
NSW Health

NSW Zoonoses Annual Report 2021

Health Protection NSW

July 2024



Health Protection NSW acknowledges the traditional owners of the lands on which we work, live and play. We pay our respect to Elders past, present and emerging. This report was produced on the lands of the Cammeraygal People of New South Wales. The knowledge, resilience and strength of Aboriginal Peoples is key to supporting health for Aboriginal communities.

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SHPN: SHPN (HP NSW) 230817
ISSN: 2981-9555 (online)

Suggested citation: One Health Branch. *NSW Zoonoses Annual Surveillance Report: 2021*. Sydney: Health Protection NSW, 2024.

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1. Overview

A zoonosis is any disease or infection that is naturally transmissible from vertebrate animals to humans. Worldwide, there are over 200 known types of zoonoses and these comprise a large percentage of new and existing diseases in humans.

This report focuses on:

- Notifications of selected zoonoses in humans to NSW public health authorities during 2021
- Animal health events investigated in collaboration with the NSW Department of Primary Industries (DPI) and Local Land Services (LLS) requiring a public health response.
- Post-exposure risk assessments and treatments delivered for the prevention of rabies and Australian Bat Lyssavirus (ABLV).

Beyond the scope of this report are numerous zoonoses transmitted through food, water, or vectors – many of which are notifiable to NSW public health and animal health authorities ([Appendix 2](#)).

Surveillance findings on enteric and other zoonoses are routinely published in other reports available via the [NSW Health website](#). A wealth of further information and resources are also available ([Appendix 3](#)).

2021 Highlights

- NSW observed 95 confirmed cases of leptospirosis in 2021, the highest number on record. Case numbers were highest in March and April in rural areas affected both by heavy rainfall and a mouse plague
- After a marked increase in 2020, the number of psittacosis notifications decreased by nearly half in 2021 but still remained above the previous 5 year mean (Table 1)
- Brucellosis and Q fever rates in 2021 were similar to those reported in 2020
- No human infections of anthrax, avian/animal influenza, Hendra virus, rabies/ABLV or tularaemia were reported
- NSW continued to observe a downward trend in potential exposures to lyssaviruses in 2021 with a 53% overall reduction in the number of potential exposure events compared to 2020. Restrictions to both international and domestic travel due to the COVID-19 pandemic are likely to have contributed to a 92% reduction in overseas exposures and a 16% reduction in domestic exposures
- Sporadic cases of ABLV, anthrax, brucellosis, psittacosis and Hendra virus infection were reported in animal populations in 2021, requiring public health investigation of exposures and some interventions to prevent human infections

Table 1: Incidence of selected zoonotic diseases in humans notified in 2021 compared to the previous 5 years (2016–2020), by local health district (LHD) of residence, NSW.

LHD	n (Rate per 100,000 ^e)									
	Brucellosis		Leptospirosis		Psittacosis		Q fever		Tularaemia	
	5yr mean 2016-2020	2021	5yr mean 2016-2020	2021	5yr mean 2016-2020	2021	5yr mean 2016-2020	2021	5yr mean 2016-2020	2021
Central Coast	<1 (0.06)	0	<1 (0.12)	2 (0.58)	<1 (0.06)	0	2 (0.58)	1 (0.29)	0	0
Far West	0	0	0	0	<1 (0.69)	0	4 (14.80)	2 (6.96)	0	0
Hunter New England	3 (0.28)	2 (0.21)	3 (0.35)	50 (5.27)	2 (0.21)	4 (0.42)	48 (5.23)	41 (4.32)	0	0
Illawarra Shoalhaven	<1 (0.05)	0	<1 (0.15)	0	0	2 (0.47)	14 (3.33)	23 (5.37)	0	0
Mid North Coast	<1 (0.09)	0	12 (5.32)	7 (3.08)	<1 (0.09)	0	25 (11.27)	25 (11.0)	0	0
Murrumbidgee	<1 (0.07)	0	<1 (0.27)	3 (1.00)	2 (0.54)	5 (1.66)	12 (3.90)	12 (3.98)	0	0
Nepean Blue Mountains	0	1 (0.26)	0	0	3 (0.84)	0	2 (0.58)	0	0	0
Northern NSW	<1 (0.07)	0	4 (1.26)	14 (4.54)	0	0	30 (9.96)	18 (5.83)	0	0
Northern Sydney	<1 (0.02)	0	<1 (0.09)	2 (0.21)	<1 (0.06)	0	4 (0.47)	5 (0.52)	<1 (0.005)	0
South Eastern Sydney	0	0	<1 (0.04)	0	<1 (0.06)	1 (0.11)	<1 (0.06)	2 (0.21)	0	0
South Western Sydney	1 (0.14)	0	0	1 (0.10)	1 (0.12)	1 (0.10)	2 (0.20)	1 (0.10)	0	0

Southern NSW	0	0	0	0	<1 (0.28)	0	16 (7.58)	25 (11.61)	0	0
Sydney	<1 (0.03)	0	0	1 (0.14)	<1 (0.03)	3 (0.43)	<1 (0.06)	0	0	0
Western NSW	<1 (0.07)	1 (0.35)	<1 (0.14)	15 (5.32)	2 (0.64)	0	62 (22.1)	32 (11.34)	0	0
Western Sydney	1 (0.10)	0	<1 (0.02)	0	<1 (0.08)	1 (0.10)	2 (0.16)	1 (0.10)	0	0
NSW total	7 (0.08)	4 (0.05)	23 (0.29)	95 (1.16)	13 (0.16)	17 (0.21)	225 (2.83)	188 (2.30)	<1 (0.005)	0 (0.0)

^a Exposures may have occurred outside the LHD of residence.

^b There were no notifications of anthrax, avian or animal influenza, Hendra virus infection or Rabies/ABLV virus infection in humans in NSW during this period.

^c For population data source see [Appendix 1](#).

2. Brucellosis

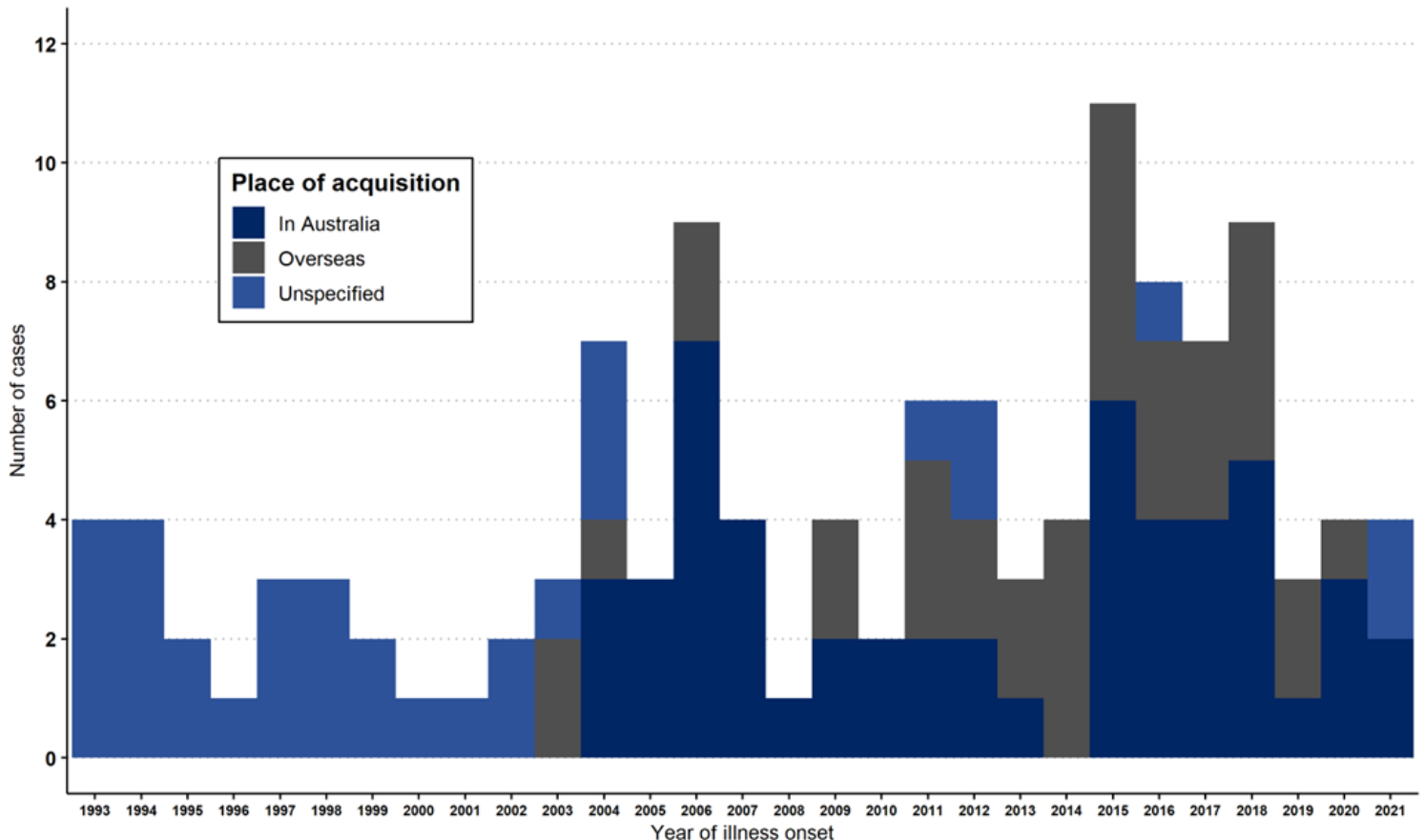
Brucellosis is an infection that can be transmitted to humans from animals such as cows, sheep, goats, and pigs. *Brucella suis* remains a potential source of human infection in Australia, while other *Brucella* species have either been eliminated or never detected. Human cases in NSW are rare and usually result from contact with feral pigs in north-western NSW, or from consuming unpasteurized dairy products while overseas.

Key points:

- 4 probable cases notified in 2021.
- 2 locally acquired cases.
- 2 cases where place of acquisition unknown

During 2021, 4 (0.05 per 100,000) cases of brucellosis were notified in NSW (Figure 1). Two cases were male and two females, with a mean age of 44 years. None identified as Aboriginal. Two of the cases acquired their infection in NSW, while 2 had an unknown place of acquisition. One case reported engaging in feral pig hunting activities. The 3 other cases were all engaged in farming either cows, sheep, or goats. No cases reported consumption of any unpasteurized dairy products.

Figure 1: Trends in brucellosis notifications by place of acquisition, NSW, 1993–2021



3. Leptospirosis

Leptospirosis is a disease of humans and animals caused by *Leptospira* bacteria, found in infected animal urine and animal tissues. Although relatively rare in Australia, leptospirosis is more common in warm and wet areas such as north-eastern NSW. Infections usually occur in people who have close contact with animals or who have been exposed to water, mud, soil, or vegetation contaminated by animal urine.

Key points:

- 95 confirmed cases notified in 2021.
- 70 locally acquired cases, 1 interstate, 24 unknown.
- Rodent and rain activity likely contributed to high case numbers

During 2021, 95 (1.16 per 100,000) confirmed cases of leptospirosis were notified in NSW. This is a marked increase compared to 2020 and the highest annual number ever reported in NSW (Figure 2). Cases were predominately male (79%, n=75), ranging in age from 11–85 years (mean: 49 years).

Seventy cases acquired their infection locally in NSW: one interstate and 24 with unknown place of acquisition. Fifty-three cases (56%) engaged in farming activity and/or lived on a farm; 7 cases (7%) had occupations that included regular contact with soil such as gardening, earthworks, and agronomy; and 3 cases (3%) were abattoir workers. The majority of cases had illness onset in March and April (n=58) and were from rural areas affected both by a mouse plague peaking during this period as well as heavy rains (Figures 3 and 4). Many cases reported multiple exposure risks: to rodents (n=42); livestock (primarily cattle) (n=23); soil likely contaminated with rodent urine (n=11); flood waters (n=11); and feral pig hunting (n=4)

Figure 2: Leptospirosis cases by year of illness onset & place of acquisition, NSW, 1993–2021

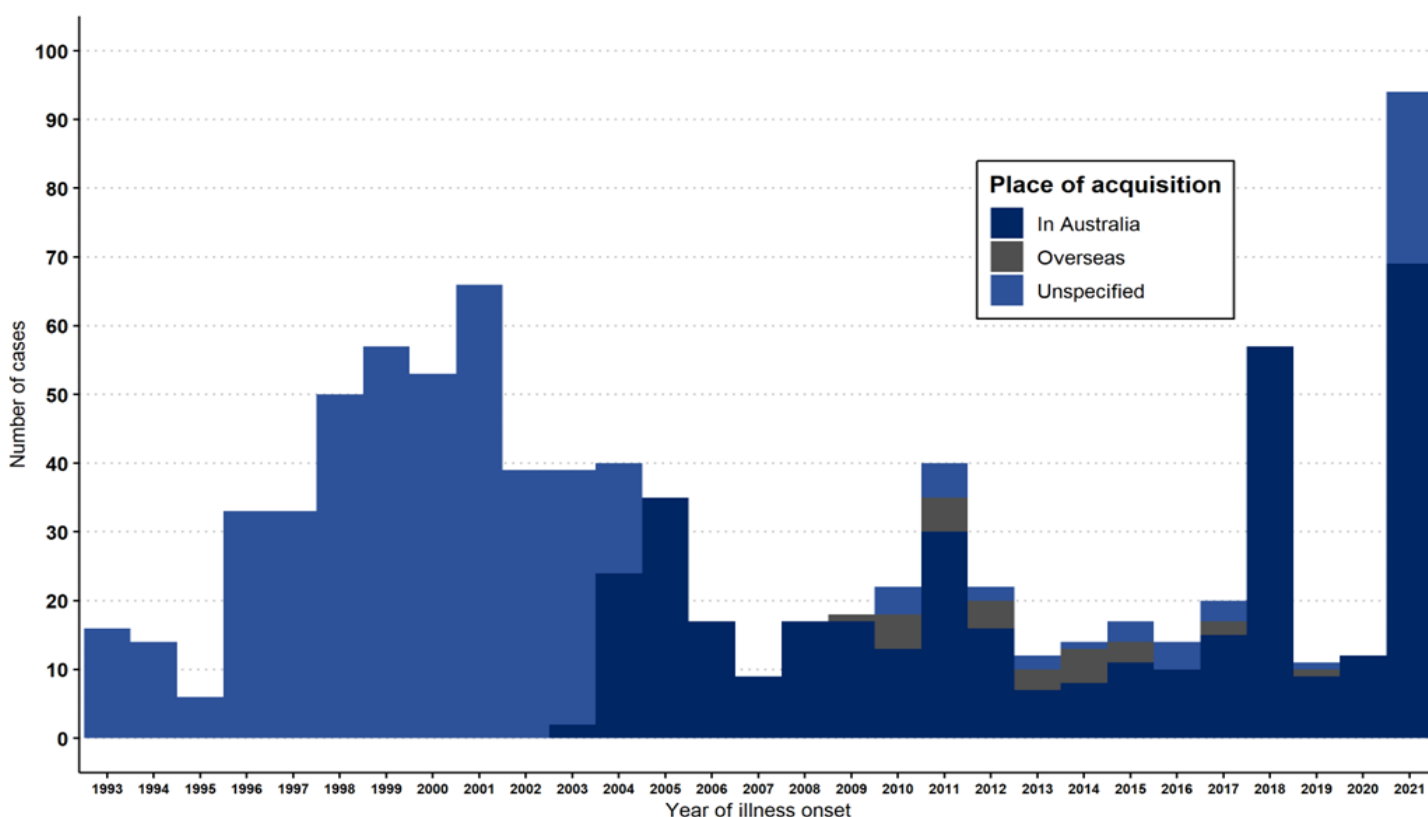


Figure 3: Leptospirosis incidence rate by LGA, NSW, 2021

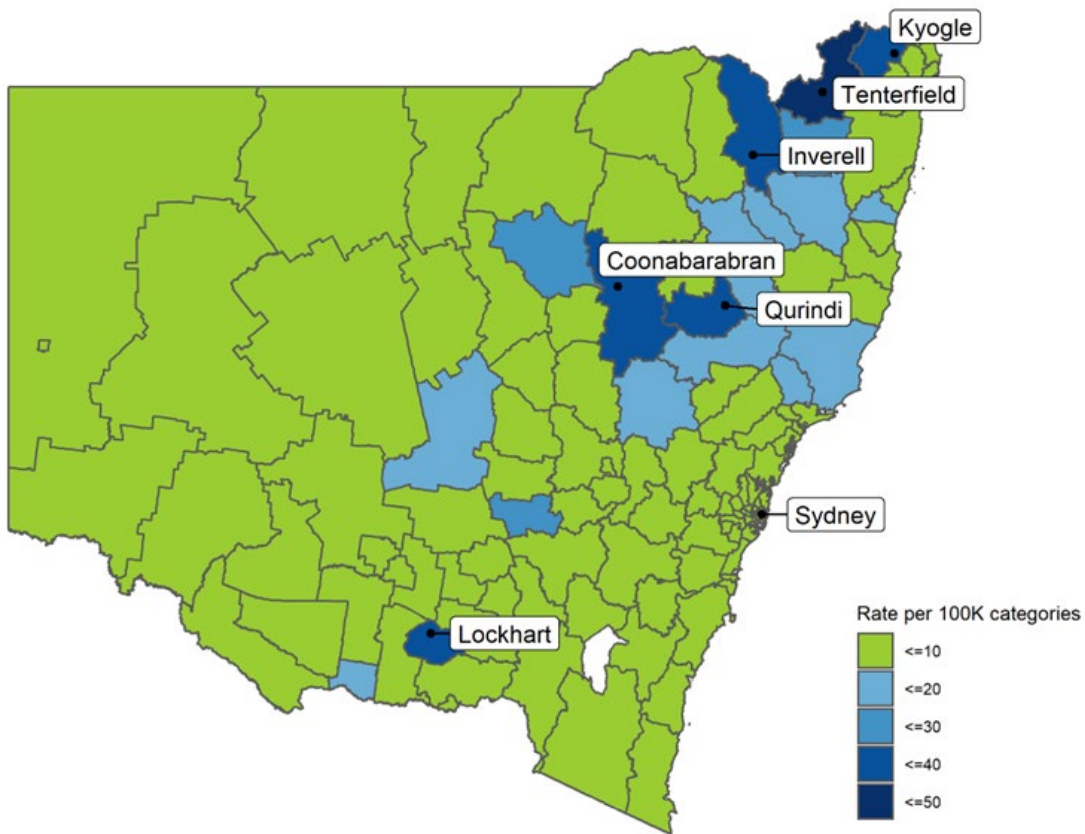
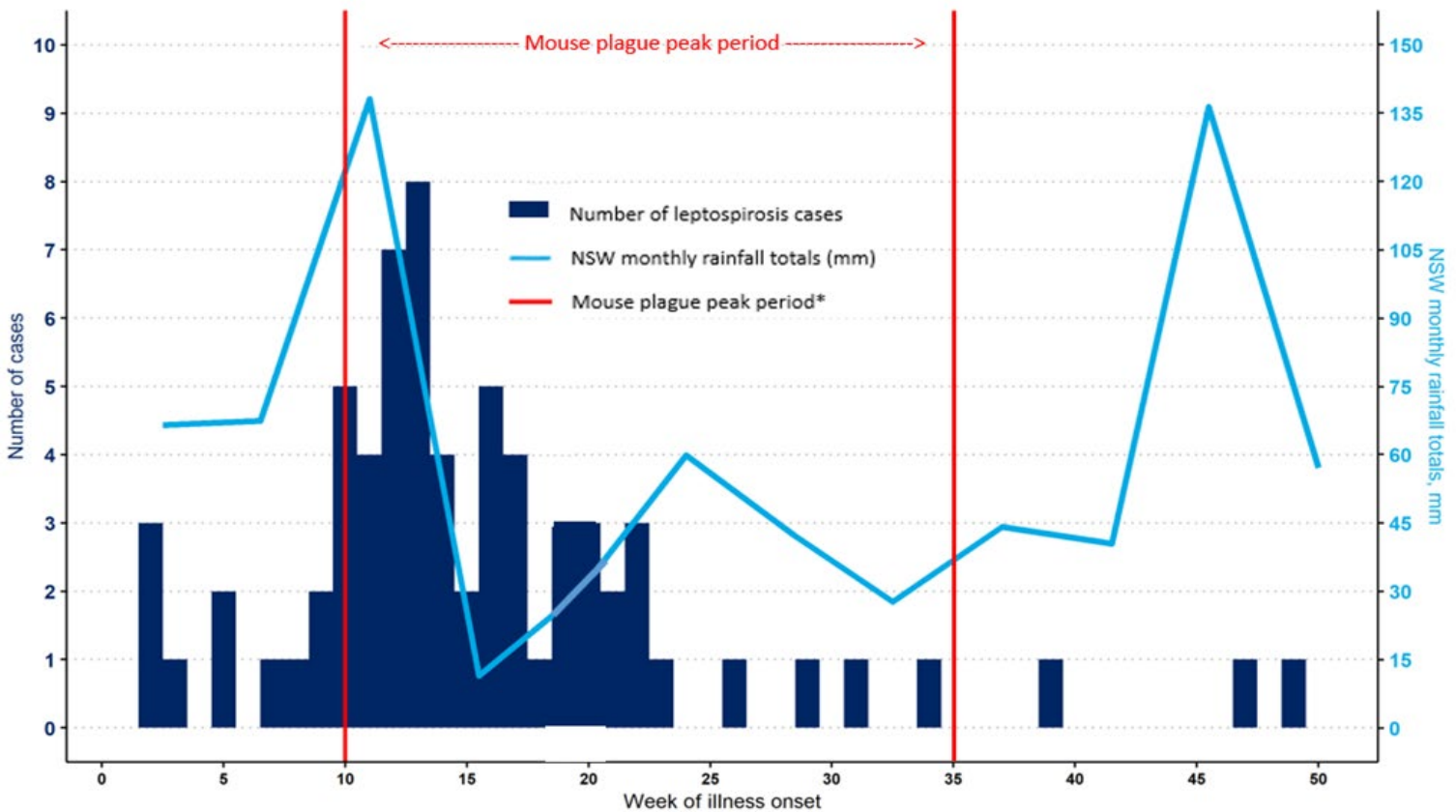


Figure 4: Leptospirosis cases by week & monthly average rainfall, NSW, 2021



*White J, Taylor J, Brown PR, Henry S, Carter L, Mankad A, Chang W, Stanley P, Collins K, Durrheim DN, Thompson K. The New South Wales Mouse Plague 2020-2021: A One Health description. *Under Review*

4. Psittacosis (Ornithosis)

Psittacosis is an uncommon disease caused by the bacterium *Chlamydia psittaci*. The bacteria can also cause disease in animals which is usually called chlamydiosis. Most human cases in NSW develop the disease by inhaling feather dust, and particles contaminated with secretions and droppings from infected birds. More rarely, people can contract the disease from other animals, such as sheep, cattle, and horses.

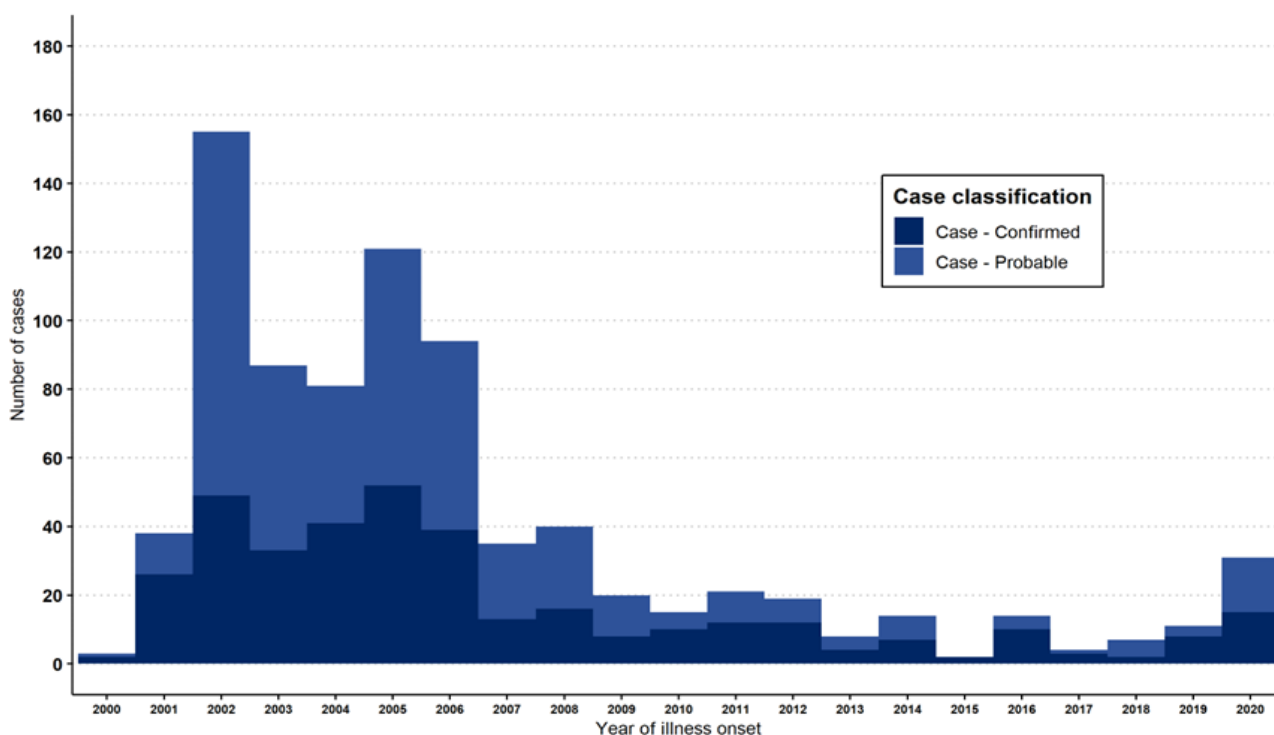
Key points:

- 13 confirmed cases notified in 2021
- 4 probable cases notified

Since surveillance began in 2000, relatively high case incidence rates and sporadic outbreaks were observed from 2002–2006 in NSW, followed by a steady decline (Figure 5).

During 2021, 13 confirmed cases and 4 probable cases were notified in NSW (0.21 per 100,000); just over half the number notified in 2020. Nine cases were male and 8 were females, ranging in age from 23–82 years (mean: 55). Ten (59%) cases reported direct exposure to pet birds (n=7) or wild birds (n=3). Three of those with pet bird exposures reported illness or death in the birds with which they had contact prior to their own illness. Three cases reported activities associated with exposure to potentially contaminated environments including lawn mowing and working in housing roof space areas where bird droppings were present. Three cases were unable to be interviewed.

Figure 5: Psittacosis cases by year of illness onset & case clarification, NSW, 2000a–2021



* a Psittacosis notifications are not available prior to 2000.

5. Q Fever

Q fever is caused by the bacterium *Coxiella burnetii*. The main carriers of the disease are cattle, sheep, and goats but other animals, including marsupials, can also be infected. People are usually infected by inhaling aerosols or dust when working with infected animals, animal tissues or animal products. The bacteria survive for long periods in the environment as they are resistant to heat, drying and many disinfectants.

Key points:

- 188 confirmed cases notified in 2021.
- Adult males, Aboriginal people and populations in regional/remote areas were overrepresented.
- Only 7 cases were reported in those aged less than 20 years.
- Most adult cases (54%) worked in a known high-risk occupation.
- Most cases (95%) were exposed to animals or animal products, tissues, or discharges.

During 2021, 188 confirmed cases of Q fever (2.30 cases per 100,000) were notified in NSW. This was a slight decrease compared to the previous five-year annual mean (225 cases, 2.82 cases per 100,000) (Figure 6).

The majority of cases notified in 2021 were males (n=137, 73%), and cases ranged in age from 15–83 years (mean: 52) (Figure 7). No cases were reported as acquired overseas.

During this time period, Indigenous status completeness for notified Q fever cases in NSW was 82% (n=155). Of these, 19 cases identified as Aboriginal or Torres Strait Islander. The rate for Q fever in Aboriginal and Torres Strait Islander residents in NSW was 6.5 per 100,000.

An enhanced surveillance project was undertaken in 2020 looking at Q fever trends among Aboriginal people. Please see the NSW Zoonoses Annual report for further detail.

Compared to the five-year mean (2016–2020), the most substantive increases of Q fever were observed in Illawarra Shoalhaven and Southern NSW LHDs, whereas Western NSW observed a substantive decrease (Table 1).

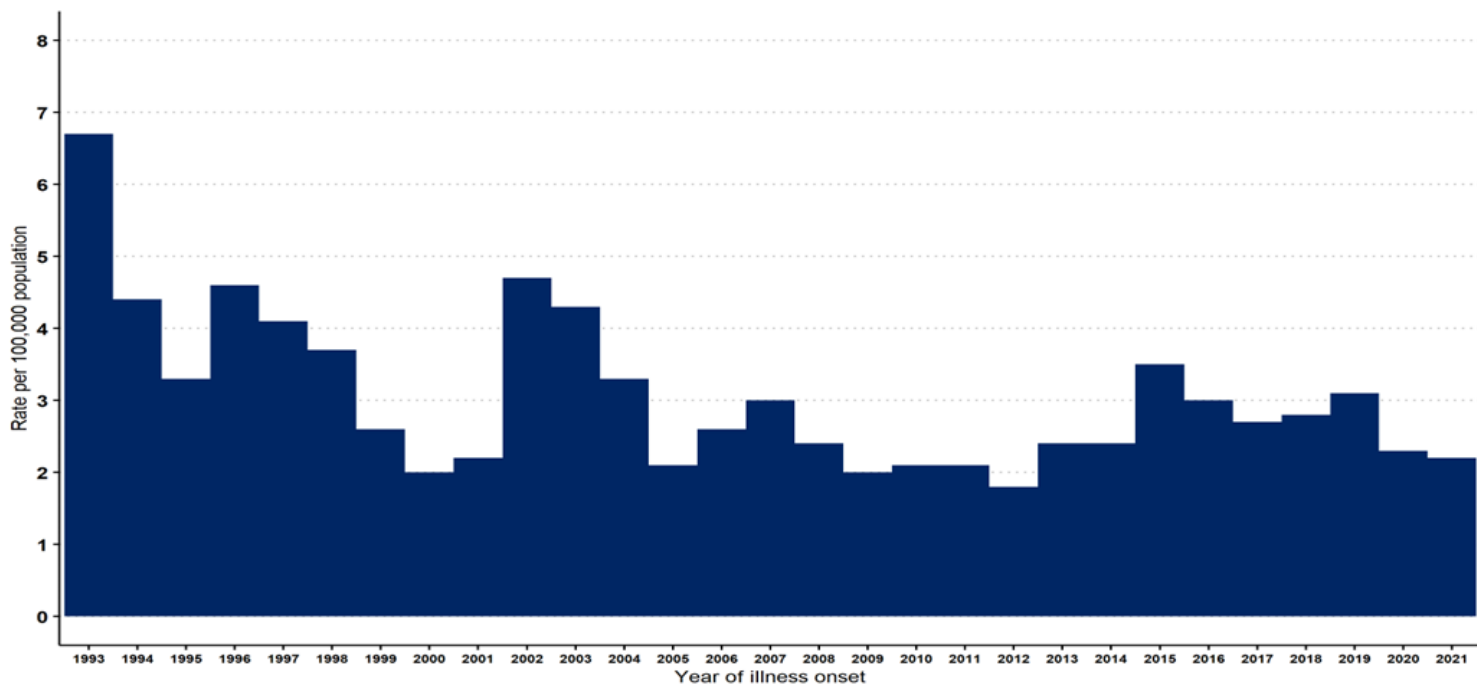
The highest incidence of disease was observed in rural and remote areas of the state (Figure 8) – especially Lachlan Shire (n=5, 82.8 per 100,000), Bogan Shire (n=2, 80.0 per 100,000), Walgett Shire (n=4, 69.6 per 100,000) and Bega Valley Shire (n=20, 57.6 per 100,000) local government areas (LGAs).

Occupations were reported for 121 cases in 2021. Of these, 54% (n=65) worked in high-risk occupations, including: farmers, farm hands or property managers (n=46), lawn mowing/property maintenance (n=7), abattoir and other meat industry workers (n=3), veterinary professional (n=3), stockyard worker (n=1), shearer (n=1) and wildlife carer (n=1). The remainder of adult cases (46%, n=56) were retired, unemployed or worked in a non-animal related occupation. Two infections were reported in children under 16 years of age and five in the 16–19-year age group.

Exposure history was available for 61% of cases in 2021 (n=114). Of these, most (95%, n=108) reported one or more types of exposure to animals or animal products, including exposures to livestock or their products (38%, n=43), exposures to native wildlife (20%, n=23), exposure to animal faeces or other products (16%, n=18), direct contact with animal tissues or discharges (13%, n=15) or exposure to other animals or animal product (8%, n=9). The remainder reported no discernible exposure to livestock or wildlife (5%, n=6). Over the period 2018–2021, NSW Health ran a campaign to increase awareness about Q fever in the community and amongst

GPs, including advertising in mass media and development of an [online learning module](#) hosted on the Australian College of Rural and Remote Medicine website. Further information and resources can be downloaded from the [NSW Health Q fever webpage](#).

Figure 6: Trends in Q fever notifications, NSW, 1993–2021



*1994: Vaccine introduced; †2001: National Q-fever management program commenced; ‡2007: National Q-fever management program end.

Figure 7: Q fever incidence rate by age, gender and Aboriginal and Torres Strait Islander status, NSW, 2021

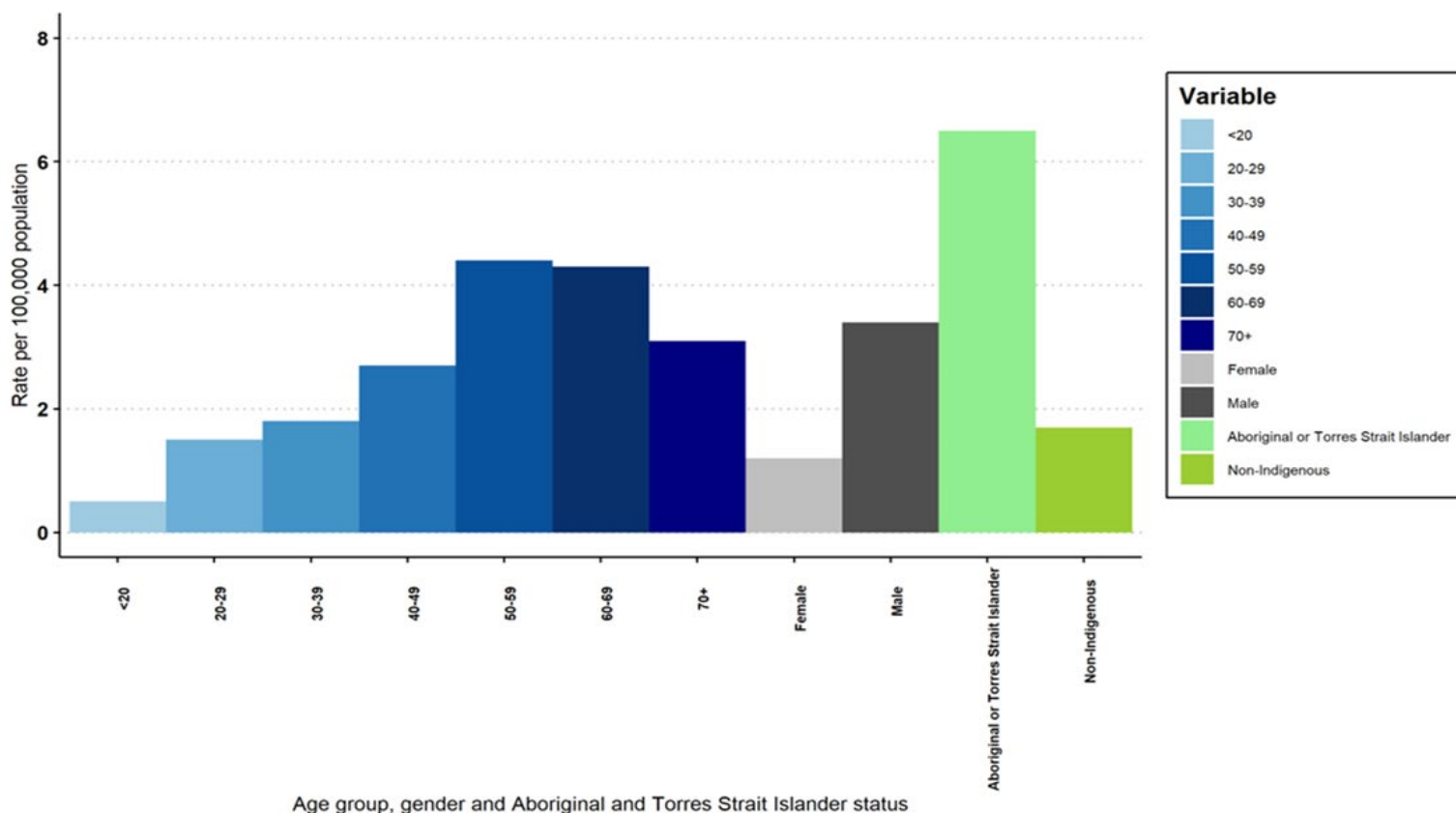
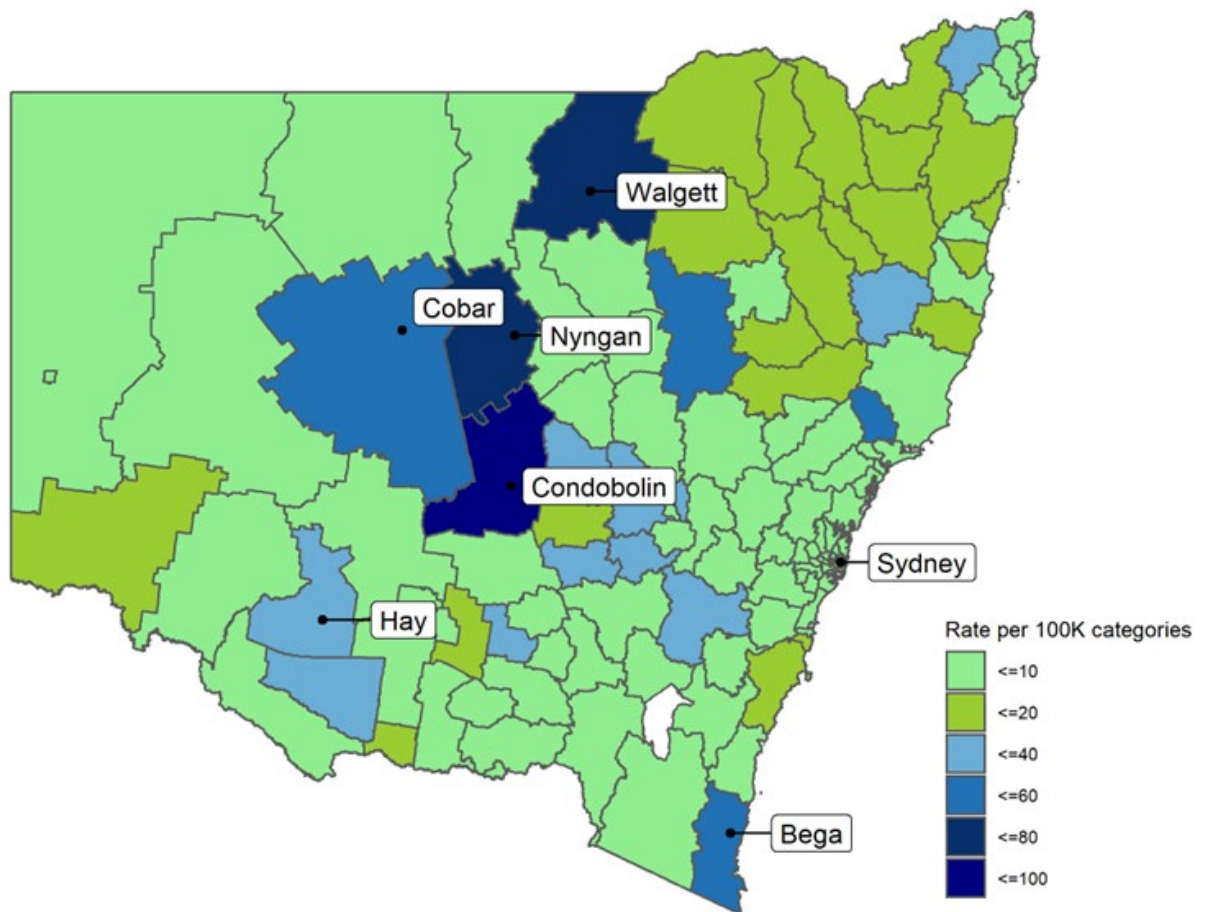


Figure 8: Q fever incidence rate by LGA, NSW, 2021



6. Rabies and other lyssavirus (including Australian Bat Lyssavirus)

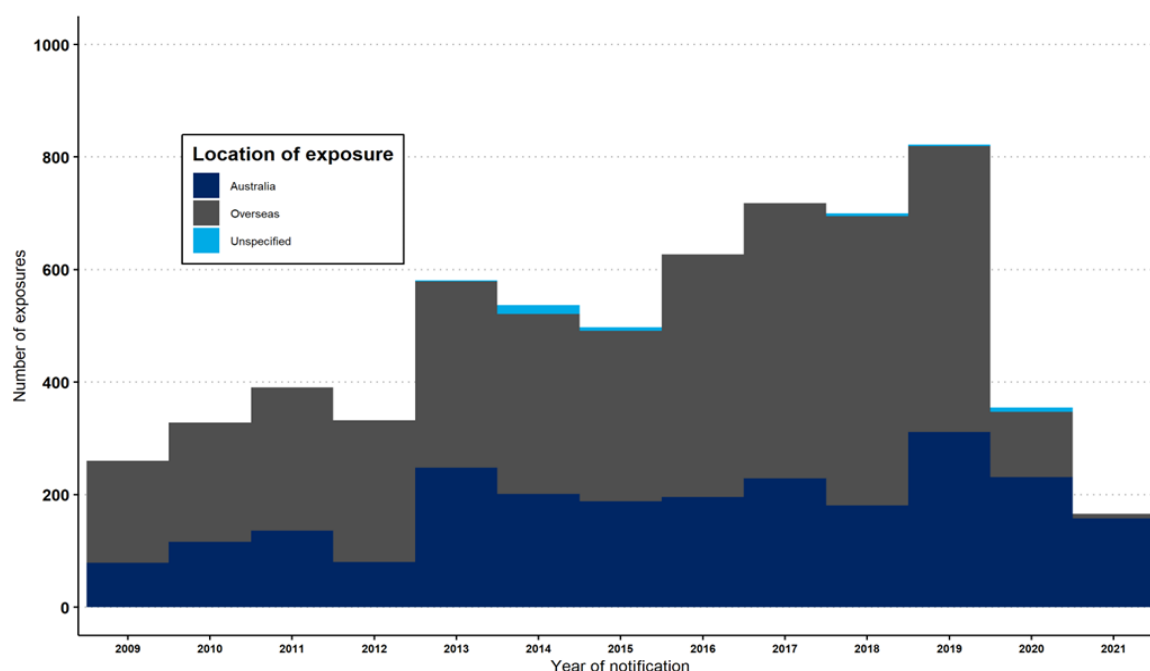
Lyssaviruses are a group of viruses that includes rabies and bat lyssavirus. Lyssavirus is carried by bats in Australia and worldwide. Rabies is carried by terrestrial mammals in many overseas countries. Both viruses are spread by bites and scratches from infected animals. Infections affect the central nervous system and are usually fatal. These diseases can be prevented by rapid and thorough cleaning of the wound and post-exposure prophylaxis (PEP).

Key points:

- No human cases notified in 2021.
- 166 exposures to potentially infected animals, of which 96% were assessed as requiring PEP to prevent infection.
- 7 exposures requiring PEP occurred overseas, 6 in Southeast Asia and 1 in South Africa; 4 were from dog bites/scratches; 2 from bat bites/scratches and 1 was from a cat bite/scratch.
- 151 local exposures to bats requiring PEP were reported, of which 68% were reported to be from megabats including flying foxes. Ten bats were positive for ABLV.
- 604 doses of vaccine and 723 vials of human rabies immunoglobulin (HRIG) were distributed for the purpose of PEP

During 2021, while there were no human infections of classical rabies or ABLV, a total of 166 potential exposures to lyssaviruses were notified to public health units. This represents a 53% overall reduction in the number of potential exposure events, compared to 2020 (n=355). This was predominantly owing to a reduction in the number of people exposed to potentially rabid animals during travel overseas (92% reduction), caused by international travel restrictions due to the COVID-19 pandemic. Domestic travel restrictions may also have contributed to the 16% reduction in local exposures compared to 2020 (Figure 9). Of all exposures, 160 (96%) required PEP with either rabies vaccine or HRIG.

Figure 9: Exposures to rabies and other lyssaviruses by location, NSW 2009–2021



Overseas exposures

Of 8 exposures overseas (5%), post exposure prophylaxis was initiated or continued for 7 people exposed to potentially rabid animals (88%). Of these, 3 were male and 4 female and travellers aged 20–49 years accounted for the greatest proportion (n=5, 71%) – mean age: 39 years. The majority of overseas exposures requiring prophylaxis occurred in Southeast Asia (n=6, 86%) (Table 2). Most incidents involved bites or scratches from dogs (n=4, 57%), followed by bats (n=2, 29%) and cats (n=1, 14%).

Table 2: Potential overseas exposures to rabies and other lyssaviruses by location, 2021

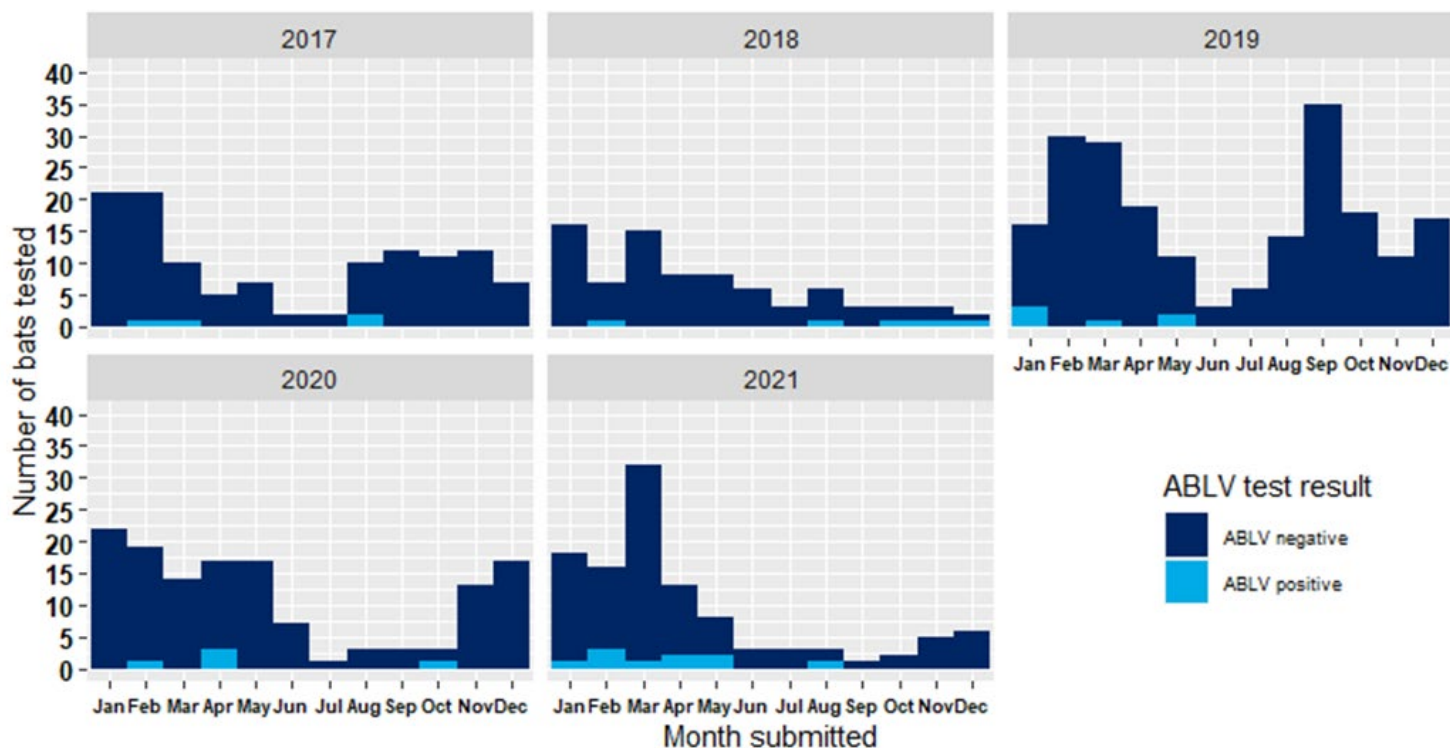
Location	n	%
Southeast Asia:	6	86
Thailand	3	43
Philippines	2	29
Cambodia	1	14
Africa	1	14
South Africa	1	14
Total	7	100

Local exposures

Of 156 exposures to bats in Australia reported during 2021 (94%), 151 required PEP (97%). The average age of persons exposed was 46 years. A higher proportion were in females (n=80, 53%). Occupation was reported for 139 exposures, of which 26% (n=36) were considered high-risk occupations (including wildlife workers and volunteers, veterinary professionals, etc.), 1% (n=2) were exposed to potentially rabid cats at local freight handling centres where stray cats had stowed away in international cargo, and the remainder were members of the general public. The majority of bat exposures were megabats (n=103, 68%), which includes flying foxes

Of 105 bats submitted for testing during 2021, 10 tested positive (9.5%) (see page 11). Submissions for testing peaked in March (Figure 10) with most bats testing positive in the first half of the year: February (n=3); April and May (n=2); and January and March (n=1).

Figure 10: Number of bats tested for ABLV by month and year, NSW, 2017–2021



Post-exposure prophylaxis

NSW Health provides PEP, including vaccination and rabies immunoglobulin, free of charge to people potentially exposed to rabies and ABLV following a risk assessment with their medical professional (see [NSW Rabies and other lyssavirus infections control guidelines](#)). During 2021, NSW Health distributed 604 doses of rabies vaccine and 723 vials of HRIG to prevent infections, at a cost of approximately AUD 278,587.

Most overseas exposures requiring PEP occurred among residents of metropolitan Sydney. The highest number of local exposures requiring PEP occurred among residents of Northern NSW (Table 3).

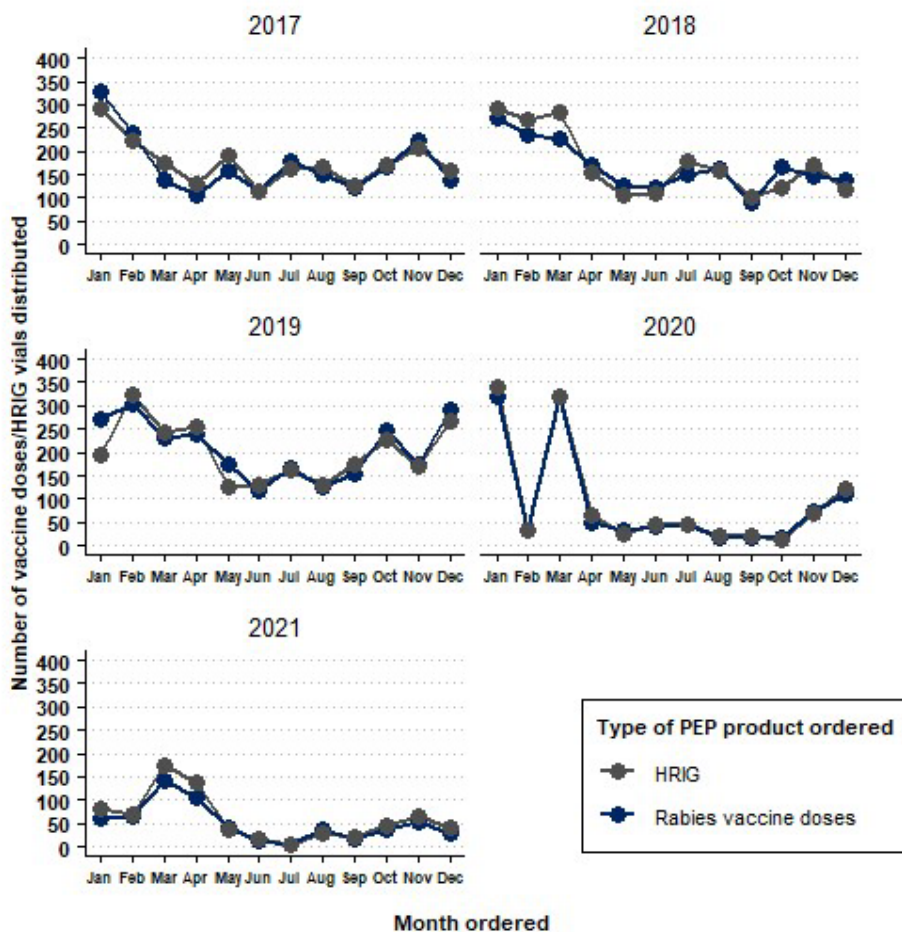
Distribution rates of both rabies vaccine and HRIG peaked in March and April 2021. Overall, distribution rates of PEP were substantially lower in 2021 compared to recent years, consistent with the observed reduction in reported exposure events (Figure 11).

Table 3: Distribution of rabies vaccine and human rabies immunoglobulin by LHD, NSW, 2021

LHD	n		Total (%)
	Overseas	Local	
Central Coast	1	10	11 (7%)
Far West	0	0	0
Hunter New England	0	25	25 (16%)
Illawarra Shoalhaven	0	10	10 (6%)
Mid North Coast	0	0	0

Murrumbidgee	0	13	13 (8%)
Nepean Blue Mountains	1	6	7 (4%)
Northern NSW	0	37	37 (23%)
Northern Sydney	2	6	8 (5%)
South Eastern Sydney	0	9	9 (6%)
South Western Sydney	1	6	7 (4%)
Southern NSW	0	4	4 (2%)
Sydney	1	7	8 (5%)
Western NSW	0	10	10 (6%)
Western Sydney	1	10	11 (7%)
NSW total	7	153	160

Figure 11: Distribution of rabies vaccine and human rabies immunoglobulin by month and year, NSW, 2017–2021



7. Tularaemia

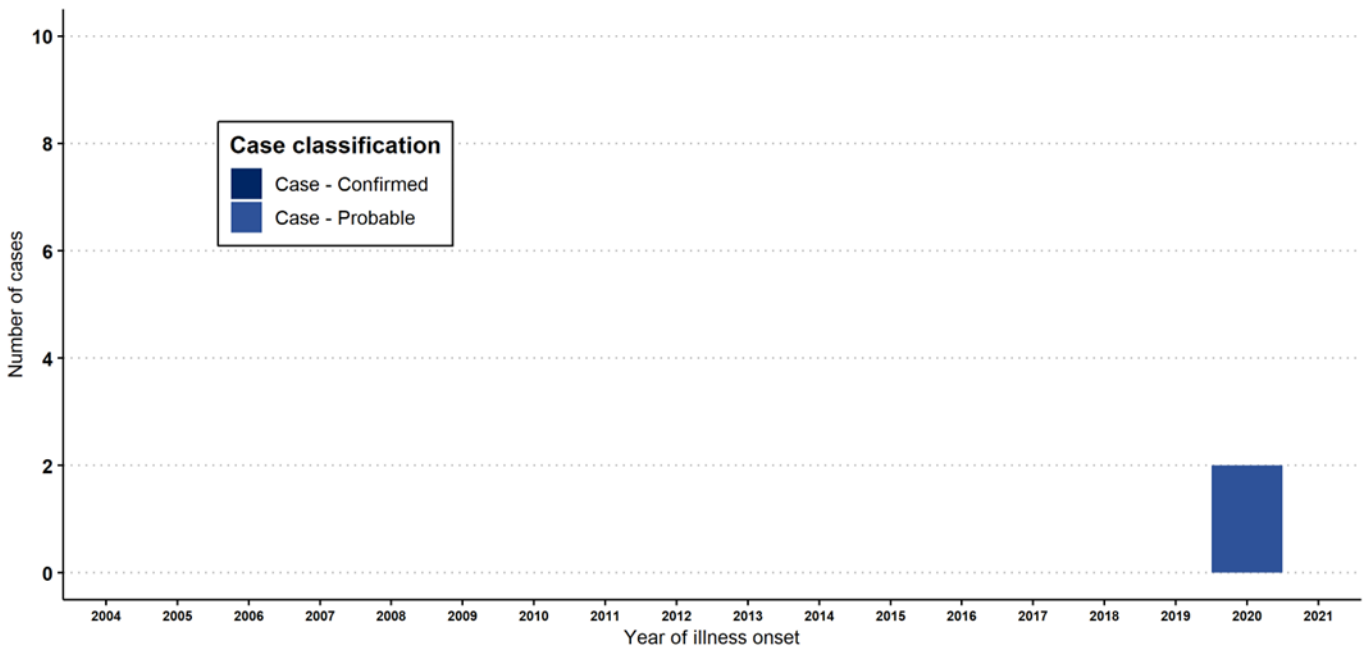
Tularaemia is a rare bacterial disease caused by the bacterium *Francisella tularensis*. The infection is usually acquired from handling infected animals, bites of infected ticks or deer flies or from contaminated food or water. In Australia, ringtail possums have been associated with human infection and other wildlife may carry the disease.

Key points:

- 0 cases notified in 2021

During 2021, no probable or confirmed cases were notified in NSW. Two probable cases reported in 2020 are the only cases detected in NSW since surveillance began in 2004. These cases had physical contact with unwell wildlife, one of which was a ringtail possum.

Figure 12: Trends in tularaemia notifications by case classification, NSW, 2004a–2021



^a Tularaemia notifications are not available prior to 2004.

8. Animal health events notified to NSW Health

Key points:

- Sporadic cases of ABLV, anthrax, brucellosis, psittacosis and Hendra virus infection were reported in animal populations in 2021

Notifications of significant zoonotic animal health events to the Department of Primary Industries (DPI) or Local Land Services (LLS) are rapidly communicated to NSW public health authorities. Depending on the disease and nature of the event, public health units (in collaboration with DPI, LLS and other relevant parties) will investigate human exposures and advise appropriate actions, which may include monitoring for symptoms and referral for laboratory testing and treatment. While animal health authorities work to confirm the diagnosis through laboratory tests at the Elizabeth Macarthur Agriculture Institute (EMAI) and the Australian Centre for Disease Preparedness (ACDP) and control spread in animal populations, public health authorities take steps to prevent human infections, such as providing education to reduce risk and post-exposure treatment, where indicated.

There were no incidents or clusters of highly pathogenic avian influenza, leptospirosis, terrestrial rabies or tularaemia reported in NSW animal populations during 2021.

During 2021, NSW authorities collectively responded to the following animal health events:

ABLV – 110 bats were submitted for testing following human exposures, exposure of a pet, or exhibiting signs suggestive of ABLV infection. Ten bats tested positive for ABLV. Three of the positive bats were tested due to potential human exposure.

Anthrax – was investigated on 177 occasions as the cause of death of stock, of which one incident was confirmed. This event involving sheep occurred in January 2021, in a region within the anthrax belt of NSW. Shortly after infection was confirmed, the affected property and livestock were managed in accordance with biosecurity directions issued under the *Biosecurity Act (2015)* (e.g. tracing, movement restrictions and vaccination of at-risk livestock, carcass disposal, equipment decontamination, etc.). The public health unit determined four potential human exposures required prophylactic treatment.

Brucellosis – samples from 153 dogs were submitted for testing for *Brucella suis* during 2021. Of these, 38 were serologically positive. The majority of positive cases originated from the northern NSW, Hunter New England and central west NSW. NSW DPI assists private veterinarians in assessing and managing the risks posed by *Brucella suis* infection in dogs, providing advice on infection control to prevent transmission to humans and other animals. All infections were reported to the local public health unit for human health assessment and advice.

Avian chlamydiosis – 49 birds were tested for avian chlamydiosis in 2021. Two birds were confirmed positive from the Hunter and greater Sydney regions.

Equine Chlamydiosis – Of the 118 horses that were tested for equine chlamydiosis in NSW during 2021, *Chlamydia psittaci* was detected in 8 cases. Three of the 8 detections were on the same property in the Hunter New England region, a further 2 detections were also in the Hunter, 3 in the Riverina region. All infections were reported to the local public health unit for assessment of human contacts. Although the zoonotic potential of psittacosis from non-avian sources is not currently well understood, the case definition in the NSW psittacosis control guideline was updated from 1 July 2019, to include epidemiological links to any animal with confirmed chlamydiosis.

Hendra virus infection – Of 213 reports of sick or dead horses where samples were submitted for Hendra virus testing in NSW during 2021, a variant Hendra virus infection was

confirmed on one property involving an unvaccinated horse. The event occurred in the Hunter region of NSW in October 2021. The horse carcass was safely disposed of through burial and the property was managed in accordance with biosecurity directions issued under the *Biosecurity Act (2015)*. The event was reported to the local public health unit for assessment and was discussed by an expert panel. Twelve contacts were assessed with one deemed at negligible risk, 6 at low risk and 5 at low to moderate risk. Prophylaxis with monoclonal antibodies was not indicated. (Table 4).

Table 4: Human assessment and treatment following exposure to horses infected with Hendra virus, NSW, 2021

Month	Council Area	Number of Horses	Number of Human contacts			Human Risk Assessment
			High Risk	Low to Moderate Risk	Low or Neg Risk	
October	Lake Macquarie	1	0	5	7	Five people assessed as low to moderate risk advised to observe for symptoms, of which none developed.
Total		1	0	5	7	

9. Appendices

Appendix 1: Methods

Human disease notifications:

Under authority of the [NSW Public Health Act 2010](#), NSW Health receives notifications of communicable diseases from laboratories, doctors, and hospitals. Cases are recorded on the NSW Notifiable Conditions Information Management System (NCIMS) – a confidential, internet-based system used by NSW public health units – and categorised based on the agreed [national cases definitions](#).

This report reflects notifications of anthrax, avian and other animal influenza virus infections, brucellosis, Hendra virus infections, leptospirosis, psittacosis, Q fever, and rabies and other lyssaviruses (including ABLV), recorded in NCIMS on or shortly after June 2022. Unless specified otherwise, cases were categorised by calendar year based on notification date (i.e. the date of that public health were notified of the infection).

Incidence rates were calculated using mid-year estimated resident population (ERP) projections published by the Secure Analytics for Population Health Research and Intelligence (SAPHaRI) group, NSW Ministry of Health. This includes LGA based ERPs derived from estimates published by the NSW Department of Planning and Environment in 20223 and ERPs of Aboriginal and Torres Strait Islander Australians published by the Australian Bureau of Statistics in 2019.

The degree to which notification data reflect the true incidence of disease varies between conditions, as many people with infectious disease will not be diagnosed with the disease or notified. For some conditions (e.g. Q fever), where infections maybe asymptomatic or are not diagnosed, notifications likely underestimate the true incidence of disease. Notification data are also subject to retrospective changes – data are only accurate at the time of extraction.

The degree to which notification data reflect the true incidence of disease varies between conditions, as many people with infectious disease will not be diagnosed with the disease or notified. For some conditions (e.g. Q fever), where infections maybe asymptomatic or are not diagnosed, notifications likely underestimate the true incidence of disease. Notification data are also subject to retrospective changes – data are only accurate at the time of extraction.

Animal disease notifications:

Members of the public, veterinarians or animal owners or managers have a general biosecurity duty to notify certain suspected animal diseases under legislation. This report reflects selected conditions prone to infect humans, notified to the DPI during 2021, and conveyed to public health authorities. This information is not intended to reflect overall incidence of disease in the animal population, but rather an indication of the scope of diseases upon which the DPI and NSW Health collaborate to prevent transmission to the public.

Rabies post-exposure treatment:

Doctors contact public health units for advice on the management of potential exposures to lyssaviruses. Where indicated, public health units arrange for the ordering, urgent delivery and administration of rabies vaccine and HRIG to prevent infection – a service provided free of charge to NSW residents. These events are routinely captured in NCIMS, and records of rabies vaccine and HRIG distribution are maintained by the Immunisation Unit.

Costs estimates provided in this report were based on the total number and costs of treatments distributed and courier distribution costs. This does not take into account any salaries, consumables, consultation costs, other incidental costs borne by NSW Health or costs associated with testing bats.

Appendix 2: Zoonoses notifiable to NSW human and/or animal health authorities

Disease	Status in NSW	Human health notification	Animal health notification
Anaplasmosis	sporadic		✓
Anthrax	sporadic	✓	✓
Arboviral infections	varies by virus	✓	some
Babesiosis	sporadic		✓
Borna disease	exotic		✓
Brucellosis - <i>Brucella suis</i>	sporadic	✓	✓
Brucellosis - NEC	exotic	✓	✓
Camelpox	exotic		✓
Campylobacteriosis	endemic	*	
Crimean-Congo haemorrhagic fever	exotic	✓	✓
Cryptosporidiosis	endemic	✓	
Cysticercosis – porcine, bovine	exotic/sporadic		✓
Encephalitides (tick-borne)	exotic		✓
<i>Escherichia coli</i> - STEC and HUS	endemic	✓	
Getah virus infection	exotic		✓
Giardiasis	endemic	✓	
Glanders	exotic		✓
Hendra virus infection except in pteropid bats	sporadic	✓	✓
Hepatitis E	sporadic	✓	
Influenza - highly pathogenic avian influenza	exotic	✓	✓
Influenza - swine/equine influenza	exotic	✓	✓
Leishmaniasis	exotic		✓
Leptospirosis	endemic	✓	
Listeriosis	endemic	✓	
Louping ill	exotic		✓

Lyssavirus - ABLV	endemic	✓	✓
Lyssavirus - Rabies	exotic	✓	✓
Menangle virus infection	sporadic		✓
Nairobi sheep disease	exotic		✓
Newcastle disease	exotic		✓
Nipah virus infection	exotic	✓	✓
Pigeon paramyxovirus	sporadic		✓
Plague	exotic	✓	
Psittacosis (Ornithosis) / Chlamydiosis in birds	endemic	✓	✓
Q Fever	endemic	✓	
Rift Valley fever	exotic	✓	✓
Salmonellosis - NEC	endemic	✓	
Salmonellosis - <i>Salmonella</i> Enteritidis	sporadic	✓	✓
SARS CoV	exotic	✓	
Transmissible spongiform encephalopathy	exotic	✓	✓
Trichinellosis	exotic		✓
Trypanosomiasis / Chagas' disease	exotic		✓
Tuberculosis - Bovine (<i>Mycobacterium bovis</i>)	exotic		✓
Tuberculosis - other mammal or avian	sporadic	✓	✓
Tularaemia	Exotic/sporadic	✓	✓
Turkey rhinotracheitis (avian metapneumovirus)	exotic		✓
Vesicular stomatitis virus	exotic		✓
Viral haemorrhagic fever, human – NEC	exotic	✓	
Warble-fly myiasis	exotic		✓
Wesselsbron disease	exotic		✓

NEC: Not elsewhere classified. * *Campylobacter* notifications commenced in NSW on 7 April 2019

Table correct as at 24 May 2019

NEC: Not elsewhere classified Table correct as at June 2022

Appendix 3: Additional sources of information

See NSW Health's [Infectious Diseases website](#) for further information for the general public and health professionals on all human health conditions presented in this report, as well as other notifiable conditions. This includes NSW-specific data and information, factsheets, and control guidelines on:

- [Anthrax](#)
- [Avian influenza](#)
- [Brucellosis](#)
- [Hendra virus](#)
- [Leptospirosis](#)
- [Psittacosis](#)
- [Q fever](#)
- [Rabies and ABLV](#)
- [Tularaemia.](#)

See the DPI's [Animal health and diseases](#) and [Animal Biosecurity Zoonoses](#) websites for further information for general public, veterinarians, and animal health authorities about zoonoses in animals.

Appendix 4: List of acronyms

ABLV	Australian Bat Lyssavirus
ACDP	Australian Centre for Disease Preparedness
ACT	Australian Capital Territory
CDNA	Communicable Diseases Network Australia
DPI	Department of Primary Industries
EMAI	Elizabeth Macarthur Agriculture Institute
ERP	Estimated resident population
HRIG	Human rabies immunoglobulin
LGA	Local Government Area
LHD	Local Health District
LLS	Local Land Services
NCIMS	Notifiable Conditions Information Management System
NEC	Not elsewhere classified
NSW	New South Wales
NQFMP	National Q Fever Management Program
PCR	Polymerase chain reaction
PEP	Post-exposure prophylaxis
PPE	Personal protective equipment
SAPHRI	Secure Analytics for Population Health Research and Intelligence
Yr	Year

10. Contributors and acknowledgments.

This report was developed by staff of the One Health Branch and the Immunisation Unit, Communicable Diseases Branch, Health Protection NSW in collaboration with the NSW Department of Primary Industries.

Protecting the health of the community is a collaborative effort, involving public health units, clinicians, laboratory scientists, affected communities, and other government and community-based organisations. We sincerely thank all those involved for the role they played in NSW in 2021.

11. References

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