OzFoodNet

Enhancing Foodborne Disease Surveillance Across Australia

NSW ANNUAL REPORT 2022

Produced by:

ONE HEALTH BRANCH
Health Protection NSW
Locked Mail Bag 961
North Sydney NSW 2059
Email: MOH-onehealth@health.nsw.gov.au
www.health.nsw.gov.au/infectious/pages/default.aspx

SHPN: (HP NSW) 231014 NSW
ISBN: 978-1-76023-723-3

Suggested citation:
One Health Branch. *NSW OzFoodNet Annual Surveillance Report: 2022.* Sydney: Health Protection NSW, 2023.

April, 2023

TABLE OF CONTENTS

GLOSSARY

ACF	Aged-care facility
CC	Central Coast LHD
CCC	Childcare centre
DPI	Department of Primary Industries
FW	Far West LHD
HNE	Hunter New England LHD
HUS	haemolytic uraemic syndrome
ICPMR	Institute of Clinical Pathology and Medical Research
IS	Illawarra Shoalhaven LHD
LHD	Local Health Districts
M	Murrumbidgee LHD
MDR	Multi-drug resistant
MLVA	Multi-locus variable number tandem repeat analysis
MLST	Multi-locus sequence typing
MNC	Mid North Coast LHD
N	Number
N/A	Not available
NBM	Nepean Blue Mountains LHD
NNSW	Northern NSW LHD
NS	Northern Sydney LHD
NSW	New South Wales
NSWFA	NSW Food Authority
Q	Quarter
SES	South Eastern Sydney LHD
SNP	single nucleotide polymorphisms
SNSW	Southern NSW LHD
STEC	Shiga toxin-producing *Escherichia Coli*
SWS	South Western Sydney LHD
SYD	Sydney LHD
WGS	Whole genome sequencing
WNSW	Western NSW LHD
WS	Western Sydney LHD
Yr	Year

SUMMARY – ENTERIC INFECTIONS IN NSW

This report summarises NSW enteric disease surveillance data for viral, bacterial and parasitic pathogens for 2022, changes in notifications over time, and other activities in 2022. NSW Health undertakes surveillance of enteric diseases to monitor trends and identify outbreaks, with the aim of implementing control measures to prevent further illness within the community. Disease notification represents only a portion of cases in the community, as it usually relies on people seeing a doctor, and the doctor ordering a test that detects the infection, to generate a notification.

Note: During the COVID-19 response in 2020-2021 the control guidelines for public health unit management of some enteric conditions were temporarily amended. Some information collected during that period may be incomplete.

Cases of infection and incidence 2022

Notifications of enteric conditions: 20,704

Reported hospitalisations: 431

Reported deaths: 7

Notification rate per 100,000 population: 253.3

Notified incidence and reported hospitalisation due to enteric pathogens in NSW, 2022

	5Yr annual mean	N 2022	% change	Notified Rate	Reported Hospitalisations[a]
Campylobacter[b]	10380.2	13291	28%	162.6	7
Salmonellosis	3275.0	2913	-11%	35.6	99
Rotavirus	1143.2	1877	64%	23.0	50
Giardiasis	2604	1396	-46%	17.1	0
Shigellosis	422	468	9%	5.7	45
Cryptosporidiosis	718.4	465	-35%	5.7	40
STEC/VTEC	84.2	144	71%	1.8	68
Typhoid	42.2	49	16%	0.6	43
Hepatitis A	51.6	35	-26%	0.4	21
Listeriosis	19.2	34	61%	0.4	32
Paratyphoid	20.8	14	-33%	0.2	10
Hepatitis E	14.0	9	-36%	0.11	7
Haemolytic Uremic Syndrome	2.4	7	292%	0.1	7
Cholera	1.0	2	100%	0.02	2
Botulism	1.3	0	0%	0	0
TOTAL	19124.0	20,704	8%	253.3	431

[a] Hospitalisations may be underestimated as counts are limited to those infections investigated by a public health unit

[b] Campylobacteriosis became a notifiable condition in April 2017. Therefore data for 2017 will be under reported when 5yr mean is calculated.

Notable changes in 2022 (compared to 5 year annual average, 2017-2021)

- Campylobacteriosis was the highest enteric infection notified in 2022. Since its introduction as a notifiable condition in NSW in April 2017, Campylobacteriosis notifications have exceeded all other enteric infections (page 6).
- HUS notifications increased by 292% compared to the five year annual average. Cases did not cluster by cause, and less than half were associated with STEC (page 14).

Reported enteric disease outbreaks

- 33 foodborne or potentially foodborne disease outbreaks were reported affecting at least 540 people; a 6% decrease in the number of reported foodborne or probable foodborne disease outbreaks compared to 2021 (n=31)
- 1862 viral or probable viral gastroenteritis outbreaks in institutions were reported, affecting at least 21,983 people; a 45% increase in the number of reported gastroenteritis outbreaks in institutions compared to 2021 (n=1284)

CAMPYLOBACTERIOSIS

Campylobacteriosis is a disease caused by *Campylobacter* bacteria, usually through contaminated and uncooked food, untreated water and contact with unwell animals. It usually causes diarrhoea, abdominal pain, fever, malaise, nausea, and sometimes vomiting. Notified cases are only investigated if they are part of, or suspected to be part of, an outbreak.

Summary 2022

- Case count: 13290
- Reported hospitalisations: 7[a]
- Reported deaths: 0
- Notification rate per 100,000: 162.6

a. Hospitalisations may be underestimated as most cases are not interviewed by public health officers

Overall trend

There was an 19.0% increase when compared to the previous year (n=11171). Campylobacteriosis became a notifiable condition on 7 April 2017.

Groups with highest notification rate in 2022

Age: <5 years (8.8% of cases – 246.4 per 100,000)

Sex: Male (56% of cases – 184.5 per 100,000)

LHD: Murrumbidgee (5% of cases – 205.4 per 100,000)

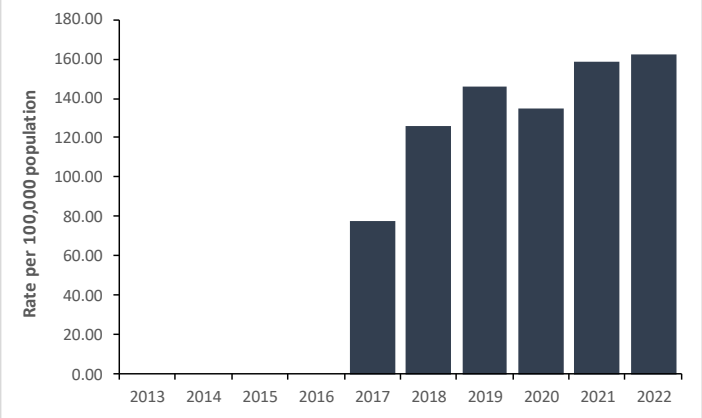
Seasonality

Campylobacteriosis notifications were highest in the warmer spring months

Outbreaks

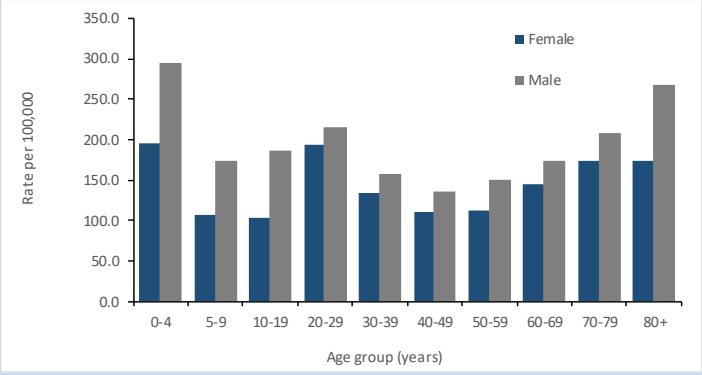
Seven outbreaks were detected in NSW in 2022 affecting 25 people. (pages 23-27)

Notification rate per 100,000 population by year, 2017 – 2022, NSW



* Campylobacteriosis became a notifiable condition on 7 April 2017, therefore 2017 notifications only represent 9 months of data.

Notification rate per 100,000 population by age category and sex, 2022, NSW



Number of cases and rates (per 100,000) by Local Health District, 2022, NSW

	Count		Rate	
LHD	**5Yr mean**	**2022**	**5yr mean**	**2022**
CC	414.6	520	118.7	148.9
FW	27.4	36	96.6	127.0
HNE	1109.8	1374	116.1	143.8
IS	499	668	115.5	154.6
MNC	282.6	343	123.7	150.2
MURR	472.6	621	156.3	205.4
NBM	447	673	116.4	175.2
NNSW	463	565	149.5	182.5
NS	1496	1856	156.4	194.0
SES	1399.6	1758	150.0	188.4
SWS	1068.6	1457	101.4	138.2
SNSW	302.6	416	139.3	191.6
SYD	870.6	956	125.5	137.8
WNSW	413.4	521	146.1	184.1
WS	1113.4	1526	106.5	146.0
NSW	**10380.2**	**13290**	**127.0**	**162.6**

*grey shading – >50% increase compared to 5yr mean

SALMONELLOSIS

Salmonellosis is caused by infection with *Salmonella* bacteria. In Australia, most *Salmonella* infections occur after eating contaminated food, and sometimes after close contact with another person or animals with salmonellosis. Notified cases are usually only investigated if they are part of, or suspected to be part of, an outbreak.

Summary 2022

- Case count: 2913
- Reported hospitalisations: 99*
- Reported deaths: 0
- Notification rate per 100,000: 35.6

*Hospitalisations may be underestimated as most cases are not interviewed by public health officers

Overall trend

12.4% decrease in the 2022 notification rate compared to the 5 year annual mean (40.7 per 100,000)

Groups with highest notification rate in 2022

- Age: <5 years (24.2% of cases – 148.2 per 100,000)
- Sex: Male (50.3% of cases – 36.1 per 100,000)
- LHD: Northern NSW (12.0% of cases – 72.3 per 100,000)

Seasonality

Consistent peaks in summer months (Dec-Feb)

Top serotypes in 2022 (% of all types *Salmonella*) - % change compared to 2021

1. Typhimurium (39%) - ↓ 2%
2. Wangata (6%) - ↓ 34%
3. Virchow (3%) - ↑ 3%
4. Enteriditis - (2.9%) - ↑ 151%
5. Paratyphi B bv Java - (2.8%) - ↑ 198%

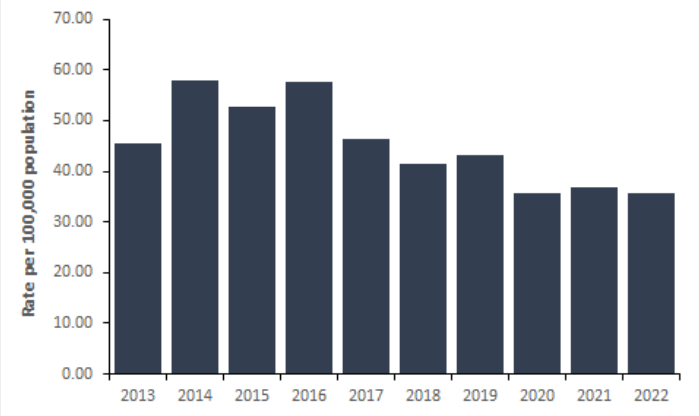
Outbreaks

13 foodborne outbreaks caused by *Salmonella* were detected in NSW in 2022, affecting 220 people (7.6% of all *Salmonella*) (pages 23-27)

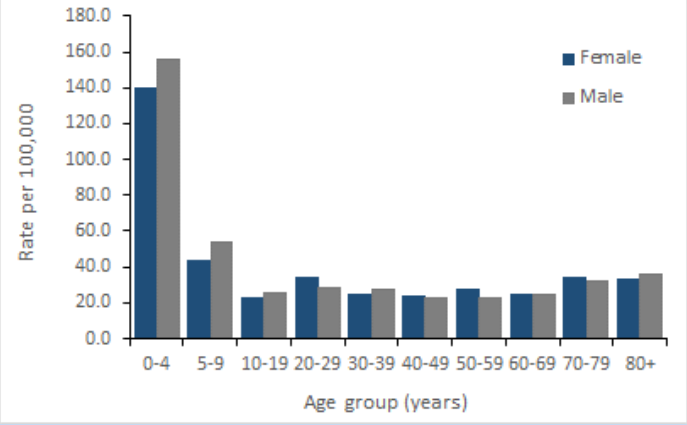
Deaths

No deaths related to salmonellosis infection were recorded in 2022.

Notification rate per 100,000 population by year, 2013 – 2022, NSW



Notification rate per 100,000 population by age category and sex, 2022, NSW



Number of cases and rates (per 100,000) by Local Health District, 2022, NSW

	Count		Rate	
LHD	5Yr mean	2022	5yr mean	2022
CC	166.4	134	45.2	38.4
FW	14.0	9	45.0	31.7
HNE	404.4	318	41.6	33.3
IS	161.8	138	33.2	31.9
MNC	143.2	107	60.7	46.8
MURR	143.2	113	46.8	37.4
NBM	149.8	131	36.1	34.1
NNSW	278.2	224	94.2	72.3
NS	471.8	351	43.1	36.7
SES	426.6	302	37.0	32.4
SWS	374.6	352	34.3	33.4
SNSW	82.2	82	37.9	37.8
SYD	260.8	167	32.2	24.1
WNSW	107.0	131	42.3	46.3
WS	389.8	354	34.4	33.9
NSW	**3564.6**	**2913**	**40.7**	**35.6**

*grey shading – >50% increase compared to 5yr mean

Salmonellosis continued

Salmonella serotypes

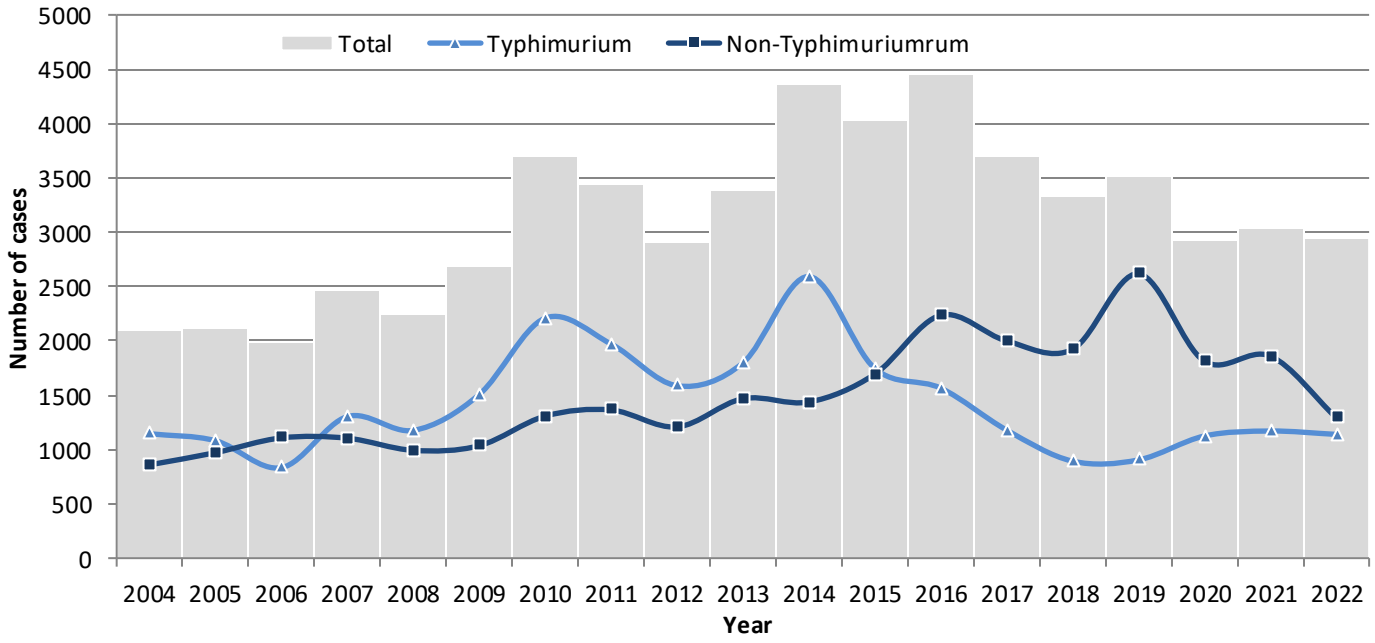
Top 5 *Salmonella* serotypes in NSW, 2018-2022 (number of notifications)

	2018	2019	2020	2021	2022
1	Typhimurium (892)	Typhimurium (901)	Typhimurium (1120)	Typhimurium (1156)	Typhimurium (1129)
2	Enteritidis (284)	Enteritidis (362)	Wangata (261)	Saintpaul (257)	Wangata (166)
3	Wangata (200)	Wangata (222)	Saintpaul (152)	Wangata (252)	Virchow (88)
4	Ser 4,5,12:i:- (136)	Paratyphi B bv Java (120)	Enteritidis (113)	Virchow (85)	Enteritidis (84)
5	Birkenhead (119)	Virchow (117)	Virchow (105)	Birkenhead (83)	Paratyphi B bv Java (81)

Salmonella Typhimurium trends

In 2022, *Salmonella* Typhimurium notifications decreased by 3% when compared to 2021.

Number of *Salmonella* Typhimurium infections compared to other *Salmonella* serotypes in NSW, 2004-22.



SALMONELLA ENTERITIDIS INFECTION

While *Salmonella* Enteritidis is endemic in commercial poultry farms in most countries, it was not thought to be endemic in Australia until 2018 when an outbreak occurred originating from NSW egg farms. All notified cases of *Salmonella* Enteritidis are investigated in NSW to determine likely place of acquisition (local vs overseas); locally acquired cases are further investigated in conjunction with the NSW Food Authority.

Summary 2022

- Case count: 84
- Reported hospitalisations: 14
- Reported deaths: 0
- Notification rate per 100,000: 1.0

Overall trend

55.6% decrease in the 2022 notification rate compared to the 5 year annual mean (2.3 per 100,000)

Groups with highest notification rate in 2022

Age: 5-9 years (8.3% of cases – 1.4 per 100,000)

Sex: Male (50% of cases – 1.04 per 100,000)

LHD: Northern Sydney (31% of cases – 2.7 per 100,000)

Seasonality

Typically peaks in October.

Place of acquisition in 2022

In NSW: 8%

In Australia & outside NSW: 4%

Overseas: 87%

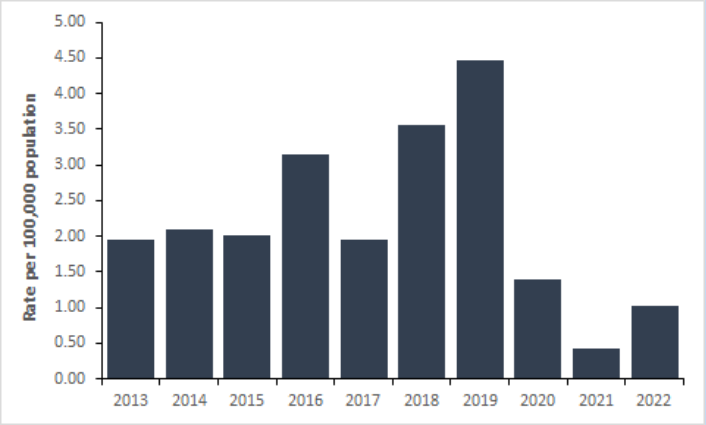
Unknown: 1%

(data available from 100% of cases)

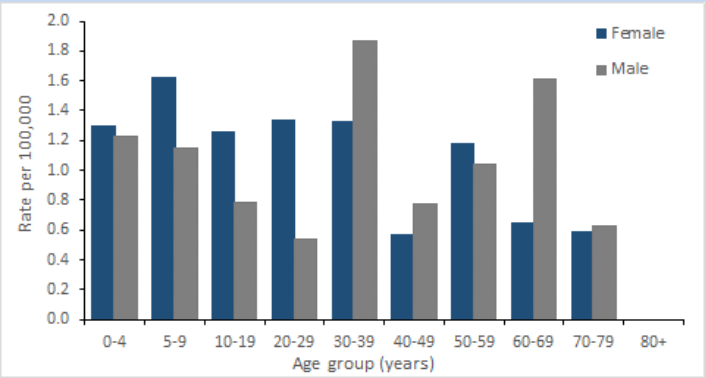
Outbreaks

There were no *Salmonella* Enteritidis outbreaks in 2022

Notification rate per 100,000 population by year, 2013 – 2022, NSW



Notification rate per 100,000 population by age category and sex, 2022, NSW



Number of cases and rates (per 100,000) by Local Health District, 2022, NSW

	Count		Rate	
LHD	**5Yr mean**	**2022**	**5yr mean**	**2022**
CC	5.8	4	1.7	1.1
FW	0.2	0	0.7	0.0
HNE	13.8	4	1.5	0.4
IS	7.6	5	1.8	1.2
MNC	5.2	0	2.3	0.0
MURR	4.2	0	1.4	0.0
NBM	8.4	0	2.2	0.0
NNSW	9	5	3.0	1.6
NS	34	26	3.6	2.7
SES	27.8	19	2.9	2.0
SWS	23.4	11	2.3	1.0
SNSW	3.2	1	1.5	0.5
SYD	17.6	5	2.5	0.7
WNSW	2.8	2	1.0	0.7
WS	26.2	2	2.6	0.2
NSW	**189.2**	**84**	**2.3**	**1.0**

*grey shading – >50% increase compared to 5yr mean

TYPHOID & PARATYPHOID FEVER

Typhoid & paratyphoid fever are caused by infections with *Salmonella* Typhi and *Salmonella* Paratyphi bacteria, respectively. Together, they are called Enteric Fever. In Australia, most diagnosed infections are acquired overseas by individuals ingesting contaminated food or water while visiting countries where typhoid or paratyphoid is endemic. All notified cases of typhoid and paratyphoid are investigated in NSW.

Summary 2022

- Case count: 63
- Reported hospitalisations: 53
- Reported deaths: 0
- Notification rate per 100,000: 0.8

Overall trend

The 2022 notification rate was the same as the 5 year annual mean (0.8 per 100,000)

Groups with highest notification rate in 2022

Age: <5 years (32.4% of cases – 2.2 per 100,000)

Sex: Female (57% of cases – 0.5 per 100,000)

LHD: Western Sydney (44% of cases – 2.7 per 100,000)

Seasonality

Peaks typically in summer months (Jan-Feb)

Place of acquisition in 2022

In NSW: 3.2%*

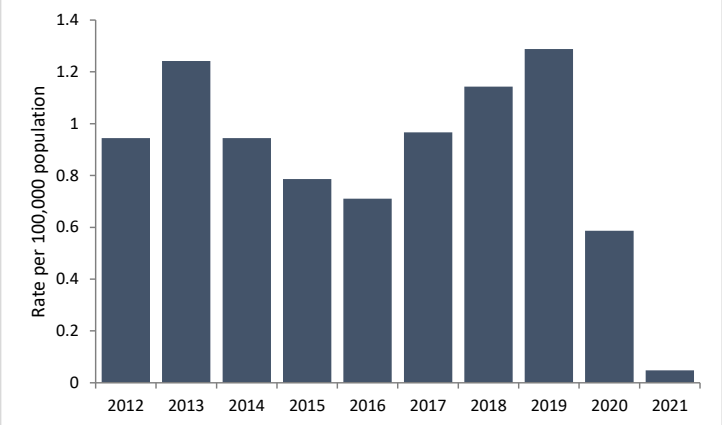
Overseas: 96.8%

** Acquired in NSW from contact with returned travellers*

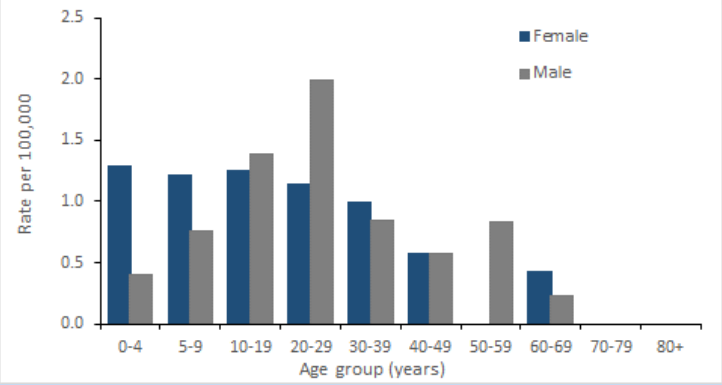
Outbreaks

There have been no known local typhoid outbreaks in Australia since 1977

Notification rate per 100,000 population by year, 2012 – 2022, NSW



Typhoid and paratyphoid notification rate per 100,000 population by age category and sex, 2022, NSW



Number of cases and rates (per 100,000) by Local Health District, 2022, NSW

	Count		Rate	
LHD	**5Yr mean**	**2022**	**5yr mean**	**2022**
CC	1	1	0.3	0.3
FW	0	0	0.0	0.0
HNE	2.4	4	0.3	0.4
IS	1	2	0.2	0.5
M	0.2	0	0.1	0.0
MNC	0.2	1	0.1	0.3
NBM	2	1	0.5	0.3
NNSW	0.6	0	0.2	0.0
NS	5.6	6	0.6	0.6
SES	6.6	2	0.7	0.2
SWS	9	11	0.9	1.0
SNSW	0.4	1	0.2	0.5
SYD	6.4	6	0.9	0.9
WNSW	0.4	0	0.1	0.0
WS	27.2	28	2.7	2.7
NSW	**63**	**63**	**0.8**	**0.8**

* grey shading – >50% increase compared to 5yr mean

SHIGELLOSIS

Shigellosis is a disease caused by infection with *Shigella* bacteria. It causes diarrhoea and is easily spread among people. All cases of shigellosis are investigated in NSW to determine if the infection was acquired overseas or from local sources. *Shigella* can be spread person-to-person or via contaminated food. A change in the national case definition occurred on 1 July 2019 to include probable cases (detection by PCR test only), which has affected the trend in recent years.

Summary 2022

- Case count: 468
- Confirmed cases: 109, Probable cases: 359
- Reported hospitalisations: 45*
- Notification rate per 100,000: 5.73

*Hospitalisations may be underestimated as usually only confirmed cases are interviewed by public health officers

Overall trend

9.3% increase in the 2022 notification rate compared to the 5 year annual mean (5.2 per 100,000).

Groups with highest notification rate in 2022

Age: <5 years (15.8% of cases – 15.6 per 100,000)

Sex: Male (52.8% of cases – 0.95 per 100,000)

LHD: SES (17.5% of cases – 13.6 per 100,000)

Seasonality

No significant trend (highest in October - November)

Place of acquisition in 2022 (confirmed cases only)

In NSW: 36%

Overseas: 64%

Risk exposures reported (locally acquired only)

Men who have sex with men (MSM): 59%

Contact with a confirmed/possible case: 13%

Unknown: 28%

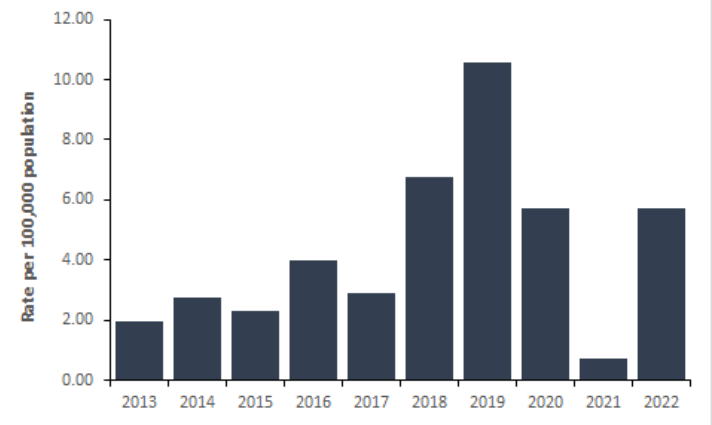
Typing of confirmed cases

Sonnei: 63%

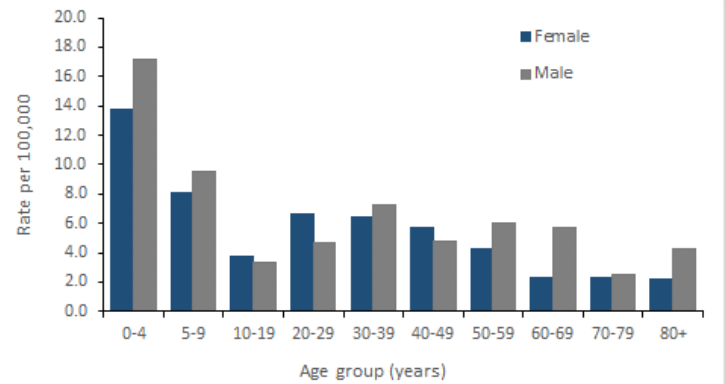
Flexneri: 32%

Boydii: 3%

Notification rate per 100,000 population by year, 2013 – 2022, NSW



Notification rate per 100,000 population by age category and sex, 2022 NSW



Number of cases and rates (per 100,000) by Local Health District, 2022, NSW

	Count		Rate	
LHD	**5Yr mean**	**2022**	**5yr mean**	**2022**
CC	15	14	4.5	1.1
FW	1	0	3.3	0.0
HNE	22	19	2.4	2.4
IS	11	9	2.7	2.6
MNC	5	1	2.3	0.9
MURR	6	1	2.6	1.6
NBM	11	17	2.9	4.3
NNSW	20	14	6.6	4.5
NS	60	65	6.4	7.0
SES	101	82	10.9	13.6
SWS	30	58	3.0	3.6
SNSW	6	3	2.9	1.8
SYD	83	66	12.3	11.1
WNSW	5	6	1.7	2.5
WS	46	113	4.6	6.1
NSW	**422**	**468**	**5.2**	**5.7**

* grey shading – >50% increase compared to 5yr mean

LISTERIOSIS

Listeriosis is an illness usually acquired after eating foods contaminated with the bacterium *Listeria monocytogenes*. Listeriosis is a serious disease in pregnant women and their foetuses, the elderly and people with weakened immune systems. All notified cases of listeriosis are investigated in NSW.

Summary 2022

- Case count: 34
- Reported hospitalisations: 32
- Reported deaths: 4
- Notification rate per 100,000: 0.4

Overall trend

There was a 75% increase in the 2022 notification rate compared to the 5 year annual mean (0.2 per 100,000)

Groups with highest notification rate in 2022

Age: 70-79 years (18% of cases – 0.9 per 100,000)

Sex: Female (59% of cases - 0.5 per 100,000)

LHD: Murrumbidgee (17.6% of cases – 2.0 per 100,000)

Deaths

Four deaths occurred in people aged 59-98 years, from South Eastern Sydney. North Sydney South Western Sydney and Southern NSW regions.

Place of acquisition in 2022

In NSW: 94%

Overseas: 3%

Unknown: 3%

Seasonality

Notifications were highest in April and September

Outbreaks

There were no listeriosis outbreaks detected in 2022.

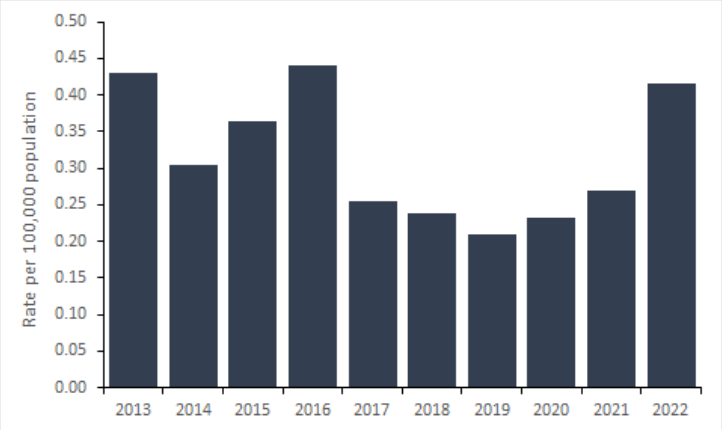
Most common comorbidities reported

Cancer: 9

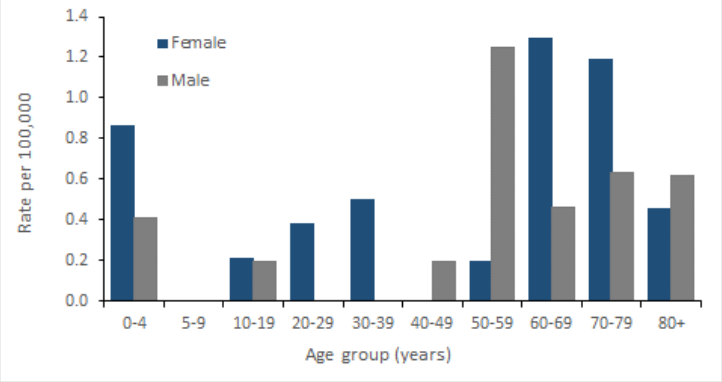
Perinatal

Eight perinatal cases were reported in 2022 representing three mother-baby pairs (mother an baby both survived, but both were positive), one woman (who gave birth to a healthy baby) and one woman who miscarried at 18 weeks.

Notification rate per 100,000 population by year, 2013 – 2022, NSW



Notification rate per 100,000 population by age category and sex, 2022, NSW



Number of cases and rates (per 100,000) by Local Health District, 2022, NSW

	Count		Rate	
LHD	5Yr mean	2022	5yr mean	2022
CC	0.6	0	0.2	0.0
FW	0.2	0	0.7	0.0
HNE	1.8	3	0.2	0.3
IS	1	2	0.2	0.5
MNC	0.4	0	0.2	0.0
MURR	0.4	6	0.1	2.0
NBM	0.2	1	0.1	0.3
NNSW	0.6	0	0.2	0.0
NS	3.2	6	0.3	0.6
SES	3.2	2	0.3	0.2
SWS	2.2	2	0.2	0.2
SNSW	0.8	1	0.4	0.5
SYD	2	3	0.3	0.4
WNSW	0.2	2	0.1	0.7
WS	2.4	6	0.2	0.6
NSW	**19.2**	**34**	**0.2**	**0.4**

* grey shading – >50% increase compared to 5yr mean

SHIGA TOXIN PRODUCING *E. COLI* INFECTION (STEC)

STEC is a bacterial infection that can cause serious disease, including bloody diarrhoea, and sometimes haemolytic uraemic syndrome (HUS). Infection usually results from consuming contaminated food or water, or from contact with infected animals or people. All notifications of STEC infection are investigated in NSW.

Summary 2022

- Case count: 144
- Reported hospitalisations: 68
- Reported deaths: 3
- Notification rate per 100,000: 1.8

Overall trend

In 2022 there was a 68.5% increase in notification rate compared to 5 year annual mean (1.0 per 100,000).

The widespread use of a more sensitive laboratory method (PCR) in NSW laboratories since 2020 may have attributed to the increase in notification rate.

Groups with highest notification rate in 2022

- Age: 80+ years (12.5% of cases – 4.8 per 100,000)
- Sex: Females (52.1% of cases – 1.8 per 100,000)
- LHD: Murrumbidgee (6.0 per 100,000, 12.5% of notifications)

Seasonality

The highest number of notifications occurred in October and June.

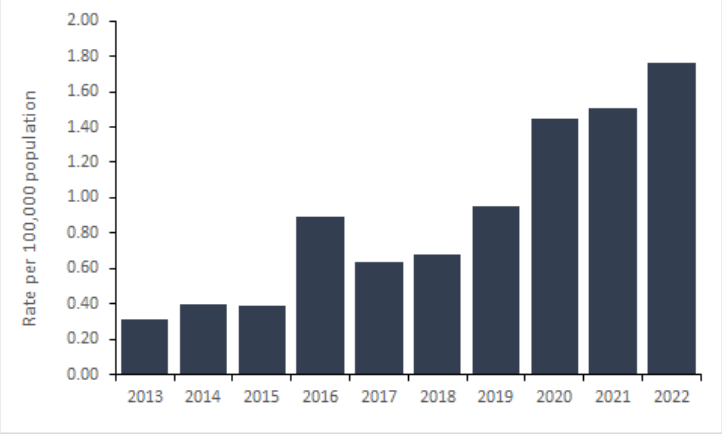
Place of acquisition in 2022

- In NSW: 73.6%
- Overseas: 5.6
- Unknown: 20.8%

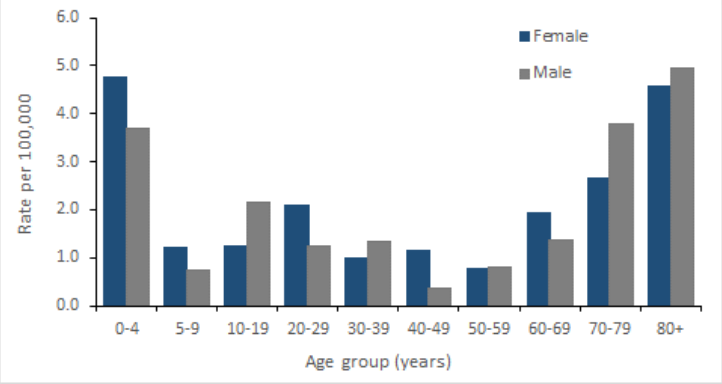
Deaths

3 deaths relating to STEC were reported in 2022. All cases developed HUS (page 14)

Notification rate per 100,000 population by year, 2013 – 2022, NSW



Notification rate per 100,000 population by age category and sex, 2022, NSW



Number of cases and rates (per 100,000) by Local Health District, 2022, NSW

	Count		Rate	
LHD	**5Yr mean**	**2022**	**5yr mean**	**2022**
CC	0.8	3	0.2	0.9
FW	0.6	1	2.0	3.5
HNE	12.8	17	1.4	1.8
IS	1	2	0.2	0.5
MNC	1.6	9	0.7	3.9
MURR	13.6	18	4.5	6.0
NBM	4.4	13	1.2	3.4
NNSW	1	4	0.3	1.3
NS	2.2	9	0.2	0.9
SES	3.6	14	0.4	1.5
SWS	2.8	3	0.3	0.3
SNSW	8.8	9	4.2	4.1
SYD	0.6	3	0.1	0.4
WNSW	14	20	5.0	7.1
WS	16.4	19	1.6	1.8
NSW	**84.2**	**144**	**1.0**	**1.8**

* grey shading – >50% increase compared to 5yr mean

HAEMOLYTIC URAEMIC SYNDROME (HUS)

HUS is a clinical syndrome characterized by progressive renal failure that is associated with haemolytic anaemia and thrombocytopenia. In patients with HUS associated with diarrhoea, STEC is the primary cause. All notified cases of HUS are investigated in NSW.

Summary 2022

- Case count: 7
- Reported hospitalisations: 7
- Reported deaths: 3
- Notification rate per 100,000: 0.09

Place of acquisition in 2022

- In NSW: 86%
- Overseas: 0%
- Unknown: 14%

(based on responses from 100% of cases)

Overall trend

In 2022 there was a 187.4% increase in notification rate compared to 5 year annual mean (0.03 per 100,000).

Groups with highest notification rate in 2022

- Sex: Male (57% of cases - 0.1 per 100,000)
- Age: 70-79 years (43% of cases – 0.46 per 100,000)
- LHD: Illawarra Shoalhaven (43% of cases – 0.69 per 100,000)

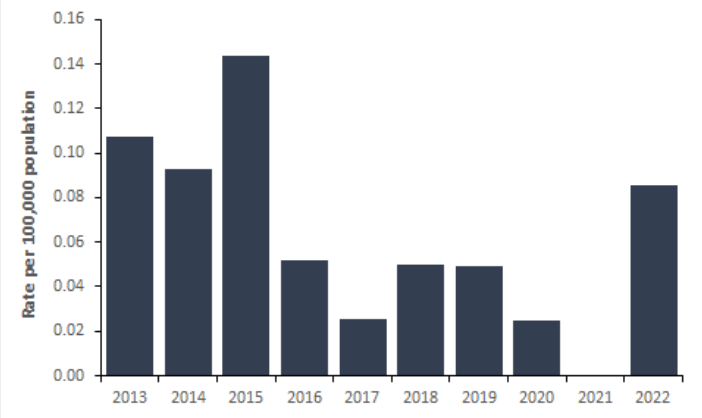
Bacterial infection

STEC infections were identified in 3 of the notified HUS cases in 2022. No serogroup was identified for these cases and none clustered on whole genome sequencing. No common source was identified for the three cases.

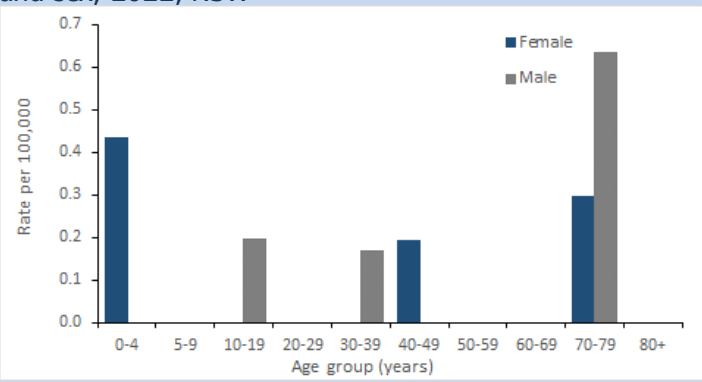
Deaths

Three deaths occurred in people with HUS aged 4, 75 and 75. Two from Hunter New England and one Mid North Coast NSW.

Notification rate per 100,000 population by year, 2013 – 2022, NSW



Notification rate per 100,000 population by age category and sex, 2022, NSW



Number of cases and rates (per 100,000) by Local Health District, 2022, NSW

	Count		Rate	
LHD	**5Yr mean**	**2022**	**5yr mean**	**2022**
CC	0.2	1	0.06	0.29
FW	0.0	0	0.00	0.00
HNE	0.4	2	0.04	0.21
IS	0.2	3	0.05	0.69
MNC	0.0	1	0.00	0.44
MURR	0.2	0	0.07	0.00
NBM	0.0	0	0.00	0.00
NNSW	0.2	0	0.07	0.00
NS	0.2	0	0.02	0.00
SES	0.0	0	0.00	0.00
SWS	0.2	0	0.02	0.00
SNSW	0.2	0	0.09	0.00
SYD	0.0	0	0.00	0.00
WNSW	0.0	0	0.00	0.00
WS	0.6	0	0.06	0.00
NSW	**2.4**	**7**	**0.03**	**0.09**

* grey shading – >50% increase compared to 5yr mean

CRYPTOSPORIDIOSIS

Cryptosporidiosis is a disease caused by swallowing the *Cryptosporidium* parasite, most commonly in contaminated water. It mainly causes diarrhoea and abdominal cramps. All cases of cryptosporidiosis are investigated in NSW. When an investigation finds multiple cases have attended the same recreational water facility, further investigation and controls may be initiated.

Summary 2022

- Case count: 465
- Reported hospitalisations: 40
- Reported deaths: 0
- Notification rate per 100,000: 5.7

Overall trend

- 36.2% decrease in the 2022 notification rate compared to 5 year annual mean (8.9 per 100,000)

Groups with highest notification rate in 2022

- Age: <5 years (30.2% of cases – 79.7 per 100,000)
- Sex: Female (51.8% of cases – 15.7 per 100,000)
- LHD: Northern NSW (16.1 per 100,00 – 6.3% of total notifications)

Seasonality

- Typically peaks in summer months (Dec-Feb)

Place of acquisition in 2022

- In NSW: 45%
- In Australia & outside NSW: 2%
- Overseas: 14%
- Unknown: 37%

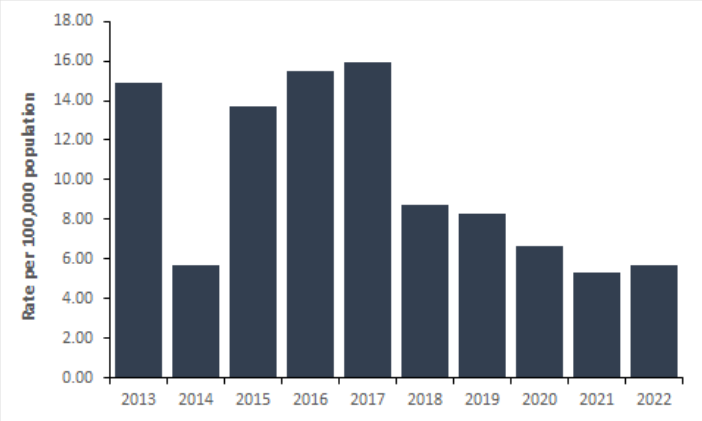
(based on responses from 63% of cases)

Risk exposures reported (locally acquired only)

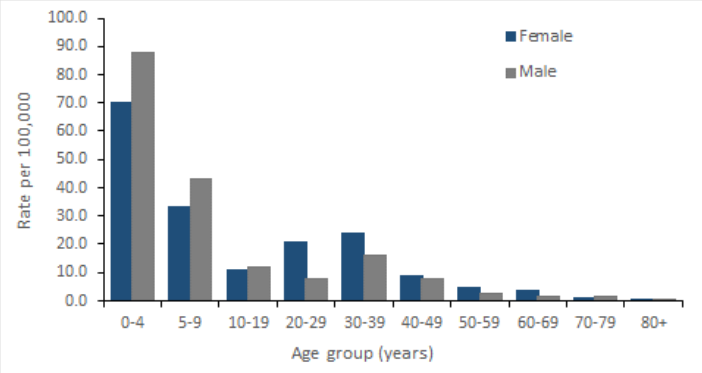
- Consumed salad items: 51%
- Farm/farm animal exposure: 29%
- Swimming pool: 13%

Note: Some cases may report more than one risk factor. Responses only received from 47% of cases.

Notification rate per 100,000 population by year, 2013 – 2022, NSW



Notification rate per 100,000 population by age category and sex, 2022, NSW



Number of cases and rates (per 100,000) by Local Health District, 2022, NSW

	Count		Rate	
LHD	**5Yr mean**	**2022**	**5yr mean**	**2022**
CC	25.2	9	7.3	2.6
FW	1	1	3.4	3.5
HNE	94.8	55	10.2	5.8
IS	55	19	13.1	4.4
MNC	23.2	19	10.4	8.3
MURR	28	17	9.4	5.6
NBM	37.4	29	9.8	7.6
NNSW	42	50	13.8	16.1
NS	105	59	11.1	6.2
SES	80	52	8.4	5.6
SWS	61.6	40	6.0	3.8
SNSW	16	14	7.6	6.4
SYD	44.6	30	6.4	4.3
WNSW	44.6	20	15.9	7.1
WS	60	51	5.9	4.9
NSW	**718.4**	**465**	**8.9**	**5.7**

* grey shading – >50% increase compared to 5yr mean

GIARDIASIS

Giardiasis is an infection mainly of the small intestine caused by the parasite *Giardia lamblia*. Giardiasis has been reported in humans and in a variety of animals. Notified cases of giardiasis are not routinely followed up in NSW.

Summary 2022

- Case count: 1396
- Reported hospitalisations: 0*
- Reported deaths: 0
- Notification rate per 100,000: 17.1

*Hospitalisations may be underestimated as most cases are not interviewed by public health officers

Overall trend

- 47.2% decrease in 2022 notification rate compared to 5 year average (32.3 per 100,000)

Groups with highest notification rate in 2022

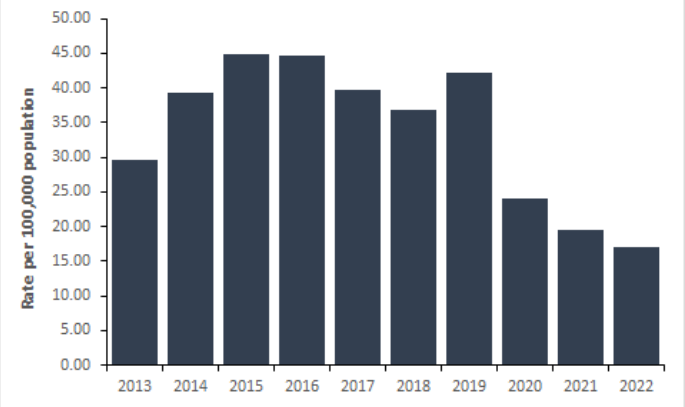
- Age: <5 years (17.7% of cases – 52.5 per 100,000)
- Sex: Male (59.2% of cases – 20.5 per 100,000)
- LHD: Murrumbidgee (10.4% of cases – 22.5 per 100,000)

Seasonality

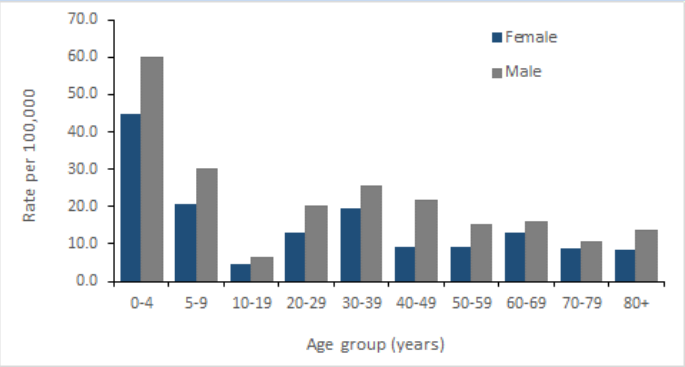
- Typically peaks in summer to autumn months (Jan-May)

Note: Risk factor information is not available as cases are not routinely followed up

Notification rate per 100,000 population by year, 2013 – 2022, NSW



Notification rate per 100,000 population by age category and sex, 2022, NSW



Number of cases and rates (per 100,000) by Local Health District, 2022, NSW

	Count		Rate	
LHD	**5Yr mean**	**2022**	**5yr mean**	**2022**
CC	114	63	33.2	18.0
FW	7.4	3	25.2	10.6
HNE	303.6	146	32.5	15.3
IS	127	54	30.2	12.5
MNC	74.4	39	33.2	17.1
MURR	91.2	68	30.5	22.5
NBM	111.6	68	29.4	17.7
NNSW	184.2	47	60.4	15.2
NS	375.8	209	39.7	21.9
SES	433.8	209	45.8	22.4
SWS	199.6	131	19.5	12.4
SNSW	33.4	20	15.8	9.2
SYD	219.2	114	31.7	16.4
WNSW	100	59	35.6	20.8
WS	228.8	166	22.5	15.9
NSW	**2604**	**1396**	**32.3**	**17.1**

* grey shading – >50% increase compared to 5yr mean

HEPATITIS A

Hepatitis A is caused by a viral infection of the liver. The virus is mainly spread by the faecal-oral route, usually by consuming contaminated food or water or by direct contact with an infected person. All notified cases of hepatitis A are investigated in NSW.

Summary 2022

- Case count: 35
- Reported hospitalisations: 21
- Reported deaths: 0
- Notification rate per 100,000: 0.4

Overall trend

- 33.2% decrease in the 2022 notification rate compared to 5 year average (0.6 per 100,000)

Groups with highest notification rate in 2022

- Age: 5-9 years (17.1% of cases – 1.19 per 100,000)
- Sex: Female (51.4% of cases – 0.44 per 100,000)
- LHD: Western Sydney (1.1 per 100,000, 34.3% of cases)

Seasonality

- No seasonality

Place of acquisition in 2022

- In NSW: 11%
- In Australia & outside NSW: 0%
- Overseas: 89%
- Unknown: 0%

(note: data available on 100% of cases)

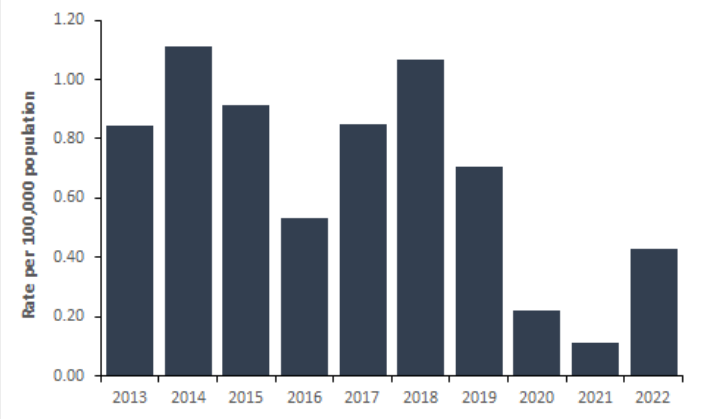
Risk exposures reported (locally acquired)

- Household contact with overseas HAV case: 50%
- Unknown: 50%

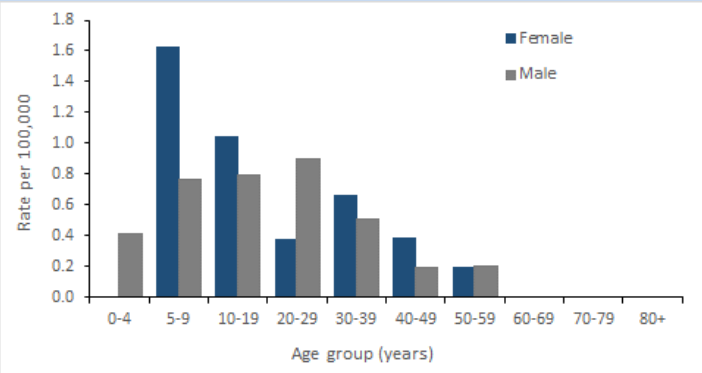
Outbreaks

There were no outbreaks of hepatitis A detected in 2022

Notification rate per 100,000 population by year, 2013 – 2022, NSW



Notification rate per 100,000 population by age category and sex, 2022, NSW



Number of cases and rates (per 100,000) by Local Health District, 2022, NSW

	Count		Rate	
LHD	**5Yr mean**	**2022**	**5yr mean**	**2022**
CC	0.8	1	0.2	0.3
FW	0.4	0	1.4	0.0
HNE	2.8	1	0.3	0.1
IS	1.8	0	0.4	0.0
MNC	0	0	0.0	0.0
MURR	1.2	0	0.4	0.0
NBM	2	0	0.5	0.0
NNSW	4.8	2	1.6	0.6
NS	4.8	4	0.5	0.4
SES	7.4	4	0.8	0.4
SWS	6.8	9	0.7	0.9
SNSW	0	1	0.0	0.5
SYD	6.8	1	1.0	0.1
WNSW	0.8	0	0.3	0.0
WS	11.2	12	1.1	1.1
NSW	**51.6**	**35**	**0.6**	**0.4**

* grey shading – >50% increase compared to 5yr mean

HEPATITIS E

Hepatitis E is caused by a viral infection of the liver. The virus is mainly spread by the faecal-oral route, usually by consuming contaminated food or water or by direct contact with an infected person. All cases of hepatitis E are investigated in NSW.

Summary 2022

- Case count: 9
- Reported hospitalisations: 7
- Reported deaths: 0
- Notification rate per 100,000: 0.11

Overall trend

- 36.6% decrease in 2022 notification rate compared to 5 year average (0.17 per 100,000)

Groups with highest notification rate in 2022

- Age: 50-59 years (33% of cases - 0.30 per 100,000)
- Sex: Female (67% of cases – 0.15 per 100,000)

  LHD: South western Sydney (44% of cases - 0.38 per 100,000 respectively)

Place of acquisition in 2022

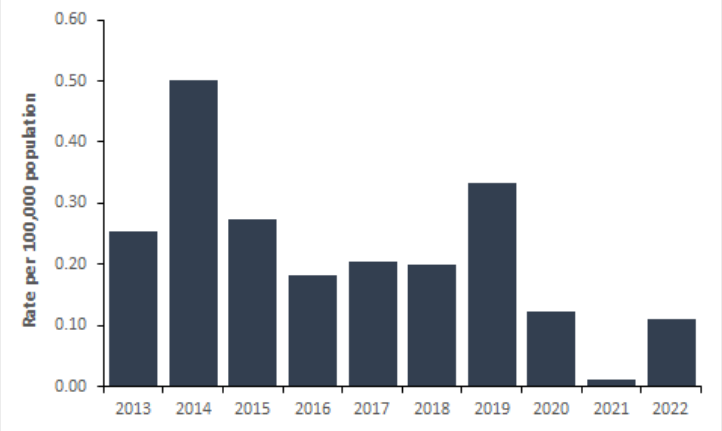
- In NSW: 56%
- Overseas: 33%
- Unknown: 11%

(note: data available on 100% of cases)

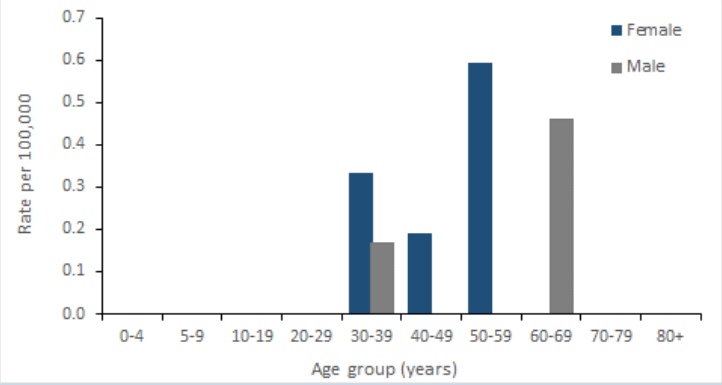
Risk exposures reported (locally acquired)

- Consumed pork products: 20%
- No risk identified: 80%

Notification rate per 100,000 population by year, 2013 – 2022, NSW



Notification rate per 100,000 population by age category and sex, 2022, NSW



Number of cases and rates (per 100,000) by Local Health District, 2022, NSW

	Count		Rate	
LHD	**5Yr mean**	**2022**	**5yr mean**	**2022**
CC	0.2	0	0.06	0.00
FW	0	0	0.00	0.00
HNE	0.4	0	0.04	0.00
IS	0.4	0	0.10	0.00
MNC	0.2	0	0.09	0.00
MURR	0.4	1	0.13	0.33
NBM	1	0	0.26	0.00
NNSW	0	0	0.00	0.00
NS	1.8	1	0.19	0.10
SES	0.8	0	0.08	0.00
SWS	2.6	4	0.25	0.38
SNSW	0	0	0.00	0.00
SYD	2	1	0.29	0.14
WNSW	0	1	0.00	0.35
WS	4.2	1	0.41	0.10
NSW	**14**	**9**	**0.17**	**0.11**

* grey shading – >50% increase compared to 5yr mean

ROTAVIRUS INFECTION

Rotavirus is a viral infection that causes gastroenteritis. Globally, rotavirus is the most common cause of severe gastroenteritis in early childhood. A vaccine is available and is provided free for children less than 6 months of age in NSW. Single notified cases of rotavirus are not routinely followed up in NSW.

Summary 2022

- Case count: 1877
- Reported hospitalisations: 50*
- Reported deaths: 0
- Notification rate per 100,000: 23.0

*Hospitalisations may be underestimated as not all cases are interviewed by public health officers

Overall trend

- 61.8% increase in the 2022 notification rate compared to 5 year average (14.2 per 100,000)

Seasonality

- Usually peaks in spring to summer.

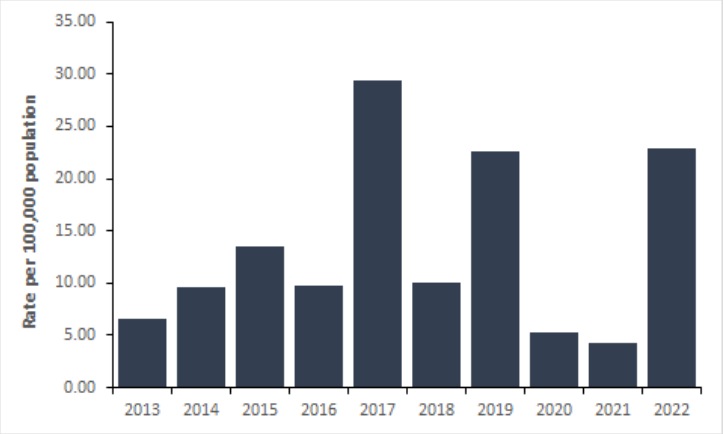
Groups with highest notification rate in 2022

- Age: <5 years (45.1% of cases – 178.3 per 100,000)
- Sex: Female (51.4% of cases – 23.4 per 100,000)
- LHD: Northern NSW (40.4 per 100,000 – 6.7% of cases)

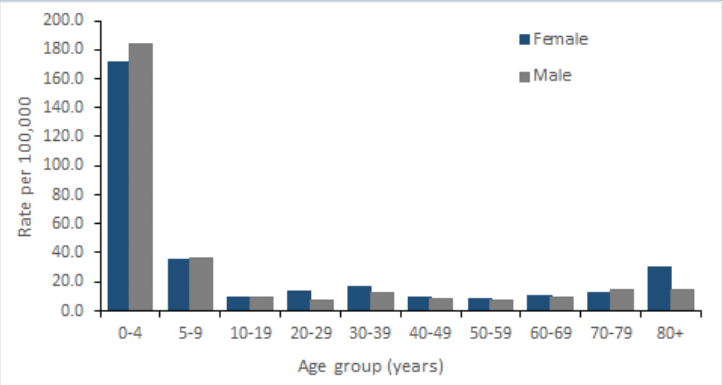
Outbreaks

- Cases found to be associated with an institutional outbreak: 28 cases (1.5%) associated with 23 institutional outbreaks

Notification rate per 100,000 population by year, 2013 – 2022, NSW



Notification rate per 100,000 population by age category and sex, 2022, NSW



Number of cases and rates (per 100,000) by Local Health District, 2022, NSW

	Count		Rate	
LHD	**5Yr mean**	**2022**	**5yr mean**	**2022**
CC	31	86	9.0	24.6
FW	2.4	2	8.2	7.1
HNE	79.2	177	8.5	18.5
IS	34	57	8.1	13.2
MNC	6.4	36	2.9	15.8
MURR	35.4	49	11.8	16.2
NBM	54.6	133	14.4	34.6
NNSW	57.4	125	18.8	40.4
NS	168.8	271	17.8	28.3
SES	163.8	206	17.3	22.1
SWS	185.6	309	18.1	29.3
SNSW	12.2	43	5.8	19.8
SYD	112	124	16.2	17.9
WNSW	29.2	38	10.4	13.4
WS	171.2	221	16.8	21.1
NSW	**1143.2**	**1877**	**14.2**	**23.0**

* grey shading – >50% increase compared to 5yr mean

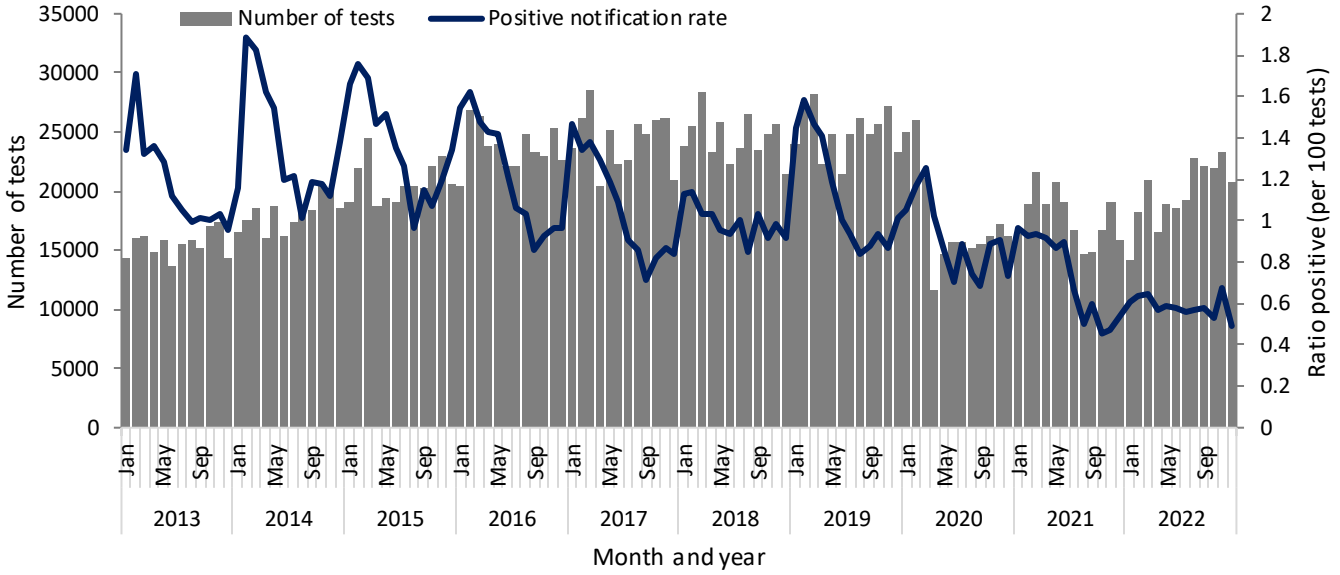
DENOMINATOR DATA

Laboratory testing data from 14 public and private laboratories was collected for *Cryptosporidium*, *Giardia*, *Salmonella* and *Shigella* from 2012. In January 2014, an additional private laboratory was added. The positive notification ratio is the ratio of positive results to total laboratory tests performed from participating laboratories.

Summary for 2022:

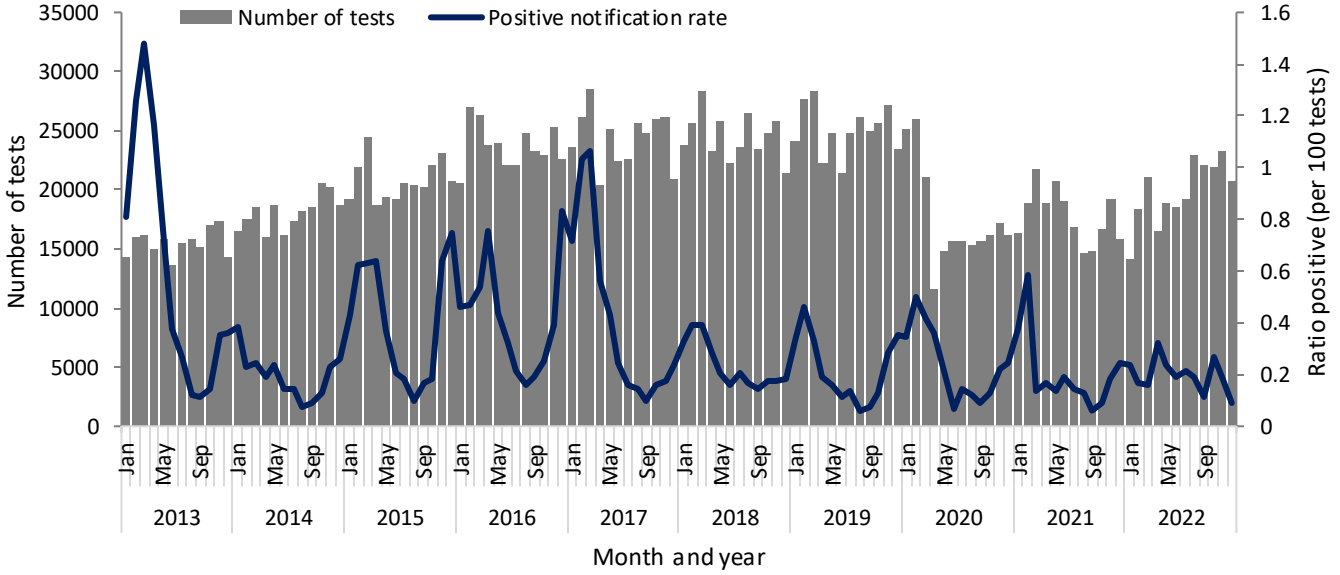
- *Giardia* positive notification rates peaked during January at 2.49 (per 100 tests performed)
- *Cryptosporidium* positive notification rates peaked during January at 2.12 (per 100 tests performed)
- *Salmonella* positive notification rates followed the seasonal pattern, peaking in January at 1.88 (per 100 tests performed)
- *Shigella* positive notification rate was highest in March at 0.26 (per 100 tests performed)

Number of *Giardia* tests performed by 15 laboratories and rate positive by month and year, NSW, 2013–2022*



* These 15 laboratories account for approximately 90% of all tests performed in NSW.

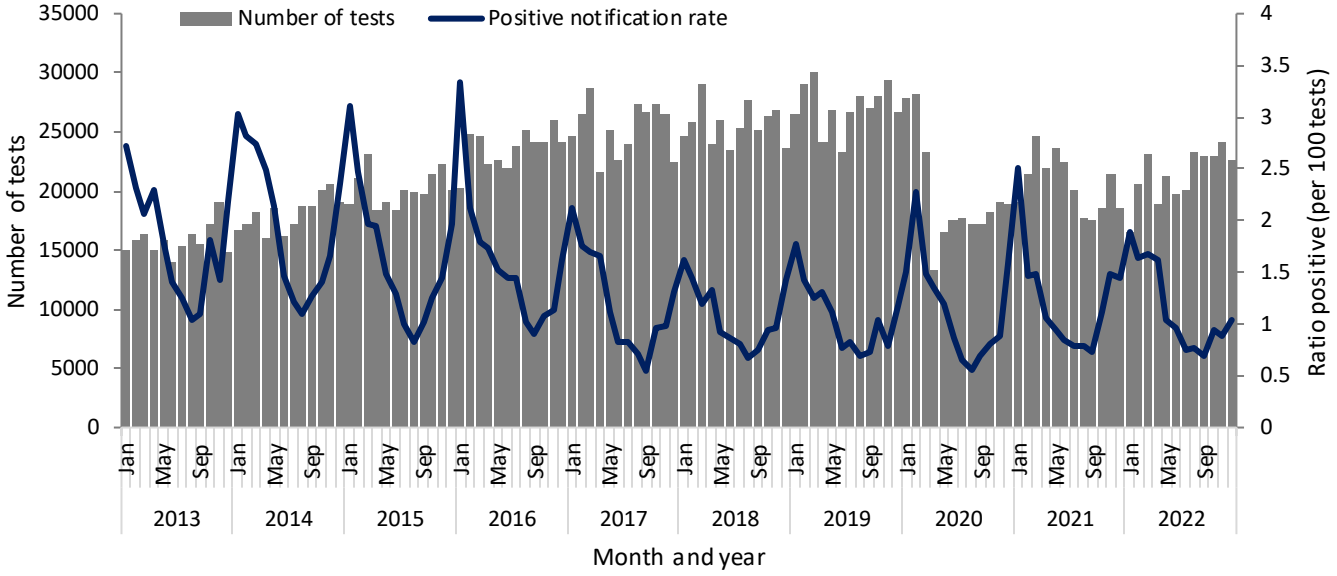
Number of *Cryptosporidium* tests performed by 15 laboratories and rate positive by month, NSW, 2013–2022*



* These 15 laboratories account for approximately 90% of all tests performed in NSW.

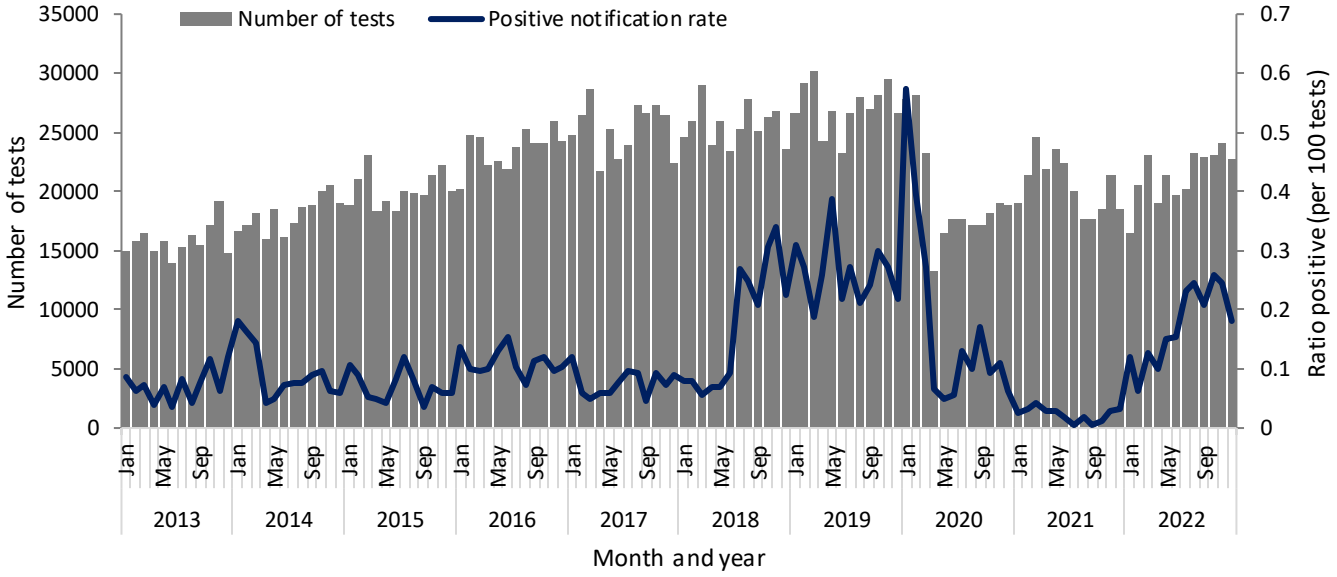
Denominator data continued

Number of *Salmonella* tests performed by 15 laboratories and rate positive by month, NSW, 2013–2022*



* These 15 laboratories account for approximately 90% of all tests performed in NSW.

Number of *Shigella* tests^ performed by 15 laboratories and rate positive by month, NSW, 2013–2022*



* These 15 laboratories account for approximately 90% of all tests performed in NSW.

^ The national shigellosis case definition changed on 1 July 2018 to include 'probable cases.' Probable cases include those with a detection of *Shigella* on nucleic acid testing (PCR).

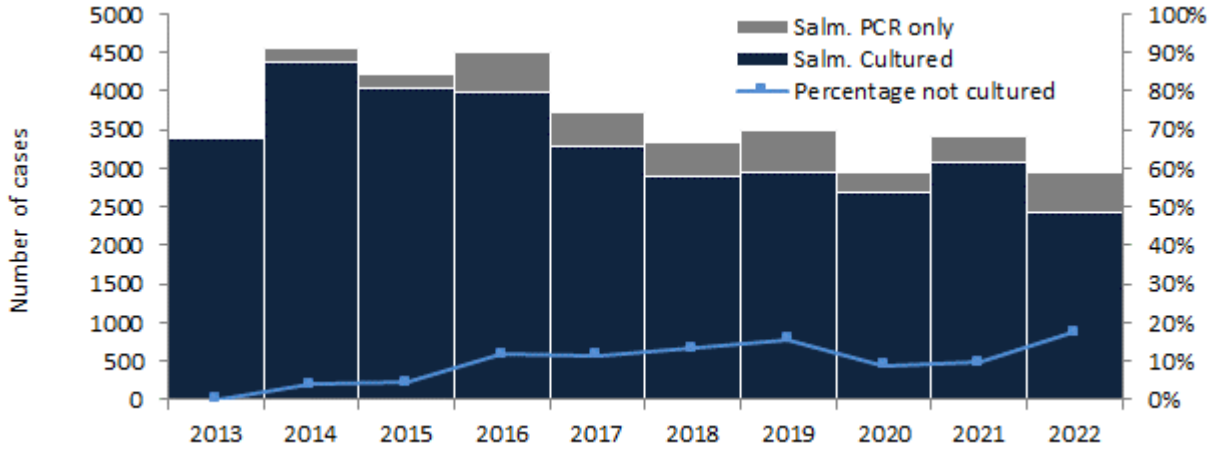
CULTURE INDEPENDENT TESTING

Culture independent testing (CIDT) does not require isolation and identification of living micro-organisms but works by detecting the presence of specific antigens using polymerase chain reaction (PCR). CIDT was introduced by NSW laboratories in 2014. These tests can be conducted more rapidly and yield results sooner than can be reached through traditional culturing methods. Culture is needed, however, to further characterise the organisms that cause infections.

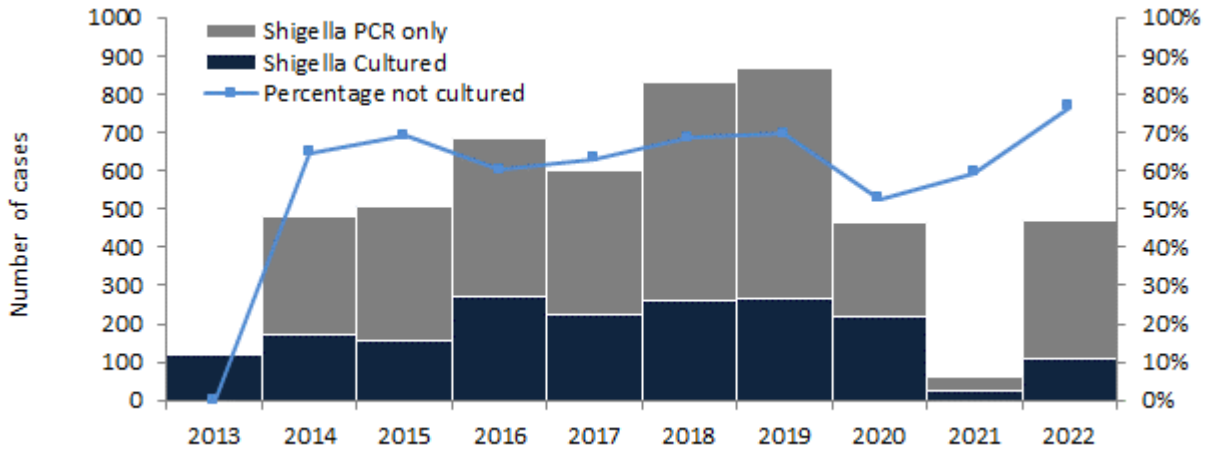
Summary for 2022:

- 17% of *Salmonella* notifications in 2022 were based on diagnosis by PCR methods only.
    - Some laboratories in NSW do not culture *Salmonella* unless it has been requested by the treating doctor.
- 77% of *Shigella* notifications in 2022 could not be cultured or were not cultured.
    - The national shigellosis case definition changed on 1 July 2019 to include 'probable cases.' Probable cases include those with a detection of *Shigella* on nucleic acid testing only (PCR).
    - PCR positive *Shigella* samples should be routinely cultured because the antigen target for *Shigella* is also found in enteroinvasive *E. coli*. As such *Shigella* PCR reports that are not culture confirmed are not counted as confirmed cases in NSW.
    - Culture for *Shigella* has a high false negative rate due to the fastidious nature of the organism.

The number of *Salmonella* notifications, by test type, and the percentage PCR only, in NSW, 2013 – 2022



The number of *Shigella* notifications, by test type, and the percentage with only PCR positive result in NSW, 2013 – 2022



SURVEILLANCE OF FOODBORNE OUTBREAKS

A food-borne disease outbreak may be defined as a situation where two or more people, who are linked in time or place, report acute onset of enteric or other symptoms caused by ingestion of infectious agents or toxins that may have been acquired by consuming contaminated food or drink. These investigations follow the identification of disease clusters or reports of illness in two or more people who consumed the same food. Investigations are commenced when complaints are received by the NSW Food Authority, or when reported directly to public health units.

Summary 2022

- Foodborne outbreaks investigated: 33
- Outbreak related cases: 540

Overall trend

- 21% decrease in the number of outbreaks compared to 5 year annual mean (42 outbreaks)
- 6% increase in the number of outbreak-related cases compared to 5 year annual mean (508 people ill)

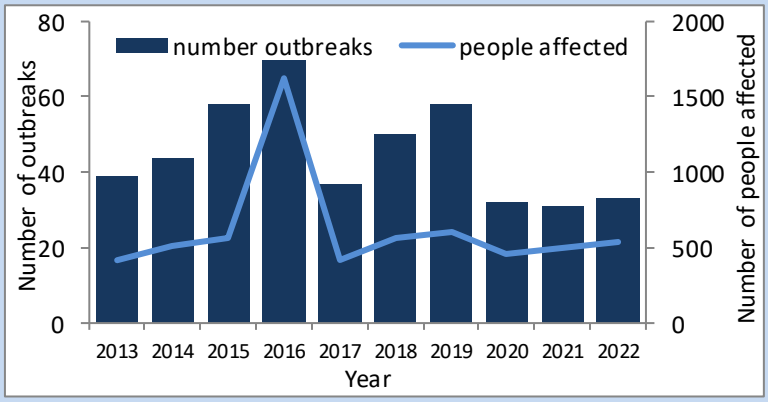
Top 5 Causative agent in 2022

- *Salmonella*: 39%
- Unknown: 24%
- *Campylobacter*: 21%
- Fish poisoning: 6%
- Other: 6%

Contributing factors in 2022

- Unknown: 46%
- Cross contamination raw ingredients: 17%
- Inadequate cooking: 11%
- Poor temperature control, Inadequate cleaning & raw meat consumption: 6% each

Number of foodborne or suspected foodborne outbreaks and number people affected by year, 2013-2022, NSW



Foodborne outbreak by causative agent and year, 2017-2022, NSW

Causative agent	2017	2018	2019	2020	2021	2022
Salmonella (all serotypes)	5	11	24	10	13	13
Salmonella Typhimurium	4	6	12	6	5	10
Unknown	21	27	13	13	7	8
Campylobacter	3	1	1	3	3	7
Fish poisoning	1	7	7	3	4	2
Norovirus	3	1	3	1	0	1
Clostridium perfringens	0	1	0	0	0	0
Listeria	0	1	2	0	0	0
Hepatitis E	0	0	1	0	0	0
STEC	0	0	0	0	0	0
Hepatitis A	0	1	1	0	1	0
Shigella	0	0	0	0	0	0
Bacillus cereus toxin	0	0	0	1	0	0
Other	0	0	1	1	3	2
Total outbreaks	37	50	53	32	31	33

Number of foodborne outbreaks and number of people affected by local health district, 2022, NSW

LHD	2022	No. ill
CC	1	76
HNE	2	52
IS	4	12
M	1	3
MNC	3	30
NBM	1	12
NNSW	1	7
NS	4	53
SES	5	55
SWS	5	38
Syd	1	5
WNSW	1	2
WS	1	6
NSW*	3	189
Total	33	540

*Outbreaks affecting more than one LHD counted in NSW resident cases only **

Foodborne outbreaks continued

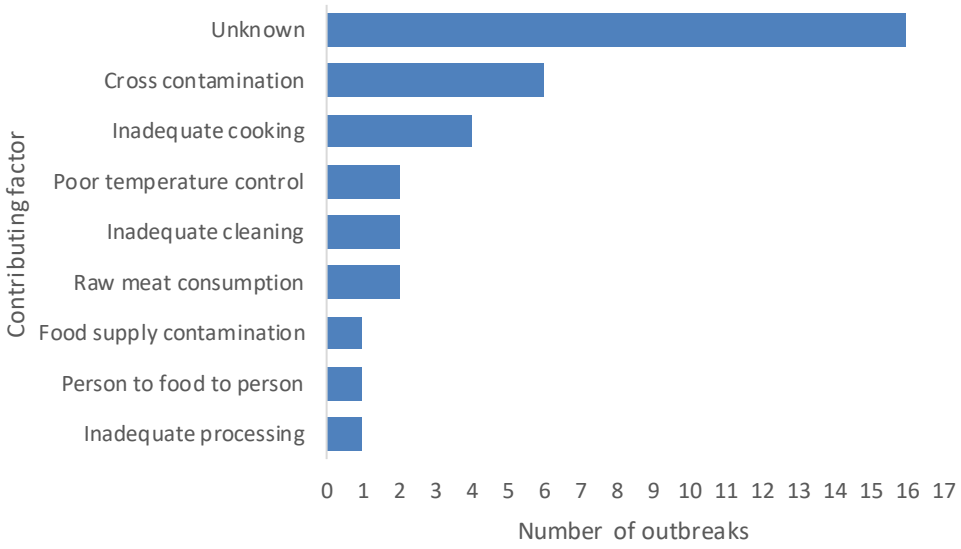
Description of outbreaks by causative agent

Number of outbreaks, number ill and number hospitalised by causative agent, 2022, NSW

Causative agent	Number of outbreaks	Number ill	Ratio ill per outbreak	Number hospitalised	Ratio hospitalised per outbreak
Salmonella Typhimurium	10	193	19.3	32	3.2
Unknown	8	113	14.1	0	0
Campylobacter	7	25	3.6	7	1
Other *Salmonella*	3	27	9	0	0
Fish Poisoning	2	8	4	0	0
Norovirus	1	4	4	0	0
Other	2	170	85	70	35
Total	**33**	**540**	**16.4**	**109**	**3.3**

Summary foodborne outbreaks by contributing factors

Foodborne outbreaks by contributing factors*, 2022, NSW



* Contributing factors are not mutually exclusive per outbreak

OUTBREAK SUMMARY 2022

Foodborne and potentially foodborne disease outbreaks investigated in NSW, 2022

PHU ID	Month[1]	Setting	Agent responsible	No. ill	Lab confirmed	No. Hospitalised	Evidence*	Suspected vehicle	Suspected contributing factors
SWS46-36	January	Restaurant / café	*Salmonella* Typhimurium 19-0001	10	1	0	D	Charcoal chicken	Unknown
NS46-37	February	Restaurant / café	*Campylobacter* Jejuni	2	1	1	D	Chicken schnitzel burger	Cross contamination
SWS46-38	February	Restaurant / café	*Salmonella* Typhimurium 19-0001	9	9	6	D, A	Caramel cheesecake	Inadequate processing
MNC46-39	February	Aged care	*Salmonella* Bareilly	3	2	UNK	D, A	Eggs	Inadequate cooking
SWS46-40	February	Restaurant / café	*Salmonella* Typhimurium 21-0083	4	4	0	D	Eggs	Inadequate cooking
IS46-41	February	Restaurant / café	Norovirus	4	1	0	D	Unknown	Person to food to person
IS46-42	February	Restaurant / café	*Campylobacter* Jejuni/Coli	2	1	2	D	Duck in plum sauce	Inadequate cooking
HNE46-43	March	Child care	*Salmonella* Typhimurium 22-0023	48	20	2	D, M, A	Unknown	Cross contamination, inadequate cleaning
SYD46-44	March	Disability home	*Salmonella* sp.	5	3	0	D	Unknown	Unknown
MNC46-45	April	Aged Care Facility	*Salmonella* Typhimurium	15	9	2	D	unknown	Unknown
SES46-47	May	Restaurant / cafe	Scombroid fish poisoning	5	0	0	M	Tuna cheeseburger	Poor temperature control
MNC46-48	May	Restaurant / cafe	*Salmonella* Typhimurium STM-21-0037	12	8	0	D	unknown	Cross contamination
SES46-49	May	Restaurant / cafe	Scombroid fish poisoning	3	0	0	D	Battered fish and chips	unknown
NSW46-50	May	Community	*Salmonella* Hvittingfoss SalHvit-22-0002	19	19	unknown	D	Tiger prawns	unknown
SWS46-52	May	Restaurant / cafe	*Salmonella* Typhimurium STM-22-0039	10	10	unknown	D	Vietnamese pork roll	Cross contamination
IS46-51	July	Restaurant / café	UNK	3	0	0	D	Steak tartare	Raw meat consumption
IS46-53	July	Restaurant / café	Campylobacter	3	1	1	D	Steak tartare	Raw meat consumption

PHU ID	Month[1]	Setting	Agent responsible	No. ill	Lab confirmed	No. Hospitalised	Evidence*	Suspected vehicle	Suspected contributing factors
HNE46-54	August	Restaurant / café	*Salmonella* Typhimurium, STM-22-0061	4	3	2	D	deep fried ice cream	Inadequate cooking
SWS46-55	August	Restaurant / café	Campylobacter	5	2	1	D	unknown	Unknown
NS46-58	August	Restaurant / café	Campylobacter	8	1	0	D	unknown	Unknown
SES46-59	August	Restaurant / café	*Salmonella* Typhimurium, STM-17-0006	5	5	0	A	unknown	Inadequate cleaning; Cross contamination
MLHD46-60	Oct	Restaurant / café	Campylobacter	3	1	0	D	Unknown	Cross contamination
NNSW46-61	Oct	Restaurant / café	Unknown	7	0	0	D	Suspected Gravy	Poor temperature control
NBM46-62	Nov	Restaurant / café	Unknown	12	0	0	D	Unknown	Unknown
NSW46-70	Nov	Community	Increased levels Thebaine	15	6	7	D, M	Poppy Seeds	Unknown
WS46-63	Dec	National franchised fast food	Unknown	6	0	0	D	Unknown	Unknown
WNSW46-64	Dec	Restaurant / café	Campylobacter	2	1	2	A	Satay chicken	Unknown
CC46-65	Dec	Function	*Salmonella* Typhimurium, STM-22-0002	76	40	20	A	Unknown	Unknown
NS46-66	Dec	Restaurant / café	Unknown	16	0	0	D	Pulled Pork Nachos	Unknown
MJOI 2022_0001; 45-7	Dec	Community	Jimsonweed (Datura stramonium)	155	2	63	D	Baby Spinach	Food supply contamination
SES46-67	Dec	Restaurant / café	Unknown	39	0	0	A	Beef Brisket	Unknown
NS46-68	Dec	Function	Unknown	27	0	0	D	Unknown	Unknown
SES46-69	Dec	Restaurant / café	Unknown	3	0	0	D	Unknown	Unknown

*Evidence: D=Descriptive evidence implicating the suspected vehicle or suggesting foodborne transmission; A=Analytical association between illness and food; M=Microbiological confirmation in the suspected vehicle and cases; AM=Analytical and microbiological evidence.

INSTITUTIONAL GASTROINTESTINAL OUTBREAKS

Viral gastroenteritis is highly infectious and outbreaks are very common and can be difficult to control. Outbreaks often occur in institutional settings, such as residential care facilities, educational institutions, or health care facilities. Gastroenteritis among two or more people of any age from an institution and linked in time should be notified to the local PHU. This is to ensure that the institution implements appropriate control and prevention strategies.

Summary 2022

- Number of outbreaks: 1862
- Number of people affected: 21983
- Number of outbreaks with at least one stool sample collected: 226 (12%)

Overall trend (compared to 5 year average)

- 92% increase in the number of outbreaks
- 68% increase in the number of people affected

Seasonality

- Childcare centres: Peaked in March
- Aged care facilities and hospitals: Peaked in December

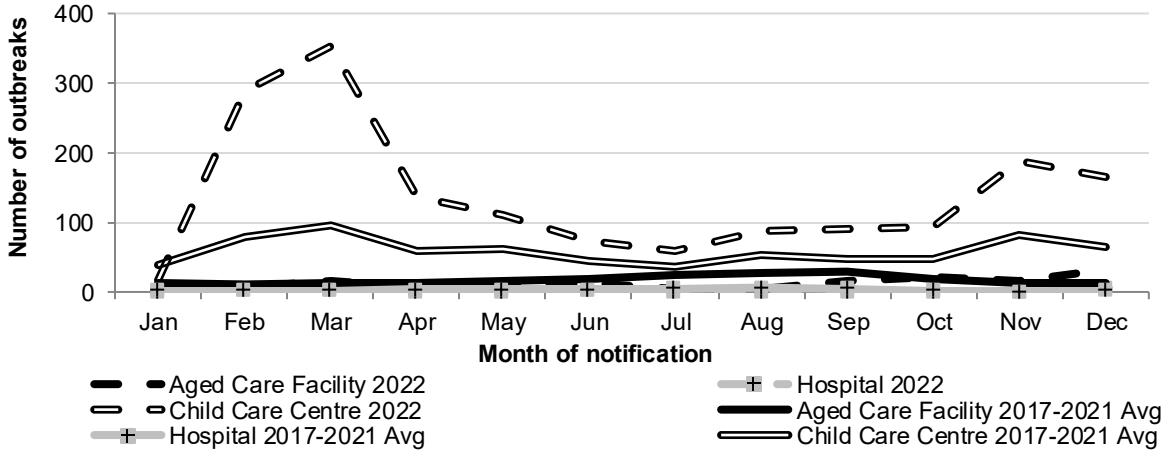
Groups with highest frequency in 2022

- Facility type: childcare centres, 1673 (90%) of outbreaks
- Attack rate in staff: hospitals at 16%
- Attack rate in non-staff: hospital patients at 26%
- Average duration of outbreaks: Childcare centres and hospitals at 11 days

Causative agent

- Norovirus (confirmed): 5% of outbreaks (38% of outbreaks with sample collected)
- Rotavirus (confirmed): 1% of outbreaks (10% of outbreaks with sample collected)
- Shigella: 1 outbreak in a CCC, thought to be person-person spread

Figure: Number of reported outbreaks of gastrointestinal illness in institutions in 2022 and average of the previous 5 years by month and facility type



Characteristics of outbreaks of gastrointestinal illness in institutions reported to NSW in 2022

Setting	No of Outbreaks (n)	Staff Affected (n: attack rate)	Non-staff affected (n: attack rate)	Avg duration of outbreak (days)	Outbreaks with stool collected (n: %)	Outbreaks with cause found (n: pathogen)
Aged Care	151	400: 3%	1911: 17%	9	107: 71%	43: Norovirus 7: Rotavirus
Child care	1673	3863: 12%	15563: 10%	11	101: 6%	28: Norovirus 14: Rotavirus 1: Shigella
Hospital	19	53: 16%	98: 26%	11	13: 68%	12: Norovirus
Other*	19	43: 7%	270: 8%	8	5: 26%	2: Norovirus 1: Rotavirus
TOTAL	1862	4359: 10%	17842: 11%	11	226: 12%	85: Norovirus 22: Rotavirus 1: Shigella

*Military institution, Function Centre, Police, School, Disability support & other educational or residential care facilities

METHODS

The data in this report are derived from disease surveillance and outbreak investigation activities undertaken by staff from NSW public health units, One Health Branch (OHB), Health Protection NSW, OzFoodNet (OFN) staff and the NSW Food Authority (NSWFA).

There are two OzFoodNet (OFN) sites in NSW - one based in Sydney at the Communicable Diseases Branch, Health Protection NSW and the other in Newcastle at Hunter New England Public Health Unit.

The Sydney site's primary role is to coordinate, monitor and report state-wide enteric disease surveillance, investigate state-wide outbreaks and to contribute to enteric disease related policy development in NSW. The team at this site consists of an OFN epidemiologist and an OFN surveillance officer.

The Newcastle site's primary role is to investigate outbreaks that occur within the Hunter New England area, assist with the investigation of state-wide outbreaks, and assist in developing enteric disease policy. The Hunter OFN site comprises an OFN epidemiologist and a research officer. Both sites work closely with the Manager, Enteric Diseases, One Health Branch staff and staff in other Health Protection NSW branches where appropriate

The management of suspected foodborne disease outbreaks in NSW is the shared responsibility of NSW public health units, Health Protection NSW, NSW OFN sites and the NSW Food Authority. NSW Health is responsible for the human health and epidemiological aspects of outbreak investigations and the NSW Food Authority is responsible for the environmental investigation, food testing and food trace-back components of an outbreak investigation. A Memorandum of Understanding between NSW Health and the NSW Food Authority outlines the roles and responsibilities of each agency, and the Investigation of Foodborne Illness Response Protocol describes the interaction and communication between NSW Health and the NSW Food Authority in relation to foodborne illness surveillance and investigations of food-related outbreaks and complaints in NSW.

Notifiable enteric diseases in NSW

Under the Public Health Act 2010 (NSW), the following enteric diseases and conditions are notifiable in NSW: botulism, *Campylobacter*, cholera, cryptosporidiosis, giardiasis, hepatitis A, haemolytic uraemic syndrome (HUS), hepatitis E, listeriosis, paratyphoid, rotavirus, Shiga toxin producing *Escherichia coli* (STEC/VTEC) infections, shigellosis, salmonellosis, typhoid, institutional gastroenteritis in two or more people, and foodborne disease in two or more people. In 2015 paratyphoid was separated from *Salmonella* into a separate disease. Individual cases of other enteric diseases such as norovirus infection are not notifiable in NSW.

NSW laboratories report cases of notifiable enteric diseases to public health units (PHUs). Outbreaks of foodborne or suspected foodborne illness and institutional gastroenteritis are reportable by doctors, hospitals, child care centres and aged care facilities. Notifiable disease data are routinely entered by public health unit staff into the NSW Notifiable Conditions Information Management System (NCIMS).

Data sources for this report

Data in this report has been extracted from the NSW Notifiable Conditions Information Management System, NSW OFN Outbreak Database and the NSW Gastroenteritis in Institutions Database, all held by Health Protection NSW.

Methods

We analysed data for the following notifiable enteric pathogens; *Salmonella*[i], *Salmonella* Paratyphi *Salmonella* Typhi, *Listeria monocytogenes*, *Shigella*, HUS and STEC, *Cryptosporidium*, *Giardia*, *Campylobacter*, rotavirus and hepatitis A & E viruses. There were no cases of botulism or cholera in 2022.

On 6 April 2023, 2022 data was extracted from NCIMS using Secure Analytics for Population Health Research and Intelligence (SAPHaRI)[ii] using the

[i] We define *Salmonella* as all *Salmonella* serovars, excluding *S.* Typhi and *S.* Paratyphi, in accordance with the definition of *Salmonella* endorsed by the Communicable Diseases Network of Australia (CDNA).

[ii] NSW Health Notifiable Conditions Information Management System (NCIMS), Communicable Diseases Branch and Centre for Epidemiology and Evidence, NSW Ministry of Health.

Methods continued

date of onset of disease. The counts of each notifiable enteric disease[iii] for 2022 were compared with the average annual count for the years 2017 to 2021. The NSW estimated resident population for 30 June of each year from 2017-2022 was used to calculate crude incidence rates for each disease.[iv]

Individual factors such as place of acquisition, possible risk exposures, and hospitalisation are reported for cases where that information has been collected by the public health unit. "Unknown" place of acquisition usually indicates that the person was in more than one place during their exposure period, so that the place of acquisition cannot be definitively assigned. Possible risk factors are those reported by the case on questioning, and cannot be attributed as the source unless further investigation is undertaken.

Laboratory testing data from 14 public and private laboratories is available from 2012 and 2013 for *Cryptosporidium*, *Giardia*, *Salmonella* and *Shigella*. In January 2014, an additional private laboratory was added. Care should be taken when interpreting trends using data prior to 2014. In addition, there is some duplication of the number of tests undertaken where more than one method of testing is used. Faecal specimens are tested for both *Cryptosporidium* and *Giardia* by nucleic acid amplification test (NAAT). The laboratory testing data does not provide any information on whether there are repeat tests performed on the same individual.

Notification data for *Campylobacter*, *Cryptosporidium*, *Giardia, Salmonella* and *Shigella* were analysed for the period between 1 January 2013 and 31 December 2022, based on the specimen date. The ratio of positive notifications was calculated by dividing the overall positive results notified to NSW Health by all laboratories, by the total number of tests performed as reported from the participating laboratories. The overall positive results included in the analysis are for individual people notified with each condition reported from all laboratories. However, the testing data are for individual tests reported from participating laboratories and may include multiple specimens per individual. As such, the ratio of positive notifications per test may be an underestimate of the per cent of people tested that are positive for the condition.

Data for outbreaks of suspected point-source foodborne enteric diseases were collected from the NSW Food Authority Notification of Foodborne Illness Outbreak Form, the Public Health Unit Environmental Request Form and the OFN Outbreak Summary Form and entered into a national REDCap database. Data for enteric disease outbreaks in institutions with suspected person-to-person transmission of a viral pathogen were entered directly into NCIMS by public health units. Data from these registers are analysed using MS Excel at Health Protection NSW.

[iii] Notifiable enteric diseases in NSW include cryptosporidiosis, giardiasis, haemolytic uraemic syndrome, rotavirus, salmonellosis (including paratyphoid), shigellosis, listeriosis, hepatitis A, hepatitis E, typhoid and Shiga toxin-producing *Escherichia coli* (STEC) infection

[iv] Australian Bureau of Statistics. Estimated resident populations based on 2011 Census counts and mid-series experimental population projections.

ACKNOWLEDGEMENTS

The NSW OzFoodNet Annual Report 2022 was possible due to the collaborative work of many people, some mentioned by name here, who contribute in varying capacities to the management of communicable enteric diseases in NSW:

- NSW Public Health Unit staff for surveillance, reporting and investigation of enteric disease cases, clusters and outbreaks
- HAPS, ICPMR, IMVS, MDU and other public and private laboratory staff in New South Wales, Queensland, Victoria and South Australia
- Enteric diseases and OzFoodNet team, One Health Branch, Health Protection, NSW
- Hunter New England OzFoodNet team and Dr Tony Merritt, Dr Craig Dalton and Dr David Durrheim, Hunter New England Local Health District
- Dr Christine Selvey, Director, Communicable Diseases Branch, Health Protection NSW
- Dr Jeremy McAnulty, Executive Director, Health Protection NSW
- Dr Richard Broome, Acting Executive Director, Health Protection, NSW
- Clinicians across NSW who assist in the diagnosis and follow up enteric disease
- The New South Wales Food Authority for management of environmental aspects of outbreak investigations
- Local Councils in NSW that contribute to enteric disease investigations
- Roy Byun, Laboratory Liaison Officer and Alicia Arnott and Grace Blackwell, Epidemiologist with ICPMR Westmead
- All OzFoodNet epidemiologists and collaborators
- Partners in NSW Department of Primary Industries and associated stakeholders