

Dr Janine Barrett

PhD BVSc MVSc MANZCVS (Pathology)

Biosecurity Queensland

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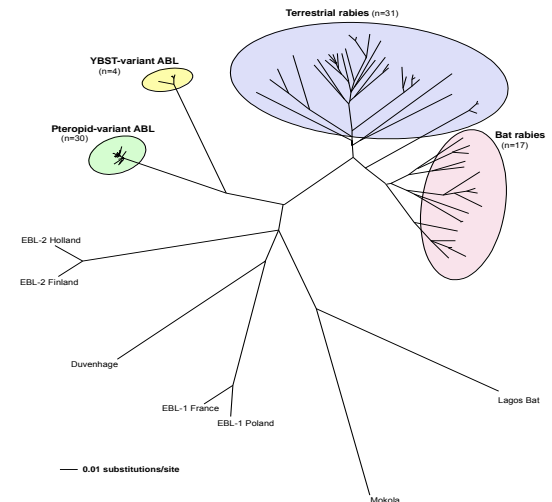
Viruses in May 2017



**Queensland
Government**

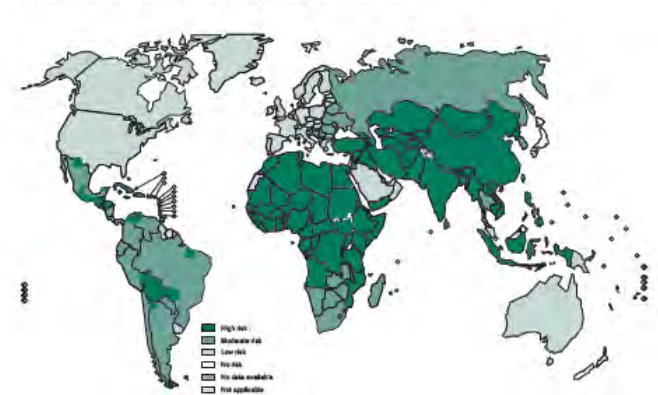
ABLV and rabies – what's in a name?

- Lyssaviruses - rabies and ABLV
- Invariably fatal encephalitis (clinical rabies)
 - neurological signs
 - clinical duration < 10 days
- Incubation period – long and variable, provides for post-exposure vaccination
 - rabies virus - < 21 days to > 6 years, usually 1-6 months
 - known ABLV - 30 days – 2.3 years



- **Rabies** – highest risk from dog-rabies in Indonesia
- **ABLV**
 - Potential for ABLV to be present in any Australian bat
 - spill-over to **3 humans** cases + **2 horses** *recognised* so

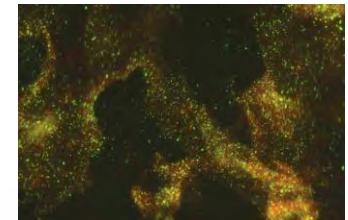
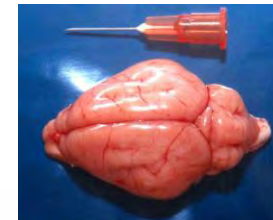
Distribution of risk to humans of contracting rabies, worldwide, 2013



ABLV in bats



- Recognised in 1996 – ‘incidental finding’ of Hendra virus research
 - Paresis, paralysis (> 50%)
 - Overt aggression (~20%)
 - Other CNS signs: seizures, cranial nerve deficits
 - Dead, moribund or inadequate history “sick”
 - A few look like they have a different disease
 - 85-95% of bats rescued with ABLV die within 1-3 days
- <<<1% whole bat populations
- 5-10% unwell bats
- 20-30% bats showing CNS clinical signs
- Diagnosis / definitive exclusion requires testing of brain (lethal sampling)
 - Florescent antibody test
 - PCR and sequencing
 - Blood tests – interesting but meaningless



ABLV risk to humans

- Risk of primary transmission from a **bat to human** - direct contact with bat
- Risk of secondary transmission to **human from another animal**
 - Dog and cat contact with ABLV-infected bats is known to occur
 - Two ABLV-infected horses
 - *Any adequately exposed mammal may be infected, develop clinical disease and pose a risk of transmission to humans*
 - Pre-exposure vaccination for ABLV not permitted in Australia - yet



Preventing ABLV disease in people

Plan A

- Pre-exposure rabies vaccination
- Avoid exposure to ABLV (bat bites and scratches)

Plan B

- *Immediate* cleaning of wound
- ± Keep (euthanase) and submit bat for testing
- Seek urgent medical advice (likely to lead to post-exposure vaccination)



Key messages for the public

- Only vaccinated people experienced in dealing with bats and wearing appropriate PPE should handle live bats
- Call a vaccinated wildlife carer if a bat needs help



Preventing ABLV disease in people

Plan A+

- Pre-exposure rabies vaccination
- Avoid exposure to ABLV (prevent bat bites and scratches)
- Risk-based mitigation of potential for ABLV disease in in-contact animals

Plan B+

- Immediate cleaning of wound
- ± Keep (euthanase) and submit bat for testing
- Seek urgent medical advice (likely to lead to post-exposure vaccination)
- Awareness of potential for ABLV in other animals and if suspect ABLV in any animal to seek urgent veterinary and medical advice

Key messages for the public

- Contact your veterinarian if your pet may have had contact with a bat

Rabies and ABLV are One Health diseases – medical + veterinary disciplines

When bats meet pets

How vets can managing potential exposure of pets to ABLV

1. Assess if exposure has potentially occurred

- Was there *opportunity* for potentially infectious contact (bite, scratch)?
- Did the bat have ABLV?
 1. Test it (lethal sampling – not bat friendly)
 2. Observe bat for 10 days
If bat still alive on Day 10_{post-contact} = Not infectious at time of contact with pet

2. Consider and discuss the options

- Pre-exposure vaccination of domestic animals
- Humane destruction
- Monitor and report
- Post-exposure vaccination



Considering and discussing the options

1. Euthanasia

Pros – absolute resolution of pet becoming a future risk to others

Cons – pet no longer alive with family, there are less ‘drastic’ alternatives

2. Monitor and report

Pros – no cost, least impact intervention for a low likelihood disease

Cons – *does nothing* to reduce risk the pet (if exposed and infected) develops clinical disease and poses a future risk to others. If disease develops months to years later, owner unlikely to recognise, lost opportunity for human PEP.

NOT recommended if ABLV confirmed or suspected from history

(e.g. lab test positive, or bat with neuro signs, or bat died within 10 days)

3. Post-exposure vaccination

Pros – assumed to reduce risk of later disease development

Cons – Cost (\$\$) and **residual risk period** until Day 35_{post-vaccination}



Post-exposure vaccination - animals

Assumptions

- Rabies vaccination assumed to provide cross-protection against ABLV in animals as in humans
- An anti-rabies titre of ≥ 2 IU is presumed to indicate cross-protective immunity against ABLV
- Vaccines don't work immediately
- Qld data - 95% confidence that 95% of animals acquire titers > 2 IU by Day 28_{post vac}
- If still alive on day 35_{post vac} either wasn't infected or vaccine induced immunity cleared infection
- *Earlier the better* – maximise likelihood vaccine has time to work.. *but better late than never*

There is a residual risk of clinical disease due to vaccination failure until Day 35_{post vac}

This must be stated clearly to owners

- Animal PEP resolves the long term risk of future transmission
- The residual risk period, when disease may occur despite vaccination, is limited to when owners are receiving veterinary advice, and awareness and compliance are high
- Clinical disease during the residual risk period is highly likely to be recognised, providing for post-exposure management of humans



What about next time?

Take all reasonable steps to avoid contact with bats

...but what that means in practice will depend on the circumstances

- Pets inside/secured at night
- Especially when bats feeding of flowering or fruiting trees
- Pets on leads when walking near bat colonies
- Pets inside/secured if an unwell bat is in the area (call bat carer)

Booster vaccinations following post-exposure vaccination?

- Boosters every 3 years maintain rabies immunity
- BUT – pre-exposure vaccination **not yet available**





Summary

- **ABLV causes rabies in bats, humans and other mammals**
- Once you're sick – you're dead, **preemptive action is the key**
- Risk to humans is **direct from bats AND indirect via companion animals**
- **People can work safely with bats and other ABLV-suspect animals**
 - pre-exposure vaccination
 - use skills, expertise, appropriate protective gear and assistance to avoid bites and scratches
 - wound management and urgent medical advice if required
- **Public should take all reasonable steps to avoid interactions with bats – people and pets**
- Pre-exposure **vaccination** is the single most effective measure for preventing ABLV/rabies
- Long incubation = post-exposure vaccination – ***early the better, but better late than never***
- To mitigate risk of **2ndry transmission, collaborate with biosecurity officers and veterinarians** to provide owners with risk-based solutions proportionate to the risk
 - case-specific assessment of potential for transmission
 - discussion of the options
 - advice for preventing further bat interactions
- **Always get the current information from the government website**

Scenario 1

- Patient phones your clinic to say that she has noticed a sick bat in her backyard. She has heard about the "bat virus" and she wants your advice
- Carer takes sick bat to vet – history includes that dog was 'playing' with the bat
- Owner had indicated she loves her dog, is concerned and would like to protect her pet and her family

Carer and vet agree the bat is suitable for rehabilitation – unlikely to have ABLV. Carer does not want bat to be killed

- Carer calls to say bat is alive and doing well on Day 10
- Carer calls to say the bat is gravely ill on Day 3
- Result for the bat is ABLV-negative
- Result for the bat is ABLV-positive
- The bat was not available for testing



Scenario 2

- Owner in the Torres Strait rings your clinic to say that her dog has bitten her. The dog has been unwell and unusually aggressive for the past 24 hours. Four days ago her two dogs were found with a dead bat. She has heard about the "bat virus" and is concerned she has been infected.
- Dog dies overnight
- Government vet collects samples to be sent to the laboratory in Brisbane
- Dog tests negative
 - What does that mean for the owner?
 - What does that mean for the bat from four days ago?
 - What does that mean for the other dog?
- Dog tests positive
 - What does that mean for owner?
 - What does that mean for the bat from four days ago?
 - What does that mean for the other dog?



Thank You