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Rabies response, One Health and more-than-human considerations in indigenous communities in northern Australia

Chris Degeling[a,*], Victoria Brookes[b], Tess Lea[c], Michael Ward[b]

[a] Research for Social Change, Faculty of Social Science, The University of Wollongong, Australia
[b] Sydney School of Veterinary Science, The University of Sydney, Australia
[c] Department of Gender and Cultural Studies, Faculty of Arts and Social Sciences, The University of Sydney, Australia

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ABSTRACT

Australia is currently canine rabies free; however, the spread of rabies in eastern Indonesia poses an increasing risk to northern Australia. Domestic dogs are numerous in East Arnhem Land (EAL) and the Northern Peninsular Area (NPA), usually unrestrained and living in close relationships with humans. The response to any rabies outbreak on Australian territory will focus on dog vaccination, controlling dog movements and depopulation. A One Health approach to zoonotic disease control should seek to co-promote human and animal health, whilst also seeking to accommodate the preferences of affected communities. We report on 5 collaborative workshops and 28 semi-structured interviews conducted between January 2017 and June 2018 with: (i) EAL and NPA community members; (ii) Indigenous Rangers in EAL and NPA; and (iii) residents of Cairns, the local regional centre. Storyboard methodologies were used to work with participants and explore what rabies response measures they thought were justified or unacceptable, why they held these views, and what other steps they believed needed to be taken. Key findings include that the capacity of the NPA and EAL communities to contribute/adapt to a biosecurity response is limited by structural disadvantage including poor infrastructure (such as lockable premises and intact fences) and appropriate information, dominant cultural norms and food security concerns. Dogs and dingoes can have great cultural and social importance; key interventions might be accommodated within cultural beliefs and long-standing norms of dog management if sufficient effort is made to adapt interventions to local contexts and community preferences. Adopting such a 'strengths-based' approach mandates that the communities at greatest risk need help to prepare for and develop strategies to manage a biosecurity response to a rabies incursion. This would include listening to individual and community concerns and attending to the educational and infrastructural needs for supporting different groups to respond appropriately.

1. Introduction

Canine rabies is a fatal, viral zoonosis most commonly transmitted via the bite of an infected dog. The global burden of rabies is high: there are estimated to be more than 50,000 human fatalities each year, mainly in Asia and Africa (Hampson et al., 2015). Australia is currently free of canine rabies, but a zoonotic incursion is a realistic and imminent threat. Rabies is endemic in most of the western Indonesian islands. It has spread eastward along the archipelago – probably through human activities such as taking sub-clinically infected dogs on fishing trips and journeys to visit relatives (Tenzin and Ward, 2012). There are vibrant sea trade routes between northern Australia and rabies-affected areas and the cultural links between these communities are strong. The movement of dogs across national borders is restricted by international regulations, but most experts believe it is only a matter of time before a rabies-infected dog enters the northern Australian mainland from Indonesia direct or via the coastal regions of Papua New Guinea (Hudson et al., 2017; Sparkes et al., 2015). In the absence of an effective and rapid response, rabies could conceivably become endemic to large parts of northern Australia (Johnstone-Robertson et al., 2017).

Risk assessment models indicate that the Cape York Northern Peninsula Area (NPA) in Queensland and coastal areas of East Arnhem Land (EAL) in the Northern Territory (Fig. 1.) are the most likely locations for a rabies incursion on the Australian mainland (Dürr and Ward, 2015). Dogs are numerous and free-roaming in Aboriginal and Torres Strait Islander (Indigenous) communities in both of these areas (Burleigh et al., 2015). Likewise, people can also be widely distributed. Many live in larger regional centres, while some live in what are called

* Corresponding author. Research for Social Change, Faculty of Social Science, Building 233, G05D, Innovation Campus, The University of Wollongong, NSW, 2500, Australia.
E-mail address: degeling@uow.edu.au (C. Degeling).

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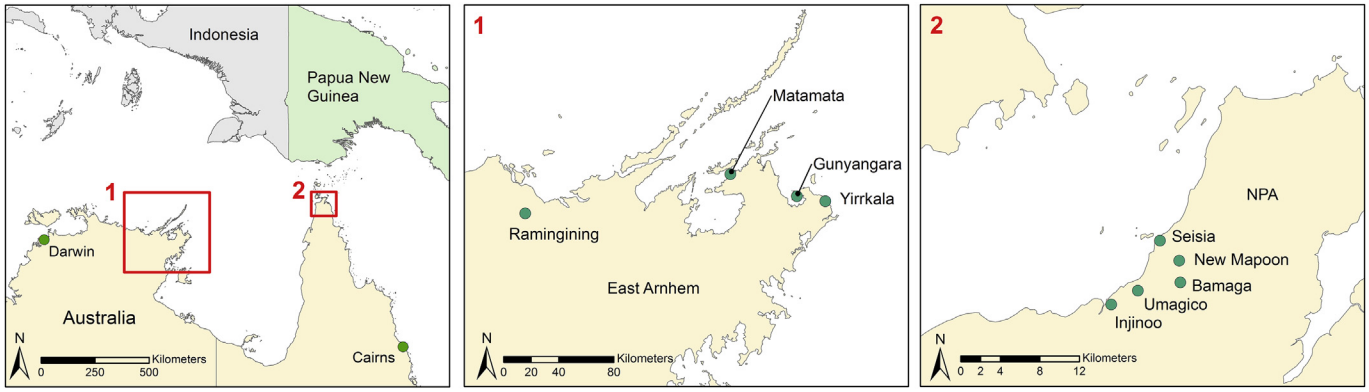

Fig. 1. Map of the study region (far left). Inset 1 (centre map) is East Arnhem Land (EAL), and inset 2 (far right map) is the Northern Peninsular Area (NPA).

Textbox 1
Measures included in the 2011 AUSVETPLAN for canine rabies.

Stage 1

- Communicate with residents in the declared area, encourage them to report dog bites and unusual animal behaviour, and provide them with strategies to minimise rabies risks
- Establish a restricted area (RA) around the outbreak to stop domestic animals being moved out of the area. The RA could be as small as individual premises or as large as the home range of wild or feral animals.
- Conduct a rapid census of all the dogs in the RA
- Seize, quarantine and destroy any dogs displaying signs consistent with a rabies infection
- Trace and quarantine any dogs who have been in contact with these animals
- Promote and perform euthanasia on old and sick dogs voluntarily surrendered by their owners and seek permission to destroy any unowned or stray dogs in the community

Stage 2

- Once the canine vaccines and appropriately trained personnel are available a larger 'control area' (CA) would be declared around the RA (to act as a buffer between it and non-infected areas)
- Stop all dog movements (including free-roaming, hunting, car travel, etc.) in the CA and insist that all owned dogs are kept at home (within a secure fenced area or on a chain)
- All dogs still 'at large' within the CA would be considered stray or unowned and impounded until claimed and/or destroyed
- Using the dog census, teams of trained responders would rapidly vaccinate all dogs in the RA and CA at their owner's home by going door-to-door

Stage 3

- Monitor dingoes and wild dogs in and around the RA for signs of rabies
- If rabies is found in wild animal population then the RA and CA would be enlarged to contain them and provide a buffer zone for non-infected areas
- Oral vaccines would be deployed throughout the RA to try and eliminate the disease by decreasing the number of susceptible hosts.
- A trap-vaccinate-release program might be initiated in the RA or on the boundary between it and the CA if oral vaccination is proving to be ineffective.
- Limited and cautious use of culling of a specific animal population (only as a last resort) after careful consideration of the circumstances
- 3 weeks after the mass vaccination program is completed and if there are no further rabies cases, owners of vaccinated dogs in the CA are likely to be allowed to move their dogs between secure premises after applying for a receiving a permit
- Any dogs moved from the CA to the RA will not be permitted to return to the CA until restrictions are lifted

outstations or homelands, comprising smaller settlements where Indigenous people might permanently or periodically reside, to be close as possible to the sites for which they hold primary custodial responsibility. As well as being used for hunting and as physical and spiritual protectors, many dogs live in close relationship with community members. Dogs can have immense importance to different Indigenous people, because they are totems or are central to Dreaming stories (Constable et al., 2010; Rose, 2011). Like most Australian canines, these dogs are not vaccinated against rabies because the disease is currently exotic to the continent. Unlike other regions of the world where rabies is endemic, domestic dogs in regional and remote northern Australia also live in contact – and are sometimes contiguous – with feral dog and wild dingo populations (Dwyer and Minnegal, 2016). A rabies outbreak in either the domestic, feral or wild dog populations in northern Australia could have devastating, long-term impacts on both human and animal health. Therefore, a timely and effective response to a rabies incursion is important to increase the probability of control and prevent human deaths. However, controlling the risks in affected areas would require a re-orientation of how individuals and communities live with and among domestic and wild dog populations. Interventions that