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**Biosecurity in North Queensland: Challenges and opportunities**

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Abstract

Much of North Queensland is rural and remote, with attendant challenges for the timeliness of detection of disease incursions. Receptivity for dengue, an important global re-emerging infectious disease, is unique in the Australian context. Two mosquito vectors for dengue are now found in north Queensland. *Aedes aegypti* is well established and will spread as local governments legislate for household water tanks. *Aedes albopictus* is a newly arrived dengue vector, now established in Torres Strait and moving south. The opportunity to make significant advances to control dengue has been provided by a symbiotic bacterium, now adapted to *A. aegypti*, that appears to be able to block dengue virus multiplication in the mosquito.

The porous nature of the Papua New Guinea (PNG) – Torres Strait border constitutes a significant risk for incursions of new pathogens and vectors. Under the Torres Strait Treaty residents of designated villages in PNG and Torres Strait can move relatively freely across the international border. Animal movement is restricted. The humans bring multidrug resistant tuberculosis, dengue and malaria to Torres Strait. The inadequate health infrastructure and non-existent veterinary infrastructure in the south of the Western Province in PNG play no role in control of communicable disease in this critical area. A suite of known emerging infectious diseases are present in PNG, Papua and other western parts of Indonesia. These include HPAI H5N1, chikungunya, rabies, Japanese encephalitis and Nipah virus. In addition PNG and Papuan wildlife have an immense potential to yield novel infectious agents, potentially capable of becoming emerging infectious diseases of humans and other animals. The push factors are strong.

On the Australian side communicable disease surveillance systems exist for humans and livestock, but timeliness is a challenge. Other animals, including pets and wildlife, are arguably very poorly monitored for disease. In addition communication between the health and animal industry surveillance systems is poor and largely dependent on individuals, not on systemic structures. High level laboratory support for clinicians to investigate unknown human or animal syndromes is available, but 2200 km south.

Let's speculate on how these challenges can be met. On the Australian side improving the timeliness of the current surveillance systems, the completeness of surveillance for diseases of wildlife and domestic pets, as well as the formal collaborative structures between the human and animal surveillance systems could be major goals. Joint investigation of suspect outbreaks by combined teams and joint control strategies should be routine. On the PNG side, a start may be to implement a wholly integrated surveillance system for both human and animal communicable diseases, perhaps with initial laboratory support from Australia, but ultimately supported by public health laboratories at Balimo and Port Moresby. The biosecurity threats facing Australia through North Queensland require urgent changes in the *status quo*.