

Land-Use Change and Emerging Infectious Disease on an Island Continent

Table 1. Emerging infectious diseases of humans and animals of Australia (n = 90) derived from a systematic review of literature 1970–December 2009.

<p>Emerging infections of humans</p> <p><u>Human diseases (or pathogens) of environmental (or invertebrate) origin</u></p> <p><i>Acinetobacter baumannii</i> [1] Bairnsdale-, Daintree- , Buruli ulcer <i>Mycobacteria ulcerans</i> * [2,3] <i>Cryptococcus gattii</i> [4] Fungal diseases in the immuno-compromised <i>Candida</i>, Aspergillosis, <i>Rhodotorula</i> spp., <i>Mucor</i>, <i>Paecilomyces</i>, <i>Zygomycetes</i>, <i>Fusarium</i>, <i>Scedosporium apiospermum</i> [5,6] Legionnaires disease <i>Legionella</i> spp. [7] Meliodosis <i>Burkholderia pseudomallei</i> * [8,9] <i>Photorhabdus asymbiotica</i> [10] <i>Trachipleistophora hominis</i> (Human Microsporidia) [11] <i>Vibrio vulnificus</i> ** [12]</p>
<p><u>Human to Human diseases (or pathogens)</u></p> <p>Influenza A H1N1 “Swine Flu” [13] Enterovirus 71 Hand Foot and Mouth Disease [14] HIV AIDS [15] Metapneumovirus ** [16] Rhinovirus A2 ** [17] Norovirus (strain GGII.4) [18] HCoV-NL63 human coronavirus ** [19] <i>Helicobacter pylori</i> Peptic Ulcer Disease ** [20] <i>Mycobacterium haemophilum</i> [21] Rotavirus G9 serotype G4P[6] and G9P[8] strains [22] <i>Cyclospora cayatanensis</i> (“Travellers Diarrhoea”) [23] Pertussis/Whooping cough** [20] Rubella ** [24] <i>Entamoeba histolytica</i> [25] Hepatitis C [26]</p> <p><u>Antibiotic resistant bacteria:</u></p> <p>a. <i>Staphylococcus aureus</i> CA-MRSA Community acquired multi-drug resistant <i>S. aureus</i> [27,28] ORSA Oxacillin resistant <i>S. aureus</i> infections [29] MDRSA multidrug resistant <i>S. aureus</i> inc Vancomycin [28]</p> <p>b. Penicillin-resistant pneumococci [30]</p> <p>c. Vancomycin-resistant enterococci (VRE) [30]</p> <p>d. Extended-spectrum beta-lactamase (ESBL) resistant <i>Klebsiella pneumoniae</i> [31]</p>

Table 1. Cont.

<p><u>Human Vector-Borne Diseases (or pathogens)</u></p> <p>Dengue serotypes 1–3 * [32] Ross River Virus, urbanising* [33–36] Barmah Forest Virus [32,37] Japanese encephalitis [32,37] Murray Valley Encephalitis * [32,38] Kunjin Virus [32] Flinders Island Spotted fever <i>Rickettsia honei</i> [39,40] Australian spotted fever <i>Rickettsia marmionii</i> [41] Scrub typhus * <i>Orientia tsutsugamushi</i>, new strains [42,43] Note also the potentially zoonotic arboviruses: Edge Hill, Trubanaman, GanGan, Alfuy, Sindbis, Kokobera, Stratford viruses [32]</p>
<p><u>Human food- and water- borne diseases (or pathogens)</u></p> <p><i>Cryptosporidium parvum</i> [20] Campylobacteriosis [44] Non-typhoid Salmonellosis [44] Giardiasis (<i>G. duodenalis</i>) [45] Shigatoxigenic/Verotoxigenic <i>E. coli</i> (inc 0157H7& 0111) [44] Hepatitis E ** [46] <i>Yersinia enterocolitica</i> * [47]</p>
<p><u>Other zoonotic diseases (or pathogens) of domestic animal origin</u></p> <p><i>Ancylostoma caninum</i> [48] Cross species acquired methicillin resistant <i>Staphylococcus aureus</i> [49] Hydatids (<i>Echinococcus granulosus</i>) * (urbanising.canine) [50]</p>
<p><u>Zoonotic diseases (or pathogens) of wildlife origin</u></p> <p>Hendra Virus [51] Australian Bat Lyssavirus [52,53] Menangle Virus [54,55] <i>Brucella suis</i> (feral pig) [56] Angiostrongyliasis (rat lungworm) [57]</p>
<p>EMERGING INFECTIONS OF ANIMALS</p> <p><u>Wildlife Diseases (or pathogen) of environmental origin</u></p> <p>Cryptococcosis <i>Cryptococcus gattii</i> (Koalas) [4]</p>

Table 1. Cont.

<p><u>Livestock and domestic animal diseases of single species</u></p> <p>Equine Influenza (horse) [58] <i>Tritrichomonas cf. foetus</i>. (cat) [59] Canine infectious cyclic thrombocytopenia <i>Anaplasma platys</i> [60]</p>
<p><u>Wildlife single species diseases (or pathogens)</u></p> <p>Tasmanian Devil Facial Tumour Disease [61,62] Rabbit calicivirus/ haemorrhagic disease [63] Koala retrovirus [64,65]</p>
<p><u>Livestock and domestic animal diseases (or pathogens) of multiple species (10)</u></p> <p>Angiostrongyliasis (multiple spp.) [66,67] Highly Pathogenic Avian influenza H7N3,4,7 [68] Hendra virus (horses) [51,67,69] Menangle virus (pigs) [54] Porcine Myocarditis (pigs) [70] Newcastle Disease (highly virulent strains) [71] Cross species acquired methicillin resistant <i>Staphylococcus aureus</i> [49] <i>Neospora caninum</i> ** [72] Canine parvovirus CPV 2, 2a, 2b [73] Note also reported equine infection Ross River Virus [74] porcine infection with Japanese Encephalitis [75]</p>
<p><u>Wildlife diseases (or pathogens) involving multiple species</u></p> <p>Angiostrongyliasis rat lungworm (multiple spp. affected) [66] Avian Papilloma Virus (parrots) [76] Australian Bat Lyssavirus (bats) [52,53] Airsacculitis <i>Sternostoma tracheacolum</i> (wild Gouldian Finches) [77] Bohle virus (frog) [78] Chytridimycosis (frogs) [79,80] Inclusion Body Disease of Boids (snakes) [81] Mucormycosis (platypus) [82,83] Ophidian paramyxoviruses (snakes) [84] Proventricular dilatation disease (parrots) [76,85] Pacheco's Disease (parrots) [76] Wamena virus (snake) [86]</p>
<p><u>Vector-borne diseases of wildlife</u></p> <p>Cutaneous leishmanianiasis (kangaroo) [87] Chorioretinitis (kangaroo) [88,89] Note also: brush tail possum clinical pathology associated with Ross River Virus [33]</p>

Notes: * re-emerging, ** re-identified

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Appendix 1. Historical sources used in the study

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