

Domestic PhD opportunity: Improving epidemic risk assessment using record linkage

Before making an enquiry, check your eligibility for PhD research and a PhD scholarship at the UNSW School of Population Health:

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An opportunity is available for an outstanding scholar to conduct PhD research on using linked healthcare databases to provide improved risk assessment and healthcare impact of epidemics of influenza and COVID-19. You will be supervised by Dr David Muscatello from the School of Population Health.

The coronavirus disease 2019 (COVID-19) pandemic we are all experiencing has tested health systems and populations. The World Health Organization (WHO) labelled pandemic influenza one of "ten threats to global health in 2019" (WHO 2019). Australia in 2017 was taken by surprise by an unexpectedly severe influenza season combining circulation of the influenza A(H3N2) subtype and B type viruses. The severity was likely exacerbated by low vaccine effectiveness. This was followed by severe influenza epidemics in some northern hemisphere countries, such as the United States, also with low vaccine effectiveness. The 2019 influenza season in Australia was another surprise with uncharacteristically strong, unseasonal and early seasonal virus circulation in parts of Australia.

The objectives of this research are to:

- create a research database for emulating the real-time monitoring of influenza and COVID-19 epidemic and pandemic outcomes using integrated health-care and death data streams
- develop case studies using the research database for comparative risk assessment of emerging epidemics using multiple epidemic-attributable disease outcomes
- Use the research database to emulate real-time estimation of the impact of the epidemic on health services as epidemics evolve

This research requires:

- A passion for improving knowledge on epidemics and pandemics
- Very strong data management, database operations (ideally SQL) and analysis skills, which you will develop further with this research.
- Being unafraid of "big data", as there will be millions of health care records used in this project with several hundred database columns.

Applicants must meet the PhD entry requirements of UNSW Australia, be enrolling full-time and must hold an Honours degree (1st Class or 2nd Class upper) or a research Master's degree in a quantitative discipline (such as mathematics, statistics, physics, engineering, computing, data science). Students with a background of research in health, public health, epidemiology, and medical or health science will also be considered if they can demonstrate suitable expertise.

For further information please contact David Muscatello by phone on (02) 9065 1498 or by email at david.muscatello@unsw.edu.au. Please include your CV.