septicemia - bacterial in Israel

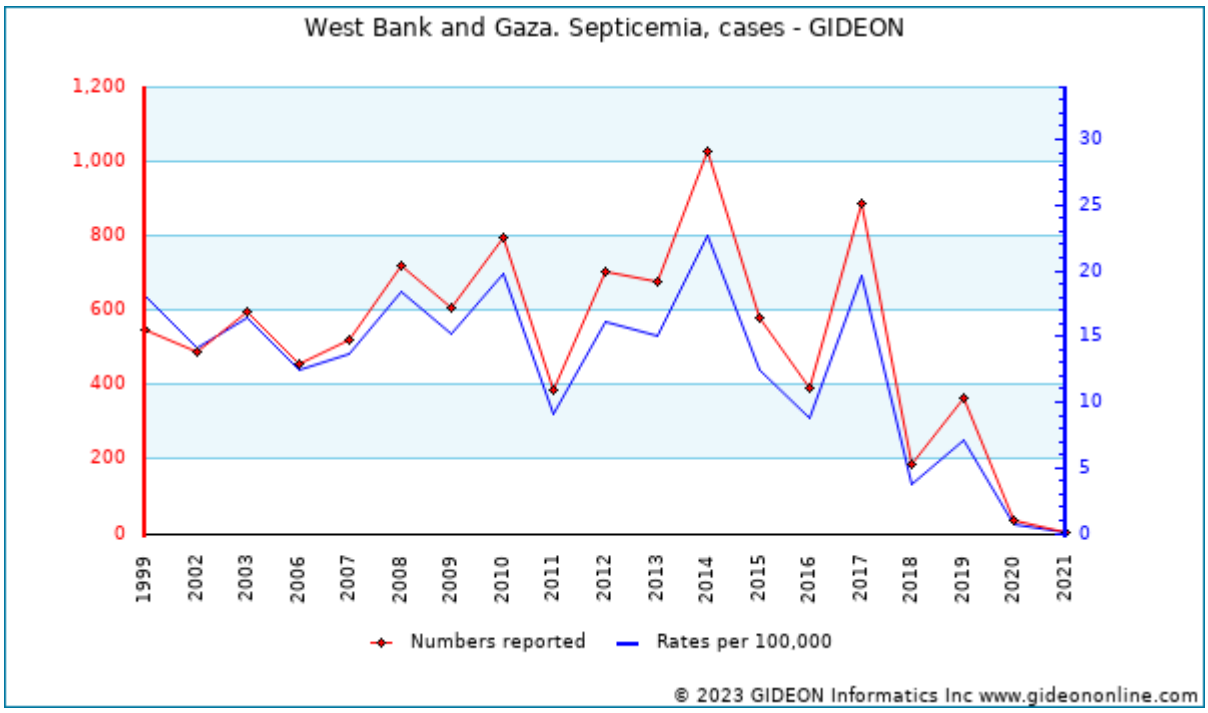


Graph: Israel. Septicemia, cases

Notes:
1. Septicemia has been a reportable disease since 1978.



Graph: Israel. Septicemia, deaths



Graph: West Bank and Gaza. Septicemia, cases

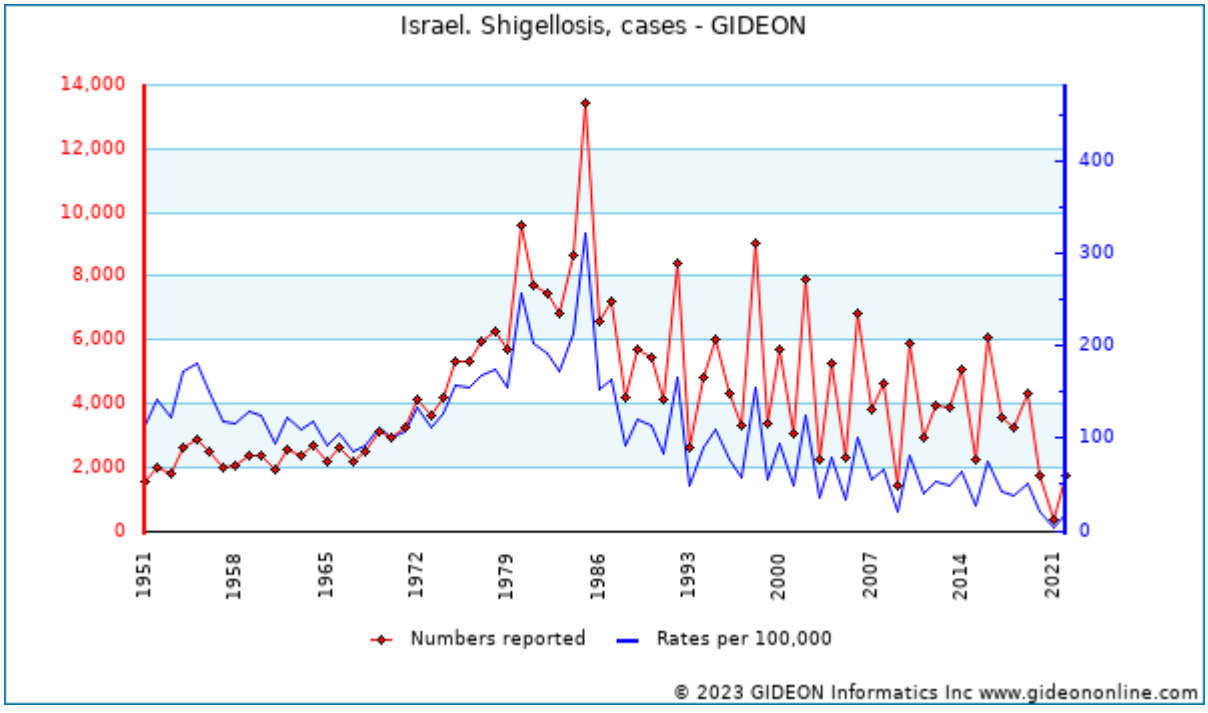
References

1. Indian J Crit Care Med 2020 Jul ;24(7):551-556.

Shigellosis

Agent	BACTERIUM. *Shigella sonnei*, *Shigella flexneri*, *Shigella boydii* or *Shigella dysenteriae* A facultative gram-negative bacillus
Reservoir	Human, Non-human primate
Vector	None
Vehicle	Fecal-oral, Water, Dairy products, Fomite, Fly, Vegetables
Incubation Period	48h - 72h (range 7h - 1w)
Diagnostic Tests	Stool culture.
Typical Adult Therapy	Stool precautions. Choice of antimicrobial agent based on regional susceptibility patterns. Continue treatment for five days[1] [2] [3] [4]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Watery or bloody diarrhea, tenesmus, abdominal pain and headache - Colonic hyperemia and abundant fecal leucocytes are present - Usually resolves in 3 days, but may persist for up to 14 - Reported case fatality rate is 1% - severity and mortality highest with *Shigella dysenteriae* infection
Synonyms	Bacillaire dysenterie, Bacillary dysentery, Dissenteria batterica, Dysenteria bacillaris, Leptospirenerkrankung, Ruhr, Shigella, Shigellose, Shigelose, Ubertragbare Ruhr. ICD9: 004 ICD10: A03

Shigellosis in Israel



Graph: Israel. Shigellosis, cases

Notes:
1. Shigellosis has been a reportable disease since 1951.
2. Children ages 1 to 4 account for over 50% of cases.
3. Review of cases reported during 1986 to 1995 - see reference [5]
4. Review of cases reported during 1998 to 2012 - see reference [6]

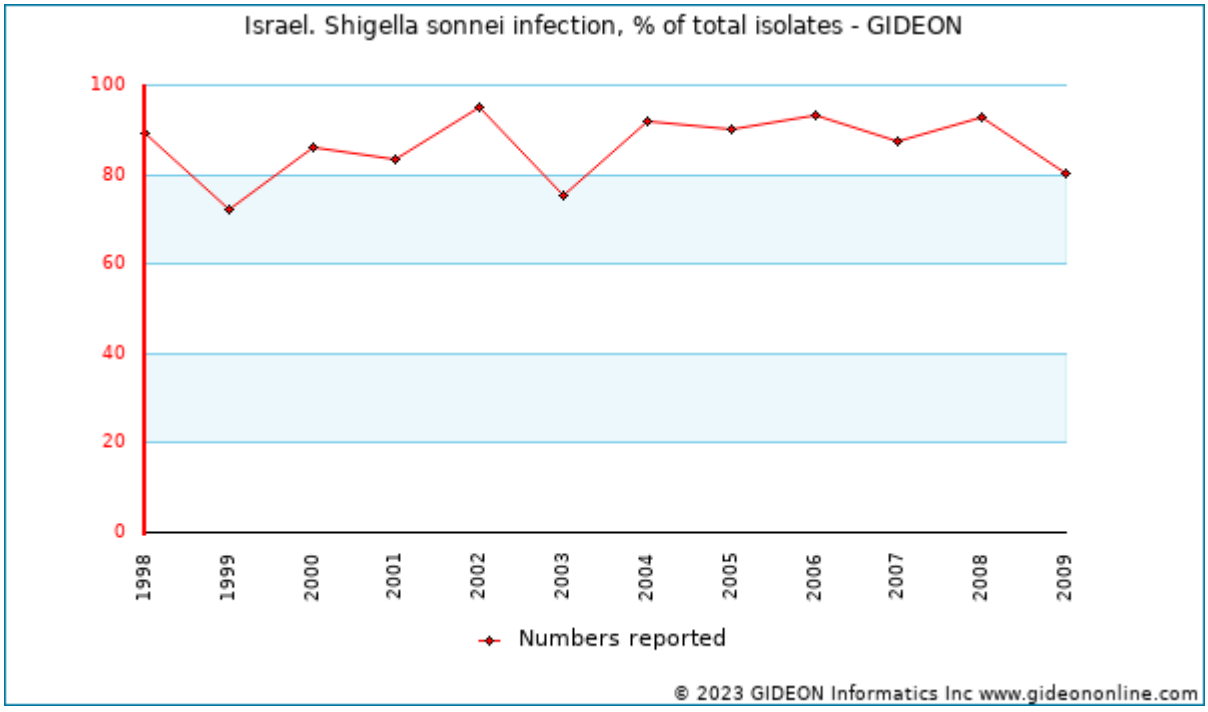
- 1990 to 2008 - *Shigella* accounted for 47.4% of enteric infections in Jerusalem - with rates 19.7 per 100,000 to 252.8 per 100,000. [7]
- 1998 to 2006 - Biennial outbreaks of shigellosis are reported among religious communities in Bnei Berak. [8]
- 2000 to 2013 - Biennial outbreaks of *Shigella sonnei* infection were reported in an ultraorthodox Jewish community. [9]

- 1993 to 1997 - 0.13% to 1.52% of soldiers develop shigellosis during basic training - 50% *S. flexneri* and 50% *S. sonnei*.
- 1988 to 2002 - 170 outbreaks of shigellosis were reported in the Israeli Defense Forces - 72 *S. sonnei* and 58 *S. flexneri*. [10]

Cross-border events
Does not include individual case reports

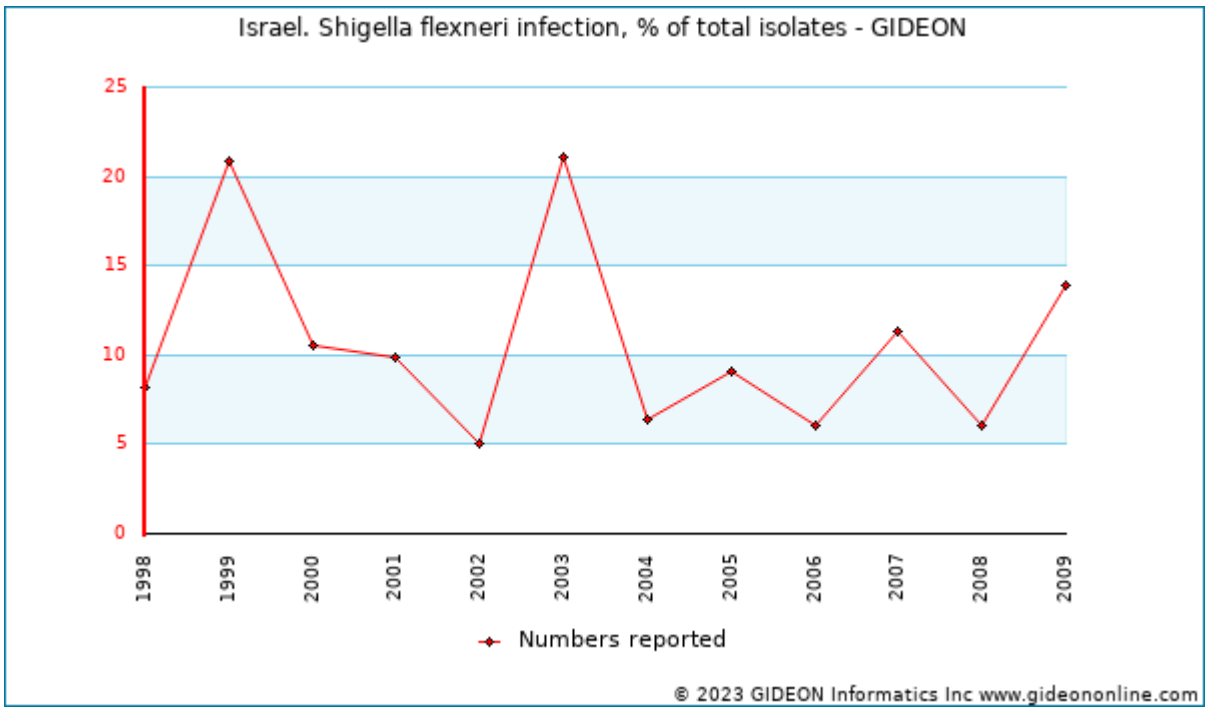
Years	Acquired by**	Originated in**	Setting	Cases	Notes
2013 to 2014	United Kingdom	Israel	travel	52	Outbreaks in the English Orthodox Jewish community caused by multiple importations from Israel [11]

** Country or Nationality



Graph: Israel. Shigella sonnei infection, % of total isolates

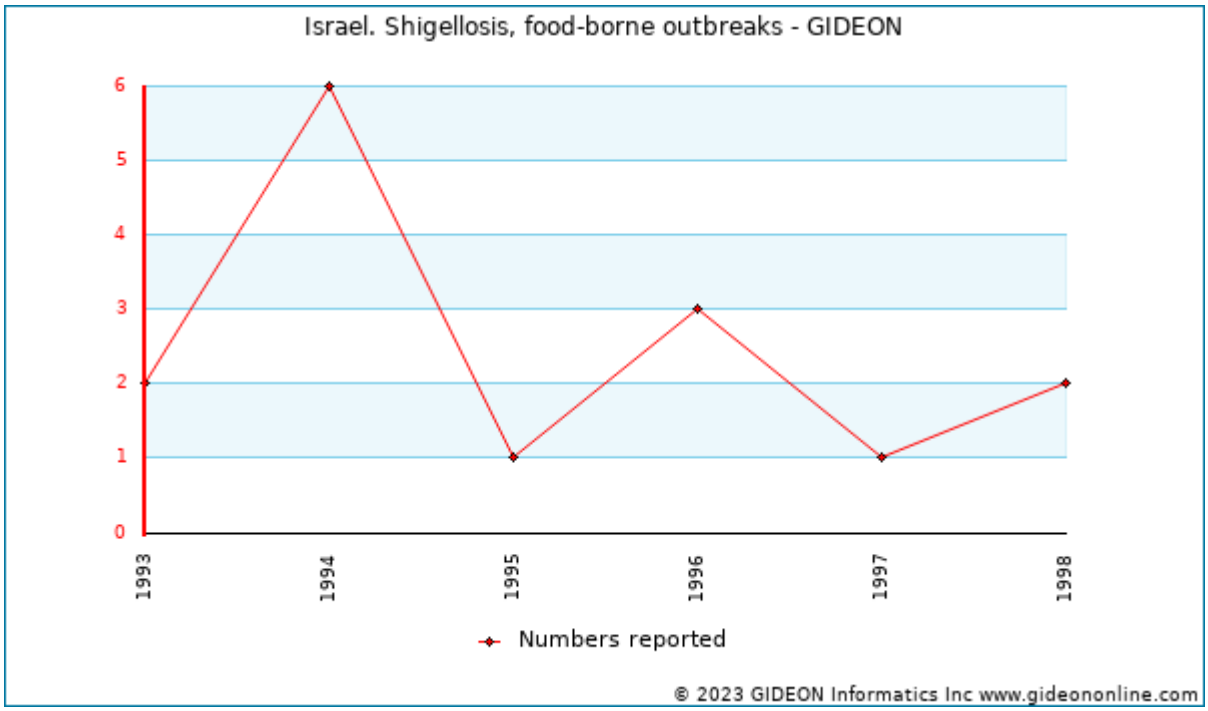
Notes:
1. In 1970, the most common isolate was *Shigella flexneri*.
2. The most common species during 1971 to 2015 has been *S. sonnei*. [12]



Graph: Israel. Shigella flexneri infection, % of total isolates

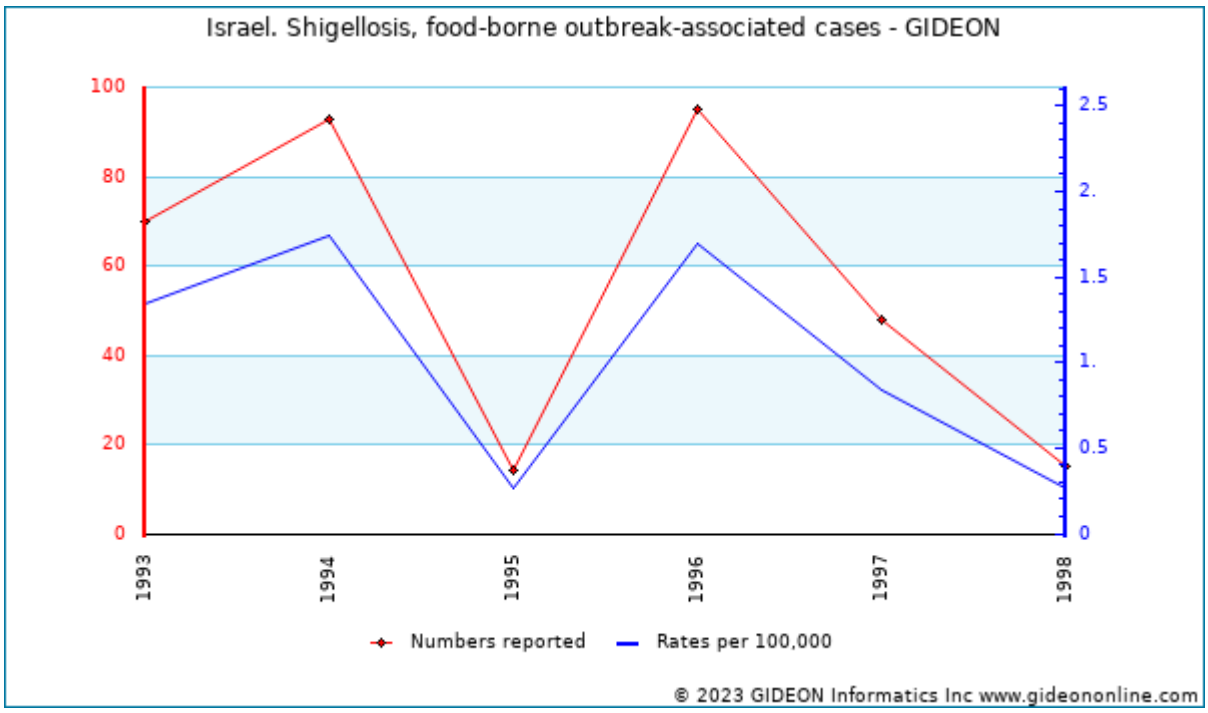
Infecting species

- 1990 to 1996 - 31,319 *Shigella* isolates were submitted to the National *Shigella* Reference Center - 15,287 were identified as *Shigella sonnei*, 1,833 as *Shigella flexneri*, 327 as *Shigella boydii* and 127 as *Shigella dysenteriae* [13]
- *Shigella flexneri*, *S. dysenteriae* and *S. boydii* account for approximately 50% of isolates in the Arab population.
- 2005 to 2009 - *Shigella sonnei* accounted for 91.8% of isolates from Jewish patients, while *Shigella flexneri* accounted for 60.4% of isolates from Bedouin patients in southern Israel. [14]

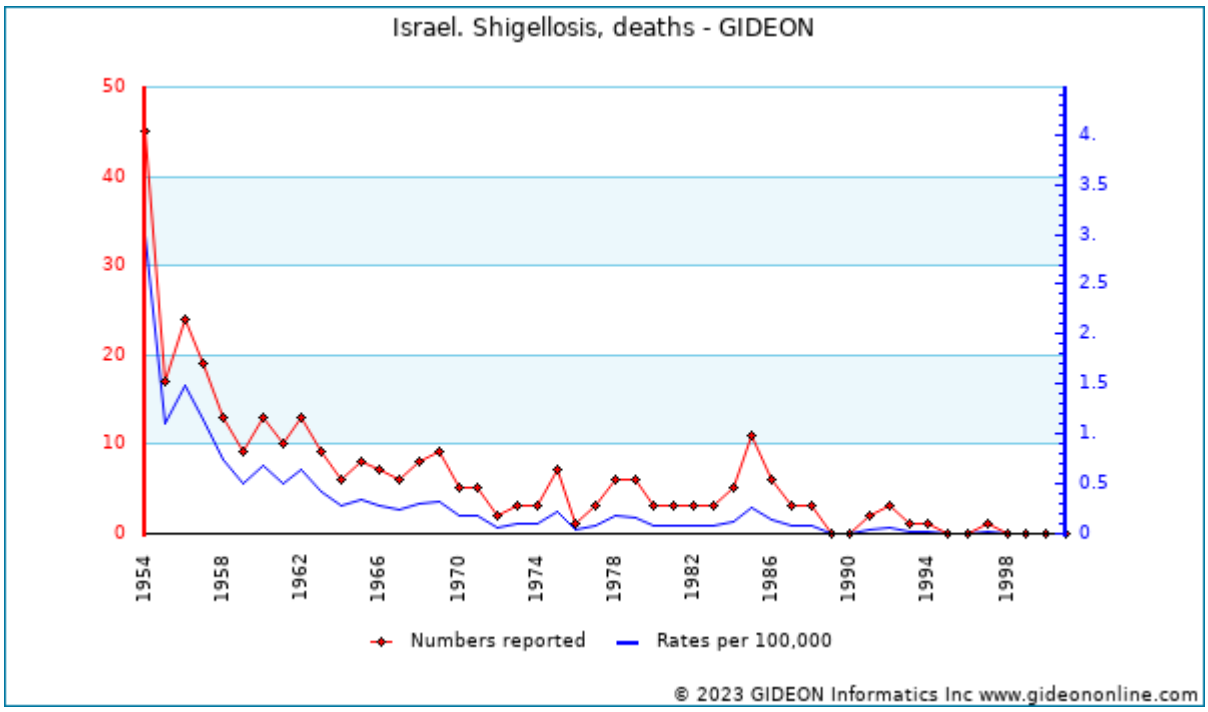


Graph: Israel. Shigellosis, food-borne outbreaks

Notes:
1. 19 outbreaks of shigellosis (1,236 cases) were reported in 1977.

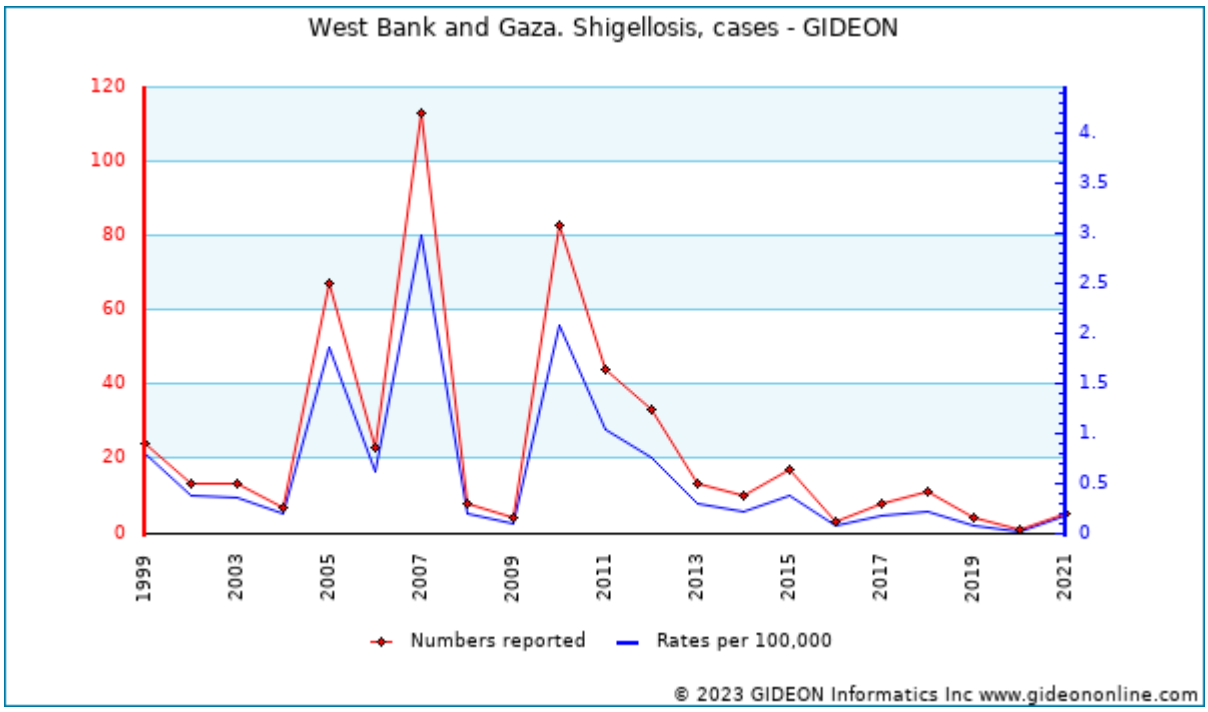


Graph: Israel. Shigellosis, food-borne outbreak-associated cases



Graph: Israel. Shigellosis, deaths

West Bank and Gaza:



Graph: West Bank and Gaza. Shigellosis, cases

Prevalence surveys

Years	Region	Study Group	%	Notes
2000 - 2018	Multiple locations	children	9.98	Survey of children below age 3 years undergoing stool culture [15]
1986*		immigrants	6.9	6.9% of Ethiopian immigrants hospitalized in Israel (1986 publication) [16]
1990 - 2008	Jerusalem	patients	47.4	47.4% of bacterial enteric infections in Jerusalem (1990 to 2008) [17]
1990 - 1999		patients	11	11% of all food-related illness reported during 1990 to 1999
1998 - 1992		children - gastrointestinal	10	10% of diarrhea among children on a communal settlement (1998 to 1992) [18]
1999 - 2006	Gaza	children - gastrointestinal	0.8	0.8% of diarrhea in children - the predominant species was drug-resistant *S. flexneri* (Gaza, 1999 to 2006) [19]
2003 - 2012	Afula	children - gastrointestinal	25.2	Survey of children hospitalized for gastroenteritis [20]
2006 - 2007	Gaza	children - gastrointestinal	6.7	6.7% of childhood diarrhea in Gaza (2006 to 2007) [21]
2007*	Gaza	children - gastrointestinal	6	6% of diarrhea in children less than 5 years of age. (Gaza, 2007 publication) [22]
2008*	Gaza	children - gastrointestinal	6	6% of diarrhea among children below age 5 in Gaza (2008 publication) [23]
2010*	Multiple locations	children - gastrointestinal	7.1	7.1% of outpatient diarrhea among children below age 17 years (2010 publication) [24]
2015*	Gaza	children - gastrointestinal	3.1	3.1% of diarrhea among kindergarten children below age 5 in Gaza (2015 publication) [25]
2015 - 2020	Kfar Saba	children - gastrointestinal	28.3	In this study, stool culture tests of 276 patients with acute gastroenteritis (AGE) and positive bacterial culture, as well as 560 control patients (negative bacterial cultures), who visited the pediatric emergency department in Meir Medical Center were evaluated. *Shigella* spp. was detected in 79 (28.3%) of the culture-positive samples. [26]
2015 - 2018	Jerusalem	children - gastrointestinal	56	Out of 162 children who were diagnosed with clinical dysentery during the study period at Shaare Zedek Medical Center, 56% had a stool culture positive for *Shigella* spp. [27]

Years	Region	Study Group	%	Notes
2016 - 2019	Netanya	children - gastrointestinal	27	*Shigella sonnei* was detected in 27% of 135 hospitalized children with clinical dysentery. Testing was done on stool cultures. [28]
2018 - 2020	Tel Aviv	children - gastrointestinal	2	In the stool samples collected from 118 hospitalized children at the Schneider Children's Medical Center of Israel, *Shigella* was detected in 2% of the samples. [29]

* indicates publication year (not necessarily year of survey)

Notable outbreaks

Years	Region	Setting	Cases	Source	Pathogen	Population	Notes
1984*	Southern Region	religious community		vegetable			Outbreak in an ultra-orthodox Jewish community was caused by contaminated vegetables. [30]
1984	Haifa	kibbutz	70				[31]
1985	Haifa		9,595	water			Outbreak caused by contamination of drinking water by sewage [32] [33] [34] [35]
1991 - 1992		kibbutz	5		*Shigella sonnei*	children	[36]
1991*	Galilee	kibbutz		water	*Shigella sonnei*		[37] [38]
1998	Nablus	refugee camp	500				Outbreak ascribed to "spoiled food." [39]
2002			94		*Shigella sonnei*	children	[40]
2010			870		*Shigella flexneri*		
2010	Haifa	village	17				[41]
2013 - 2014	Foreign Country		52		*Shigella sonnei*	religious community	Outbreaks in the English Orthodox Jewish community caused by multiple importations from Israel [42]
2016	Multiple locations		300			children	Most cases in Ashkelon and Jerusalem. [43]

* indicates publication year (not necessarily year of outbreak)

References

1. Paediatr Int Child Health 2018 Nov ;38(sup1):S50-S65.
2. Lancet 2018 02 24;391(10122):801-812.
3. Lancet Glob Health 2017 12 ;5(12):e1235-e1248.
4. Expert Rev Anti Infect Ther 2016 ;14(2):193-206.
5. Public Health Rev 1996 ;24(3-4):213-25.
6. Epidemiol Infect 2014 Dec ;142(12):2583-94.
7. Epidemiol Infect 2009 Nov ;137(11):1531-7.
8. Epidemiol Infect 2010 Feb ;138(2):244-52.
9. Int J Infect Dis 2019 Mar 01;
10. Eur J Clin Microbiol Infect Dis 2005 Jan ;24(1):71-3.
11. Microb Genom 2018 Mar 27;
12. Epidemiol Infect 2018 Jun 08;:1-7.
13. Eur J Clin Microbiol Infect Dis 2000 Feb ;19(2):108-11.
14. Diagn Microbiol Infect Dis 2014 Mar ;78(3):287-91.
15. J Atten Disord 2020 Jul 23;:1087054720940392.
16. J Trop Med Hyg 1986 Jun ;89(3):107-12.
17. Epidemiol Infect 2009 Nov ;137(11):1531-7.
18. Pediatr Infect Dis J 1994 Feb ;13(2):116-22.
19. J Gastroenterol Hepatol 2008 Aug ;23(8 Pt 2):e330-3.
20. Sci Rep 2020 Apr 02;10(1):5823.
21. Indian J Pediatr 2011 Feb ;78(2):165-70.
22. Int J Infect Dis 2007 Nov ;11(6):501-7.
23. Med Princ Pract 2008 ;17(4):296-301.
24. Epidemiol Infect 2011 Sep ;139(9):1379-87.
25. J Biomed Res 2015 Jan ;29(1):61-8.
26. Clin Pediatr (Phila) 2022 Dec 01;:99228221140772.
27. Isr Med Assoc J 2023 Jan ;25(1):5-7.
28. Acta Paediatr 2023 Feb 18;
29. Acta Paediatr 2022 Nov 29;
30. Soc Sci Med 1984 ;18(12):1061-2.
31. J Clin Microbiol 1985 Feb ;21(2):240-2.
32. J Infect 1991 Jan ;22(1):87-93.
33. Isr J Med Sci 1986 Mar-Apr;22(3-4):277-82.
34. Isr J Med Sci 1988 Nov ;24(11):637-9.
35. Bull World Health Organ 2000 ;78(12):1466-73.
36. J Clin Microbiol 1994 Apr ;32(4):1092-4.
37. Int J Epidemiol 1991 Dec ;20(4):1081-7.
38. J Infect 1991 Jan ;22(1):87-93.
39. ProMED <promedmail.org> archive: 19980831.1752
40. Eur J Clin Microbiol Infect Dis 2002 Dec ;21(12):887-9.
41. ProMED <promedmail.org> archive: 20100205.0387
42. Microb Genom 2018 Mar 27;
43. ProMED <promedmail.org> archive: 20160721.4360699

Sindbis

Agent	VIRUS - RNA. Togaviridae, Alphavirus: Sindbis virus
Reservoir	Wild bird, Zoonotic
Vector	Mosquito (*Culex univittatus* and *Cx. tritaeniorhyncus*)
Vehicle	None
Incubation Period	3d - 6d
Diagnostic Tests	Biosafety level 2. Viral culture (blood, vesicle fluid). Serology. Nucleic acid amplification.
Typical Adult Therapy	Supportive
Typical Pediatric Therapy	As for adult
Clinical Hints	- Fever, myalgia and arthritis - Papular-to-vesicular rash - Arthralgias may persist for more than three years - Fatality not reported
Synonyms	Babanki, Whataroa. ICD9: 078.89 ICD10: A92.8

Sindbis in Israel

Seropositivity toward Sindbis virus has been identified among human subjects. [1] [2] [3]

- 1967 - Sindbis virus was isolated from a bird (*Streptopelia turtur*) in Israel. [4]
- 1982 to 1984 - Sindbis virus was isolated from mosquitoes in Israel. [5]

Prevalence surveys

Years	Study Group	%	Notes
2004 - 2015	mosquitoes	6.35	6.35% of mosquito pools collected during 2004 to 2006; and during 2013 to 2015 [6]

Seroprevalence surveys

Years	Region	Study Group	%	Notes
2011 - 2014	Multiple locations	general population	3.6	3.6% of the population (ELISA) [7]

References

1. Isr J Med Sci 1965 Jan ;1:88-90.
2. Isr J Med Sci 1966 Jul-Aug;2(4):411-6.
3. Viruses 2019 Jun 11;11(6)
4. Am J Epidemiol 1967 Sep ;86(2):372-8.
5. Trans R Soc Trop Med Hyg 1986 ;80(3):471-2.
6. J Infect Dis 2018 Sep 01;
7. Viruses 2019 Jun 11;11(6)

Sinusitis

Agent	BACTERIUM. Various (*Haemophilus influenzae* & *Streptococcus pneumoniae* in most acute cases)
Reservoir	Human
Vector	None
Vehicle	None
Incubation Period	Variable
Diagnostic Tests	Imaging techniques. Culture of sinus drainage.
Typical Adult Therapy	Amoxicillin / Clavulanate 2000 / 125 mg BID X 7 days Drainage as indicated Alternatives: Levofloxacin, Clindamycin, Cefuroxime, Cefdinir[1]
Typical Pediatric Therapy	Amoxicillin / Clavulanate 22.5 to 45 mg/kg (Amoxicillin) BID X 7 days Drainage as indicated Alternatives: Clindamycin, Cefuroxime, Cefdinir
Clinical Hints	- Sinusitis often follows upper respiratory infections - Headache, fever and local tenderness are common - The precise presentation varies with patient age and anatomic localization
Synonyms	Acute sinusitis, Mastoidite, Mastoiditis, Rhinosinusitis, Sinusite. ICD9: 473.9,383.0,461 ICD10: H70,J01

References

1. Cochrane Database Syst Rev 2018 09 10;9:CD006089.

Small intestinal trematodes

Agent	PARASITE - Platyhelminthes, Trematoda. Plagiorchiida, Heterophyidae: *Heterophyes heterophyes*, *H. nocens*, et al
Reservoir	Snail (*Cerithidea cingulata*, *Pirenella conica*), Fish, Zoonotic
Vector	None
Vehicle	Fish (mullet and tilapia)
Incubation Period	7d - 14d
Diagnostic Tests	Identification of ova or adults in stool. Heterophyes heterophyes adult: length - 1.1 to 1.7 mm
Typical Adult Therapy	Praziquantel 25 mg/kg TID X 3 doses
Typical Pediatric Therapy	As for adult
Clinical Hints	- Onset 1 to 2 weeks after ingestion of undercooked fish - Abdominal pain and mucous diarrhea with eosinophilia - Infestation resolves spontaneously within two months
Synonyms	Acanthogobius, Apophallus, Ascocotyle, Brachylaima, Carneophallus, Cotyluris, Cryptocotyle, Diorchitrema, Gymnophalloides, Gynaecotyla, Haplorchis, Heterophyes, Heterophyid infections, Heterophyidiasis, Heterophyopsis, Paralecithodendrium, Phagicola, Phaneropsolus, Procerovum, Prosthodendrium, Pygidiopsis, Spelotrema, Stellantchasmus, Stictodora. ICD9: 121.6 ICD10: B66.8

Although Small intestinal trematodes is not endemic to Israel, imported, expatriate or other presentations of the disease have been associated with this country.

Small intestinal trematodes in Israel

Infestation by *Heterophyes heterophyes* was common, particularly among Jewish women (2% prevalence during the 1920's) until importation of Egyptian fish ceased in 1948.

Smallpox

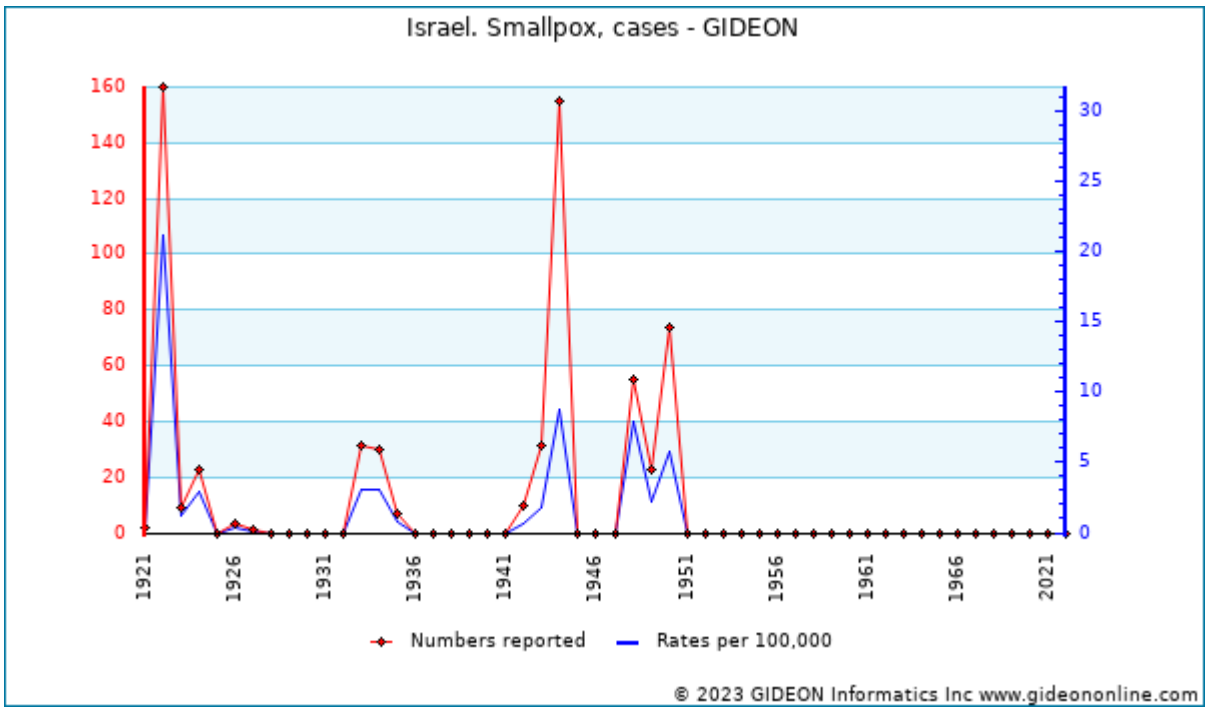
Agent	VIRUS - DNA. Poxviridae, Orthopoxvirus: Variola virus
Reservoir	Human
Vector	None
Vehicle	Contact, Secretions, Fomite, Respiratory or pharyngeal acquisition
Incubation Period	7d - 17d
Diagnostic Tests	Biosafety level 3. Culture and electron microscopy of skin lesions. Serology. Nucleic acid amplification.
Typical Adult Therapy	Strict isolation Brincidofovir 200 mg PO weekly X 2 doses OR Tecovirimat 400 to 600 mg PO once daily X 14 days Cidofovir is effective in vitro[1] [2]
Typical Pediatric Therapy	Strict isolation Brincidofovir <48 kg: 4 mg/kg PO weekly X 2 doses OR Tecovirimat 13 to <25 kg: 200 mg BID 25 to <40 kg: 400 mg BID
Vaccine	Smallpox + Mpox vaccine Smallpox vaccine
Clinical Hints	- Fever, myalgia, headache with pustular or hemorrhagic rash - Disease resolves in 2 to 3 weeks - Reported case-fatality rate is 25% for severe form (variola major) and 1% for minor form; - The last naturally-acquired case was reported in Somalia in 1977
Synonyms	Alastrim, Eczema vaccinatum, Kopper, Smallpox, Vailo, Variola, Variola minor, Varioloid. ICD9: 050 ICD10: B03

Not currently endemic to any country.
Although Smallpox is not endemic to Israel, imported, expatriate or other presentations of the disease have been associated with this country.

Smallpox in Israel

Smallpox vaccination

- Routine vaccination was introduced in 1918, and discontinued in 1979.
- Routine vaccination of military personnel was discontinued in 1997.
- A mass vaccination campaign was carried out in 1949
- Selective vaccination of health care workers was initiated in 2002, in view of possible bioterrorism.



Graph: Israel. Smallpox, cases

Notes:
Individual years:
1921 - Cases in Ramla and Hebron
1922 - Most cases in Hebron and Jerusalem
1923 - Cases in Tiberias and Majdal)
1924 - Cases in Jaffa, Zemach and Huleh
1926 - Cases in Hebron and Tiberias
1927 - Case in Jerusalem
1933 - Cases in Majdal and Gaza
1934 - Cases in Haifa, Baisan and Beer Sheva
1942 - Cases in Tel Aviv, Haifa and Beer Sheva
1943 - Cases in Tulkarem
1944 - Cases in Jaffa, Tel Aviv, Ramleh, Majdal and Haifa
1948 - Cases in Nazareth
1949 - Cases in Jerusalem [3] , Tel Aviv and Beit Zefafa
1950 - Cases in the northern region and Jerusalem

Mortality

- 1921 to 1944 - 76 deaths were ascribed to smallpox during 1921 to 1944.
- 1949 - Seven fatal cases were reported in Jerusalem.

No cases have been reported since 1950. [4]

References

1. N Engl J Med 2018 07 05;379(1):44-53.
2. J Med Chem 2023 Apr 13;66(7):4468-4490.
3. Harefuah 1950 Jan 01;38(1):1-3.
4. Isr Med Assoc J 2001 Jan ;3(1):71-2.

Sporotrichosis

Agent	FUNGUS. Ascomycota, Euascomycetes, Ophiostomatales: *Sporothrix schenckii*, *S. brasiliensis* and *S. globosa* A dimorphic dematiaceous fungus
Reservoir	Soil, Vegetation, Wood
Vector	None
Vehicle	Trauma, Contact, Air, Respiratory or pharyngeal acquisition
Incubation Period	1w - 3m
Diagnostic Tests	Fungal culture. Serologic tests available in some centers.
Typical Adult Therapy	Itraconazole 100 to 200 mg PO daily X 3 to 6 months. OR Fluconazole 400 mg PO daily X 6 months. OR Potassium iodide 1 to 5 ml PO TID X 3 to 6 months OR Liposomal Amphotericin B (severe disease) 3-5 mg/kg/d IV, then Itraconazole 200 mg PO BID for at least 1 year[1]
Typical Pediatric Therapy	Itraconazole 2 mg/kg PO daily X 3 to 6 months. OR Fluconazole 3 mg/kg PO daily X 6 months. OR Potassium iodide 1-2 drops/year age (maximum 30-40 drops) PO TID X 3 to 6 months OR Liposomal Amphotericin B (severe disease) 3-5 mg/kg/d IV, then Itraconazole 3-5 mg/kg PO BID for at least 1 year
Clinical Hints	- Recent contact with flowers, thorns, trees or other plant material (occasionally cats) - Draining nodules which appear along the course of lymphatics - Eye, brain, testis, bone and other tissues may be involved
Synonyms	Rose gardener's disease, Schenck's disease, Sporothrix brasiliensis, Sporothrix chiensis, Sporothrix globosa, Sporothrix mexicana, Sporothrix schenckii, Sporotrichose. ICD9: 117.1 ICD10: B42

Sporotrichosis in Israel

Three cases of subcutaneous sporotrichosis had been reported to 1976, and the organism was isolated from soil at the time. [2]

References

1. Clin Infect Dis 2007 Nov 15;45(10):1255-65.

2. Sabouraudia 1976 Jul ;14(2):217-22.

Spotted fevers - Old World

Agent	BACTERIUM. *Rickettsia conorii* subsp. *conorii*, *R. aeschlimannii*, *R. helvetica*, *R. massiliae*, *R. monacensis*, *R. slovaka*
Reservoir	Dog, Rodent, Tick, Zoonotic
Vector	Tick (*Rhipicephalus sanguineus*, *Hyalomma* spp, *Boophilus* spp, *Dermacentor* spp, et al)
Vehicle	None
Incubation Period	6d - 7d (range 3d - 18d)
Diagnostic Tests	Serology. Demonstration of rickettsiae by immunofluorescence or culture. Nucleic acid amplification.
Typical Adult Therapy	Doxycycline 100 mg PO BID X 3 to 5d. OR Chloramphenicol 500 mg PO QID X 3 to 5d[1]
Typical Pediatric Therapy	Doxycycline 2 mg/kg PO BID X 3 to 5d (maximum 200 mg/day). OR Chloramphenicol 10 mg/kg PO QID X 3 to 5d
Clinical Hints	- Patient may recall tick bite or dog contact during the preceding 1 to 3 weeks - Headache, myalgia, maculopapular rash - An eschar may be identifiable - Untreated disease resolves within two weeks - Case-fatality rates of 2% to 3% are reported
Synonyms	Boutonneuse fever, Candidatus Rickettsia kellyi, Candidatus Rickettsia tarasevichiae, Candidatus Rickettsia xinyangensis, DEBONEL, Febre escaro-nodular, Febre escaronodular, Indian tick typhus, Kenya tick typhus, Marseilles fever, Mediterranean spotted fever, R. aeschlimannii, Rickettsia aeschlimannii, Rickettsia conorii subsp conorii, Rickettsia conorii subsp indica, Rickettsia gravesii, Rickettsia helvetica, Rickettsia massiliae, Rickettsia monacensis, Rickettsia raoultii, Rickettsia slovaca, Rickettsia sp. XY99, Rickettsia tamurae, Thai spotted fever, TIBOLA, Tick-borne lymphadenopathy. ICD9: 082.1 ICD10: A77.1

Spotted fevers - Old World in Israel

- Mediterranean spotted fever and Israeli spotted fever are clinically similar; however, an eschar ("tache noire') is unusual in the Israeli variety.

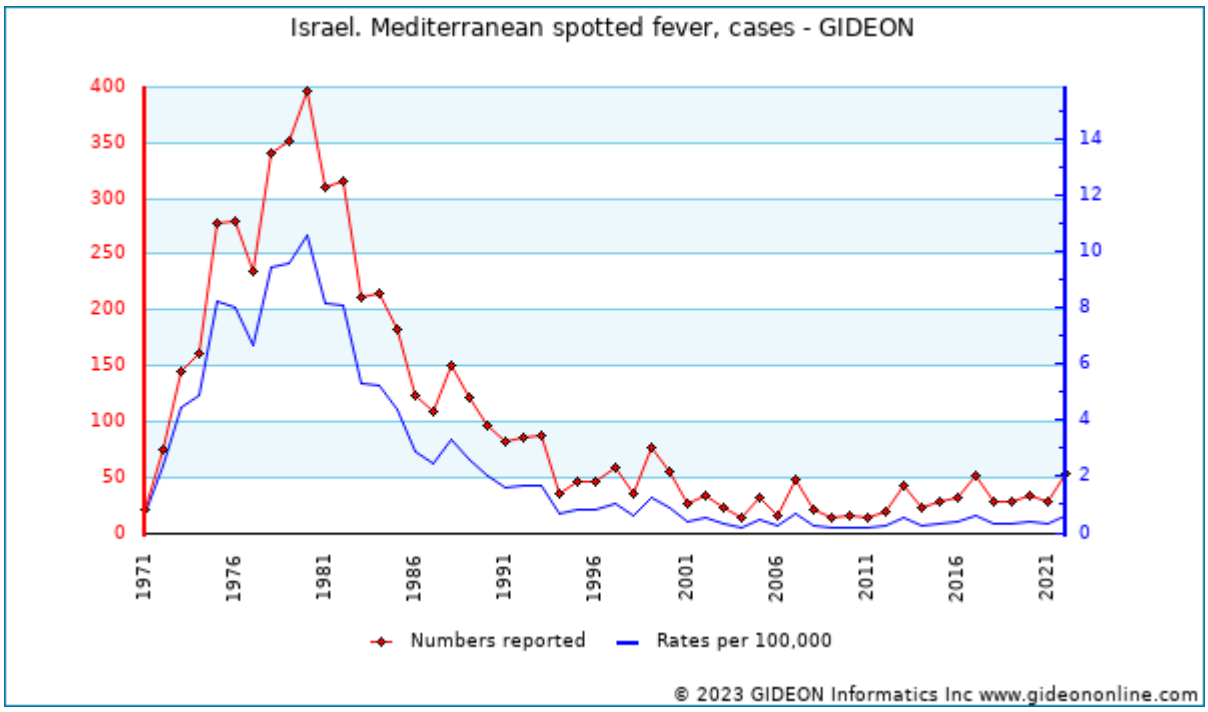
- Since statistics for "spotted fever" include both diseases, the precise incidence for the individual diseases is unknown.

Time and Place

The first case of human infection was reported in 1943.

- Highest rates are recorded along the Mediterranean coast, in the areas of Netanya and Hadera. [2] [3]
- During 1997 to 1999, 41% of cases were reported from the Hadera district, 16% from the Beer Sheva district and 14% from the Sharon district.
- Case clusters are occasionally encountered. [4]
- Five cases of Israeli spotted fever were reported from the Sharon District during 2016 to 2017 - including two patients who died of purpura fulminans. [5]
- Rates of murine typhus among children hospitalized in the southern region exceed those of spotted fevers (2021 publication) {"p 34420007}

Only 32.2% of cases are clinically-apparent.



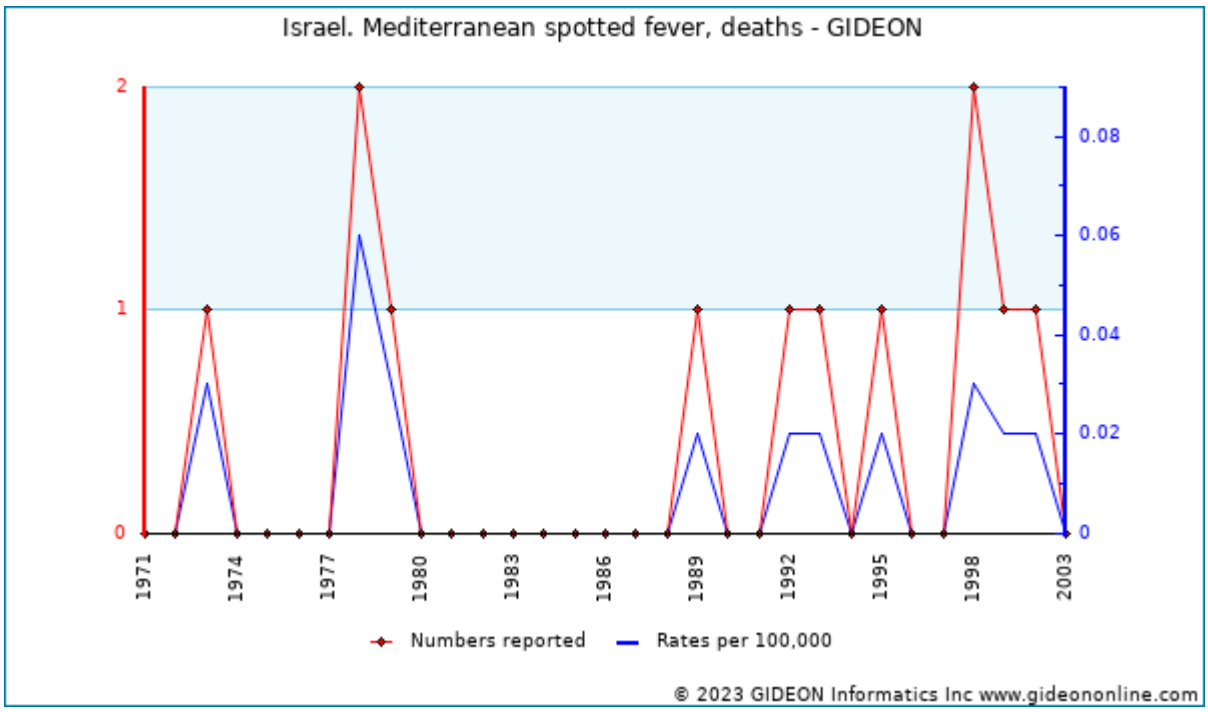
Graph: Israel. Mediterranean spotted fever, cases

Notes:
1. Spotted fever has been reportable since 1971.

Cross-border events

Years	Acquired by**	Originated in**	Setting	Cases	Deaths	Notes
2017*	United States	Israel	travel	1		An Israeli traveler developed Mediterranean spotted fever while in the United States. [6]
2018*	Israel	India	immigrant community	1	1	Concomitant spotted fever and typhoid were diagnosed in an Indian immigrant in Israel

***** indicates publication year (not necessarily year of event)
****** Country or Nationality



Graph: Israel. Mediterranean spotted fever, deaths

Notes:
1. 31 fatal cases were reported during 1971 to 1997 - most patients above age 60.

Pathogens and Vectors

The principal vector is the dog tick, *Rhipicephalus sanguineus*. [7]

- *Rh. turanicus* has been implicated in the southern region. [8]
- *Rickettsia massiliae* has been identified in ticks (*Rhipicephalus sanguineus* and *Rh. turanicus*, and *Haemaphysalis erinacei*) [9] [10]
- *Rickettsia conorii israelensis* has been detected in *Rh. sanguineus*.
- *Rickettsia aeschlimannii* has been detected in *Hyalomma marginatum* from roe deer (*Capreolus capreolus*), *Hyalomma detritum* from addax (*Addax nasomaculatus* [11] , and camels and ticks (*H. dromedarii*, *H. turanicum*, and *H. excavatum*. [12]

Prevalence surveys

Years	Region	Study Group	%	Notes
1980 - 1989		dogs	20	20% of dogs tested during the 1980's
1989 - 1990	Southern Region	ticks	2.2-7.3	7.3% of questing *Rhipicephalus sanguineus* and 2.2% of *Rh. turanicus* in the area of Kibbutz Ze'elim and Re'im (1989 to 1990) [13]
2014	West Bank	ticks	17	Spotted fever rickettsiae were identified in 17% of ticks [14]
2014 - 2015	Jerusalem Region	ticks	59.1	Spotted fever group *Rickettsia* spp. DNA was detected in 59.1% of ticks collected from birds trapped at observatories in Spain, Italy, Greece and Israel. [15]

Jackals as well as dogs are implicated as reservoirs.

Seroprevalence surveys

Years	Region	Study Group	%	Notes
1998*		dogs	28-58	58% of dogs with suspected tick-borne disease toward *Rickettsia conorii*, and 28% toward *Rickettsia conorii* subsp. Israelensis (1998 publication) [16]
2007*		various	10-81	10% of humans and 81% of dogs in rural endemic areas (2007 publication) [17]

Years	Region	Study Group	%	Notes
1993*	Ze'elim	animal contact	1.4-7.1	7.1% of dog owners and 1.4% of non dog owners in Ze'elim (1993 publication) [18]

* indicates publication year (not necessarily year of survey)

Notable outbreaks

Years	Region	Cases	Population	Notes
1973*	Coastal Plain	13		[19]
1999*		3	family members	[20]

* indicates publication year (not necessarily year of outbreak)

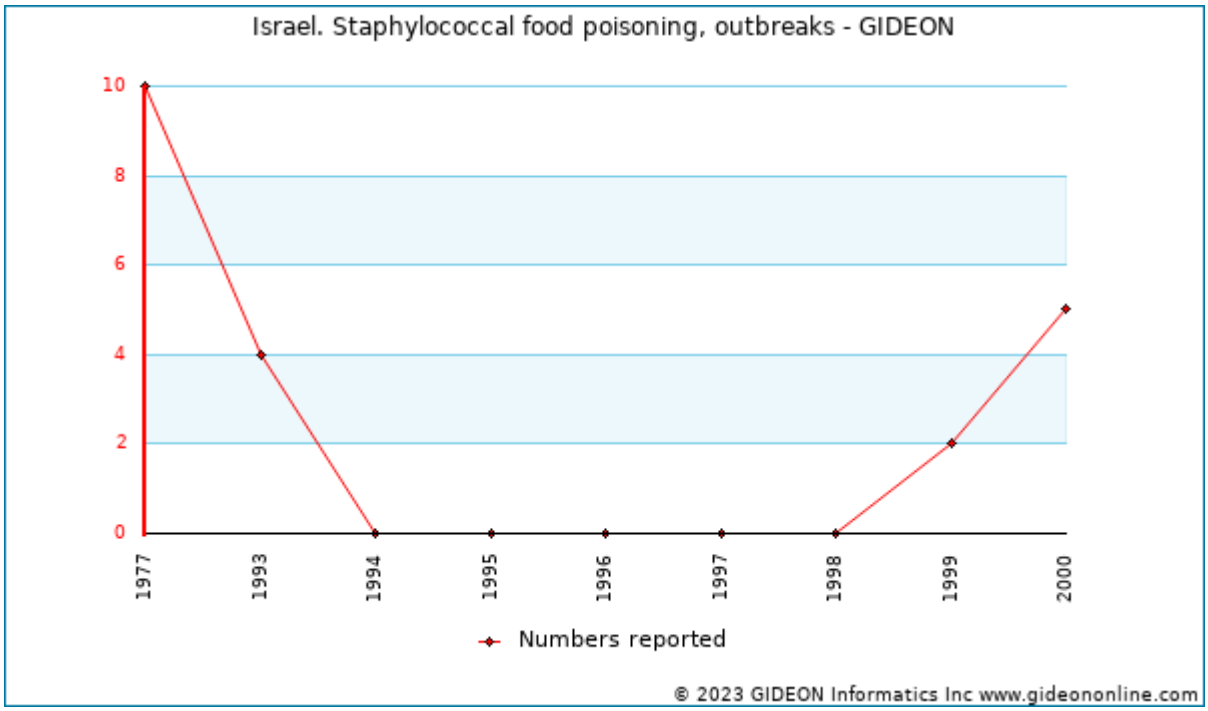
References

1. Expert Rev Anti Infect Ther 2012 Dec ;10(12):1425-37.
2. Isr Med Assoc J 2002 Jan ;4(1):44-9.
3. Clin Infect Dis 1999 Nov ;29(5):1321-2.
4. Vector Borne Zoonotic Dis 2007 ;7(2):143-6.
5. Emerg Infect Dis 2018 May ;24(5):835-840.
6. Cureus 2017 Jan 12;9(1):e974.
7. J Med Entomol 1993 Jan ;30(1):114-21.
8. J Med Entomol 1996 Nov ;33(6):979-82.
9. Clin Microbiol Infect 2011 Feb ;17(2):176-80.
10. Am J Trop Med Hyg 2014 May ;90(5):920-2.
11. Am J Trop Med Hyg 2011 Nov ;85(5):919-23.
12. Vector Borne Zoonotic Dis 2013 Dec ;13(12):851-6.
13. J Med Entomol 1996 Nov ;33(6):979-82.
14. PLoS Negl Trop Dis 2016 Jan ;10(1):e0004348.
15. Microorganisms 2022 Jul 11;10(7)
16. Vet Parasitol 1998 Jan 31;74(2-4):133-42.
17. Am J Trop Med Hyg 2007 Jul ;77(1):133-5.
18. J Med Entomol 1993 Jan ;30(1):114-21.
19. Trans R Soc Trop Med Hyg 1973 ;67(1):112-21.
20. Emerg Infect Dis 1999 Sep-Oct;5(5):723-4.

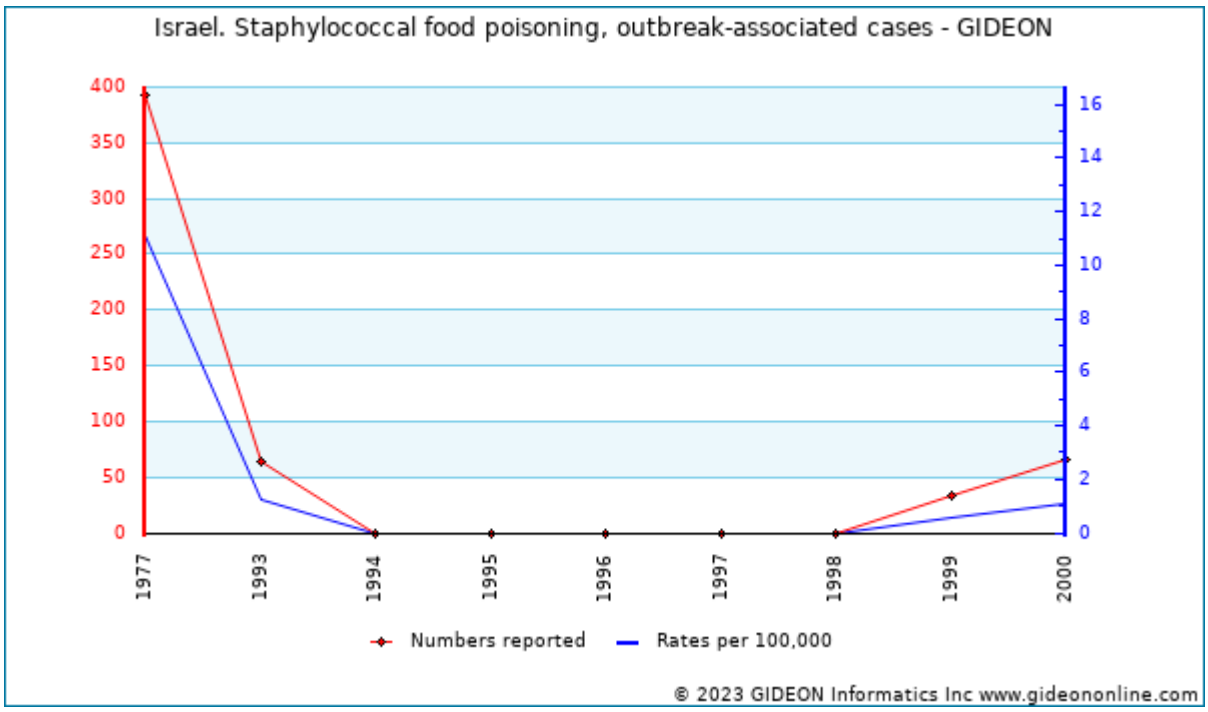
Staphylococcal food poisoning

Agent	BACTERIUM. *Staphylococcus aureus* exotoxins
Reservoir	Human (nares, hands), Cattle (udder), Dog/Cat (nasopharyngeal)
Vector	None
Vehicle	Food (creams, gravies, sauces)
Incubation Period	2h - 4h (range 30 min - 9h)
Diagnostic Tests	Identification of bacterium in food.
Typical Adult Therapy	Supportive[1] [2]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Onset 1 to 6 hours after food ingestion - "Explosive" diarrhea and vomiting - Usually no fever - No fecal leucocytes - Resolves within 1 to 2 days - Fatality is rarely reported
Synonyms	Staphylococcus aureus food poisoning. ICD9: 005.0 ICD10: A05.0

Staphylococcal food poisoning in Israel



Graph: Israel. Staphylococcal food poisoning, outbreaks



Graph: Israel. Staphylococcal food poisoning, outbreak-associated cases

Talking Points

- 1990 to 1992 - Staphylococcal food poisoning accounted for 18% of all food-related outbreaks.
- 1990 to 1999 - Staphylococcal food poisoning accounted for 15% of all food-related illness.

Notable outbreaks

Years	Region	Cases	Source	Population	Notes
1988*	Negev	3	milk	children	Outbreak among children who had ingested milk from a goat with mastitis. [3]

* indicates publication year (not necessarily year of outbreak)

References

1. World J Pediatr 2018 04 ;14(2):116-120.
2. J Infect 2015 Jun ;71 Suppl 1:S76-9.
3. Am J Trop Med Hyg 1988 Jul ;39(1):103-4.

Staphylococcal scalded skin syndrome

Agent	BACTERIUM. *Staphylococcus aureus* phage group 2 A facultative gram-positive coccus
Reservoir	Human
Vector	None
Vehicle	Contact, Secretions
Incubation Period	1d - 4d
Diagnostic Tests	Typical clinical features; Recovery of S. aureus from localized wound or blood ; skin biopsy may be helpful
Typical Adult Therapy	Fluid replacement (as for burn) ; Intravenous Nafcillin or Oxacillin, in addition to application of anti-staphylococcal drug to local source infection; Vancomycin if MRSA Clindamycin used to interfere with toxin production.
Typical Pediatric Therapy	Fluid replacement (as for thermal burn) ; Intravenous Nafcillin, Oxacillin of Cefazolin - in addition to application of anti-staphylococcal drug to local source infection. Vancomycin if MRSA
Clinical Hints	- Acute, generalized exfoliative dermatitis which occurs primarily in infants and young children - A pre-existing localized skin infection is present in most cases
Synonyms	Lyell disease, Ritter disease, Ritter von Ritterschein disease, Scalded skin syndrome, SSSS. ICD9: 695.81 ICD10: L00

Streptococcus suis infection

Agent	BACTERIUM. *Streptococcus suis* I and *Streptococcus suis* II A facultative gram-positive coccus
Reservoir	Pig, Zoonotic
Vector	None
Vehicle	Air, Secretions, Meat, Wound, Contact
Incubation Period	Unknown.Probably hours to few days
Diagnostic Tests	Culture of blood, tissue, body fluids
Typical Adult Therapy	Systemic antibiotic. Usually susceptible in vitro to Penicillin, Amoxicillin, Chloramphenicol and Gentamicin[1] [2]
Typical Pediatric Therapy	Systemic antibiotic
Clinical Hints	- Disease appears hours to a few days after contact with pigs or pig products - Severe multisystem illness, hemorrhagic diatheses, deafness or meningitis
Synonyms	Streptococcus suis. ICD9: 027.8 ICD10: A48.8

References

1. Vet Microbiol 2018 Aug ;222:109-113.

2. Vet Microbiol 2016 Oct 15;194:5-10.

Strongyloidiasis

Agent	PARASITE - Nematoda. Secernentea: *Strongyloides stercoralis* (*Strongyloides fulleborni* is occasionally implicated in systemic disease)
Reservoir	Human, Dog, Monkey (for *Strongyloides fulleborni*), Zoonotic
Vector	None
Vehicle	Skin contact, Soil, Feces, Autoinfection, Sexual contact
Incubation Period	14d - 30d
Diagnostic Tests	Identification of larvae (or ova, for Strongyloides fulleborni) in stool or duodenal aspirate. Serology.
Typical Adult Therapy	Ivermectin 200 micrograms/kg/d PO daily X 2d OR Albendazole 400 mg/d X 3d (7 days for hyperinfection syndrome) OR Moxidectin 8 mg PO once[1] [2]
Typical Pediatric Therapy	Ivermectin 200 micrograms/kg/d PO daily X 2d OR Albendazole 200 mg/d X 3d (7 days for hyperinfection syndrome) OR Moxidectin (age >12 years) 8 mg PO once
Clinical Hints	- Diarrhea - Gluteal or perineal pruritus and rash - Eosinophilia often present - Widespread dissemination encountered among immune-suppressed patients (case-fatality rate for this complication = 80%)
Synonyms	Anguilluliasis, Anguillulosis, Cochin China gastroenteritis, Diploscapter, Halicephalobus, Larva currens, Leptodera intestinals, Leptodera stercoralis, Lungworm, Metastrongylus, Micronema, Pseudo-rhabdis stercoralis, Rhabditis stercoralis, Rhabdonema intestinale, Rhabdonema stercoralis, Strongyloides fulleborni, Strongyloides stercoralis, Strongyloidose, Threadworm, Turbatrix. ICD9: 127.2 ICD10: B78

Strongyloidiasis in Israel

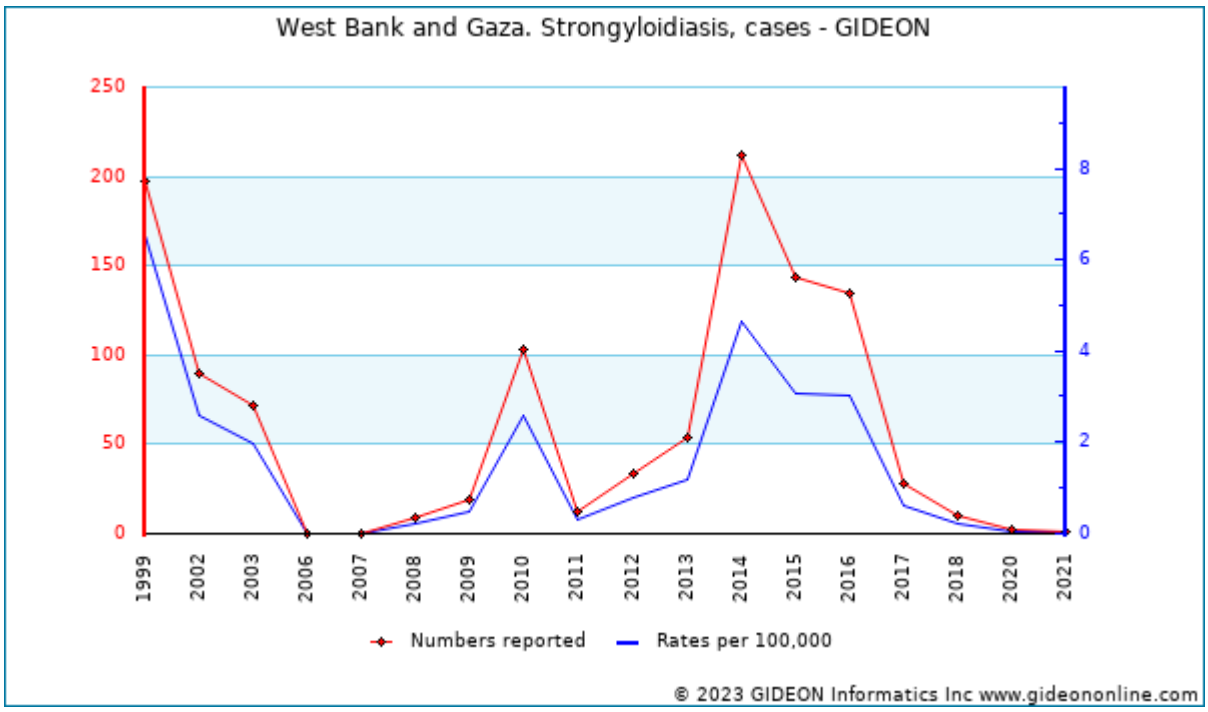
The parasite is commonly identified, and cases of fatal dissemination have been reported in immune-suppressed patients. [3] [4]

Prevalence surveys

Years	Region	Study Group	%	Notes
1991*	Multiple locations	immigrants	4.5	4.5% of Ethiopian immigrants (1991 publication) [5]
2008*	Gaza	children - gastrointestinal	1	1% of diarrhea among children below age 5 in Gaza (2008 publication) [6]

* indicates publication year (not necessarily year of survey)

2009 (publication year) - Four cases (3 fatal) of *Strongyloides* hyperinfection among Ethiopian immigrants were treated at a hospital. [7]



Graph:

West Bank and Gaza. Strongyloidiasis, cases

References

1. Clin Infect Dis 2017 Jul 15;65(2):276-281.
2. Int J Antimicrob Agents 2008 Jan ;31(1):46-9.
3. Harefuah 1996 Jan 15;130(2):90-2, 143.
4. Isr J Med Sci 1992 Oct ;28(10):736-8.
5. Isr J Med Sci 1991 May ;27(5):278-83.
6. Med Princ Pract 2008 ;17(4):296-301.
7. Isr Med Assoc J 2009 Nov ;11(11):660-3.

Subdural empyema

Agent	BACTERIUM. *Haemophilus influenzae*, oral anaerobes, streptococci, et al
Reservoir	Human
Vector	None
Vehicle	Endogenous
Incubation Period	Variable
Diagnostic Tests	Imaging techniques (CT scan, etc).
Typical Adult Therapy	Antimicrobial agent(s) directed at known or likely pathogen[1] [2]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Fever, severe headache, vomiting - Signs of meningeal irritation and increased cerebrospinal fluid pressure - May follow head trauma, meningitis, otitis or sinusitis - Case-fatality rates vary from 15% (patient alert) to 60% (comatose)
Synonyms	ICD9: 324.9 ICD10: G06.1,G06.2

References

1. Infection 2018 Dec ;46(6):785-792.

2. World Neurosurg 2016 Mar ;87:663.e1-8.

Suppurative parotitis

Agent	BACTERIUM. Most commonly *Staphylococcus aureus*
Reservoir	Human
Vector	None
Vehicle	Endogenous
Incubation Period	Unknown
Diagnostic Tests	Clinical features (local swelling and purulent discharge from salivary ducts). Stain and culture of discharge.
Typical Adult Therapy	Surgical drainage and aggressive parenteral antistaphylococcal therapy[1] [2] [3]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Consider in patient with unexplained fever in the setting of malnutrition, dehydration and obtundation - Local swelling and discharge of pus from salivary duct
Synonyms	Parotitis, bacterial. ICD9: 527.2 ICD10: K11.3

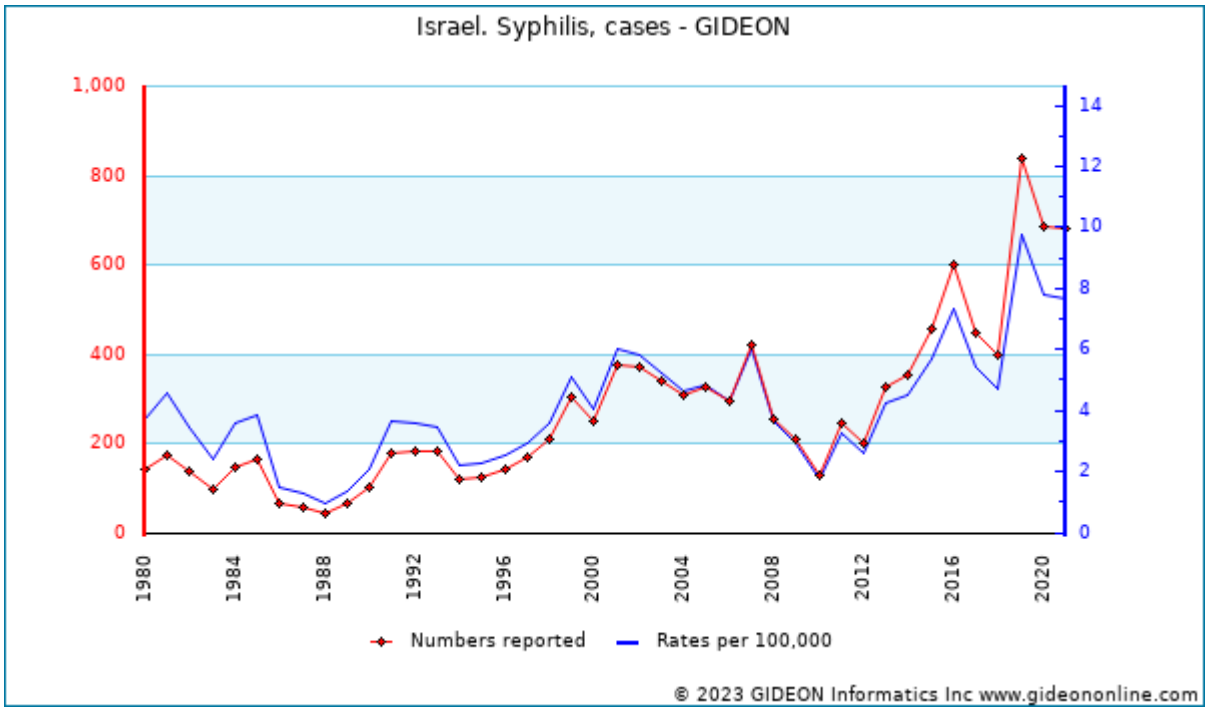
References

1. Eur Arch Otorhinolaryngol 2009 Mar ;266(3):315-23.
2. Infect Dis Clin North Am 2007 Jun ;21(2):523-41, viii.
3. J Craniofac Surg 2003 Jan ;14(1):37-40.

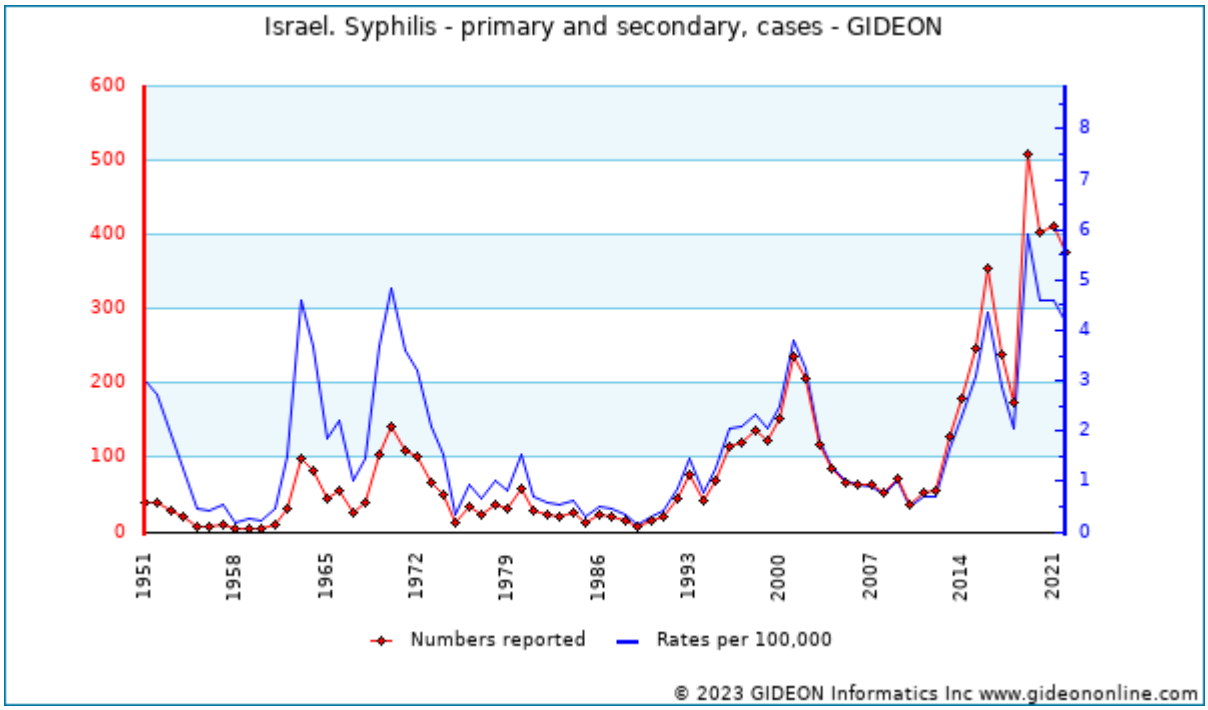
Syphilis

Agent	BACTERIUM. *Treponema pallidum* subsp. *pallidum* A microaerophilic gram-negative spirochete
Reservoir	Human
Vector	None
Vehicle	Sexual contact, Secretions, Respiratory or pharyngeal acquisition
Incubation Period	2w - 4w (range 10d - >8w)
Diagnostic Tests	Dark field microscopy (chancre). VDRL confirmed by antitreponemal test (FTA, MHTP). Nucleic acid amplification.
Typical Adult Therapy	Primary, secondary or early (< 1 year) latent: Benzathine Penicillin G 2.4 million units IM Other stages: Repeat dosage at one and two weeks Alternatives: Doxycycline, Tetracycline, Ceftriaxone[1] [2] [3] [4]
Typical Pediatric Therapy	Primary, secondary or early (< 1 year) latent: Benzathine Penicillin G : Weight <14 kg: 600,000u IM Weight 14 to 28 kg: 1,200,000u IM Other stages: Repeat dosage at one and two weeks
Clinical Hints	- Firm, painless chancre (primary syphilis) - Fever, papulosquamous rash and multisystem infection (secondary syphilis) - Late necrotic lesions of brain, aorta, bone or other organs (tertiary syphilis)
Synonyms	Canton rash, Chinese ulcer, Christian disease, French disease, German sickness, Harde sjanker, Lues, Neopolitan itch, Polish sickness, Sifilide, Sifilis, Spanish pockes, Syfilis, Treponema pallidum. ICD9: 090,091,092,093,094,095,096,097 ICD10: A50,A51,A52,A53

Syphilis in Israel



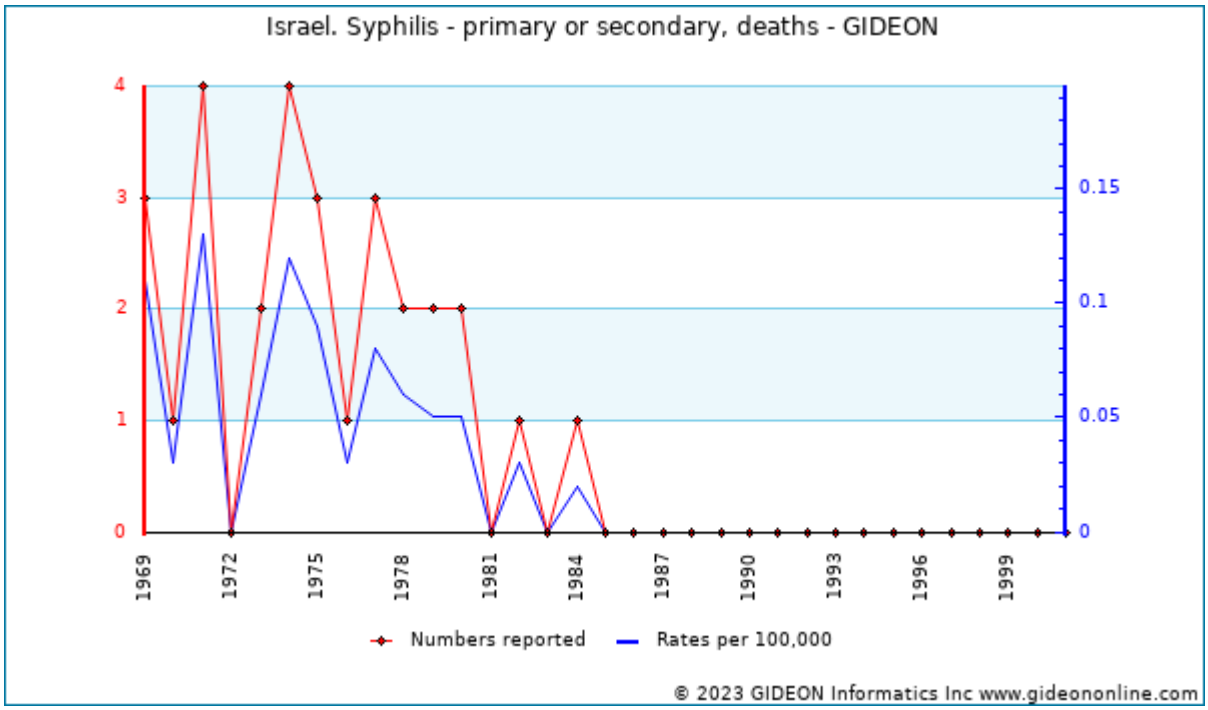
Graph: Israel. Syphilis, cases



Graph: Israel. Syphilis - primary and secondary, cases

Notes:
1. The peak reporting year was 1948, with a disease rate of 6.9 per 100,000.
2. 3,321 cases of primary and secondary syphilis were reported nationwide during 1929 to 1932.
3. 93 cases of primary and secondary syphilis were reported among the Jewish population of Jerusalem during 1936 to 1937.

4. Syphilis has been officially reportable since 1951.
5. Cases during 1951 to 1962 reported only for the Jewish population.
Individual years:
2004 - 0.7 per 100,000 in Haifa District [5]
2014 - Refugees and foreign workers have accounted for much of the increasing incidence. [6]



Graph: Israel. Syphilis - primary or secondary, deaths

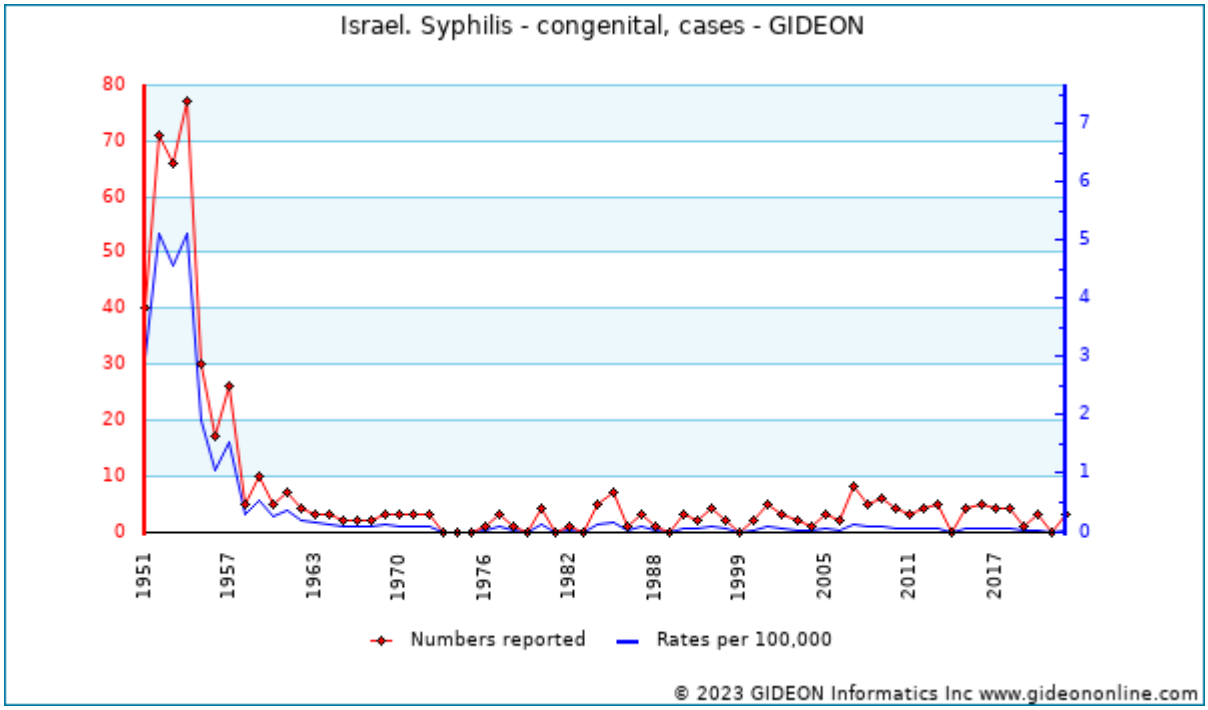
Prevalence surveys

Years	Region	Study Group	%	Notes
2002 - 2008	Tel Aviv	MSM	0.3-0.7	0.7% of MSM vs. 0.3% of heterosexual males visiting an STD clinic in Tel Aviv (2002 to 2008) [7]

Seroprevalence surveys

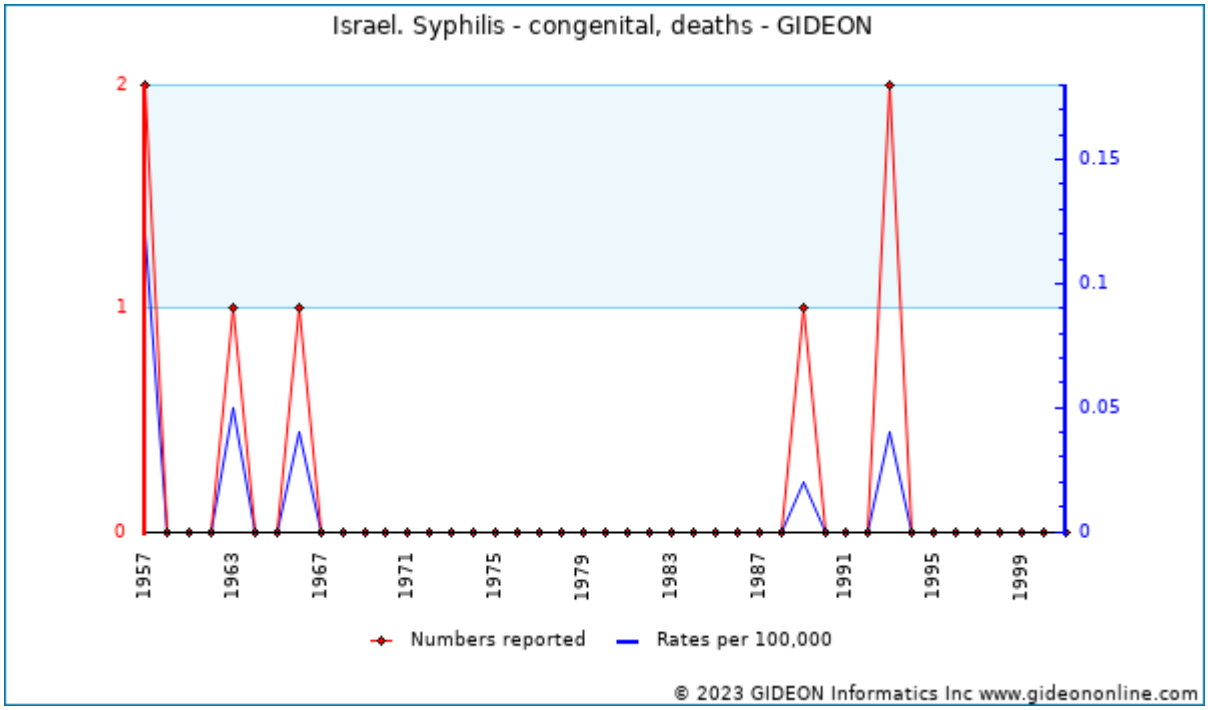
Years	Region	Study Group	%	Notes
1999 - 2002		immigrants	4.9	4.9% of Ethiopian immigrants in Israel (1999 to 2002) [8]
2009	Southern Region	women	2.4	2.4% of HIV-positive women (southern Israel, 2009)
2009	Tel Aviv	sex workers	2.6	2.6% of CSW in the Tel Aviv region (VDRL >= 1:4)
2008*	Tel Aviv	sex workers	1.3	1.3% of brothel-based CSW in Tel Aviv (2008 publication) [9]
2017 - 2019	Multiple locations		4.4	Survey of men purchasing HIV pre-exposure prophylaxis [10]
1988 - 2010	Beer Sheva	pregnant women	0.1	0.1% of pregnant women at term (Beer Sheva, 1988 to 2010) [11]
2014*	Multiple locations	blood donors	0.047	0.047% of volunteer blood donors (2014 publication) [12]
2000 - 2005		patients - HIV / AIDS	14.2	14.2% of HIV-positive patients (2000 to 2005) [13]
2002 - 2018	Tel Aviv	patients - HIV / AIDS	12.3-22	Among 154 patients with HIV, VDRL was reactive in 19 (12.3%) and treponemal antibodies (*Treponema pallidum* hemagglutination test) were detected in 34 (22%) samples. [14]

* indicates publication year (not necessarily year of survey)

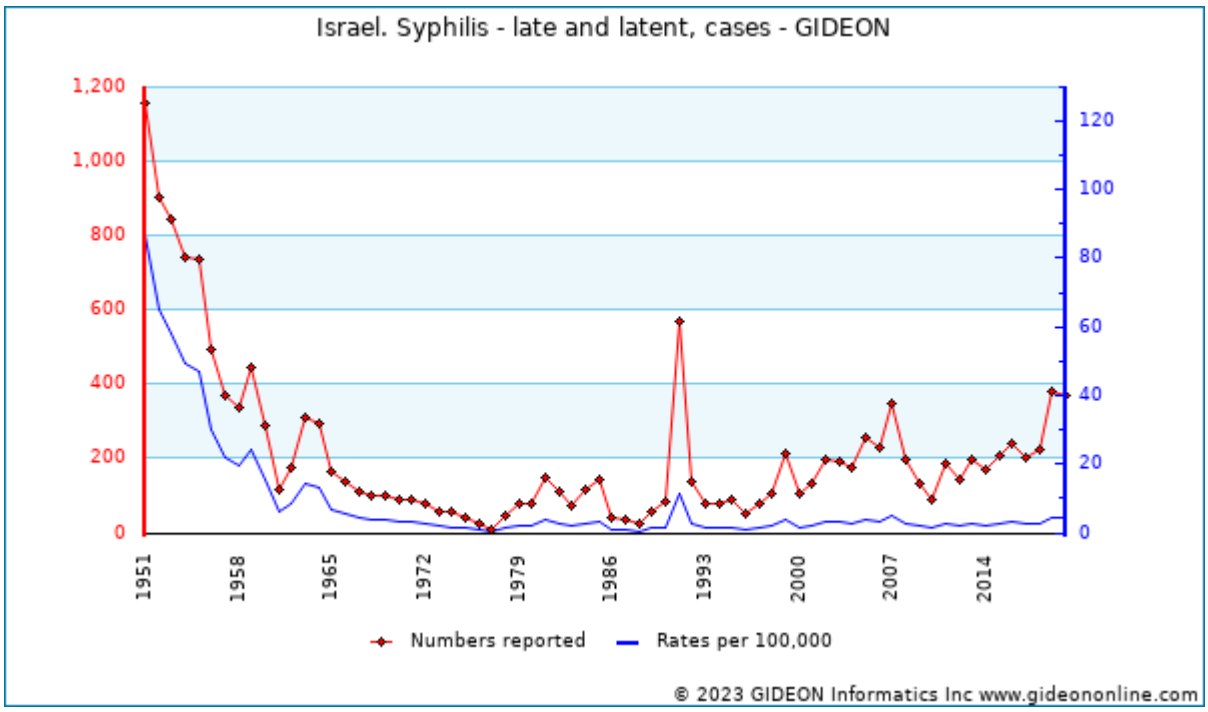


Graph: Israel. Syphilis - congenital, cases

Notes:
1. Cases during 1951 to 1962 reported only for the Jewish population.

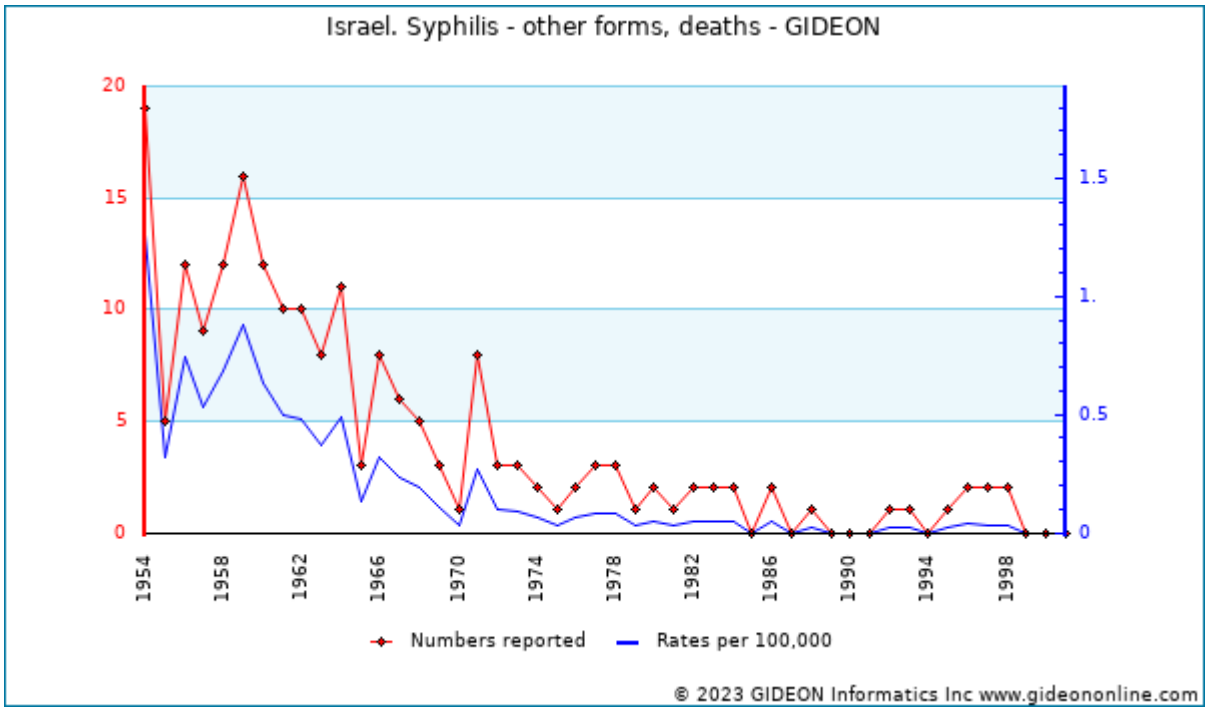


Graph: Israel. Syphilis - congenital, deaths

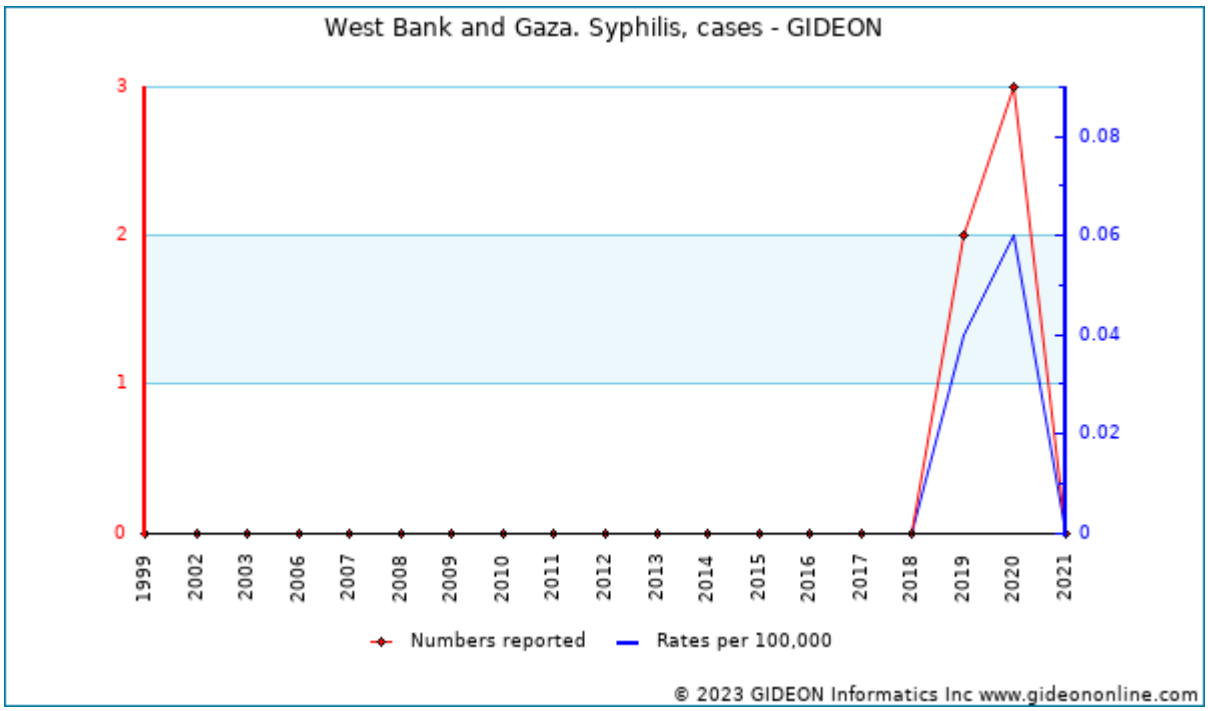


Graph: Israel. Syphilis - late and latent, cases

Notes:
1. Late and latent syphilis cases are officially reported as "Syphilis, other." Since 1991, reports of congenital syphilis have also been included in "Syphilis, other."



Graph: Israel. Syphilis - other forms, deaths



Graph: West Bank and Gaza. Syphilis, cases

Notable outbreaks

Years	Region	Cases	Population	Notes
2008 - 2009	Tel Aviv	23	MSM	96% of patients were HIV-positive. [15]

References

1. Emerg Med Clin North Am 2018 Nov ;36(4):767-776.
2. 2016 ;
3. Clin Infect Dis 2015 Dec 15;61 Suppl 8:S818-36.
4. Dermatol Ther 2022 Aug ;35(8):e15586.
5. Harefuah 2007 Jun ;146(6):425-8, 503, 502.
6. ProMED <promedmail.org> archive: 20150509.3351831
7. Isr Med Assoc J 2012 Mar ;14(3):147-51.
8. Isr Med Assoc J 2014 Jul ;16(7):427-30.
9. Int J STD AIDS 2008 Oct ;19(10):656-9.
10. PLoS One 2021 ;16(11):e0259168.
11. Int J Gynaecol Obstet 2012 Jul ;118(1):15-7.
12. J Blood Transfus 2014 ;2014:154048.
13. Int J STD AIDS 2010 Apr ;21(4):249-52.
14. Int J Environ Res Public Health 2022 Nov 18;19(22)
15. Isr Med Assoc J 2012 Mar ;14(3):152-6.

Taeniasis

Agent	PARASITE - Platyhelminthes, Cestoda. Cyclophyllidea, Taeniidae: *Taenia solium* & *T. saginata* (other species occasionally encountered)
Reservoir	Cattle, Pig, Zoonotic
Vector	None
Vehicle	Meat
Incubation Period	6w - 14w
Diagnostic Tests	Identification of ova or proglottids in feces.
Typical Adult Therapy	Praziquantel 10 mg/kg PO as single dose OR Niclosamide 2 g PO once[1] [2] [3]
Typical Pediatric Therapy	Praziquantel 10 mg/kg PO as single dose OR Niclosamide: weight 11-34 kg - 1 g PO as single dose weight >34 kg - 1.5 g PO as single dose
Clinical Hints	- Vomiting and weight loss - Often symptomatic or first recognized due to passage of proglottids - Parasite may survive for over 25 years in the human intestine
Synonyms	Bandwurmer [Taenia], Drepanidotaenia, Gordiid worm, Hair snake, Hydatigera taeniaeformis, Mesocestoides, Raillietina, Taenia asiatica, Taenia longihamatus, Taenia saginata, Taenia saginata asiatica, Taenia solium, Taenia suihominis, Taenia taeniaformis, Taeniarhynchiasis, Tapeworm (pork or beef), Tenia. ICD9: 123.0,123.2 ICD10: B68

Taeniasis in Israel

- Ova of *Taenia* spp. were identified in a cesspit in Jerusalem dating from the mid 7th century BCE. [4]

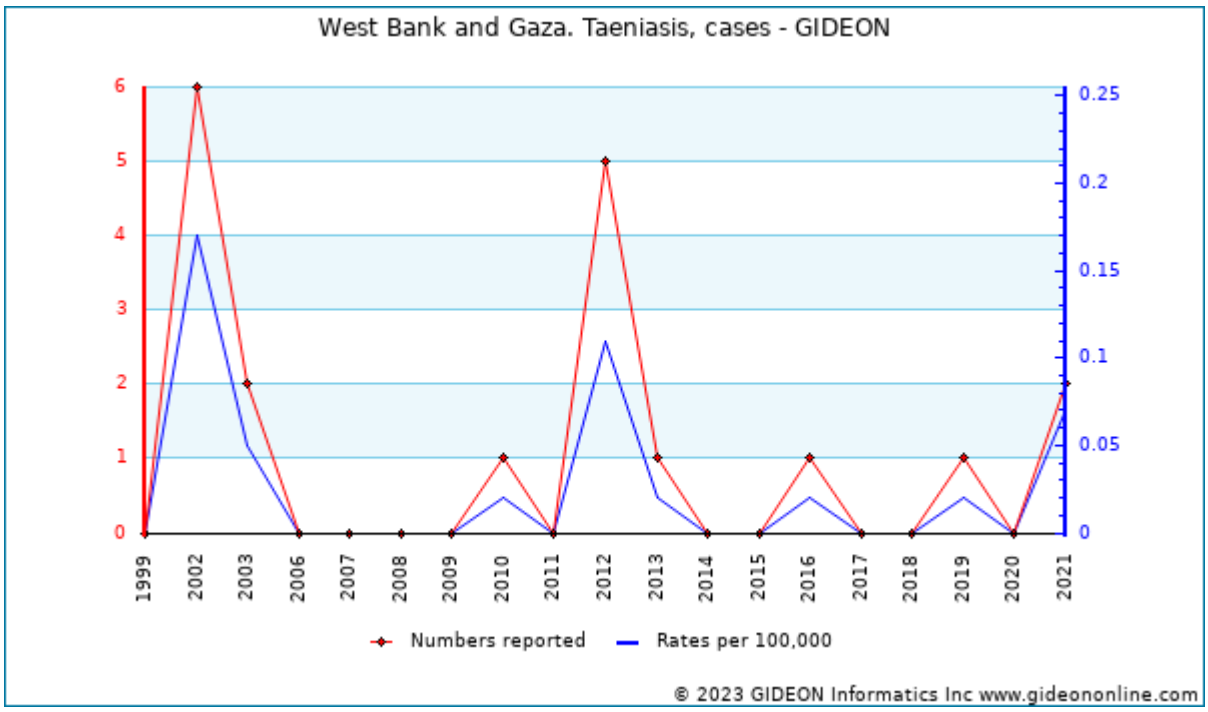
- Evidence for *Taenia* spp infestation has been identified in an Ottoman latrine in Acre dating from the early 1800's. [5]

- 2007 to 2009 - Eleven cases of *Taenia saginata* infestation were identified among inpatients at a hospital in the western Galilee.

Prevalence surveys

Years	Region	Study Group	%	Notes
		cattle	1.3	1.3% of cattle imported slaughter cattle from Cyprus
		cattle	4.2	4.2% of cattle imported from Australia (*Cysticercosis bovis*)
1990	Southern Region	cattle	0.26	0.26% of cattle at slaughter (*Cysticercosis bovis*) in 1990 [6]
2003 - 2007	Southern Region	cattle	0.4	0.4% of cattle at slaughter (*Cysticercosis bovis*) during 2003 to 2007 [7]
1994*		foreign workers	3.2	3.2% of Thai workers in Israel (1994 publication) [8]
1951*		general population	34	*Taenia saginata* was identified in 34%, and *T. solium* in less than 1% [9]
2019*	Gaza	students - university	0	Survey of female university students [10]

* indicates publication year (not necessarily year of survey)



Graph:
West Bank and Gaza. Taeniasis, cases

Notes:
1. Three cases of *T. solium* infestation were reported in 2002; 0 in 2003.
2. Three cases of *T. saginata* infestation were reported in 2002; 2 in 2003.

References

1. Risk Manag Healthc Policy 2017 ;10:107-116.
2. Infect Disord Drug Targets 2010 Oct ;10(5):313-21.
3. Curr Opin Infect Dis 2007 Oct ;20(5):524-32.
4. Int J Paleopathol 2021 Nov 12;36:1-6.
5. Korean J Parasitol 2019 Dec ;57(6):575-580.
6. Transbound Emerg Dis 2013 Aug ;60(4):298-302.
7. Transbound Emerg Dis 2013 Aug ;60(4):298-302.
8. Harefuah 1994 May 01;126(9):507-9, 563.
9. J Med Liban 1951 May ;4(3):163-9.
10. Avicenna J Med 2019 Oct-Dec;9(4):143-147.

Tetanus

Agent	BACTERIUM. *Clostridium tetani* An anaerobic gram-positive bacillus
Reservoir	Animal feces, Soil
Vector	None
Vehicle	Trauma
Incubation Period	6d - 8d (range 1d - 90d)
Diagnostic Tests	Isolation of C. tetani from wound is rarely helpful. Serology (specimen taken before administration of antitoxin).
Typical Adult Therapy	Human antitoxin (see Vaccine module). Metronidazole 500 mg IV q6h OR Penicillin G (4 million u IV q4h) OR Doxycycline (100 mg IV BID). Diazepam (30 to 240 mg daily). Tracheostomy, hyperalimentation Active immunization should be started at the time of diagnosis[1]
Typical Pediatric Therapy	Human antitoxin (see Vaccine module). Metronidazole (30 mg/kg daily); OR Penicillin G (300,000 units/kilo daily). Diazepam. Tracheostomy, hyperalimentation Active immunization should be started at the time of diagnosis
Vaccines	DT vaccine DTaP vaccine DTP vaccine Td vaccine Tetanus immune globulin Tetanus vaccine
Clinical Hints	- Trismus, facial spasm, opisthotonus and tachycardia - Recurrent tonic spasms of skeletal muscle - Sensorium is clear - Disease may persist for 4 to 6 weeks - Case fatality rates of 10% to 40% are reported
Synonyms	Lockjaw, Starrkrampf, Stelkramp, Tetano, Tetanos. ICD9: 037,771.3 ICD10: A33,A34,A35

Tetanus in Israel

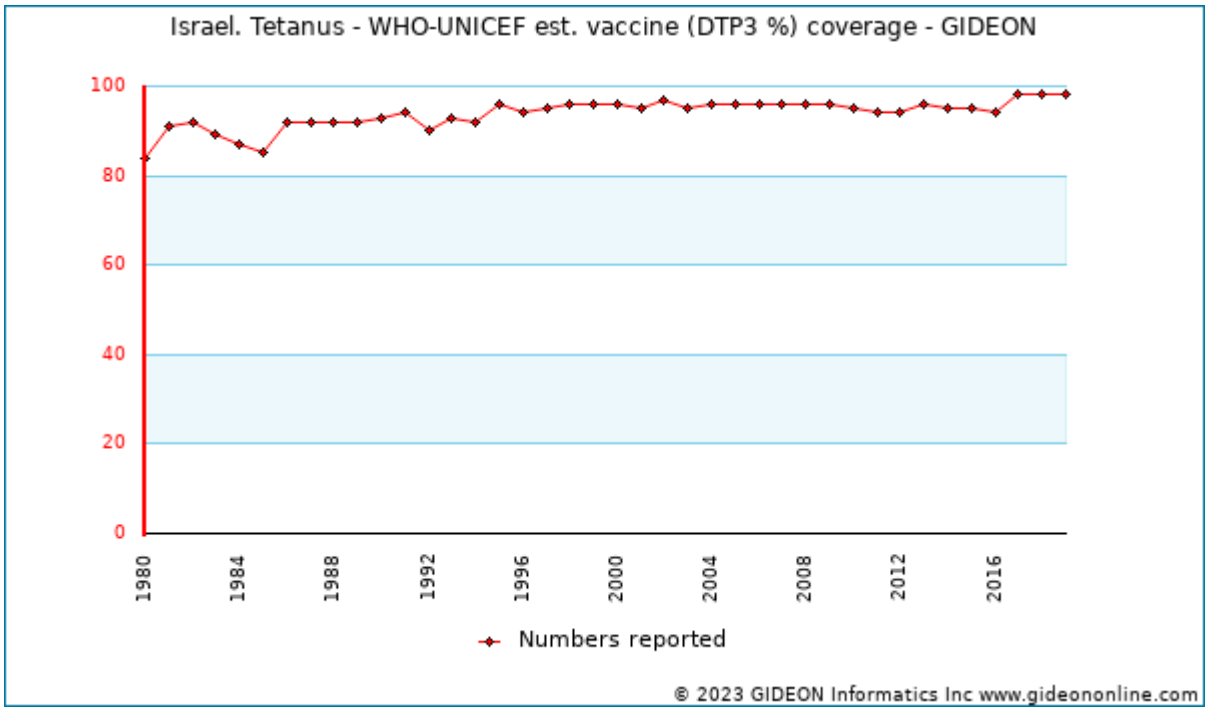
Vaccine Schedule:

DTaP - 2,4,6,12 months
DTaPHibIPV - 2,4,6,12 months
HPV - 13 years; +6 months
HepA - 18, 24 months
HepB - birth; 1,6 months
IPV - 7 years
MMRV - 12 months; 6 years
OPV - 6,18 months
Pneumo ps - >=65 years
Pneumo-conj - 2,4,12 months
Rotavirus - 2,4,6 months

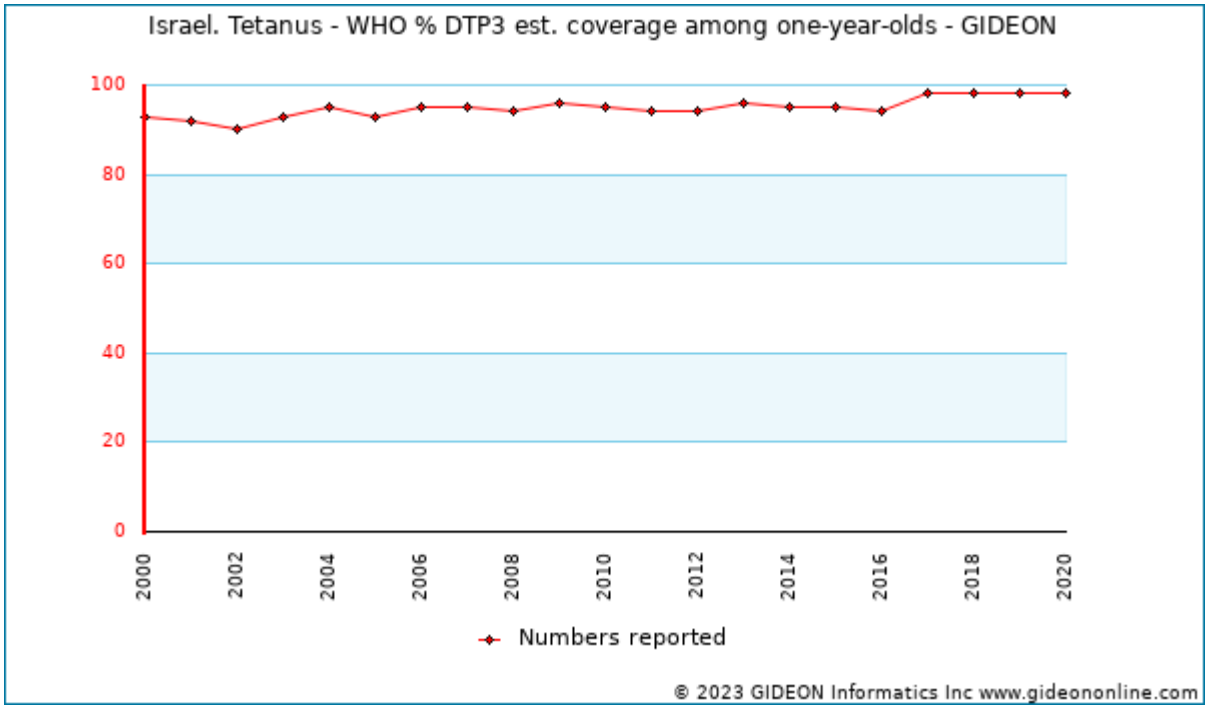
Td - every 10 years (adults)
TdaP - 13 years
TdaPIPV - 7 years

Israel:

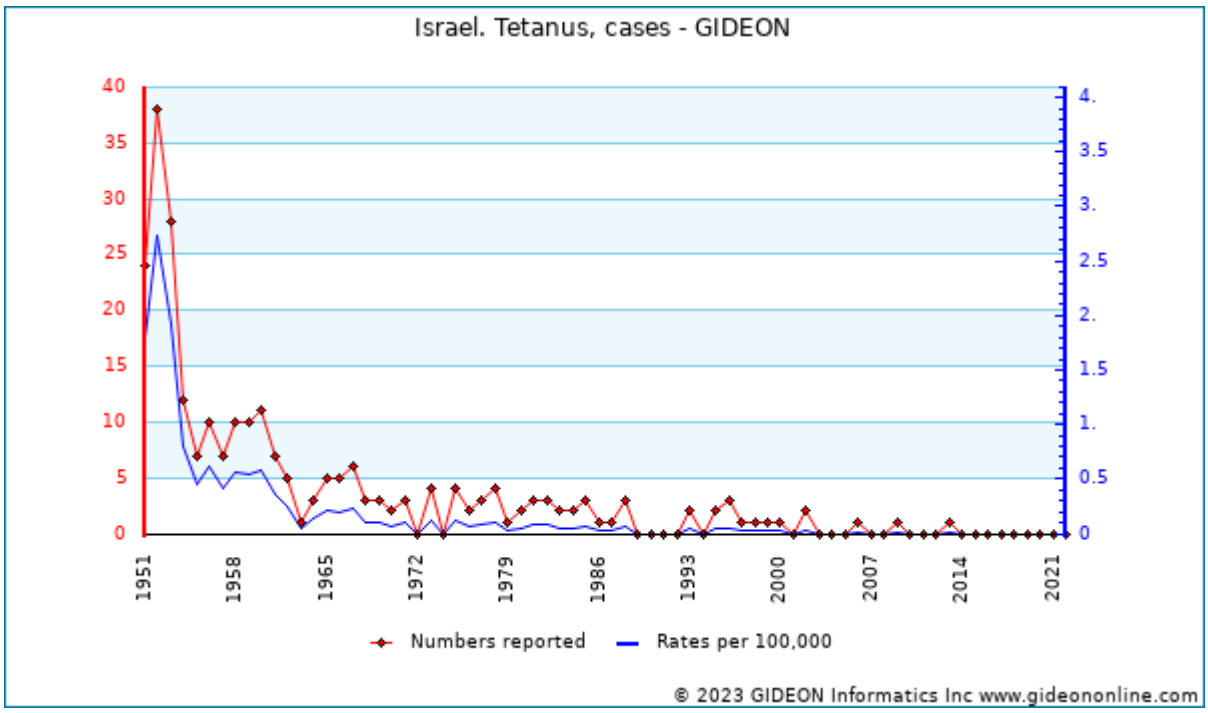
- Routine immunization was introduced in 1955; and replaced by DPT in 1957.
- Tdap-IPV was vaccination of elementary school students was introduced in 2005.



Graph: Israel. Tetanus - WHO-UNICEF est. vaccine (DTP3 %) coverage

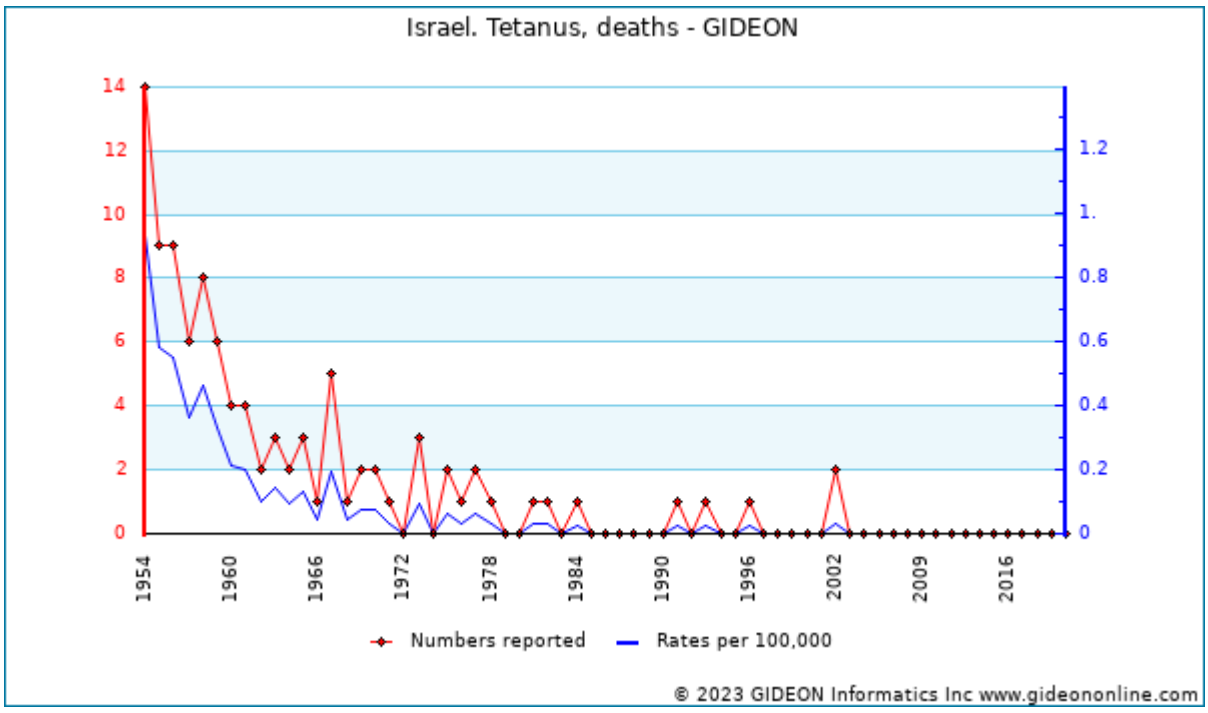


Graph: Israel. Tetanus - WHO % DTP3 est. coverage among one-year-olds



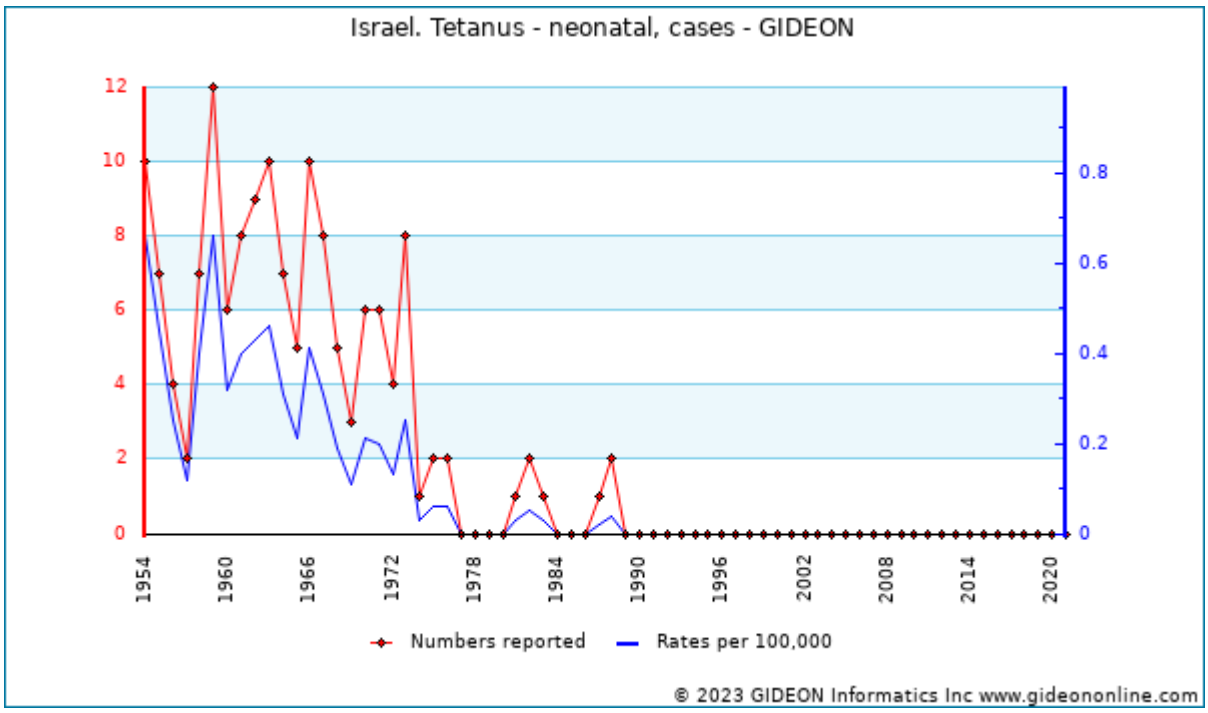
Graph: Israel. Tetanus, cases

Notes:
1. Tetanus has been a reportable disease since 1951.
2. Since 1991, reports for tetanus have included cases of neonatal tetanus.



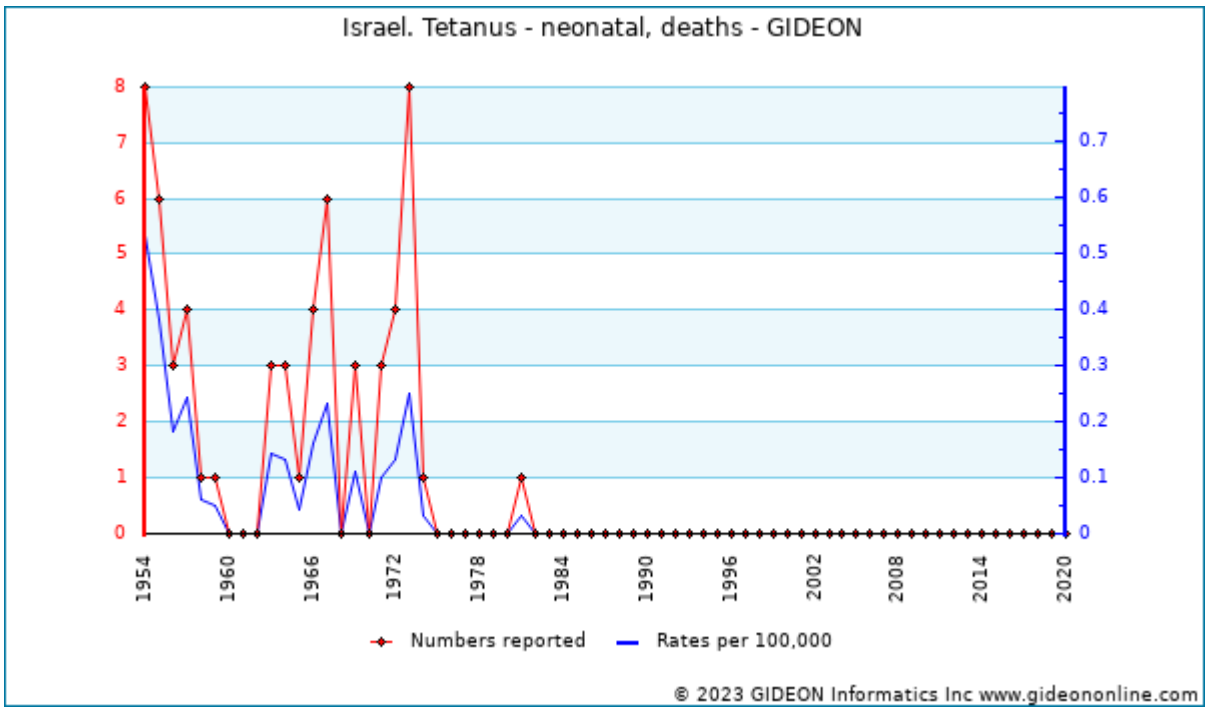
Graph: Israel. Tetanus, deaths

Notes:
1. The case-fatality rate tetanus was 37.6% during 1950 to 1958, and 55.2% during 1967 to 1977.



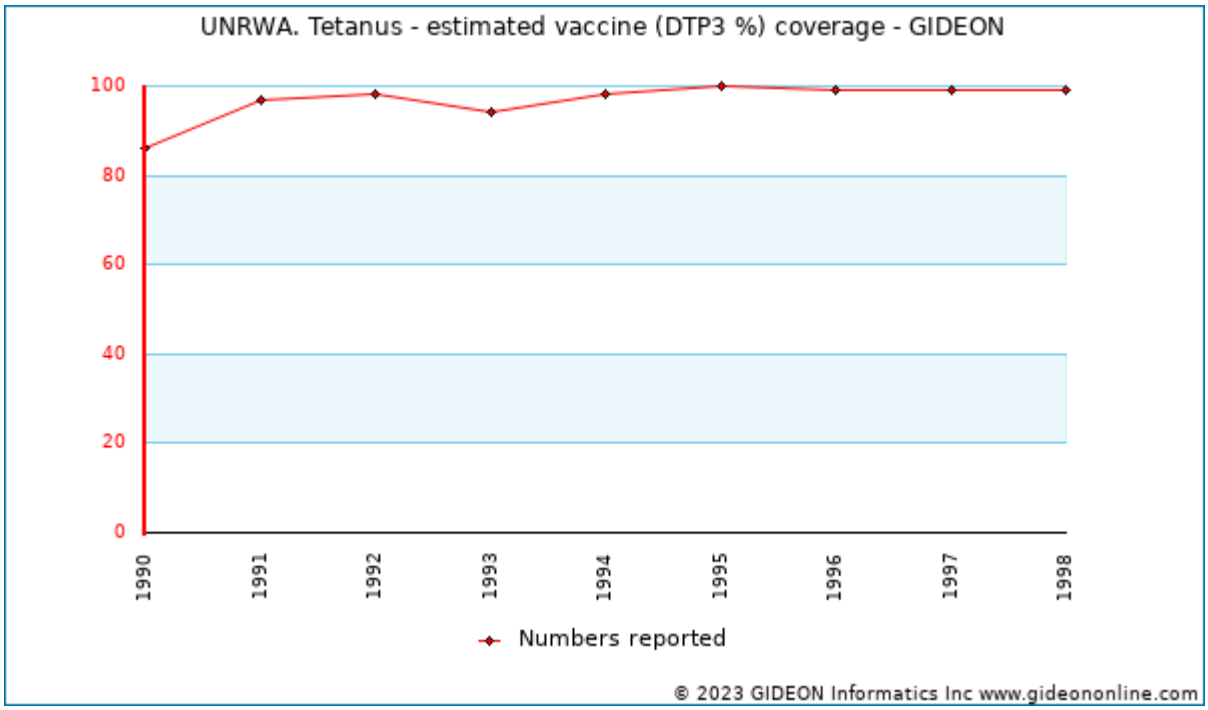
Graph: Israel. Tetanus - neonatal, cases

Notes:
1. Neonatal tetanus has been a reportable disease since 1954.
2. Neonatal tetanus accounted for 50% of tetanus cases in pre-1967 Israel and Gaza, and 62.4% in Judea and Samaria. **2**

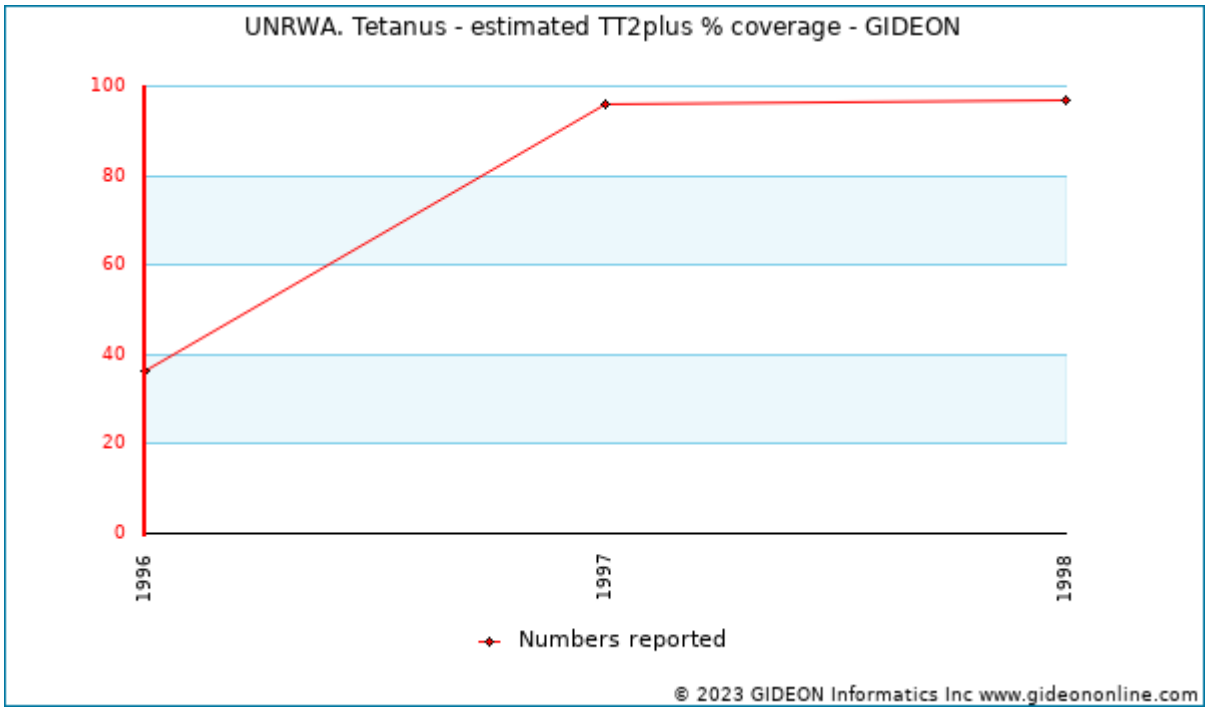


Graph: Israel. Tetanus - neonatal, deaths

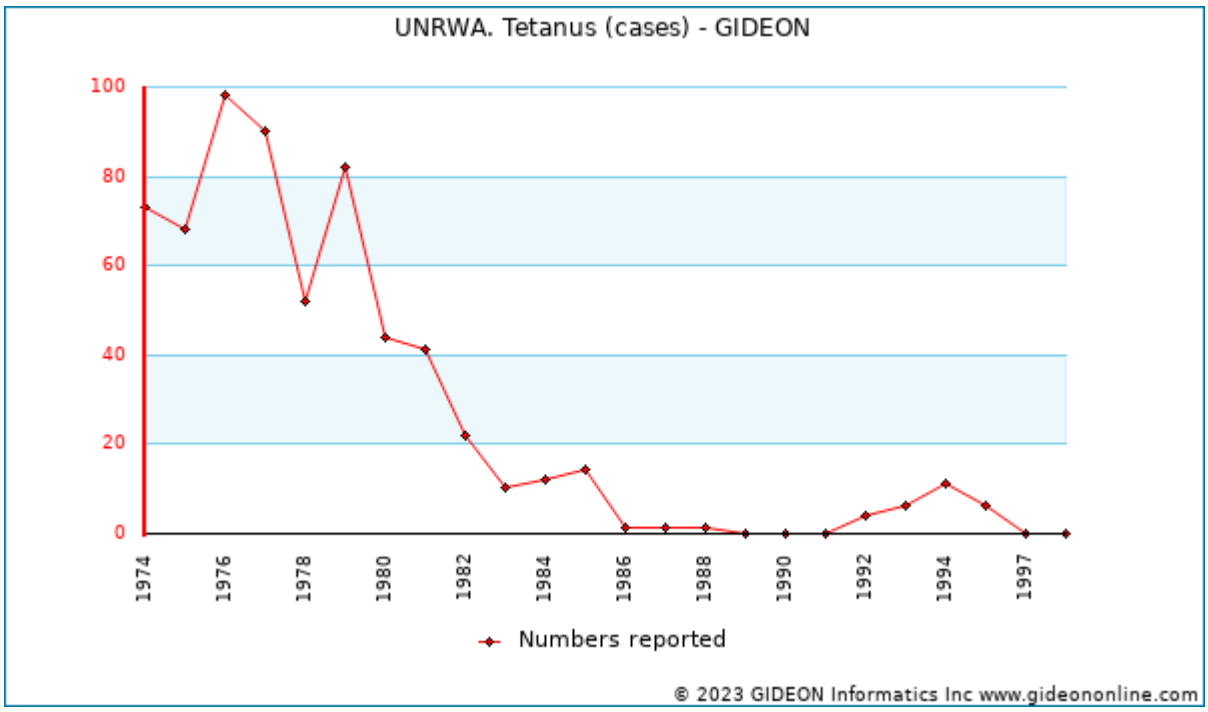
UNRWA, West Bank and Gaza:



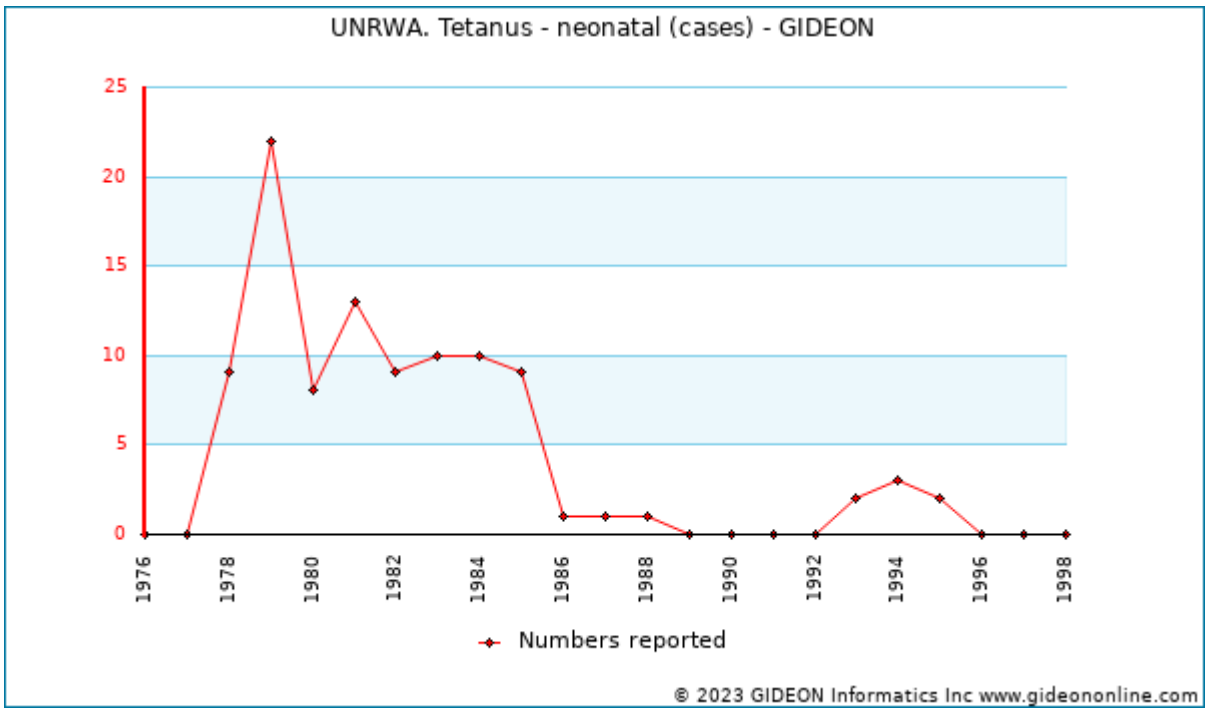
Graph: UNRWA. Tetanus - estimated vaccine (DTP3 %) coverage



Graph: UNRWA. Tetanus - estimated TT2plus % coverage

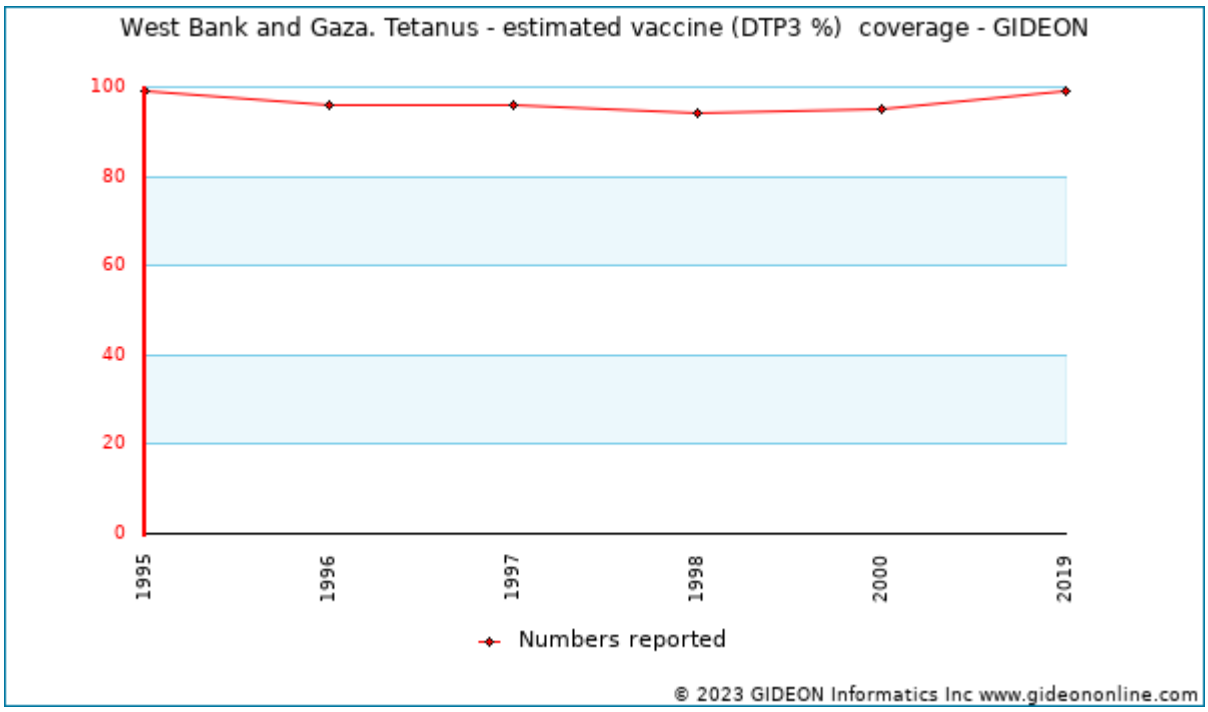


Graph: UNRWA. Tetanus (cases)

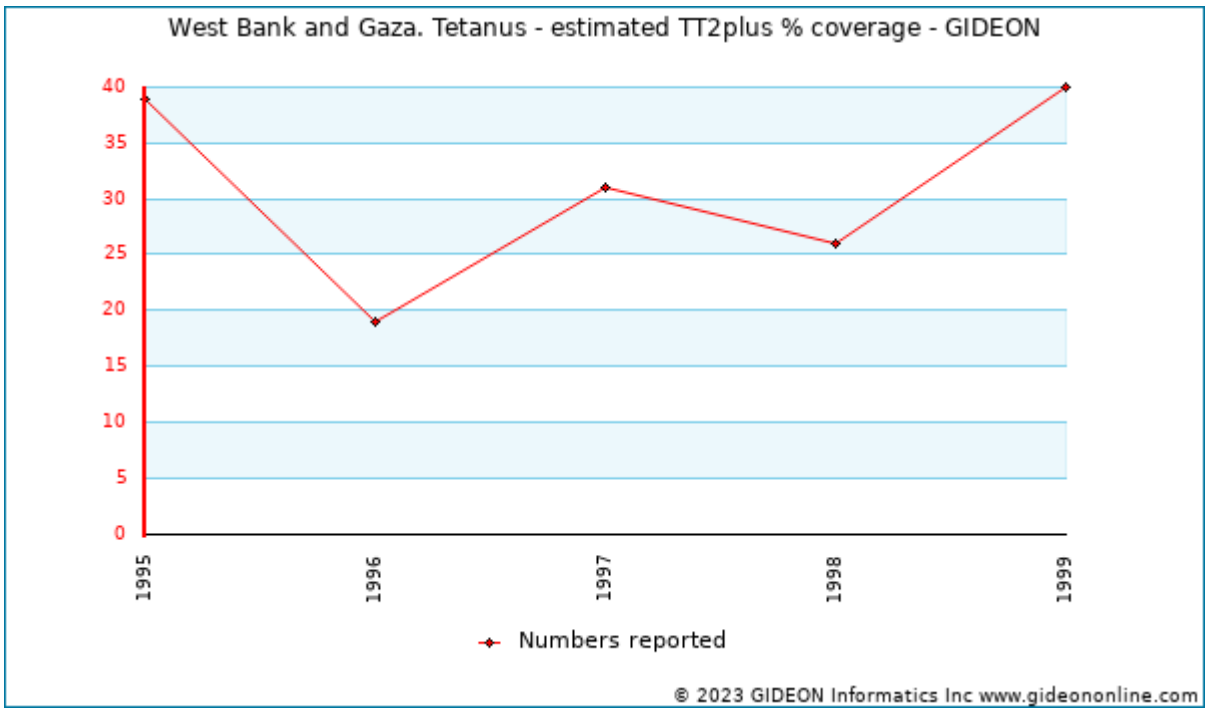


Graph: UNRWA. Tetanus - neonatal (cases)

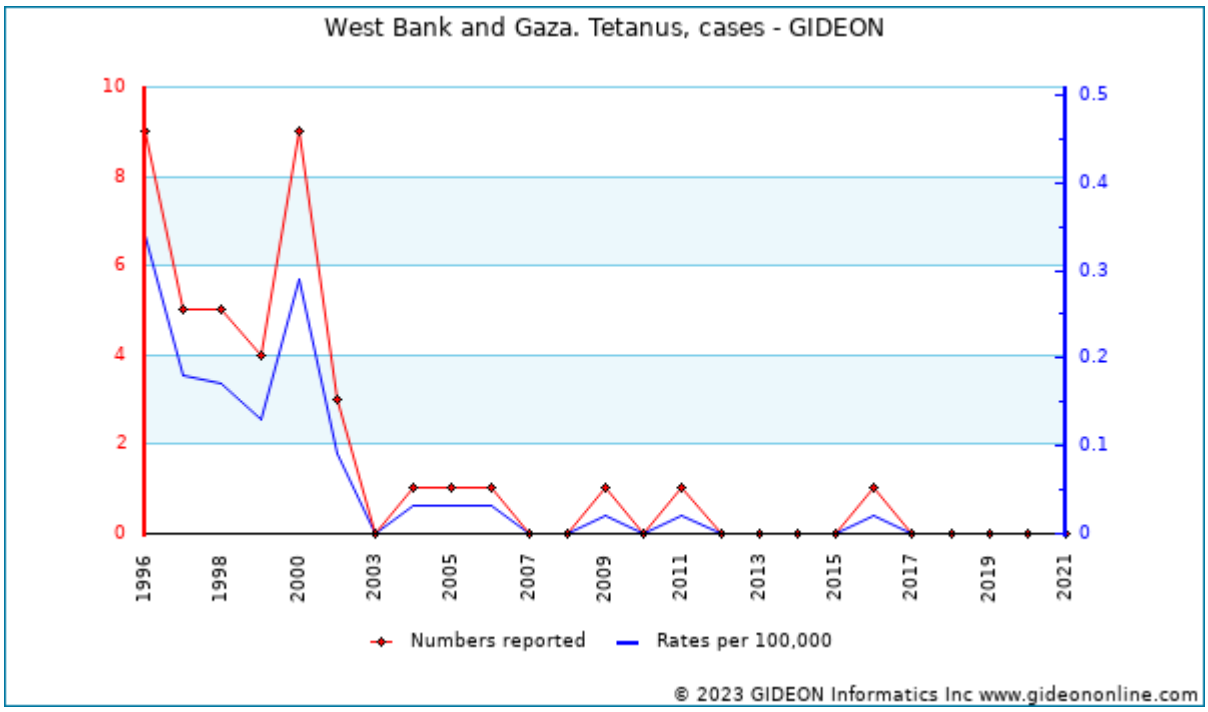
In the West Bank and Gaza, routine vaccination (DTP) is administered at ages 2, 4, 6 and 12 months. DT is given at ages 6 and 15 years.



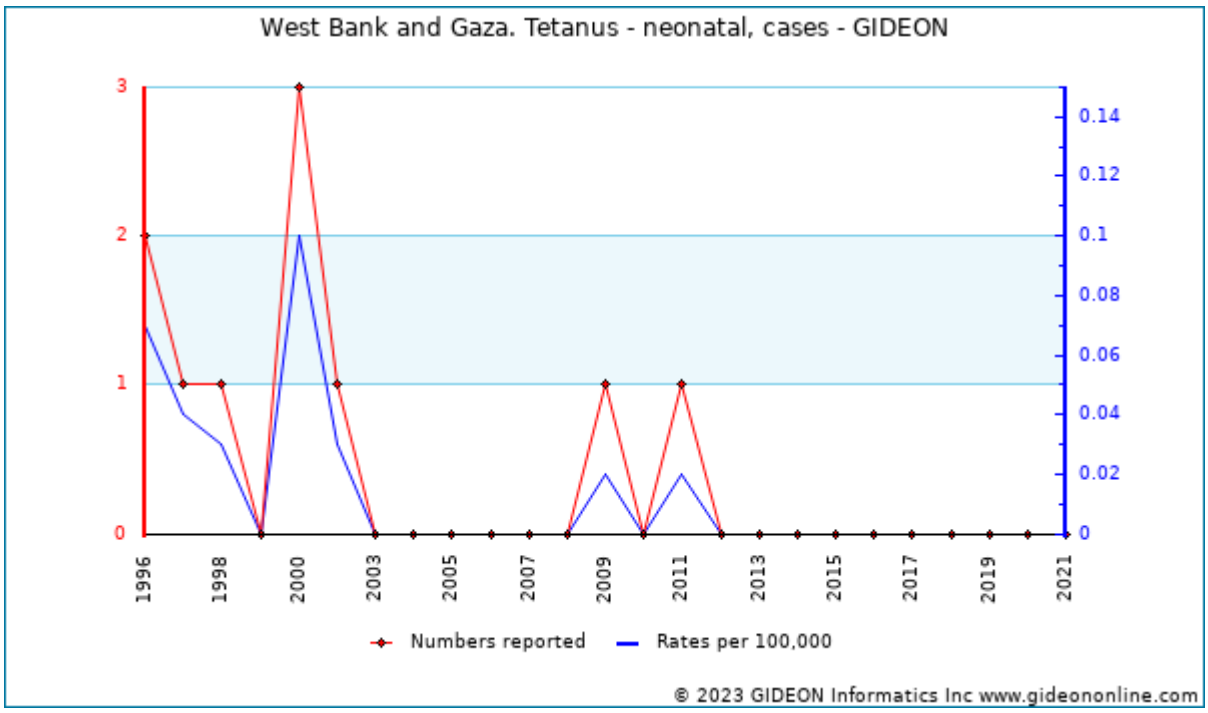
Graph: West Bank and Gaza. Tetanus - estimated vaccine (DTP3 %) coverage



Graph: West Bank and Gaza. Tetanus - estimated TT2plus % coverage



Graph: West Bank and Gaza. Tetanus, cases



Graph:
West Bank and Gaza. Tetanus - neonatal, cases

References

1. Crit Care 2014 Mar 26;18(2):217.

2. Isr J Med Sci 1990 Aug ;26(8):438-42.

Tick-borne encephalitis

Agent	VIRUS - RNA. Flaviviridae, Flavivirus: Central European encephalitis virus
Reservoir	Rodent (*Apodemus flavicollis*, *A. sylvaticus*, *Microtus arvalis*), Tick, Bird, Cattle, Zoonotic
Vector	Tick (*Ixodes ricinus*)
Vehicle	Dairy products
Incubation Period	7d - 14d (range 4d - 20d)
Diagnostic Tests	Biosafety level 4. Viral culture (blood, brain tissue, CSF). Serology. Nucleic acid amplification.
Typical Adult Therapy	Supportive
Typical Pediatric Therapy	As for adult
Vaccine	Tick-borne encephalitis globulin Tick-borne encephalitis vaccine
Clinical Hints	- Biphasic illness - Headache and myalgia followed by encephalitis - Onset 1 to 2 weeks after tick bite - Symptoms may persist for weeks following the acute infection - Case-fatality rate less than 2%
Synonyms	Central European tick encephalitis, Diphasic meningoencephalitis, Diphasic milk fever, Encephalite a tiques, European tick-borne encephalitis, Forest encephalitis, Fruhsommer-Meningoenzephalitis, FSME, Hanzlova, Haseki tick virus, Hypr, Kumlinge, Langat, Neudorfl, Skogflattencefalitt, Tick-borne encephalitis: Central European, Zeckenzephalitis. ICD9: 063.2 ICD10: A84.1

Although Tick-borne encephalitis is not endemic to Israel, imported, expatriate or other presentations of the disease have been associated with this country.

Tick-borne encephalitis in Israel

Cross-border events

Years	Acquired by**	Originated in**	Setting	Cases	Notes
2010	Israel	Russian Federation	travel	1	[1]
2011	Israel	Sweden	travel	1	[2]
2012	Israel		travel	1	An Israeli traveler acquired tick-borne encephalitis (nonfatal) during travel in Germany and Switzerland. [3]
2014	Israel	Austria		1	[4]

** Country or Nationality

References

1. Emerg Infect Dis 2017 01 ;23(1):119-121.
2. Emerg Infect Dis 2017 01 ;23(1):119-121.
3. Emerg Infect Dis 2017 01 ;23(1):119-121.
4. Emerg Infect Dis 2017 01 ;23(1):119-121.

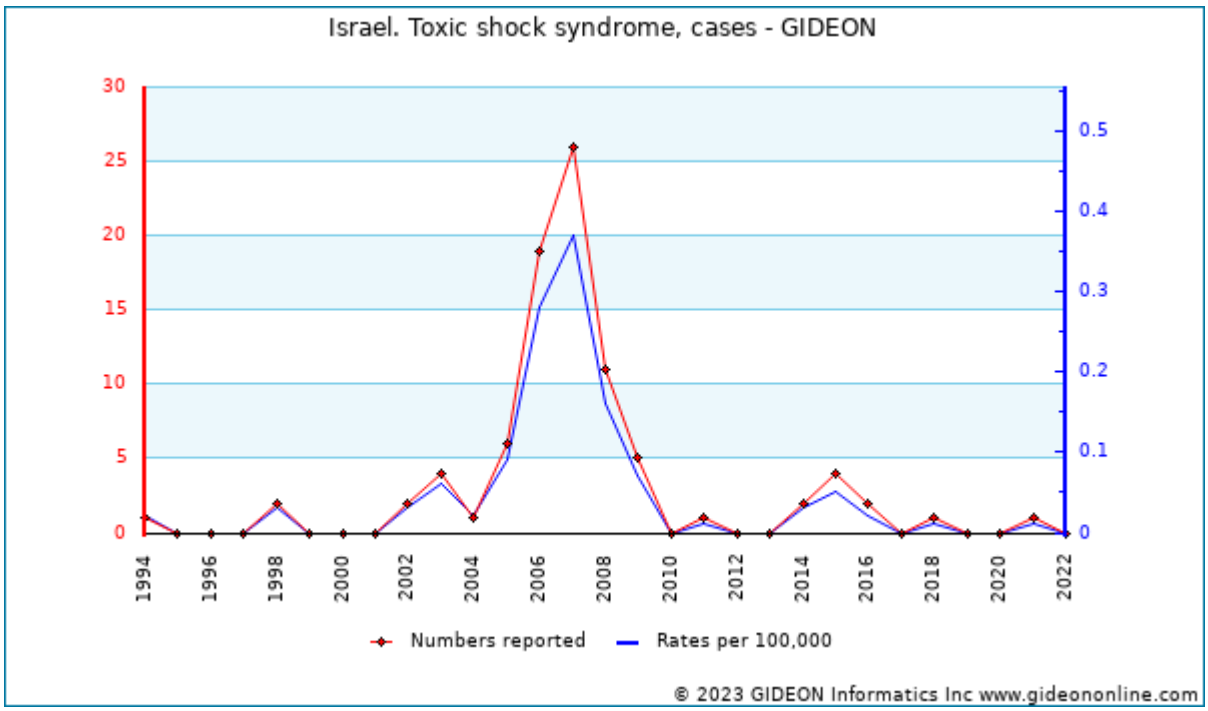
Toxic shock syndrome

Agent	BACTERIUM. *Staphylococcus aureus*, *Streptococcus pyogenes*, et al - (toxins) Facultative gram-positive cocci
Reservoir	Human
Vector	None
Vehicle	Tampon (Bandage, etc)
Incubation Period	Unknown
Diagnostic Tests	Isolation of toxigenic Staphylococcus aureus. Toxin assay available in specialized laboratories.
Typical Adult Therapy	Vancomycin 15-20 mg/kg IV BID + Clindamycin 900 mg IV TID Definitive therapy: Streptococcus - Penicillin G 4 million u IV q4h + Clindamycin 900 mg IV q8h Staphylococcus: MSSA - Nafcillin or Oxacillin 2 g IV q4h + Clindamycin 900 mg IV q8h MRSA as for empirical therapy The role of IVIG remains uncertain - consider in severe cases[1] [2] [3]
Typical Pediatric Therapy	Vancomycin 10 mg/kg IV QID + Clindamycin 8-13 mg/kg mg IV TID Definitive therapy: Streptococcus - Penicillin G 40-50000 units/kg (maximum 4 million) IV q4h + Clindamycin 8-13 mg/kg IV q8h Staphylococcus: MSSA - Nafcillin or Oxacillin 25-37.5 mg/kg IV q6h + Clindamycin 8-13 mg/kg mg IV q8h MRSA as for empirical therapy The role of IVIG remains uncertain; consider in severe cases
Clinical Hints	- Most cases associated with "super absorbent" tampon use or staphylococcal wound infection - Fever (>38.9), hypotension (<90 mm Hg) and dermal erythema with desquamation - Respiratory, cardiac or other disease present - Case-fatality rates of 5% to 10% are reported
Synonyms	Streptococcal toxic shock syndrome, TSS. ICD9: 040.82 ICD10: A48.3

Toxic shock syndrome in Israel

- 1983 (publication year) - The first case of toxic shock syndrome in Israel was reported. [4]

- 2008 to 2021 - Among 143,750 deliveries, 66 (0.04%) had pregnancy associated group A *Streptococcus* (GAS) infections. Streptococcal toxic shock syndrome was observed in 12 women. The most common manifestations in these patients were postpartum pyrexia (72%); abdominal pain (33%); and tachycardia (22%). [5]



Graph:

Israel. Toxic shock syndrome, cases

References

1. Ann Intensive Care 2018 Sep 17;8(1):88.
2. J Emerg Med 2018 Jan 20;
3. BMJ Open 2022 Dec 01;12(12):e063023.
4. Isr J Med Sci 1983 Dec ;19(12):1097-9.
5. J Matern Fetal Neonatal Med 2023 Dec ;36(1):2196363.

Toxocariasis

Agent	PARASITE - Nematoda. Secernentea: *Toxocara cati* and *T. canis*
Reservoir	Cat, Dog, Mouse, Zoonotic
Vector	None
Vehicle	Soil ingestion
Incubation Period	1w - 2y
Diagnostic Tests	Identification of larvae in tissue. Serology.
Typical Adult Therapy	Albendazole 400 mg BID X 5d. OR Mebendazole 100 to 200 mg PO bid X 5 days Add corticosteroids if eye, brain, heart or lung involvement is present.[1] [2] [3]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Cough, myalgia, seizures and urticaria - Hepatomegaly, pulmonary infiltrates or retrobulbar lesions may be present - Marked eosinophilia is common - Symptoms resolve after several weeks, but eosinophilia may persist for years
Synonyms	Ascaris suum, Toxocara canis, Toxocara cati, Toxocarose, Toxocarosis, Visceral larva migrans. ICD9: 128.0 ICD10: B83.0

Toxocariasis in Israel

Sporadic cases are reported. [4] [5]

Prevalence surveys

Years	Region	Study Group	%	Notes
1995 - 1996	Northern Region	dogs	0.7	0.7% of dogs in Jewish villages of Northern Israel (1995 to 1996) [6]
2008 - 2009	West Bank	dogs	36.4	36.4% of dogs in Nablus, Tulkarm, and Jenin (2008 to 2009) [7]
2019	West Bank	dogs	46	[8]
1980 - 1989	Tel Aviv	animals	10-18	18% of dogs and 10% of cats in the Tel Aviv area during the 1980's
1984*	Beer Sheva	various	3-7	3% of dogs and 7% of fecal samples from day-care centers, in Beer Sheba (1984 publication) [9]

* indicates publication year (not necessarily year of survey)

Seroprevalence surveys

Years	Region	Study Group	%	Notes
1992*		intellectual disability	8.5	8.5% of institutionalized mentally-retarded adults (1992 publication) [10]
2005 - 2019	Nationwide	specimens - serum	4.4	The yearly seropositivity rate among specimens submitted for testing ranged from 2% to 22% [11]

* indicates publication year (not necessarily year of survey)

- 2001 - 14 seropositive patients were reported by the Central Laboratory
- 2004 to 2010 - 44 seropositives were reported during January 2004 to September 2010
- 2004 to 2016 - 60 seropositives were reported during 2004 to 2016 - 67% male, 62% children.
- 2005 to 2019 - 464 individuals were found to be seropositive nationwide. [12]

References

1. Parasitology 1995 Jun ;110 (Pt 5):529-33.
2. J Ocul Pharmacol Ther 2001 Jun ;17(3):287-94.
3. Microorganisms 2022 Jan 22;10(2)
4. Harefuah 1990 Aug ;119(3-4):72-3.
5. Isr J Med Sci 1995 Nov ;31(11):689-92.
6. J Helminthol 1998 Jun ;72(2):127-31.
7. Korean J Parasitol 2011 Jun ;49(2):181-2.
8. Iran J Parasitol 2021 Jul-Sep;16(3):435-442.
9. J Helminthol 1984 Jun ;58(2):139-41.
10. Am J Trop Med Hyg 1992 Mar ;46(3):278-81.
11. Am J Trop Med Hyg 2022 Feb 21;
12. Am J Trop Med Hyg 2022 Feb 21;

Toxoplasmosis

Agent	PARASITE - Protozoa. Apicomplexa, Eimeriida: *Toxoplasma gondii*
Reservoir	Rodent, Pig, Cattle, Sheep, Chicken, Bird, Cat, Marsupial, Zoonotic
Vector	None
Vehicle	Transplacental, Meat, Soil ingestion, Water , Milk, Filth flies
Incubation Period	1w - 3w (range 5d - 21d)
Diagnostic Tests	Serology. Cultivation or identification of organisms per specialized laboratories. Nucleic acid amplification.
Typical Adult Therapy	60 kg: Pyrimethamine 75 mg/d + Sulfadiazine 1.5 g PO QID X 6w - administer with folinic acid Alternatives: Clindamycin, Trimethoprim/Sulfamethoxazole, Atovaquone Spiramycin (in pregnancy) 4g/d X 4w[1] [2] [3] [4]
Typical Pediatric Therapy	Pyrimethamine 1 mg/kg/d X 3d, then 0.5 mg/kg/d + Sulfadiazine 100 mg/kg/d X 4w - administer with folinic acid. Alternatives: Clindamycin, Trimethoprim/Sulfamethoxazole, Atovaquone.
Clinical Hints	- Fever, lymphadenopathy, hepatic dysfunction or chorioretinitis - Cerebral cysts often encountered in patients with AIDS - Congenital hydrocephalus associated with mental retardation - Seizures or blindness
Synonyms	Toxoplasma, Toxoplasmose, Toxoplasmosi. ICD9: 130 ICD10: B58

Toxoplasmosis in Israel

2013 to 2017 - 23 cases of toxoplasmosis in pregnancy were confirmed in northern Israel - 23 of these in the Arab sector.

Prevalence surveys

Years	Region	Study Group	%	Notes
2018 - 2019	Multiple locations	cattle	7.5	The molecular detection of *T. gondii* using PCR in the tissue samples of cattle at slaughterhouses was 7.5%. [5]
2018 - 2019	Multiple locations	pigs	6.3	The molecular detection of *T. gondii* using PCR in the tissue samples of pigs at the abattoir was 6.3%. [6]
2018 - 2019	Multiple locations	sheep	7.3	The molecular detection of *T. gondii* using PCR in the tissue samples of sheep at slaughterhouses was 7.3%. [7]
2019	Gaza	vegetables	11.66	Survey of raw leafy vegetables in Gaza [8]

Seroprevalence surveys

Years	Region	Study Group	%	Notes
2018 - 2019	Multiple locations	cattle	28.9-29.4	Serum samples of 249 cattle were collected from farms. The total seroprevalence for T. gondii in the cattle farm population was 28.9 %. The total seroprevalence for *T. gondii* in 201 cattle at slaughterhouses was 29.4 %. [9]
1993*		immigrants	34	34% of Ethiopian immigrants (1993 publication) [10]
2018 - 2019	Multiple locations	pigs	8.1	Serum and heart samples were obtained from 160 pigs at the abattoir. The seroprevalence observed in pigs was 8.1%. [11]

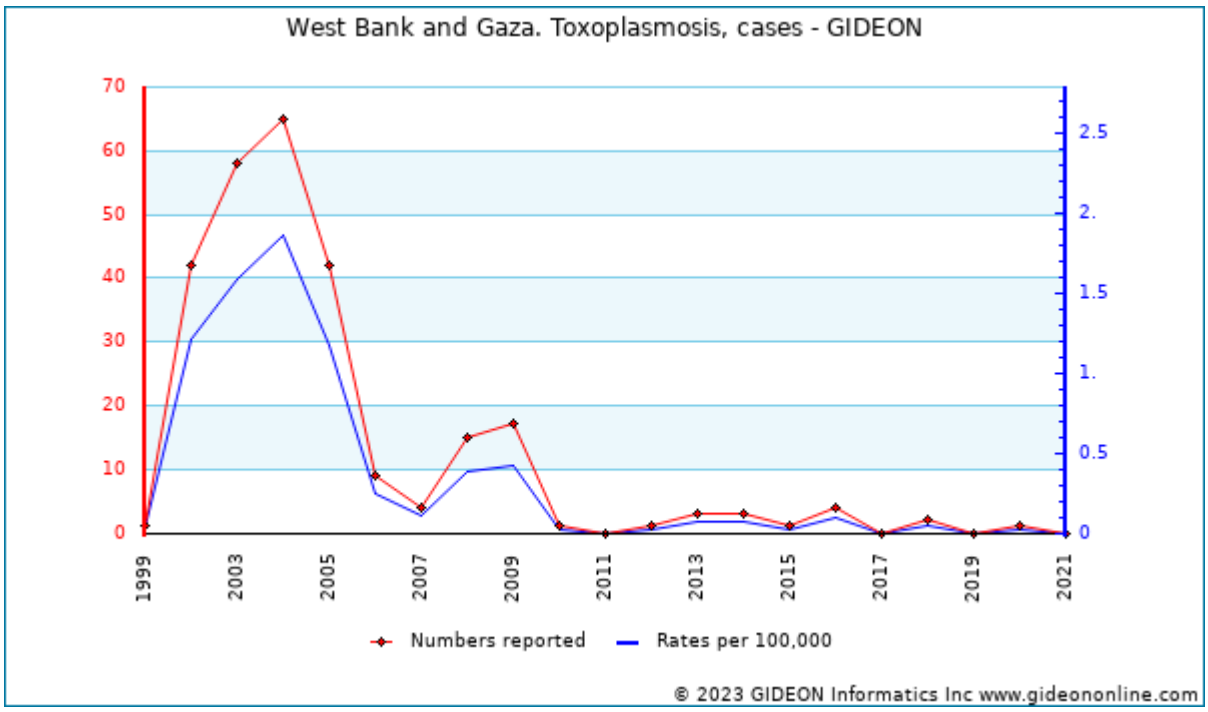
Years	Region	Study Group	%	Notes
2011 - 2013	Multiple locations	horses	2.5	2.5% of horses (2011 to 2013) [12]
2012*		birds	39.6-42.6	42.6% of free-ranging crows (*Corvus cornis*, *Corvus monedula*, *Corvus splendens*) and 39.6% of Griffon vultures (*Gyps fulvus*) (2012 publication) [13]
1970 - 1973	Tel Aviv	women	29	29% of healthy women (1970 to 1973, Tel Aviv area)
2000 - 2005	Gaza	women	7.9	7.9% of infertile women in Gaza (IgM, 2000 to 2005) [14]
2012*		patients	71	71% of patients with primary biliary cirrhosis vs. 40% of controls (2012 publication) [15]
2012*		patients	42	42% of patients with autoimmune diseases, vs. 29% of controls (2012 publication) [16]
2018 - 2019	Multiple locations	sheep	26.1-33.3	Serum was collected from 165 sheep at slaughterhouses. The total seroprevalence of *T. gondii* in sheep was 26.1%. Sera were collected from 138 sheep at 8 farms. The total *T. gondii* seroprevalence was 33.3%. [17]
1960 - 1969		adults	30	30% of adults, during the 1960's
2004*	Jerusalem	cats	14.2-39	39.0% of domestic cats and 14.2% of stray cats (Jerusalem, 2004 publication) [18]
2011*	Jerusalem	cats	16.9	16.9% of cats in Jerusalem (2011 publication)
2018*		poultry	9-100	9% to 100% - depending on growth and housing conditions [19]
1993*	Northern Region	general population	22.2-55.8	22.2% of kibbutz members and 55.8% of Arab villagers in northern Israel (1993 publication) [20]
1993*	Tel Mond	general population	29	29% of healthy individuals in the Tel Mond region (1993 publication) [21]
2013*		general population	19.9-60.4	60.4% of non-Bedouin Arabs, 19.9% of Jews and 27.5% of Bedouins (2013 publication) [22]
1993*	Upper Galilee	pregnant women	21	21% of pregnant women (1993 publication) [23]
2005	Hebron	pregnant women	27.9	27.9% of pregnant women in Hebron (2005) [24]
2004*		poultry - chicken	47	47% of commercial chickens (2004 publication) [25]
2009*	Multiple locations	birds - pigeon	4	4% of wild pigeons (2009 publication) [26]
2020*	Multiple locations	donkeys	94	[27]

***** indicates publication year (not necessarily year of survey)

Highest seropositivity rates are found among native-born non-Jews and Jews of North African or Asian extraction.

2013 - *Toxoplasma gondii* infection was identified in stranded bottlenose dolphins (*Tursiops truncatus*) on the Israeli coast. [28]

West Bank and Gaza:



Graph: West Bank and Gaza. Toxoplasmosis, cases

Notable outbreaks

Years	Notes
2008*	Outbreak among captive squirrel monkeys (*Saimiri sciureus*) was ascribed to contaminated feed [29]

***** indicates publication year (not necessarily year of outbreak)

References

1. Clin Microbiol Rev 2018 Oct ;31(4)
2. Parasitol Res 2018 Aug 08;
3. Eur J Med Res 2021 Dec 11;26(1):143.
4. Pediatr Infect Dis J 2022 Feb 14;
5. Comp Immunol Microbiol Infect Dis 2022 Nov 28;92:101928.
6. Comp Immunol Microbiol Infect Dis 2022 Nov 28;92:101928.
7. Comp Immunol Microbiol Infect Dis 2022 Nov 28;92:101928.
8. J Food Prot 2021 Feb 01;84(2):255-261.
9. Comp Immunol Microbiol Infect Dis 2022 Nov 28;92:101928.
10. Isr J Med Sci 1993 Jun-Jul;29(6-7):395-7.
11. Comp Immunol Microbiol Infect Dis 2022 Nov 28;92:101928.
12. Vector Borne Zoonotic Dis 2015 Dec ;15(12):726-31.
13. Vet Parasitol 2013 Jan 16;191(1-2):23-8.
14. J Egypt Soc Parasitol 2010 Aug ;40(2):451-8.
15. Exp Mol Pathol 2012 Dec ;93(3):386-90.
16. J Autoimmun 2012 Aug ;39(1-2):112-6.
17. Comp Immunol Microbiol Infect Dis 2022 Nov 28;92:101928.
18. Vet Parasitol 2004 Oct 05;124(3-4):167-77.
19. Vet Parasitol Reg Stud Reports 2016 Sep ;5:34-36.
20. Isr J Med Sci 1993 Oct ;29(10):636-9.
21. Isr J Med Sci 1993 Jan ;29(1):30-2.
22. Epidemiol Infect 2014 Jan ;142(1):149-55.
23. Isr J Med Sci 1993 May ;29(5):285-6.
24. East Mediterr Health J 2009 Sep-Oct;15(5):1278-84.
25. Vet Parasitol 2004 May 26;121(3-4):317-22.
26. Vet Parasitol 2009 Oct 28;165(1-2):145-9.
27. Animals (Basel) 2020 Oct 19;10(10)
28. Vet Parasitol 2018 Jul 15;258:74-78.
29. Vet Parasitol 2009 Jan 22;159(1):24-9.

Trachoma

Agent	BACTERIUM. *Chlamydia trachomatis*, type A
Reservoir	Human
Vector	Fly
Vehicle	Secretions, Contact, Fly, Fomite
Incubation Period	5d - 12d
Diagnostic Tests	Culture or direct immunofluorescence of secretions. Serology. Nucleic acid amplification.
Typical Adult Therapy	Azithromycin 1 g po as single dose. Also administer topical Tetracycline[1] [2]
Typical Pediatric Therapy	Azithromycin 20 mg/kg as single dose. Also administer topical Tetracycline
Clinical Hints	- Keratoconjunctivitis with follicular hypertrophy, palpebral scarring and pannus formation - In later stages, eyelashes may protrude inward or outward - 0.5% of infections result in blindness
Synonyms	Chlamydia trachomatis, Egyptian ophthalmia, Granular conjunctivitis, Kornerkrankheit, Trachom, Tracoma. ICD9: 076 ICD10: A71

Trachoma in Israel

Chronology: [3] [4]

- 1914 - "Trachoma" was the subject of Israel's first Medical Conference. [5]
- 1918 - 34% of children in "Hadassah" schools suffered from trachoma; with rates as high as 78% among children in Tiberius.
- 1927 - 50% to 70% of Arab school children were found to be infected
- 1942 - 2.1% of individuals in Safed were found to be infected; and 0.46% in the Upper Galilee
- 1949 to 1950 - 46% of immigrants arriving from Libya were infected; 22.5% from Tunisia; 17.1% from Egypt; 15.4% from Iraq; 13% from Morocco; 11.3% from Iran.
- 1955 - 93% of individuals in Hebron were found to have trachoma (including healed infections) [6]
- 1960 - 47.6% of individuals in Hebron and 44.4% in adjacent villages were found to have active trachoma. [7]
- 1937 - Rates among Arab settlements in the Jerusalem area were in 9.9% - decreasing to 2.7% in 1959.
- 1980 - 6.4% of children in eastern Jerusalem were found to have trachoma [8]

No autochthonous cases have been reported in Israel since 1978.

Infection is common in the West Bank and Gaza Strip. [9] [10]

References

1. Lancet 1993 Aug 21;342(8869):453-6.
2. Chin Med J (Engl) 2021 Sep 16;
3. Harefuah 1988 Apr 15;114(8):384-5.
4. Rev Int Trach Pathol Ocul Trop Subtrop Sante Publique 1987 ;(64):133-42.
5. Harefuah 2014 Mar-Apr;153(3-4):219-22, 235.
6. Bull World Health Organ 1963 ;28(4):417-36.
7. Bull World Health Organ 1963 ;28(4):417-36.
8. Br J Ophthalmol 1982 Sep ;66(9):580-2.
9. Eye (Lond) 1988 ;2 (Pt 5):463-70.
10. Br J Ophthalmol 1984 Aug ;68(8):598-602.

Trichinosis

Agent	PARASITE - Nematoda. *Trichinella spiralis* (occasionally *T. nativa*, *T. britovi*, *T. pseudospiralis*, *T. nelsoni*, et al)
Reservoir	Wild carnivore, Omnivore, Marine mammal, Zoonotic
Vector	None
Vehicle	Meat
Incubation Period	10d - 20d (range 1w - 10w)
Diagnostic Tests	Identification of larvae in tissue. Serology.
Typical Adult Therapy	Albendazole 400 mg PO BID X 14d. OR Mebendazole 200 to 400 mg PO tid X 3 days, then 400 to 500 mg PO. tid X 10 days. Administer with prednisone 50 mg PO daily X 3 to 5 days (then 'taper' dosage)[1] [2]
Typical Pediatric Therapy	Albendazole 7 mg/kg BID X 14 d. OR Mebendazole 200 to 400 mg PO tid X 3 days, then 400 to 500 mg PO. tid X 10 days. Administer with prednisone 50 mg PO daily X 3 to 5 days (then 'taper' dosage)
Clinical Hints	- Onset 1 to 4 weeks following ingestion of undercooked meat - Early diarrhea and vomiting - Subsequent myalgia, facial edema and eosinophilia - Symptoms may persist for two months - Reported case-fatality rate for symptomatic infection is 2%
Synonyms	Trichinellose, Trichinellosis, Trichinose, Trikinose, Triquiniase, Triqunosis. ICD9: 124 ICD10: B75

Trichinosis in Israel

Rare cases of autochthonous trichinosis are acquired from wild boar in the upper and western Galilee, and the Carmel Hills.

No infections have been found in domestic pigs since 1948.

- 2001 - Five seropositive patients were reported by the Central Laboratory - all foreign workers.
- 2016 (publication year) - *Trichinella britovi* and *T. spiralis* have been identified in foxes and wolves. [3]

Cross-border events
Includes importation of infested meat or animals

Years	Acquired by**	Originated in**	Setting	Cases	Notes
1982	Israel	Lebanon		6	An outbreak (1,000 cases or more) was reported in the southern region of Lebanon - including six cases hospitalized in Israel. [4] [5]
2002	Israel	Thailand	foreign workers	30	An outbreak (30 cases, 0 fatal) was reported among Thai workers in Israel who had ingested the meat of a wild pig. [6]

** Country or Nationality

Prevalence surveys

Years	Region	Study Group	%	Notes
2002 - 2009	Southern Region	animals	2.8-20.8	20.8% of golden jackals and 2.8% of red foxes - including 36.7% of animals from the Golan Heights, 27.3% from the Carmel region, 27.5% from the area of Jerusalem Mountains and 0% from the central and southern regions (2002 to 2009)
2002 -	Golan	pigs -	9.2	9.2% of wild boar from the Golan Heights

Years	Region	Study Group	%	Notes
2009	Heights	boars		
2002 - 2009	Galilee	pigs - boars	8	8% of wild boar from the western Galilee
2005		pigs - boars	4.98	4.98% of wild boar in 2005
2007		pigs - boars	1.06	1.06% of wild boar in 2007

Notable outbreaks

Years	Region	Cases	Source	Population	Notes
1971	Elaboun	39			Outbreak in Elaboun, a Christian village near Nazareth.
1982		6			Outbreak (1,000 cases or more) in southern Lebanon included six cases hospitalized in Israel. [7] [8]
1992*	Northern Region		meat - boar	family members	[9]
1999		111			
2000		13			
2002	Hadera	123	meat - pork	foreign workers	Outbreak among Thai workers who had ingested the meat of wild pigs [10]
2005*		47		foreign workers	Outbreak among Thai workers. [11]
2007*		30	meat - pork		Outbreak associated with ingestion of the meat of two wild pigs from the Golan Heights [12]

***** indicates publication year (not necessarily year of outbreak)

West Bank and Gaza:

2003 to 2004 - No cases were reported.

References

1. Clin Infect Dis 2017 Nov 29;65(12):e45-e80.
2. J Infect Dis 2000 Jul ;182(1):371-4.
3. Vet Parasitol 2016 Nov 15;231:128-131.
4. Isr J Med Sci 1984 Feb ;20(2):141-4.
5. Trans R Soc Trop Med Hyg 1992 Nov-Dec;86(6):658-60.
6. Harefuah 2004 Sep ;143(9):656-60, 694.
7. Isr J Med Sci 1984 Feb ;20(2):141-4.
8. Trans R Soc Trop Med Hyg 1992 Nov-Dec;86(6):658-60.
9. Harefuah 1992 Jun 01;122(11):702-4, 751.
10. Harefuah 2004 Sep ;143(9):656-60, 694.
11. Emerg Infect Dis 2005 Dec ;11(12):1979-81.
12. Isr Med Assoc J 2007 Jul ;9(7):537-9.

Trichomoniasis

Agent	PARASITE - Protozoa. Metamonada, Parabasala, Trichomonadea. Flagellate: *Trichomonas vaginalis*
Reservoir	Human
Vector	None
Vehicle	Sexual contact
Incubation Period	4d - 28d
Diagnostic Tests	Microscopy of vaginal discharge. ELISA, culture, antigen detection tests available. Nucleic acid amplification.
Typical Adult Therapy	Metronidazole or Tinidazole 2g PO as single dose to both sexual partners[1]
Typical Pediatric Therapy	Metronidazole 5 mg/kg PO TID X 7d. OR Tinidazole 50 mg/kg PO X 1 (maximum 2 grams)
Clinical Hints	- Vaginal pruritus, erythema and thin or frothy discharge - Mild urethritis may be present in male or female
Synonyms	Pentatrichomonas, Tetratrichomonas, Trichomonaden, Trichomonas, Trichomonas vaginalis, Tricomoniasis, Tritrichomonas. ICD9: 131 ICD10: A59

Trichomoniasis in Israel

Prevalence surveys

Years	Region	Study Group	%	Notes
2003*	Holon	patients	8.1	8.1% of vaginitis (2003 publication) [2]
2016 - 2019	Kfar Saba	patients	3.4	3.4% of pathogens identified in women with pelvic inflammatory disease [3]
1951*		general population	3	[4]
2008 - 2010	Tel Aviv	patients - STD	0	0% of male patients in an STD clinic in Tel Aviv (2008 to 2010) [5]
2022*	Northern	patients - STD	0.6	Out of 3,753 assays performed on 2,407 patients screened for STD from a secondary referral hospital and 2 STD clinics in Northern Israel, *Trichomonas vaginalis* was detected in 0.6% of the patients. *T. vaginalis* was more frequently encountered among females. [6]

***** indicates publication year (not necessarily year of survey)

References

1. MMWR Recomm Rep 2015 Jun 05;64(RR-03):1-137.
2. Isr Med Assoc J 2003 Sep ;5(9):629-32.
3. J Gynecol Obstet Hum Reprod 2021 Jun 01;:102176.
4. J Med Liban 1951 May ;4(3):163-9.
5. Int J STD AIDS 2017 02 ;28(2):127-132.
6. J Low Genit Tract Dis 2022 Nov 30;

Trichostrongyliasis

Agent	PARASITE - Nematoda. Secernentea: *Trichostrongylus colubriformis*, *T. orientalis*, *T. probolurus*
Reservoir	Herbivore, Zoonotic
Vector	None
Vehicle	Water, Food, Vegetation, Contact
Incubation Period	21d
Diagnostic Tests	Identification of ova in stool or duodenal aspirate. Trichostrongylus colubriformis adult: female - 3 to 10 mm; male - 2 to 8 mm
Typical Adult Therapy	Albendazole 400 mg PO X 1. OR Pyrantel pamoate 11 mg/kg (max 1g) PO once. OR Mebendazole 100 mg PO BID X 7d[1]
Typical Pediatric Therapy	As for adult
Clinical Hints	- Diarrhea, abdominal pain and weight loss - Eosinophilia is often present - Infestation may persist for years - Fatality and sequelae are not reported
Synonyms	Haemonchus, Marshallagia, Ostertagia, Teladorsagia, Trichostrongylus. ICD9: 127.6 ICD10: B81.2

Trichostrongyliasis in Israel

The presence of Trichostrongyliasis in Israel was first reported in a 1951 publication. [2]

- Trichostrongyliasis was identified among immigrants from Iraq, Syria and Turkey - and was also found among their children.

- 1972 (publication year) - A case series (94 cases) was published from south Tel Aviv. [3]
- 1994 (publication year) - *Trichostrongylus* infection was identified among Thai workers in Israel. [4]

- 1975 (publication year) - *Trichostrongylus colubriformis* has been identified in small mammals in Israel. [5]

Prevalence surveys

Years	Region	Study Group	%	Notes
1994*		foreign workers	1	1% of Thai workers in Israel (1994 publication) [6]
1968*	Tel Aviv	specimens - stool	1.5	1.5% of stool specimens examined in Tel Aviv (1968 publication)

* indicates publication year (not necessarily year of survey)

References

1. Chemotherapy 1977 ;23(2):98-105.
2. Harefuah 1951 Nov 15;41(10):179-80.
3. Harefuah 1972 Jul 02;83(1):26-8.
4. Harefuah 1994 May 01;126(9):507-9, 563.
5. Ann Parasitol Hum Comp 1975 Nov-Dec;50(6):735-62.
6. Harefuah 1994 May 01;126(9):507-9, 563.

Trichuriasis

Agent	PARASITE - Nematoda. *Trichuris trichiura*
Reservoir	Human
Vector	None
Vehicle	Soil ingestion, Sexual contact, Flies
Incubation Period	2m - 2y
Diagnostic Tests	Stool microscopy or visualization of adult worms Trichuris trichiura adult: female - 35 to 50 mm; male - 30 to 45 mm
Typical Adult Therapy	Mebendazole 100 mg PO BID X 3d. OR Albendazole 400 mg PO daily X 3 to 7 days OR Ivermectin 200 mg/kg PO daily X 3 days[1] [2]
Typical Pediatric Therapy	Albendazole 200 mg PO single dose OR Mebendazole 100 mg BID X 3 d (> age 2). OR Ivermectin 200 mg/kg PO daily X 3 days
Clinical Hints	- Abdominal pain, bloody diarrhea - Rectal prolapse or intestinal obstruction are occasionally encountered - The parasite may survive for as long as five years in the human host
Synonyms	Trichocephaliasis, Trichuris trichiura, Trichuris vulpis, Tricuriasis, Whipworm. ICD9: 127.3 ICD10: B79

Trichuriasis in Israel

- Ova of *Trichuris trichiura* were identified in a cesspit in Jerusalem dating from the mid 7th century BCE. [3]
- Evidence for *Trichuris trichiura* infestation has been identified in an Ottoman latrine in Acre dating from the early 1800's. [4]

Prevalence surveys

Years	Region	Study Group	%	Notes
2004*	Gaza	children	1.6	1.6% of children in Khan Younis (Gaza, 2004 publication) [5]
1991*	Multiple locations	immigrants	19.2	19.2% of Ethiopian immigrants (1991 publication) [6]
1994*		foreign workers	1	1% of Thai workers in Israel (1994 publication) [7]
1921	Jerusalem	general population	31.5	31.5% of the population of Jerusalem (40.9% of adults in the city) in 1921
1948	Jerusalem	general population	14	14% in 1948, in Jerusalem
1950 - 1959	Jerusalem	general population	4.7	4.7% during the 1950's, in Jerusalem
1951*		general population	19	[8]
1957	Jerusalem	general population	0.7	0.7% in 1957, in Jerusalem

* indicates publication year (not necessarily year of survey)

References

1. Clin Infect Dis 2019 Jan 01;68(1):96-105.
2. PLoS Negl Trop Dis 2018 04 ;12(4):e0006458.
3. Int J Paleopathol 2021 Nov 12;36:1-6.
4. Korean J Parasitol 2019 Dec ;57(6):575-580.
5. Parasitol Res 2004 Dec ;94(6):449-51.
6. Isr J Med Sci 1991 May ;27(5):278-83.
7. Harefuah 1994 May 01;126(9):507-9, 563.
8. J Med Liban 1951 May ;4(3):163-9.

Trypanosomiasis - African

Agent	PARASITE - Protozoa. Euglenozoa, Kinetoplastidea. Flagellate: *Trypanosoma* (*Trypanozoon*) *brucei gambiense* and *T. b. rhodesiense*
Reservoir	Human, Deer, Wild carnivore, Cattle, Zoonotic
Vector	Tsetse fly (*Glossina* spp.)
Vehicle	None
Incubation Period	3d - 21d (acute illness)
Diagnostic Tests	Identification of protozoa in CSF, blood, lymph node aspirate. Serology. Nucleic acid amplification.
Typical Adult Therapy	Early stage Pentamidine (T. Gambiense) 4 mg/kg IM daily X 7 days. OR Suramin 1g IV days 1, 3, 7, 14, 21 (after test dose 100 mg) Late stages: Eflornithine (T. Gambiense) 200 mg/kg IV BID X 7 d + Nifurtimox 5 mg/kg PO TID X 10 d OR Melarsoprol 2.2 mg/kg/d IV X 10 d + Prednisolone 1 mg/kg/d[1] [2] [3] [4] [5] [6]
Typical Pediatric Therapy	Early stage: Pentamidine (T. Gambiense) 4 mg/kg IM daily X 7d. OR Suramin 20 mg/kg IV days 1, 3, 7, 14, 21 (after test dose 20 mg) Late stages: Eflornithine (T. Gambiense) 200 mg/kg IV BID X 7 d + Nifurtimox 5 mg/kg PO TID X 10 d OR Melarsoprol 2.2 mg/kg/d IV X 10 d + Prednisolone 1 mg/kg/d
Clinical Hints	- Cutaneous chancre, myalgia, arthralgia, lymphadenopathy and recurrent fever - Mental changes, sensory disorders and heart failure - Disease due to *Trypanosoma brucei rhodesiense* is more rapidly progressive and virulent than that due to *T.b. gambiense*
Synonyms	African sleeping sickness, African trypanosomiasis, Gambian fever, Schlafkrankheit, Trypanosoma brucei, Trypanosoma congolense, Trypanosoma evansi, Trypanosoma lewisi, Trypanosoma vivax, Trypansomiasis, afrikanische. ICD9: 086.3,086.4,086.5 ICD10: B56

Although Trypanosomiasis - African is not endemic to Israel, imported, expatriate or other presentations of the disease have been associated with this country.

Trypanosomiasis - African in Israel

Cross-border events

Years	Acquired by**	Originated in**	Setting	Cases	Notes
2009	Israel	Tanzania	travel	1	[7]

** Country or Nationality

- 2006 - *Trypanosoma evansi* infection was first identified in Israel, in a camel and a horse from the Dead Sea region. [8]

Seroprevalence surveys

Years	Region	Study Group	%	Notes
2012*	Nationwide	horses	4.6	4.6% of horses, nationwide (*Trypanosoma evansi*, 2012 publication) [9]

* indicates publication year (not necessarily year of survey)

Notable outbreaks

Years	Pathogen	Population	Notes
2010*	*Trypanosoma evansi*	various	Outbreak among horses, camels and donkeys [10]

* indicates publication year (not necessarily year of outbreak)

References

1. Lancet 2018 01 13;391(10116):144-154.
2. Cochrane Database Syst Rev 2013 Jun 28;(6):CD006201.
3. Clin Infect Dis 2013 Jan ;56(2):195-203.
4. Acta Trop 2015 Oct ;150:4-13.
5. Cureus 2021 Aug ;13(8):e16881.
6. Cochrane Database Syst Rev 2021 Dec 09;12:CD015374.
7. Am J Trop Med Hyg 2012 Aug ;87(2):264-6.
8. ProMED <promedmail.org> archive: 20120604.1156132
9. Res Vet Sci 2012 Dec ;93(3):1225-30.
10. Vet Parasitol 2010 Dec 15;174(3-4):317-22.

Tuberculosis

Agent	BACTERIUM. Actinomycetes, *Mycobacterium tuberculosis* An aerobic acid-fast bacillus
Reservoir	Human, Cattle, Zoonotic
Vector	None
Vehicle	Air, Dairy products, Respiratory or pharyngeal acquisition
Incubation Period	4w - 12w (primary infection)
Diagnostic Tests	Microscopy. Culture. Nucleic acid amplification. Inform laboratory when this diagnosis is suspected.
Typical Adult Therapy	Respiratory isolation. Typical pulmonary infection is treated with 2 months of Isoniazid, Rifampin & Pyrazinamide (with Ethambutol until results of sensitivity testing) , followed by 4 months of Isoniazid and Rifampin alone. MDR tuberculosis - 5 drugs (including Pyrazinamide and/or Ethambutol if possible) for at least 6 months, followed by 4 drugs for 18-24 months.[1] [2] [3]
Typical Pediatric Therapy	As for adult
Vaccine	BCG vaccine
Clinical Hints	- Cough, "night sweats" and weight loss - Most infections represent reactivation of old foci in lungs, brain, bone, kidneys etc - Often presents as prolonged fever (FUO) or infection of bone, meninges, kidneys or other organs
Synonyms	Consumption, Mycobacterium africanum, Mycobacterium bovis, Mycobacterium canettii, Mycobacterium caprae, Mycobacterium orygis, Mycobacterium pinnipedii, Mycobacterium tuberculosis, Oryx bacillus, Phthisis, TB, TB meningitis, Tuberculose, Tuberculose miliar, Tuberculosi, Tuberculous meningitis, Tuberkulose, White plague. ICD9: 010,012,013,014,015,016,017,018 ICD10: A15,A16,A17,A18,A19

Tuberculosis in Israel

Israel:

Routine BCG vaccination was introduced in 1955; and abandoned for Israeli infants in 1982, and for children in 1987.

- Tuberculosis - WHO-UNICEF est. % BCG coverage was 75 in 1980; 70 in 1981; 68 in 1982.

- 12,232 cases of tuberculosis and 3,901 tuberculosis deaths were reported during 1921 to 1938.
- The peak reporting year was 1953 (95.3 cases per 100,000).

Demography

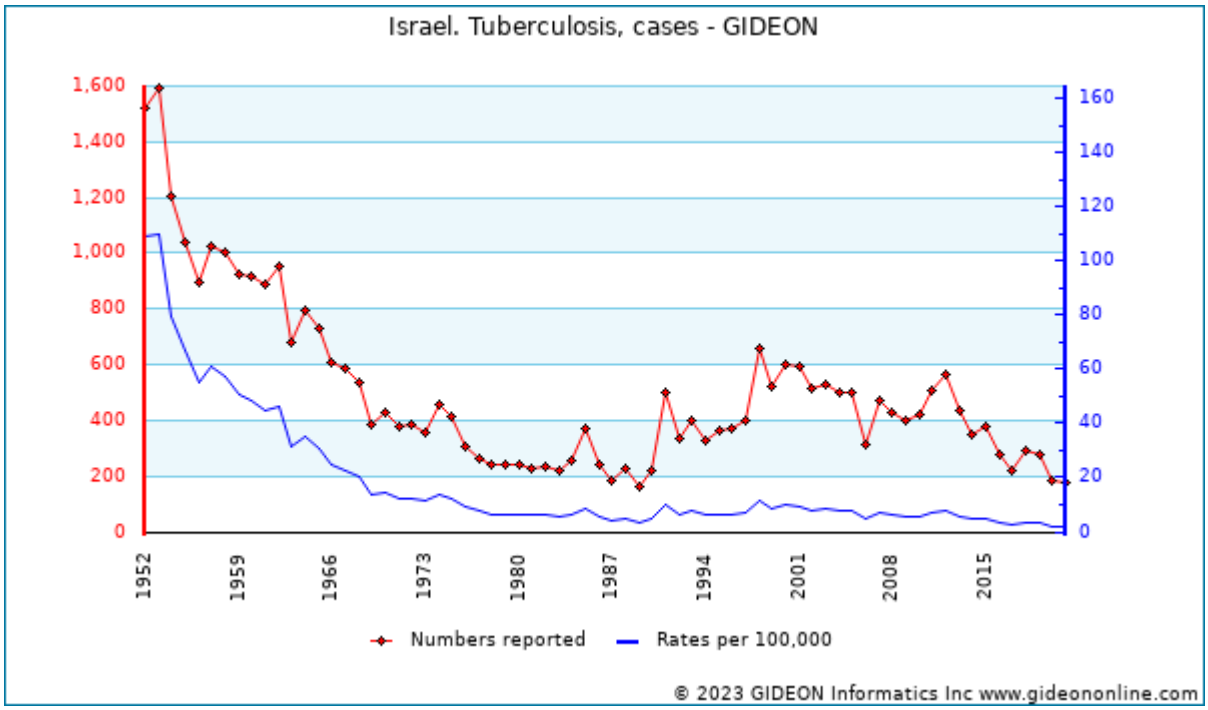
- 1954 to 1959 - 61% of tuberculosis cases reported were below the age of 29.
- 1953 to 1989 - Over 50% of cases were above the age of 65.
- 2000 to 2009 - Migrant workers accounted for 586 cases (13.2% of total tuberculosis).

Tuberculosis among immigrants

- 1986 (publication year) - Tuberculosis was diagnosed in 5.3% of Ethiopian immigrants hospitalized in Israel. [4]
- 1989 to 1996 - Rates among immigrants from the former Soviet Union were 38 to 172 per 100,000; 500 to 3,000 per 100,000 among Ethiopian immigrants.
- 1991 - 55% of patients were immigrants from Ethiopia and 4% immigrants from the former Soviet Union)
- 1992 - 56.8% of patients were immigrants from Ethiopia and the former Soviet Union
- 1995 - 11.3% of patients were immigrants from Ethiopia and 17% from the former Soviet Union

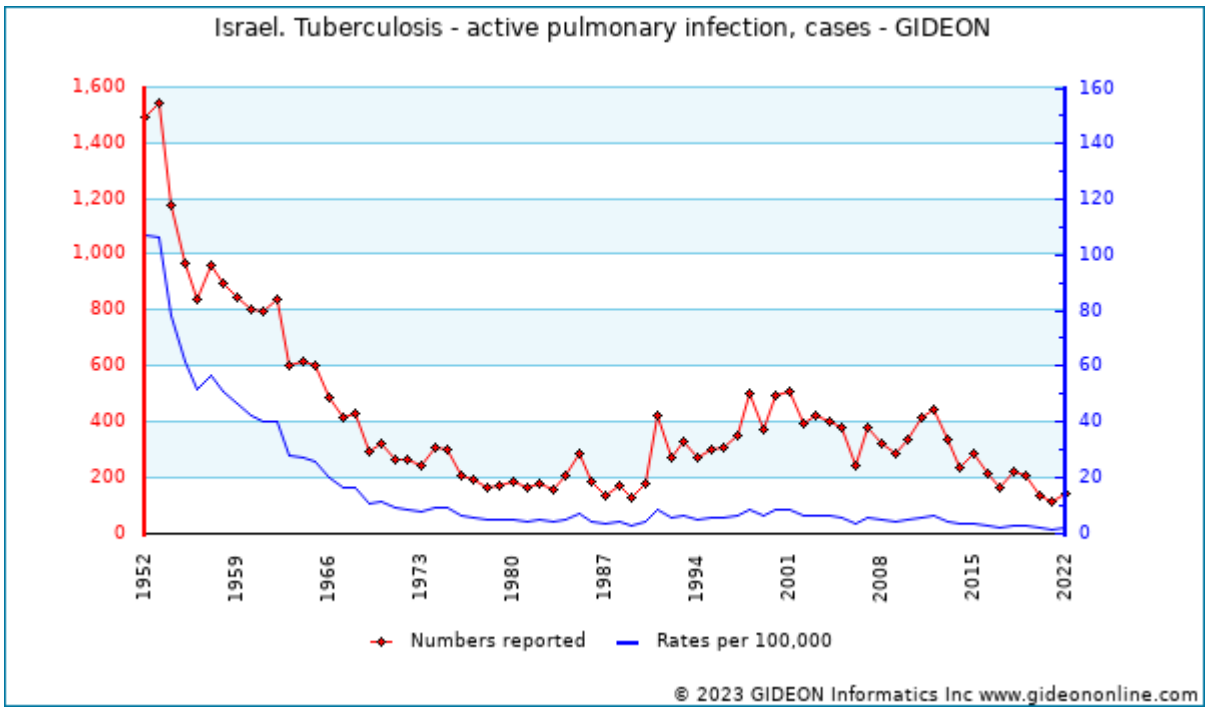
86% of reported tuberculosis is pulmonary infection.

Tuberculosis has been a reportable disease since 1952.

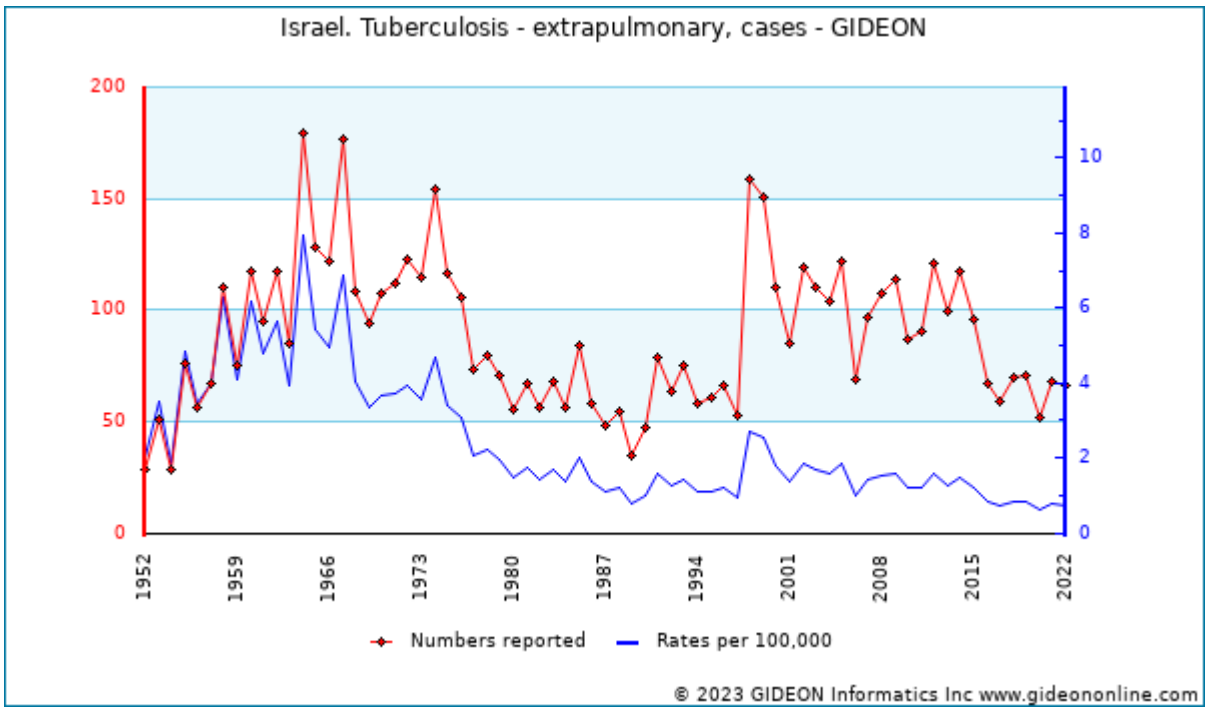


Graph: Israel. Tuberculosis, cases

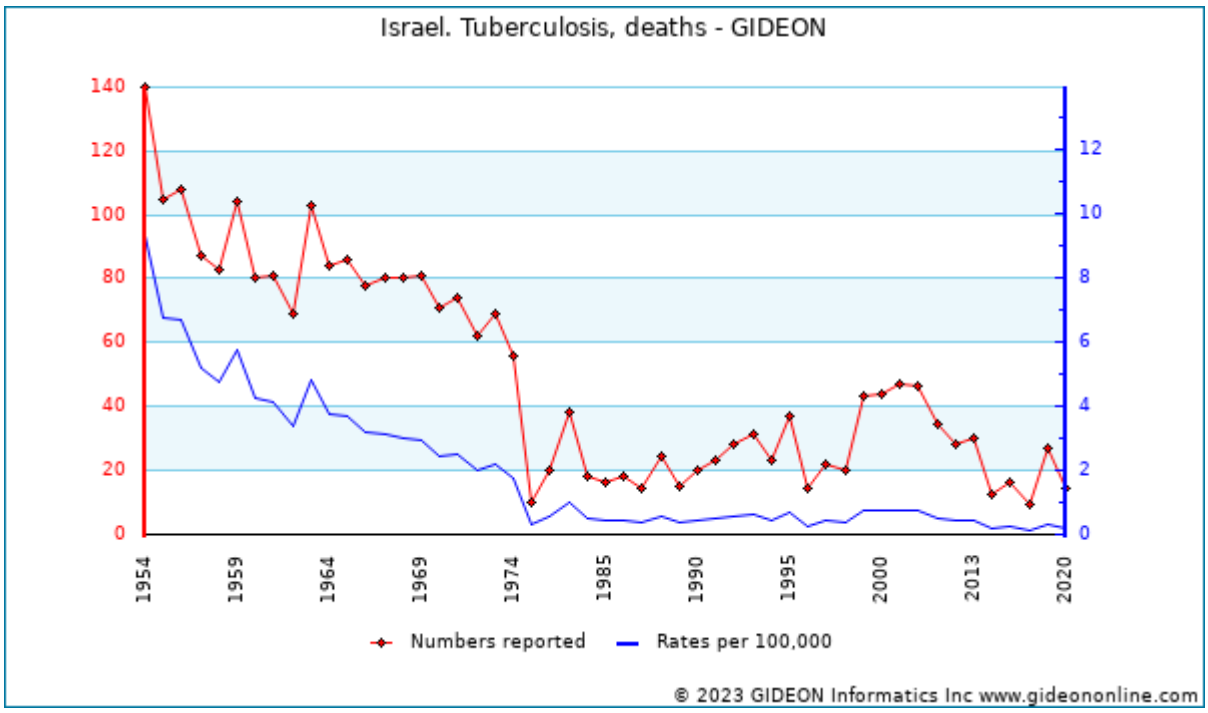
Notes:
1. Figures denote new cases of active tuberculosis.



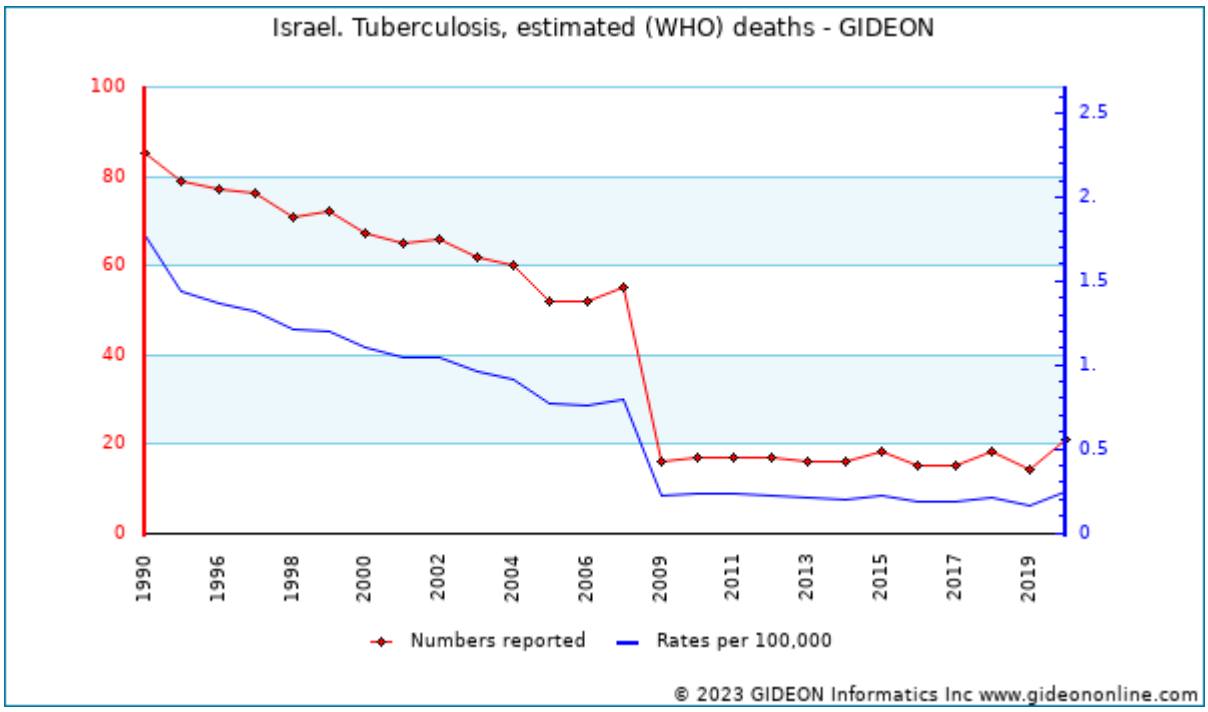
Graph: Israel. Tuberculosis - active pulmonary infection, cases



Graph: Israel. Tuberculosis - extrapulmonary, cases



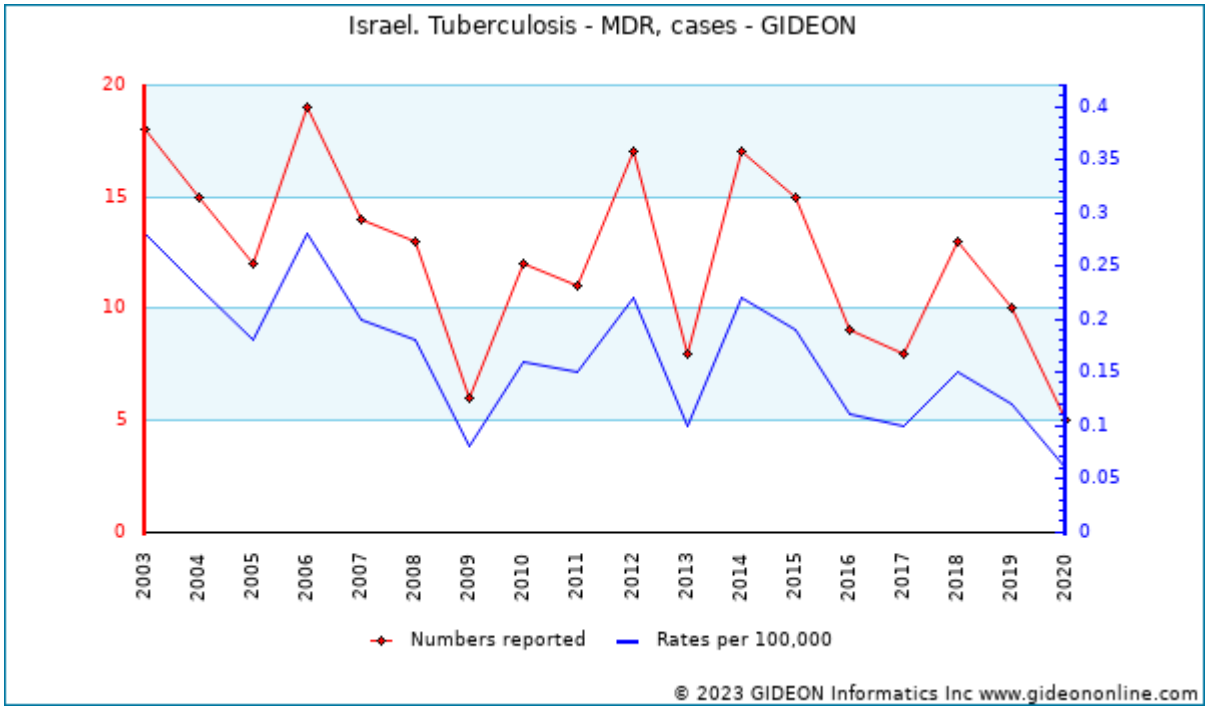
Graph: Israel. Tuberculosis, deaths



Graph: Israel. Tuberculosis, estimated (WHO) deaths

Tuberculosis and HIV

- 1990 to 1993 - 15 cases of combined AIDS and tuberculosis were reported.
- 2000 to 2006 - 8.8% of patients hospitalized for tuberculosis were HIV-positive - 61.2% of the latter were immigrants from Ethiopia and 20.4% from the former Soviet Union.



Graph: Israel. Tuberculosis - MDR, cases

Notes:

1. Also see reference [5]

Drug resistance

- 1992 - 12.6% of isolates were resistant to one or more drugs
- 1995 - 23% of isolates were resistant to one or more drugs.
- 2003 to 2007 - 5% of MDR TB isolates were found to be XDR. [6]
- 2010 - INH resistance / MDR-TB was identified in 11.4% / 4.9% of new cases. [7]

Bovine infection

Bovine infection was eradicated from Israel in 1973. [8]

- 1990 to 1991 - An case of bovine infection was reported in the Golan Heights, and 457 cattle were slaughtered as a precautionary measure. [9]
- 1992 to 2012 - Three cases of tuberculosis were reported in cattle - 2 in 1997 and 1 in 1999.
- 1999 - An outbreak was reported among grazing cattle on the Golan Heights.
- 2018 - An outbreak (19 cases) among cattle in Ashkelon was ascribed to contact with an infected human worker [10] ; and infection (*Mycobacterium caprae*) was identified in a calf imported from Portugal. [11]
- 2019 - An outbreak (48 cases) was reported among cattle in the Beit She'an Valley. [12] [13]
- 2020 - An infected bovine was identified in Meirav.
- 2021 - An infected bovine was identified in the Kinneret region [14] ; two infected goats in Kibbutz Kfar Ruppin [15] ; and captive spotted deer (*Axis axis*) in Hamat Gader. [16]

Notable outbreaks

Years	Region	Setting	Cases	Population	Notes
1962*		kibbutz			[17]
1987 - 1996		psychiatric hospital	39		[18]
1998 - 1999	Hadera	boarding school	6		[19]
2012 - 2016	Tel Aviv		29		Outbreak involved 26 migrants from Africa and three immigrant residents at a nursing home [20]
2014*		rural Arab community	10		6 confirmed and 4 probable cases was associated with a tuberculous incarcerated immigrant [21]
2014*		reception center	6	immigrants	Outbreak at a reception center for Ethiopian immigrants to Israel [22]

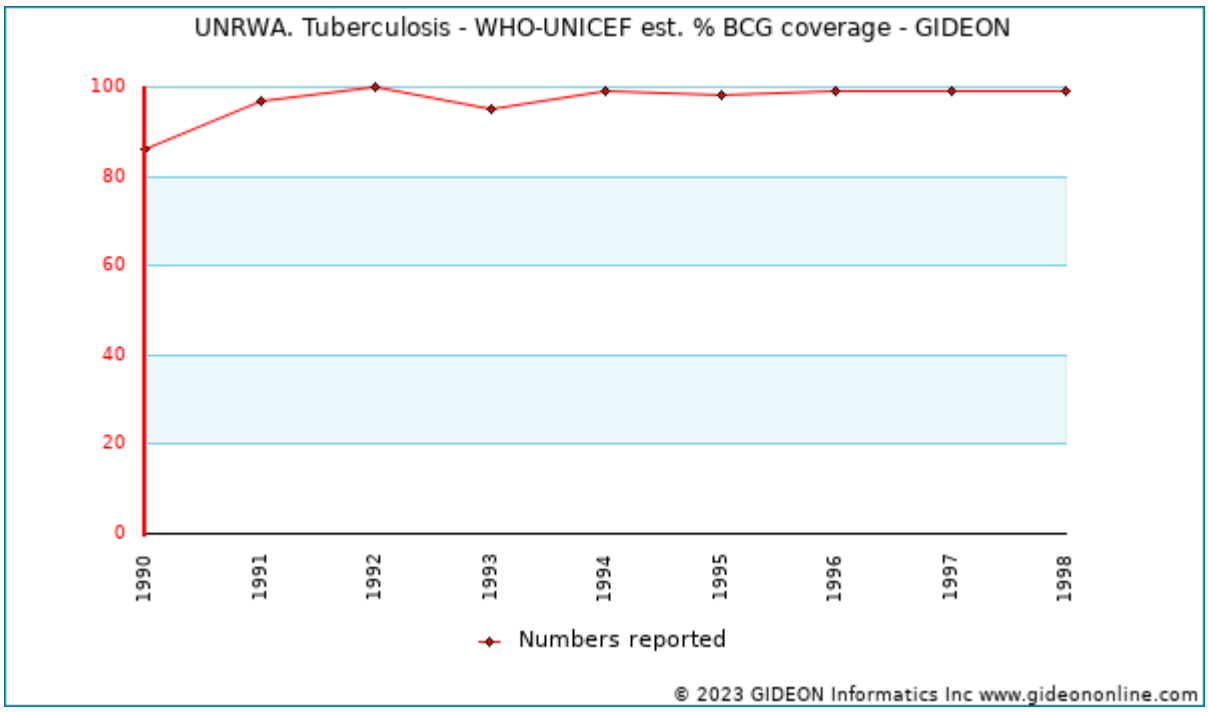
***** indicates publication year (not necessarily year of outbreak)

UNRWA, West Bank and Gaza:

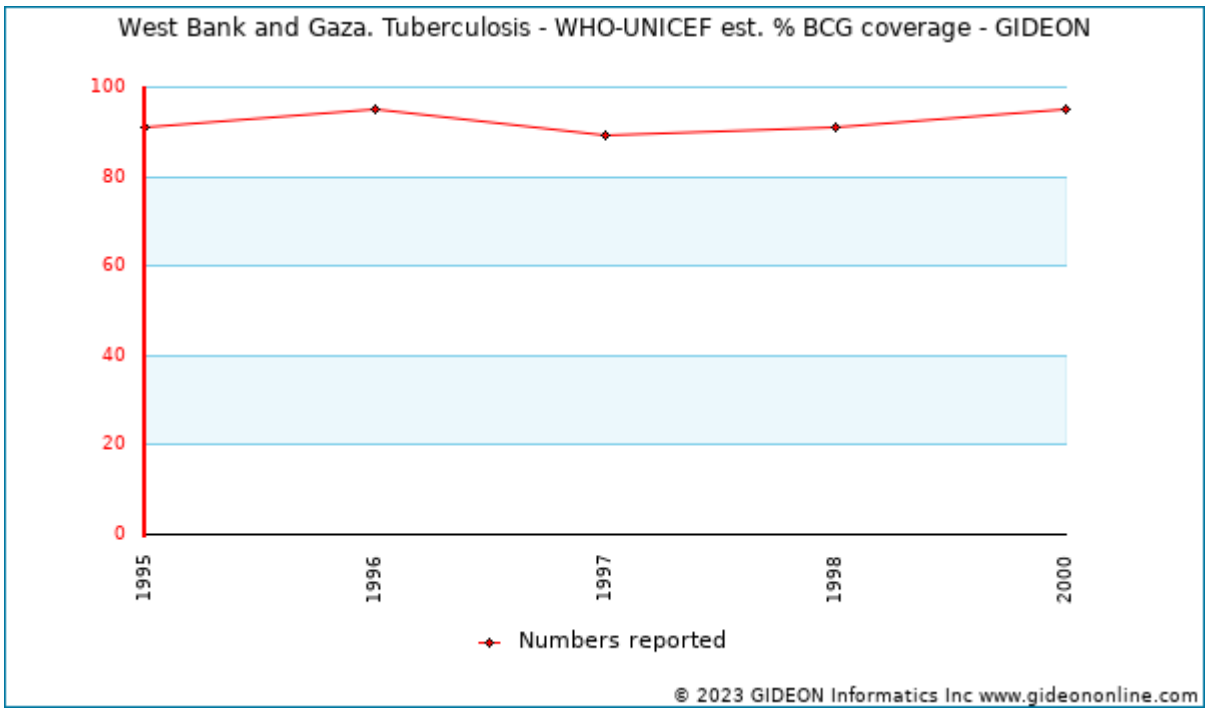
Vaccine Schedule:

DTaP - 2,4,6,12 months
DTaPHibIPV - 2,4,6,12 months
HPV - 13 years; +6 months
HepA - 18, 24 months
HepB - birth; 1,6 months
IPV - 7 years
MMRV - 12 months; 6 years
OPV - 6,18 months
Pneumo ps - >=65 years
Pneumo-conj - 2,4,12 months
Rotavirus - 2,4,6 months
Td - every 10 years (adults)
TdaP - 13 years
TdaPIPV - 7 years

BCG is given to the population administered by UNRWA; and in "some regions" of the West Bank and Gaza Strip

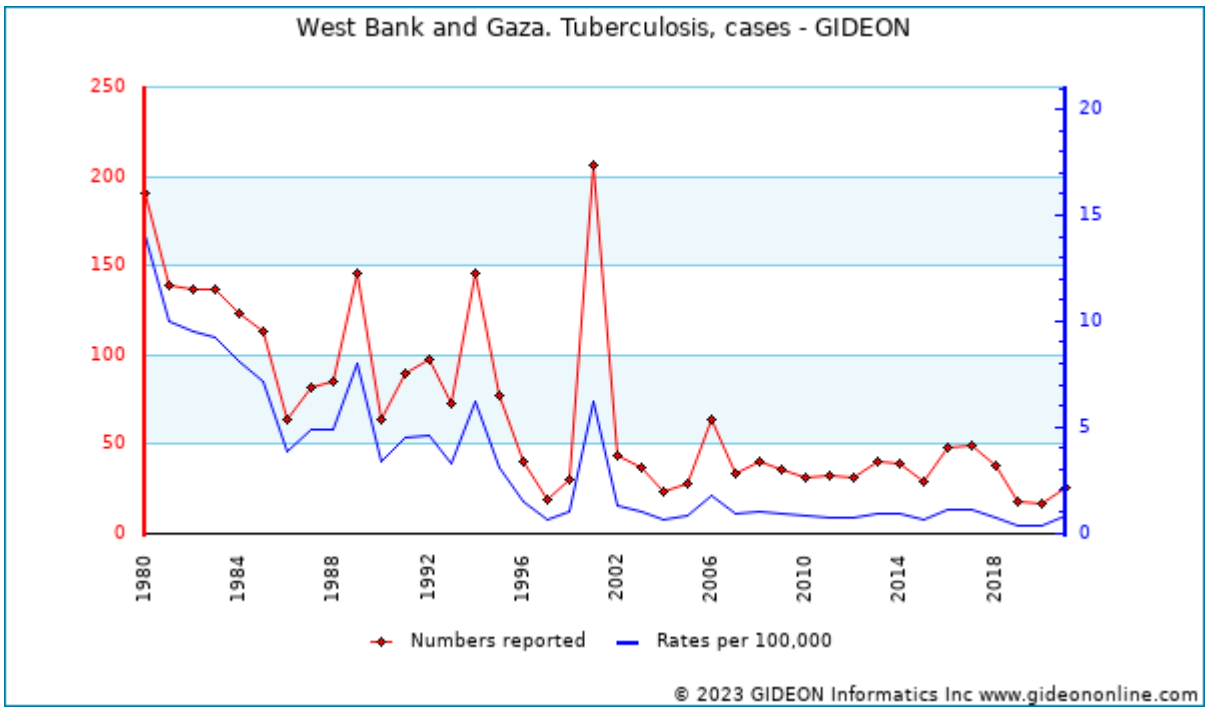


Graph: UNRWA. Tuberculosis - WHO-UNICEF est. % BCG coverage



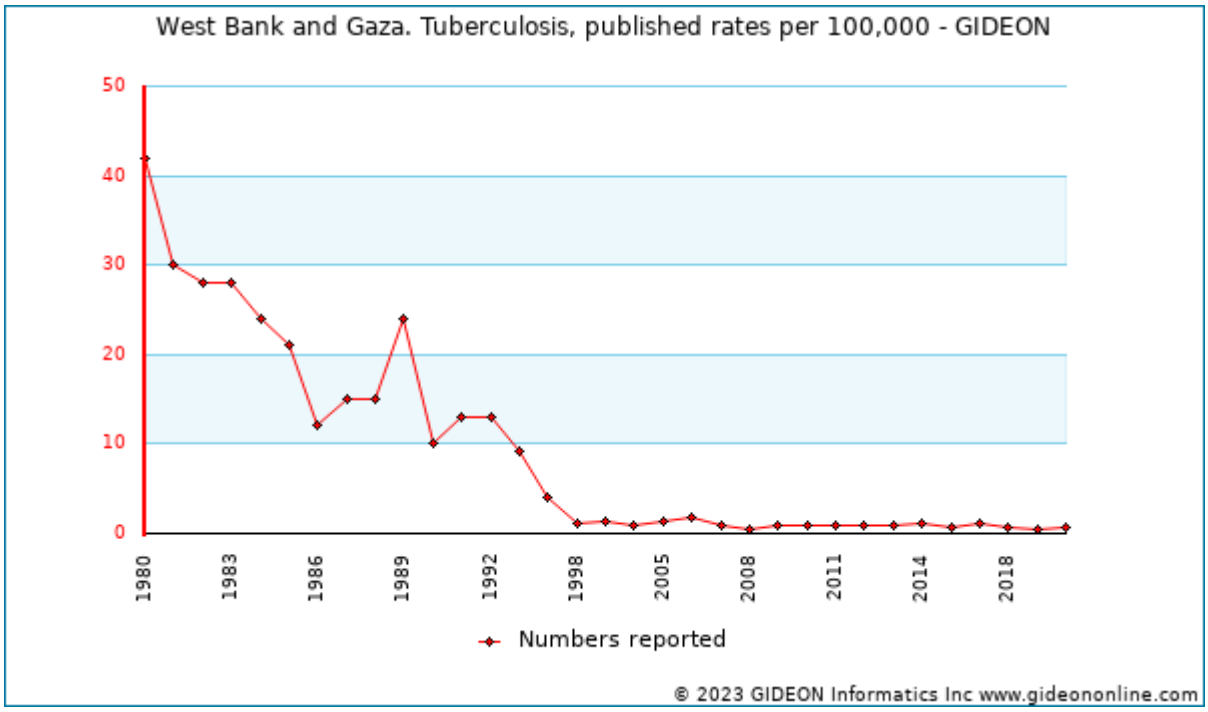
Graph: West Bank and Gaza. Tuberculosis - WHO-UNICEF est. % BCG coverage

An outbreak (225 cases, 1 fatal) of BCG complications was reported in Gaza in 2001, and controlled by reverting to a less virulent vaccine lot.



Graph: West Bank and Gaza. Tuberculosis, cases

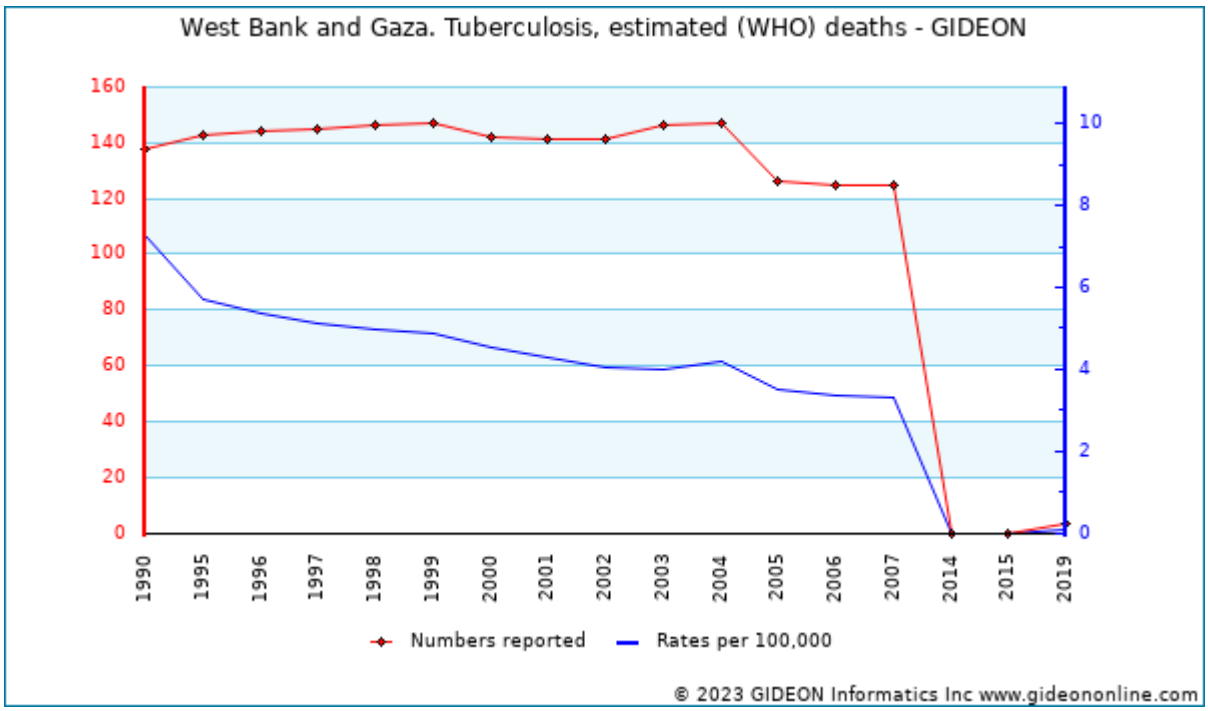
Notes:
Individual years:
2011 - 8 cases were reported in Gaza



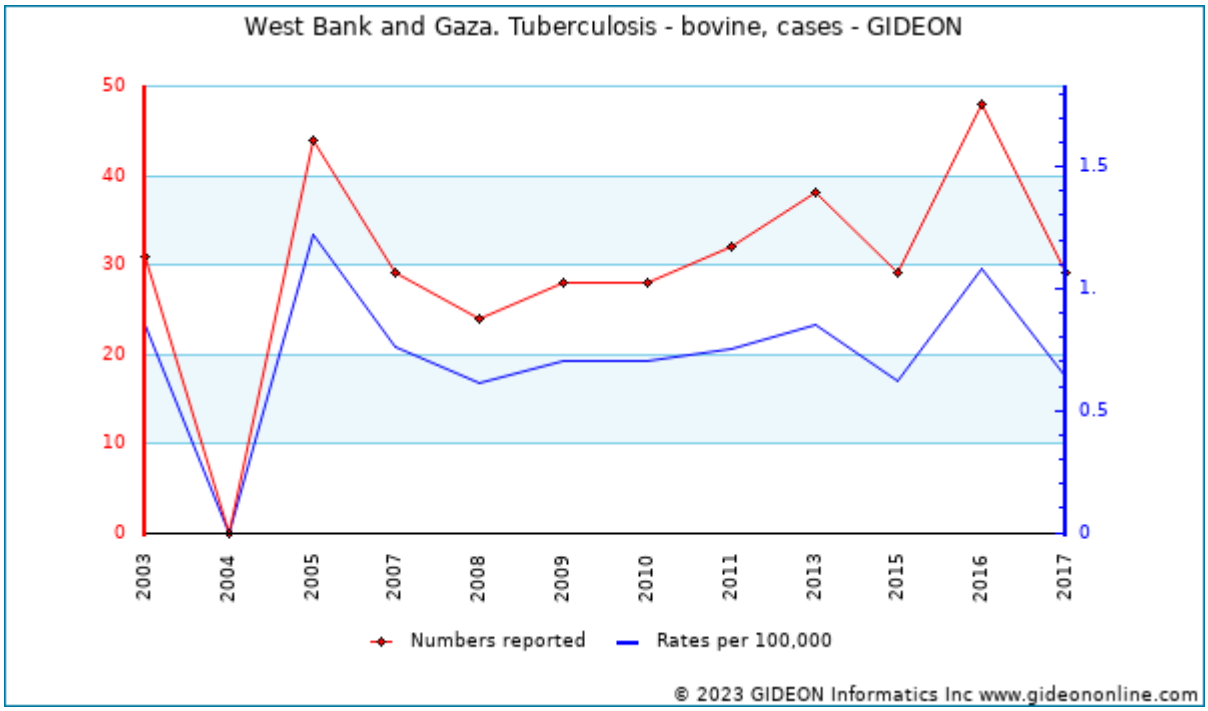
Graph: West Bank and Gaza. Tuberculosis, published rates per 100,000

Notes:
Individual year:
2006 - The rate of tuberculosis in the West Bank was estimated at 21 per 100,000 - mean age 15 to 44 years, and m/f

ration 1.8/1. [23]



Graph: West Bank and Gaza. Tuberculosis, estimated (WHO) deaths



Graph:
West Bank and Gaza. Tuberculosis - bovine, cases

References

1. 2018 ;

2. Bull World Health Organ 2018 Mar 01;96(3):173-184F.

3. Tuberc Respir Dis (Seoul) 2018 Jan ;81(1):6-12.
4. J Trop Med Hyg 1986 Jun ;89(3):107-12.
5. Emerg Infect Dis 2009 Jul ;15(7):1052-60.
6. Euro Surveill 2010 Mar 18;15(11)
7. ProMED <promedmail.org> archive: 20120206.1034331
8. ProMED <promedmail.org> archive: 20190209.6307221
9. ProMED <promedmail.org> archive: 20210314.8246025
10. ProMED <promedmail.org> archive: 20180112.5555373
11. ProMED <promedmail.org> archive: 20190209.6307221
12. ProMED <promedmail.org> archive: 20190319.6374410
13. ProMED <promedmail.org> archive: 20190403.6402973
14. ProMED <promedmail.org> archive: 20210314.8246025
15. ProMED <promedmail.org> archive: 20210508.8351900
16. ProMED <promedmail.org> archive: 20210724.8542695
17. Harefuah 1962 Mar 15;62:200-3.
18. Harefuah 1998 Feb 01;134(3):168-72, 248, 247.
19. Eur Respir J 2006 Nov ;28(5):986-91.
20. Isr J Health Policy Res 2018 Jul 15;7(1):36.
21. Int J Tuberc Lung Dis 2014 Dec ;18(12):1502-4.
22. Scand J Infect Dis 2014 Dec ;46(12):906-10.
23. Trop Med Int Health 2011 Mar ;16(3):360-7.

Tularemia

Agent	BACTERIUM. *Francisella tularensis* An aerobic gram-negative bacillus
Reservoir	Rabbit, Hare, Muskrat, Beaver, Tick, Wild bird, Dog, Cat, Zoonotic
Vector	Deer fly (*Chrysops* spp), Tick, Mosquito
Vehicle	Bite, Contact, Meat, Eye inoculation, Air, Dust, Water, Respiratory or pharyngeal acquisition, Organ transplantation
Incubation Period	3d - 5d (range 1d - 14d)
Diagnostic Tests	Culture or direct fluorescent staining of exudates. Serology. Nucleic acid amplification.
Typical Adult Therapy	Gentamicin or Tobramycin 1.7 mg/kg q8h X 7 to 10d OR (mild disease) Doxycycline 100 mg PO BID X 14-21d OR (mild disease) Ciprofloxacin 500 mg PO BID X 10-14d Add Chloramphenicol, Doxycycline or Ciprofloxacin if evidence for central nervous system infection.[1] [2]
Typical Pediatric Therapy	Gentamicin or Tobramycin 1.7 mg/kg q8h X 7-10d. Add Chloramphenicol if evidence for central nervous system infection.
Vaccine	Tularemia vaccine
Clinical Hints	- Often follows contact with small mammals (usually rabbits) or tick-bite - Fever, dermal eschar, lymphadenopathy, myalgia and diarrhea - May present as overwhelming septicemia or pneumonia - Case-fatality rates are 1% (treated) to 6% (untreated)
Synonyms	Conjunctivitis tularensis, Deerfly fever, Francisella hispanensis, Francisella novicida, Francisella philomiragia, Francisella salimarina, Francisella tularensis, Harpest, Hasenpest, Lemming fever, Market men's disease, Ohara's disease, Pahvant Valley plague, Rabbit fever, Tularamie, Water rat trapper's disease, Yao-byo disease, Yatobyo. ICD9: 021 ICD10: A21

Although Tularemia is not endemic to Israel, imported, expatriate or other presentations of the disease have been associated with this country.

Tularemia in Israel

Tularemia has never been reported in Israel.

References

1. Front Cell Infect Microbiol 2017 ;7:122.

2. J Antimicrob Chemother 2017 Dec 14;

Tungiasis

Agent	PARASITE - Insecta Siphonaptera (Flea), Tungidae: *Tunga penetrans* and *T. trimamillata* ("sand fleas")
Reservoir	Pig, Dog, Various other mammals, Zoonotic
Vector	None
Vehicle	Contact
Incubation Period	8d - 12d
Diagnostic Tests	Identification of parasite.
Typical Adult Therapy	Extraction of parasite Ivermectin has been advocated in some publications.
Typical Pediatric Therapy	As for adult
Clinical Hints	- Painful papule or nodule, usually on the feet - may be multiple - Onset 1 to 2 weeks after walking on dry soil - Secondary infections and tetanus are reported
Synonyms	Bicho de pe, Chica, Chigger, Chigoe flea, Jigger, Nigua, Puce-chique, Tu, Tunga penetrans, Tunga trimamillata, Tungosis. ICD9: 134.1 ICD10: B88.1

Although Tungiasis is not endemic to Israel, imported, expatriate or other presentations of the disease have been associated with this country.

Tungiasis in Israel

Sporadic imported cases are encountered. [1] [2] [3]

Notable outbreaks

Years	Cases	Population	Notes
2011	9	travelers	Outbreak among Israeli travelers returning from Ethiopia. [4]

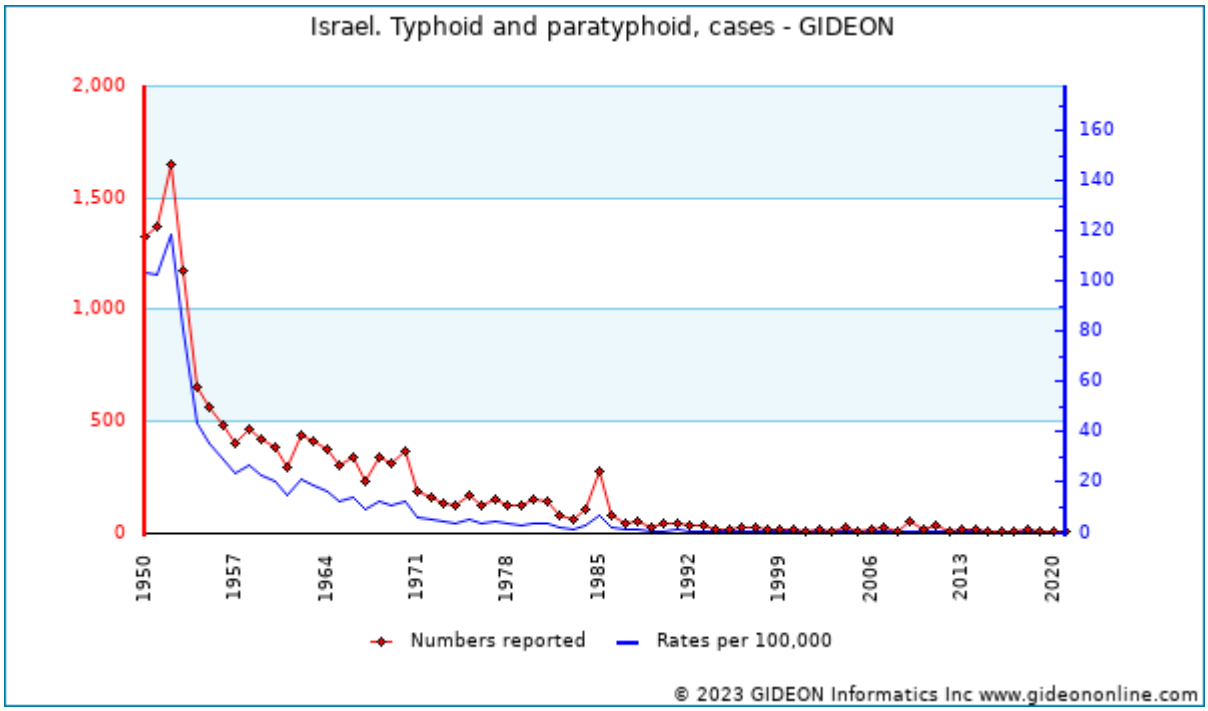
References

1. Isr Med Assoc J 1999 Dec ;1(4):279.
2. Isr J Med Sci 1989 May ;25(5):280-1.
3. Dermatol Online J 2003 Aug ;9(3):10.
4. Travel Med Infect Dis 2012 Sep ;10(5-6):220-3.

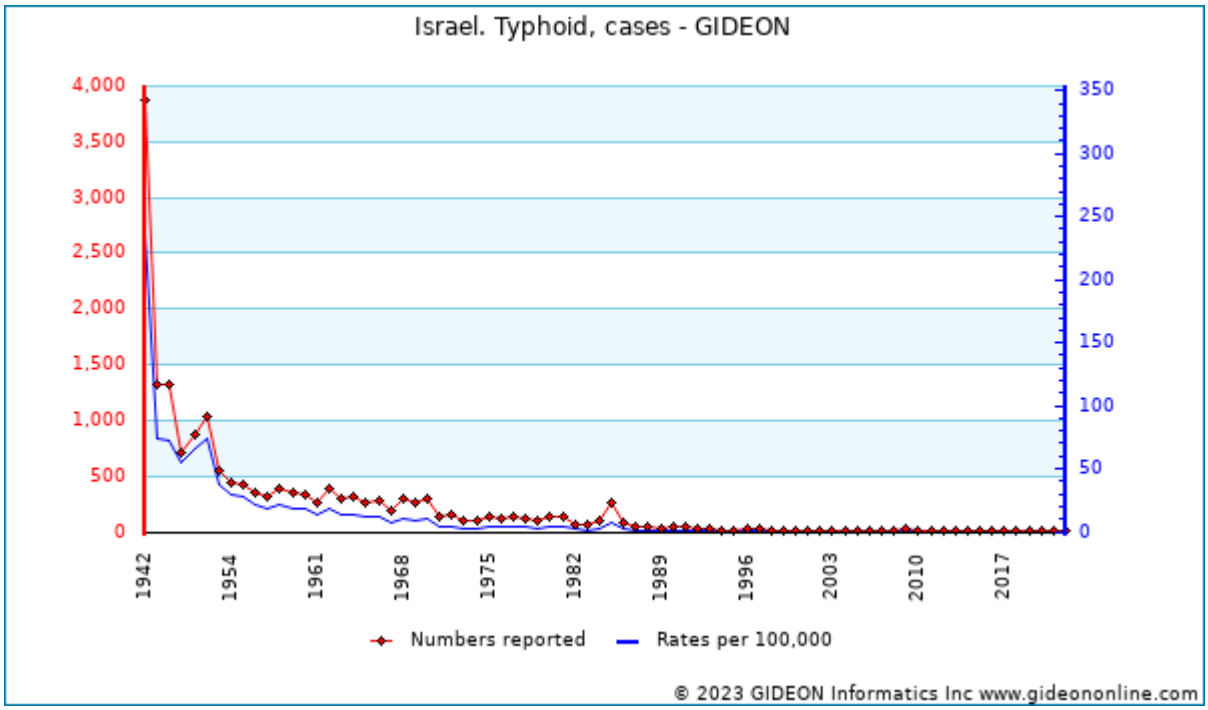
Typhoid and enteric fever

Agent	BACTERIUM. *Salmonella* serotype Typhi (certain other *Salmonella* species cause 'paratyphoid' fever) A facultative gram-negative bacillus
Reservoir	Human
Vector	None
Vehicle	Fecal-oral, Food, Fly, Water
Incubation Period	15d - 21d (range 5d - 34d)
Diagnostic Tests	Culture (blood, urine, sputum culture). Stool usually negative unless late, untreated infection. Serology.
Typical Adult Therapy	Stool precautions Ceftriaxone 2 g IV q12h to q 24h X 10-14d. OR Azithromycin 1 gram PO on day 1; then 500 mg days 2 to 7. Fluoroquinolone resistance is common - not recommended for empiric therapy. Add corticosteroids if evidence of shock or decreased mental status.[1] [2] [3] [4]
Typical Pediatric Therapy	Stool precautions Ceftriaxone 50 to 100 mg/kg IV daily X 10-14d. OR Azithromycin 15 mg/kg PO on day 1; then 7.5 mg/kg on days 2 to 7.
Vaccine	Typhoid - injectable vaccine Typhoid - oral vaccine
Clinical Hints	- Transient diarrhea followed by fever, splenomegaly and obtundation - Rose spots (during second week of illness), leukopenia and relative bradycardia are common - Intestinal perforation or hemorrhage may occur in third to fourth week of illness - Case-fatality rates are 0.8% (treated) to 15% (untreated)
Synonyms	Abdominal typhus, Abdominaltyphus, Buiktyphus, Enteric fever, Febbre tifoide, Febbre tifoidea, Fiebre tifoidea, Paratifoidea, Paratyfus, Paratyphoid, Salmonella serotype Typhi, Tyfoid, Typhoid, Typhoide. ICD9: 002 ICD10: A01

Typhoid and enteric fever in Israel



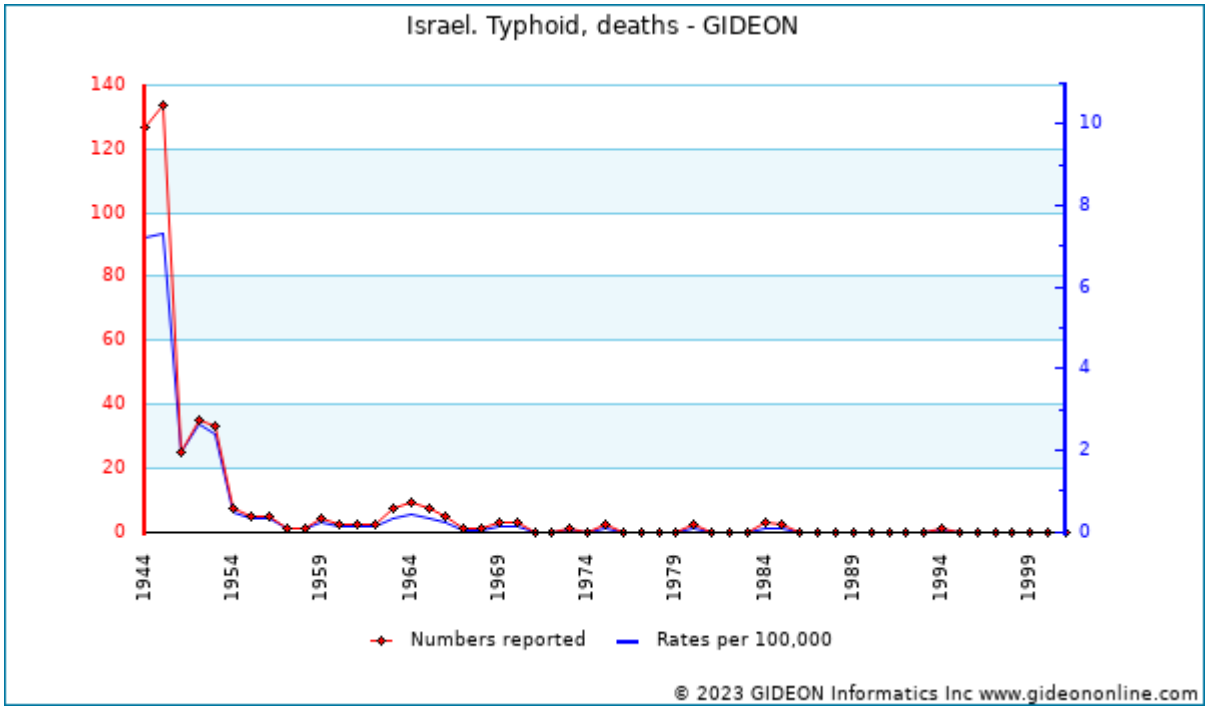
Graph: Israel. Typhoid and paratyphoid, cases



Graph: Israel. Typhoid, cases

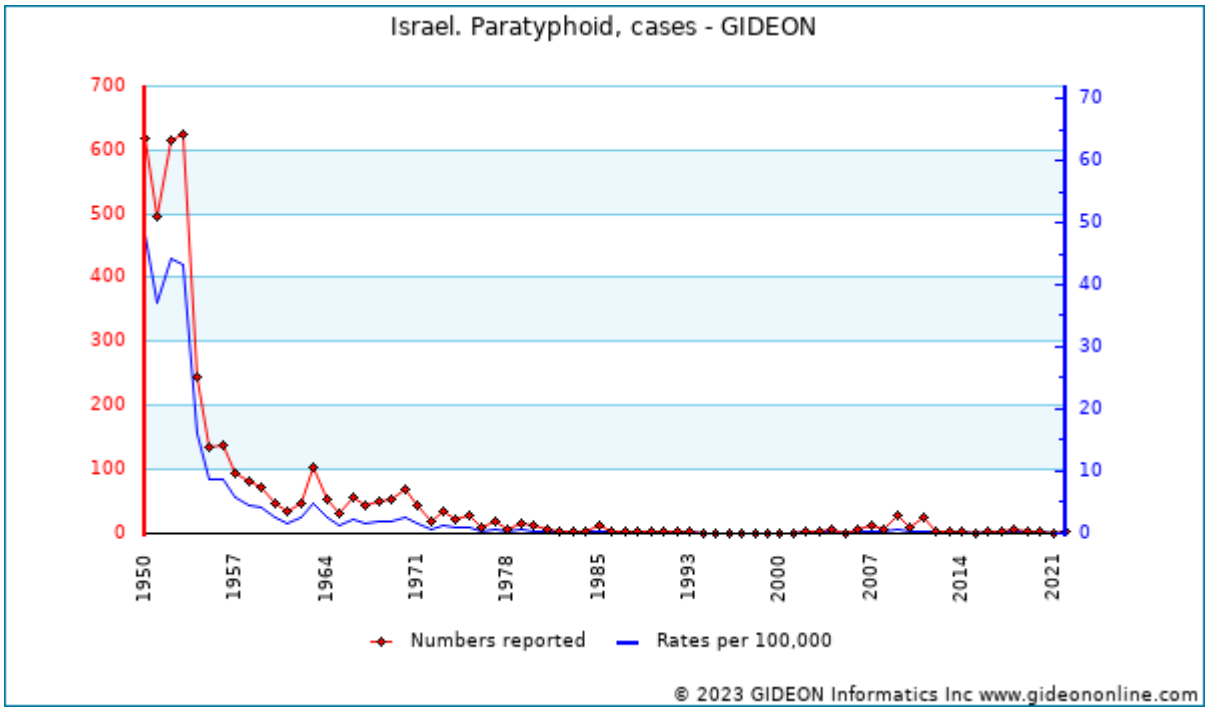
Notes:
1. Typhoid has been officially notifiable since 1951.
2. 12,691 cases of typhoid were reported during 1928 to 1937
3. The mean infection rate was 42.8 per 100,000 per year during 1950 to 1954; 13.9 per 100,000 during 1960 to 1964; 5.0 per 100,000 during 1970 to 1974; 2.3 per 100,000 during 1980-1984.

4. 206 outbreaks were investigated during 1964 to 1975.
5. Typhoid was diagnosed in 121 (1.1%) of Ethiopian immigrants to Israel during 1984 to 1985. [5] ; 9.9% of Ethiopian immigrants hospitalized in Israel (1986 publication) [6]



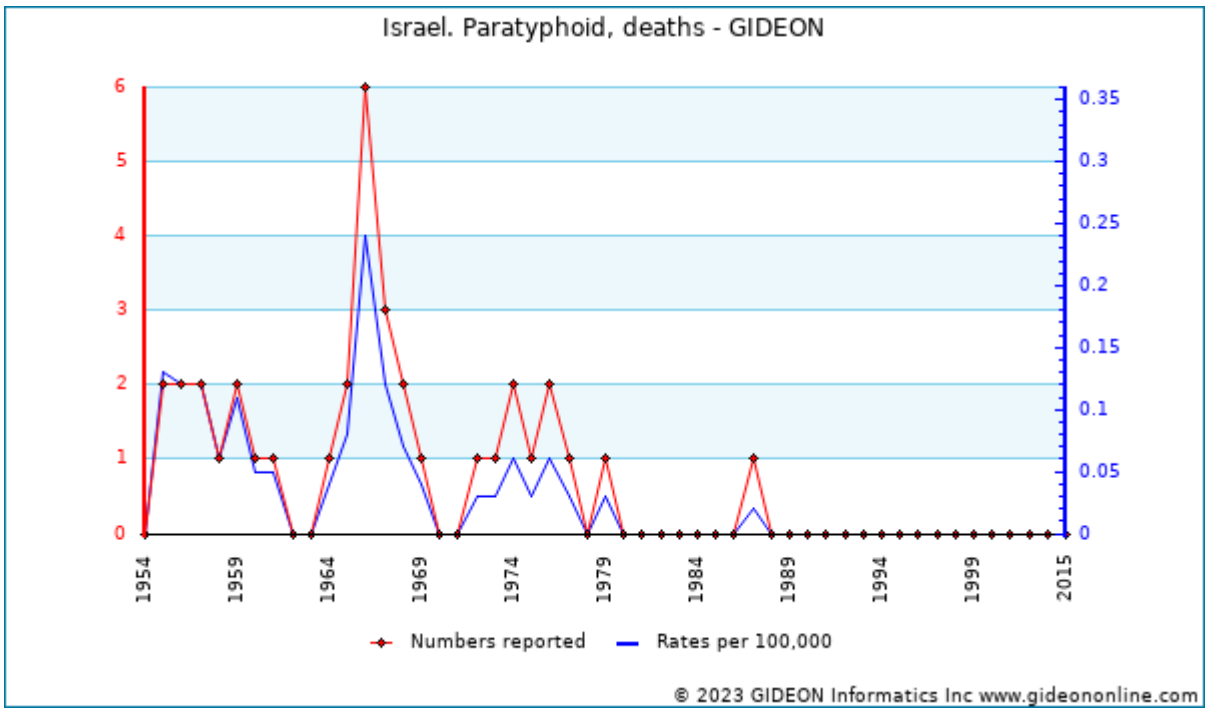
Graph: Israel. Typhoid, deaths

Notes:
1. 1,972 Israelis died of typhoid during 1936 to 1947; 124 during 1950 to 1964.



Graph: Israel. Paratyphoid, cases

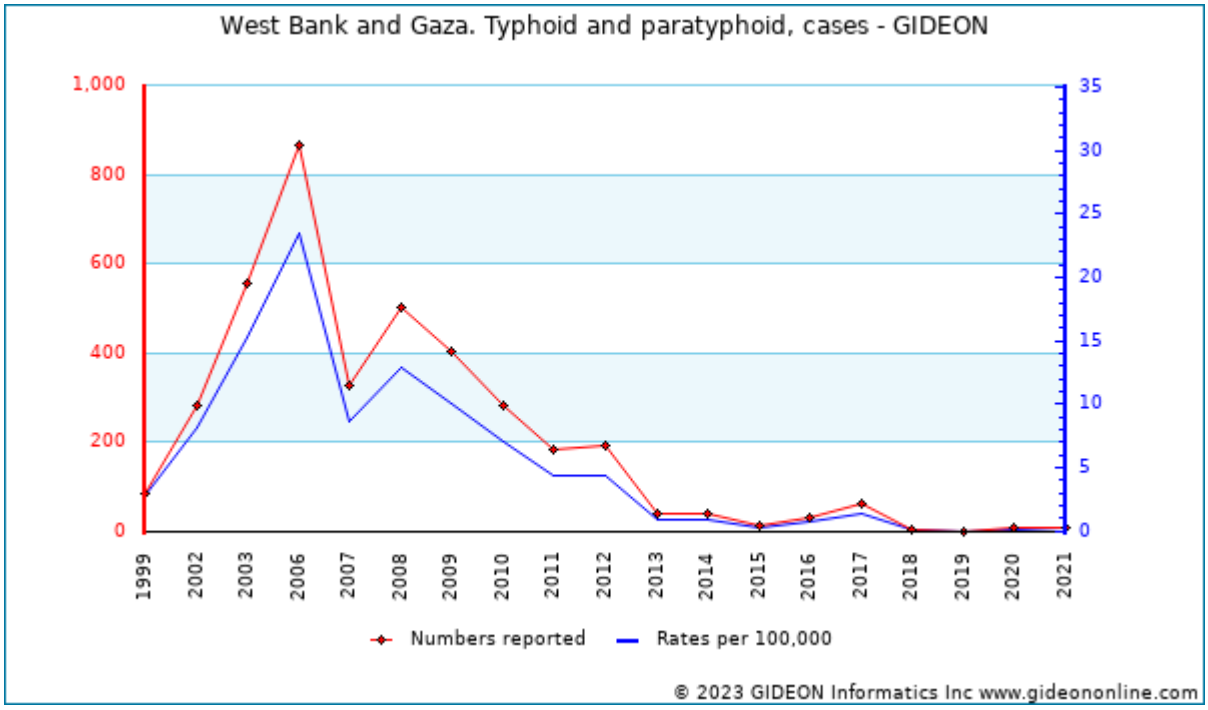
Notes:
1. Paratyphoid has been officially reportable since 1951.
2. Ten Israeli tourists returned from India with paratyphoid (*Salmonella paratyphi* A infection) in 2004. [7]



Graph: Israel. Paratyphoid, deaths

- 1995 to 2003 - 136 cases of enteric fever were confirmed during 1995 to 2003 - 57.4% acquired abroad. All cases in the Arab population were locally-acquired and caused by *Salmonella typhi* [8]

West Bank and Gaza:



Graph: West Bank and Gaza. Typhoid and paratyphoid, cases

Cross-border events

Does not include individual case reports

Years	Acquired by**	Originated in**	Setting	Cases	Notes
2009	Israel	Nepal	travel	37	An outbreak (37 cases) of *Salmonella paratyphi* A infection was reported among Israeli travelers returning from Nepal [9]
2009 to 2010	Israel	Nepal	travel	40	An outbreak (40 cases) of typhoid fever was reported in the Russian Far East, among Israeli tourists who had acquired the infection in Nepal. [10] [11]

** Country or Nationality

Notable outbreaks

Years	Region	Cases	Source	Pathogen	Population	Notes
1985	Haifa	77	water			[12] [13] [14]
2009		37		Paratyphi A	travelers	Outbreak among Israeli travelers returning from Nepal [15]
2009 - 2010	Foreign Country	40			tourists	Outbreak in the Russian Far East, among Israeli tourists who had acquired the infection in Nepal [16] [17]

References

1. Curr Opin Infect Dis 2016 Oct ;29(5):453-8.
2. Clin Infect Dis 2017 Jun 01;64(11):1522-1531.
3. PLoS Negl Trop Dis 2018 Oct 11;12(10):e0006779.
4. Curr Opin Infect Dis 2018 Aug 21;
5. Clin Infect Dis 1994 Dec ;19(6):1144-6.
6. J Trop Med Hyg 1986 Jun ;89(3):107-12.
7. ProMED <promedmail.org> archive: 20041019.2840
8. Am J Trop Med Hyg 2006 Apr ;74(4):540-5.
9. Clin Infect Dis 2014 Feb ;58(3):359-64.
10. ProMED <promedmail.org> archive: 20100111.0125
11. ProMED <promedmail.org> archive: 20100113.0156
12. Am J Med Sci 1988 Jul ;296(1):27-32.
13. Isr J Med Sci 1988 Nov ;24(11):640-3.
14. Isr J Med Sci 1988 Nov ;24(11):637-9.
15. Clin Infect Dis 2014 Feb ;58(3):359-64.
16. ProMED <promedmail.org> archive: 20100111.0125
17. ProMED <promedmail.org> archive: 20100113.0156

Typhus - endemic

Agent	BACTERIUM. *Rickettsia typhi*
Reservoir	Rat, Zoonotic
Vector	Flea (*Xenopsylla* or *Nosopsyllus* spp.)
Vehicle	None
Incubation Period	10d - 12d (range 4d - 18d)
Diagnostic Tests	Serology. Identification of rickettsiae in smear or culture of skin lesions. Nucleic acid amplification.
Typical Adult Therapy	Doxycycline 100 mg BID X 7d[1]
Typical Pediatric Therapy	Doxycycline 2.2 mg/kg BID X 7d (maximum 200 mg/day) OR Chloramphenicol 12.5 mg/kg QID X 7d
Clinical Hints	- Fever, headache and myalgia - Truncal maculopapular rash (present in 60%) appears on days 3 to 5 and persists for 4 to 8 days - Fever resolves after 12 to 16 days - Case fatality rate (untreated) is 2%
Synonyms	Endemic typhus, Murine typhus, Rickettsia typhi, Ship typhus, Tifo murino, Tifus pulgas, Vlektyphus. ICD9: 081.0 ICD10: A75.2

Typhus - endemic in Israel

Time and Place

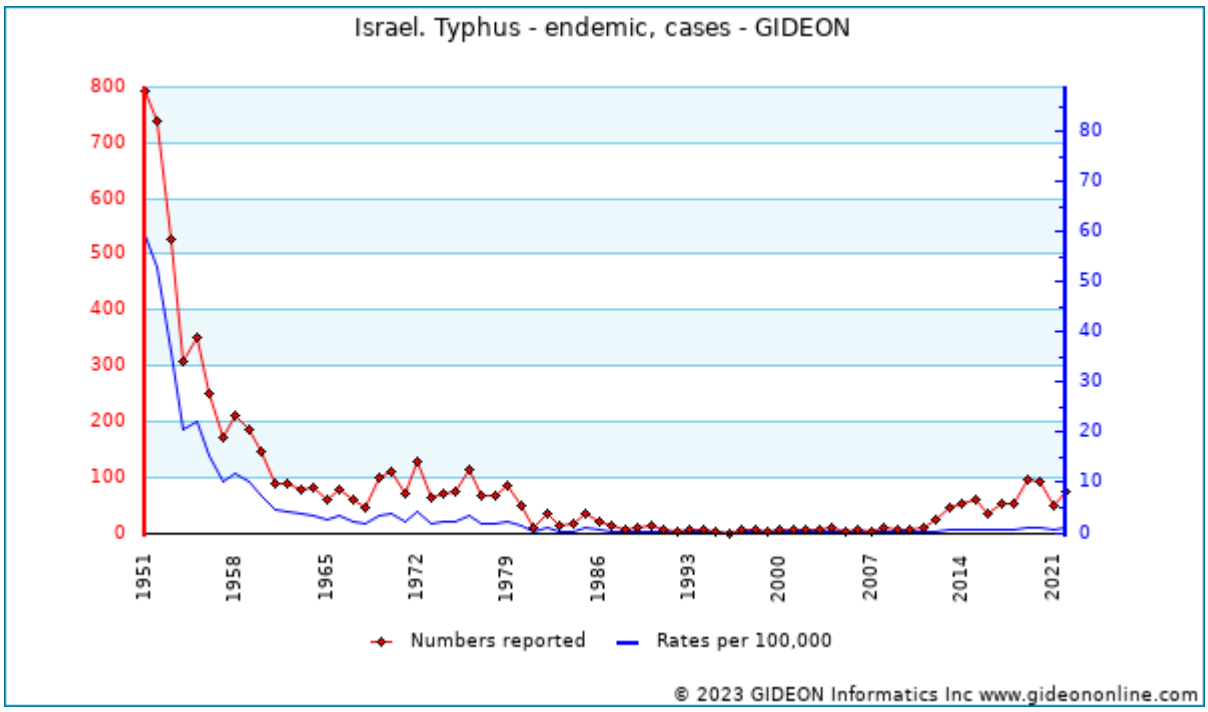
Murine typhus is thought to have been introduced into Israel during the 1920's, by British troops.

- Highest rates occur during July to November.
- The male/female ratio is 2.1.
- Most cases since 1953 have occurred in the areas of Tel Aviv and Haifa.
- High rates are also noted among Bedouin in the Southern region. [2]
- Rates of murine typhus among children hospitalized in the southern region exceed those of spotted fevers (2021 publication) {"p 34420007}

Prevalence surveys

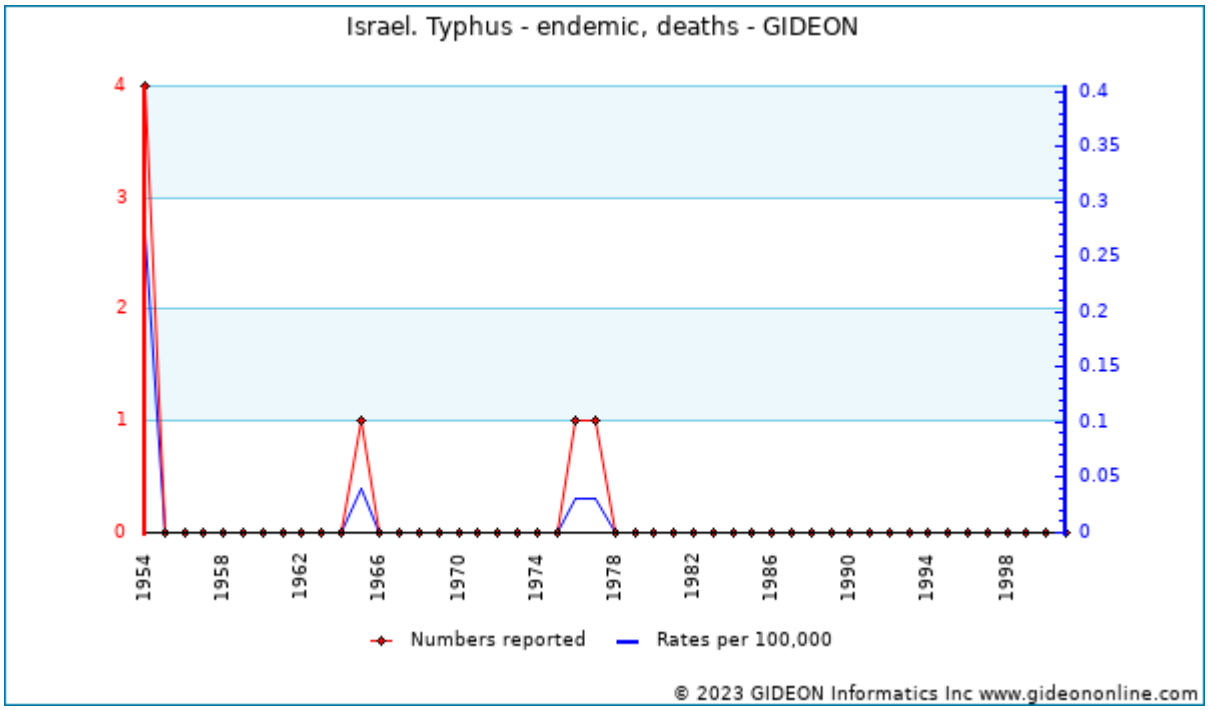
Years	Region	Study Group	%	Notes
2006*	Southern Region	children	13.8	13.8% of undifferentiated febrile illness among Bedouin children in southern Israel (2006 publication) [3]

* indicates publication year (not necessarily year of survey)



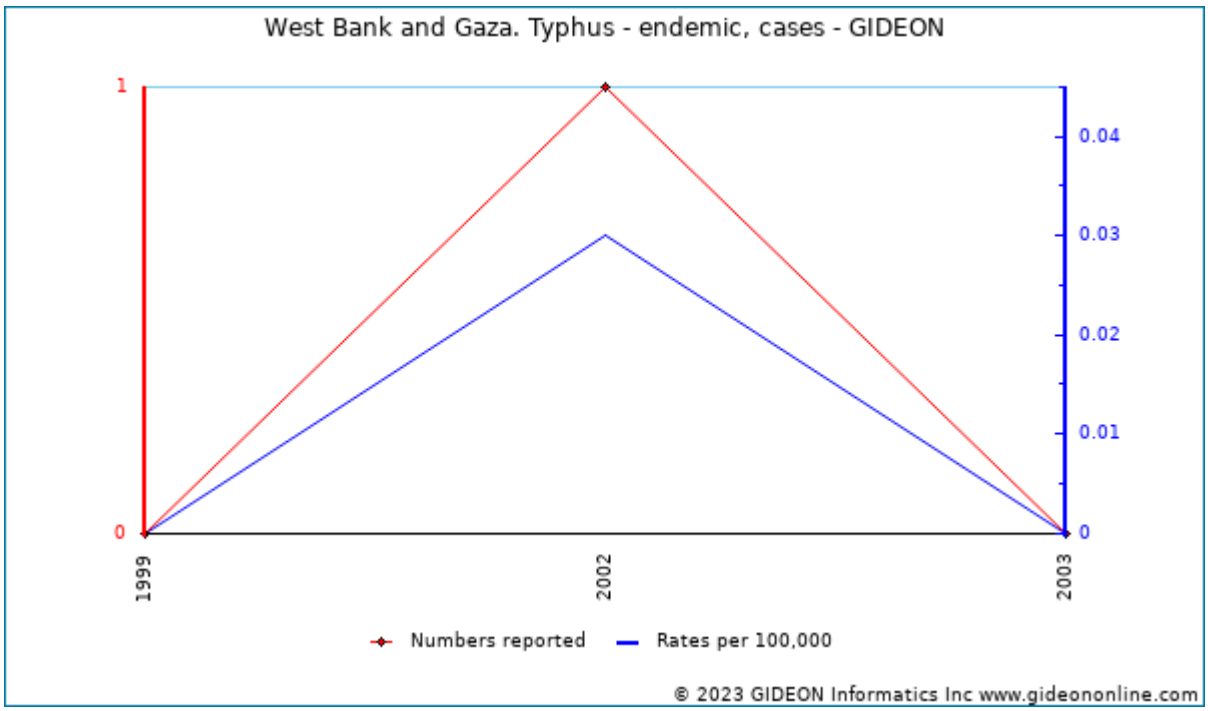
Graph: Israel. Typhus - endemic, cases

Notes:
1. Endemic typhus has been a reportable disease since 1951.
2. 406 cases were reported during 1991 to 2001. [4]
3. 78 cases were treated at a hospital in central Israel during 2006 to 2016. [5]



Graph: Israel. Typhus - endemic, deaths

West Bank and Gaza:



Graph: West Bank and Gaza. Typhus - endemic, cases

736 cases of "Rickettsial disease (OX19-positive)" were reported in 2002; 1,012 in 2003

References

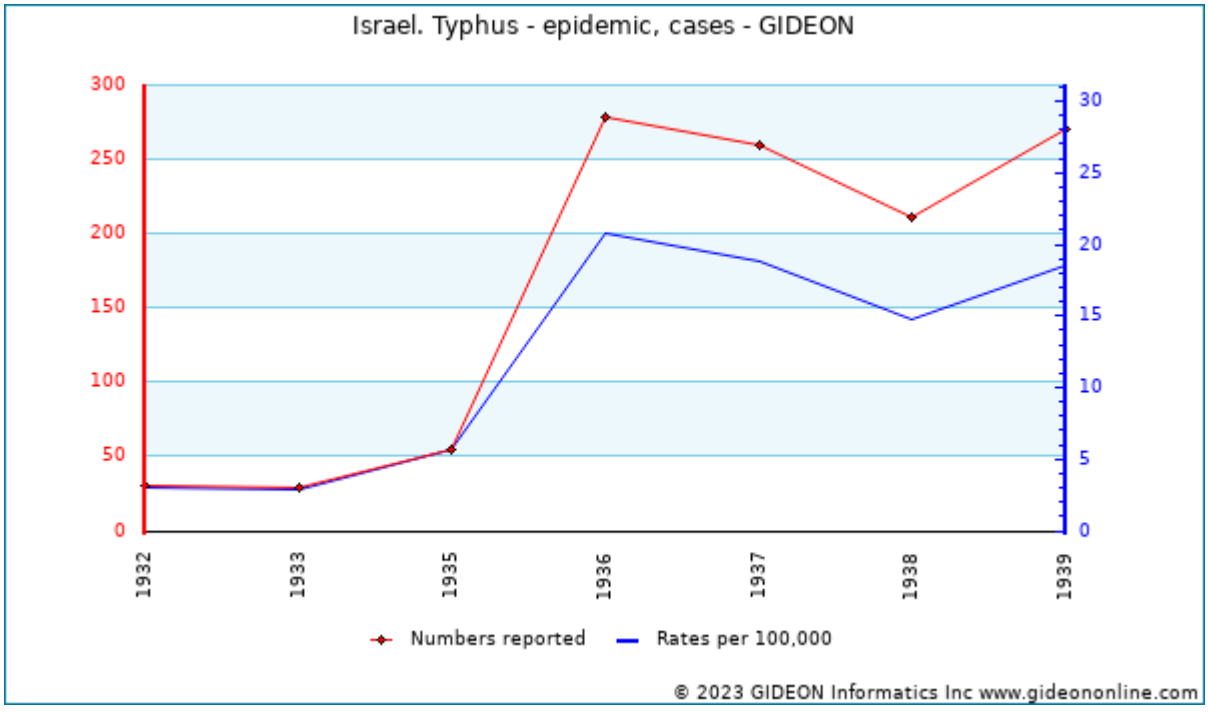
1. Expert Rev Anti Infect Ther 2012 Dec ;10(12):1425-37.
2. Trans R Soc Trop Med Hyg 2001 May-Jun;95(3):301-3.
3. Scand J Infect Dis 2006 ;38(6-7):451-5.
4. Eur J Epidemiol 2004 ;19(12):1123-6.
5. Am J Trop Med Hyg 2019 Feb 11;

Typhus - epidemic

Agent	BACTERIUM. *Rickettsia prowazekii*
Reservoir	Human, Flying squirrel (*Glaucomys volans volans*, in the United States), Zoonotic
Vector	Louse (*Pediculus*), Squirrel flea
Vehicle	None
Incubation Period	10d - 14d (range 5d - 23d)
Diagnostic Tests	Serology. Identification of rickettsiae in smear or culture of skin lesions. Nucleic acid amplification.
Typical Adult Therapy	Doxycycline 100 mg PO BID X 3 to 5d. OR Chloramphenicol 500 mg QID X 3 to 5d[1]
Typical Pediatric Therapy	Doxycycline 2 mg/kg PO BID X 3 to 5d (maximum 200 mg/day). OR Chloramphenicol 10 mg/kg PO QID X 3 to 5d
Clinical Hints	- Fever, headache and myalgia - Truncal maculopapular rash appears on days 4 to 7 - Encephalopathy or myocarditis may ensue; - Fever resolves after 2 weeks, but convalescence is prolonged - Case-fatality rate (untreated) is 10% to 20%
Synonyms	Camp fever, Epidemic typhus, Jail fever, Red louse disease, Rickettsia prowazekii, Ship fever, Shop typhus, Sutama, Sylvatic epidemic typhus, Tifus piojos, Tobardillo. ICD9: 080 ICD10: A75.0

Although Typhus - epidemic is not endemic to Israel, imported, expatriate or other presentations of the disease have been associated with this country.

Typhus - epidemic in Israel



Graph:

Israel. Typhus - epidemic, cases

References

1. Expert Rev Anti Infect Ther 2012 Dec ;10(12):1425-37.

Urinary tract infection

Agent	BACTERIUM OR FUNGUS. *Escherichia coli*, other facultative gram negative bacilli, enterococci, et al
Reservoir	Human
Vector	None
Vehicle	Endogenous
Incubation Period	Variable
Diagnostic Tests	Urine culture and leucocyte count.
Typical Adult Therapy	Antimicrobial agent(s) directed at known or likely pathogen
Typical Pediatric Therapy	As for adult
Clinical Hints	- Fever, dysuria, frequency, flank pain and vomiting - Infection in children or men - and infection which relapses in women - may warrant radiological studies to rule out underlying obstruction or calculus
Synonyms	Cistite, Cistitis, Cystite, Cystitis, Pielite, Pielitis, Pielonefrite, Pielonefritis, Prostatite, Pyelitis, Pyelonephrite, Pyelonephritis, Trigonitis, Tubulointerstitial nephritis, U.T.I., Urethritis, Uretrite, UTI, Zystitis. ICD9: 791.9,136.9,599.0,590,601.0 ICD10: N10,N30,N41

Vaccinia and cowpox

Agent	VIRUS - DNA. Poxviridae, Orthopoxvirus. Cowpox virus
Reservoir	Cattle, Cat Rodent, Zoonotic
Vector	None
Vehicle	Cattle, Cat
Incubation Period	2d - 4d
Diagnostic Tests	Biosafety level 3. Viral isolation from skin exudate or biopsy. Nucleic acid amplification.
Typical Adult Therapy	Secretion precautions; supportive. In severe cases, Tecovirimat, 400 to 600 mg PO OD X 14 d.[1] [2]
Typical Pediatric Therapy	As for adult
Vaccine	Smallpox + Mpox vaccine Smallpox vaccine Vaccinia immune globulin
Clinical Hints	- Vesicles or pustules (usually on hand) progressing to crusts - Painful regional lymphadenopathy - Follows contact with infected animals or smallpox vaccination
Synonyms	Akhmeta poxvirus, Alaskapox, Aracatuba, Buffalopox, Camelpox, Cantagalo, Cowpox, Passatempo, Vaccinia, Vaiolo. ICD9: 051.0 ICD10: B08.0

References

1. Emerg Infect Dis 2015 Dec ;21(12):2261-3.

2. J Med Chem 2023 Apr 13;66(7):4468-4490.

Variant Creutzfeldt-Jakob disease

Agent	PRION
Reservoir	Cattle
Vector	None
Vehicle	Meat
Incubation Period	Months to years
Diagnostic Tests	Brain biopsy
Typical Adult Therapy	None
Typical Pediatric Therapy	None
Clinical Hints	- Most cases of human disease have been related to ingestion of beef from cattle which had been infected through ingestion of offal from other infected animals - A progressive and invariably fatal degenerative disease of the brain.
Synonyms	Bovine spongiform encephalopathy, Mad cow disease. ICD9: 04611 ICD10: A81.09

Not currently endemic to any country.
Although Variant Creutzfeldt-Jakob disease is not endemic to Israel, imported, expatriate or other presentations of the disease have been associated with this country.

Variant Creutzfeldt-Jakob disease in Israel

As of 2002, only a single cow infected with bovine spongiform encephalopathy had been reported in Israel. [1]

References

1. Isr Med Assoc J 2003 Sep ;5(9):662-5.

Varicella

Agent	VIRUS - DNA. Herpesviridae, Alphaherpesvirinae: Human Herpesvirus 3 (Varicella-zoster virus)
Reservoir	Human
Vector	None
Vehicle	Air, Contact, Breastfeeding, Respiratory or pharyngeal acquisition
Incubation Period	2w - 3w
Diagnostic Tests	Viral culture (vesicles). Serology. Nucleic acid amplification.
Typical Adult Therapy	Respiratory isolation. Severe/complicated cases: Acyclovir 10 to 12 mg/kg IV q8h X 7d Adolescent / young adult: 800 mg PO X 5 per day X 7 d. Alternatives: Valacyclovir 1 g PO TID; or Famciclovir 500 mg PO TID[1] [2]
Typical Pediatric Therapy	Respiratory isolation. Acyclovir (severe/complicated cases) 150 mg/sq m IV q8h X 7d
Vaccine	Varicella vaccine Varicella-Zoster immune globulin
Clinical Hints	- Cough and fever followed by a pruritic papulovesicular rash after 1 to 2 days - Pneumonia is often encountered - Case fatality rate is 4.3 per 100,000 cases (7% in immune-suppressed patients)
Synonyms	Chickenpox, Lechina, Skoldkopper, Vannkopper, Varicela, Varizellen, Vattenkoppor, Waterpokken, Windpocken. ICD9: 052 ICD10: B01

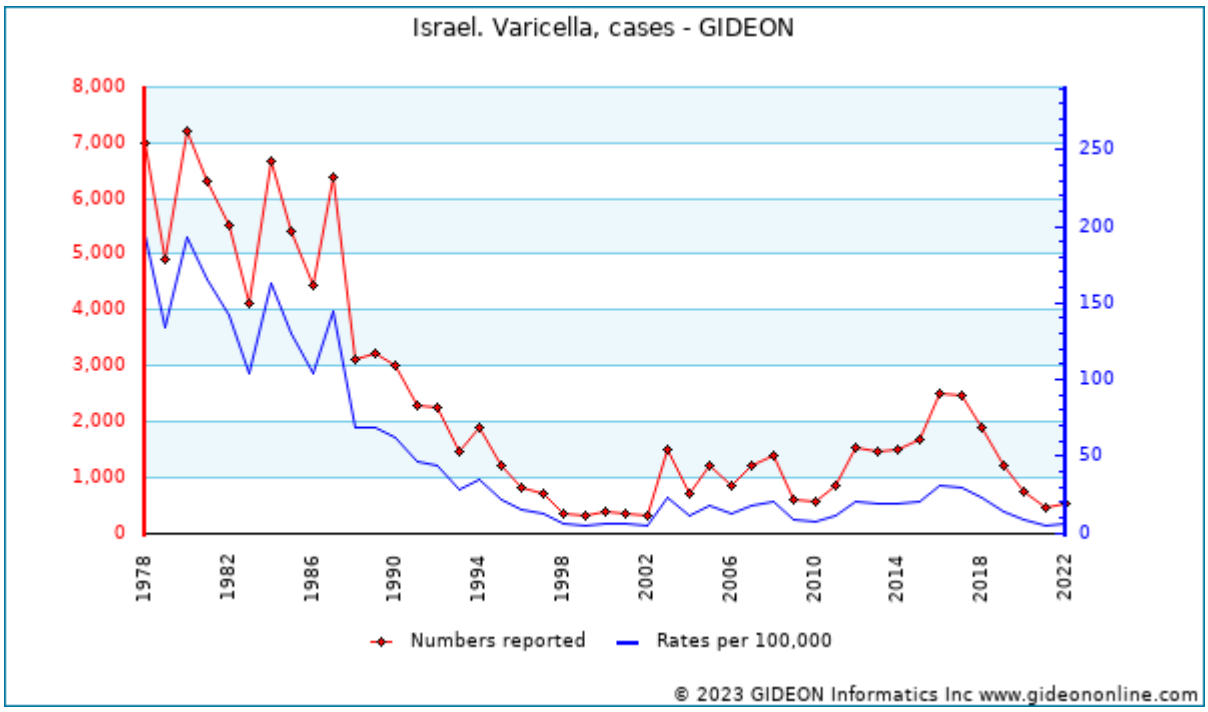
Varicella in Israel

Vaccine Schedule:

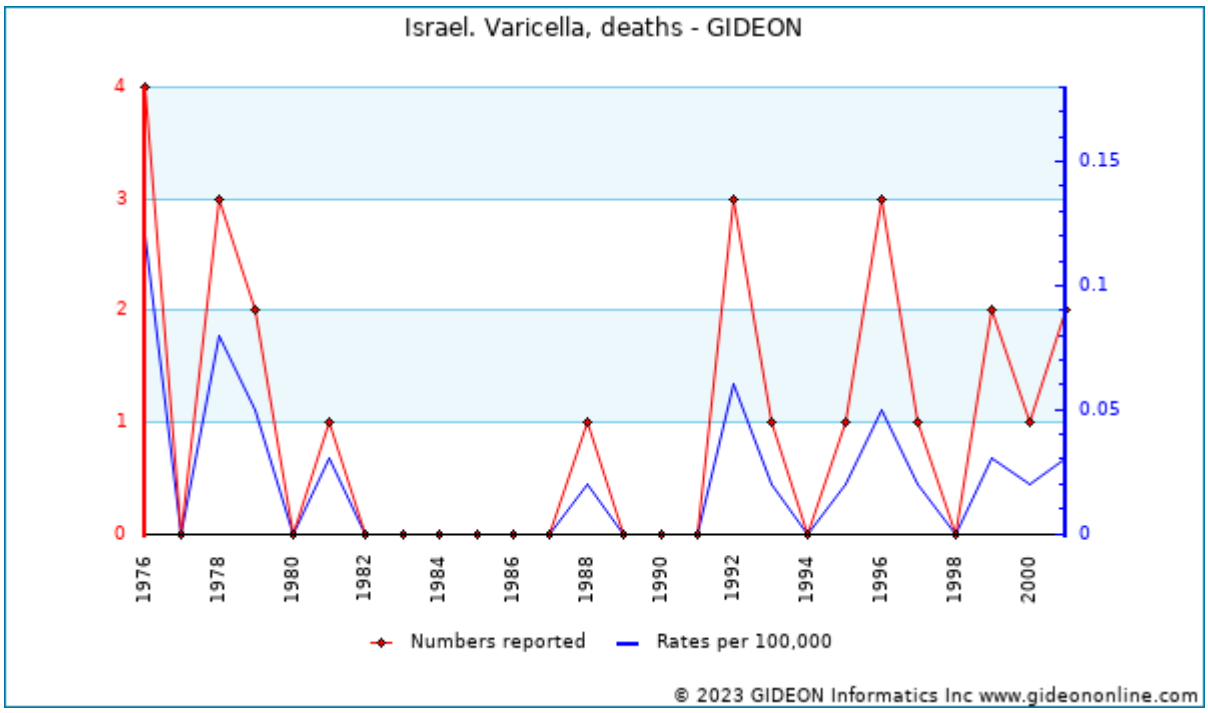
DTaP - 2,4,6,12 months
DTaPHibIPV - 2,4,6,12 months
HPV - 13 years; +6 months
HepA - 18, 24 months
HepB - birth; 1,6 months
IPV - 7 years
MMRV - 12 months; 6 years
OPV - 6,18 months
Pneumo ps - >=65 years
Pneumo-conj - 2,4,12 months
Rotavirus - 2,4,6 months
Td - every 10 years (adults)
TdaP - 13 years
TdaPIPV - 7 years

Israel:

- Introduction of vaccination in 2000 was followed in a significant reduction in varicella hospitalizations. [3] [4]
- The rate of varicella among military personnel was 100 per 100,000 during 1979 to 2000; 80 per 100,000 in 2000; 5.7 per 100,000 in 2009. [5]



Graph: Israel. Varicella, cases



Graph: Israel. Varicella, deaths

21 cases of varicella pneumonitis were reported from southern Israel during 1995 to 2008. [6]

Prevalence surveys

Years	Region	Study Group	%	Notes
2023*	Jerusalem	transplant	1.2	A retrospective, interventional case series of 88 donor corneoscleral buttons (CSBs)

Years	Region	Study Group	%	Notes
		donors		collected from the conjunctiva, iris, and endothelium was done. Transplanted eyes were evaluated and followed up. Varicella-zoster virus (VZV) was found in 1 (1.2%) of the 82 examined CSBs. [7]
2016 - 2020	Northern Region	patients - CNS	5.7	Survey of CSF specimens collected from patients admitted to hospital in Safed with suspected meningitis or encephalitis. Percentage reflects proportion of all test-positive specimens. [8]

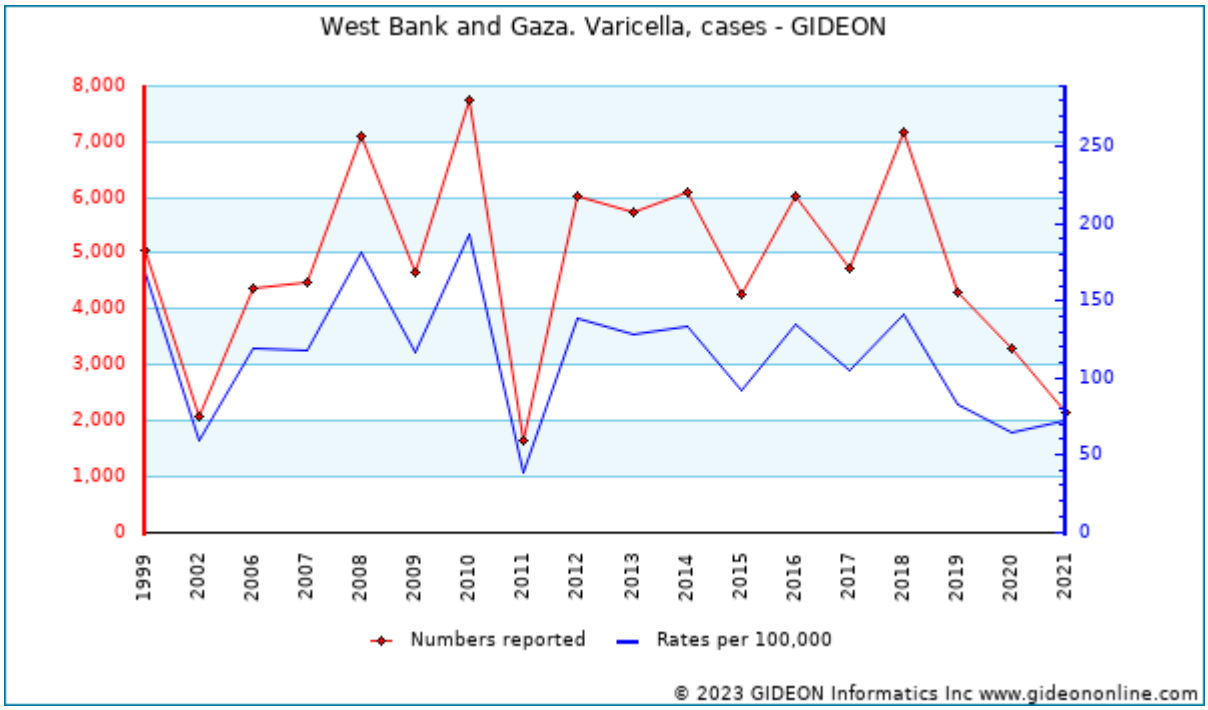
* indicates publication year (not necessarily year of survey)

Seroprevalence surveys

Years	Region	Study Group	%	Notes
2000 - 2001		children	68.9-96.6	68.9% at age 4, 94.4% at age 7, and 96.6% at age 12 years (2000 to 2001, prior to introduction of vaccine) [9]
2000 - 2001		children	50	50% by age of 3 years (2000 to 2001) [10]
1992		military personnel	98	98% of non-vaccinated Army recruits (1985, 1988, 1992) [11]
1978*		women	80.5	80.5% of women of childbearing age (1978 publication) [12]
2004*	Multiple locations	health care workers	94.4	94.4% of health-care and day-care-center workers (2004 publication) [13]
2008*	Northern Region	health care workers	98.5	98.5% of health care workers in northern Israel (2008 publication) [14]
1986*		general population	52-59	52% of overseas volunteers and 59% of kibbutz residents (1986 publication) [15]
2001*		pregnant women	95.1	95.1% of parturient women (2001 publication) [16]

* indicates publication year (not necessarily year of survey)

West Bank and Gaza:



Graph: West Bank and Gaza. Varicella, cases

Notable outbreaks

Years	Region	Setting	Cases	Deaths	Population	Notes
2011	Tel Aviv	pediatric oncology unit	13	1	children	Outbreak in a pediatric hemato-oncology unit [17]
2012	Southern Region	detention center			immigrants	Outbreak among African immigrants in a detention center. [18]

References

1. Clin Ther 2018 Aug 10;
2. Med Lett Drugs Ther 2018 Sep 24;60(1556):153-157.
3. Hum Vaccin 2009 Mar ;5(3):136-40.
4. Acta Paediatr 2016 Apr ;105(4):e161-6.
5. Hum Vaccin Immunother 2013 Jun ;9(6):1303-7.
6. Isr Med Assoc J 2009 May ;11(5):261-5.
7. Cornea 2023 Apr 01;42(4):412-415.
8. Diagn Microbiol Infect Dis 2022 Jul 18;104(3):115769.
9. Infection 2006 Aug ;34(4):208-13.
10. Eur J Epidemiol 2007 ;22(9):641-6.
11. Isr Med Assoc J 2000 Mar ;2(3):196-9.
12. Isr J Med Sci 1978 Jul ;14(7):766-70.
13. Epidemiol Infect 2004 Dec ;132(6):1135-8.
14. Am J Infect Control 2008 Aug ;36(6):436-8.
15. J Med Virol 1986 Oct ;20(2):189-97.
16. Fetal Diagn Ther 2001 Nov-Dec;16(6):423-6.
17. Pediatr Infect Dis J 2018 Jan 25;
18. Int Health 2014 Sep ;6(3):203-7.

Vibrio parahaemolyticus infection

Agent	BACTERIUM *Vibrio parahaemolyticus* A facultative gram-negative bacillus
Reservoir	Marine water, Seafood, Fish
Vector	None
Vehicle	Seafood
Incubation Period	10h - 20h (range 2h - 4d)
Diagnostic Tests	Stool culture - alert laboratory when this organism is suspected.
Typical Adult Therapy	Stool precautions Supportive For severe infection, consider treatment with Doxycycline, Azithromycin or Ciprofloxacin
Typical Pediatric Therapy	Supportive For severe infection, consider treatment with Doxycycline or Azithromycin.
Clinical Hints	- Onset 4 to 24 hours following ingestion of seafood (often steamed crabs) - Vomiting and explosive diarrhea - Diarrhea may persist for 7 to 10 days - Case fatality rate is 0.1%
Synonyms	Vibrio parahaemolyticus. ICD9: 005.4 ICD10: A05.3

Vibrio parahaemolyticus infection in Israel

- 1973 (publication year) - *Vibrio parahaemolyticus* was identified in the coastal waters of Israel. [1]

References

1. Harefuah 1973 Jul 01;85(1):7-9.

West Nile fever

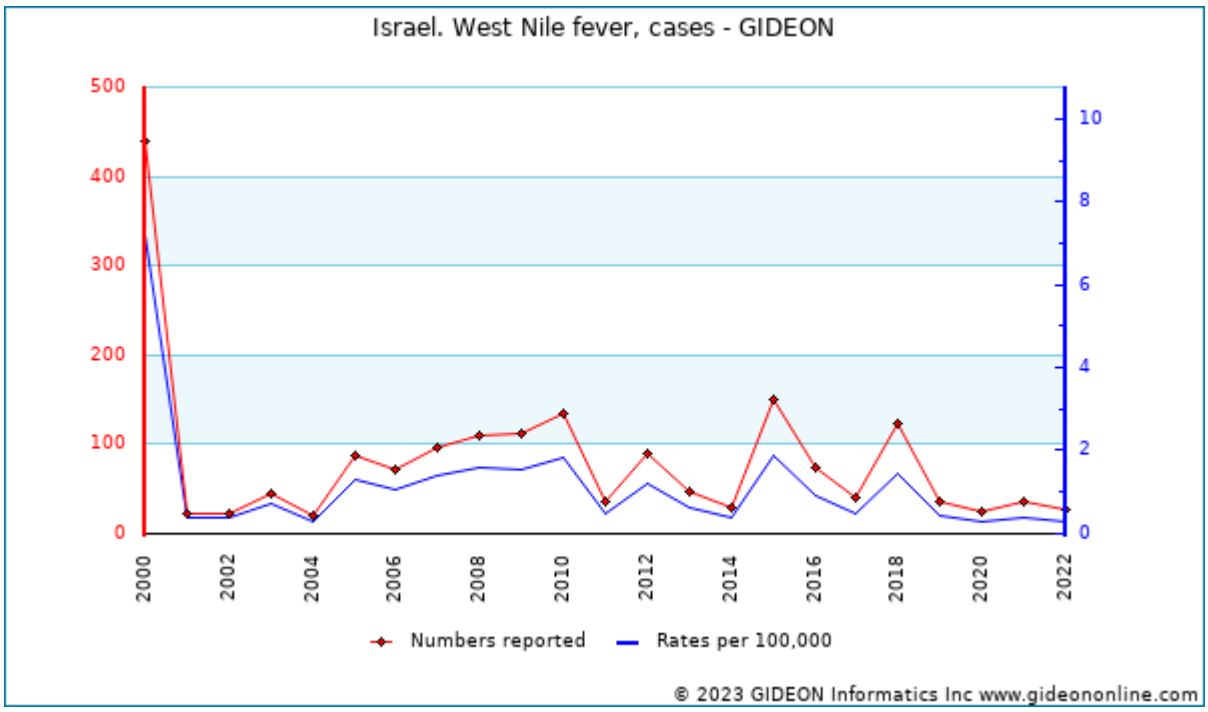
Agent	VIRUS - RNA. Flaviviridae, Flavivirus: West Nile virus
Reservoir	Bird, Horse, Bat, Tick, Zoonotic
Vector	Mosquito (*Culex univittatus*. *Cx. pipiens*, *Cx. vishnui*, *Cx. naevei*, *Coquillettidia*, *Aedes* and *Anopheles* spp.)
Vehicle	Blood, Breastfeeding
Incubation Period	3d - 6d (range 1d - 14d)
Diagnostic Tests	Biosafety level 3. Viral culture (blood, CSF). Serology. Nucleic acid amplification.
Typical Adult Therapy	Supportive
Typical Pediatric Therapy	As for adult
Clinical Hints	- Myalgia, arthralgia, lymphadenopathy, headache, conjunctivitis and a macular rash - Sporadic instances of encephalitis, meningitis and myocarditis are reported - Illness resolves within one week in most cases
Synonyms	Bagaza, Fiebre del Oeste del Nilo, Lourdige, Near Eastern equine encephalitis, Ntaya, Usutu, WNF. ICD9: 066.4 ICD10: A92.3

West Nile fever in Israel

Time and Place

Rates of West Nile fever peak during spring and autumn in the southeast region.[1] and during August to September in the rest of the country.

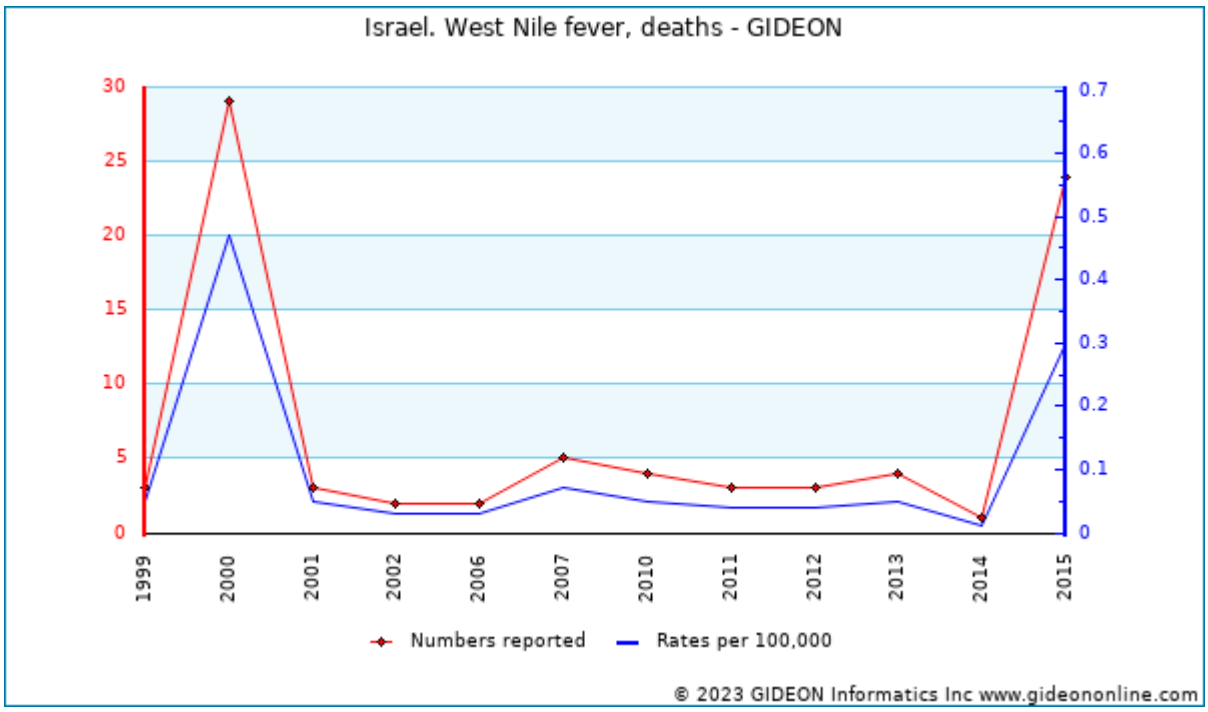
- Epidemics of West Nile fever were reported during 1950 to 1954; and in 1957.
- West Nile fever has been an officially reportable disease in Israel since 2000.
- Individuals residing in the central and Arava regions are at highest risk (2000 to 2014). [2]
- Highest incidence is reported in coastal cities, among elderly patients, and in the late summer months and early autumn (2000 to 2012). [3]
- West Nile fever was first reported in the western Galilee in 2001 (publication year) [4]
- A review of the history of West Nile fever in Israel (2001 publication) is available at reference [5]
- Forty to 160 human cases of West Nile virus infection are reported annually in Israel.[6]



Graph: Israel. West Nile fever, cases

Notes:
1. 61 cases were registered during 1975 to 1980.
2. 104 cases (79 with neuroinvasive disease), 8 fatal were reported in the Tel Aviv District during 2005 to 2010. [7] [8]
3. Nearly 1,400 cases were reported during 2000 to 2012. [9]

Individual years:
2000 - Included 326 hospitalized cases.
2006 - Data for January to November
2011 - 33 cases were reported to November. [10]
2014 - 17 suspected and confirmed cases were reported to November. [11]
2015 - 125 cases were reported to November.
2017 - 39 cases were reported. [12] [13]
2018 - 128 cases were reported to December 13.
2019 - Ten cases (nonfatal) were reported to November 28.
2020 - 17 cases were reported to November 26. [14]



Graph: Israel. West Nile fever, deaths

Prevalence surveys

Years	Region	Study Group	%	Notes
2018	Multiple locations	birds	11.03	11.03% of visceral and central nervous system tissue pools from 136 wild birds collected at various locations were positive for WNV RNA. [15]
2000 - 2014		mosquitoes	4.71	Out of 7,135 pools containing 277,186 mosquitoes (family: Culicidae) tested at the Central Virology Laboratory, West Nile virus (WNV) RNA was detected in 336 (4.71%) pools. Testing was done using RT-PCR method. The majority of WNV infections were found in the 2 most common species, *Culex pipiens* and *Culex perexiguus*. Two pools of *Aedes albopictus* were also positive for WNV, [16] [17] [18]

Seroprevalence surveys

Years	Region	Study Group	%	Notes
1997	Multiple locations	horses	39	[19]
2002	Multiple locations	horses	66.1	[20]
2013	Multiple locations	horses	85.5	[21]
2018	Multiple locations	horses	10.8-84.1	10.8% / 84.1% of horses were seropositive toward Usutu / West Nile viruses [22]
2020	West Bank	horses	60.9	[23]
1999*		adults	7-41.9	7.0% of adults ages 18 to 20, and 41.9% ages 40 to 55 (1999 publication) [24]
2021*	West Bank	various	23-60.9	23% of veterinarians and 60.9% of horses [25]
1989		general population	14.8	14.8% of Army reserve personnel - 45% in the age group 40 to 50 (1989)
1997		general population	7	7% ages 18 to 19 (1997)
2000	Multiple locations	general population	7-13.5	13.5% of individuals in central Israel and 7% in the south (2000) [26]
2011 -	Nationwide	general	11.1	Out of 3,145 serum samples collected by the Israeli national serum bank between

Years	Region	Study Group	%	Notes
2014		population		2011 and 2014 from all age and population groups in Israel, IgG antibodies against West Nile fever virus were detected in 350 (11.1%) samples. Testing was done with ELISA. [27] [28] [29]
2017*	Multiple locations	equids	73	[30]

* indicates publication year (not necessarily year of survey)

Cross-border events

Years	Acquired by**	Originated in**	Setting	Cases	Notes
2001	Netherlands	Israel	travel	1	[31] [32]
2003*	Denmark	Israel		2	[33]
2009*	Australia	Israel	travel	1	An Israeli tourist was found to have West Nile fever while in Australia. [34]
2010	Netherlands	Israel	travel	2	[35] [36]

* indicates publication year (not necessarily year of event)
** Country or Nationality

Infection in animals and birds:

- 1960's - West Nile virus was demonstrated in seagulls from the north and central regions.
- 1970's - The virus was demonstrated in migratory birds, including wagtails and turtle doves.
- 1997 - Infection was identified in 4 flocks of geese.
- 1998 - 15 outbreaks were reported among geese.
- 1998 - Serum antibody was demonstrated in horses; and in migrating white storks (*Ciconia ciconia*) which settled in Eilat.
- 1999 - 11 outbreaks were reported among geese.
- 1999 - 8,000 geese were destroyed in the Yizre'el and Ramala districts when the virus was discovered in commercial flocks. [37] The viral strain found in these geese was virtually identical to that responsible for an outbreak in New York City during 1999.
- 2000 - A flock of 8,803 geese in nine flocks died or were destroyed due to the infection - including one flock of 3,500 geese.
- 2000 - 13 seropositive horses (two fatal) and 720 seropositive cattle (in 24 herds) were identified. [38]
- 2007 - 13 infected horses were reported, most in the northern and central regions. [39]
- 2017 - 3 cases in horses were reported. [40] [41]

Vectors

- The principal vector is *Cx. perexiguus*; additional vectors include *Culex pipiens*, *Cx. antennatus*, *Anopheles coustani* and *Aedes caspius*. [42] [43]
- The virus has also been confirmed in *Cx. antennatus* and Cx. poicilipes.
- Argasid ticks (*Argas arboreus*) may be involved in transmission among birds. [44]

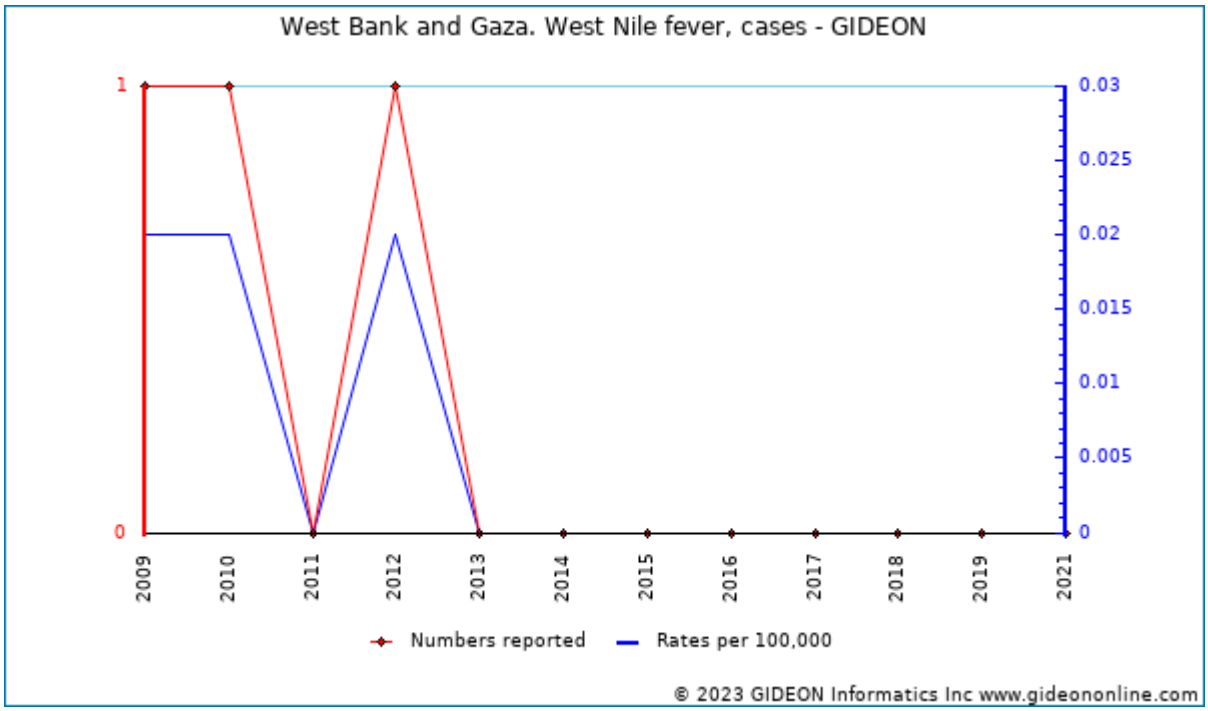
- 2014 to 2015 - Usutu virus was identified in mosquitoes trapped in northern Israel. [45]
- 2023 - Mosquitos infected with West Nile virus were found for the first time in 2023 in southern Israel in Nahal Revivim, near Lake Yeruham, and outside the educational centers of Nitzana and Midreshet Ben Gurion. [46] [47]

Notable outbreaks

Years	Region	Cases	Deaths	Population	Notes
1955	Maayan Zvi	123			Year approximate.10 cases characterized as meningitis. 2 unrelated outbreaks in senior citizens' homes involved 121 cases. [48]
1956	Central Region			military personnel	
1957	Multiple locations	419			Included 15 cases with neurological disease. [49]
1980	Beer Sheva	32		military personnel	Included 1 case with neurological disease. [50]
2000	Multiple locations	417	35		[51] [52] [53] [54] [55] [56] [57] [58]

Years	Region	Cases	Deaths	Population	Notes
2015		149	24		Neuroinvasive disease accounted for 70% of cases [59] [60]
2018		139	2		Case count to November 12 [61] [62] [63]

West Bank and Gaza:



Graph:
West Bank and Gaza. West Nile fever, cases

Notes:
Individual years:
2015 - One case was reported during January to November.

References

1. Euro Surveill 2020 Nov ;25(46)
2. Int J Infect Dis 2017 Nov ;64:20-26.
3. J Infect 2014 Feb ;68(2):170-5.
4. Harefuah 2001 Aug ;140(8):686-8, 808.
5. Ann N Y Acad Sci 2001 Dec ;951:127-42.
6. ProMED <promedmail.org> archive: 20230526.8710253
7. Euro Surveill 2011 Jun 23;16(25)
8. ProMED <promedmail.org> archive: 20110623.1922
9. J Infect 2014 Feb ;68(2):170-5.
10. ProMED <promedmail.org> archive: 20111128.3477
11. ProMED <promedmail.org> archive: 20140811.2680134
12. ProMED <promedmail.org> archive: 20230526.8710253
13. ProMED <promedmail.org> archive: 20230528.8710285
14. ProMED <promedmail.org> archive: 20201128.7960818
15. Pathogens 2022 Jan 17;11(1)
16. J Infect Dis 2016 Apr 01;213(7):1107-14.
17. ProMED <promedmail.org> archive: 20230526.8710253
18. ProMED <promedmail.org> archive: 20230528.8710285
19. PLoS One 2014 ;9(11):e113149.
20. PLoS One 2014 ;9(11):e113149.
21. PLoS One 2014 ;9(11):e113149.
22. Viruses 2020 Sep 28;12(10)
23. Vet World 2021 May ;14(5):1241-1246.
24. Public Health Rev 1999 ;27(1-3):217-30.
25. ProMED <promedmail.org> archive: 20210524.8379250
26. Eur J Clin Microbiol Infect Dis 2005 Dec ;24(12):851-3.
27. PLoS One 2017 ;12(6):e0179774.
28. ProMED <promedmail.org> archive: 20230526.8710253
29. ProMED <promedmail.org> archive: 20230528.8710285
30. Vector Borne Zoonotic Dis 2017 08 ;17(8):558-566.
31. Ned Tijdschr Geneeskd 2001 Oct 27;145(43):2084-6.
32. Ned Tijdschr Geneeskd 2002 Jan 12;146(2):90-1.
33. Ugeskr Laeger 2003 May 05;165(19):2003-4.
34. Med J Aust 2009 Aug 17;191(4):232-4.
35. Euro Surveill 2010 Aug 26;15(34)
36. ProMED <promedmail.org> archive: 20100827.3049
37. ProMED <promedmail.org> archive: 19991123.2076
38. Vet Rec 2002 Jul 13;151(2):47-9.
39. ProMED <promedmail.org> archive: 20070925.3176
40. ProMED <promedmail.org> archive: 20230526.8710253
41. ProMED <promedmail.org> archive: 20230528.8710285
42. J Med Entomol 2008 Sep ;45(5):939-47.
43. J Infect Dis 2016 Apr 01;213(7):1107-14.
44. Vector Borne Zoonotic Dis 2005 ;5(1):65-71.
45. Emerg Infect Dis 2017 10 ;23(10):1707-1710.
46. ProMED <promedmail.org> archive: 20230526.8710253
47. ProMED <promedmail.org> archive: 20230528.8710285
48. Harefuah 1955 Aug 01;49(3):41-4.
49. Harefuah 1958 Jun 01;54(11):275-80; English & French abstracts 280-1.

50. Isr J Med Sci 1989 Jan ;25(1):39-41.
51. Emerg Infect Dis 2001 Jul-Aug;7(4):686-91.
52. Emerg Infect Dis 2001 Jul-Aug;7(4):675-8.
53. Emerg Infect Dis 2001 Jul-Aug;7(4):748-50.
54. Harefuah 2001 Aug ;140(8):723-7, 806, 805.
55. J Neurol Sci 2002 Aug 15;200(1-2):63-6.
56. Clin Infect Dis 2003 Dec 01;37(11):1573-8.
57. Emerg Infect Dis 2005 Nov ;11(11):1754-7.
58. PLoS One 2014 ;9(11):e113149.
59. Clin Microbiol Infect 2017 Dec ;23(12):986-993.
60. Travel Med Infect Dis 2018 Jul 14;
61. ProMED <promedmail.org> archive: 20180824.5984197
62. ProMED <promedmail.org> archive: 20181212.6201294
63. Euro Surveill 2019 Jan ;24(1)

Whipple's disease

Agent	BACTERIUM. Actinobacterium, *Tropheryma whipplei* A gram positive bacillus
Reservoir	Unknown
Vector	None
Vehicle	None
Incubation Period	Unknown
Diagnostic Tests	Identification of inclusions in lamina propria (other tissues). Tissue culture. Nucleic acid amplification.
Typical Adult Therapy	Ceftriaxone 2.0 g IV daily X 14d. OR Penicillin G 4 million u IV q4h X 14d. OR Meropenem 1 g IV TID X 14-28d Continue Sulfamethoxazole / Trimethoprim X 1 year[1] [2] [3]
Typical Pediatric Therapy	Disease is rarely, if ever, encountered in children
Clinical Hints	- Chronic multisystem disorder characterized by weight loss, diarrhea, abdominal and joint pain - Dermal hyperpigmentation, fever and lymphadenopathy are often present - *Tropheryma whipplei* has recently been recovered from the blood of patients with fever, headache or cough.
Synonyms	Intestinal lipodystrophy, Lipophagic granulomatosis, Mesenteric chyladenectasis, Steatorrhea arthropericarditica, Tropheryma whipplei. ICD9: 040.2 ICD10: K90.8

References

1. Clin Microbiol Rev 2017 Apr ;30(2):529-555.
2. Scand J Gastroenterol 2017 Apr ;52(4):465-466.
3. Lancet Infect Dis 2016 Mar ;16(3):e13-22.

Yellow fever

Agent	VIRUS - RNA. Flaviviridae, Flavivirus: Yellow fever virus
Reservoir	Human, Mosquito, Monkey, Marsupial, Zoonotic
Vector	Mosquito (*Stegomyia* (*Aedes*), *Haemagogus*, *Sabethes*)
Vehicle	Breast feeding
Incubation Period	3d - 6d (range 2.5d - 14d)
Diagnostic Tests	Biosafety level 3. Viral culture (blood, liver). Serology. Nucleic acid amplification.
Typical Adult Therapy	Supportive
Typical Pediatric Therapy	As for adult
Vaccine	Yellow fever vaccine
Clinical Hints	- Headache, backache, vomiting, myalgias, jaundice and hemorrhagic diathesis - Relative bradycardia and leukopenia are present - Illness is often biphasic - Case fatality rate is 10% to 60%, occurring within 7 days of disease onset
Synonyms	Bulan fever, Febbre gialla, Febre amarela, Fever of Fernando Po, Fever of the blight of Benin, Fiebre amarilla, Fievre jaune, Gelbfieber, Gele koorts, Gul feber, Gula febern, Inflammatory fever, Kendal's disease, Magdalena fever, Maladie de Siam, Pest of Havana, Stranger's fever. ICD9: 060 ICD10: A95

Although Yellow fever is not endemic to Israel, imported, expatriate or other presentations of the disease have been associated with this country.

Yellow fever in Israel

Yellow fever does not occur in Israel.

Imported cases have not been reported.

Proof of vaccination is **NOT** required for travelers arriving from countries with risk for YFV transmission.

Yersiniosis

Agent	BACTERIUM. *Yersinia enterocolitica* and *Yersinia pseudotuberculosis* A facultative gram-negative bacillus
Reservoir	Pig, Rodent, Rabbit, Sheep, Goat, Cattle, Horse, Dog, Cat, Bat, Zoonotic
Vector	None
Vehicle	Food, Water, Meat, Dairy products, Vegetables, Fecal-oral, Blood
Incubation Period	4d - 7d (range 1d - 11d)
Diagnostic Tests	Culture stool, blood. Alert laboratory when these organisms are suspected.
Typical Adult Therapy	Stool precautions; diarrhea is self-limited. If severe - Ciprofloxacin 500 mg BID X 5 to 7d. OR Sulfamethoxazole / Trimethoprim
Typical Pediatric Therapy	Stool precautions; diarrhea is self-limited. If severe - Sulfamethoxazole / Trimethoprim 20 mg-4 mg/kg BID X 5 to 7d
Clinical Hints	- Fever, diarrhea, and right lower quadrant pain - Fecal leucocytes present - May be associated with rheumatologic manifestations such as erythema multiforme, Reiter's syndrome and chronic arthritis
Synonyms	Far East scarlet-like fever, FESLF, Yersinia enterocolitica, Yersinia pseudotuberculosis, Yersiniose. ICD9: 008.44 ICD10: A04.6,A28.2

Yersiniosis in Israel

Yersinia enterocolitica was first isolated in Israel in 1977, and accounts for less than 0.01% of stool isolates.

- 1976 to 1977 - 53 cases were reported from northern Israel - 76% below age 5 years. [1]
- 2006 to 2007 - A series of 16 cases of *Yersinia enterocolitica* infection among children below age 12 years was reported from Gaza7. [2]

Mesenteric lymphadenitis due to *Yersinia pseudotuberculosis* has been reported. [3]

- *Yersinia pseudotuberculosis* was isolated from 9 dairy cows with mastitis, including 6 cases on one farm (2007 publication) [4]
- *Yersinia pseudotuberculosis* had been previously isolated from a Palm dove (*Streptopelia senegalensis*) in Nir Banim. [5]

Prevalence surveys

Years	Region	Study Group	%	Notes
1980 - 1986	Northern Region	specimens - stool	0.0036	0.0036% of stool specimens (northern Israel, 1980 to 1986)
2006 - 2007	Gaza	children - gastrointestinal	2.7	2.7% of childhood diarrhea in Gaza (2006 to 2007) [6]

Notable outbreaks

Years	Setting	Cases	Population	Notes
1979	boarding school	18	children	

References

1. Isr J Med Sci 1978 Oct ;14(10):1048-55.
2. Int J Infect Dis 2011 Jan ;15(1):e48-53.
3. Isr J Med Sci 1977 Nov ;13(11):1114-7.
4. Zoonoses Public Health 2007 ;54(9-10):353-7.
5. Avian Dis 1976 Jan-Mar;20(1):202-4.
6. Indian J Pediatr 2011 Feb ;78(2):165-70.

Zika

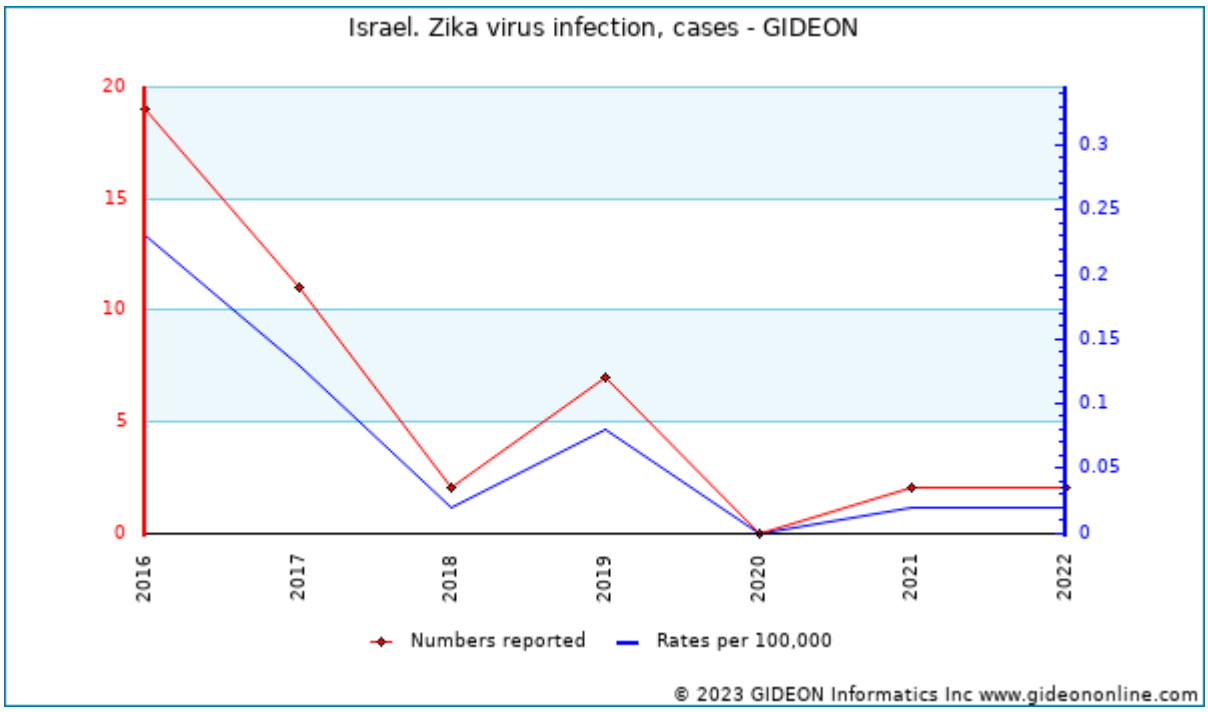
Agent	VIRUS - RNA. Flaviviridae, Flavivirus: Zika virus
Reservoir	Human, Mosquito, Monkey, Zoonotic
Vector	Mosquito (*Aedes* spp)
Vehicle	Sexual contact, Saliva, Blood transfusion, Breast-feeding
Incubation Period	5d - 8d (range 2d - 15d)
Diagnostic Tests	Viral isolation (blood). Serology. Nucleic acid amplification.
Typical Adult Therapy	Supportive
Typical Pediatric Therapy	As for adult
Clinical Hints	- A mild dengue-like illness with conjunctivitis and a pruritic maculopapular rash that starts on the face and spreads to the rest of the body; - Joint pain is common - Myalgia, retroorbital pain and leg edema may occur - May be associated with Guillain-Barre syndrome and congenital neurological defects
Synonyms	Zika fever. ICD9: 078.89 ICD10: A92.8

Although Zika is not endemic to Israel, imported, expatriate or other presentations of the disease have been associated with this country.

Zika in Israel

Chronology

- 2016 - 122 imported cases of Zika virus infection were reported - including a mother and child who acquired the disease in Colombia [1] and an Israeli tourist who acquired Zika virus infection in Vietnam. [2] [3] [4] [5] (note: only 19 cases were officially reported to the Health Ministry)
- 2019 - Eight cases of imported Zika virus infection from Thailand were reported. [6]
- 2022 - Two cases of imported Zika virus infection from Thailand were reported. [7]



Graph: Israel. Zika virus infection, cases

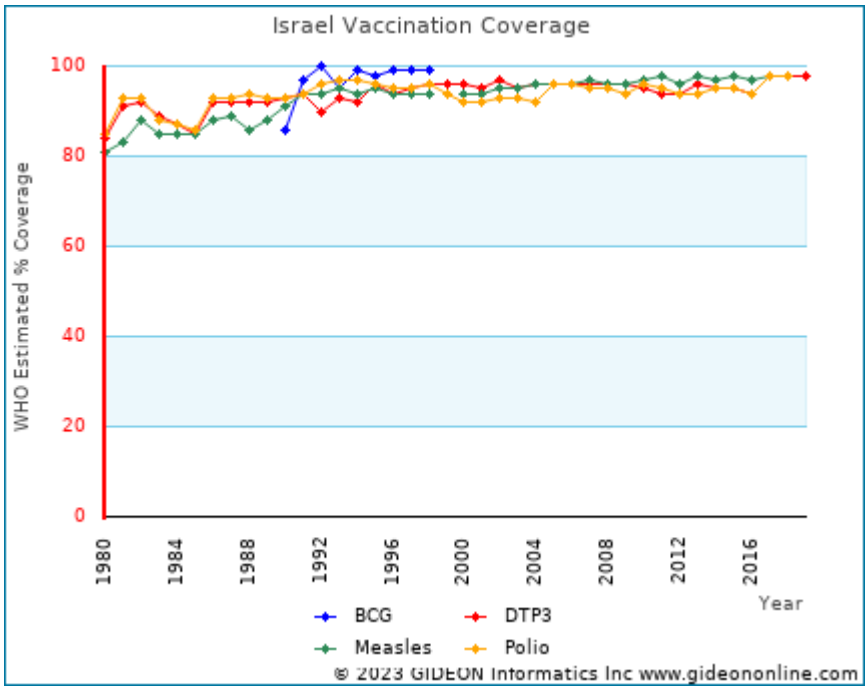
19 of 20 cases of Zika virus infection among Israeli travelers during 2016 were acquired in the Americas Region; while, six of 10 cases during 2017 were acquired in Asia. [8]

References

1. ProMED <promedmail.org> archive: 20160128.3974426
2. Am J Med 2016 Oct ;129(10):1126-30.
3. Emerg Infect Dis 2016 08 ;22(8):1521-2.
4. ProMED <promedmail.org> archive: 20160317.4102468
5. ProMED <promedmail.org> archive: 20170117.4772206
6. ProMED <promedmail.org> archive: 20191108.6768177
7. ProMED <promedmail.org> archive: 20220914.8705577
8. Am J Trop Med Hyg 2018 Nov 12;

Vaccine Schedule and coverage for Israel

DTaP - 2,4,6,12 months
DTaPHibIPV - 2,4,6,12 months
HPV - 13 years; +6 months
HepA - 18, 24 months
HepB - birth; 1,6 months
IPV - 7 years
MMRV - 12 months; 6 years
OPV - 6,18 months
Pneumo ps - >=65 years
Pneumo-conj - 2,4,12 months
Rotavirus - 2,4,6 months
Td - every 10 years (adults)
TdaP - 13 years
TdaPIPV - 7 years



A given generic vaccine may have multiple designations in this list due to variations in terminology used by individual countries. Vaccination policies evolve rapidly in response to changes in disease occurrence and the introduction of new vaccines. Every effort has been made to update these lists accordingly.

Vaccine Abbreviations

aP - Acellular pertussis
BCG - Bacillus Calmette Guerin
CBAW - Childbearing age women
D - Diphtheria
dT - Tetanus lower dose diphtheria
HCW - Health-care workers
HepA - Hepatitis A
HepB - Hepatitis B
Hib - Haemophilus influenzae type B
HPV - Human papillomavirus
IPV - Injectable polio vaccine
MenA-conj - Meningococcus type A conjugate
MenACWY - Meningococcus types A,C,Y and W
MenC-conj - Meningococcus type C conjugate
MMR - Measles, Mumps, Rubella
MMRV - Measles, Mumps, Rubella, Varicella
MR - Measles, Rubella
NA - Details not available

OPV - Oral polio vaccine
P - Pertussis
Pneumo - Pneumococcal vaccine
Pneumo ps - Pneumococcal polysaccharide
Pneumo-con - Pneumococcal conjugate
T - Tetanus
TBE - Tick-borne encephalitis
TT - Tetanus toxoid
YF - Yellow fever
Zoster - Herpes zoster

About GIDEON

GIDEON exists to advance the global effort against Infectious Disease.

- We help protect societies by providing reliable, timely epidemiological data.
- We save doctors precious time in diagnosing and treating infectious diseases.
- We provide state-of-the-art tools for training healthcare workers of tomorrow.

GIDEON platform

GIDEON platform is widely recognized as the most comprehensive infectious diseases database in the world – for research, education, and diagnostics. It is a one-stop resource for anyone with a professional interest in Infectious Diseases and Microbiology. Over the past three years, GIDEON contributed to 200+ diverse scientific publications. GIDEON is ideally suited for saving time in Point-of-Care settings while empowering clinicians to consider all possible scenarios. Additionally, it is an excellent teaching tool for Biology, Microbiology, Public Health, and Medical students and Residents. It is used in 164 countries by organizations such as the London School of Hygiene and Tropical Medicine, Public Health England, WHO, ECDC, NATO, Harvard Medical School, Stanford University, McGill University, and hundreds more.

GIDEON ebooks

GIDEON ebooks complement the GIDEON platform by expanding easy access to GIDEON's vast content. Ebooks can be downloaded to a variety of devices and can be read anywhere. These ebooks summarize the status of individual infectious diseases, drugs, vaccines, and pathogens, in every country of the world. Some newer features in the GIDEON platform, including new reference sources, case series, associated infections, vaccination coverage maps, ICD11 codes, new columns in outbreaks and surveys tables and disease and microbe etymology, are only available on the GIDEON platform.

Content

GIDEON's worldwide data sources access the entire world's literature and adhere to the standards of Evidence-Based Medicine. A team of highly regarded medical scientists tracks all infectious diseases in 235 countries and territories worldwide, updating the database every day. The data set includes:

- 27,000+ outbreaks, going back to 1348 AD
- 100,000+ prevalence and seroprevalence surveys
- 38,000+ graphs for visual epidemiological data analysis
- 24,000+ country notes for each disease
- 30,000+ vaccine and anti-infective drugs trade names
- 2,000+ pathogens
- 3,000+ images
- 300,000+ references, saving years of manual research work

Users

GIDEON is used in hospitals, universities (colleges and medical schools), private practice, public health departments, and military installations - by physicians (emergency room, infectious diseases, pediatrics, and hospitalists), teachers, clinical microbiologists, and health professionals. It is an ideal teaching tool for health care and microbiology students, residents, and fellows.

Accuracy

The Infectious Diseases Diagnosis module has been tested in a blinded multi-center field trial of 495 patients. The correct diagnosis was displayed in over 94% of cases and was listed first in over 75%. GIDEON has been reviewed in numerous journals and is continually updated daily to maintain content and accuracy.

To learn more about GIDEON online, visit www.gideononline.com and follow our blog at www.gideononline.com/blog and social media.For the latest list of GIDEON ebooks, visit www.gideononline.com/ebooks