

Centre for Big Data  
Research in Health

# Annual Report 2019

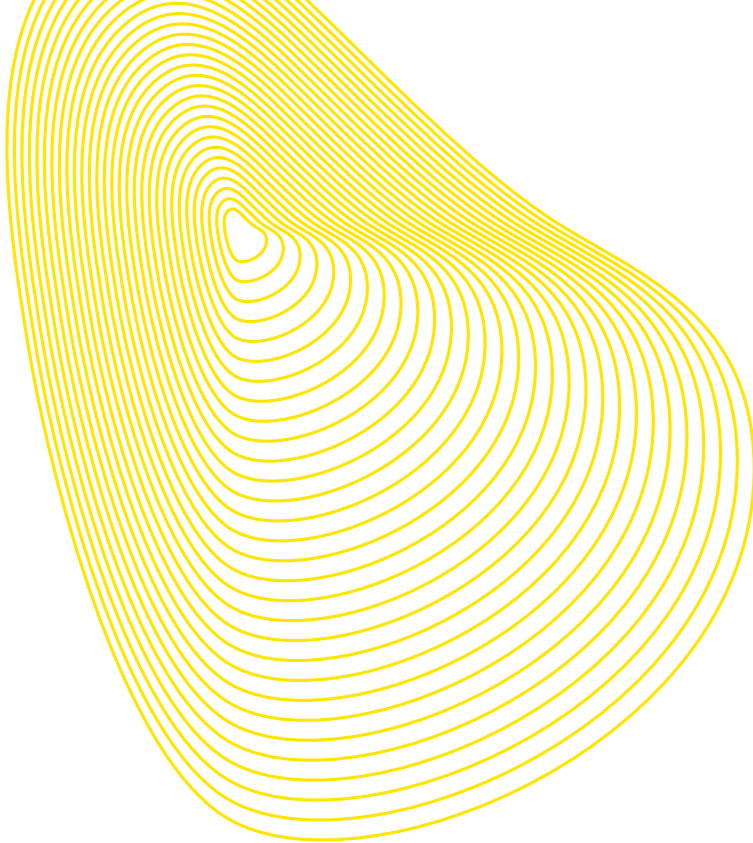


UNSW  
SYDNEY



CENTRE FOR  
BIG DATA RESEARCH  
IN HEALTH





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# Director's message



I am pleased to share with you the achievements and successes of the Centre for Big Data Research Health in 2019, our 5th full year of operation. I've listed a few highlights below.

Two of the Centre's big data experts Sallie Pearson and myself have been appointed to national advisory committees to support the government on how to better share and collect data.

Professor Pearson, head of our Medicines Policy Research Unit, has been appointed to the National Data Advisory Council (NDAC), the key advisory body to the National Data Commissioner. NDAC, established in 2019, includes experts from government, community, business and research sectors to represent a range of perspectives on the sharing of data and protection of privacy and confidentiality.

I have been appointed to the Australian Institute of Health and Welfare's (AIHW) Independent Expert Panel for development of a National Health Information Strategy. The Panel has the task of developing a National Health Information Strategy that is enduring and can achieve coordinated, integrated, efficient, effective and timely collection and development of health data that will meet the information needs of all who use, work in and manage Australia's health system.

Congratulations to our inaugural graduates of the Master of Science in Health Data Science program (Marta Fredes Torres, Phillip Hungerford, Olubukola Ayeni and Yichen Zhao). They all fulfilled the requirements of Australia's first postgraduate qualification in Health Data Science earlier in 2019. We wish them the best in their new careers as Health Data Scientists!

Also to be warmly congratulated are our two 2019 PhD graduates: Dr Bilal Ahmed and Dr Natasha Donnelly. We wish them all the best as they forge their post-doctoral careers.

Over four days in February 2019, three of our staff participated in the Australian Computer Society Directed Ideation/Hackathon on Data Sharing and Privacy, which had an overarching goal of developing methods to allow sharing of data whilst protecting individual privacy. The hackathon was held across four rounds, and two teams with CDBRH members survived all rounds, ending the competition in overall first (Oisin Fitzgerald and Elliot Zhu of team Led Zeppelin) and second place (Georgina Kennedy of team Data Destroyers). Well done, teams!

**Louisa Jorm**



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# Research highlights

2019



## Misused and overprescribed: issues with anxiety drug persist despite 2017 policy

Alprazolam – known as Xanax – is still being overprescribed and misused, a big data study has found. A national policy to curb inappropriate use and prescribing of anxiety drug alprazolam – more commonly known as Xanax – has not had the desired effect, a team of researchers led by UNSW Medicine's Centre for Big Data Research in Health has found.

In their study – published in *JAMA Network Open* – the team analysed a range of data sources relating to Xanax prescribing and use, e.g. PBS dispensing databases and calls to a poisons information service.



Schaffer AL, Buckley NA, Cairns R, Pearson S. Comparison of prescribing patterns before and after implementation of a national policy to reduce inappropriate alprazolam prescribing in Australia. *JAMA Network Open*. 2019;2(9):e1911590. doi:10.1001/jamanetworkopen.2019.11590

<https://jamanetwork.com/journals/jamanetworkopen/fullarticle/275139>

## IVF birth rates improving, multiple birth rate at a record low

IVF success rates in Australia and New Zealand have continued to improve, while the number of IVF twins are falling, a new UNSW report has shown.

The Assisted Reproductive Technology in Australia and New Zealand 2017 report shows the overall live birth rate per embryo transfer has increased from 23.6% in 2013 to 26.8% in 2017, the most recent year from which data are available. A total of 15,613 babies were born through IVF in Australia and New Zealand in 2017/18.

The improved success rates are likely due to the increasing trend in frozen embryo transfers and improved laboratory technologies. For the second year in a row, the birth rate following frozen embryo transfer cycles (28.9%) was higher than fresh embryo transfer

cycles (24.1%). The use of pre-implantation genetic testing increased by 24% between 2016 and 2017.

“The improvement in the overall live birth rate has largely been due to improved success rates in cycles using frozen embryos,” said UNSW Medicine Professor Michael Chapman, President of the Fertility Society of Australia (FSA).

In parallel, the proportion of twins and triplets born following IVF treatment is now 3.6% - a record low in Australia and New Zealand's 40-year IVF history. This all-time low is due to the increased proportion of IVF cycles where only a single embryo is transferred, up from 76% in 2013 to 89% in 2017.

“The Australian and New Zealand region has one of the lowest rates of multiple deliveries from IVF treatment in the world and maintains consistently high success rates. We have achieved this through the commitment of IVF specialists and patients to provide the safest treatment possible, guided by clinical practice guidelines developed by the FSA,” said Professor Luk Rombauts, Vice President of the FSA.

The report, which is funded by the Fertility Society of Australia (FSA), contains data about IVF cycles undertaken in 2017 and the resulting babies born in 2017 and 2018. The data presented in this report is maintained by the National Perinatal Epidemiology and Statistics Unit (NPESU) within UNSW’s Centre for Big Data Research in Health and School of Women’s and Children’s Health on behalf of the FSA.

#### Key findings of the report

- Largest ever number of babies born through IVF – 13,944 from Australian clinics and 1,669 from New Zealand clinics in 2017
- Live birth rate per embryo transfer has increased from 23.6% in 2013 to 26.8% in 2017
- Record low multiple birth rate of 3.6%



Newman JE, Fitzgerald O, Paul RC, Chambers GM 2019. Assisted reproductive technology in Australia and New Zealand 2017. Sydney: National Perinatal Epidemiology and Statistics Unit, the University of New South Wales Sydney.

<https://npesu.unsw.edu.au/sites/default/files/npesu/surveillances/Assisted%20Reproductive%20Technology%20in%20Australia%20and%20New%20Zealand%202017.pdf>

## 1 in 4 families delay their child’s school entry – and older children are more school-ready: big data study

A UNSW-led study of more than 100,000 children is the largest ever to examine who delays starting school in New South Wales, and how a child’s age when they start school relates to their ‘readiness’ in terms of development.

One in four families delay school entry until the year their child turns six – with striking geographical and social variation, a study of more than 100,000 NSW Kindergarten children has found. The data also indicates a strong relationship between age and developmental skills in the first year of school.





**The published study in Early Childhood Research Quarterly:**

<https://www.sciencedirect.com/science/article/pii/S0885200619300110>

**The Conversation article:**

<https://theconversation.com/which-families-delay-sending-their-child-to-school-and-why-we-crunched-the-numbers-111826>

**The SMH article:**

<https://www.smh.com.au/education/a-gift-of-time-children-who-start-school-later-fare-better-study-finds-20190408-p51bw1.html>

**ABC radio segment with Dr Kathleen Falster and Associate Professor Ben Edwards:**

<https://www.abc.net.au/radio/programs/am/one-in-four-nsw-families-delay-school-start-for-a-better-outcome/10983184>

**SBS news coverage**

<https://www.sbs.com.au/news/starting-school-later-is-better-for-children-landmark-study-shows>

## Obesity and alcohol responsible for nearly 30,000 cases of breast cancers in the next decade

Maintaining a healthy weight and not consuming alcohol regularly could help prevent thousands of breast cancer cases, a new big data study by UNSW Sydney researchers has found. The findings could help inform future cancer control strategies.

The large collaborative study led by UNSW's Centre for Big Data Research in Health was published in the International Journal of Cancer. It pooled six Australian cohort studies including over 200,000 women and evaluated what proportion of pre-menopausal and post-menopausal breast cancers could be prevented by modifying current behaviours.

"We found that current levels of overweight and obesity are responsible for the largest proportion of preventable future breast cancers – more specifically, 17,500 or 13% of breast cancers in the next decade," says study author Dr Maarit Laaksonen.

"Regular alcohol consumption is the second largest contributor – 13% of pre-menopausal and 6% of post-menopausal breast cancers, that is 11,600 cases over the next 10 years, are attributable to consuming alcohol regularly."

This was the first time that regular alcohol consumption was shown as the leading modifiable cause of breast cancer burden for pre-menopausal women. Although the current Australian recommendation is to not drink more

than two alcoholic drinks per day on average, the study found that risk of breast cancer increased with an average consumption of just one alcoholic drink per day.

More than half of Australian women currently report drinking alcohol regularly, and three in five Australian women are overweight or obese. The researchers also found current use of menopausal hormone therapy (MHT) to explain 7% of postmenopausal breast cancers, with over 90% of this burden explained by a long-term use of at least 5 years. Similarly, the researchers found current long-term use of oral contraceptives to explain 7% of premenopausal breast cancers.

"Our findings support the current Australian and international recommendations of using MHT for the shortest duration possible, and only to alleviate menopausal symptoms, not for the prevention of chronic disease," Dr Laaksonen says.

"When it comes to oral contraception, it is not recommended that women restrict their use of OCs – the latest position statement from Cancer Council says that over the course of a woman's lifetime, the net effect of OCs is actually cancer-protective, as they provide long-term protection against endometrial and ovarian cancers, meaning that the potential benefits, including reproductive benefits, outweigh the harms."



Jointly, these behavioural and hormonal factors explain about one in five breast cancers, amounting to 37,000 breast cancers over the next 10 years. For the first time, the researchers were able to compare the breast cancer burden for different population subgroups. They identified population subgroups with the greatest burden of preventable post-menopausal breast cancer.

“For instance, we found that the body fatness-related burden is greatest (20%) among those with lower educational attainment, and the MHT-related burden is greatest (10%) among those of healthy weight, those consuming alcohol more frequently and those of higher socioeconomic status,” Dr Laaksonen says.

The findings may help to target preventative measures to high-burden subgroups that are likely to benefit most. Breast cancer is the most common cancer in women in Australia and worldwide – in 2018, an estimated 18,000 Australian women were diagnosed with breast cancer. It is also the second leading cause of cancer death in Australian women.

“That means that consequently, even relatively small preventable proportions translate into large numbers of preventable breast cancers,” Dr Laaksonen says.

“If confirmed, these findings are likely to contribute important evidence for individual and population level cancer control strategies,” she concludes.

Arriaga ME, Vajdic CM, Canfell K, MacInnis RJ, Banks E, Byles JE, Magliano DJ, Taylor AW, Mitchell P, Giles GG, Shaw JE, Gill TK, Klaes E, Velentzis LS, Cumming RG, Hirani V, Laaksonen MA. The preventable burden of breast cancers for premenopausal and postmenopausal women in Australia: A pooled cohort study'. *International Journal of Cancer*. 2019;145:2383 - 2394, <http://dx.doi.org/10.1002/ijc.32231>

<https://onlinelibrary.wiley.com/doi/epdf/10.1002/ijc.32231>

## The burden of pancreatic cancer in Australia attributable to smoking - MJA article & ABC News

Maarit Laaksonen and colleagues in the Cancer Epidemiology Research Unit have published their findings on the burden of pancreatic cancer attributable to smoking in Australia. The research was published by the Medical Journal of Australia, and featured on its cover. It received considerable media interest, including coverage on ABC Radio National and ABC News. The team analysed data from 365,000 Australian adults and found that current and recent smoking explained 22%,

and current smoking alone explained 15%, of the future pancreatic cancer burden. The proportion attributed to current smoking corresponds to 5500 cases over the next 10 years. They also found that the burden attributable to current smoking was greater for men (24%) than for women (7%). These findings reinforce the need to prevent the uptake of smoking and encouraging smoking cessation.

Watching ABC News Mornings Monday 11/3/2019 in iview

<https://iview.abc.net.au/show/abc-news-mornings/series/0/video/NU1913H050S00>

Arriaga ME, Vajdic CM, MacInnis RJ, Canfell K, Magliano DJ, Shaw JE, Byles JE, Giles GG, Taylor AW, Gill TK, Hirani V, Cumming RG, Mitchell RP, Banks E, Marker J, Adelstein BA, Laaksonen MA. The burden of pancreatic cancer in Australia attributable to smoking. *Medical Journal of Australia*. 2019;210:213 - 220, <http://dx.doi.org/10.5694/mja2.12108>

<https://onlinelibrary.wiley.com/doi/epdf/10.5694/mja2.12108>







“Big data” refers to datasets whose size or complexity is beyond the ability of traditional methods and tools to capture, store, manage, and analyse. Big data in health and medicine are generated through operating the health system (e.g. medical service claims), clinical care (e.g. hospital records, primary care records), laboratories (e.g. imaging data, pathology records, genetic testing) and research studies (e.g. clinical trials, observational studies), to support disease prevention, control (e.g. disease notifications) and survivorship, and by individuals themselves (e.g. “life logging”). This type of ‘real-world’ data is growing rapidly and will continue to expand exponentially for the foreseeable future.

There is enormous potential to inform improvements in the effectiveness, safety and efficiency of health care by bringing these data together, and using them for research to understand the determinants of disease risk, target therapies to those who will benefit most, compare the effectiveness of alternative preventative and therapeutic interventions, and model the health and economic impacts of interventions and policies. Recognising this potential, research that will lead to “better models of care and services that improve outcomes, reduce disparities, increase efficiency and provide greater value” is listed first among the new national research priorities for health . Moreover, it is estimated that effective use of big data could also deliver reductions to national health care expenditure of around 8 percent which would translate to more than \$11 billion annually in Australia.

The Centre for Big Data Research in Health (CBDRH) is a world-first research centre that is focused on delivering this value. The Centre supports UNSW Medicine’s Thematic Research model in which key research themes (Neuroscience, mental health and addiction; Infectious disease, immunity and inflammation; Cancer; Non-communicable diseases) are supported by cross-cutting enabling capabilities including ‘Big data in health’.

### Vision

The power of “big data” is harnessed to transform the prevention and management of disease, and the delivery of health services.

### Mission

To maximise the productive use of all possible sources of health big data in order to enhance the health and well being of Australians and the global community.

### Values

- **Excellence:** Our research is scientifically rigorous and of high quality
- **Innovation:** We use creative and novel approaches in study design, analysis techniques and reporting
- **Impact:** Our high impact research benefits population health and the health care system
- **Leadership:** We are influential in the health data science field and aim to be regarded as a world leader
- **Collaboration:** We develop and maintain open and respectful relationships with research partners, the community, and each other

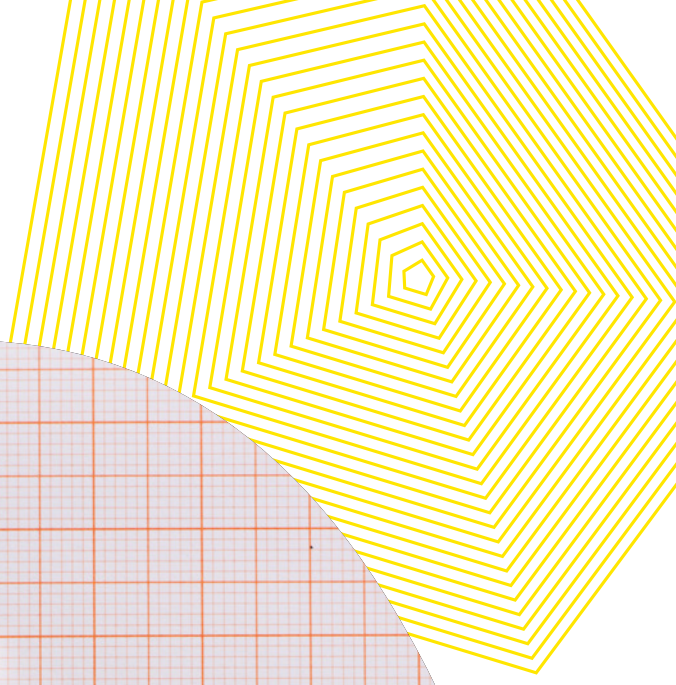
### Functions

- Foster and develop innovation in health data science
- Undertake high impact, high-quality and multi-disciplinary health and medical research using big data
- Facilitate the rapid translation of research findings into health improvements and better value in health care
- Build multi-disciplinary capacity in health research using big data
- Promote public, clinical and policy awareness of the health and societal benefits of research using big data

**Research Units**

While the Centre has broad expertise that spans multiple health domains and the capability to address any health issue that can be informed through research using large-scale electronic data, it has a longstanding reputation as world leaders in thematic areas that correspond to its four internal research units:

- **Health Services and Outcomes Unit:** undertakes research to identify variations and disparities in the use, outcomes and costs of health services, investigates the factors that drive these, and evaluates the outcomes of health policies and programs.
- **National Perinatal Epidemiology and Statistics:** conducts national epidemiological, health services, policy and health economic research in reproductive, perinatal and maternal health.
- **Cancer Epidemiology Research Unit:** performs genetic epidemiology and population-based health record linkage studies aimed at understanding the causes and consequences of cancer.
- **Medicines Policy Research Unit:** conducts research regarding the judicious use, safety, costs and cost-effectiveness of prescribed medicines.
- **Clinical Analytics and Machine Learning Research Unit:** design, develop and evaluate technology that supports evidence-based decision making by patients and clinicians.



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# Staff list 2019





**Dr Alys Havard**  
Senior Research Fellow

**Dr Amy Gibson**  
Research Fellow

**Dr Andrea Schaffer**  
Research Fellow

**Mr Andrew Blance**  
Senior Lecturer

**Dr Benjamin Daniels**  
Research Fellow

**Dr Benjamin Hsu**  
Research Fellow

**Dr Bich Tran**  
Research Fellow (until June)

**A/Prof Blanca Gallego Luxan**  
Unit Head

**Dr Bronwyn Brew Haasdyk**  
Senior Research Fellow

**Dr Christos Venetis**  
Senior Lecturer

**A/Prof Claire Vajdic**  
Scientia Fellow & Unit Head

**Ms Claudia Bruno**  
Research Assistant

**Dr Danielle Tran**  
Research Fellow

**Dr Danni Han**  
Research Associate (until July)

**Ms Ellena Keller**  
Research Associate

**Ms Evelyn Karantonis**  
Data Management Officer

**A/Prof Georgina Chambers**  
Scientia Fellow & Unit Director

**Dr Hanna Tervonen**  
Research Fellow

**Ms Hina Salimuddin**  
Data Management Officer

**Dr Hon Hwang**  
Research Fellow

**Dr Helga Zoega**  
Scientia Fellow

**Ms Jade Newman**  
ANZARD Data Manager

**Dr Jon Brett**  
Research Fellow

**Dr Juliana de Oliveira Costa**  
Research Associate

**Dr Kalinda Griffiths**  
Scientia Fellow

**Dr Kathleen Falster**  
Snr Research Fellow (until May)

**Dr Kylie-ann Mallitt**  
Research Fellow

**Professor Louisa Jorm**  
Director

**Ms Louise Francis**  
Centre Manager

**Dr Maarit Laaksonen**  
Senior Research Fellow

**Dr Marina van Leeuwen**  
Research Fellow

**Ms Margot Murphy**  
Project Officer

**Dr Mark Hanly**  
Research Fellow

**Ms Melisa Litchfield**  
Data Manager

**Dr Michael Falster**  
Research Fellow

**Ms Michele Partridge**  
Administrative Officer

**Ms Natasha Donnelly**  
Project Manager

**Mr Oisin Fitzgerald**  
Research Officer

**Dr Oscar Perez Concha**  
Lecturer

**Ms Prudence Creighton**  
Statistician

**Mr Repon Paul**  
Research Officer

**Dr Sabita Rana**  
Project Coordinator

**Dr Stephanie Choi**  
Research Fellow

**Professor Sallie Pearson**  
Unit Head

**Ms Sanja Lujic**  
Lecturer

**Dr Sebastiano Barbieri**  
Research Fellow

**Dr Sharon Chow**  
Coordinator (ANZNN)

**Dr Stephanie Choi**  
Research Fellow

**Dr Sujita Narayan**  
Research Associate

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# Research Students 2019

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**Bilal Ahmed (PhD Awarded)**

Topic: Utilisation of Antihypertensive Drugs During Pregnancy and the Risk of Adverse Outcomes for Mothers and their Children  
Primary Supervisor: Dr Alys Havard  
Secondary Supervisor: Professor Louisa Jorm  
Funding source: International Postgraduate Research Scholarship (IPRS)

**Jared Brown**

Topic: Using big data to evaluate pharmaceutical policy interventions  
Primary Supervisor: Professor Sallie Pearson  
Co-Supervisor(s): Dr Helga Zoega, Dr Andrea Schaffer, Professor Nicholas Buckley  
Funding source: Scientia Scholarship

**Natasha Donnelly (PhD Awarded)**

Topic: Classifying maternity models of care  
Primary Supervisors: Professor Michael Chapman, A/ Professor Georgina Chambers  
Secondary Supervisor(s): Professor Elizabeth Sullivan, Dr Kerry Butler-Henderson

**Xiaohong Deng (PhD Awarded)**

Topic: Comparing ISPs Broadband Performance using M-Lab Data  
Primary Supervisor: Professor Vijay Sivaraman  
Secondary Supervisor: A/Professor Blanca Gallego Luxan

**Michael Hennessy**

Topic: Cataract Surgery in NSW and relationship to health status  
Primary Supervisor: Professor Minas Coroneo  
Secondary Supervisor(s): Dr Ian Harris, Professor Louisa Jorm

**Dominique Favell (Masters by Research)**

Topic: The application of real-world evidence to support regulatory and reimbursement decisions  
Primary Supervisors: Professor Sallie Pearson  
Co-Supervisor: Dr Helga Zoega

**Oisin Fitzgerald**

Topic: Patient phenotyping to support new care pathways  
Joint Supervisors: Professor Louisa Jorm, Dr Oscar Perez Concha  
Co-Supervisor(s): Lachlan Rudd (eHealth NSW), Dr Alejandro Metke Jimenez (CSIRO)  
Funding source: iPhD Industry Scholarship

**Elena Keller**

Topic: Using behavioural economics to inform decision making in fertility treatment  
Joint Supervisor(s): Professor Georgina Chambers, Professor Andreas Ortmann  
Secondary Supervisor: Professor Louisa Jorm

**James Kemp**

Topic: Deep learning to detect anomalies in big datasets  
Joint Supervisors: Professor Louisa Jorm, Dr Sebastiano Barbieri  
Co-Supervisor(s): Laura Sham (DoH), Norm Good (CSIRO)  
Funding source: iPhD Scholarship

**Georgina Kennedy**

Topic: Automation of patient trajectory management at St Vincent's Hospital, Sydney  
Primary Supervisor: A/Professor Blanca Gallego Luxan  
Co-Supervisor: Mark Dras  
Funding Source:

**Damian Kotevski**

Topic: Using machine learning to understand and improve care and outcomes for head and neck cancer patients

Joint Supervisors: A/Professor Robert Smee, A/Professor Claire Vajdic

Co-Supervisor: Dr Matthew Field

Funding source: Prince of Wales Hospital

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**Mei Lin Lee**

Topic: The utilisation of Smoking Cessation

Pharmacotherapies in pregnant smokers

Primary Supervisor: Dr Alys Havard

Secondary Supervisor(s): Dr Duong Tran, Professor Alec Welsh

Funding source(s): University International Postgraduate Award (UIPA)

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**Peiwen Liao**

Topic: Health service utilization by people with an intellectual disability

Joint Supervisor(s): A/Professor Claire Vajdic and Professor Julian Trollor

Secondary Supervisor: Dr Simone Reppermund

Funding source: Scientia Scholarship

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**Leibo Liu**

Topic: Extracting value from unstructured health data

Joint Supervisors: Professor Louisa Jorm, Dr Oscar Perez Concha

Co-Supervisor(s): Dr Anthony Nguyen, Vicki Bennett

Funding source: iPhD Scholarship

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**Sanja Lujic**

Topic: Comorbidity and Multiborbidity in New South Wales: Prevalence, Trajectories and Implications for Healthcare Utilization and Costs

Primary Supervisor: Professor Louisa Jorm

Secondary Supervisor(s): Professor Judy Simpson

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**Tarun Malviya**

Topic: Using interpretable machine learning to increase prediction accuracy in cancer

Primary supervisor: Professor Salil Kanhere

Secondary Supervisor(s): Professor Claire Vajdic, Professor Michael Barton, Dr Helen Paik

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**Michael Odutola**

Topic: Lifestyle, occupational and genetic risk factors for follicular lymphoma in Australia

Primary Supervisor: A/Professor Claire Vajdic

Co-Supervisor: Dr Marina van Leeuwen

Funding source: University International Postgraduate Award (UIPA)

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**Elizabeth Nguyen**

Topic: Cancer health service utilization by people with an intellectual disability".

Joint Supervisor(s): A/Professor Claire Vajdic and Professor Julian Trollor

Secondary Supervisor: Dr Simone Reppermund

Funding source: Translational Cancer Research Network Scholar

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**Stella Settumba Nalukwago (PhD Submitted)**

Topic: Economic Evaluation of Offender health programs

Primary Supervisor: Tony Butler (Kirby)

Secondary Supervisor(s): A/Professor Georgina Chambers (CBDRH), Marian Shanahan (NDARC)

Funding source: NHMRC Centre for Research Excellence in Offender Health Postgraduate Scholarship

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**Smriti Raichand**

Topic: Antidepressants use during pregnancy and their effects on mother and child

Primary Supervisor: Dr Alys Havard

Secondary Supervisor(s): Professor Sallie Pearson, Professor Nick Buckley

Funding source(s): Australian Postgraduate Award (APA), NHMRC Centre for Research Excellence Medicines and Ageing Top-up Scholarship

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**Oluwadamisola Sotade**

Topic: Using machine learning algorithms to predict the surgical outcomes of Australians with multimorbidity

Joint Supervisors: Professor Louisa Jorm, Dr Michael Falster

Co-Supervisor: Professor Sallie Pearson

Funding source: Scientia Scholarship

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**Venkata Tadi**

Topic: Machine learning to understand and improve patient journeys

Primary Supervisor: Professor Louisa Jorm

Co-Supervisor(s): Dr Sebastiano Barbieri, Sankalp Khanna, Allison Clarke

**Monica Tang**

Topic: Assessing and Optimising Anti-Cancer Drug Utilisation

Primary Supervisor: Professor Sallie-Anne Pearson  
Co-Supervisor(s): Dr Andrea Schaffer, Professor John Simes, Chee Lee

Funding source(s): NHMRC Postgraduate Scholarship, NBCF Scholarship

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**Heidi Welberry**

Topic: Using big data to understand health care trajectories for older Australians at risk of dementia

Primary Supervisor: Professor Louisa Jorm  
Co-Supervisor(s): Scientia Professor Henry Brodaty, Dr Benjamin Hsu, Dr Sebastiano Barbieri

Funding source: NHMRC Dementia Team Grant

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**Elliot (Jie) Zhu**

Topic: Enabling Personalised Cohort Studies from Large Repositories of Clinical Practice Data

Primary Supervisor(s): A/Professor Blanca Gallego Luxan

Co-Supervisor: Ian Marschner



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# **Research Funding 2019**



# New Grants awarded – 2019

- Jorm L**, Baily M, Boyle D, Churches T, Herbert S, Neal B, Neideck G, Palmer L, Preen D, Smith M. E-Research Institutional Cloud Architecture (ERICA): secure cloud computing for sensitive microdata. *ARDC Platforms Projects 2020-2022* (\$1,915,000)
- Gallego Luxan B**. Learning what works and for which patients: efficient framework and novel technologies for precision comparative effectiveness research. *NHMRC Ideas Grant 2020-2023* (\$587,183).
- Falster M**. Same patient, same care: is out funding of hospitals promoting inequities in care and outcomes? *NHMRC Ideas Grant 2020-2022* (\$566,781).
- Falster K, Pilkington R, Lynch J, **Hanly M**, Shakeshaft A, Edwards B, Lingam R, Brownell M, Transforming the health system response to child maltreatment: the need for cross-jurisdictional e-cohorts. *NHMRC Clinical Trials and Cohort Studies Grant 2020-2023* (\$1,248,388).
- Maher C, Buchbinder R, Hancock M, O'Sullivan P, McAulay J, Blyth F, **Jorm L**, Collie A, McCaffrey K, Hayes A. Low Back Pain Centre for Research Excellence. *NHMRC Centre for Research Excellence in Clinical Research 2020-2024* (\$2,499,199).
- Anstey K, Peters R, Lautenschlager N, Shaw J, Anderson C, **Jorm L**, Kiely K, Whitmer R, Matthews F, Kivipelto M. Translating the evidence on dementia risk reduction to generate assessments, advice and training for health professionals, policy makers, patients and public. *NHMRC Boosting Dementia Research 2020-2023* (\$1,995,480.60).
- Rhee J, **Vajdic C**, Carey M, Sitas F, Goldstein D, Bonney A, Ferreira I, Mullan J, Emery J, Bergin R, Garne D, Smith M, Harland D, Prioretto A, Chantrill L. Not getting a fair go: why do people in rural areas with cancer have worse outcomes? *NUW Alliance Project Grant 2019-2020* (\$225,000).
- Vajdic C**, Goldstein D, Lloyd A, Harris M, Bosco A, Tiller K, Suchy S, **Tran B**, **Laaksonen M**. What can we learn from linked administrative health data about the contemporary real-world continuum of care for cancer survivors? *TCRN Flagship Grant 2019* (\$60,000).
- Pearson A, Jorm L, Chambers GM, Degenhardt L, Dobbins T, Falster K, Harris I, Guy R, **Havard A**, Ivers R, Jaffe A, Levi C, Lingam R, Liu B, Sedrakyan A, Woodward M, **Vajdic CM**, **Zoega H**. A "Big Data" Platform for Real World Evidence in Health. *UNSW Sydney Research Infrastructure Scheme 2020* (\$217,443).
- Trollor J, Reppermund S, Sachdev P, Brodaty H, Christensen H, **Vajdic C**, Mather, Sraseubkul, Dowse, Fisher, Baldry, Dean. Understanding the Health and Service System Needs of People with Mental Health, Developmental Disabilities, Cognitive and Neurological Disorders. Establishment of an interdisciplinary Big Data Hub. *UNSW Sydney Research Infrastructure Scheme 2019* (\$175,945).
- van Leeuwen M**, Anazodo A, **Vajdic C**, **Chambers G**, Boydell K, Cohn R. Linked data platform for adolescents and young adults diagnosed with cancer: improving survivorship care through population data analytics. *UNSW Medicine and SPHERE Cancer Clinical Academic Group (Cancer CAG) seed grant 2019-2020* (\$200,000).
- Pearson SA**, **Jorm LJ**, **Vajdic C**, **Zoega H**, Falster K, **Havard A**, Sedrakyan A, Dobbins T, **Chambers G**, Ivers R, Guy R, Woodward M, Harris I, Levi C, Lingham R, Jaffe A, Liu B. A "Big Data" Platform for Real World Evidence in Health. *UNSW Research Infrastructure Scheme 2019* (\$254,225).
- Schaffer AL**. Health service and medicine utilisation before suicide: optimising suicide prevention using population-based linkage of routinely collected data. *NHMRC New Investigator Project Grant* (\$354,526).

14. Smith VH, **Griffiths K**, Marsh R, Mayo M. Ramaciotti Centre for Excellence in Building Regional and Remote Biomedical Capability. *Perpetual - Ramaciotti Biomedical Research Award* 2019-2023 (\$1,000,000).
15. Houston S, Perdue S, **Griffiths K**, Watts S. Development of the National Aboriginal and Torres Strait Islander Health and Medical Workforce Plan (the Workforce Plan). *Commonwealth of Australia* 2019-2020 (\$217,382).
16. Miller P, Smith J, Livingston M, Guthridge S, Whyte C, Boffa J, Paradies Y, **Griffiths K**, Chikritzhs T, Room R, Mayshak R, Smith L, Stevens M, Paterson J, Ward J, Crane M, Thorn M, Scott D. Investigating the impacts of the banned drinker register re-introduction in the Northern Territory. *Australian Research Council – Linkage Project* 2019-2023 (\$1,191,949).
7. **Vajdic C**. *UNSW Sydney Scientia Fellowship* 2018-2021 (\$989,665).
8. **Zoega H**. *UNSW Sydney Scientia Fellowship* 2018-2021 (\$925,864).
9. **Griffiths K**. *UNSW Sydney Scientia Fellowship* 2018-2021 (\$767,912).
10. **Pearson SA, Jorm LJ, Vajdic C, Zoega H, Falster K, Havard A**, Sedrakyan A, Dobbins T, Chambers G, Ivers R, Guy R, Woodward M, Harris I, Levi C, Lingham R, Jaffe A, Liu B. A “Big Data” Platform for Real World Evidence in Health. *UNSW Research Infrastructure Scheme* 2019 (\$254,225).
11. Neal B, Wu Y, **Pearson SA**, Elliott P, Tian M. The Salt Substitute and Stroke Study (SSaSS): a large-scale cluster randomised controlled trial to assess whether sodium reduction, achieved through salt substitution, prevents stroke. *NHMRC Project Grant* 2019-2020 (\$1,519,450).
12. **Chambers GM**, Consultancies: St John of God Healthcare, Sydney Children’s Hospital Network, SPHERE (\$63,000).

## ONGOING GRANTS

1. **Jorm L**, Sedrakyan A, Elshaug A, Falster M. Post-surgery care fragmentation: impacts and implications. *NHMRC Project Grant* 2019-2021 (\$554,537).
2. **Vajdic C, Venetis C, Chambers G**, Sutcliffe, Opdahl, Hacker. Cancer risk in women and children after medically assisted reproduction. *NHMRC Project Grant* 2019-2023 (\$1,025,422).
3. Liauw W, Goldstein D, Barton M, Apte M, **Vajdic C**, Delaney G. Development, validation and application of a Variation Framework for Pancreatic Cancer Care based on Australian Consensus Guidelines. *SPHERE Clinical Academic Group Seed Grant* 2018-2020 (\$199,820).
4. **Jorm L**, Ainsworth M, Alavi M, Barton M, Billot L, Churches T, Dobbins T, Grebely J, Jaffe A, Levi C, Liauw W, Lock J, Sachdev P, **Vajdic**. UNSW Sydney Research Infrastructure Scheme. E-Research Institutional Cloud Architecture (ERICA): Phase 3 2018-2019 (\$354,528).
5. Barton M, **Jorm L**, Delaney, Holloway, Girgis, **Pearson S**, Chua, Goldstein, Crowe, Liaw, Levi C, Churches T, **Vajdic C**. UNSW Sydney Research Infrastructure Scheme. CaVa – a platform for research into cancer clinical variation 2018-2019 (\$220,426).
6. **Chambers G**. *UNSW Sydney Scientia Fellowship* 2018-2021 (\$989,665).
13. Brown M, Henry A, **Chambers GM**, Makris A, Homer, C, Hyett J, Arnott, C, Hennessy A, Davis G, Lowe S, Denney-Wilson E. Adverse cardiovascular outcome after hypertensive disorders of pregnancy: altering this trajectory’ NSW Health Translation Research Grant (\$632,843).
14. **Chambers GM**. Management of Australian and New Zealand Assisted Reproductive Technology Database. Fertility Society of Australia (undisclosed) 2019-2021.
15. **Chambers G**. Assisted reproductive technology in New Zealand report. *New Zealand Ministry of Health*. 2019.
16. **Brown J**. *UNSW Sydney Scientia PhD Scholarship* 2019-2022 (\$200,000).
17. **Fitzgerald O**. Patient phenotyping using machine learning to support new care pathways. *iPhD Scholarship* 2019-2022 (\$242,384).
18. **Leibo L**. Extracting value from unstructured health data. *iPhD Scholarship* 2019-2022 (\$242,384).
19. **Kemp J**. Deep learning to detect anomalies in big datasets. *iPhD Scholarship* 2019-2022 (\$242,384).
20. **Tadi V**. Provision of support, training and supervision of PhD Student. *Department of Health* 2019-2022 (\$40,000).



21. **Griffiths K.** Superstars of STEM. *Science and Technology Australia* 2019-2020.
22. **Schaffer AL.** Evaluating population-level medicine policy interventions: generating high-quality evidence about intended and unintended consequences. *NHMRC Early Career Fellowship* 2019-2022 (\$327,192).
23. **Griffiths K.** Winner: Emerging Researcher Award. *Lowitja Institute for Aboriginal and Torres Strait Islander Health* 2019 (\$5,000).
24. Eades S, Sanson-Fisher R, McAullay D, Ivers R, **Jorm L**, Bryant J, Goldfeld S, Oldmeadow C, Searles A. Aboriginal child and adolescent health improvement through Aboriginal leadership and collaborative research teams. *NHMRC Centre for Research Excellence in Population Health Research* 2017-2021 (\$2,499,589).
25. Woodward M, **Jorm L**, Redfern J, **Havard A**, Randall D, Peters S. Sex disparities in management of myocardial infarction. *NHMRC Project Grant* 2018-2020 (\$615,585).
26. **Falster MO.** Using big data to reduce inappropriate medicine use. *NHMRC Early Career Fellowship* 2018-2021 (\$322,952).
27. **Venetis CA.** Improving the outcomes for mothers and babies after IVF using big data research. *NHMRC Early Career Fellowship* 2018-2021 (\$306,362).
28. Graves S, Pratt N, Inacio M, de Steiger R, Harris I, Ackerman I, **Jorm L**. Enhancing joint replacement outcomes through national data linkage. *NHMRC Project Grant* 2018-2020 (\$765,349).
29. Degenhardt L, **Pearson S**, Dobbins T, Gisev N, Currow D, Blyth F, Larney S, Dunlop A, Mattick R, Wilson A. Combating escalating harms associated with pharmaceutical opioid use. *NHMRC Project Grant* 2018-2021 (\$925,000).
30. Gandhi M, MacManus M, Seymour J, **Vajdic C**, Fink L, Green M, Cheah C, Trau M, Korbic D. *NHMRC Project Grant - Application Title: Integrating immunity and genetics in Follicular Lymphoma to establish a prognostic score fit for the modern era.* *NHMRC Project Grant* 2018-2021 (\$1,377,174).
31. Garvey G, Cunningham J, Whop L, Brotherton J, Girgis A, Olver I, Howard K, **Griffiths K**, Baxi S. Targeted Approaches to Improve Cancer Services for Aboriginal and Torres Strait Islander Australians. *NHMRC Targeted Grant* 2018-2023 (\$2,499,981).
32. Brown M, **Chambers G** (AI). Adverse cardiovascular outcome after hypertensive disorders of pregnancy: altering this trajectory. *South Eastern Sydney Local Health District* 2018-2020 (\$632,843).
33. Prospection Pty Ltd, UNSW Sydney (**Jorm L**, **Pearson S**), Janssen-Cilag Pty Ltd. A big health data analytics and insights platform for the MTP sector. *Australian Government Cooperative Research Centre Projects (CRC-P)* 2017-2019 (\$1,948,008).
34. Korda R, Banks E, Lynch J, **Jorm L**, Lovett R, Calabria B. Whole-of-population linked data: strengthening the evidence to drive improvement in health and health care in Australia. *NHMRC Partnership Project Grant* 2017-2020 (\$1,130,376).
35. Sachdev P, Ganguli M, **Jorm L**, Brodaty H, Peterson R, Lipton R, Ritchie K, Kim K. Cohort Studies of Memory International Consortium (COSMIC). *NIH Project Grant* 2017-2022 (US\$2,600,000)
36. **Jorm L**, **Blance A**, Churches T, Parker R, Sisson S, **Pearson S**, Shepherd J, Straka P, Lujic S. Health Data Analytics Training Materials. *Commonwealth Department of Health* 2017-2019 (\$1,294,451).
37. Lui K, Haslam R, **Chambers G**, Gill A, Callander I, Cruz M, Tarnow-Mordi. Using a clinical registry to reduce variation in clinical outcomes in Neonatal Intensive Care Unit. *HCF Foundation* 2018-2021. (\$211,000)
38. **Chambers G**, **Jorm L**, Norman R, Lui K, **Havard A**. Medically assisted fertility treatment and infant outcomes: The role of IVF (in vitro fertilisation), ovulation induction and subfertility. *NHMRC Project Grant* 2017-2020 (\$463,000).
39. Pearse J, **Jorm L**, Hall J, Mazevska D, McElduff P, **Pearson S**, **Falster M**, van Gool K. Evaluation of the Health Care Homes model of care. *Commonwealth Department of Health* 2016-2021 (\$3,135,369).
40. **Chambers G**, **Donnolley N**, Homer C, Nicholl M. Evaluation of maternity care using ICHOM standards and MaCCS. *HCF Research Foundation* 2017-2019 (\$218,525).
41. **Chambers, G.** Australian and New Zealand Assisted Reproduction Database (ANZARD). Fertility Society of Australia (FSA) 2016-2020.

42. Trollor J, **Vajdic C**, Lennox N, Moorin R, Reppermund S. Understanding health service system needs for people with intellectual disability. *NHMRC Project Grant 2017-2021* (\$1,216,388).
43. Jordon S, **Pearson S**, Pandeya N, Stewart L, Coory M, Spilsbury K, Donovan P. IMPROVE - Investigating Medication re-Purposing to Reduce risk of Ovarian cancer and Extend survival. *NHMRC Project Grant 2017-2019* (\$430,196).
44. Miller P, Egerton-Warburton D, Shakeshaft A, Caldicott D, Staiger P, **Havard A**, Doran C, Baker T, Weiland T, Bowe S. Driving Change: Using emergency department data to reduce alcohol-related harm. *NHMRC Partnership Grant 2016-2020* (\$3,596,826).
45. Brodaty H, Valenzuela M, Sachdev P, McNeil J, Maeder A, Lautenschlager N, **Jorm L**, Fiatarone Singh M, Anstey K, Andrews G. Maintain Your Brain. *NHMRC Dementia Team Grant 2015-2020* (\$6,467,016).
46. McNamara B, Eades S, **Jorm L**, Preen D, Jones J, Joshy G, Gubhaju L, Shepherd C, McCaullay D. Defying the odds': Exploring the impact of perinatal outcomes, maternal social and health outcomes and level of culturally appropriate service availability on the health of Western Australian Aboriginal infants and children. *NHMRC Project Grant 2015-2019* (\$634,886).
47. **Chambers G**, Norman R, Ledger W, Shanahan M, Raymer J. Accountable fertility treatment: An evidenced-based framework for the provision of cost-effective, patient-centred fertility treatment in Australia. *NHMRC Project Grant 2016-2019* (\$423,312).
48. **Chambers G**. Assisted reproductive technology in New Zealand report. *New Zealand Ministry of Health*.
49. **Chambers G**. Population Burden analysis of low birth weight by indigenous status and IEC birthweight, antenatal care and smoking data. *Australian Institute of Health and Welfare (AIHW)*.
50. Elshaug E, **Pearson S**, Scott I. Measuring low-value health care for targeted policy action. *NHMRC Project Grant 2016-2019* (\$806,176).
51. **Pearson S-A**, Schneider C, Karanges EA, McGregor IS, Buckley N, McLachlan A, Wilson F, Marshall N, Hunt G, Allsop D, Bowen M, Hunt C, Russell J, Abbott M, Lintzeris N. From 'BIG DATA' to evidence: Post-market surveillance of psychotropic medicines in Australia. *University of Sydney BMRI SPARC Funding 2016-2019* (\$49,700).
52. McLachlan A, **Pearson S**, Banks E, Preen D, Le Couteur D, Dobbins T, Etherton-Beer C, Buckley N, Viney R, Henry D. Centre of Research Excellence in Medicines and Ageing. *NHMRC Centre of Research Excellence 2014-2019* (\$2,446,505).
53. Lloyde A, Dore G, Grebely J, Butler T, Martin N, **Chambers G**, Treloar C. Surveillance and Treatment of prisoners with hepatitis C (SToP-C). *NHMRC Partnership for Better Health Grant 2014-2019* (\$1,300,000).



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# Publications 2019



## BOOKS

1. Assisted reproductive technology surveillance (2019). Edited by Kissin DM, Adamson GD, **Chambers GM**, De Geyter C. Cambridge, United Kingdom: Cambridge University Press (2019). ISBN 978-1-108-49858-6 Hardback and online. [www.cambridge.org/9781108498586](http://www.cambridge.org/9781108498586). doi: 10.1017/9781108653763.
2. "Recurrent Implantation Failure" (2019) edited by Efstratios M, Kolibianakis, **Venetis CA**. Boca Raton: CRC Press. doi.org/10.1201/9781315165707.
5. Bosdou JK, **Venetis CA**, Kolibianakis EM. "The role of late follicular phase luteinizing hormone and estradiol on embryo implantation" in "Recurrent Implantation Failure" edited by Kolibianakis EM and **Venetis CA**. Boca Raton: CRC Press. doi.org/10.1201/9781315165707
6. **Venetis CA**, Kolibianakis EM. "Proposed management of patients with recurrent implantation failure and directions for future research" in "Recurrent Implantation Failure" edited by Kolibianakis EM and **Venetis CA**. Boca Raton: CRC Press. <https://doi.org/10.1201/9781315165707>

## BOOK CHAPTERS

1. **Chambers GM**, Crawford S, Kissin DM. ART Surveillance: Who, What, When and How? In: Kissin D, Adamson GD, Chambers GM, De Geyter C, editors. Assisted Reproductive Technology Surveillance. *Cambridge: Cambridge University Press*; 2019. p. 23-30.
2. **Chambers GM**, Doody K, Crawford S. Reporting ART Success Rates. Assisted Reproductive Technology Surveillance. *Cambridge UK: Cambridge University Press*; 2019. p. 37-46.
3. Crowther S, Ross-Davie M, Davis D, **Donnolley N**. Ways of Providing Midwifery Continuity of Care. In: Homer C, Leap N, Brodie P, Sandall J, editors. Midwifery Continuity of Care A Practical Guide: Elsevier; 2019. p. 53-73.
4. **Venetis CA**, Bosdou JK, Kolibianakis EM. "Optimizing endometrial receptivity for patients with recurrent implantation failure" in "Recurrent Implantation Failure" edited by Kolibianakis EM and **Venetis CA**. Boca Raton: CRC Press. doi.org/10.1201/9781315165707.

## PAPERS PUBLISHED IN PEER-REVIEWED JOURNALS

1. Arriaga ME, **Vajdic CM**, Canfell K, MacInnis RJ, Banks E, Byles JE, Magliano DJ, Taylor AW, Mitchell P, Giles GG, Shaw JE, Gill TK, Klaes E, Velentzis LS, Cumming RG, Hirani V, **Laaksonen MA**. The preventable burden of breast cancers for premenopausal and postmenopausal women in Australia: A pooled cohort study. *Int J Cancer*. 2019;145(9):2383-94. doi: 10.1002/ijc.32231.
2. Arriaga ME, **Vajdic CM**, MacInnis RJ, Canfell K, Magliano DJ, Shaw JE, Byles JE, Giles GG, Taylor AW, Gill TK, Hirani V, Cumming RG, Mitchell P, Banks E, Marker J, Adelstein B-A, **Laaksonen MA**. The burden of pancreatic cancer in Australia attributable to smoking. *Med J Aust*. 2019;210(5):213-20. doi: 10.5694/mja2.12108.
3. Badgery-Parker T, Feng Y, **Pearson SA**, Levesque JF, Dunn S, Elshaug AG. Exploring variation in low-value care: A multilevel modelling study. *BMC Health Serv Res*. 2019;19(1). doi.org/10.1186/s12913-019-4159-1.

4. Badgery-Parker T, **Pearson SA**, Dunn S, Elshaug AG. Measuring Hospital-Acquired Complications Associated with Low-Value Care. *JAMA Intern Med.* 2019;179(4):499-505. 10.1001/jamainternmed.2018. 7464.
5. **Barbieri S, Jorm L.** Travel times to hospitals in Australia. *Scientific data.* 2019;6(1):248. doi:10.1038/s41597-019-0266-4.
6. Bell J, Paget SP, Nielsen TC, Buckley NA, Collins J, **Pearson SA**, et al. Prescription opioid dispensing in Australian children and adolescents: a national population-based study. *Lancet Child Adolesc Health.* 2019;3(12):881-8.
7. Bosdou JK, **Venetis CA**, Tarlatzis BC, Grimbizis GF, Kolibianakis EM. Higher probability of live-birth in high, but not normal, responders after first frozen-embryo transfer in a freeze-only cycle strategy compared to fresh-embryo transfer: A meta-analysis. *Hum Reproduction.* 2019;34(3):491-505.
8. Botha W, **Donnolley N**, Shanahan M, Norman RJ, **Chambers GM.** Societal preferences for fertility treatment in Australia: a stated preference discrete choice experiment. *J Med Econ.* 2019;22(1):95-107.
9. **Brett J**, Anthony C, Day R. Off-label quetiapine prescribing in general hospital inpatients. *J Pharm Pract Res.* 2019.
10. **Brett J**, Wylie C, Raubenheimer J, Isbister G, Buckley N. The relative lethal toxicity of pharmaceutical and illicit substances; A 16-year study of the Greater Newcastle Hunter Area, Australia. *Br J Clin Pharmacol.* 2019 Sep;85(9):2098-2107. doi: 10.1111/bcp.14019.
11. **Brew BK**, Chiesa F, Lundholm C, Örtqvist A, Almqvist C. A modern approach to identifying and characterizing child asthma and wheeze phenotypes based on clinical data. *PLoS One.* 2019;14(12).
12. Briffa TG, **Jorm L**, Jackson RT, Reid C, Chew DP. Nationally linked data to improve health services and policy. *Med J Aust.* 2019;211 (9): . doi: 10.5694/mja2.50368.
13. **Bruno C, Daniels B, Pearson SA**, Buckley NA, **Schaffer A, Zoega H.** Passing the acid test? Evaluating the impact of national education initiatives to reduce proton pump inhibitor use in Australia. *BMJ Qual Saf.* 2019. Doi: 10.1136/bmjqs-2019-009897.
14. Busingye D, Gianacas C, Pollack A, Chidwick K, Merrifield A, Norman S, Mullin B, Hayhurst R, Blogg S, **Havard A**, Stocks N. Data Resource Profile: MedicinesInsight, an Australian national primary health care database. *Int J Epidemiol.* 2019;48(6):1741-1741h. doi.org/10.1093/ije/dyz147.
15. Cairns R, Karanges EA, Wong A, Brown JA, Robinson J, **Pearson SA**, et al. Trends in self-poisoning and psychotropic drug use in people aged 5-19 years: A population-based retrospective cohort study in Australia. *BMJ Open.* 2019;9(2). doi:10.1136/bmjopen-2018-026001.
16. Cairns R, **Schaffer A**, Brown J, **Pearson S**, Buckley N. Codeine use and harms in Australia: evaluating the effects of re-scheduling. *Addiction.* 2019 doi: 10.1111/add.14798.
17. Campbell G, Lintzeris N, Gisev N, Larance B, **Pearson S**, Degenhardt L. Regulatory and other responses to the pharmaceutical opioid problem. *Med J Aust.* 2019;210(1).
18. Cerhan JR, Kane E, **Vajdic CM**, Linet MS, Monnereau A, Bernstein L, et al. Blood transfusion history and risk of non-Hodgkin lymphoma: an InterLymph pooled analysis. *Cancer Causes Control.* 2019;30(8):889-900. doi: 10.1007/s10552-019-01188-w.
19. Cesta CE, Cohen JM, Pazzagli L, Bateman BT, Bröms G, Einarsdóttir K, Furu K, **Havard A**, Heino A, Hernandez-Diaz S, Huybrechts K, Oystein K, Kieler H, Jiong L, Leinonen M, Gulseth H, **Tran D**, Yu Y, **Zoega H**, Odsbu I. Antidiabetic medication use during pregnancy: An international utilization study. *BMJ Open Diabetes Research and Care.* 2019;7(1):e000759 doi:10.1136/bmjdr-2019-000759.
20. Chalmers K, **Pearson SA**, Badgery-Parker T, **Brett J**, Scott IA, Elshaug AG. Measuring 21 low-value hospital procedures: Claims analysis of Australian private health insurance data (2010-2014). *BMJ Open.* 2019;9(3):e024142. doi: 10.1136/bmjopen-2018-024142.
21. **Chambers GM**, Harrison C, Raymer J, Raymer AKP, Britt H, Chapman M, et al. Infertility management in women and men attending primary care - Patient characteristics, management actions and referrals. *Hum Reproduction.* 2019;34(11):2173-83.

22. Chen Y, Kirk MD, Stuart R, Cheng AC, **Pearson SA**, Hayen A, et al. Socio-demographic and health service factors associated with antibiotic dispensing in older Australian adults. *PLoS One*. 2019;14(8):pe0221480. Doi: 10.1371/journal.pone.0221480.
23. **Choi SKY**, Henry A, Hilder L, Gordon A, **Jorm L**, **Chambers GM**. Adverse perinatal outcomes in immigrants: A ten-year population-based observational study and assessment of growth charts. *Paediatr Perinat Epidemiol*. 2019;33(6):421-32.
24. **Costa JDO**, **Pearson SA**, Acurcio FDA, Bonolo PDF, Silveira MR, Ceccato MDGB. Health-related quality of life among HIV-infected patients initiating treatment in Brazil in the single-tablet regimen era. *AIDS Care*. 2019;31(5):572-81. doi 10.1080/09540121.2019.1576841.
25. Costello M, Garad R, Hart R, Homer H, Johnson L, Jordan C, Mocanu E, Qiao J, Rombauts L, Teede H, Vanky E, **Venetis C**, Ledger W. A Review of First Line Infertility Treatments and Supporting Evidence in Women with Polycystic Ovary Syndrome. *Med Sci (Basel)*. 2019;7(9). Sep; 7(9): 95. doi: 10.3390/medsci7090095.
26. Costello MF, Garad RM, Hart R, Homer H, Johnson L, Jordan C, Mocanu E, Qiao J, Rombauts L, Teede H, Vanky E, **Venetis C**, Ledger W. A Review of Second- and Third-line Infertility Treatments and Supporting Evidence in Women with Polycystic Ovary Syndrome. *Med Sci (Basel)*. 2019;7(7). 2019 Jun 26;7(7). pii: E75. doi: 10.3390/medsci7070075.
27. **Daniels B**, Kiely BE, **Tang M**, **Tervonen H**, **Pearson SA**. Trastuzumab use in older patients with HER2-positive metastatic breast cancer: Outcomes and treatment patterns in a whole-of-population Australian cohort (2003-2015). *BMC Cancer*. 2019;19(1):909 doi: 10.1186/s12885-019-6126-y.
28. Din L, Sheikh M, Kosaraju N, Smedby KE, Bernatsky S, Berndt SI, ....**Vajdic CM**, et al. Genetic overlap between autoimmune diseases and non-Hodgkin lymphoma subtypes. *Genet Epidemiol*. 2019;43(7):844-63. doi: 10.1002/gepi.22242.
29. **Donnolley NR**, **Chambers GM**, Butler-Henderson KA, Chapman MG, Sullivan E. "A Validation Study of the Australian Maternity Care Classification System". *Women and Birth*. 2019;32(30):204-12. doi.org/10.1016/j.wombi.2018.08.161.
30. Donovan LA, Wakefield CE, Russell V, Fardell J, **Mallitt KA**, Hetherington K, et al. Variables associated with grief and personal growth following the death of a child from cancer: A mixed method analysis. *Death Studies*. 2019. doi.org/10.1080/07481187.2019.1682087.
31. Du W, Gnjjidic D, **Pearson SA**, Hilmer SN, McLachlan AJ, Blyth F, et al. Patterns of high-risk prescribing and other factors in relation to receipt of a home medicines review: A prospective cohort investigation among adults aged 45 years and over in Australia. *BMJ Open*. 2019;9(2):e027305 doi 10.1136/bmjopen-2018-027305.
32. **Falster MO**, Leyland AH, **Jorm LR**. Do hospitals influence geographic variation in admission for preventable hospitalisation? A data linkage study in New South Wales, Australia. *BMJ Open*. 2019;9(2):e027639.
33. Feng Y, Flitcroft K, **van Leeuwen MT**, Elshaug AG, Spillane A, **Pearson SA**. Patterns of immediate breast reconstruction in New South Wales, Australia: a population-based study. *ANZ J Surg*. 2019;89(10):1230-35. doi: 10.1111/ans.15381.
34. Fitzpatrick SJ, **Brew BK**, Read DMY, Inder KJ, Hayes A, Perkins D. Rethinking Suicide in Rural Australia: A study Protocol for Examining and Applying Knowledge of the Social Determinants to Improve Prevention in Non-Indigenous Populations. *Int J Environ Res Public Health*. 2019;16(16):2944-.
35. Ford E, Boyd A, Bowles JKF, **Havard A**, Aldridge RW, Curcin V, et al. Our data, our society, our health: A vision for inclusive and transparent health data science in the United Kingdom and beyond. *Learning Health Systems*. 2019;3(3).
36. Ghinea N, Wiersma M, Kerridge I, Olver I, **Pearson S**, Day R, et al. "Some sort of fantasy land": A qualitative investigation of appropriate prescribing in cancer care. *J Eval Clin Pract*. 2019 Sep 12. doi: 10.1111/jep.13278.
37. Gidding HF, Flack LK, Sheridan S, Liu B, Fathima P, Sheppard V, ... **Jorm L**, et al. Infant, maternal and demographic predictors of delayed vaccination: A population-based cohort study. *Vaccine*. 2019 Oct 15. pii: S0264-410X(19)31333-7. doi: 10.1016/j.vaccine.2019.09.091.
38. Gisev N, **Brett J**, Peacock A. Extra-medical use of antipsychotics: what can be learnt from experiences with other prescription medicines? *Addiction*. 2019. doi.org/10.1111/add.14823

39. Gisev N, **Pearson SA**, Larance B, Larney S, Blanch B, Degenhardt L. A population-based study of transdermal fentanyl initiation in Australian clinical practice. *Eur J Clin Pharmacol*. 2019;75(3):401-8.
40. **Griffiths K**, Coleman C, Al-Yaman F, Cunningham J, Garvey G, Whop L, et al. The identification of Aboriginal and Torres Strait Islander people in official statistics and other data: Critical issues of international significance. *Statistical Journal of the IAOS*. 2019;35(1):91-106.
41. **Hálfðánarson ÓÖ**, Pottegård A, Lund SH, Ogmundsdottir MH, Ogmundsdottir HM, **Zoega H**. Use of proton pump inhibitors and mortality among Icelandic patients with prostate cancer. *Basic Clin Pharmacol Toxicol*. 2019. doi: 10.1111/bcpt.13379.
42. **Han D**, **Narayan SW**, **Zoega H**, **Litchfield M**, Buckley NA, **Pearson SA**, et al. Anticipating the effects of restricting high-dose preparations of strong opioids in Australia: A population-based analysis to inform the current policy debate. *Pharmacoepidemiol Drug Saf*. 2019;28(4):521-7. doi 10.1002/pds.4755.
43. **Hanly M**, Edwards B, Goldfeld S, Craven RG, Mooney J, **Jorm L**, et al. School starting age and child development in a state-wide, population-level cohort of children in their first year of school in New South Wales, Australia. *Early Child Res Q*. 2019;48:325-40.
44. **Havard A**, Straka P, Sara G, **Lujic S**, **Tran DT**, **Jorm LR**. Identifying patients using antidepressants for the treatment of depression: A predictive algorithm for use in pharmaceutical and medical claims data. *Pharmacoepidemiol Drug Saf*. 2019;28(3):354-61. doi:10.1002/pds.4739.
45. Hay PJ, Touyz S, Claudino AM, **Lujic S**, Smith CA, Madden S. Inpatient versus outpatient care, partial hospitalisation and waiting list for people with eating disorders. *Cochrane Database Syst Rev*. 2019;2019(1).
46. Heffernan M, Andrews G, Fiatarone Singh MA, Valenzuela M, Anstey KJ, Maeder AJ, McNeil J, **Jorm L**, et al. Maintain Your Brain: Protocol of a 3-Year Randomized Controlled Trial of a Personalized Multi-Modal Digital Health Intervention to Prevent Cognitive Decline among Community Dwelling 55 to 77 Year Olds. *J Alzheimers Dis*. 2019;70(s1):S221-S237. doi:10.3233/JAD-180572.
47. Homaira N, Briggs N, Oei JL, Hilder L, Bajuk B, Snelling T, **Chambers GM**, Jaffe A. Impact of influenza on hospitalization rates in children with a range of chronic lung diseases. *Influenza Other Respir Viruses*. 2019;13(3):233-9.
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## LETTERS

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## REVIEW

1. Ward Thompson C, Silveirinha de Oliveira E, Tilley S, Elizalde A, **Botha W**, Briggs A, et al. Health impacts of environmental and social interventions designed to increase deprived communities' access to urban woodlands: a mixed-methods study. *Southampton (UK): NIHR Journals Library*. 2019.

## PUBLISHED ABSTRACTS

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2. **Barbieri S**, **Perez Concha O**, Kotwal S, Gallagher M, Ritchie A, **Jorm L**. A Deep Representation of Longitudinal EMR Data Used for Predicting Readmission to the ICU and Describing Patients-at-Risk. HSRAANZ. Auckland, New Zealand 2019.
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7. **Chiu TR**, **Pearson S**, **Schaffer AL**. Pregabalin use outside subsidy restrictions in Australia. 35th International Conference on Pharmacoepidemiology & Therapeutic Risk Management; August 24-28; Philidelphia, PA, USA. *Pharmacoepidemiol Drug Saf*. 2019. p. 252
8. **Daniels B**, Wylie C, **Pearson SA**, **Brett J**, Buckley N. A day in the life: Prescription medicine use in Australia. 35th International Conference on Pharmacoepidemiology & Therapeutic Risk Management; August 24-28; Philidelphia, PA, USA. *Pharmacoepidemiol Drug Saf*. 2019. p. 545.
9. **De Oliveira Costa J**, **Schaffer AL**, **Litchfield M**, Medland NA, **Narayan SW**, **Pearson SA**. Adherence to antiretroviral regimens in Australia: a nationwide cohort analysis of dispensing data. 11th Health Services and Policy Research Conference; December 4-6; Auckland, New Zealand, 2019.
10. Fraison E, Moran L, Bilal S, Ee C, **Venetis C**, Costello M. Metformin versus the combined oral contraceptive pill for hirsutism, acne, and menstrual pattern in polycystic ovary syndrome. 35th Annual Meeting of the European-Society-of-Human-Reproduction-and-Embryology (ESHRE). Vienna, Vienna, Austria: Oxford Univ Press; p. 458-.
11. **Havard A**, **Choi SKY**, Chow CK, **Tran DT**, Filion KB. Risk of Major Cardiovascular Events Associated with Varenicline and Nicotine Replacement Therapy: An Australian Population-Based Study. *Pharmacoepidemol Drug Saf*. 2019;28:20.

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16. Santos S, Silveira MR, Almeida-Brasil CC, **de Oliveira Costa J**, Cruz M, Reis E, Acurcio F, Ceccato MDGB. Does Single-Tablet Regimen Improve Adherence to Antiretroviral Therapy in Brazil? A Group-Based Trajectory Modeling Analysis of Patients Switching Regimens. 35th International Conference on Pharmacoepidemiology & Therapeutic Risk Management; August 24-28; Philadelphia, PA, USA. *Pharmacoepidemiol Drug Saf.* 2019. p. 519
17. **Schaffer AL**, Buckley NA, **Pearson SA**. Unintended Consequences of a National Policy Intervention to Curb Inappropriate Alprazolam Prescribing in Australia. 35th International Conference on Pharmacoepidemiology & Therapeutic Risk Management; August 24-28; Philadelphia, PA, USA. *Pharmacoepidemiol Drug Saf.* 2019. p. 34.
18. **Schaffer AL**, **Zoega H**, **Tran DT**, Buckley NA, **Pearson SA**, **Havard A**. Trajectories of antipsychotic use before and during pregnancy and related maternal and birth characteristics. 35th International Conference on Pharmacoepidemiology & Therapeutic Risk Management; August 24-28; Philadelphia, PA, USA: Pharmacoepidemiology and Drug Safety; 2019. p. 216.
19. **Welberry H**, Brodaty H, **Barbieri S**, **Hsu B**, **Jorm L**. Transitions through aged care in the last five years of life among those with dementia. Australian Dementia Forum. Hobart, TAS, Australia 2019.
20. **Welberry H**, Brodaty H, **Hsu B**, **Barbieri S**, **Jorm L**. Impact of prior home care on length of stay in residential care for Australians with dementia. HSRAANZ. Auckland, New Zealand 2019.

## GOVERNMENT AND INDUSTRY REPORTS

1. **Chow SSW**, **Creighton P**, **Chambers G**, Lui K. Report of the Australian and New Zealand Neonatal Network 2017. Sydney: UNSW Sydney; 2019 2019/07/01/. Report No.: 978- 0-7334-3871 -4.
2. **Falster MO**, **Schaffer AS**. Delivering better cardiac outcomes in Victoria – An initiative of the National data Linkage Demonstration Project. Victorian Agency for Clinical Innovation. 2019
3. **Newman J**, **Fitzgerald O**, **Paul RC**, **Chambers GM** 2019. Assisted reproductive technology in Australia and New Zealand 2017. Sydney: National Perinatal Epidemiology and Statistics Unit, the University of New South Wales. <https://npesu.unsw.edu.au/surveillance-reports>
4. Department of Health and Human Services (Victoria) [**Vajdic CM** member of working group]. Optimal care pathway for people with cancer of unknown primary (CUP). 2019.

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# Invited conference presentations 2019

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**Chambers GM.** Gender inequality and access to fertility care. *The 4th European Conference on Preconception Health and Care*. September 26-27 2019 Copenhagen, Denmark. **Invited speaker**

**Chambers GM.** The role of clinical quality registries in quality. *International Federation of Fertility Societies*. Shanghai 10-14th April 2019. **Invited speaker**

**Daniels B.** Using administrative data to understand the treatment and outcomes of HER2-positive breast cancer. *Ingham Institute for Applied Medical Research*, Sydney 30 October 2019. **Invited speaker**

**Daniels B.** Validating administrative health data in Australia. *12<sup>th</sup> Annual Asian Conference on Pharmacoepidemiology*. Kyoto, Japan. 12 October 2019. **Invited plenary speaker**

**Gallego Luxan, B.** Medica AI. *Spanish Researchers in Australia Pacific: Pintxos of Science*, 16 August 2019. **Invited speaker**

**Gallego Luxan, B.** Can machines replace medical researchers? The Case of Real World Evidence. *AI Med Symposium*, 12 October 2019. **Invited speaker**

**Gallego Luxan, B.** The Watchlist initiative. *Agency for Clinical Innovation Research Talks*, 16 December 2019. **Invited speaker**

**Gallego Luxan, B.** The Use of Clinical Practice Data to Support Personalised Therapies. *TCRN PhD Translational Skills and Development Workshop*, 7 June 2019. **Invited Lecture**

**Gallego Luxan, B.** AI tools for clinical decision support at the point-of-care. *BIOMED 9450 course*, 5 October 2019. **Invited Lecture**

**Griffiths K.** Chronic Diseases Network & Baker Institute Joint Conference and Baker Educational Symposium. 'Aboriginal and Torres Strait Islander people in official statistics: counting our mob'. Alice Springs. October, 2019. **Invited keynote speaker**

**Griffiths K.** Counting our Mob – Aboriginal and Torres Strait Islander people and official statistics. *Ngar-Wu Wanyarra*, Shepparton, October, 2019. **Invited keynote speaker**

**Griffiths K.** On the measurement of cancer survivorship: considerations for Indigenous peoples. *World Indigenous Cancer Conference*, Calgary, September, 2019. **Invited plenary speaker**

**Griffiths K.** The identification of Aboriginal and Torres Strait Islander people in the cancer data: quality and accuracy. *Australasian Association of Cancer Registries*, Darwin. August, 2019. **Invited plenary speaker**

**Griffiths K.** The gaps in measuring the gap: driving cancer equity through data. *Cancer Council Australia*, Sydney. July, 2019. **Invited speaker**

**Griffiths K.** Measuring health disparities in Australia: using data to drive rural and remote health solutions. *15th National Rural Health Conference*, Hobart, March, 2019. **Invited keynote speaker**

**Havard A.** The safety and effectiveness of smoking cessation pharmacotherapies during pregnancy: Findings from the Smoking MUMS (Maternal Use of Medications and Safety) Study. *Jewish General Hospital Epidemiology Seminar Series*, Montreal, Canada, 2<sup>nd</sup> July 2019. **Invited speaker**

**Havard A.** The safety of smoking cessation pharmacotherapies: Birth outcomes following use during pregnancy and the risk of major cardiovascular events associated with use in the general population. *University of Toronto Leslie Dan Faculty of Pharmacy Centre for Practice Excellence Speaker Series*, Toronto, Canada 19<sup>th</sup> August 2019. **Invited speaker**

**Jorm LR.** Data in health and medical research: making the most of our opportunities. *National Academy of Science and National Academy of Health and Medical Sciences Data Roundtable*, Sydney 2019. **Invited keynote speaker**

**Jorm LR.** Big data driving better decisions and actions in health care. *National Surgical Quality Improvement Program Annual Meeting*, Sydney, 2019. **Invited keynote speaker**

**Jorm LR.** Data linkage (and its uses). *Australia & New Zealand Musculoskeletal Clinical Trials Network Annual Meeting*, Sydney, 2019. **Invited plenary speaker**

**Jorm LR.** Healthcare AI in 2019: where are we now? *Australian Society for Artificial Intelligence in Medicine, Surgery and Healthcare Congress*, Sydney, 2019. **Invited plenary speaker**

**Jorm LR.** Big data driving better decisions and actions in health care. *ICPRP 2019*, Kuala Lumpur, 20 October 2019. **Invited plenary speaker**

**Jorm LR.** Big patient data, machine learning and artificial intelligence. *ICPRP 2019*, Kuala Lumpur, 21 October 2019. **Invited speaker**

**Jorm LR.** CRNs in Australia: Big Data Approaches to Medical Device Research. *MDEpiNet Annual Meeting*, Washington 23 October 2019. **Invited plenary speaker**

**Jorm LR.** Realising the potential of linked data. 2019 *NHMRC Symposium on Research Translation*, November 2019. **Invited plenary speaker**

**Jorm LR.** MDEpiNet in Australia: Big Data Approaches to Medical Device Research. *CIN International Registry Forum* Tokyo, 12 December 2019. **Invited plenary speaker**

**Jorm LR.** Using big data to generate real-world evidence in Australia. *Waseda University Symposium*, Tokyo, 13 December 2019. **Invited speaker**

**Pearson S.** Putting the spotlight on prescriber behaviour using 'big data' analytics. *AusMed: Nurse Practitioners Prescribing and Practice National Conference*. Sydney March 2019. **Invited speaker**

**Pearson S.** Taking the wide view: Maximising opportunities in health data linkage research in Australia. *ARC Centre of Excellence in Population Ageing Research workshop on data linkage and ageing related research*. Canberra April 2019. **Invited speaker**

**Pearson S, Henry D.** Measuring real-world benefits and harms of prescription medicines using population-based, linked data: Perspectives from Australia and Canada. *Therapeutic Goods Administration*. Canberra May 2019. **Invited speaker**

**Pearson S.** Women in STEM Leadership Panel. *Activity Based Funding Conference (ABF19)*. Melbourne May 2019. **Invited speaker**

**Pearson S.** Big Data Revolutionising Healthcare. *Australian British Chamber of Commerce Seminar*. Sydney June 2019. **Invited speaker**

**Pearson S.** Quantifying medicine use and outcomes in the MSK field: The promise and pitfalls of big data. *Sydney Musculoskeletal Health Alliance Annual Scientific Meeting*. Sydney August 2019. **Invited speaker**

**Pearson S.** Data in the Australian health care system. *NSW Bureau of Health Information Masterclass*. Sydney October 2019. **Invited speaker**

**Vajdic CM.** Using linked data for public good research and enhancing public trust. *GovData 2019*. Melbourne, September 2019. **Invited speaker**

**Venetis CA.** State of the ART: Improving Fertility Treatment through Research and Technological Innovation. *Annual Women's & Children's Health Update Conference hosted by HealthEd*, Sydney, Australia, 23 February 2019. **Invited lecture**

**Venetis CA.** Progesterone in IVF: from zero to hero. *18<sup>th</sup> CREI Training Workshop*, Sydney, Australia, 2-3 March 2019. **Invited lecture**

**Venetis CA.** Fertility preservation in females. *2019 Advanced Trainees Oncology Meeting*, Sydney, Australia, 16 March 2019. **Invited lecture**

**Venetis CA.** How to read an article on Diagnosis. *9<sup>th</sup> Congress of Asia Pacific Initiative on Reproduction (ASPIRE 2019)*, Hong Kong, 2-5 May 2019. **Invited lecture**

**Venetis CA.** How to write a systematic review and meta-analysis. *9<sup>th</sup> Congress of Asia Pacific Initiative on Reproduction (ASPIRE 2019)*, Hong Kong, 2-5 May 2019. **Invited lecture**

**Venetis CA.** Get the mother a baby quickly. Time to delivery: a new fad? *MSD SEED Medical Education Event*, Sydney, Australia, 18-19 May 2019. **Invited lecture**

**Venetis CA.** Guideline on Lipiodol Tubal Flushing. *Australian and New Zealand Society of Reproductive Endocrinology and Infertility Annual Conference*, Sydney, Australia, 26-28 July 2019. **Invited lecture**

**Venetis CA.** Fertility preservation in Oncology. *Basic Sciences in Oncology Course (BSOC) 2019 Workshop*, Sydney, 23 August 2019. **Invited lecture**

**Venetis CA.** Big data, machine learning and artificial intelligence in evidence-based medicine: hype or hope? *Annual meeting of the Fertility Society of Australia*, Hobart, Australia, 14<sup>th</sup> September 2019. **Invited lecture**



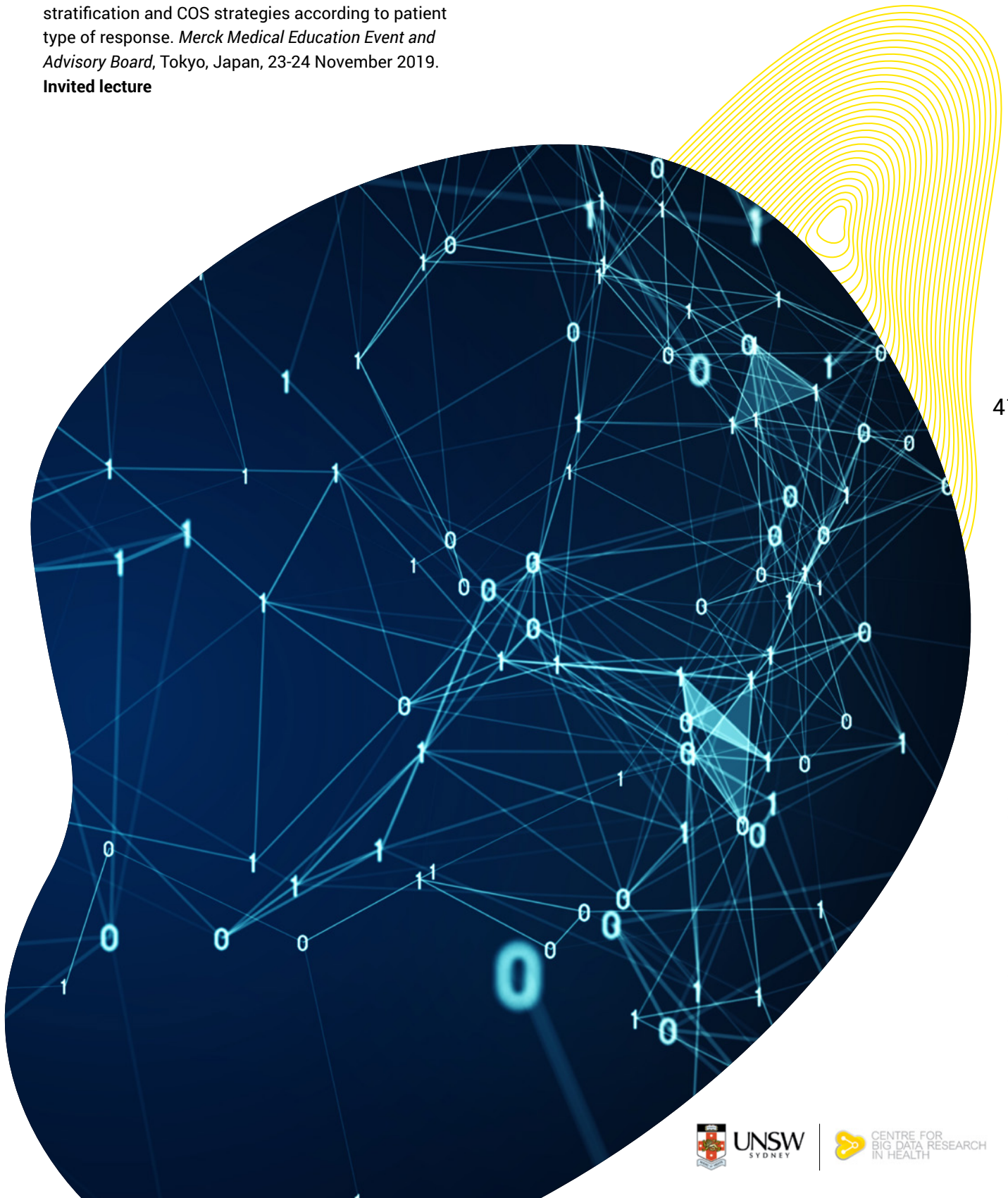
**Venetis CA.** How can progesterone rise be avoided during ovarian stimulation? *Fertility academe Medical Education Conference*, Taipei, Taiwan, 25-26 October 2019. **Invited lecture**

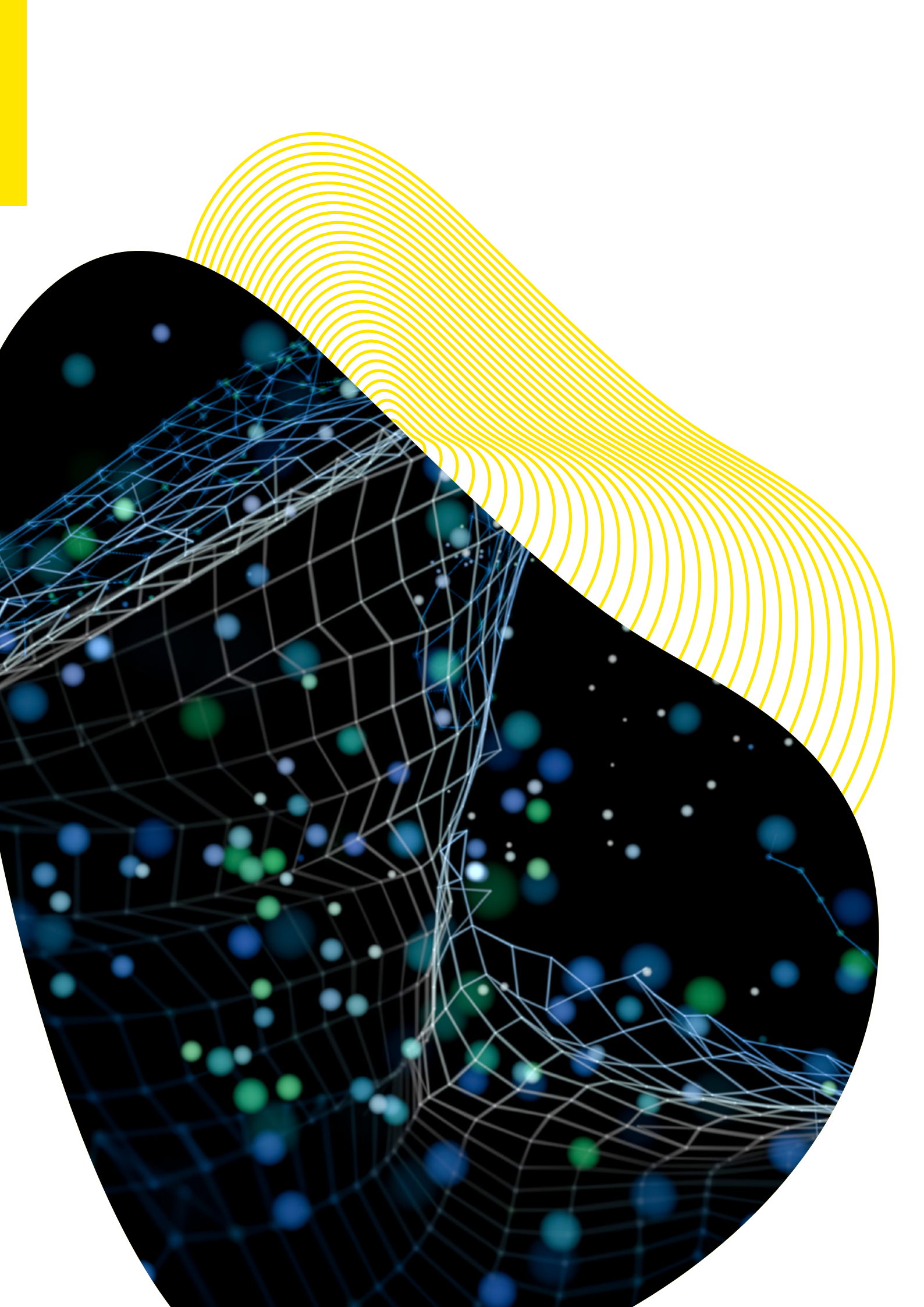
**Venetis CA.** Luteal Phase Support in modern ART: the Whys and the Hows. *Fertility academe Medical Education Conference*, Taipei, Taiwan, 25-26 October 2019. **Invited lecture**

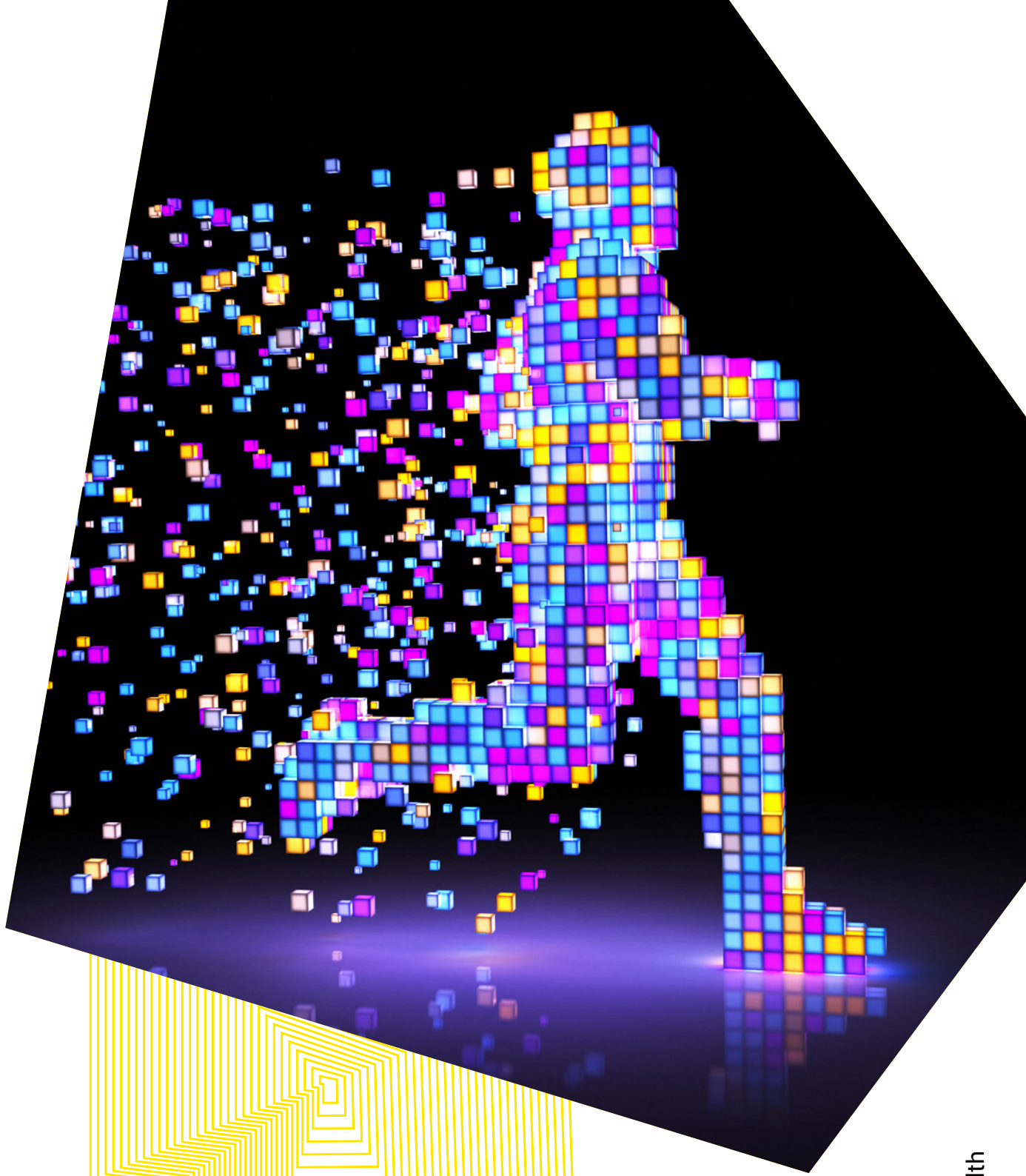
**Venetis CA.** Treatment environment in Australia, patient stratification and COS strategies according to patient type of response. *Merck Medical Education Event and Advisory Board*, Tokyo, Japan, 23-24 November 2019. **Invited lecture**

**Venetis CA.** Stimulation strategies for different types of patients to maximise efficacy and safety. *Merck Medical Education Event and Advisory Board*, Tokyo, Japan, 23-24 November 2019. **Invited lecture**

**Zoega H.** Studying medicine safety in pregnancy with large-scale linked data. *Centre for Medicine Use & Safety, Monash University*, Melbourne. Lunch Seminar November 2019. **Invited speaker**









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