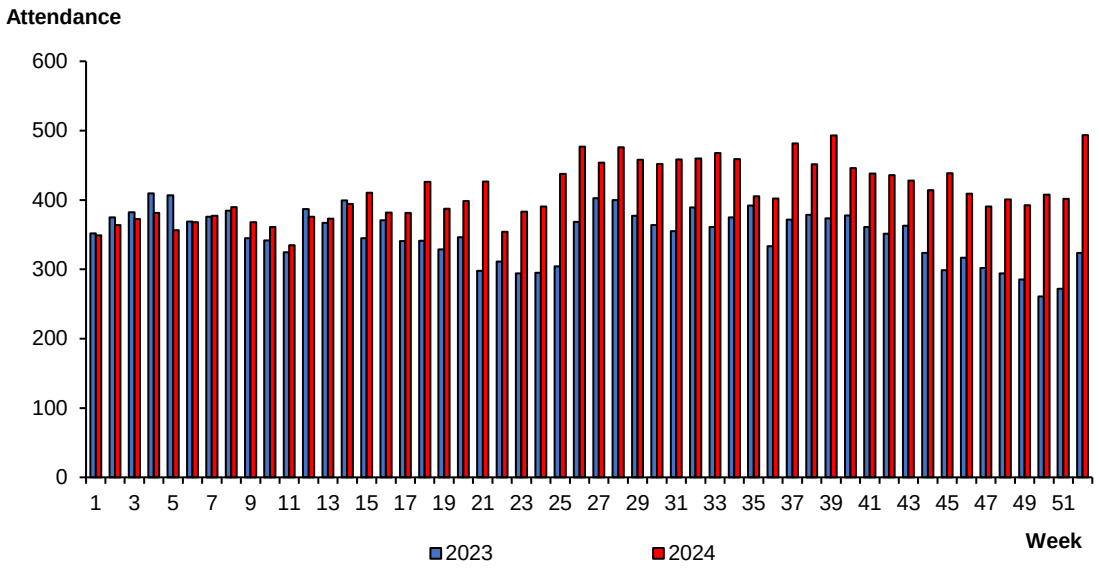
ACUTE DIARRHOEAL ILLNESS

There was a total of 113,105 attendances at polyclinics for acute diarrhoeal illness in 2024, an increase of 18.2% compared to the 95,711 seen in 2023. The average daily acute diarrhoeal illness attendances in 2024 showed an increase from Week 15, with daily attendances at higher levels as compared to the same period in 2023 (Figure 4.1).

Figure 4.1
Average Daily Attendances of diarrhoeal illnesses at polyclinics, 2023-2024



BOTULISM

Botulism is a rare but serious illness caused by neurotoxin produced by *Clostridium botulinum*. These neurotoxins affect the nervous system to cause muscle paralysis, in turn affecting the ability to breathe, and even death. *C. botulinum* is common in the environment but can only grow and produce the toxin under specific conditions facilitated on food products, in contaminated wounds, and in the intestinal tract of infants and adults with structurally or functionally compromised intestinal tracts.

There are five kinds of botulism:

- Foodborne botulism through ingestion of pre-formed toxins, usually involving home canned foods (e.g. fruits, vegetables, fish);
- Infant botulism through intestinal colonization by *C. botulinum* after ingestion of environmental dust/soil or food contaminated with spores (e.g., honey);
- Wound botulism through introduction of *C. botulinum* spores into wounds, especially among injection drug users;
- Inhalation botulism through inhalation of botulinum toxins when released in the form of an aerosol (e.g., bioterrorism); and
- Iatrogenic botulism through cosmetic use of botulinum toxin.

Since botulism was made legally notifiable in September 2016, there have been four isolated indigenous cases of infant botulism, one each in 2017, 2018, 2020 and 2021. There were no cases in 2022, 2023 and 2024.

CAMPYLOBACTERIOSIS

Campylobacter enteritis is an acute bacterial enteric disease of variable severity, characterised by diarrhoea (which may be bloody), abdominal pain, fever, nausea and vomiting. *Campylobacter jejuni* is the causative agent of a large majority of human *Campylobacter* enteritis, with other species such as *C. coli* and *C. fetus* as less commonly causing infections. The mode of transmission is by ingestion of the organism in raw or undercooked poultry, contaminated food, water or unpasteurised milk.

A total of 448 cases of *Campylobacter* enteritis were reported in 2024, an increase of 4.9% compared to 427 cases reported in 2023 (Figure 4.2). *C. jejuni* was isolated in majority of cases in 2023 and 2024 (Table 4.1). Of the 427 confirmed cases reported in 2023, 349 were classified as indigenous cases and 68 were imported cases. Among the 68 imported cases, there were three tourists and seven foreigners who travelled to Singapore to seek medical treatment. Of the 448 confirmed cases reported in 2024, 365 were classified as indigenous cases and 70 were imported cases. Among the 70 imported cases, there were seven tourists and six foreigners who travelled to Singapore to seek medical treatment.

The resident incidence was highest in the 0-4 years age group in both 2023 and 2024 (Tables 4.3 and 4.4). Among the three major ethnic groups, Chinese had the highest incidence rate in 2023 and 2024 (Tables 4.5 and 4.6).

Figure 4.2
Weekly distribution of reported campylobacteriosis cases, 2023-2024

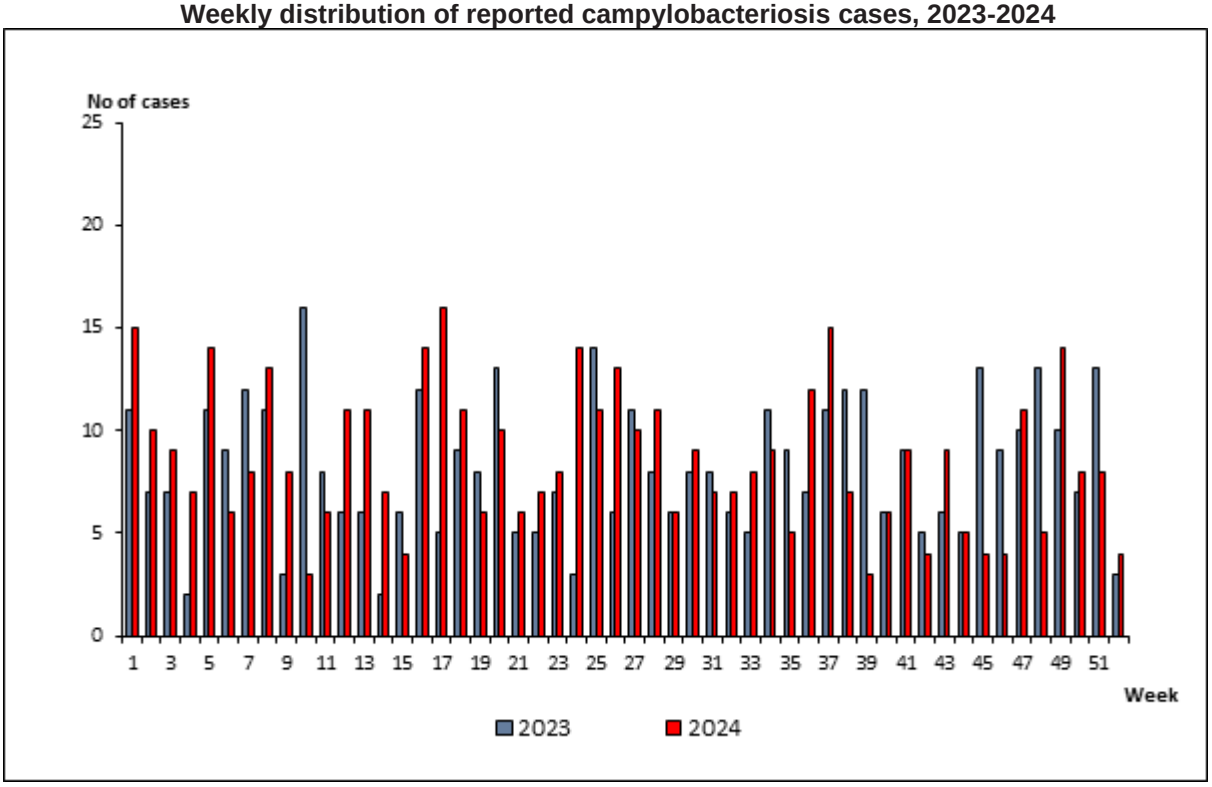


Table 4.1
Incidence rates of reported *Campylobacter* enteritis cases, 2020-2024

Year	No. of cases caused by				Incidence rate per 100,000 population*
	C. jejuni	*C. coli*	*Other species*	*Total*	
2020	458	41	8	507	8.9
2021	599	50	21	670^	12.3
2022	496	31	26	553	9.8
2023	372	36	19	427	7.2
2024	394	48	6	448	7.4

^ Count is higher as one case was concurrently infected with two Campylobacter species.
*Rates are based on estimated mid-year population.

Table 4.2
Total number of notifications* received for reported *Campylobacter* enteritis, 2020-2024

Age group	2020		2021		2022		2023		2024	
	Local	Imported	Local	Imported	Local	Imported	Local	Imported	Local	Imported
0-4	198	2	255	0	198	4	135	15	103	21
5-14	145	3	238	0	178	10	101	21	106	18
15-24	24	2	29	0	34	1	20	7	21	8
25-34	28	0	28	1	14	3	13	8	21	7
35-44	19	1	17	0	19	2	13	4	17	5
45-54	12	0	16	0	12	0	6	2	15	3
55+	70	1	85	0	65	0	61	11	82	8
Total	**496**	**9**	**668**	**1**	**520**	**20**	**349**	**68**	**365**	**70**

*Excluded tourists and foreigners seeking medical treatment in Singapore.

Table 4.3
Age-sex distribution and age-specific resident incidence rate of reported *Campylobacter* enteritis cases^, 2023

Age group	Number of notifications				Incidence rate per 100,000 resident population*
	Male	Female	Total	%	
0-4	84	66	150	36.0	74.2
5-14	70	52	122	29.3	25.6
15-24	20	7	27	6.5	4.8
25-34	12	9	21	5.0	3.3
35-44	7	10	17	4.1	1.6
45-54	5	3	8	1.9	0.8
55-64	4	6	10	2.4	1.5
65+	31	31	62	14.9	8.4
Total	**233**	**184**	**417**	**100+**	

^Excluded three tourists and seven foreigners seeking medical treatment in Singapore.
*Rates are computed based on 2023 mid-year population obtained from the Singapore Department of Statistics.
+ Figures may not add to 100% due to rounding.

Table 4.4
Age-sex distribution and age-specific resident incidence rate of reported *Campylobacter* enteritis cases^, 2024

Age group	Number of notifications				Incidence rate per 100,000 resident population*
	Male	Female	Total	%	
0-4	81	43	124	28.5	62.8
5-14	79	45	124	28.5	26.6
15-24	16	13	29	6.7	6.0
25-34	17	11	28	6.4	3.2
35-44	14	8	22	5.1	1.8
45-54	10	8	18	4.1	2.0
55-64	13	8	21	4.8	3.4
65+	37	32	69	15.9	8.9
Total	**267**	**168**	**435**	**100**	

^Excluded seven tourists and six foreigners seeking medical treatment in Singapore.
*****Rates are computed based on 2024 mid-year population obtained from the Singapore Department of Statistics.

Table 4.5
Ethnic-sex distribution and ethnic-specific incidence rate of reported *Campylobacter* enteritis cases^, 2023

	Male	Female	Total	%	Incidence rate per 100,000 population*
Singapore residents					
Chinese	149	114	263	63.1	8.5
Malay	13	23	36	8.6	6.4
Indian	14	9	23	5.5	6.1
Others	23	14	37	8.9	26.3
Non-residents	34	24	58	13.9	3.3
Total	**233**	**184**	**417**	**100**	**7.2**

^Excluded three tourists and seven foreigners seeking medical treatment in Singapore.
*Rates are computed based on 2023 mid-year population obtained from the Singapore Department of Statistics**.**

Table 4.6
Ethnic-sex distribution and ethnic-specific incidence rate of reported *Campylobacter* enteritis cases^, 2024

	Male	Female	Total	%	Incidence rate per 100,000 population*
Singapore residents					
Chinese	163	114	277	63.7	9.0
Malay	20	16	36	8.3	6.4
Indian	14	6	20	4.6	5.3
Others	22	15	37	8.5	25.7
Non-residents	48	17	65	14.9	3.5
Total	**267**	**168**	**435**	**100**	**7.2**

^Excluded seven tourists and six foreigners seeking medical treatment in Singapore.
*****Rates are computed based on 2024 mid-year population obtained from the Singapore Department of Statistics.

CHOLERA

Cholera is an acute bacterial enteric disease characterised by its severe form with sudden onset, profuse, painless watery stools, nausea and vomiting. Untreated cases may deteriorate rapidly, developing dehydration with ensuing electrolyte imbalance, hypoglycaemia, renal failure and circulatory collapse. The mode of transmission is through ingestion of food or water contaminated by faeces of infected persons. Toxigenic cholera is caused by *Vibrio Cholerae* serogroup O1 and O139. A disease

commonly associated with poor sanitation and inadequate access to clean water, cases of cholera are typically imported to Singapore. The usual causative agent for cholera detected in Singapore is *Vibrio cholerae* O1, which includes two biotypes, Classical and El Tor. Each of these biotypes can be further classified into serotypes Inaba, Ogawa and Hikojima.

A total of four cases of cholera were reported in 2024, as compared to none reported in 2023 (Figure 4.3). Of the four confirmed cases in 2024, all were classified as imported cases. (Figure 4.3, Table 4.7).

The resident incidence rate was highest in the 35 to 44 years age group in 2024 (Table 4.9). The overall incidence rate was 0.0 per 100,000 population in 2024 (Table 4.11).

Figure 4.3
Weekly distribution of reported cholera cases, 2023-2024

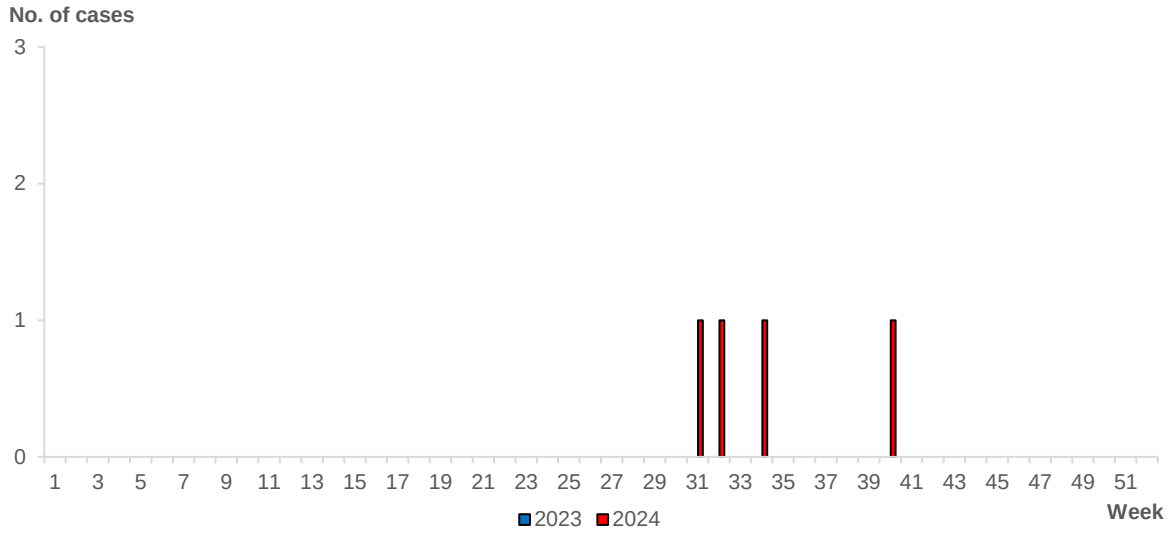


Table 4.7
Total number of notifications* received for reported cholera cases, 2020-2024

Age group	2020		2021		2022		2023		2024	
	Local	Imported	Local	Imported	Local	Imported	Local	Imported	Local	Imported
0-4	0	0	0	0	0	0	0	0	0	0
5-14	0	0	0	0	0	0	0	0	0	0
15-24	0	0	0	0	0	2	0	0	0	0
25-34	0	0	0	3	0	3	0	0	0	1
35-44	0	0	0	0	0	2	0	0	0	1
45-54	0	0	0	0	0	0	0	0	0	0
55-64	0	0	0	0	0	0	0	0	0	0
65+	0	0	1	0	0	0	0	0	0	1
Total	**0**	**0**	**1**	**3**	**0**	**7**	**0**	**0**	**0**	**3**

*Excluded tourists and foreigners seeking medical treatment in Singapore.

Table 4.8
Age-sex distribution and age-specific resident incidence rate of reported cholera cases, 2023

Age group	Number of notifications				Incidence rate per 100,000 resident population*
	Male	Female	Total	%	
0-4	0	0	0	0.0	0.0
5-14	0	0	0	0.0	0.0
15-24	0	0	0	0.0	0.0
25-34	0	0	0	0.0	0.0
35-44	0	0	0	0.0	0.0
45-54	0	0	0	0.0	0.0
55-64	0	0	0	0.0	0.0
65+	0	0	0	0.0	0.0
Total	**0**	**0**	**0**	**0.0**	**-**

*Rates are computed based on 2023 mid-year population obtained from Singapore Department of Statistics.

Table 4.9
Age-sex distribution and age-specific resident incidence rate of reported cholera cases^, 2024

Age group	Number of notifications				Incidence rate per 100,000 resident population*
	Male	Female	Total	%	
0-4	0	0	0	0.0	0.0
5-14	0	0	0	0.0	0.0
15-24	0	0	0	0.0	0.0
25-34	0	1	1	33.3	0.0
35-44	0	1	1	33.3	0.2
45-54	0	0	0	0.0	0.0
55-64	0	0	0	0.0	0.0
65+	1	0	1	33.3	0.0
Total	**1**	**2**	**3**	**100+**	-

^Excluded one tourist seeking medical treatment in Singapore.
*Rates are computed based on 2024 mid-year population obtained from the Singapore Department of Statistics.
[+]Figures may not add to 100% due to rounding.

Table 4.10
Ethnic-sex distribution and ethnic-specific incidence rate of reported cholera cases, 2023

Residential Status	Male	Female	Total	%	Incidence rate per 100,000 population*
Singapore residents					
Chinese	0	0	0	0.0	0
Malay	0	0	0	0.0	0
Indian	0	0	0	0.0	0
Others	0	0	0	0.0	0
Non-residents	0	0	0	0.0	0
Total	**0**	**0**	**0**	**0**	**0**

*Rates are computed based on 2023 mid-year population obtained from the Singapore Department of Statistics.

Table 4.11
Ethnic-sex distribution and ethnic-specific incidence rate of reported cholera cases^, 2024

Residential Status	Male	Female	Total	%	Incidence rate per 100,000 population*
Singapore residents					
Chinese	0	1	1	33.3	0
Malay	0	0	0	0.0	0
Indian	0	0	0	0.0	0
Others	0	0	0	0.0	0
Non-residents	1	1	2	66.7	0.1
Total	**1**	**2**	**3**	**100**	**0**

^Excluded one tourist seeking medical treatment in Singapore.
*Rates are computed based on 2024 mid-year population obtained from the Singapore Department of Statistics.

ENTERIC FEVERS

Enteric fevers, namely typhoid and paratyphoid fevers, are caused by *Salmonella* Typhi and *Salmonella* Paratyphi (types A, B or C) respectively. While typhoid fever typically presents as a systemic, bacterial disease characterised by insidious onset of sustained fever, bacteraemia, and diarrhoea, paratyphoid fever typically presents mild or even asymptomatic, rarely progressing to systemic disease. Typhoid fever, on the other hand, can progress beyond the initial presentation to complications resulting in hepatosplenomegaly, intestinal bleeding and perforation. Infections by either of the bacteria are usually associated with travel to endemic countries, with a faecal-oral route of transmission through contaminated food or water.

During the period from 2020 to 2024, a total of 275 cases of enteric fever were reported, of which 224 (81.4%) cases were typhoid and 51 (18.5%) cases were paratyphoid. The majority (80.4%) were imported cases (Table 4.12).

Table 4.12
Classification of reported enteric fever cases, 2020-2024

Year	Typhoid	Paratyphoid			Total
		A	B	C	
2020	30 (17)	10 (10)	0 (0)	0 (0)	40 (27)
2021	17 (1)	3 (3)	0 (0)	0 (0)	20 (4)
2022	69 (64)	12 (10)	0 (0)	0 (0)	81 (74)
2023	55 (43)	9 (8)	0 (0)	0 (0)	64 (51)
2024	53 (49)	17 (16)	0 (0)	0 (0)	70 (65)
Total	**224 (174)**	**51 (47)**	**0 (0)**	**0 (0)**	**275 (221)**

( ): number of imported cases.

In 2023, there were 55 reported cases of typhoid comprising 21 Singapore residents and 27 non-residents, six tourists and one foreigner seeking medical treatment in Singapore, while there were nine reported cases of paratyphoid, comprising seven residents and two non-residents.

In 2024, there were 53 reported cases of typhoid comprising 16 Singapore residents, 35 non-residents, one foreigner seeking medical treatment in Singapore and one tourist, while there were 17 reported cases of paratyphoid, comprising seven Singapore residents, 10 non-residents (Figure 4.4 and Table 4.13).

Figure 4.4
Weekly distribution of reported enteric fever cases, 2023-2024

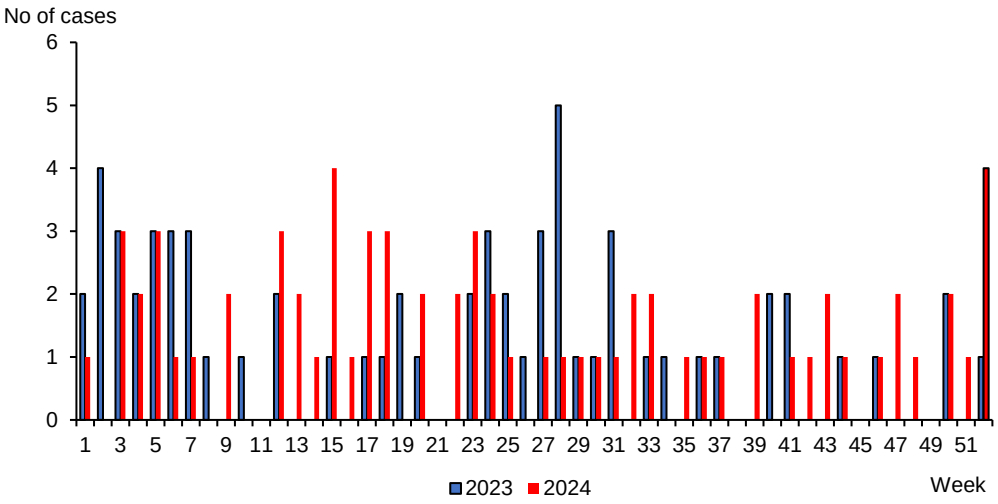


Table 4.13
Classification of reported typhoid and paratyphoid cases, 2023 and 2024

Population Group	2023		2024	
	Typhoid No. (%)	Paratyphoid No. (%)	Typhoid No. (%)	Paratyphoid No. (%)
Singapore residents	21 (38.2)	7 (77.8)	16 (30.2)	7 (41.2)
Foreigners seeking medical treatment in Singapore	1 (1.8)	0	1(1.9)	0
Tourists	6 (10.9)	0	1(1.9)	0
Non-residents	27 (49.1)	2 (22.2)	35 (66.0)	10 (58.8)
Total	**55 (100)**	**9 (100)**	**53 (100)**	**17 (100)**

TYPHOID

In 2023 and 2024, majority of the cases were imported (Table 4.14). The resident incidence rate was highest in the 45-54 years age group in 2023; and 5-14- and 55-64-years age group in 2024 (Tables 4.15 and 4.16). Among the three major ethnic groups, Indians had the highest incidence in 2023 and 2024. (Tables 4.17and 4.18).

Table 4.14
Total number of notifications* received for reported typhoid cases, 2020–2024

Age group	2020		2021		2022		2023		2024	
	Local	Imported	Local	Imported	Local	Imported	Local	Imported	Local	Imported
0-4	2	2	0	0	1	0	0	1	0	0
5-14	0	4	1	0	0	7	1	2	0	6
15-24	2	1	6	1	1	14	1	5	0	6
25-34	6	4	6	0	0	26	3	12	1	22
35-44	1	4	0	0	1	13	1	10	2	8
45-54	0	1	2	0	0	2	3	4	1	0
55-64	0	1	0	0	0	1	3	0	0	4
65+	2	0	1	0	2	0	0	2	0	1
Total	**13**	**17**	**16**	**1**	**5**	**63**	**12**	**36**	**4**	**47**

*Excluded tourists and foreigners seeking medical treatment in Singapore.

Table 4.15
Age-sex distribution and age-specific resident incidence rate of reported typhoid cases^, 2023

Age group	Number of notifications				Incidence rate per 100,000 resident population*
	Male	Female	Total	%	
0-4	0	1	1	2.1	0.6
5-14	1	2	3	6.3	0.2
15-24	5	1	6	12.5	0.2
25-34	10	5	15	31.3	0.7
35-44	4	7	11	22.9	0.7
45-54	2	5	7	14.6	1.0
55-64	1	2	3	6.3	0.5
65+	1	1	2	4.2	0.1
Total	**24**	**24**	**48**	**100+**	**-**

^Excluded one foreigner seeking medical treatment in Singapore and six tourists.
*Rates are computed based on 2023 mid-year population obtained from the Singapore Department of Statistics.
+Figures may not add to 100% due to rounding.

Table 4.16
Age-sex distribution and age-specific resident incidence rate of reported typhoid cases^, 2024

Age group	Male	Female	Total	%	Incidence rate per 100,000 resident population*
0-4	0	0	0	0	0.0
5-14	5	1	6	11.8	0.7
15-24	2	4	6	11.8	0.2
25-34	13	10	23	45.1	0.3
35-44	7	3	10	19.6	0.6
45-54	1	0	1	2.0	0.2
55-64	2	2	4	7.8	0.7
65+	0	1	1	2.0	0.1
Total	**30**	**21**	**51**	**100+**	**-**

^Excluded one foreigner seeking medical treatment in Singapore and one tourist.
*Rates are computed based on 2024 mid-year population obtained from the Singapore Department of Statistics.
+Figures may not add to 100% due to rounding.

Table 4.17
Ethnic-sex distribution and ethnic-specific incidence rate of reported typhoid cases, 2023

	Male	Female	Total	%	Incidence rate per 100,000 population*
Singapore residents					
Chinese	3	9	12	25.0	0.4
Malay	0	0	0	0	0.0
Indian	3	5	8	16.7	2.1
Others	0	1	1	2.1	0.7
Non-residents	18	9	27	56.3	1.5
Total	**24**	**24**	**48**	**100+**	**0.8**

^Excluded one foreigner seeking medical treatment in Singapore and six tourists.
*Rates are computed based on 2023 mid-year population obtained from the Singapore Department of Statistics.
+Figures may not add to 100% due to rounding.

Table 4.18
Ethnic-sex distribution and ethnic-specific incidence rate of reported typhoid cases^, 2024

	Male	Female	Total	%	Incidence rate per 100,000 population*
Singapore residents					
Chinese	3	0	3	5.9	0.1
Malay	1	0	1	2.0	0.2
Indian	5	6	11	21.6	2.9
Others	0	1	1	2.0	0.7
Non-residents	21	14	35	68.6	1.9
Total	**30**	**21**	**51**	**100+**	**0.8**

^Excluded one foreigner seeking medical treatment in Singapore and one tourist.
*Rates are computed based on 2024 mid-year population obtained from the Singapore Department of Statistics.
[+]Figures may not add to 100% due to rounding.

Majority of cases acquired the infection from South Asia in 2023 and 2024 (Table 4.19). All Singapore residents acquired the disease while overseas on vacation in 2023 (Table 4.20).

Table 4.19
Imported typhoid cases by country/ region of origin*, 2023-2024

	2023	2024
	No. (%)	No. (%)
Southeast Asia		
Indonesia	3 (8.3)	5 (10.6)
Myanmar	5 (13.9)	6 (12.8)
Philippines	1 (2.8)	1(2.1)
South Asia		
Bangladesh	7 (19.4)	12 (25.5)
India	18 (50.0)	23 (48.9)
Pakistan	1 (2.8)	0
East Asia		
Republic of China (ROC)	1 (2.8)	0
Total	**36 (100)**	**47 (100)+**

*Excluded tourists and foreigners seeking medical treatment in Singapore.
[+]Figures may not add to 100% due to rounding.

Table 4.20
Singapore residents who contracted typhoid overseas, 2020–2024

Purpose of travel	2020		2021		2022		2023		2024	
	No.	(%)	No.	No.	(%)	No.	No.	(%)	No.	(%)
Vacation	5	83.3	0	5	83.3	0	12	100	13	92.9
Business/employment	0	0	0	0	0	0	0	0	1	7.1
Others	1	16.7	0	1	16.7	0	0	0	0	0
Total	**6**	**100**	**0**	**6**	**100**	**0**	**12**	**100**	**14**	**100**

PARATYPHOID

During the period from 2020 to 2024, majority of the cases of paratyphoid were imported (Table 4.21). The resident incidence rate was highest in the 5-14 years age group in 2023; and 5-14 and 25-34 years age group in 2024 (Table 4.22 and Table 4.23).

Among the three major ethnic groups, Indians had the highest incidence in 2023 and 2024 (Table 4.24 and 4.25).

Table 4.21
Total number of notifications* received for reported paratyphoid cases, 2020 - 2024

Age group	2020		2021		2022		2023		2024	
	Local	Imported	Local	Imported	Local	Imported	Local	Imported	Local	Imported
0-4	0	2	0	0	0	0	0	0	0	1
5-14	0	2	0	0	1	1	0	3	1	3
15-24	0	0	0	0	0	1	1	0	0	1
25-34	0	4	0	3	0	7	0	3	0	5
35-44	0	0	0	0	1	0	0	0	0	4
45-54	0	2	0	0	0	0	0	2	0	2
55-64	0	0	0	0	0	0	0	0	0	0
65+	0	0	0	0	0	0	0	0	0	0
Total	**0**	**10**	**0**	**3**	**2**	**9**	**1**	**8**	**1**	**16**

* Excluded tourists and foreigners seeking medical treatment in Singapore.

Table 4.22
Age-sex distribution and age-specific resident incidence rate of reported paratyphoid cases, 2023

Age group	Number of notifications				Incidence rate per 100,000 resident population*
	Male	Female	Total	%	
0-4	0	0	0	0.0	0.0
5-14	1	2	3	33.3	0.7
15-24	0	1	1	11.1	0.2
25-34	2	1	3	33.3	0.3
35-44	0	0	0	0.0	0.0
45-54	2	0	2	22.2	0.2
55-64	0	0	0	0.0	0.0
65+	0	0	0	0.0	0.0
Total	5	4	9	**100+**	**-**

* Rates are computed based on 2023 mid-year population obtained from the Singapore Department of Statistics.
+Figures may not add to 100% due to rounding.

Table 4.23
Age-sex distribution and age-specific resident incidence rate of reported paratyphoid cases, 2024

Age group	Number of notifications				Incidence rate per 100,000 resident population*
	Male	Female	Total	%	
0-4	1	0	1	5.9	0.0
5-14	3	1	4	23.5	0.5
15-24	1	0	1	5.9	0.2
25-34	3	2	5	29.4	0.5
35-44	4	0	4	23.5	0.0
45-54	1	1	2	11.8	0.2
55-64	0	0	0	0.0	0.0
65+	0	0	0	0.0	0.0
Total	13	4	17	**100**	**-**

* Rates are computed based on 2024 mid-year population obtained from the Singapore Department of Statistics.

Table 4.24
Ethnic-sex distribution and ethnic-specific incidence rate of reported paratyphoid cases, 2023

Residential Status	Male	Female	Total	%	Incidence rate per 100,000 population*
Singapore residents					
Chinese	0	1	1	11.1	0.0
Malay	1	0	1	11.1	0.2
Indian	2	3	5	55.6	1.3
Others	0	0	0	0.0	0.0
Non-residents	2	0	2	22.2	0.1
Total	**5**	**4**	**9**	**100**	**0.2**

* Rates are computed based on 2023 mid-year population obtained from the Singapore Department of Statistics.

Table 4.25
Ethnic-sex distribution and ethnic-specific incidence rate of reported paratyphoid cases, 2024

Residential Status	Male	Female	Total	%	Incidence rate per 100,000 population*
Singapore residents					
Chinese	1	1	2	11.8	0.1
Malay	0	0	0	0.0	0.0
Indian	3	1	4	23.5	1.1
Others	0	1	1	5.9	0.7
Non-residents	9	1	10	58.8	0.5
Total	**13**	**4**	**17**	**100**	**0.3**

* Rates are computed based on 2024 mid-year population obtained from the Singapore Department of Statistics.

Majority of the cases acquired the infection from South Asia in 2023 and 2024 (Table 4.26). All Singapore residents acquired the disease while overseas on vacation in 2023. In 2024, five Singapore residents acquired the disease while overseas on vacation and one acquired the disease while on overseas business trip. (Table 4.27).

Table 4.26
Imported paratyphoid cases by country/ region of origin, 2023-2024

	2023	2024
	No. (%)	**No. (%)**
Southeast Asia		
Indonesia	1 (12.5)	3 (18.8)
Philippines	0	1 (6.3)
South Asia		
Bangladesh	0	2 (12.5)
India	5 (62.5)	9 (56.3)
Pakistan	0	1 (6.3)
Middle East		
Saudi Arabia	2 (25.0)	0
Total	**8 (100)**	**16 (100)+**

+Figures may not add to 100% due to rounding.

Table 4.27
Singapore residents who contracted paratyphoid overseas, 2020-2024

Purpose of travel	2020		2021		2022		2023		2024	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Vacation	3	75.0	0	0	2	100	6	100	5	83.3
Business/employment	1	25.0	0	0	0	0	0	0	1	16.7
Others	0	0	0	0	0	0	0	0	0	0
Total	**4**	**100**	**0**	**0**	**2**	**100**	**6**	**100**	**6**	**100**

HEPATITIS A

Hepatitis A is a liver infection caused by the Hepatitis A virus. It is transmitted primarily via the faecal-oral route, which includes consumption of contaminated food or water. It can also be spread from close contact with infected persons such as certain sexual acts or sharing needles when using drugs. Compared to the other hepatitis viruses, hepatitis A infections are typically self-limiting and does not become chronic. Clinical features include jaundice, fever, nausea and vomiting, loss of appetite, abdominal pain, dark urine and pale stools.

There were 44 cases of laboratory confirmed acute hepatitis A in 2023 as compared to 49 cases in 2024 (Figure 4.5). The 44 cases in 2023 comprised of 23 Singapore residents, 17 non-residents, three tourists and one foreigner seeking medical treatment. In 2024, there were 49 cases, comprising of 30 Singapore residents, 17 non-residents and two foreigners who sought medical treatment in Singapore in 2023 (Table 4.28).

In 2023, there were 20 indigenous and 20 imported cases, compared to 28 indigenous and 19 imported cases in 2024 (Table 4.29).

The resident incidence rate was highest in the 15-24 years age group in 2023 and 65+ years age group in 2024 (Tables 4.30 and 4.31). Among the three major ethnic groups, Indians had the highest incidence in 2023 and 2024 (Tables 4.32 and 4.33).

Figure 4.5
Weekly distribution of reported acute hepatitis A cases, 2023-2024

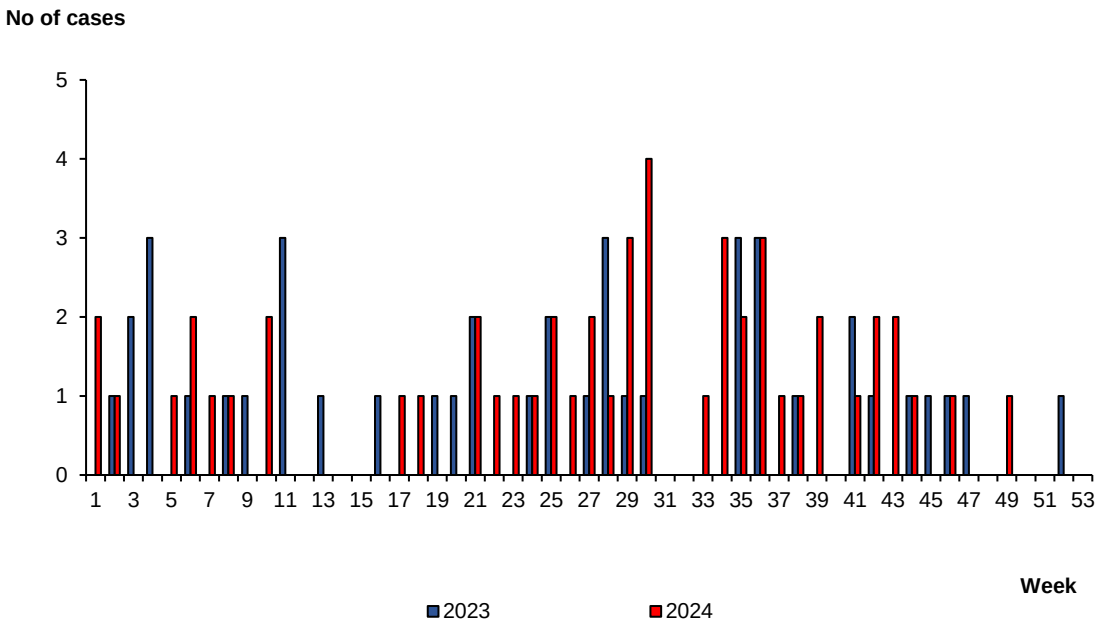


Table 4.28
Classification of reported acute hepatitis A cases, 2023 and 2024

Population group	No. of cases (%)	
	2023	2024
Singapore residents	23 (52.3)	30 (61.2)
Non-residents	17 (38.6)	17 (34.7)
Foreigners seeking medical treatment in Singapore	1 (2.3)	2 (4.1)
Tourists	3 (6.8)	0
Total	**44 (100)**	**49 (100)**

Table 4.29
Total number of notifications* received for acute hepatitis A, 2020-2024

Age group	2020		2021		2022		2023		2024	
	Local	Imported	Local	Imported	Local	Imported	Local	Imported	Local	Imported
0-4	**0**	**1**	**0**	**0**	**0**	**0**	0	3	0	1
5-14	**1**	**0**	**0**	**0**	**0**	**1**	0	1	3	2
15–24	**1**	**0**	**0**	**2**	**0**	**1**	3	6	4	2
25–34	**4**	**2**	**0**	**0**	**0**	**8**	3	6	4	6
35–44	**0**	**1**	**1**	**0**	**2**	**3**	1	3	4	2
45–54	**0**	**2**	**0**	**0**	**3**	**0**	3	1	6	2
55–64	**3**	**0**	**2**	**1**	**2**	**0**	3	0	0	3
65+	**9**	**2**	**13**	**0**	**5**	**1**	7	0	7	1
Total	**18**	**8**	**16**	**3**	**12**	**14**	**20**	**20**	**28**	**19**

*Excluded tourists and foreigners seeking medical treatment in Singapore.

Table 4.30
Age-sex distribution and age-specific resident incidence rate of acute hepatitis A cases^, 2023

Age group	Number of notifications				Incidence rate per 100,000 resident population*
	Male	Female	Total	%	
0-4	1	2	3	7.5	0.6
5-14	0	1	1	2.5	0.0
15-24	5	4	9	22.5	1.1
25-34	7	2	9	22.5	0.3
35-44	1	3	4	10.0	0.5
45-54	3	1	4	10.0	0.3
55-64	1	2	3	7.5	0.5
65+	2	5	7	17.5	1.0
Total	**20**	**20**	**40**	**100**	**-**

^Excluded one foreigner seeking medical treatment in Singapore and three tourists in 2023.
*Rates are computed based on 2023 mid-year population obtained from the Singapore Department of Statistics.

Table 4.31
Age-sex distribution and age-specific resident incidence rate of acute hepatitis A cases^, 2024

Age group	Number of notifications				Incidence rate per 100,000 resident population*
	Male	Female	Total	%	
0-4	0	1	1	2.1	0.0
5-14	3	2	5	10.6	1.0
15-24	4	2	6	12.8	0.2
25-34	6	4	10	21.3	0.7
35-44	2	4	6	12.8	0.6
45-54	6	2	8	17.0	1.0
55-64	0	3	3	6.4	0.5
65+	2	6	8	17.0	1.1
Total	**23**	**24**	**47**	**100**	**-**

^Excluded two foreigners seeking medical treatment in Singapore in 2024.
*Rates are computed based on 2024 mid-year population obtained from the Singapore Department of Statistics.

Table 4.32
Ethnic-sex distribution and ethnic-specific incidence rate of acute hepatitis A cases^, 2023

	Male	Female	Total	%	Incidence rate per 100,000 population*
Singapore residents					
Chinese	4	9	13	32.5	0.4
Malay	2	0	2	5.0	0.4
Indian	3	4	7	17.5	1.9
Others	1	0	1	2.5	0.7
Non-residents	10	7	17	42.5	1.0
Total	**20**	**20**	**40**	**100**	**0.7**

^Excluded one foreigner seeking medical treatment in Singapore and three tourists in 2023.
*Rates are computed based on 2023 mid-year population obtained from the Singapore Department of Statistics.

Table 4.33
Ethnic-sex distribution and ethnic-specific incidence rate of acute hepatitis A cases^, 2024

	Male	Female	Total	%	Incidence rate per 100,000 population*
Singapore residents					
Chinese	5	7	12	25.5	0.4
Malay	3	4	7	14.9	1.2
Indian	3	7	10	21.3	2.6
Others	1	0	1	2.1	0.7
Non-residents	11	6	17	36.2	0.9
Total	**23**	**24**	**47**	**100**	**0.8**

^Excluded two foreigners seeking medical treatment in Singapore in 2024.
*Rates are computed based on 2024 mid-year population obtained from the Singapore Department of Statistics.

Imported acute hepatitis A

In 2023, 24 out of 44 cases (54.5%) acquired the infection overseas as compared to 21 out of 49 cases (42.9%) of acute Hepatitis A in 2024 (Table 4.34). Majority of the cases acquired the infection from Southeast Asia and South Asia in 2023 and 2024 (Table 4.35).

Table 4.34

Classification of imported acute hepatitis A cases, 2023 and 2024

Population group	No. of cases (%)	
	2023	2024
Singapore residents	6 (25.0)	9 (42.9)
Non-residents	14 (58.3)	10 (47.6)
Foreigners seeking medical treatment in Singapore	1 (4.2)	2 (9.5)
Tourist	3 (12.5)	0
Total	**24 (100)**	**21 (100)**

Table 4.35

Imported acute hepatitis A cases by country/ region of origin*, 2023 and 2024

Country/ region of origin	No. of cases (%)	No. of cases (%)
	2023	2024^
Southeast Asia		
Indonesia	1 (5.0)	0
Malaysia	0	1 (5.0)
Myanmar	2 (10.0)	3 (15.0)
Thailand	1 (5.0)	2 (10.0)
South Asia		
Bangladesh	4 (20.0)	2 (10.0)
India	11 (55.0)	10 (50.0)
Pakistan	0	1 (5.0)
Others		
Republic of China (ROC)	1(5.0)	0
Egypt	0	1 (5.0)
Total	**20 (100)**	**20 (100)**

*Excluded tourists and foreigners seeking medical treatment in Singapore.
^Count is higher as some individuals visited more than one country during the incubation period.

HEPATITIS E

Similar to hepatitis A, hepatitis E is also a viral infection of the liver. It is spread largely via the faecal-oral route, most often through faecal-contaminated drinking water. It can also be spread via the consumption of raw or undercooked meat or organs from infected animals (e.g. pork, venison) or shellfish. Clinical features include jaundice, fever, nausea and vomiting, loss of appetite, abdominal pain and tenderness, dark urine and pale stools.

There were 43 reported cases of acute hepatitis E in 2024, as compared to 61 cases in 2023 (Figure 4.6). In 2023, there were 57 Singapore residents and four non-residents, while 40 Singapore residents and three non-residents were reported in 2024 (Table 4.36). Of the reported cases in 2023 and 2024, majority were indigenous cases (Table 4.37).

The resident incidence rate was highest in the 65+ years age group in 2023 and 2024 (Tables 4.38 and 4.39). Among the three major ethnic groups, Chinese had the highest incidence in both 2023 and 2024 (Tables 4.40 and 4.41).

Figure 4.6
Weekly distribution of reported acute hepatitis E cases, 2023-2024

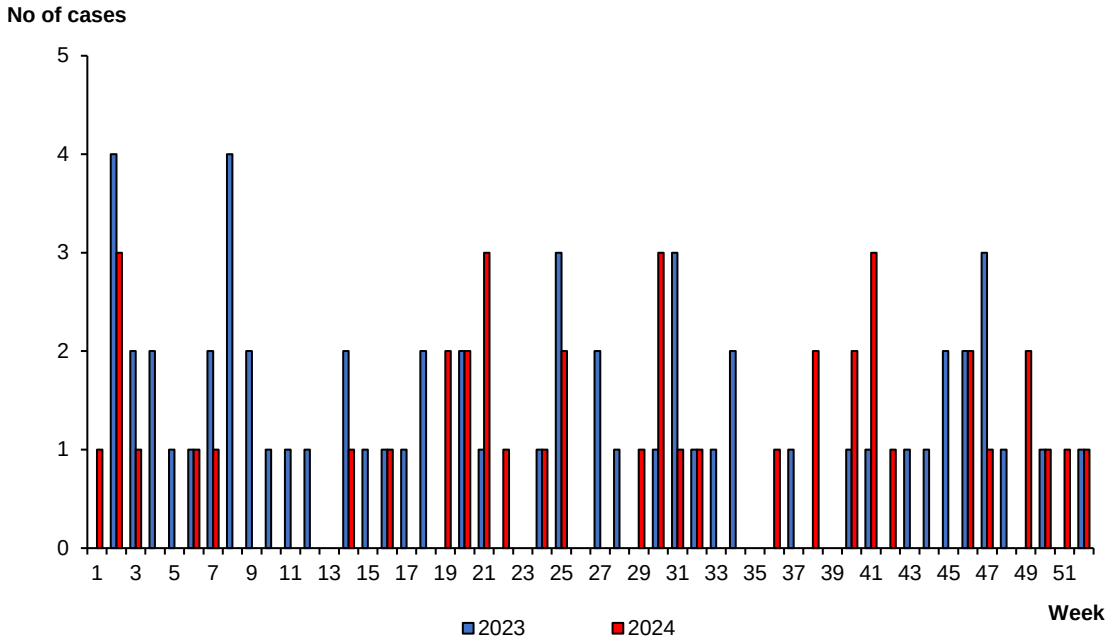


Table 4.36
Classification of reported acute hepatitis E cases, 2023 and 2024

Population group	No. of cases (%)	
	2023	2024
Singapore residents	57 (93.4)	40 (93.0)
Non-residents	4 (6.6)	3 (7.0)
Foreigners seeking medical treatment in Singapore	0	0
Total	**61 (100)**	**43 (100)**

Table 4.37
Total number of notifications* received for acute hepatitis E cases, 2020-2024

Age group	2020		2021		2022		2023		2024	
	Local	Imported	Local	Imported	Local	Imported	Local	Imported	Local	Imported
0-4	0	0	0	0	0	0	0	0	0	0
5-14	0	0	0	0	0	0	0	0	0	0
15–24	0	0	1	0	1	0	3	0	0	0
25–34	2	1	2	0	2	0	5	0	0	1
35–44	7	0	7	0	3	1	4	0	1	2
45–54	8	0	14	0	6	0	6	1	5	0
55–64	12	0	10	0	9	0	17	1	13	0
65+	22	0	20	0	13	0	24	0	21	0
Total	**51**	**1**	**54**	**0**	**34**	**1**	**59**	**2**	**40**	**3**

*Excluded tourists and foreigners seeking medical treatment in Singapore.

Table 4.38
Age-sex distribution and age-specific resident incidence rate of acute hepatitis E cases, 2023

Age group	Number of notifications				Incidence rate per 100,000 resident population*
	Male	Female	Total	%	
0-4	0	0	0	0.0	0.0
5-14	0	0	0	0.0	0.0
15-24	2	1	3	4.9	0.7
25-34	2	3	5	8.2	0.8
35-44	2	2	4	6.6	0.5
45-54	5	2	7	11.5	0.8
55-64	12	6	18	29.5	2.9
65+	17	7	24	39.3	3.3
Total	**40**	**21**	**61**	**100**	**-**

*Rates are computed based on 2023 mid-year population obtained from the Singapore Department of Statistics.

Table 4.39
Age-sex distribution and age-specific resident incidence rate of acute hepatitis E cases, 2024

Age group	Number of notifications				Incidence rate per 100,000 resident population*
	Male	Female	Total	%	
0-4	0	0	0	0.0	0.0
5-14	0	0	0	0.0	0.0
15-24	0	0	0	0.0	0.0
25-34	1	0	1	2.3	0.0
35-44	3	0	3	7.0	0.2
45-54	1	4	5	11.6	0.8
55-64	6	7	13	30.2	2.2
65+	11	10	21	48.8	2.8
Total	**22**	**21**	**43**	**100+**	**-**

*Rates are computed based on 2024 mid-year population obtained from the Singapore Department of Statistics.
[+]Figures may not add to 100% due to rounding.

Table 4.40
Ethnic-sex distribution and ethnic-specific incidence rate of acute hepatitis E cases, 2023

Residential Status	Male	Female	Total	%	Incidence rate per 100,000 population*
Singapore residents					
Chinese	34	19	53	86.9	1.7
Malay	0	0	0	0.0	0.0
Indian	0	0	0	0.0	0.0
Others	2	2	4	6.6	2.8
Non-residents	4	0	4	6.6	0.2
Total	**40**	**21**	**61**	**100+**	**1.0**

*Rates are computed based on 2023 mid-year population obtained from the Singapore Department of Statistics.
[+]Figures may not add to 100% due to rounding.

Table 4.41
Ethnic-sex distribution and ethnic-specific incidence rate of acute hepatitis E cases, 2024

Residential Status	Male	Female	Total	%	Incidence rate per 100,000 population*
Singapore residents					
Chinese	18	20	38	88.4	1.2
Malay	0	0	0	0.0	0.0
Indian	0	0	0	0.0	0.0
Others	1	1	2	4.7	1.4
Non-residents	3	0	3	7.0	0.2
Total	**22**	**21**	**43**	**100+**	**0.7**

*Rates are computed based on 2024 mid-year population obtained from the Singapore Department of Statistics.
+Figures may not add to 100% due to rounding.

Imported acute hepatitis E

Of the 61 cases in 2023, two (3.3%) acquired the infection overseas while of the 43 cases in 2022, three (7.0%) acquired the infection overseas (Table 4.42). In 2023 and 2024, all cases acquired the infection from Middle East, East Asia and South Asia (Table 4.43).

Table 4.42
Classification of imported acute hepatitis E cases, 2023 and 2024

Population group	No. of cases (%)	
	2023	2024
Singapore residents	1 (50.0)	0
Non-residents	1 (50.0)	3 (100.0)
Foreigners seeking medical treatment in Singapore	0	0
Total	**1 (100)**	**3 (100)**

Table 4.43
Imported acute hepatitis E cases by country/ region of origin, 2023 and 2024

Country/ region of origin	No. of cases (%)	No. of cases (%)
	2023	2024
Middle East		
Saudi Arabia	1 (50.0)	0
East Asia		
Japan	1 (50.0)	0
South Asia		
Bangladesh	0	2 (66.7)
Pakistan	0	1 (33.3)
Total	**1 (100)**	**3 (100)**

Hepatitis E Virus Genotypes

Genotyping was done by the National Public Health Laboratory for 35 laboratory-confirmed cases in 2023. 21 (60.0%) were genotype 3, two (5.7%) were genotype 4, one (2.9%) was genotype 1, and the genotype for the remaining samples was indeterminate. In 2024, out of the 18 laboratory-confirmed cases genotyped, 17 (94.4%) were genotype 3 and the genotypes for the remaining samples were indeterminate.

SALMONELLOSIS

Salmonellosis is a bacterial disease commonly presenting as acute enterocolitis, with sudden onset of fever, headache, abdominal pain, diarrhoea, nausea and sometimes vomiting. Dehydration, especially among infants or in the elderly, may be severe. The causative pathogen, *Salmonella* is a genus of gram-

negative, facultative anaerobic motile rod-shaped bacteria. It is divided into two species, *Salmonella enterica* and *Salmonella bongori. Salmonella enterica* is further subdivided into subspecies and serotypes based on biochemical and antigenic reactions. Most of the human pathogenic *Salmonella* serovars belong to the *enterica* subspecies, most commonly reported *Salmonella enterica* serovar Typhimurium (*S.* Typhimurium) and *Salmonella enterica* serovar Enteritidis (*S.* Enteritidis). Additionally, within the *S. enterica* subsp. *Enterica*, the most common O-antigen serogroups identified are classed from A through E.

Poultry is the most common source of human salmonellosis. Consumption of contaminated, raw or undercooked meat and eggs is also a frequent cause. A wide range of other domestic and wild animals, including swine, cattle, rodents and pets, may also act as reservoirs for *Salmonella*.

A total of 1,509 laboratory-confirmed cases of salmonellosis were reported in 2024, an increase of 11.9% compared to 1,348 cases reported in 2023 (Figure 4.7). *Salmonella* Group D was the predominant serogroup identified in both 2023 and 2024 (Table 4.44). Of these Group D cases, 350 and 453 cases were caused by *S.* Enteritidis in 2023 and 2024, respectively.

There was one salmonellosis death reported in 2023 and one in 2024, giving a case-fatality rate of 0.07% in both years.

Figure 4.7
Weekly distribution of reported salmonellosis cases, 2023-2024

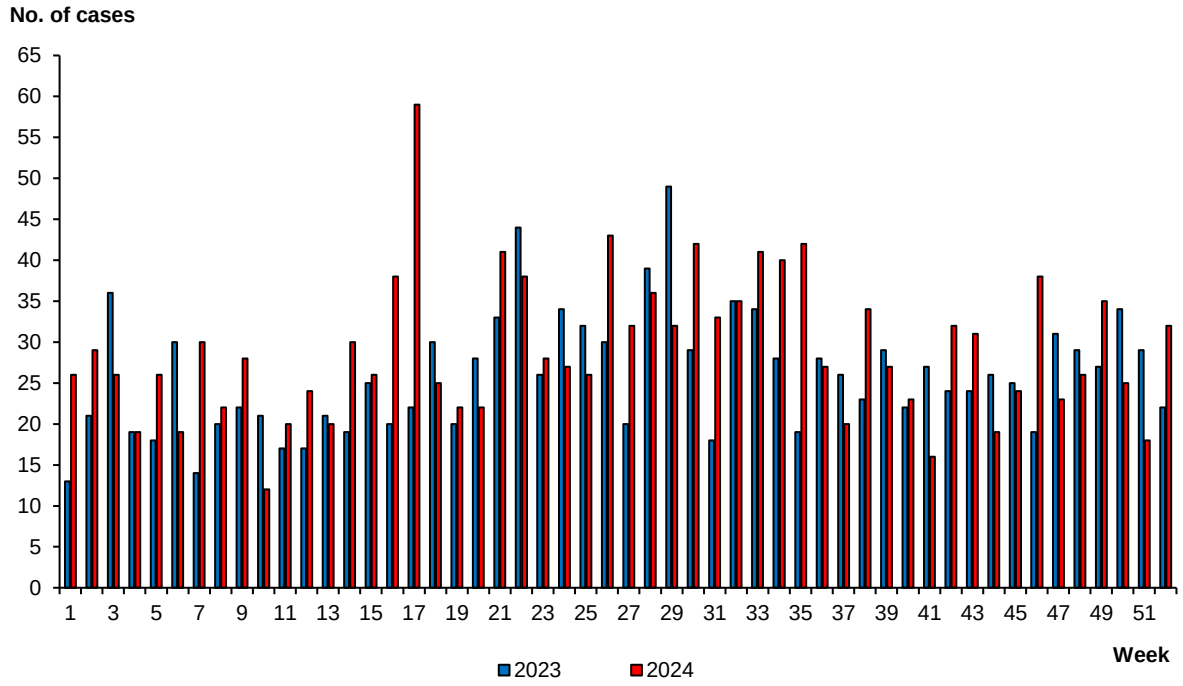


Table 4.44
Reported salmonellosis cases by serogroups, 2023-2024

Salmonella serogroups	2023		2024	
	No. of cases	Incidence rate per 100,000 population*	No. of cases	Incidence rate per 100,000 population*
Enterica-A	0	0	0	0
Enterica-B	357	6.0	462	7.7
Enterica-C	238	4.0	292	4.8
Enterica-C/D	0	0	0	0
Enterica-D	508	8.6	526	8.7
Enterica-E	112	1.9	118	2.0
Enterica-E/G	9	0.2	3	0
Enterica-F	1	0	2	0
Enterica-G	7	0.1	15	0.2
Enterica-I	52	0.9	23	0.4
Enterica-J	6	0.1	7	0.1
Enterica-K	1	0	2	0
Enterica-L	5	0.1	4	0.1
Enterica-M	0	0	0	0
Enterica-N	4	0.1	9	0.1
Enterica-O	1	0	0	0
Enterica-P	0	0	1	0
Enterica-Unspecified	47	0.8	45	0.7
Grand Total	**1,348**	**22.8**	**1,509**	**25.0**

*Rates are computed based on 2023 and 2024 mid-year population obtained from the Singapore Department of Statistics.

Salmonella Enteritidis in 2023 and 2024

Of the 350 cases reported in 2023, 302 were Singapore residents, 43 were non-residents, two were foreigners seeking medical treatment in Singapore, and three were tourists. Of the 453 cases reported in 2024, 383 were Singapore residents, 64 were non-residents, four were foreigners seeking medical treatment in Singapore, and two were tourists (Table 4.45).

During the period from 2020 to 2024, majority of the cases of *S.* Enteritidis were indigenous, and in the 0-4 years age group (Table 4.46). In 2023 and 2024, the resident incidence rate was highest in the 0-4 years age group (Tables 4.47 and 4.48). Among the three major ethnic groups, Malays had the highest incidence rate in both 2023 and 2024 (Tables 4.49 and 4.50).

Table 4.45
Classification of reported acute *S.* Enteritidis cases, 2023-2024

Population group	No. of cases (%)	
	2023	2024
Singapore residents	302 (86.3)	383 (84.5)
Non-residents	43 (12.3)	64 (14.1)
Foreigners seeking medical treatment in Singapore	2 (0.6)	4 (0.9)
Tourists	3 (0.9)	2 (0.4)
Total	**350 (100)+**	**453 (100)+**

+Figures may not add to 100% due to rounding.

Table 4.46
Total number of notifications* received for reported *S.* Enteritidis cases, 2020-2024

Age group	2020		2021		2022		2023		2024	
	Local	Imported	Local	Imported	Local	Imported	Local	Imported	Local	Imported
0-4	110	0	52	0	105	1	119	5	177	12
5-14	37	0	21	0	44	1	46	7	72	4
15-24	24	0	6	0	6	0	18	2	14	0
25-34	42	1	17	1	13	0	25	2	23	1
35-44	33	0	15	0	7	2	13	2	26	0
45-54	21	0	16	0	14	0	17	1	19	2
55-64	35	0	15	0	27	1	18	1	25	1
65+	61	0	25	0	39	0	68	1	66	5
Total	**363**	**1**	**167**	**1**	**255**	**5**	**324**	**21**	**422**	**25**

*Excluded tourists and foreigners seeking medical treatment in Singapore.
Nb: Serotyping results were routinely updated from 2018 onwards.

Table 4.47
Age-sex distribution and age-specific resident incidence rate of reported *S.* Enteritidis cases^, 2023

Age group	Number of notifications				Incidence rate per 100,000 resident population*
	Male	Female	Total	%	
0-4	65	59	124	35.9	65.0
5-14	32	21	53	15.4	11.1
15-24	5	15	20	5.8	3.6
25-34	12	15	27	7.8	3.2
35-44	7	8	15	4.3	1.8
45-54	12	6	18	5.2	2.0
55-64	9	10	19	5.5	3.0
65+	41	28	69	20.0	9.3
Total	**183**	**162**	**345**	**100+**	-

^ Excluded three tourists and two foreigners seeking medical treatment in Singapore.
*Rates are computed based on 2023 mid-year population obtained from the Singapore Department of Statistics.
+Figures may not add to 100% due to rounding.

Table 4.48
Age-sex distribution and age-specific resident incidence rate of reported *S.* Enteritidis cases^, 2024

Age group	Number of notifications				Incidence rate per 100,000 resident population*
	Male	Female	Total	%	
0-4	102	87	189	42.3	102.1
5-14	42	34	76	17.0	15.3
15-24	5	9	14	3.1	1.8
25-34	12	12	24	5.4	2.4
35-44	16	10	26	5.8	2.2
45-54	7	14	21	4.7	2.6
55-64	12	14	26	5.8	4.4
65+	39	32	71	15.9	9.2
Total	**235**	**212**	**447**	**100**	-

^ Excluded two tourists and four foreigners seeking medical treatment in Singapore.
*Rates are computed based on 2024 mid-year population obtained from the Singapore Department of Statistics.

Table 4.49
Ethnic-sex distribution and ethnic-specific incidence rate of reported *S.* Enteritidis cases^, 2023

Residential Status	Male	Female	Total	%	Incidence rate per 100,000 population*
Singapore residents					
Chinese	124	104	228	66.1	7.4
Malay	24	27	51	14.8	9.1
Indian	9	9	18	5.2	4.8
Others	3	2	5	1.4	3.6
Non-residents	23	20	43	12.5	2.4
Total	**183**	**162**	**345**	**100**	**5.8**

^ Excluded three tourists and two foreigners seeking medical treatment in Singapore.
*Rates are computed based on 2023 mid-year population obtained from the Singapore Department of Statistics.

Table 4.50
Ethnic-sex distribution and ethnic-specific incidence rate of reported *S.* Enteritidis cases^, 2024

Residential Status	Male	Female	Total	%	Incidence rate per 100,000 population*
Singapore residents					
Chinese	144	124	268	60.0	8.7
Malay	43	33	76	17.0	13.4
Indian	18	13	31	6.9	8.2
Others	4	4	8	1.8	5.6
Non-residents	26	38	64	14.3	3.4
Total	**235**	**212**	**447**	**100**	**7.4**

^ Excluded two tourists and four foreigners seeking medical treatment in Singapore.
*Rates are computed based on 2024 mid-year population obtained from the Singapore Department of Statistics.

FOOD POISONING

There were 504 notifications with 1,799 cases in 2024, as compared with 385 notifications of food poisoning with 1,368 cases in 2023. (Figure 4.8). In 2023 and 2024, most of the notifications and majority of the cases reported to have developed gastroenteritis symptoms after consuming food from restaurants (others) (Table.4.51).

Figure 4.8

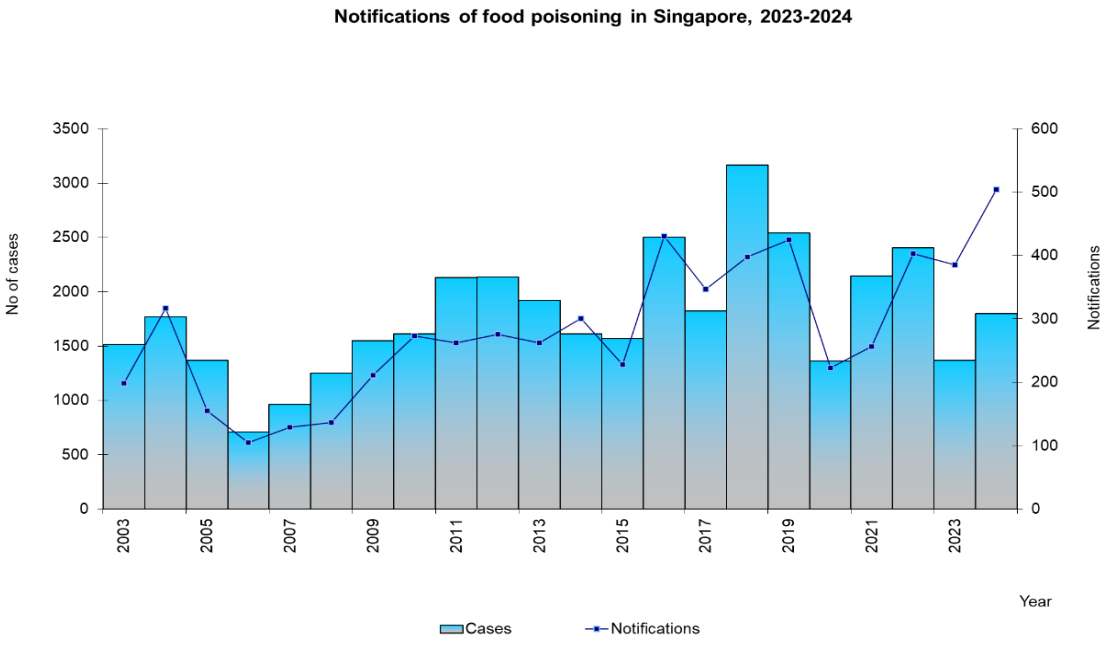


Table 4.51
Food poisoning notifications by type of food establishments, 2023-2024

Type of food establishments	2023		2024	
	No. of notifications	No of cases	No. of notifications	No of cases
General outlets				
Bakery	4	7	3	8
Canteens				
School	1	1	0	0
Tertiary Institution	1	4	0	0
others	9	27	4	11
Caterer (licensed)	6	151	5	180
Eating house	56	146	65	174
Fair (food fair)	2	4	3	5
Fair (others)	0	0	0	0
Food court	21	43	35	82
Food factory	6	178	7	59
Foodshop (takeaway)	20	41	29	66
Hawker centre	26	67	30	82
Other licensed premises	2	4	4	14
Restaurants				
In Hotel	8	20	24	133
Fast Food	24	56	15	38
Others	175	552	253	872
Snackbar	14	35	18	56
Supermarket	5	13	4	7
Sub-total (General outlets)	**380**	**1,349**	**499**	**1,787**
In house kitchens				
Preschool	0	0	1	1
Nursing home	0	0	0	0
School	0	0	0	0
Workers dormitory	0	0	0	0
Others (home based business)	0	0	1	3
Others	5	19	3	8
Unlicensed premises	0	0	0	0
Sub-total (Others)	**5**	**19**	**5**	**12**
Total	**385**	**1,368**	**504**	**1,799**