

How does a vet find a new disease that no one has seen before?

Marshall Thornton

West Cessnock Vet Hospital

2a Percy St, Cessnock NSW 2325

t. (02) 4990 4400

e. wcvh@tpg.com.au

C&T No. 5729

This a very brief version of events: I thought I could have discovered a new disease, possibly zoonotic from flying foxes.

There were 9 dogs in a yard over which flying foxes were flying—dropping faeces, urine, and dead fetuses in the yard, as the client's house was close to their roost in Cessnock.

Test, I hear you say.

All 9 dogs developed a cough, two died, the husband also developed a cough and was apparently quite unwell. The concept of One Medicine / New Zoonotic Disease—all these were running through my mind!

We only had clinical interaction with two of the dogs. The first died in spite of treatment. The second was treated with everything I could think of, had clinical pathology performed and then an autopsy. The pathology specimens were sent to Elizabeth MacArthur Agricultural Institute (EMAI) after talking to a pathologist there—they were worried this was an unknown zoonosis.

The EMAI pathologist's reports were inconclusive. I argued that EMAI was a Government lab and should be looking for new disease causative agents, but apparently they only look for what they already know, especially notifiable diseases. They do not try to look for what they do not know.

So who looks for diseases we do not already know about?

RESPONSES

1. Siobhan Mor

Reader in One Health, University of Liverpool
(formerly University of Sydney)

e. Siobhan.Mor@liverpool.ac.uk

From my perspective, and even before further laboratory

investigation, I would still think the scenario should—as a first step—be reported to the Animal Disease Hotline (1800 675 888). This would engage government veterinarians in the risk assessment process and usually they are better informed than private vets in terms of who to engage (public health unit, wildlife coordinator etc.) But there are some legitimate hurdles in this scenario as it involves a companion animal species, which doesn't really fall under the remit of government unless there is a clear threat to the livestock industry and/or public health (much to the frustration of private vets).

This is a *bona fide* gap in disease surveillance (lack of companion animal health surveillance) – and it is common throughout the world. In Australia, there is the National Significant Disease Investigation program (NSDI) (www.animalhealthaustralia.com.au/what-we-do/disease-surveillance/national-significant-disease-investigation-program) which pays a subsidy to private vets to investigate significant disease events; private vets should know about this though I suspect this is still largely directed to livestock investigations. Then there is the question of lab capacity and whether state labs have the capacity and remit to investigate unknowns in companion animals. I suspect in the end this kind of scenario falls to researchers to investigate (in universities or government labs), but the entry point for a private practitioner to engage with that side is probably not very clear.

2. Keith Eastwood

Epidemiologist
Hunter New England Population Health

e. keith.eastwood@hnehealth.nsw.gov.au

This is an interesting topic and one that has challenged our (human) public health unit in the past when we've been involved with animal health situations such as a kangaroo die-off. Early notification is an important starting point so that agencies can determine whether they have a role

in the response or are, at least, able to monitor progress. Pursuing an emerging disease, per the scenario provided, would depend on the circumstances and explores the boundary of surveillance and research – a likely area of contention. Pragmatic issues such as lead agency, cost-sharing and media reporting have already been mentioned but are crucial and not always easily resolved.

It is not possible to have a conversation involving One Health incidents without considering how much easier incidents like this would be managed through a national communicable disease control centre. Imagine if the incident described by Marshall occurred on the border of two states!

3. Karrie Rose

Manager – Australian Registry of Wildlife Health
Australian Registry of Wildlife Health
Taronga Conservation Society Australia
Bradleys Head Road Mosman NSW 2088

t. (02) 9978 4749
m. 0402 5535 37
e. krose@zoo.nsw.gov.au
w. theregistry.org.au

Investigating novel pathogens can be a very expensive and lengthy process and the current biosecurity systems do seem to focus on the notification and management of known animal diseases. In addition to the programs that Siobhan has outlined, there is a NSW Wildlife Inter-Agency Group, chaired by DPI and involving EPA, OEH, Health, LLS, WHA and the Registry. These meetings are held quarterly to address the management of emergent wildlife disease events. Discussions to define a lead agency and determine who will pay for the costs for emergency/emerging wildlife disease events are ongoing. The NDSI program is fantastic to enable the early stages of a disease investigation and WHA have done a great job to ensure that it is easily accessed. Those funds often range between \$500 to \$3,000 which is a very, very small fraction of the money expended on any investigation.

In relation to practical advice to practitioners, contacting WHA and the Registry are also good options if wildlife are affected (not for domestic animals though).

- Outside of the given scenario, I would tend to contact experienced wildlife carers to determine whether a disease syndrome in wildlife was common or likely to be something new. Whenever experienced and trusted carers say this is new, there is good value in conducting an investigation.
- Generally, we recommend an investigation whenever there is a mass mortality event (5-10 or more unexpected mortalities), signs or findings consistent with a notifiable disease (tubercles, foot or oral ulcers), animals with unexplained emaciation or neurological signs, or signs of potential infectious disease (enlarged lymph nodes, polyarthritis, discharges, respiratory distress).
- Think of Occupational Health and Safety/Personal Protective Equipment (PPE) before first contact. We've just recently had some cases where we have been incredibly pleased that we were replete with PPE and had no students attending animal handling and necropsies of some severely emaciated wild animals.

4. Kate Wingett | Senior Veterinary Officer

Animal Biosecurity Services and Response
NSW Department of Primary Industries
161 Kite St | Orange | NSW 2800

t. (02) 6391 3717
e. kate.wingett@dpi.nsw.gov.au

An excellent area of working across sectors to assess and mitigate risks. The advice from Siobhan is spot on in regards to contacting the Emergency Animal Disease Hotline on 1800 675 888 to report such cases. The NSW Biosecurity Act 2015 and subordinate legislation require mandatory reporting of biosecurity events, an unusual mortality event would be considered a biosecurity event. Actions taken in any one event will be based on a risk assessment performed by the relevant stakeholders, including NSW Health and Office of Environment and Heritage when appropriate. As mentioned by Siobhan and others, NSDI funding, WHA and The Registry are all excellent avenues open to private practitioners to collaborate when investigating such events.



The Cutting Edge Surgery Conference (September, 2018) featured Chris Tan, Philip Moses, Lucas Beierer and Gordon Corfield and was a great success.

If you missed it, don't miss the proceedings! Available in print or digital format it includes notes on:

- Laparotomy
- Four Ligature Splenectomy
- Collapsing Trachea
- Gall Bladder Mucocele
- Skin Reconstruction Techniques, etc.

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