ABLV BAT STATS

Australian Bat Lyssavirus Report - December 2014

Cases of ABLV infection - January to December 2014

Thirty-two cases of Australian bat lyssavirus (ABLV) infection were reported in bats in Australia between January and December 2014, from Queensland, New South Wales, Northern Territory, Victoria and Western Australia (Table 1).

Queensland

Six little red flying foxes (*Pteropus scapulatus*), six black flying foxes (*P. alecto*) and two grey-headed flying foxes (*P. poliocephalus*) from Queensland were found to be infected with ABLV. Eleven of these presented with neurological signs such as aggression, incoordination, paralysis, seizures, and salivation; one was found tangled in a barbed wire fence. Histopathological findings included non-suppurative meningoencephalitis, neuronal necrosis, and Negri-like bodies in Purkinje cells. One little red flying fox additionally had pulmonary emphysema. Two little red flying foxes were found to have granulomatous protozoal pneumonia, with similar findings seen in other bats that tested negative for ABLV.

Western Australia

Seven little red flying foxes and four black flying foxes from Western Australia were found to be infected with ABLV. One was found dead, while the others presented with neurological signs including aggression, unusual vocalisation, limb paralysis, self-mutilation, tremor, twitching, and inability to fly.

Northern Territory

One black flying fox from Katherine was infected with ABLV. It was submitted for testing after being attacked by a dog. There were no lesions detected on histological examination of the brain of this flying fox. This is only the second time that an ABLV-infected bat has been detected in the Northern Territory; the first case was in 1997 (Table 1).

Black flying fox
Photo: Andrew Mercer/ *Wikimedia Commons*

Table 1: ABLV infection in Australian bats as confirmed by FAT, PCR, IHC and/or virus isolation^

YEAR	NSW	NT	QLD	VIC	WA	SA	Total
1995	0	0	1[#]	0	0	0	**1**
1996	1	0	9	1	0	0	**11**
1997	7	1	27[+]	0	0	0	**35**
1998	1	0	26[+]	0	0	0	**27**
1999	0	0	6	0	0	0	**6**
2000	1	0	14	0	0	0	**15**
2001	0	0	9	1	4	0	**14**
2002	4	0	10	2	1	0	**17**
2003	6	0	3	2	0	0	**11**
2004	5	0	6	1	0	0	**12**
2005	6	0	5	0	0	0	**11**
2006	2	0	4	0	0	0	**6**
2007	6	0	2	0	0	0	**8**
2008	0	0	0	0	0	0	**0**
2009	2	0	8[a]	0	0	0	**10**
2010	0	0	8	0	1	0	**9**
2011	0	0	4[a]	2	0	0	**6**
2012	1	0	3	0	0	1	**5**
2013	3[a]	0	11[a]	0	0	0	**14**
2014	5	1	14[a]	1	11[a]	0	**32[a]**
Total	**50[a]**	**2**	**170[a]**	**10**	**17**	**1**	**250[a]**

Source: see page 6, 'Australian Bat Lyssavirus Report'.

^ ACT and TAS have not recorded any cases of ABLV infection that satisfy this case definition.
[#] ABLV was first recognised in 1996. A black flying fox from Townsville, QLD that died in 1995 was subsequently diagnosed with ABLV.
[+] Higher numbers of ABLV infected bats were associated with peak years of testing in 1997-1998.
[a] For some bats, one equivocal and one negative result (FAT/PCR) was recorded. These bats are not included in these figures as they were not confirmed to be ABLV infected.

New South Wales

Four grey-headed flying foxes and one unidentified flying fox (*Pteropus* sp.) from NSW were found to be ABLV infected. The flying foxes presented with neurological signs including agression, biting, vocalisation, a hoarse cry, limb paralysis or weakness, nystagmus, inability to swallow and hypersensitivity, and one was seen to attack a bird. One of these flying foxes was found caught in a fence.

Victoria

One little red flying fox from Victoria was found to be ABLV infected. It presented with abnormal behaviour including aggression and lying on its back, as well as hind leg paralysis.

Grey-headed flying fox Photo: Mike Lehmann/*Wikimedia Commons*

Human contact

Potentially infectious contact with humans was reported for twelve ABLV infected flying foxes this year. In each case appropriate counselling and information were provided by an experienced public health official.

Why are bats submitted for ABLV testing?

Bats are submitted for ABLV testing for a variety of reasons. A common reason is contact between the bat and a person with the potential for ABLV transmission (e.g. a bite or scratch). Bats are also regularly submitted following contact with a pet dog or cat (Figure 1). Bats displaying unusual or aggressive behaviour or other neurological signs may be tested; these signs can occur with ABLV infection but can also be due to a number of other diseases. Bats that show other clinical signs e.g. respiratory signs, bats that die or are euthanased due to trauma, and bats that are found dead may also be submitted for testing.

Figure 1: ABLV tested bats – Contact with people and pets

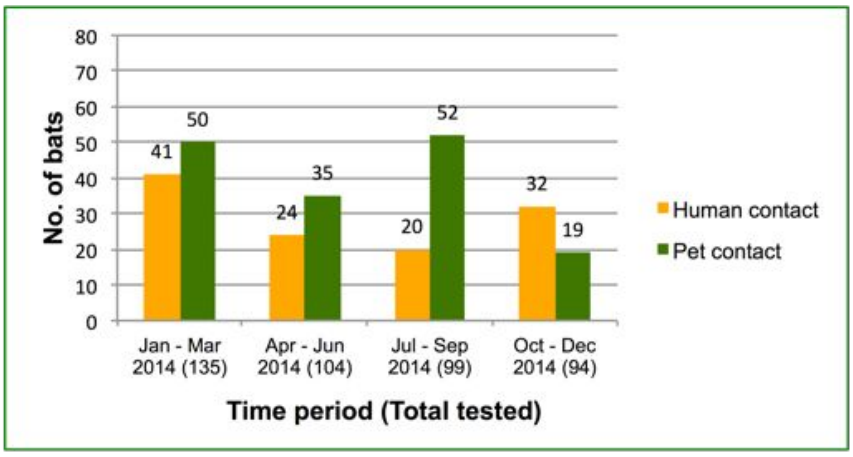

Figure 1 presents reported human-bat contacts which, based on Young & McCall 2010,[1] is an underestimate of the true contact frequency. Not all bat contact is reported, and for the majority of reports the bat is not available for testing. Some of the bats that had human contact also had contact with a pet (not shown in the graph).

ABLV prevalence in bats and public health significance

There are no recent surveys on the prevalence of ABLV in wild bats. Surveys of wild-caught bats in the early 2000s indicated an ABLV prevalence in the wild bat population of less than 1%.[2] ABLV infection is more common in sick, injured and orphaned bats, especially those with neurological signs.[3] People are more likely to have contact with bats that are unwell or debilitated, as these bats may be found on or near the ground.[4]

Chocolate wattled bats Photo: A Young © Australian Museum

ABLV infection causes a range of clinical signs in bats, which can include abnormal behaviour such as uncharacteristic aggression, paralysis or paresis, and seizures. The behavioural changes may increase the likelihood of a person or pet being bitten or scratched when coming in contact with the bat.[5] The likelihood of a person developing ABLV disease from contact with a bat is influenced by a number of factors including whether the bat was ABLV-infected, the type of contact e.g. bite or scratch, and the vaccination status of the person.

ABLV prevalence in bats submitted for testing

Some of the bats that come into contact with people or pets are tested for ABLV. The percentage of ABLV infection in bats submitted for testing is of interest as an indicator of public exposure, however it is also heavily influenced by factors affecting which bats are submitted for testing.

A total of 432 bats were tested for ABLV in Australia between January and December 2014 (Table 2). This includes twenty-nine insectivorous bats submitted by bat carers as part of an ongoing surveillance project conducted by the Queensland Centre for Emerging Infectious Diseases.

Thirty-two cases of ABLV infection were reported in bats (7.4% of the bats submitted for testing) (Table 3). As described above, testing of unwell bats is not representative of the whole bat population; consequently these results over-estimate the level of ABLV infection in the wider bat population.

The proportion of tested bats infected with ABLV is higher than for previous periods. The reason for this is not fully known. Although a real increase in ABLV prevalence in the wild bat population is a possible explanation, it is just as likely to be due to a change in the factors affecting which bats were submitted for testing e.g. location or presence of neurological signs.

Spectacled flying fox Photo: GB Baker © Australian Museum

Table 2: ABLV testing by bat species (Jan-Dec 2014)

Species	No. tested	No. ABLV infected
Flying foxes & blossom bats		
Black flying fox (*Pteropus alecto*)	144	11
Grey-headed flying fox (*Pteropus poliocephalus*)	88	6
Little red flying fox (*Pteropus scapulatus*)	40	14
Spectacled flying fox (*Pteropus conspicillatus*)	5	0
Flying fox (*Pteropus* sp.); species not identified	29	1
Eastern tube-nosed bat (*Nyctimene robinsoni*)	1	0
Insectivorous bats (microbats)		
Gould's wattled bat (*Chalinolobus gouldii*)	14	0
Lesser long-eared bat (*Nyctophilus geoffroyi*)	7	0
Gould's long-eared bat (*Nyctophilus gouldi*)	6	0
South-eastern broad-nosed bat (*Scotorepens orion*)	5	0
Little forest bat (*Vespadelus vulturnus)*	4	0
Chocolate wattled bat (*Chalinolobus morio*)	4	0
Mormopterus sp.	4	0
Nyctophilus sp.	4	0
Beccari's mastiff bat (*Mormopterus beccarii*)	3	0
Eastern long-eared bat (*Nyctophilus bifax*)	3	0
Northern free-tailed bat (*Mormopterus lumsdenae*)	3	0
Little bent-wing bat (*Miniopterus australis*)	3	0
Scotorepens sp.	3	0
Yellow-bellied sheath-tailed bat (*Saccolaimus flaviventris*)	2	0
Little broad-nosed bat (*Scotorepens greyii*)	2	0
Vespertilionidae	2	0
Eastern freetail bat (*Mormopterus ridei*)	1	0
Large-footed bat (*Myotis macropus*)	1	0
Lesser long-eared bat (*Nyctophilus geoffroyi*)	1	0
Greater broad-nosed bat (*Scoteanax rueppellii)*	1	0
Eastern bent-wing bat (*Miniopterus schreibersii oceanensis*)	1	0
Southern forest bat (*Eptesicus regulus)*	1	0
Arnhem long-eared bat (*Nyctophilus arnhemensis*)	1	0
East-coast free-tailed bat (*Mormopterus norfolkensis*)	1	0
Vespadelus sp.	1	0
Microbat; species not identified	44	0
Bat - unidentified	3	0
TOTAL	432	32

Table 3: ABLV infection (%) in bats submitted for testing (Jan-Dec 2014)

	No. tested	No. infected+	% infected*
Flying foxes & blossom bats	307	32	10.4%
Microbats	122	0	0%
Bats - unidentified	3	0	0%
TOTAL	**432**	**32**	**7.4%**

* This figure represents the percentage of ABLV infection in the bats tested. The level of ABLV infection in the wider bat population is estimated to be significantly lower.

+ In eight bats there was one equivocal and one negative result (FAT/PCR). These bats are not included in these figures as they were not confirmed to be ABLV infected.

Bat facts

- **ABLV is a virus** that infects Australian flying foxes and insectivorous bats.
- **ABLV is closely related to**, but distinct from rabies virus.
- **ABLV can infect people and other mammals with a fatal outcome.** ABLV infection has led to the deaths of three people, two horses and many bats in Australia.
- **People should not handle bats** unless they are appropriately vaccinated.
- **ABLV is transmitted to humans** via biting and scratching, and potentially also through contact with saliva. In the event of a bat bite, scratch or other significant contact, **seek medical attention URGENTLY**. **Bite or scratch wounds** should immediately be washed thoroughly with soap and copious water for approximately 5 minutes and a virucidal antiseptic applied.[+] Bat saliva in the eyes or mouth should be rinsed out immediately and thoroughly with water.
- **For more information** contact your local Public Health Unit for advice.
- **ABLV can also be transmitted to other mammals.** Prevent pets and other animals from coming into contact with bats. If an animal might have been bitten or scratched by a bat, **seek urgent veterinary advice.**
- **If you suspect a bat is infected** with ABLV contact your biosecurity authority (department of agriculture or primary industries) for advice about testing.
- **Where to find more information:** See page 5 & 6.

[+] Department of Health. Rabies Virus and Other Lyssavirus (Including Australian Bat Lyssavirus) Exposures and Infections. CDNA National Guidelines for Public Health Units. Canberra. 2014. Available from www.health.gov.au/internet/main/publishing.nsf/Content/cdna-song-abvl-rabies.htm

Gould's long-eared bat
Photo: James Cox

Clinical signs of ABLV

An ABLV infected bat may display any of these clinical signs:

- Abnormal behaviour such as excitation / agitation / aggression
- Paralysis or paresis
- Unprovoked attacks
- Unusual vocalisation
- Inability to fly
- Convulsions / seizures / tremors

DO NOT ATTEMPT TO HANDLE AN INJURED, UNWELL OR AGGRESSIVE BAT —

REPORT IT TO YOUR LOCAL WILDLIFE SERVICE, VET OR BAT CARER GROUP

Grey-headed flying foxes
Photo: Daniel Vianna/*Wikimedia Commons*

Recent news and publications

Understanding human - bat interactions in NSW, Australia: improving risk communication for prevention of Australian bat lyssavirus

Quinn E *et al* (2014) *BMC Veterinary Research*, 10:144
www.biomedcentral.com/1746-6148/10/144/abstract

Abstract: "….Human infection with ABLV is inevitably fatal unless prior vaccination and/or post-exposure treatment (PET) is given. Despite ongoing public health messaging about the risks associated with bat contact, surveillance data have revealed a four-fold increase in the number of people receiving PET for bat exposure in NSW between 2007 and 2011. Our study aimed to better understand these human - bat interactions…."

Australian bat lyssavirus: implications for public health

Francis JR *et al* (2014) *The Medical Journal of Australia*, 201(11), 647-649 https://www.mja.com.au/journal/2014/201/11/australian-bat-lyssavirus-implications-public-health

Summary: "Australian bat lyssavirus (ABLV) infection in humans is rare but fatal, with no proven effective therapy….. Any bat-related injury (bite, scratch or mucosal exposure to bat saliva or neural tissue) should be notified immediately to the relevant public health unit — no matter how small the injury or how long ago it occurred…."

Clinical review of two fatal equine cases of infection with the insectivorous bat strain of Australian bat lyssavirus

Annand EJ *et al* (2014) *Australian Veterinary Journal*, 92(9), 324-32 http://onlinelibrary.wiley.com/doi/10.1111/avj.12227/full

Abstract: "Case series: The first two confirmed cases of Australian bat lyssavirus (ABLV) infection in horses are presented. Both cases occurred in the same week in May 2013 in paddock mates in south-east Queensland. Australia has been one of only a few countries considered free from rabies-like viruses in domestic animal species. ABLV infection had previously only been confirmed in bats and humans…."

Also: **Shinwari MW *et al* (2014)** Australian bat lyssavirus infection in two horses. *Veterinary Microbiology*, 173(3-4), 224-231 http://www.sciencedirect.com/science/article/pii/S037811351400371X

Bat lyssavirus detected again in NT

16/09/2014 Northern Territory Department of Health
www.health.nt.gov.au/Agency/News_Archive/Bat_Lyssavirus_detected_again_in_NT/indexdl_5666.aspx

"The warning comes with the positive detection of the virus in a bat located in Katherine during the weekend. "There has been no transmission of the virus to humans in the NT, but it is timely to remind everyone that they should avoid contact with bats," Dr Peter Markey, Acting Director Centre for Disease Control said. Before this most recent case, the last detection of Australian Bat Lyssavirus in the NT was in 1997…"

Bat virus warning for Kimberley residents

12/09/2014 WA Country Health Service
Article (http://wacountry.health.wa.gov.au - media)

"A public health official today issued a warning to Broome and other Kimberley residents about the risk of contracting a rare but fatal disease from flying foxes (fruit bats)….."

Are you interested in bat health?

Wildlife Health Australia collates recent media articles and publications relating to bat health into a monthly **'Bat News'** email. If you would like to receive the monthly email, please contact WHA: admin@wildlifehealthaustralia.com.au

Black flying fox
Photo: Andrew Mercer/*Wikimedia Commons*

Where to find information

Wildlife Health Australia (WHA)
www.wildlifehealthaustralia.com.au

- Wildlife disease fact sheets, including *ABLV* and *Zoonoses (Australian Bats)*
- Resources: News and information on specific diseases and hosts.
- Links: Useful links to wildlife and animal health organisations and agencies in Australia and overseas.

State/Territory departments of agriculture, health and environment

Visit the agency websites, or see WHA Resources for a summary of available information & links:
Queensland >>
New South Wales & ACT >>
Victoria >>
South Australia, Western Australia & Northern Territory >>

Commonwealth Department of Health

- For current Department of Health information regarding ABLV, see the Series of National Guidelines on Rabies & ABLV: www.health.gov.au/internet/main/publishing.nsf/Content/cdna-song-abvl-rabies.htm
- For vaccination information contact your local or regional Public Health Unit, or see the immunisation handbook: http://www.health.gov.au/internet/immunise/publishing.nsf/Content/Handbook10-home

AUSVETPLAN

For current policy on surveillance and management consult AUSVETPLAN:
www.animalhealthaustralia.com.au/wp-content/uploads/2011/04/ABL-07EDIT20Jan10.pdf

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WHA Bat Health Focus Group

This document has been approved by the Wildlife Health Australia (WHA) Bat Health Focus Group. Using a collaborative One Health approach, the Bat Health Focus Group considers bat health issues in relation to the broader context of biosecurity, public health, livestock health and environmental impacts in Australia. Members come from organisations including Australian and State Government departments of agriculture, public health and environment; CSIRO Australian Animal Health Laboratory, universities, the Australasian Bat Society and the Australian Speleological Federation. Members include veterinarians, biologists, ecologists, virologists, epidemiologists and wildlife/bat carers.

For further information please contact WHA on admin@wildlifehealthaustralia.com.au

Australian Bat Lyssavirus Report

This report presents the latest information on Australian bat lyssavirus (ABLV) testing across Australia. Information has been made available by CSIRO Australian Animal Health Laboratory, Janine Barrett PhD thesis 2004 (with permission), QLD Health, Wildlife Health Australia subscribers, zoo veterinarians, and State/Territory WHA coordinators (representatives of Chief Veterinary Officers), and is collated by Wildlife Health Australia. More detailed information is available in the electronic Wildlife Health Information System (eWHIS): www.wildlifehealthaustralia.com.au

References

[1] Young MK & McCall BJ (2010). Potential exposure to Australian bat lyssavirus in South East Queensland: What has changed in 12 years? *Communicable Diseases Intelligence,* 34(3), 334-8

[2] Field HE (2005). "The Ecology of Hendra virus and Australian bat lyssavirus", PhD thesis, The University of Queensland

[3] Barrett J (2004). “Australian Bat Lyssavirus”, PhD thesis, The University of Queensland

[4] McCall B, Field HE, Smith GA, Storie GJ, Harrower BJ (2005). Defining the risk of human exposure to Australian bat lyssavirus through potential non-bat animal infection. *Communicable Diseases Intelligence,* 29(2), 200-203

[5] Animal Health Australia (2009). Disease strategy: Australian bat lyssavirus (Version 3.0). Australian Veterinary Emergency Plan (AUSVETPLAN), Edition 3, Primary Industries Ministerial Council, Canberra, ACT

State/Territory WHA Coordinators

If you would like information on ABLV testing or wish to report a suspected ABLV infected bat please contact your State/Territory Department of Primary Industries/Agriculture or local WHA Coordinator (below).

STATE	CONTACT	PHONE	EMAIL
ACT	Wendy Townsend	(02) 6205 3737	wendy.townsend@act.gov.au
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NT	Cathy Shilton	(08) 8999 2122	cathy.shilton@nt.gov.au
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