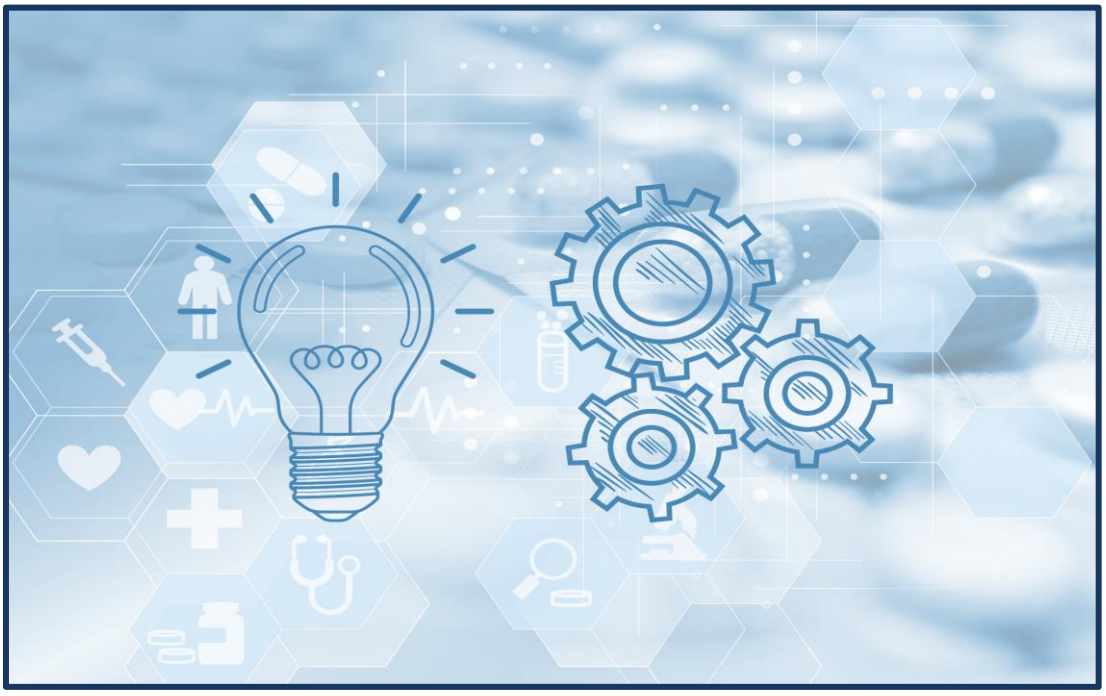
7th Pharmacoepidemiology Research Network Symposium

Wednesday 23 November 2022, 9:00am – 3:00pm

eConference, University of Otago



Sponsors:

MEDSAFE
NEW ZEALAND MEDICINES AND MEDICAL DEVICES SAFETY AUTHORITY
A BUSINESS UNIT OF THE MINISTRY OF HEALTH
www.medsafe.govt.nz

PHARMAC
TE PĀTAKA WHAIORANGA

ABSTRACTS

Extending the reach and impact of your research through dissemination and implementation science

Ross Brownson

Washington University in St. Louis, United States

Dissemination and implementation (D&I) research seeks to bridge the gap between health sciences research, everyday practice, and population health by building a knowledge base about how health information, interventions, and new clinical practices and policies are communicated and implemented in public health and health care settings. This presentation is targeted toward scholars at all stages in their careers, from postgraduate students to mid-career professionals, who are interested in increasing the impact of their research. Participants will learn what the field of D&I is (and is not), why it is important, and how it is useful for designing your research for impact, sustainment, and equity.

20 years of energising dialogue and openness between science and society in Sweden – lessons learned and keys to success

Martin Bergman

Public & Science (Vetenskap & Allmänhet)

The Swedish non-profit organisation Public & Science (Vetenskap & Allmänhet, VA) has worked to promote openness and dialogue between science and society since 2002. Through studies, communication activities, Citizen Science projects, and science festivals, VA has functioned as both a connecting hub and an expert organisation. An important part of this work has been to study, and deepen, the understanding of the interface between science and society. One example is the "VA Barometer", an annual survey that monitors public attitudes to science and research, which shows that Swedes' confidence and interest in research and researchers is both high and stable over time.

During the COVID-19 pandemic, a study was conducted to investigate how people in Sweden received and interpreted information about the pandemic. The objective was to investigate "in real time" what influences people's perceptions around science in a crisis situation, where research and researchers play a central role amidst a constantly changing flow of information. The results show that throughout the pandemic, nearly nine out of ten Swedes had high confidence in doctors and other healthcare professionals, as well as in researchers commenting on the pandemic in the media.

As a way of stimulating public engagement in science, Public & Science has also been running annual Citizen Science projects since 2009. By working closely with teachers and schools, Citizen Science can be a way of engaging children in real research projects, as well as raising awareness around important topics such as biodiversity, light pollution, and housing accessibility. Over the years, Public & Science has developed a lot of knowledge and experience, including a model for facilitating Citizen Science projects.

Supporting equity in implementation in Aotearoa New Zealand

Papillon Gustafson[1], Yasmin Abdul Aziz[1], Michelle Lambert[1], Karen Bartholomew[2], Rachel Brown[3], Peter Carswell[4], Adam Fusheini[5], Mihi Ratima[6], Patricia Priest[5], and Sue Crengle[1]

[1] *Ngāi Tahu Māori Health Research Unit, Division of Health Sciences, University of Otago, Dunedin*

[2] *Waitematā District Health Board and Auckland District Health Board regions, Auckland*

[3] *National Hauora Coalition, Auckland*

[4] *Synergia Ltd, Auckland*

[5] *Department of Preventive and Social Medicine, University of Otago, Dunedin*

[6] *Taumata Associates, Hāwera*

Background

In Aotearoa New Zealand there are persistent inequities in the health of Māori and Pacific peoples compared with other ethnic groups. Uptake and implementation of interventions, which includes treatments, procedures, practices, programmes, and services, often varies by ethnicity, resulting in inequitable benefits and increased ethnic inequities in health outcomes. There is growing recognition in the field of implementation science about the need to take an equity-focused approach to implementation, which includes exploring what is being delivered, to and by whom and under what conditions, and what adaptations are required to facilitate successful and equitable implementation in a particular context. Theories, models, and frameworks (TMFs) can assist in the planning of equitable implementation pathways by providing a basis for understanding the factors that influence implementation and equity outcomes and guide the process of implementation.

Aim

To explore the literature on equity-focused implementation science. Specifically, to identify implementation science TMFs that have an equity focus or have been used to implement interventions in populations who experience ethnic health inequities.

Methods

A scoping review was conducted to identify the relevant literature published from January 2011 to April 2022. Titles, abstracts and full-text articles were screened independently by at least two researchers. Data from eligible studies were extracted, including the study characteristics, TMF description and operationalisation. TMFs

were categorised according to their aim and described with respect to how equity and system-level factors influencing implementation were incorporated.

Results
An overview of unpublished findings from this scoping review will be presented.

Conclusions
This study identifies and summarises the TMFs that are available to support equity-focused implementation and may be used by prospective users to guide selection of an appropriate TMF. These results also contribute to our broader programme of research in which we are developing and testing an equity-focused implementation framework and equity readiness assessment tool for the Aotearoa New Zealand context.

Measuring access equity for type 2 diabetes medicines

Jason Arnold and Robyn Harris

Te Pātaka Whaioranga, Pharmac

The case for reform of the Aotearoa New Zealand health system is clear. While most New Zealanders benefit from the Health and Disability system, there are significant and persisting inequities that impact different population groups.

Pharmac measures equity of access to medicines through its **Medicine access equity monitoring and outcomes framework**. This framework measures initiation, possession, and continuation of long-term medicines for priority populations and conditions, including type 2 diabetes.

Pharmac includes three measures in our **Annual Report** which look at equity of access to medicines for Māori, Pacific peoples, and non-Māori non-Pacific peoples with type 2 diabetes – persistence at 5 years, possession, and access to medicines according to need. In our presentation, we will explore variations in access to medicines used to treat type 2 diabetes in these population groups and how this may contribute towards health outcomes. We will also look at the effect of the first COVID-19 lockdown on these measures and explain the need for the development of another methodology to look at people's medicines use over a shorter timeframe.

Some of this work, together with consultation from external stakeholders, led Pharmac to include **pro-equity criteria** when listing two new diabetes treatments for type 2 diabetes - **empagliflozin (+/- metformin)** from 1 February 2021, followed by **dulaglutide** from 1 September 2021. We will provide an update on the uptake of these medicines by Māori and Pacific peoples and provide further detail on the process taken to include proactive ethnicity criteria.

In conclusion, the drivers for medicine access equity are complex. **Pharmac has committed to doing more to achieve health equity**, and to maximise our contribution to what Pae Ora seeks to achieve. We aim to do this through living our organisation values and collaborating with others within the health system. Critical to advancing this kaupapa is the active pursuit of Te Tiriti o Waitangi based solutions, working with and for Māori whānau and Pacific peoples.

Reaching our rangatahi: creating conversations about medicines and going viral with a D-Bug game design challenge

Karyn Maclennan[1,2]

[1] *Pharmacoepidemiology Research Network, University of Otago, Dunedin*
[2] *Ngāi Tahu Māori Health Research Unit, Division of Health Sciences, University of Otago, Dunedin*

The *Science of Medicines: Whakatere Waka* project is an Unlocking Curious Minds-funded initiative that aims to spark conversations about medicines and support rangatahi (young people) and their whānau to make informed decisions about their use of medicines, and to actively participate in addressing health issues in their communities.

Framed by a waka and wayfinding analogy, we have collated and created a suite of hands-on and interactive displays, demonstrations, and activities through which young people and their whānau can journey into the science of medicines. Each paddle of our waka steers to a different part of this journey: discovering where medicines come from; creating medicines; exploring how medicines work to prevent or treat illness; protecting ourselves and our planet by using medicines safely; and putting our minds together to realise future potential and tackle current and future challenges related to medicines and health.

We have taken *Science of Medicines: Whakatere Waka* to the spaces and places our target audience live, work, and play. This has included schools, festivals, marae, cultural events, and community hubs throughout Otago, Southland, West Coast, and Taranaki. Met with a huge appetite for conversations about medicines, and a clear desire for relevant and engaging information about viruses and vaccines that is grounded in science, not mis- or disinformation, we created and launched a D-Bug game design challenge for rangatahi. This presentation will share details of the design and delivery of the D-Bug challenge, and our connection with the Science Learning Hub to increase the reach and longevity of our resources.

Regulatory life-cycle of medicines – from pre-to-post market

Tegan Coventry and Nevin Zhong

Senior Advisors (Pharmacovigilance), Clinical Risk, Medsafe, Ministry of Health

Ever wondered how Medsafe works? How medicines and medical devices are regulated in New Zealand? How Medsafe monitors the safety of medicines?

This presentation will take you on the regulatory journey of medicines – from the approval process of new medicines to the safety monitoring following their approval.

Pharmacovigilance is the science and activities relating to the detection, investigation, and understanding and prevention of adverse effects or any other medicine/vaccine related problem. The overarching goal of pharmacovigilance is to ensure medicines used in Aotearoa New Zealand continue to have a favourable risk-benefit profile.

This presentation will cover:

- The role and functions of Medsafe, as the regulator of medicines and medical devices
- Approval process of new medicines
- Post-market safety monitoring of medicines (pharmacovigilance)
- Past examples of medicine safety concerns and regulatory action taken to improve their risk-benefit profile
- How you can contribute to the safety of medicines in Aotearoa New Zealand.

Thrombotic events following the BNT162b2 mRNA COVID-19 Vaccine (Pfizer-BioNTech) in Aotearoa New Zealand: a self-controlled case series study

Muireann Walton[1,2], Robert Tomkies[2], Thomas Teunissen[2], Thomas Lumley[3], Tim Hanlon[1,2]

[1] *National Immunisation Programme, Te Whatu Ora (Health New Zealand), Wellington*
[2] *COVID-19 Vaccine and Immunisation Programme, Manatū Hauora (Ministry of Health), Wellington*
[3] *Department of Statistics, University of Auckland, Auckland*

Background
An association between thrombotic events and COVID-19, and the adenovirus based COVID-19 vaccines has been established. This has led to concern surrounding thrombosis following COVID-19 mRNA vaccination, including the BNT162b2 (Pfizer-BioNTech) vaccine, with conflicting findings in the literature.

Objectives
To evaluate the risk of arterial thrombosis, cerebral venous thrombosis (CVT), splanchnic thrombosis, and venous thromboembolism (VTE) following BNT162b2 vaccination in the general population and different ethnic groups in New Zealand.

Methods
This was a self-controlled case series (SCCS) study using national hospitalisation and immunisation records to calculate incidence rate ratios (IRR). The study population included individuals, 12 years or older, unvaccinated, or vaccinated with BNT162b2, who were hospitalised with one of the thrombotic events of interest during the first year of COVID-19 vaccinations in New Zealand (19 February 2021 through 19 February 2022). The risk period was 0-21 days after receiving a first, second, or booster dose of BNT162b2. Individuals who tested positive for SARS-CoV-2 infection 31 days prior to the event were excluded to remove any potential bias associated with the increased risk of thrombosis following COVID-19.

Results
A total of 6,039 individuals were hospitalised with a diagnosis related to one of the thrombotic events of interest. This included 5,127 with a diagnosis of VTE, 605 with arterial thrombosis, 272 with splanchnic thrombosis, and 35 with CVT. The proportion of these individuals vaccinated with at least one dose of BNT162b2 ranged

from 82.7% to 91.4%. The IRR (95% CI) of VTE, arterial thrombosis, splanchnic thrombosis, and CVT were 0.87 (0.76-1.00), 0.73 (0.56−0.95), 0.71 (0.43−1.16), and 0.87 (0.31−2.50) in the 21 days after BNT162b2 vaccination, respectively. There was no statistically significant increased risk of thrombosis following BNT162b2 in different ethnic groups.

Conclusion

The BNT162b2 vaccine was not found to be associated with arterial thrombosis, CVT, splanchnic thrombosis, or VTE in the general population or different ethnic groups in New Zealand. This study provides reassurance around the thrombotic safety of the BNT162b2 vaccine in both an international and New Zealand specific context.

Exposure to SSRI and SNRI antidepressants during late pregnancy and the risk of small for gestational age infants

Sarah Donald,[1,2] Katrina Sharples,[1,3,4] Dave Barson,[1,2] Simon Horsborough,[1,2] Lianne Parkin[1,2]

[1] *Pharmacoepidemiology Research Network*
[2] *Department of Preventive and Social Medicine, University of Otago, Dunedin*
[3] *Department of Mathematics and Statistics, University of Otago, Dunedin*
[4] *Department of Medicine, University of Otago, Dunedin*

Background
Infants with a birthweight lower than the 10th centile for their gestational age are classified as small for gestational age (SGA), and are at increased risk of perinatal complications, neurodevelopmental delay, and longer-term metabolic consequences. Previous research suggests that exposure to selective serotonin reuptake inhibitor (SSRI) and serotonin noradrenaline reuptake inhibitor (SNRI) antidepressants in early pregnancy is not of concern, but exposure in later pregnancy might increase the risk of having an SGA infant. However, published findings are conflicting for SSRIs and very limited for SNRIs.

Aim
To assess the association between exposure to an SSRI/SNRI antidepressant in late pregnancy and being SGA

Methods
Pregnancies in the New Zealand Pregnancy Cohort ending in a delivery (620,400 pregnancies; 629,386 infants) were linked with dispensing records in the Pharmaceutical Collection to determine antidepressant exposure (at least one filled prescription) during the last 120 days of pregnancy. Infants with a diagnosis of SGA recorded in the National Minimum Dataset (NMDS) and Mortality Collection (MORT) were identified using the ICD-10-AM code P051.

Results
Overall, 1.2% of infants had a diagnosis of SGA recorded. No significant associations were found for SSRI or SNRI exposure in late pregnancy and SGA diagnoses, but confidence intervals were wide.

Conclusion

Although this study did not demonstrate significant associations between antidepressant exposure in late pregnancy and SGA, we cannot rule out an association. Additionally, the large discrepancy between the 1.2% of infants with a recorded diagnosis and the expected ≈10% of infants that should have had the diagnosis complicates interpretation of the findings. Future work is planned to investigate the sensitivity and specificity of SGA diagnoses in the NMDS and MORT.

Postpartum screening for type 2 diabetes following a first diagnosis of gestational diabetes in Aotearoa New Zealand: a nationwide study based on the New Zealand Pregnancy Cohort

Andrew Sise[1], Sarah Donald[1], Kirsten Coppell[2], David Barson[1], Sue Crengle[3], Lianne Parkin[1]

[1] *Department of Preventive and Social Medicine, University of Otago, Dunedin*

[2] *Department of Medicine, University of Otago, Dunedin*

[3] *Ngāi Tahu Māori Health Research Unit, University of Otago, Dunedin*

Background

Postpartum screening for type 2 diabetes is recommended for women diagnosed with gestational diabetes mellitus (GDM). Evidence regarding how many women receive this screening is limited.

Aim

To estimate the proportion of women with a first episode of GDM in Aotearoa New Zealand who received postpartum screening for type 2 diabetes.

Methods

Data from 941,468 pregnancies in the New Zealand Pregnancy Cohort that occurred between 2005 and 2015 were linked with community pharmacy, laboratory, and hospital discharge data held in the Ministry of Health's National Collections. An algorithm was applied to identify a cohort of women (n = 14,443) who had a first episode of GDM. Proportions screened with a glycated haemoglobin (HbA1c) or oral glucose tolerance test (OGTT) within the first year after delivery were estimated within this cohort, overall and by calendar year, ethnic group, age group, New Zealand Deprivation Index (NZDep) quintile, and District Health Board (DHB) region.

Results

In total, 40.9% (95% CI 40.1 – 41.7%) of women received an HbA1c test or OGTT within 3 months, 53.3% (52.5 – 54.1%) within 6 months, and 61.0% (60.2 – 61.8%) within 12 months of delivery. From 2005 until 2015, the proportion screened within 12 months remained stable. Māori women were less likely to receive screening within 6 months postpartum (35.0% [33.1 – 37.0%]) than other ethnic groups, as were younger

women, and women with higher deprivation. There were marked variations (15.3 – 67.5%) between DHB regions.

Conclusion

Occurrence of postpartum screening for type 2 diabetes in women diagnosed with GDM was low over the period studied and varied widely, especially by ethnic group and DHB region. There is a need to improve provision of this screening, and to ensure that it occurs equitably.

"He Who Pays the Piper…": industry influence on pharmacoepidemiology

Barbara Mintzes

School of Pharmacy and Charles Perkins Centre, Faculty of Medicine and Health, University of Sydney, Australia

Background
A growing body of evidence indicates an association between industry funding and research outcomes, with industry-sponsored studies associated with results that tend to be more favourable to the sponsor. Author conflicts of interest have also been found to be associated with recommendations in clinical guidelines, opinion pieces, and narrative reviews that are more favourable to sponsors' products. This presentation examines whether there is evidence of similar biases associated with industry financing and conflicts of interest in pharmacoepidemiology, and discusses current policies to address potential influence.

Methods
Narrative literature review and commentary.

Results
Industry financing is widespread in pharmacoepidemiology with, for example, 82% of 1227 observational studies registered in the European Union's post-authorisation study register from 2010 to 2018 supported by the pharmaceutical industry. However, little research has assessed effects of industry financing within pharmacoepidemiology. A Cochrane systematic review on industry sponsorship and research outcomes identified only three analyses (including 561 primary studies) of effects of funding on observational research assessing harmful effects of medicines. The overall relative risk for results favourable to industry was 1.87 (95% CI 1.54 – 2.27, random effects model). These three studies examined research on HIV drugs, oral contraceptives, and inhaled corticosteroids; broader relevance to all pharmacoepidmiological research remains unknown. Case studies of specific drug classes have also examined the association between authors' conflicts and positions on rare, serious harms in review articles and opinion pieces. Examples include varenicline and cardiac and psychiatric adverse effects and relative risks of venous thromboembolism among oral contraceptives, both indicating strong associations between authors' positions and industry financing.

Discussion and Conclusions

There is limited research to date examining whether industry funding in pharmacoepidemiology is associated with outcomes more favourable to the sponsor, as compared with the extent of evidence on clinical trials. Preliminary results, however, indicate a similar direction of bias. Potential solutions include policy initiatives to preserve research independence, such as the European Network of Centres for Pharmacoepidemiology and Pharmacovigilance (ENCePP) code of conduct.