

OzFoodNet

Enhancing Foodborne Disease Surveillance Across Australia

NSW ANNUAL REPORT

2023



Produced by:

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

This work is copyright. It may be reproduced in whole or in part for study and training purposes subject to the inclusion of an acknowledgement of the source. It may not be reproduced for commercial usage or sale. Reproduction for purposes other than those indicated above requires written permission from Health Protection NSW.

Suggested citation:

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

© Health Protection NSW 2023

April, 2024

TABLE OF CONTENTS

Table of contents	3
Glossary	4
Summary – Enteric Infections in NSW	5
Campylobacteriosis.....	6
Salmonellosis.....	7
<i>Salmonella</i> Enteritidis infection	9
Typhoid & paratyphoid fever	10
Shigellosis.....	11
Listeriosis	12
Shiga toxin producing <i>E. Coli</i> infection (STEC)	13
Haemolytic Uraemic Syndrome (HUS)	14
Cryptosporidiosis	15
Giardiasis	16
Hepatitis A.....	17
Hepatitis E.....	18
Rotavirus infection	19
Denominator data	20
Culture Independent Testing.....	22
Surveillance of foodborne outbreaks	23
Outbreak summary 2023	25
Significant enteric outbreaks 2023.....	Error! Bookmark not defined.
Institutional gastrointestinal outbreaks.....	28
Methods	29
Acknowledgements.....	31

GLOSSARY

ACF	Aged-care facility	N/A	Not available
CC	Central Coast LHD	NBM	Nepean Blue Mountains LHD
CCC	Childcare centre	NNSW	Northern NSW LHD
DPI	Department of Primary Industries	NS	Northern Sydney LHD
FW	Far West LHD	NSW	New South Wales
HNE	Hunter New England LHD	NSWFA	NSW Food Authority
HUS	haemolytic uraemic syndrome	Q	Quarter
ICPMR	Institute of Clinical Pathology and Medical Research	SES	South Eastern Sydney LHD
IS	Illawarra Shoalhaven LHD	SNP	single nucleotide polymorphisms
LHD	Local Health Districts	SNSW	Southern NSW LHD
M	Murrumbidgee LHD	STEC	Shiga toxin-producing <i>Escherichia Coli</i>
MDR	Multi-drug resistant	SWS	South Western Sydney LHD
MLVA	Multi-locus variable number tandem repeat analysis	SYD	Sydney LHD
MLST	Multi-locus sequence typing	WGS	Whole genome sequencing
MNC	Mid North Coast LHD	WNSW	Western NSW LHD
N	Number	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 2023, changes in notifications over time, and other activities in 2023. 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: Between 2020-2022, the Covid-19 pandemic changed the way people interacted with the health system. Fewer in-person doctor appointments, changed testing capacity and reduced social interaction each had an impact on the incidence of many diseases, including enteric infections. These changes need to be considered when interpreting the 5-year annual mean and epidemiological evidence from that period.

Cases of infection and incidence 2023

Notifications of enteric conditions: 23,110

Reported hospitalisations: 723

Reported deaths: 11

Notification rate per 100,000 population: 281.6

Notified incidence and reported hospitalisation due to enteric pathogens in NSW, 2023

	N 2023	5Yr annual mean	% change	Notified Rate	Reported Hospitalisations ^a
Campylobacteriosis	12,198	11,817.8	3%	148.6	4
Rotavirus	3,107	1,060.0	193%	37.9	94
Salmonellosis	3,007	3,124.2	-4%	36.6	130
Giardiasis	2,554	2,260.2	13%	31.1	1
Shigellosis	932	479.8	94%	11.4	141
Cryptosporidiosis	877	562.2	56%	10.7	74
STEC/VTEC	191	104.8	82%	2.3	91
Typhoid	81	41.2	97%	1.4	60
Hepatitis A	72	41.2	75%	0.9	53
Paratyphoid	37	19.4	91%	0.5	24
Listeriosis	34	22.2	53%	0.4	33
Hepatitis E	14	12.4	13%	0.2	12
Haemolytic Uremic Syndrome	4	3.4	18%	0.05	4
Cholera	2	0.6	233%	0.02	2
Botulism	0	0.8	-100%	0.0	0
Total	23,110	19,550.2	18%	281.6	723

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

Notable changes in 2023 (compared to 5-year annual average, 2018-2022)

- Campylobacteriosis was the highest enteric infection notified in 2023. Since its introduction as a notifiable condition in NSW in 2017, campylobacteriosis notifications have exceeded all other enteric infections (page 6).
- Cholera notifications increased by 233% compared to the five-year annual average. The two cases were different subtypes, but both were acquired overseas in India. No further transmission was identified.

Reported enteric disease outbreaks

- 46 foodborne or potentially foodborne disease outbreaks were reported affecting at least 492 people; a 39% increase in the number of reported foodborne or probable foodborne disease outbreaks compared to 2022 (n=33)
- 2,079 viral or probable viral gastroenteritis outbreaks in institutions were reported, affecting at least 28,366 people; a 12% increase in the number of reported gastroenteritis outbreaks in institutions compared to 2022 (n=1,862)

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 2023

- Case count: 12,198
- Reported hospitalisations: 4*
- Reported deaths: 0
- Notification rate per 100,000: 148.6

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

Overall trend

3% increase in the 2023 notification rate compared to the 5-year annual mean (145.5 per 100,000).

Groups with highest notification rate in 2023

Age: <5-years (7.9% of cases – 204.1 per 100,000)
 Sex: Male (55.3% of cases – 165.7 per 100,000)
 LHD: Murrumbidgee (4.8% of cases – 190.9 per 100,000)

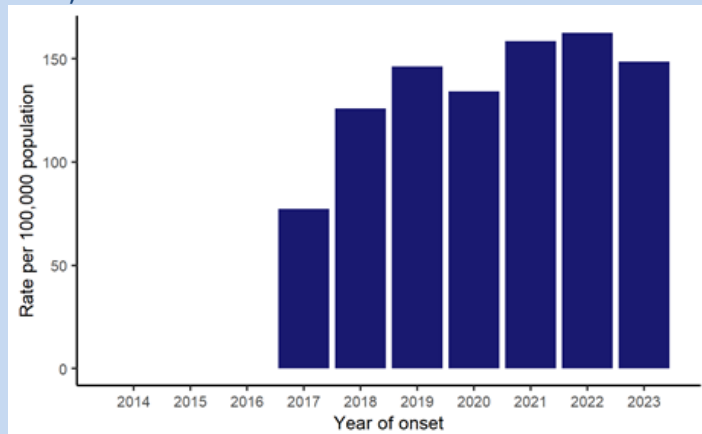
Seasonality

Campylobacteriosis notifications were highest in the late summer period (Jan-Mar)

Outbreaks

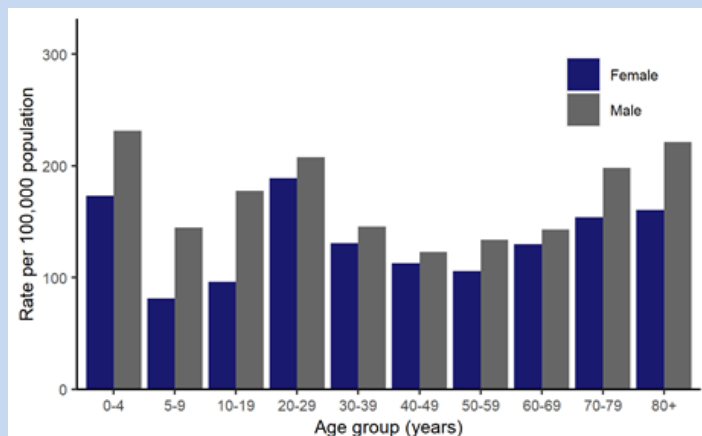
Three outbreaks were detected in NSW in 2023 affecting 8 people. (pages 23-26)

Notification rate per 100,000 population by year, 2018 – 2023, 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, 2023, NSW



Number of cases and rates (per 100,000) by Local Health District, 2023, NSW

LHD	Count		Rate	
	5Yr mean	2023	5yr mean	2023
CC	477.8	456	138.2	129.7
FW	32.6	28	112.3	100.0
HNE	1,240.0	1,169	131.7	121.3
IS	577.6	713	136.1	163.3
MNC	316.6	282	140.3	122.7
MURR	546.2	580	181.9	190.9
NBM	529.6	564	138.6	146.6
NNSW	516.4	589	168.4	189.3
NS	1,685.8	1,719	177.1	179.3
SES	1,577.4	1,728	166.5	186.3
SWS	1,228.0	1,268	118.3	119.5
SNSW	357.4	342	167.6	156.0
SYD	946.4	934	136.0	134.7
WNSW	483.0	458	171.5	161.1
WS	1,293.8	1356	125.4	128.8
NSW	11,817.8	12,198	145.6	148.6

*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 2023

- Case count: 3,007
- Reported hospitalisations: 130*
- Reported deaths: 2
- Notification rate per 100,000: 36.6

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

Overall trend

1% increase in the 2023 notification rate compared to the 5-year annual mean (36.3 per 100,000)

Groups with highest notification rate in 2023

Age: <5-years (23.5% of cases – 138.4 per 100,000)

Sex: Male (50.8% of cases – 34.9 per 100,000)

LHD: Northern NSW (8.7% of cases – 78.1 per 100,000)

Seasonality

Notifications were highest in the late summer period (Jan-Mar)

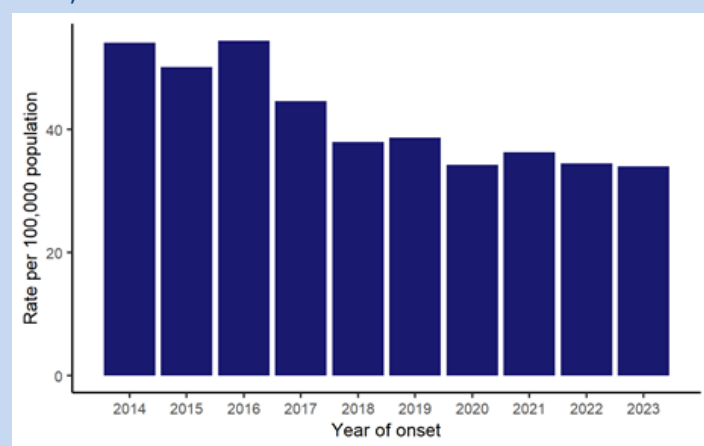
Top serotypes in 2023 (% of all types *Salmonella*) - % change compared to 2022

1. Typhimurium (20%) - ↓ 47%
2. Wangata (10%) - ↑ 83%
3. Enteritidis (7%) - ↑ 148%
4. Paratyphi B bv Java - (4%) - ↑ 48%
5. Ser 4,5,12:i:- (3%) - ↑ 32%

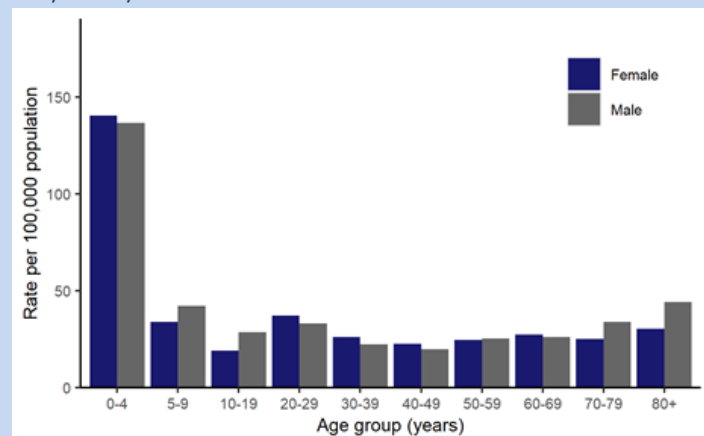
Outbreaks

10 foodborne outbreaks caused by *Salmonella* were detected in NSW in 2023, affecting 180 people (6.0% of all *Salmonella*) (pages 23-30)

Notification rate per 100,000 population by year, 2014 – 2023, NSW



Notification rate per 100,000 population by age category and sex, 2023, NSW



Number of cases and rates (per 100,000) by Local Health District, 2023, NSW

LHD	Count		Rate	
	5Yr mean	2023	5Yr mean	2023
CC	133	113	38.5	32.1
FW	10.8	12	37.2	42.8
HNE	358.6	300	38.1	31.1
IS	121.4	122	28.6	27.9
MNC	121.4	91	53.8	39.6
MURR	126.8	127	42.2	41.8
NBM	126.8	104	33.2	27.0
NNSW	260.8	243	85.0	78.1
NS	351.4	359	36.9	37.4
SES	301.2	300	31.8	32.3
SWS	327.6	328	31.6	30.9
SNSW	71.4	75	33.5	34.2
SYD	187.2	207	26.9	29.8
WNSW	122	92	43.3	32.4
WS	324.8	313	31.5	29.7
NSW	2,947.8	3,007	36.3	36.6

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

Salmonellosis continued

Salmonella serotypes

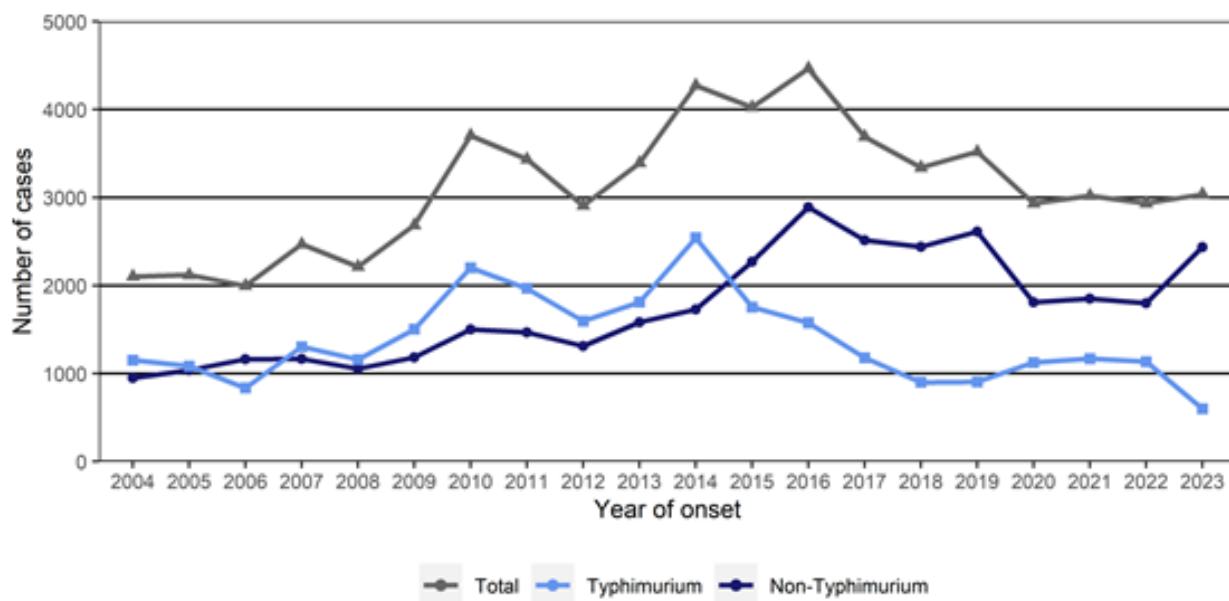
Top 5 *Salmonella* serotypes in NSW, 2019-2023 (number of notifications)

	2019	2020	2021	2022	2023
1	Typhimurium (905)	Typhimurium (1,124)	Typhimurium (1,168)	Typhimurium (1,134)	Typhimurium (600)
2	Enteritidis (366)	Wangata (264)	Saintpaul (256)	Wangata (166)	Wangata (304)
3	Wangata (222)	Saintpaul (156)	Wangata (252)	Virchow (90)	Enteritidis (218)
4	Paratyphi B bv Java (120)	Enteritidis (114)	Virchow (84)	Enteritidis (88)	Paratyphi B bv Java (120)
5	Virchow (120)	Virchow (105)	Birkenhead (83)	Paratyphi B bv Java (81)	ser 4,5,12:i:- (94)

Salmonella Typhimurium trends

In 2023, *Salmonella* Typhimurium notifications decreased by 47% when compared to 2022.

Number of *Salmonella* Typhimurium infections compared to other *Salmonella* serotypes in NSW, 2004-23.



SALMONELLA ENTERITIDIS INFECTION

While *Salmonella* Enteritidis is endemic in commercial poultry farms in most countries, it was not thought to be present 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 2023

- Case count: 217
- Reported hospitalisations: 43
- Reported deaths: 2
- Notification rate per 100,000: 2.6

Overall trend

21.0% increase in the 2023 notification rate compared to the 5-year annual mean (2.2 per 100,000)

Groups with highest notification rate in 2023

Age: <5-years (13.4% of cases – 6.1 per 100,000)

Sex: Female (53.5% of cases – 2.8 per 100,000)

LHD: Northern Sydney (23% of cases – 5.2 per 100,000)

Seasonality

Peaked in July, with overseas travel.

Place of acquisition in 2023

In Australia: 9.2%

Overseas: 88.5%

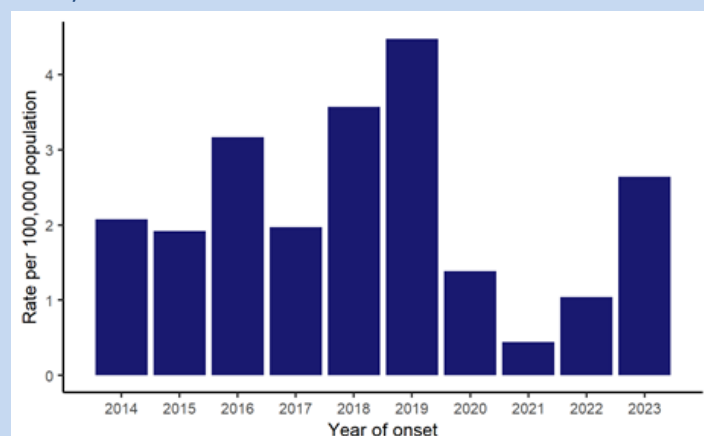
Unknown: 2.3%

(data available from 100% of cases)

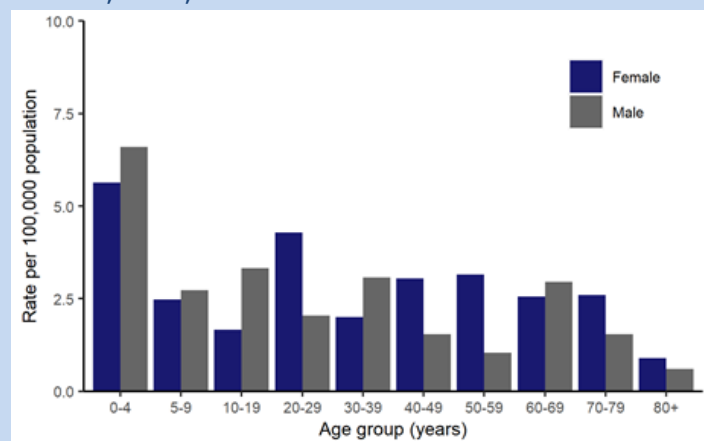
Outbreaks

There were no *Salmonella* Enteritidis outbreaks in 2023

Notification rate per 100,000 population by year, 2014 – 2023, NSW



Notification rate per 100,000 population by age category and sex, 2023, NSW



Number of cases and rates (per 100,000) by Local Health District, 2023, NSW

LHD	Count		Rate	
	5Yr mean	2023	5yr mean	2023
CC	4.8	9	1.4	2.6
FW	0.2	0	0.7	0.0
HNE	13.0	15	1.4	1.6
IS	7.2	18	1.7	4.1
MNC	3.6	4	1.6	1.7
MURR	2.2	3	0.7	1.0
NBM	7.2	12	1.9	3.1
NNSW	7.8	4	2.5	1.3
NS	33.4	50	3.5	5.2
SES	27.4	38	2.9	4.1
SWS	22.2	15	2.1	1.4
SNSW	3.0	5	1.4	2.3
SYD	16.0	14	2.3	2.0
WNSW	2.6	4	0.9	1.4
WS	24.8	25	2.4	2.4
NSW	176.2	217	2.2	2.6

*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 2023

- Case count: 118
- Reported hospitalisations: 84
- Reported deaths: 0
- Notification rate per 100,000: 1.4

Overall trend

92% increase in the 2023 notification rate compared to the 5-year annual mean (0.7 per 100,000)

Groups with highest notification rate in 2023

Age: <5-years (12.0% of cases – 3.0 per 100,000)

Sex: Female (50.8% of cases – 1.4 per 100,000)

LHD: Western Sydney (40.7% of cases – 4.6 per 100,000)

Seasonality

Peaks typically in summer months (Jan-Feb)

Place of acquisition in 2023

In NSW: 1.7%*

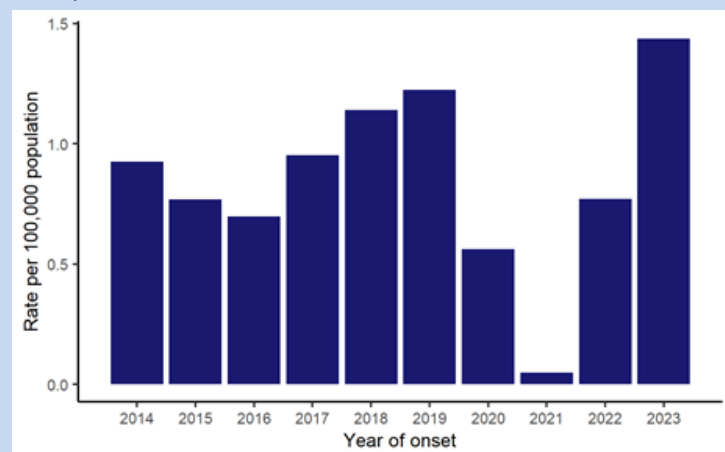
Overseas: 98.3%

* Acquired in NSW from contact with returned travellers

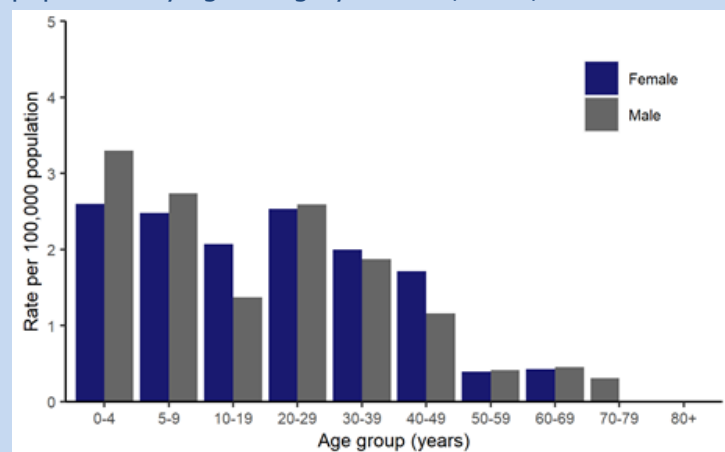
Outbreaks

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

Notification rate per 100,000 population by year, 2013 – 2023, NSW



Typhoid and paratyphoid notification rate per 100,000 population by age category and sex, 2023, NSW



Number of cases and rates (per 100,000) by Local Health District, 2023, NSW

LHD	Count		Rate	
	5Yr mean	2023	5yr mean	2023
CC	0.8	2	0.2	0.6
FW	2.6	5	0.3	0.5
HNE	1.2	1	0.3	0.2
IS	0.2	1	0.1	0.4
M	0.2	3	0.1	1.0
MNC	1.8	6	0.5	1.6
NBM	0.6	2	0.2	0.6
NNSW	4.8	9	0.5	0.9
NS	5.6	9	0.6	1.0
SES	0.6	1	0.3	0.5
SWS	9	14	0.9	1.3
SNSW	5.8	14	0.8	2.0
SYD	0.8	2	0.2	0.6
WNSW	0.2	2	0.1	0.7
WS	26.8	48	2.6	4.6
NSW	60.6	118	0.7	1.4

* 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 2023

- Case count: 932
- Confirmed cases: 287, Probable cases: 645
- Reported hospitalisations: 141*
- Notification rate per 100,000: 11.4

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

Overall trend

94% increase in the 2023 notification rate compared to the 5-year annual mean (5.9 per 100,000).

Groups with highest notification rate in 2023

Age: 30-39 years (22.6% of cases – 17.8 per 100,000)

Sex: Male (60.9% of cases – 13.9 per 100,000)

LHD: SES (23.3% of cases – 23.4 per 100,000)

Seasonality

No significant trend (highest in February and July)

Place of acquisition in 2023 (confirmed cases only)

In Australia: 62.4%

Overseas: 34.8%

Unknown: 2.8%

Risk exposures reported (locally acquired only)

Men who have sex with men (MSM): 60%

Contact with a confirmed/possible case: 13%

Unknown: 27%

Typing of confirmed cases

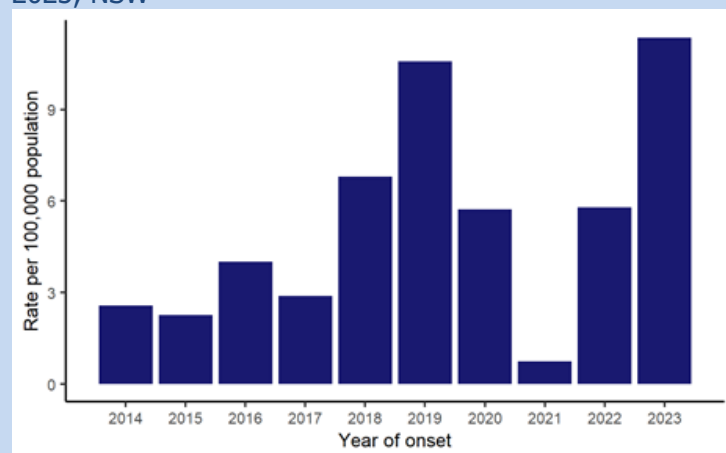
Sonnei: 54.7%

Boydii: 1.7%

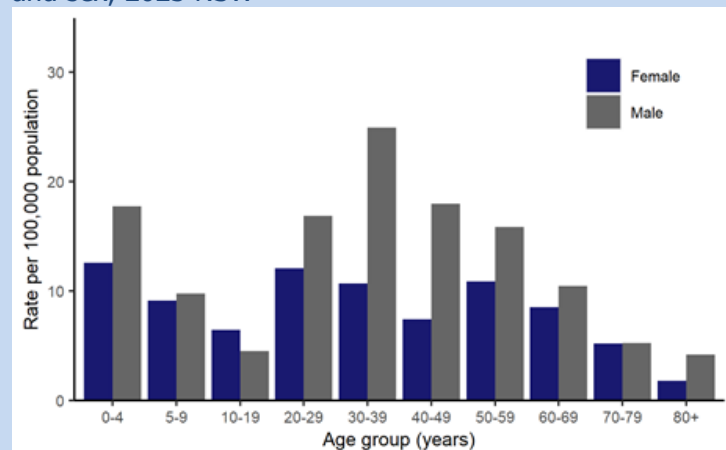
Flexneri: 39.7%

Dysenteriae: 0.3%

Notification rate per 100,000 population by year, 2014 – 2023, NSW



Notification rate per 100,000 population by age category and sex, 2023 NSW



Number of cases and rates (per 100,000) by Local Health District, 2023, NSW

LHD	Count		Rate	
	5Yr mean	2023	5yr mean	2023
CC	10.4	32	3.0	9.1
FW	0.4	4	1.4	14.3
HNE	24.8	42	2.6	4.4
IS	12.0	34	2.8	7.8
MNC	4.8	6	2.1	2.6
MURR	5.4	23	1.8	7.6
NBM	15.2	25	4.0	6.5
NNSW	23.0	32	7.5	10.3
NS	71.4	132	7.5	13.8
SES	108.0	217	11.4	23.4
SWS	41.2	72	4.0	6.8
SNSW	7.2	6	3.4	2.7
SYD	78.8	145	11.3	20.9
WNSW	6.6	10	2.3	3.5
WS	69.6	149	6.7	14.1
NSW	478.8	932	5.9	11.4

* 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 2023

- Case count: 34
- Reported hospitalisations: 33
- Reported deaths: 3
- Notification rate per 100,000: 0.4

Overall trend

There was a 57% increase in the 2023 notification rate compared to the 5-year annual mean (0.27 per 100,000)

Groups with highest notification rate in 2023

Age: > 80 years (44.1% of cases – 3.8 per 100,000)

Sex: Male (56% of cases - 0.5 per 100,000)

LHD: Southern NSW (8.8% of cases – 1.4 per 100,000)

Deaths

Three deaths occurred in people aged 52-88 years.

Place of acquisition in 2023

In NSW: 100%

Seasonality

Notifications were highest in August and September

Outbreaks

There were 3 listeriosis outbreaks detected in 2023, affecting 8 people. (pages 23-30)

Most common comorbidities reported

Heart disease: 11

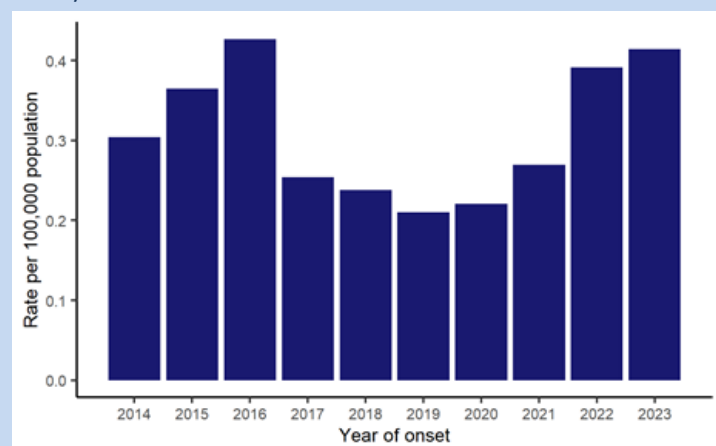
Chronic lung disease: 9

Cancer: 8

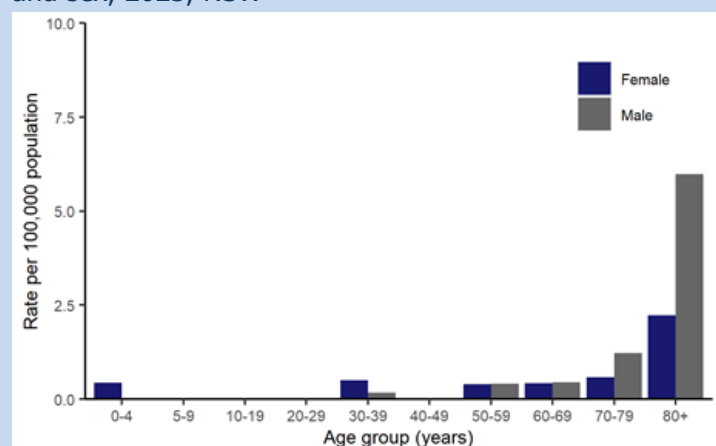
Perinatal

Four perinatal cases were reported in 2023.

Notification rate per 100,000 population by year, 2014 – 2023, NSW



Notification rate per 100,000 population by age category and sex, 2023, NSW



Number of cases and rates (per 100,000) by Local Health District, 2023, NSW

LHD	Count		Rate	
	5Yr mean	2023	5yr mean	2023
CC	0.6	1	0.2	0.3
FW	0.2	0	0.7	0.0
HNE	2	5	0.2	0.5
IS	1.4	3	0.3	0.7
MNC	0.4	0	0.2	0.0
MURR	1	2	0.3	0.7
NBM	0.4	3	0.1	0.8
NNSW	0.4	1	0.1	0.3
NS	3.4	5	0.4	0.5
SES	3	1	0.3	0.1
SWS	0.8	3	0.4	1.4
SNSW	1.8	5	0.2	0.5
SYD	2.2	2	0.3	0.3
WNSW	0.6	1	0.2	0.4
WS	3.4	2	0.3	0.2
NSW	21.6	34	0.3	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 2023

- Case count: 191
- Reported hospitalisations: 91
- Reported deaths: 4
- Notification rate per 100,000: 2.3

Overall trend

There was an 83% increase in the 2023 notification rate compared to 5-year annual mean (1.3 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 2023

Age: <5-years (16.2% of cases – 6.6 per 100,000)

Sex: Females (58.6% of cases – 2.7 per 100,000)

LHD: Western NSW (13.1% of cases – 8.8 per 100,000)

Seasonality

The highest number of notifications occurred in November and December.

Place of acquisition in 2023

In NSW: 78%

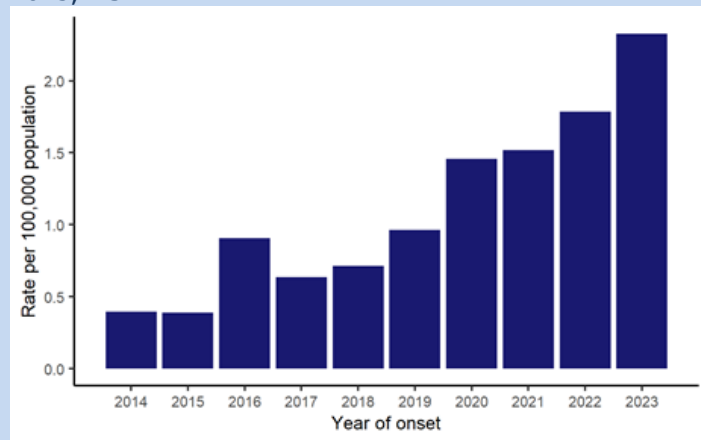
Overseas: 5%

Unknown: 17%

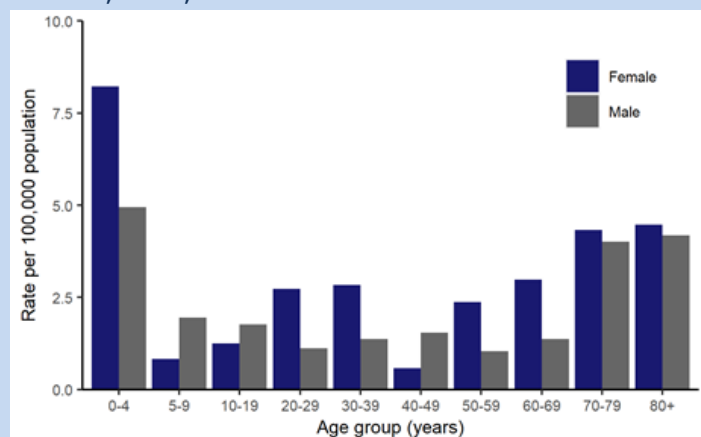
Deaths

Four deaths relating to STEC were reported in 2023. One case developed HUS (page 14)

Notification rate per 100,000 population by year, 2014 – 2023, NSW



Notification rate per 100,000 population by age category and sex, 2023, NSW



Number of cases and rates (per 100,000) by Local Health District, 2023, NSW

LHD	Count		Rate	
	5Yr mean	2023	5yr mean	2023
CC	1.2	6	0.3	1.7
FW	0.8	2	2.8	7.1
HNE	15	49	1.6	5.1
IS	1	0	0.2	0.0
MNC	3.4	9	1.5	3.9
MURR	14.8	23	4.9	7.6
NBM	7.2	4	1.9	1.0
NNSW	1.8	14	0.6	4.5
NS	4.2	6	0.4	0.6
SES	0.2	0	0.0	0.0
SWS	6.2	11	0.7	1.2
SNSW	9	15	4.2	6.8
SYD	3.4	5	0.3	0.5
WNSW	17.2	25	6.1	8.8
WS	17.6	15	1.7	1.4
NSW	104.8	191	1.3	2.3

* 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 2023

- Case count: 4
- Reported hospitalisations: 4
- Reported deaths: 1
- Notification rate per 100,000: 0.05

Overall trend

In 2023 there was a 18% increase in notification rate compared to 5-year annual mean (0.04 per 100,000).

Groups with highest notification rate in 2023

Sex: Female (75.0% of cases - 0.07 per 100,000)

Age: <5-years (75.0% of cases – 0.6 per 100,000)

LHD: Hunter New England (25.0% of cases – 0.1 per 100,000)

Place of acquisition in 2023

In NSW: 75%

Overseas: 25%

(based on responses from 100% of cases)

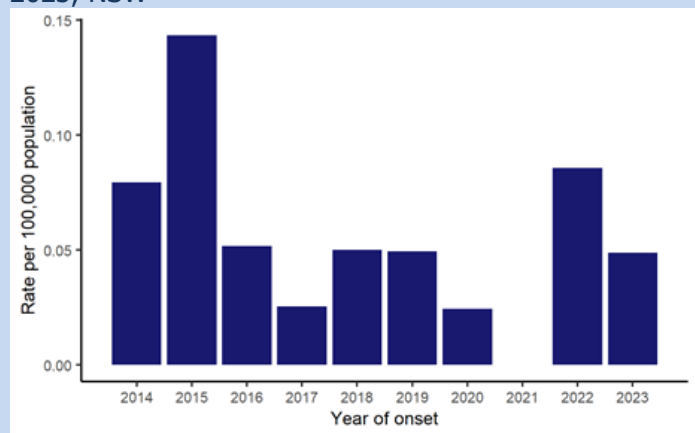
Bacterial infection

STEC infections were identified in all of the notified HUS cases in 2023. One case was serogroup O145, one as O118, and no serogroup was identified for the remaining cases.

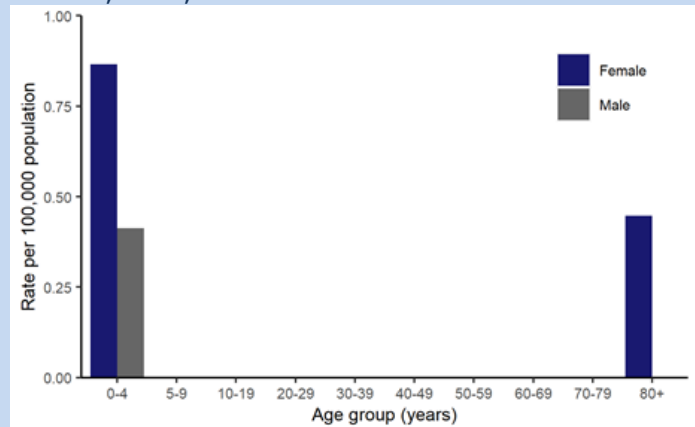
Deaths

One death occurred in a person aged over 80 years old.

Notification rate per 100,000 population by year, 2014 – 2023, NSW



Notification rate per 100,000 population by age category and sex, 2023, NSW



Number of cases and rates (per 100,000) by Local Health District, 2023, NSW

LHD	Count		Rate	
	5Yr mean	2023	5yr mean	2023
CC	0.4	0	0.12	0.0
FW	0.0	0	0.00	0.00
HNE	0.8	1	0.08	0.08
IS	0.6	0	0.14	0.0
MNC	0.2	0	0.09	0.0
MURR	0.2	0	0.07	0.0
NBM	0.0	0	0.00	0.00
NNSW	0.2	1	0.07	0.32
NS	0.0	0	0.00	0.00
SES	0.0	0	0.00	0.00
SWS	0.2	1	0.0	0.09
SNSW	0.2	0	0.09	0.00
SYD	0.0	0	0.00	0.00
WNSW	0.0	1	0.00	0.35
WS	0.6	0	0.06	0.0
NSW	3.4	4	0.03	0.05

* 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 2023

- Case count: 877
- Reported hospitalisations: 74
- Reported deaths: 0
- Notification rate per 100,000: 10.7

Overall trend

56% increase in the 2023 notification rate compared to 5-year annual mean (6.9 per 100,000)

Groups with highest notification rate in 2023

Age: <5-years (19.8% of cases – 36.8 per 100,000)

Sex: Male (54.7% of cases – 11.8 per 100,000)

LHD: Western NSW (6.6% of cases - 20.4 per 100,00)

Seasonality

Seasonal, peaked in late spring in 2023 (Nov-Dec)

Place of acquisition in 2023

In Australia: 50.3%

Overseas: 18.4%

Unknown: 31.4%

(based on responses from 63% of cases)

Risk exposures reported (locally acquired only)

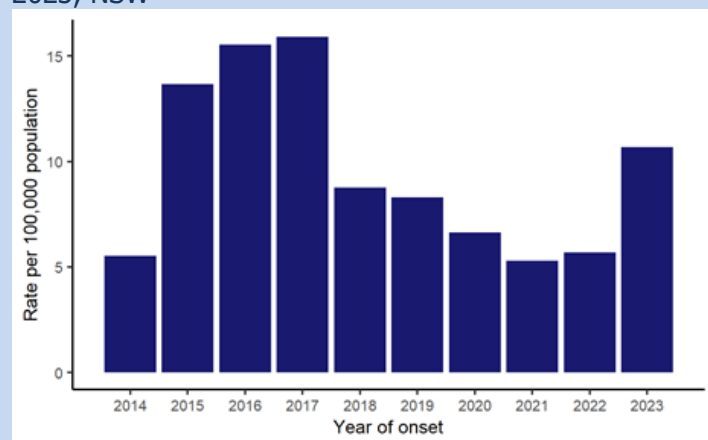
Farm/farm animal exposure: 20%

Swimming pool: 35%

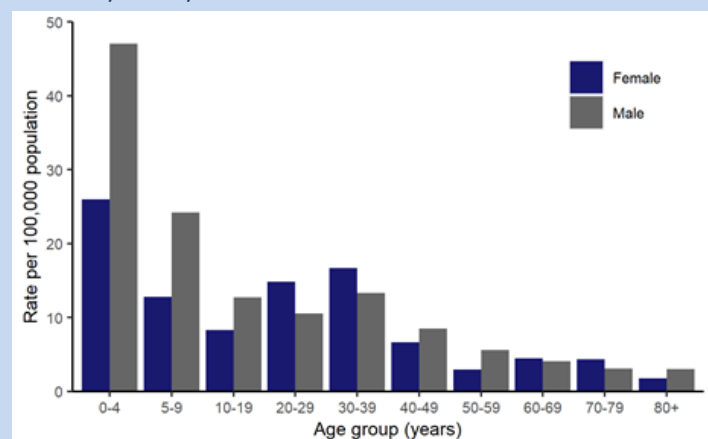
Drank water other than town or bottled water: 15%

Note: Some cases may report more than one risk factor. Responses only received from 72% of cases.

Notification rate per 100,000 population by year, 2014 – 2023, NSW



Notification rate per 100,000 population by age category and sex, 2023, NSW



Number of cases and rates (per 100,000) by Local Health District, 2023, NSW

LHD	Count		Rate	
	5Yr mean	2023	5yr mean	2023
CC	18.8	25	5.4	7.1
FW	1	1	3.4	3.6
HNE	76.4	89	8.1	9.2
IS	43.8	50	10.3	11.4
MNC	20.4	13	9.0	5.7
MURR	21.6	56	7.2	18.4
NBM	27	36	7.1	9.4
NNSW	34.8	40	11.3	12.9
NS	75.6	113	7.9	11.8
SES	64.4	108	6.8	11.6
SWS	14	31	6.6	14.1
SNSW	44.4	88	4.3	8.3
SYD	36	65	5.2	9.4
WNSW	38.6	58	13.7	20.4
WS	44.2	104	4.3	9.9
NSW	562.2	877	6.9	10.7

* 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 2023

- Case count: 2,554
- Reported hospitalisations: 1*
- Reported deaths: 0
- Notification rate per 100,000: 31.1

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

Overall trend

13% increase in 2023 notification rate compared to 5-year average (27.9 per 100,000)

Groups with highest notification rate in 2023

Age: <5-years (12.5% of cases – 67.4 per 100,000)

Sex: Male (54.5% of cases – 34.2 per 100,000)

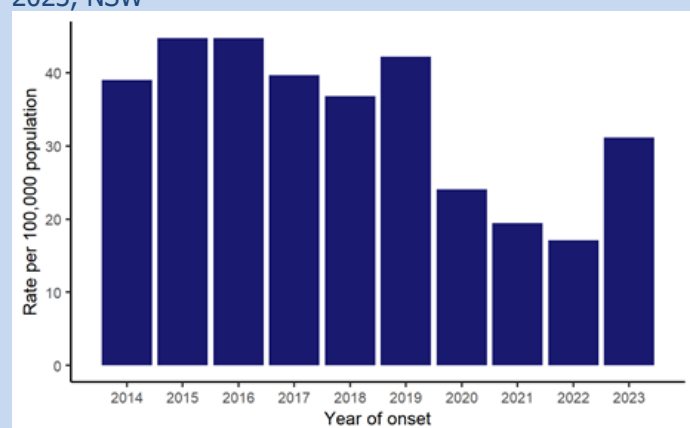
LHD: South East Sydney (18.5% of cases – 51.0 per 100,000)

Seasonality

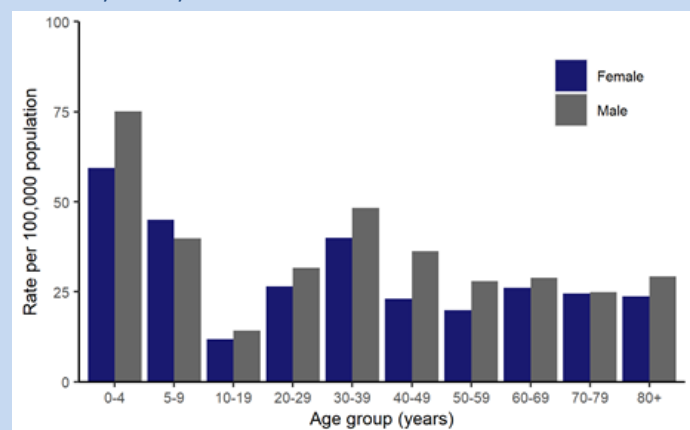
Typically peaks in summer to autumn months (Jan-May)

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

Notification rate per 100,000 population by year, 2014 – 2023, NSW



Notification rate per 100,000 population by age category and sex, 2023, NSW



Number of cases and rates (per 100,000) by Local Health District, 2023, NSW

LHD	Count		Rate	
	5Yr mean	2023	5yr mean	2023
CC	99.6	113	28.8	32.1
FW	7.4	3	25.5	10.7
HNE	255	212	27.1	22.0
IS	105.8	73	24.9	16.7
MNC	64.2	43	28.4	18.7
MURR	82.6	94	27.5	30.9
NBM	100.2	98	26.2	25.5
NNSW	161.4	80	52.6	25.7
NS	319.8	330	33.6	34.4
SES	364.4	473	38.5	51.0
SWS	185.4	322	17.9	30.3
SNSW	26.6	57	12.5	26.0
SYD	183	255	26.3	36.8
WNSW	90.4	78	32.1	27.4
WS	210.6	320	20.4	30.4
NSW	2,256.8	2,554	27.8	31.1

* 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 2023

- Case count: 72
- Reported hospitalisations: 53
- Reported deaths: 0
- Notification rate per 100,000: 0.9

Overall trend

75% increase in the 2023 notification rate compared to 5-year average (0.5 per 100,000)

Groups with highest notification rate in 2023

Age: 5-9 years (20.8% of cases – 3.0 per 100,000)

Sex: Male (51.4% of cases – 0.9 per 100,000)

LHD: Western Sydney (48.6% of cases – 3.3 per 100,000)

Seasonality

No seasonality

Place of acquisition in 2023

In Australia: 19.4%

Overseas: 79.2%

Unknown: 1.4%

(note: data available on 100% of cases)

Risk exposures reported (locally acquired)

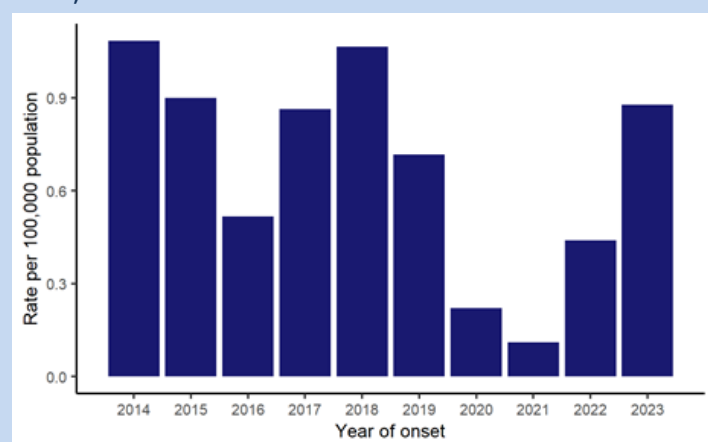
Household contact with overseas HAV case: 50%

Unknown: 50%

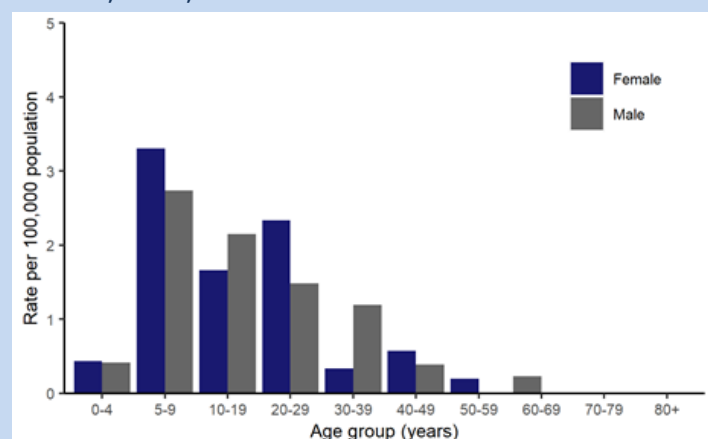
Outbreaks

There were no foodborne outbreaks of hepatitis A detected in 2023

Notification rate per 100,000 population by year, 2014 – 2023, NSW



Notification rate per 100,000 population by age category and sex, 2023, NSW



Number of cases and rates (per 100,000) by Local Health District, 2023, NSW

LHD	Count		Rate	
	5Yr mean	2023	5yr mean	2023
CC	0.4	0	0.1	0.0
FW	0.4	0	1.4	0.0
HNE	2	0	0.2	0.0
IS	1.6	2	0.4	0.5
MNC	0.2	1	0.1	0.5
MURR	1.2	2	0.4	0.7
NBM	1.4	0	0.4	0.0
NNSW	0.4	2	0.1	0.6
NS	4	6	0.4	0.6
SES	5.2	3	0.5	0.3
SWS	6.6	12	0.6	1.1
SNSW	0.2	1	0.1	0.5
SYD	4.8	8	0.7	1.2
WNSW	0.8	1	0.3	0.4
WS	11.8	35	1.1	3.3
NSW	40.8	72	0.5	0.9

* 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 2023

- Case count: 14
- Reported hospitalisations: 12
- Reported deaths: 0
- Notification rate per 100,000: 0.17

Place of acquisition in 2023

In Australia: 50%

Overseas: 50%

(note: data available on 100% of cases)

Risk exposures reported (locally acquired)

Consumed pork products: 43%

No risk identified: 57%

Overall trend

13% increase in 2023 notification rate compared to 5-year average (0.15 per 100,000)

Groups with highest notification rate in 2023

Age: 70-79 years (28.6% of cases - 0.6 per 100,000)

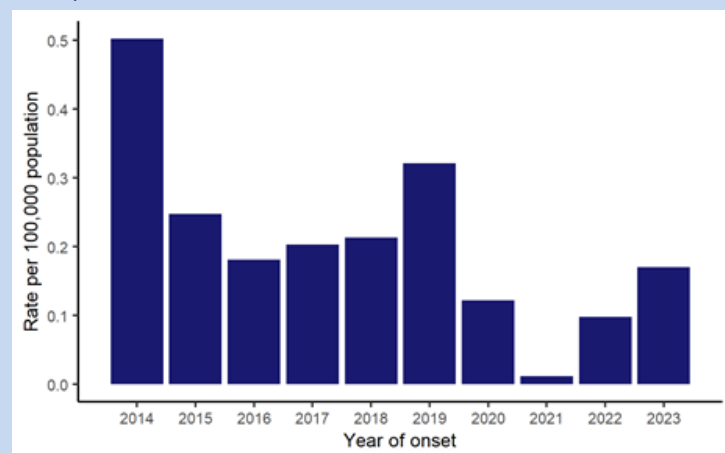
Sex: Male (71.4% of cases - 0.2 per 100,000)

LHD: Western Sydney (28.6% of cases - 0.4 per 100,000)

Outbreaks

There was one outbreak of hepatitis E in 2023, affecting 7 people (pages 23-30)

Notification rate per 100,000 population by year, 2014 – 2023, NSW

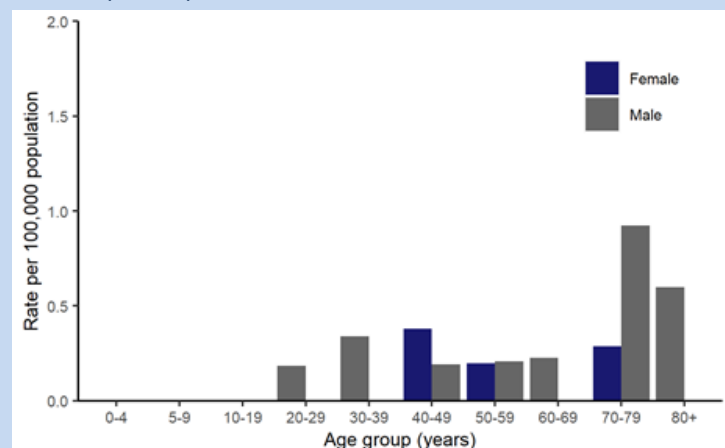


Number of cases and rates (per 100,000) by Local Health District, 2023, NSW

LHD	Count		Rate	
	5Yr mean	2023	5yr mean	2023
CC	0.2	1	0.06	0.28
FW	0	0	0.00	0.00
HNE	0.0	1	0.00	0.10
IS	0.4	1	0.09	0.23
MNC	0.2	0	0.09	0.00
MURR	0.4	1	0.13	0.33
NBM	0.8	0	0.21	0.00
NNSW	0	0	0.00	0.00
NS	1.0	2	0.11	0.21
SES	0.2	2	0.02	0.22
SWS	3.2	1	0.31	0.09
SNSW	0	0	0.00	0.00
SYD	1.8	1	0.26	0.14
WNSW	0.2	0	0.07	0.00
WS	3.8	4	0.37	0.38
NSW	12.4	14	0.16	0.17

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

Notification rate per 100,000 population by age category and sex, 2023, NSW



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 2023

- Case count: 3,107
- Reported hospitalisations: 94*
- Reported deaths: 1
- Notification rate per 100,000: 37.9

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

Overall trend

193% increase in the 2023 notification rate compared to 5-year average (13.1 per 100,000)

Seasonality

Usually peaks in spring to summer.

Groups with highest notification rate in 2023

Age: <5-years (56.4% of cases – 370.4 per 100,000)

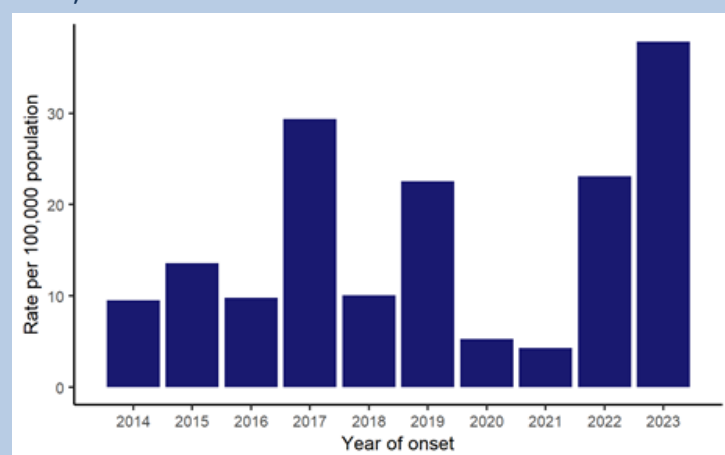
Sex: Male (50.4% of cases – 38.5 per 100,000)

LHD: South West Sydney (20.0% of cases – 58.4 per 100,000)

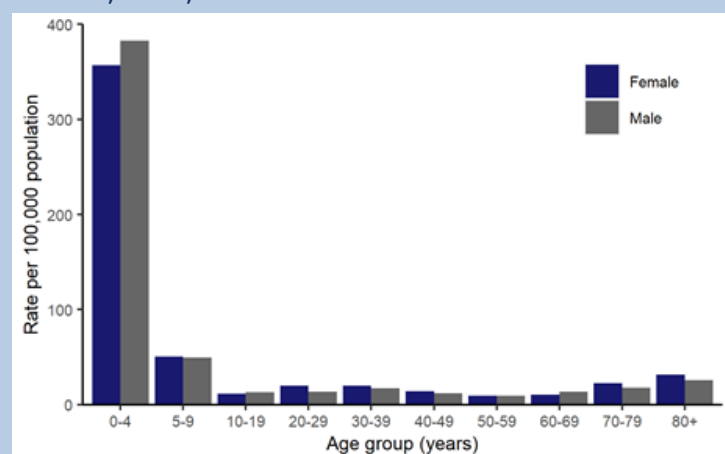
Outbreaks

Cases found to be associated with an institutional outbreak: 67 cases (2.2%) associated with 44 institutional outbreaks.

Notification rate per 100,000 population by year, 2014 – 2023, NSW



Notification rate per 100,000 population by age category and sex, 2023, NSW



Number of cases and rates (per 100,000) by Local Health District, 2023, NSW

LHD	Count		Rate	
	5Yr mean	2023	5yr mean	2023
CC	34.6	90	10.0	25.6
FW	1.4	3	4.8	10.7
HNE	78.6	175	8.3	18.2
IS	33.6	80	7.9	18.3
MNC	12.0	45	5.3	19.6
MURR	31.2	110	10.4	36.2
NBM	66.4	150	17.4	39.0
NNSW	56.0	143	18.3	46.0
NS	153.2	443	16.1	46.2
SES	121.4	324	12.8	34.9
SWS	183.0	620	17.6	58.4
SNSW	17.0	42	8.0	19.2
SYD	94.8	236	13.6	34.0
WNSW	27.0	135	9.6	47.5
WS	148.6	502	14.4	47.7
NSW	1,060.0	3,107	13.1	37.9

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

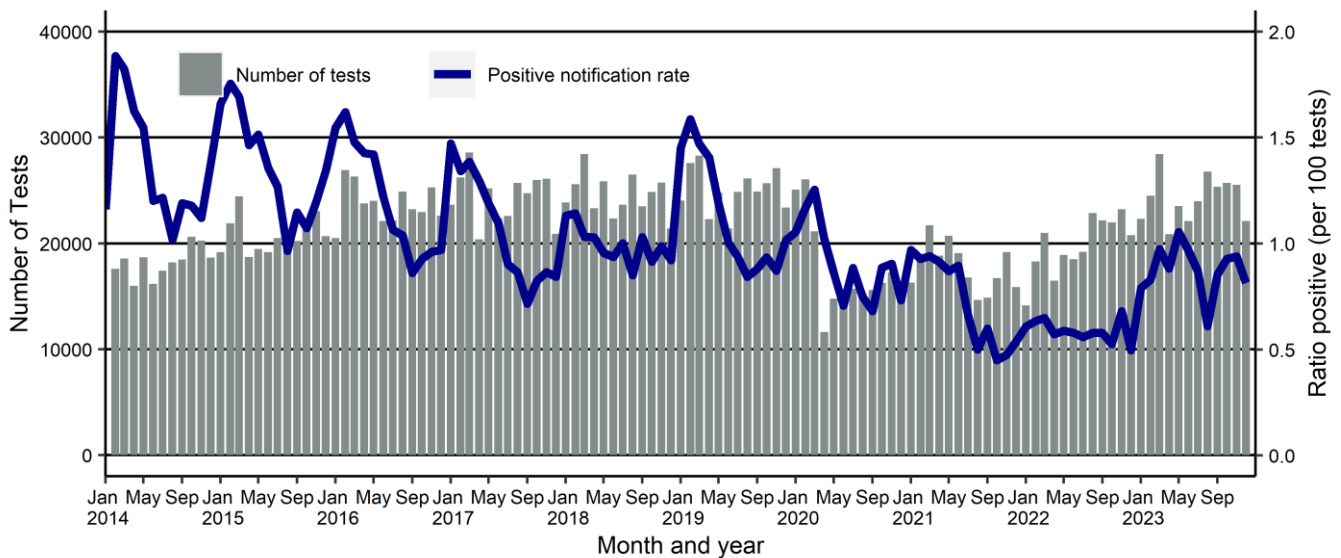
DENOMINATOR DATA

Laboratory testing data from 15 public and private laboratories was collected for *Cryptosporidium*, *Giardia*, *Salmonella* and *Shigella*. These 15 laboratories account for approximately 90% of all tests performed in NSW. The positive notification ratio is the ratio of positive results to total laboratory tests performed from participating laboratories.

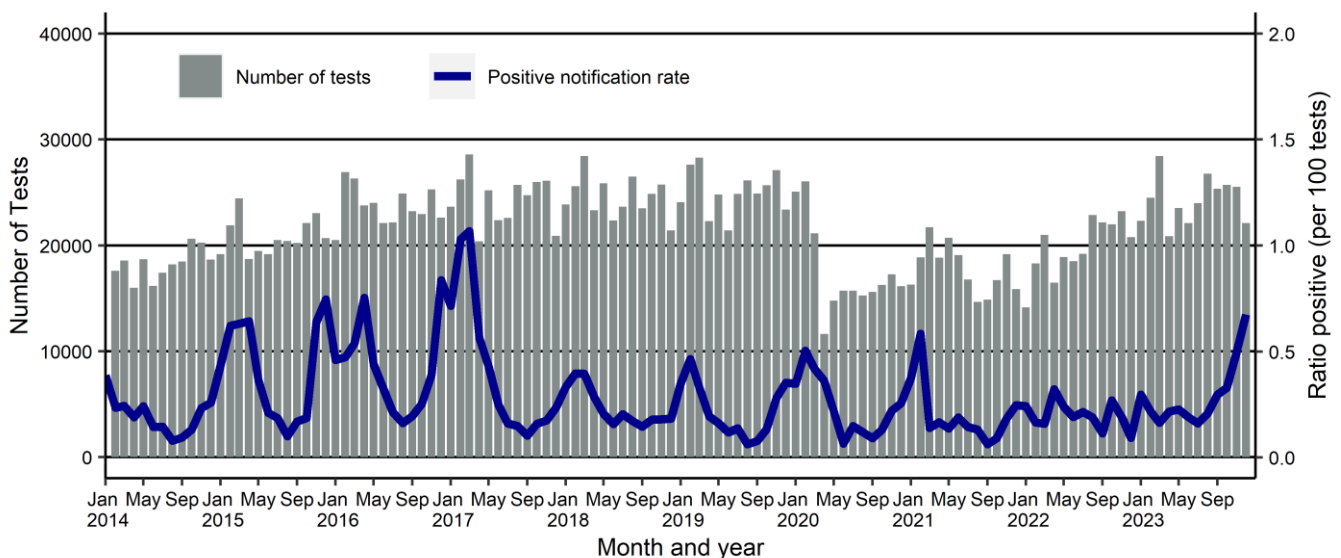
Summary for 2023:

- *Giardia* positive notification rates peaked during May at 1.05 (per 100 tests performed)
- *Cryptosporidium* positive notification rates peaked during December at 0.67 (per 100 tests performed)
- *Salmonella* positive notification rates followed the seasonal pattern, peaking in January at 1.68 (per 100 tests performed)
- *Shigella* positive notification rate was highest in July at 0.37 (per 100 tests performed)

Number of *Giardia* tests performed by 15 laboratories and rate positive by month and year, NSW, 2014–2023

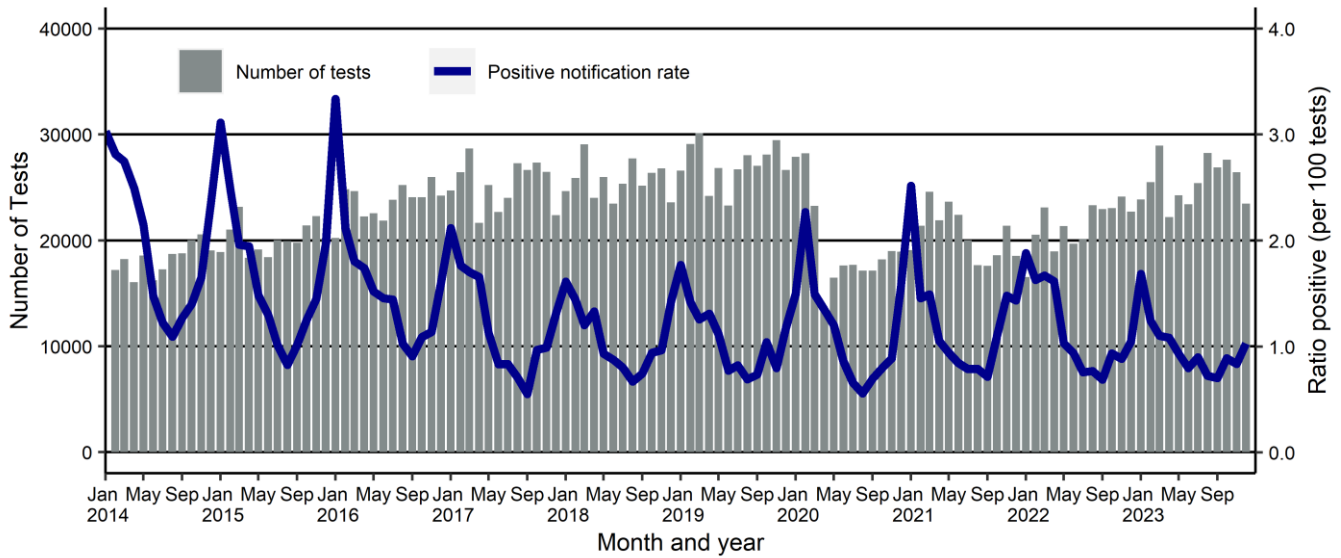


Number of *Cryptosporidium* tests performed by 15 laboratories and rate positive by month, NSW, 2014–2023

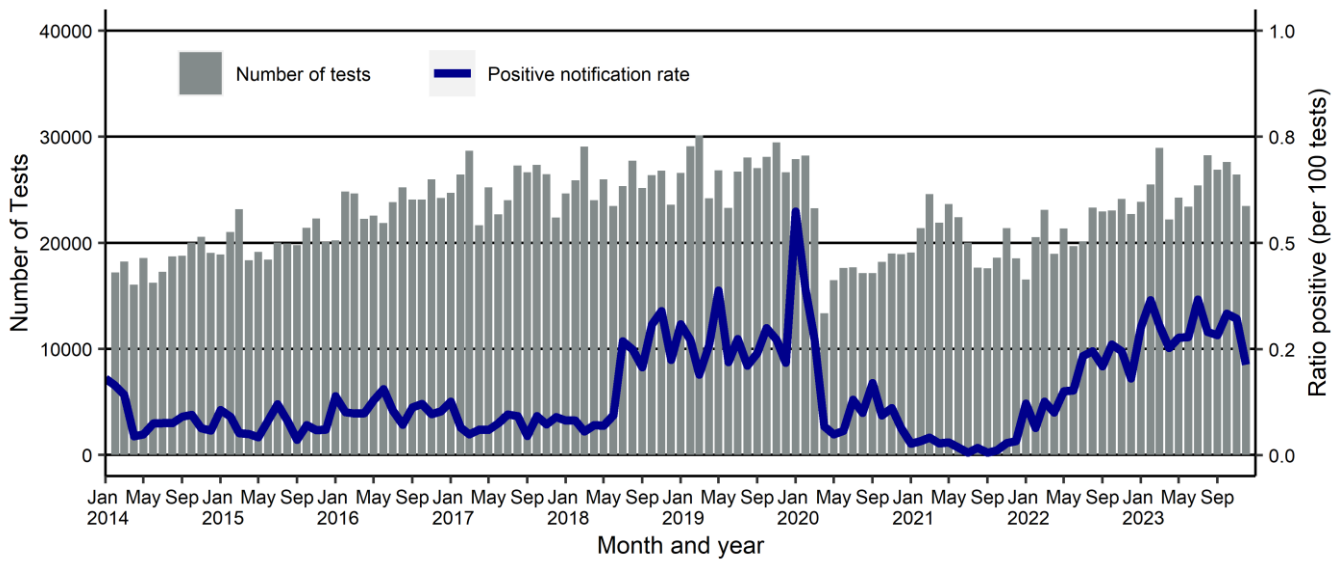


Denominator data continued

Number of *Salmonella* tests performed by 15 laboratories and rate positive by month, NSW, 2014–2023



Number of *Shigella* tests[^] performed by 15 laboratories and rate positive by month, NSW, 2014–2023



[^] 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).

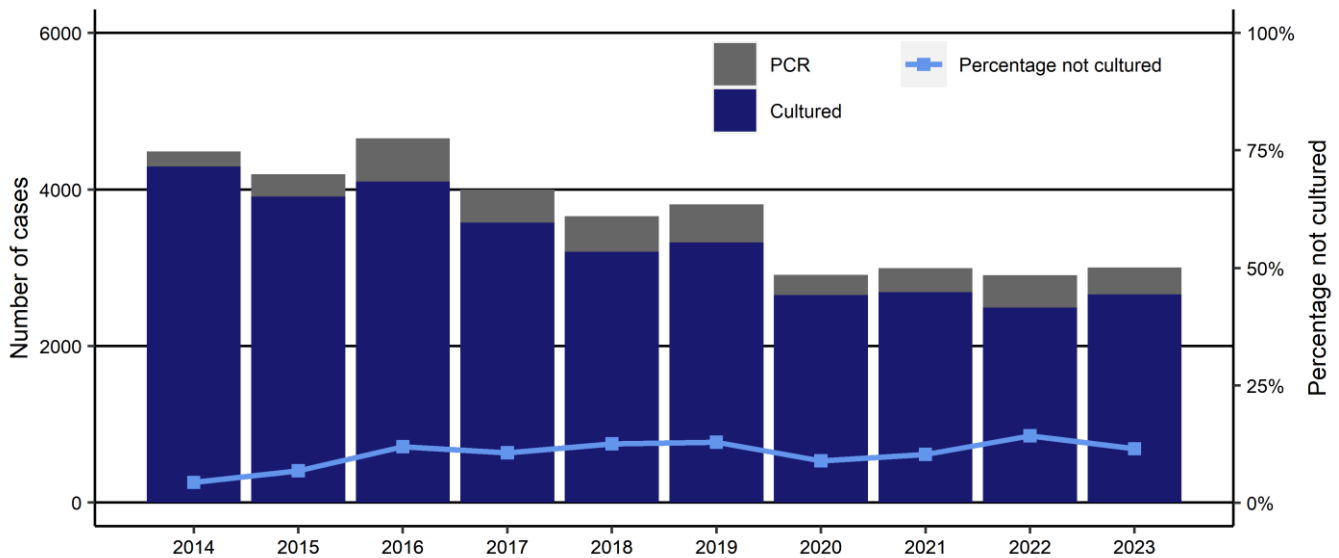
CULTURE INDEPENDENT TESTING

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.

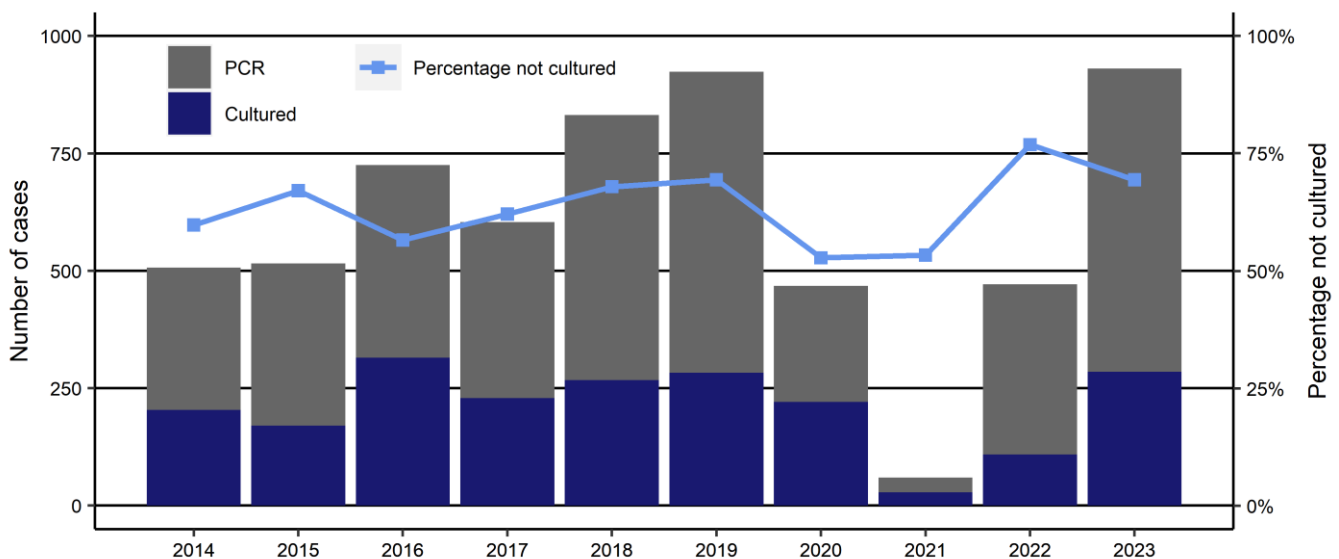
Summary for 2023:

- 11% of *Salmonella* notifications in 2023 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.
- 69% of *Shigella* notifications in 2023 could not be cultured or were not cultured.
 - 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 only (PCR).
 - PCR positive *Shigella* samples should be routinely cultured because the antigen target for *Shigella* is also found in enteroinvasive *E. coli*. For this reason PCR-only detections are only considered probable cases.
 - 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, 2014 – 2023



The number of *Shigella* notifications, by test type, and the percentage with only PCR positive result in NSW, 2014 – 2023



SURVEILLANCE OF FOODBORNE OUTBREAKS

A food-borne disease outbreak is defined as a situation where two or more people report acute onset of enteric or other symptoms caused by ingestion of infectious agents or toxins in the same contaminated food or drink. An investigation into suspected foodborne outbreaks is triggered following the identification of disease clusters in time and place, when complaints are received by the NSW Food Authority, or when reports of illness in two or more people are reported directly to public health units.

Summary 2023

- Foodborne outbreaks investigated: 46
- Outbreak related cases: 492

Overall trend

12% increase in the number of outbreaks compared to 5-year annual mean (41 outbreaks)

8% decrease in the number of outbreak-related cases compared to 5-year annual mean (532 people ill)

Top 5 Causative agent in 2023

Salmonella: 22%

Norovirus: 15%

Campylobacter: 7%

Listeria monocytogenes: 7%

Top contributing factors in 2023

Ingestion contaminated raw product: 15%

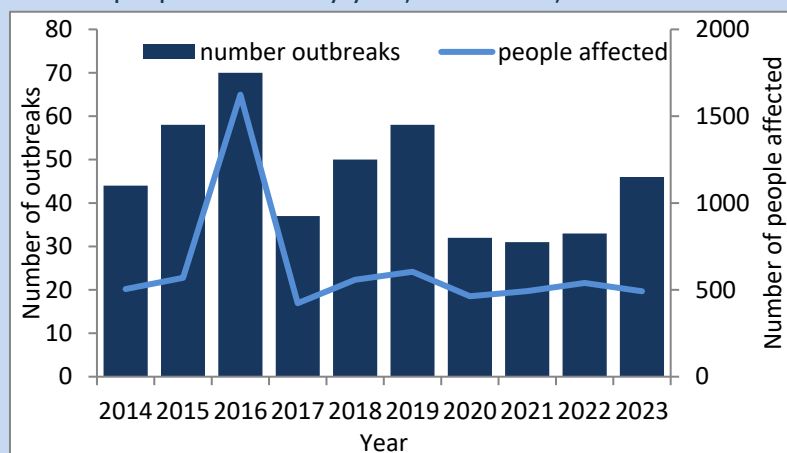
Inadequate cooking: 9%

Cross contamination: 9%

Food handler contamination: 7%

Improper storage (time &/or temperature): 4%

Number of foodborne or suspected foodborne outbreaks and number people affected by year, 2014-2023, NSW



Number of foodborne outbreaks and number of people affected by local health district, 2023, NSW

LHD	2023	No. ill
CC	1	3
HNE	3	15
IS	1	4
M	1	2
MNC	0	0
NBM	0	0
NNSW	0	0
NS	4	33
SES	11	137
SWS	6	74
Syd	5	98
WNSW	1	5
WS	6	64
NSW*	7	57
Total	46	492

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

Foodborne outbreak by causative agent and year, 2018-2023, NSW

Causative agent	2018	2019	2020	2021	2022	2023
<i>Salmonella</i> (all serotypes)	11	24	10	13	13	10
<i>Salmonella</i> Typhimurium	6	12	6	5	10	6
Unknown	27	13	13	7	8	20
<i>Campylobacter</i>	1	1	3	3	7	3
Fish poisoning	7	7	3	4	2	0
Norovirus	1	3	1	0	1	7
<i>Clostridium perfringens</i>	1	0	0	0	0	0
<i>Listeria</i>	1	2	0	0	0	3
Hepatitis E	0	1	0	0	0	1
STEC	0	0	0	0	0	0
Hepatitis A	1	1	0	1	0	0
<i>Shigella</i>	0	0	0	0	0	1
Bacillus cereus toxin	0	0	1	0	0	1
Other	0	1	1	3	2	0
Total outbreaks	50	53	32	31	33	46

Foodborne outbreaks continued

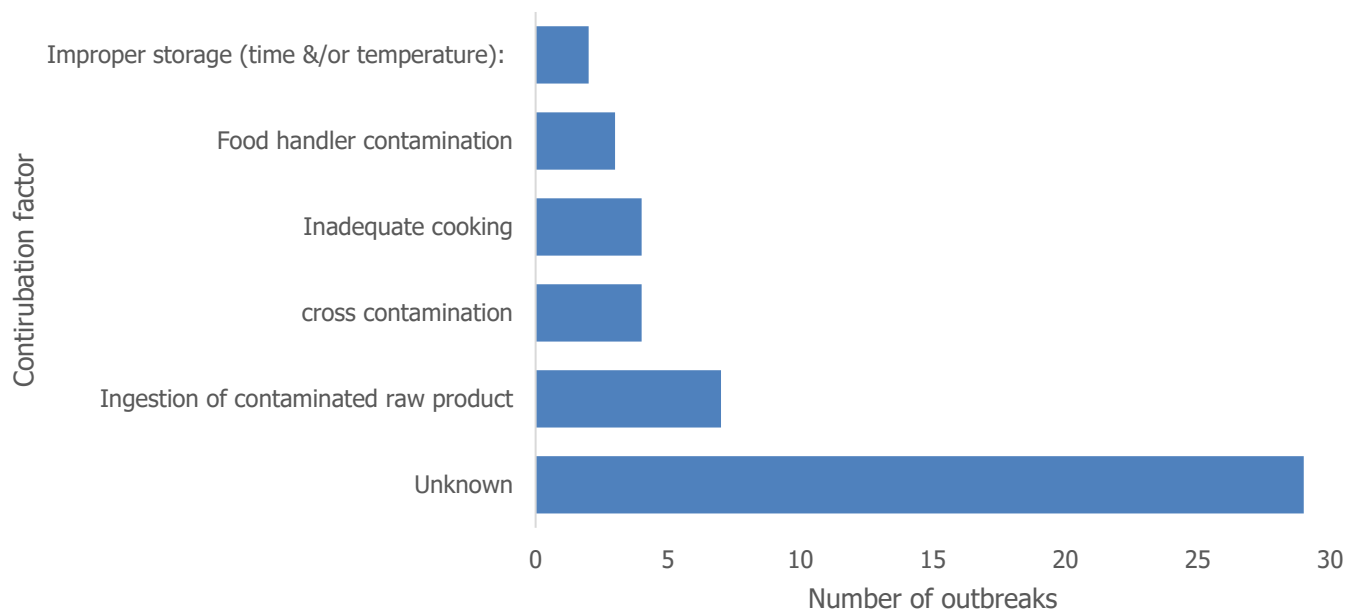
Description of outbreaks by causative agent

Number of outbreaks, number ill and number hospitalised by causative agent, 2023, NSW

Causative agent	Number of outbreaks	Number ill	Ratio ill per outbreak	Number hospitalised	Ratio hospitalised per outbreak
<i>Salmonella</i> Typhimurium	6	55	9.2	10	1.7
Other <i>Salmonella</i>	4	125	31.3	13	3.3
<i>Campylobacter</i>	3	8	2.7	2	0.7
<i>Listeria monocytogenes</i>	3	7	2.3	7	2.3
Norovirus	7	150	21.4	7	1.0
<i>Shigella flexneri</i>	1	19	19.0	10	10.0
<i>Bacillus cereus</i>	1	4	4.0	0	0.0
Hepatitis E	1	7	7.0	7	7.0
Unknown	20	117	5.9	2	0.1
Total	46	492	11.2	58	1.3

Summary foodborne outbreaks by contributing factors

Foodborne outbreaks by contributing factors*, 2023, NSW



* Contributing factors are not mutually exclusive per outbreak

OUTBREAK SUMMARY 2023

Foodborne and potentially foodborne disease outbreaks investigated in NSW, 2023

PHU ID	Month ¹	Setting	Agent responsible	No. ill	Lab confirmed	No. Hospitalised	Evidence*	Suspected Responsible vehicles	Contributing factors
HNE 46-73	January	Restaurant / café	<i>Campylobacter jejuni</i>	2	1	Unk	D	Unknown	Unknown
MJOI 2023-001 (reporting NSW cases only)	January	Private residence	<i>Salmonella</i> Typhimurium, STM MLVA 03-13-07-09-523	6	6	0	M	Baby cucumbers	Ingestion of contaminated raw product
SWS46-92	January	Community	<i>Salmonella</i> Wangata, SWAN-23-0001	42	42	Unk	D	Fresh produce	Ingestion of contaminated raw product
SES46-74	January	Restaurant / café	Unknown	8	0	Unk	D	Curry	Unknown
SYD46-71	February	Restaurant / café	<i>Salmonella</i> Typhimurium, STM-21-0055	16	16	4	D	Unknown	Unknown
SES46-75	February	Cruise/airline	<i>Salmonella</i> Typhimurium, STM-23-0004	7	5	Unk	D	Unknown	Unknown
SWS46-72	March	Restaurant / café	Unknown	12	0	0	D	Salad	Unknown
SYD46-76	March	Restaurant / café	<i>Bacillus cereus</i>	4	0	0	M	Pork dumplings	Improper storage and reheating
SWS46-77	March	Restaurant / café	Unknown	8	0	0	D	Yum Cha	Unknown
M46-78	March	Restaurant / café	<i>Salmonella</i> Infantis	2	1	Unknown	D	Sushi	Cross contamination
WS46-80	April	Restaurant / café	Unknown	2	0	0	D	Pizza	Unknown
NS46-79	April	Restaurant / café	<i>Salmonella</i> Typhimurium, STM-23-0027	10	10	4	D	Sushi	Unknown
SES46-81	May	Restaurant / café	Unknown	15	0	0	D	Unknown	Inadequate hot holding temperature or time
SES46-83	June	Restaurant / café	Unknown	2	0	1	D	Unknown	Unknown
SES46-84	June	Restaurant / café	<i>Campylobacter</i>	3	1	2	D	Yum Cha	Cross contamination
HNE46-85	July	Restaurant / café	Norovirus	5	1	unknown	D	Dumplings, steamed buns	Unknown

PHU ID	Month ¹	Setting	Agent responsible	No. ill	Lab confirmed	No. Hospitalised	Evidence*	Suspected Responsible vehicles	Contributing factors
MJOI 2023-002 (reporting NSW cases only)	July	Community	<i>Listeria monocytogenes</i> MLST 5	1	1	1	A	Suspected deli meats	Unknown
SES46-86	July	Restaurant / café	Unknown	4	0	unknown	D	Unknown	Unknown
NS46-87	July	Function	Unknown	5	0	Unknown	D	Unknown	Unknown
MJOI 2023-003 (reporting NSW cases only)	July	Cruise / airline	<i>Shigella flexneri</i> 2A, ShiFle-23-0007	19	19	10	D	Chickpea salad	Food handler contamination, ingestion of contaminated raw product
CC46-88	August	Restaurant / café	Unknown	3	0	unknown	D	Kebabs	unknown
SWS46-89	August	Restaurant / café	Unknown	3	0	1	D	Chicken	unknown
SYD46-93	August	Community and Restaurant / café	<i>Salmonella</i> Reading, SalRea-23-0001	63	39	8	M,E,T	Buffalo meat	Poor facility hygiene, cross contamination
IS46-90	August	Restaurant / café	Unknown	4	0	unknown	D	Chicken schnitzel	unknown
SES46-113	August	Restaurant / café	Norovirus	2	1	1	D	unknown	unknown
WS46-96	August	Restaurant / café	Unknown	2	0	0	D	unknown	unknown
MJOI 2023-004 (reporting NSW cases only)	September	Community	<i>Listeria monocytogenes</i> MLST 3	4	4	4	M, E	Chicken (shredded)	Inadequate cooking & post cooking contamination, consumption of high-risk foods by vulnerable consumers
WS46-94	September	Restaurant / café	Unknown	5	0	0	D	Sashimi	unknown
WNSW46-95	September	Restaurant / café	Unknown	5	0	0	D	Sushi	unknown
MJOI 2023-005 (reporting NSW cases only)	September	Community	<i>Listeria monocytogenes</i> MLST 155	2	2	2	M	Deli meats	Ingestion of contaminated raw product, consumption of high-risk foods by vulnerable consumers
SWS46-97	September	Restaurant / café	Norovirus	5	1	1	D	unknown	unknown
WS46-99	September	Restaurant / café	Norovirus	16	1	1	D	unknown	unknown

PHU ID	Month ¹	Setting	Agent responsible	No. ill	Lab confirmed	No. Hospitalised	Evidence*	Suspected Responsible vehicles	Contributing factors
MJOI 2023-007 (reporting NSW cases only)	September	Community	<i>Salmonella</i> Saintpaul	18	18	5	A, M	Frozen chicken product	Inadequate cooking
SES46-100	September	Restaurant / café	<i>Campylobacter</i> spp.	3	1	unknown	D	unknown	Inadequate cooking
HNE46-114	September	Restaurant / café	<i>Salmonella</i> Typhimurium, STM-21-0083	8	7	0	D	Eggs	unknown
MJOI 2023-006 (reporting NSW cases only)	October	Community	Hepatitis E	7	7	7	D	Unknown	unknown
SES46-98	October	Restaurant / café	Unknown	5	0	0	D	Chicken schnitzel sandwich	unknown
SES46-101	October	Restaurant / café	Norovirus	84	1	4	A, T	Oysters	Ingestion of contaminated raw product
SYD46-102	October	Restaurant / café	Unknown	5	0	0	D, T	Oysters	Ingestion of contaminated raw product
SYD46-105	October	Restaurant / café	Unknown	10	0	0	D	unknown	unknown
WS46-106	October	Commercial caterer	Norovirus	28	1	0	D	unknown	Food handler contamination
WS46-107	November	Restaurant / café	Unknown	11	0	unknown	D	unknown	unknown
NS46-112	November	Restaurant / café	<i>Salmonella</i> Typhimurium, STM-23-0055	8	8	2	D	Eggs	Inadequate refrigeration
SES46-109	December	Restaurant / café	Unknown	4	0	0	D	unknown	unknown
SWS46-110	December	Restaurant / café	Unknown	4	0	unknown	D	unknown	unknown
NS46-111	December	Restaurant / café	Norovirus	10	1	0	D	unknown	unknown

*Evidence: A = Analytical (Statistical evidence), M = Microbiological (Laboratory evidence in food vehicle), D = Descriptive (Compelling descriptive evidence), E = Equipment/environmental detection (Equipment / environmental detection), T = Traceback (Traceback evidence).

INSTITUTIONAL GASTROINTESTINAL OUTBREAKS

Viral gastroenteritis is highly contagious, and outbreaks are common, and often difficult to control. Outbreaks frequently occur in institutional settings such as residential care facilities, educational institutions, and healthcare facilities. When two or more individuals from the same institution develop gastroenteritis within a similar timeframe, it must be reported to the local PHU. This is to ensure that the institution implements appropriate control and prevention strategies.

Summary 2023

- Number of outbreaks: 2,079
- Number of people affected: 28,366
- Number of outbreaks with at least one stool sample collected: 628 (30%)

Overall trend (compared to 5-year average)

- 76% increase in the number of outbreaks
- 84% increase in the number of people affected

Seasonality

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

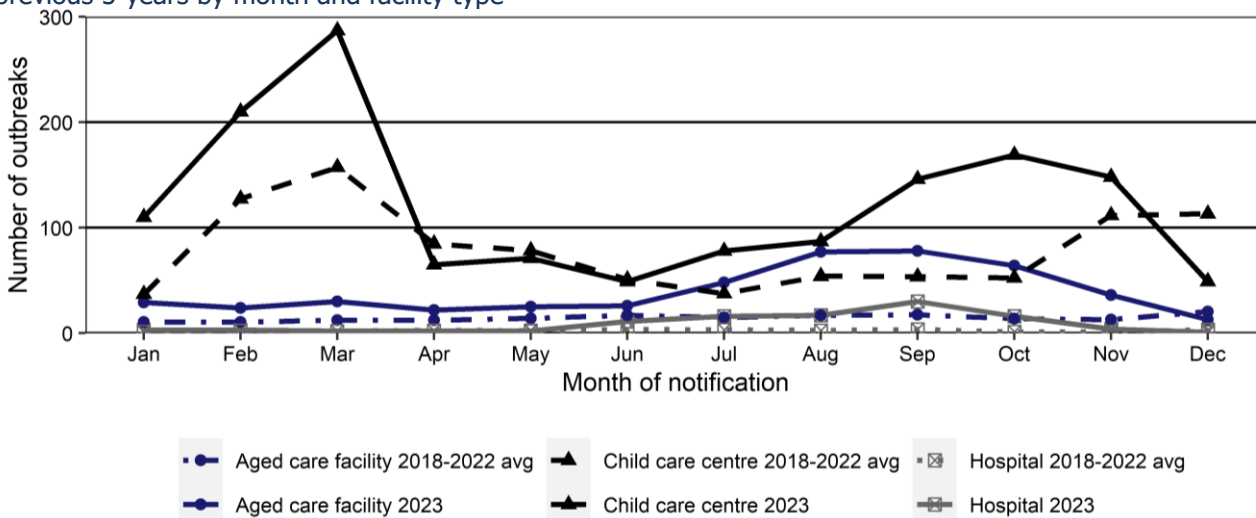
Groups with highest frequency in 2023

- Facility type: childcare centres, 1469 (71%) of outbreaks
- Attack rate in staff: hospitals at 35%
- Attack rate in non-staff: children in childcare at 12%
- Average duration of outbreaks: Childcare centres at 8 days

Causative agent

- Norovirus (confirmed): 16.5% of outbreaks (54.8% of outbreaks with sample collected)
- Rotavirus (confirmed): 2% of outbreaks (7% of outbreaks with sample collected)

Figure: Number of reported outbreaks of gastrointestinal illness in institutions in 2023 and average of the previous 5-years by month and facility type



Characteristics of outbreaks of gastrointestinal illness in institutions reported to NSW in 2023

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 pathogen found (n: pathogen)
Aged Care	472	1572: 3.6%	8346: 20.9%	7	389: 82.4%	224: Norovirus 16: Rotavirus
Child care	1469	3362: 11.7%	13580: 9.5%	8	133: 9.1%	38: Norovirus 25: Rotavirus
Hospital	105	195: 8.3%	802: 35.3%	6	95: 90.5%	77: Norovirus 2: Rotavirus
Other*	33	110: 6.9%	399: 12.3%	6	11: 33.3%	5: Norovirus 1: Rotavirus
TOTAL	2079	5239: 6.8%	23127: 12.3%	8	628: 30.2%	344: Norovirus 44: Rotavirus

*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. 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*, *Salmonella* Enteritidis *Salmonella* Typhi & Paratyphi, *Listeria monocytogenes*, *Shigella*, HUS and STEC, *Cryptosporidium*, *Giardia*, *Campylobacter*, rotavirus, cholera and hepatitis A & E viruses. There were no cases of botulism in 2023.

On 10 April 2024, 2023 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 diseaseⁱⁱⁱ for 2023 were compared with the average annual count for the years 2018 to 2022. The NSW estimated resident population for 30 June of each year from 2018-2023 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 15 public and private laboratories is available for *Cryptosporidium*, *Giardia*, *Salmonella* and *Shigella*. Care should be taken in interpreting this data as 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.

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

Notification data for *Campylobacter*, *Cryptosporidium*, *Giardia*, *Salmonella* and *Shigella* were analysed for the period between 1 January 2014 and 31 December 2023, 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 and the Public Health Units 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.

^{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 2023 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
- Enteric reference laboratory and genomics laboratory, ICPMR team Professor Vitali Sintchenko, Dr Qinning Wang, Basel Suliman, Dr Grace Blackwell
- HAPS, IMVS, MDU and other public and private laboratory staff in New South Wales, Queensland, Victoria and South Australia
- Food and Waterborne diseases, 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
- Keira Glasgow, Director, One Health Branch, Health Protection NSW
- Dr Christine Selvey, NSW CDNA rep and Director, Communicable Diseases Branch, Health Protection NSW
- Dr Jeremy McAnulty, Executive Director, Health Protection NSW
- Clinicians across NSW who assist in the diagnosis and follow up enteric disease
- The New South Wales Food Authority (now part of NSW Department of Primary Industries) 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