



Health
South Eastern Sydney
Local Health District

Public Health Unit Research Report, 2017-2018

South Eastern Sydney Local Health District

August 2018

1 Foreword

The Public Health Unit is responsible for monitoring, preventing and otherwise minimising public health risks in the community. These risks might be infectious diseases acquired from other people, from animate vectors, such as mosquitoes, or from sources in the built environment, legionellosis being a good example. Other risks might be caused by exposure to toxic chemicals, whether present in tobacco smoke, or a result of contamination of the air, soil or water by industrial processes.

To undertake this work, the Public Health Unit comprises a multidisciplinary professional team of registered nurses and surveillance officers, medical personnel, environmental health officers and epidemiologists, supported by able administrative staff. Staff work closely within the District with population health staff and clinicians in all hospitals and in the community, with Health Protection NSW and with other agencies to respond to and minimize public health risks.



Sharon Brown for the Public Health Unit

All teams are committed to fitting research around their core activities and have been successful in using opportunities for operational type research. In addition to our 'traditional' themes of outbreak investigation, immunisation, STIs, environmental causes of cancer, tobacco control and environmental hazards to health, the *Research report* documents our burgeoning interest in exploring the relevance of social media to health protection contexts; it also shows how the advent of the technology of Whole Genome Sequencing has begun to add value to outbreak investigations.

Public health research generally cannot be done without collaboration, and increasingly we are doing our research in partnership with other Public Health Units, with Health Protection NSW, laboratory personnel or universities. This *Research report* showcases research published or accepted for publication or presentation over the last year, and follows on from our [Research report 2015-2017](#)¹. It also summarises some new projects which we hope will have an impact on the future public health.

¹ www.seslhd.health.nsw.gov.au/sites/default/files/groups/Public_Health_Unit/SESLHDPHU-research-report2015-2017.pdf

2 Scientific publications

Ferson MJ, Ressler KA, Nurkic A, Spokes P. Gonorrhoea enhanced surveillance for indigenous status and risk factors in the south-eastern Sydney population. *Communicable Diseases Intelligence* 2018; (in press)

Ford L, Wang Q, Stafford R, **Ressler KA**, et al. Seven Salmonella Typhimurium Outbreaks in Australia Linked by Trace-Back and Whole Genome Sequencing. *Foodborne Pathogens and Disease* 2018. DOI: 10.1089/fpd.2017.2353

IARC Working Group, **Stewart BW**, Overall Chair. Some chemicals that cause tumours of the urinary tract in rodents. *Lancet Oncology* 18:1003-4, 2017

Knippenberg B, **Ferson MJ**. Public health impact of the enteroviruses and parechoviruses. *Microbiology Australia* 2017; 38: 198-200

Lun J, Hewitt J, Sitabkhan A, Eden JS, Enosi Tuipulotu D, Netzler NE, Morrell L, Merif J, Jones R, Huang B, Warrilow D, **Ressler KA, Ferson MJ**, et al. (2018) Emerging recombinant noroviruses identified by clinical and waste water Screening. *Emerging Microbes & Infections* 2018. DOI 10.1038/s41426-018-0047-8.

Lun J, **Ressler KA, Ferson MJ**, White P. Norovirus and cruise ships. *Microbiology Australia* 2017. 10.1071/MA17065.

Saul N, Wang K, Bag S, Baldwin H, Alexander K, Chandra M, Thomas J, Quinn H, Sheppard V, Conaty S. Effectiveness of maternal pertussis vaccination in preventing infection and disease in infants: The NSW Public Health Network case-control study. *Vaccine* 2018; 36: 1887-1892.

Scott I, McGavigan A, **Ferson M**, et al. Selected state of the art research in Internal Medicine, 2017. *Internal Medicine Journal* 2018; 48: 619-623

Stewart BW. Carcinogens off the shelf? [Invited editorial] *J Natl Cancer Inst* 2018 doi: 10.1093/jncics/pky026

Farvid MS, Guha N, Stern M, Straif K, Loomis D, Norat T, Sasazuki S, Vineis P, Weijenberg MP, Wolk A, Wu K, Willett WC, **Stewart BW**, Cho E. Consumption of red and processed meat and breast cancer incidence: a systematic review and meta-analysis of prospective cohort studies. *Int J Cancer* 2018 (in press)

3 Presentations at conferences

Chee K, Gasden T, Bateman-Steel C, Short E, Ferson M.

Improving influenza vaccination coverage data for healthcare workers in South Eastern Sydney Local Health District using REDCap. *Australasian College for Infection Prevention and Control, Brisbane, November 2018.*

Glasgow K, Bateman-Steel C, Ferson M. The right kind of ‘viral’: Infectious public health messages for social media. *Communicable Diseases Conference 2017, Melbourne, June 2017.*

Law C, McGuire R, **Ferson MJ**, et al. Children overdue for immunisation: a question of coverage or reporting? An audit of the Australian Immunisation Register. *9th Southeast Asia & Western Pacific Bi-regional TEPHINET Scientific Conference, Vientiane, November 2018*

Lee A, Ressler K, Bateman-Steel C, Chaverot S, Ferson MJ. Rethinking Syphilis Surveillance and Public Health Management in South Eastern Sydney. *Australian Public Health Conference 2018. September 2018.*

Ni N, Nguyen T, **Ferson MJ.** A 2-year follow-up of overdue children in low coverage areas. *16th National Immunisation Conference, Adelaide, June 2018*

Stewart BW. Coping with fake news about mobile phones and power lines (invited presentation). *Kids Cancer Alliance – Brain Cancer Symposium. Sydney, August 2017*

Stewart BW. Hazard vs risk: IARC evaluation of pesticides. Invited presentation. *Croplife Australia National Members Forum, October 2017.*

4 Books, chapters, published reports

Cains TC, Lilly DG, Doggett SL. Bed bugs and the law in Australia, in, Doggett SL, Miller DM, Lee C-Y (eds). *Advances in the biology and management of modern bed bugs.* Wiley Blackwell, Oxford, 2018; 403-7

Doggett SL, **Cains TC.** The bed bug resurgence in Australia, in, Doggett SL, Miller DM, Lee C-Y (eds). *Advances in the biology and management of modern bed bugs.* Wiley Blackwell, Oxford, 2018; 81-6

IARC Working Group, **Stewart BW,** Overall Chair. *Some chemicals that cause tumours of the urinary tract in rodents.* [IARC Monographs, Vol 119] IARC, Lyon, 2017.

Stewart BW. The mechanistic basis of cancer prevention, in, Waters MD, Hughes CL (eds). *Translational toxicology and therapeutics. Windows of developmental susceptibility in reproduction and cancer.* John Wiley and Sons, Hoboken NJ, 2018; 147-172

5 Research in Progress

Community knowledge of outdoor smoke-free provisions

Pope B, Ressler KA, Cannata S, Glasgow K, Shalak H, Klingstrom M, Kiss A, Ferson MJ

This project was designed to evaluate changes in knowledge among Sydney CBD users about outdoor smoke-free areas during the roll out of the NSW Health outdoor smoke-free awareness campaign. 380 people were interviewed by environmental health officers. The street intercept surveys identified a significant increase in knowledge of certain smoke-free areas one month after the changes, but this improvement did not appear to be sustained (manuscript in preparation).

Cruise ships passengers' health behaviours

Chaverot S, Ressler KA, Bateman-Steel C, Ferson MJ.

A survey of passenger health behaviours was developed as part of the Public health Unit's human biosecurity research program. The purpose of the survey is to understand the preparations passengers make prior to cruising, what they do on board whilst they are well and if they get sick, and what their attitudes are to and compliance with health measures instituted during outbreaks (manuscript in preparation).

Cruising the Twitterverse: Analysing cruise health chatter on Twitter

West C, Bateman-Steel C, Michaella P.

This project analysed Tweets during a portion of the cruising season in order to provide insights into passengers' thoughts, attitudes and communication around health and ill-health on cruise ships by 'social listening' (manuscript in preparation).

Determinants of vaccination uptake inequality in SESLHD high schools

Chaverot S, Bateman-Steel C, Allen A, Ferson MJ

Uptake of human papilloma virus vaccine by year 7 students in the Unit's school vaccination program during 2016 and 2017 varied greatly between schools. This project aims to better understand disparities in uptake of vaccination and identify the determinants of immunisation inequality (proposal in preparation).

Don't miss a moment of your cruise! A healthy cruising Facebook campaign

West C, Bateman-Steel C.

This paper will discuss the development, implementation and results of a healthy cruising Facebook campaign. The campaign aimed to increase awareness and promote the uptake of behaviours to reduce disease risk and transmission amongst current and future cruise ship passengers (manuscript in preparation).

Enhanced surveillance of infectious syphilis in men

Ressler KA, Nurkic A, Bateman-Steel C, Ferson MJ

Enhanced surveillance of notified cases of infectious syphilis does not collect information on HIV status and therefore cannot monitor the link between infectious syphilis and HIV coinfection. Since 2006, we have had HREC approval to collect this additional information and its ongoing analysis provides valuable data on syphilis and HIV coinfection during epidemic and non-epidemic periods.

How do people chat about health online? Collecting social media data for content analysis in health.

West C, Bateman-Steel C, Chaverot S

This paper will discuss the benefits and challenges of social media research in the field of health. It will also provide information about some of the tools that are available to health researchers to facilitate social media data collection for content analysis (manuscript in preparation).

Immunisation in pregnancy – understanding pregnant women’s knowledge, perceptions and uptake of antenatal vaccination for pertussis and influenza

Bateman-Steel C, Nyinawingeri A, Sun Y, Ferson MJ

Pertussis and influenza vaccination as part of antenatal care has proven to be protective to mother and baby, and evidence indicates the safety of these antenatal vaccines. This project aims to understand pregnant women’s knowledge, attitudes and practices in relation to antenatal vaccination (manuscript in preparation).

***Legionella pneumophila* serogroup 1 case associated with the use of an apartment spa pool, February 2018**

Cains T, Shalak H; Jeffery R, Smith A, Timms V, Sintchenko V, Ferson MJ

In February 2018 a notification was received for a case of *L pneumophila* serogroup 1 pneumonia. The case identified using a communal spa pool in the apartment complex he was living in. Environmental Health Officers collected water samples for microbiological analysis. The analysis, by the government analyst, found a low level of *Legionella pneumophila* serogroup 1 in the water sample. The case cultured sputum and the environmental and human isolates were subjected to whole genome sequencing which provided unexpected findings (manuscript in preparation).

Pertussis impact and morbidity study in children 12 months to 59 months in NSW

Ressler KA et al

The objectives of this research are to describe the morbidity associated with Pertussis among children aged 12 to 59 months and their families and to determine whether cases’ morbidity is associated with age, vaccination status and antibiotic treatment. The study is the second to be conducted across the state by the NSW Public Health Network (manuscript in preparation).

Rabies post-exposure prophylaxis (PEP) – assessing impact on health services in SESLHD

Bateman-Steel C, Chaverot S, Ressler K, Ferson MJ

Sydney includes a large transient population of international travellers. The proximity to countries where rabies is endemic results in regular medical consultations by travellers who have been bitten or scratched and require rabies PEP. We receive almost daily requests for support in providing rabies PEP. The full extent of the burden on the health service (GP or ED time and resources, PHU time and resources, vaccine cost) has not been fully evaluated. This project aims to assess the epidemiology of rabies PEP, and to understand the time and resource burden associated, with the aim of developing recommendations to reduce the burden (proposal in preparation).

Revising the methodology for carcinogen evaluation

Stewart BW

The WHO program IARC Evaluations of Carcinogenic Risks to Humans provides the authoritative assessments of putative carcinogenic hazards. Recently, however, some such determinations have provoked criticism and/or misunderstanding. That the herbicide glyphosate is 'probably carcinogenic' has been disputed. Though regular consumption of processed meat is carcinogenic, media reports about 'listing processed meat with tobacco smoke and asbestos' are wrong. Revision of IARC Monographs evaluation procedure provides an opportunity to avoid such problems. A submission is being prepared in relation to such a revision scheduled for November 2018; the first since 2006.



SESLHD Rabies Facebook campaign May 2017

Social media to improve engagement with health protection

Bateman-Steel C, Chaverot S, West C, Porter M, Ferson MJ

Social media has become central to modern life. The potential to disseminate information rapidly and widely is unprecedented. Social media has also changed the way in which individuals are connected, with communities springing up around interests and opinions, and constantly evolving. Health protection messages regularly need to be delivered to specific target groups within the population. This project aims to understand how to use and evaluate social media strategies to facilitate this process, and to improve and transform consumer engagement with health protection messages (manuscript in preparation).

The relationship between the 'Hallmarks of Cancer' and the impact of carcinogens.

Stewart BW, Vineis P

The term 'Hallmarks of Cancer' was adopted in the year 2000 as a vehicle for describing molecular changes such as altered signal transduction common to malignant cells irrespective of tumour type. The approach, and use of this term specifically, is the major current means of describing what cancer is like. However, the original description of the 'Hallmarks of Cancer' made no direct reference to the

impact of carcinogens on normal tissue. Viewed from the perspective of carcinogenesis, particular hallmarks can be described as early, intermediate or late effects with varying relevance to the carcinogenic process (manuscript in preparation).

The use of a computerized database (REDCap) to monitor staff uptake of the annual influenza vaccination in South Eastern Sydney Local Health District

Gasden T, Bateman -Steel C, Chee K, Chaverot S, Ressler KA, Ferson MJ

The 2017 influenza season placed a substantial burden on the NSW health care system. In early 2018, the District executive team agreed to make a determined effort to increase influenza vaccination uptake among HCWs as one way of reducing the impact of the expected 2018 seasonal influenza epidemic. A key component of this effort was to devise a system to monitor HCW vaccination rates in a standardised fashion across all health facilities and services in the District (manuscript in preparation).

Use of consumer products increasing risk of cancer

Stewart BW

A range of scientific publications have implicated, to varying degrees, use of particular products as a carcinogenic risk. Typically, there may be epidemiological evidence or evidence that product usage necessarily results in exposure to known or suspected carcinogens. All such publications are being reviewed to determine how the available evidence might best be presented such that the wider community is adequately informed but not alarmed. The matter was last reviewed in 1981 (manuscript in preparation).

Utilising parent and childcare worker interviews for the development of a social media strategy: A focus on pertussis and influenza in children under five

Porter M, Bateman-Steel C, Chaverot S, Ferson MJ

This project aims to utilise interviews with parents and childcare workers to gain better understanding of their knowledge, attitude and behaviour toward influenza, pertussis infection and vaccination in children under five years old. Insights from these interviews will be used to inform an educational social media campaign tailored to these stakeholders (manuscript in preparation).



The Public Health Unit Cruise ship team