Evidence synthesis across research disciplines, policy and practice
Evidence Synthesis Node Inaugural Meeting

18 April 2016
Level 6 Seminar room
Charles Perkins Centre
9:00am - 5:00pm

PROGRAM

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<td>9.00-9.30am</td>
<td>Registration</td>
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<td>9.30-9.40am</td>
<td>Conference welcome and opening</td>
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<td>Professor Lisa Bero and Dr Barbara Mintzes, Charles Perkins Centre, Faculty of Pharmacy, University of Sydney</td>
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<td>9.40-10.30am</td>
<td>Keynote</td>
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<td>Future Trends in Evidence Synthesis</td>
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<td>Big Data and Evidence-Based Medicine</td>
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<td>Professor Ida Sim, Faculty of Medicine and Clinical and Translational Sciences Institute, University of California – San Francisco</td>
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<td>10.30-11.00am</td>
<td>Cochrane's new evidence systems</td>
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<td>Dr Julian Elliott, Senior Research Fellow, Australasian Cochrane Centre, Monash University, and Head of Clinical Research, Infectious Diseases Unit, Alfred Hospital</td>
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<td>11.00-11.30am</td>
<td>Are research-synthesis methods evidence based? A framework for guiding how we identify, evaluate, grade, and implement the many methods used in systematic reviews.</td>
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<td>Dr Jo MacKenzie, Senior Research Fellow (biostatistician), School of Public Health and Preventive Medicine, Monash University</td>
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<td>11.30-11.45am</td>
<td>Morning tea</td>
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<td>11.45am-12.15pm</td>
<td>Systematic review and synthesis of qualitative research: relevance, rigour and impact</td>
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<td>Associate Professor Allison Tong, Sydney School of Public Health, The University of Sydney</td>
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12.15-12.45pm  Evidence for what? The important role of theory in nutrition research
Professor David Raubenheimer, Charles Perkins Centre, Faculty of Veterinary Science and School of Biological Sciences, The University of Sydney

12.45-1.15pm  Ensuring data integrity in evidence synthesis: new methods to measure and mitigate reporting bias
Dr Adam Dunn, Senior Research Fellow, Centre for Health Informatics, Macquarie University

1.15-2.15pm  Lunch

2.15-2.45pm  Informing policy, programs and health services: Horses for courses
Professor Sally Redman, Chief Executive Officer, Sax Institute

2.45-3.15pm  Environmental risk assessment: adding evidence to the equation
Professor Davina Ghersi, Senior Principal Research Scientist, National Health and Medical Research Council and Adjunct Professor, Medicine, Sydney Medical School

3.15-3.45pm  Workshops
- Group 1: Collaborating to advance evidence synthesis methods
- Group 2: Improving links between evidence synthesis, policy and practice
- Group 3: Cross-disciplinary evidence syntheses

3.45-4.00pm  Afternoon tea

4.00-4.45pm  What are the most pressing methods and policy issues for evidence synthesis?
Chair: Associate Professor Lisa Askie
- Reports from workshops
- Panel members: Professor Ida Sim, Professor Julian Elliott, Dr Adam Dunn, Professor Davina Ghersi

4.45-5.00pm  Concluding remarks
Professor Lisa Bero, Charles Perkins Centre, Faculty of Pharmacy, University of Sydney

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Evidence Synthesis Node Members Meeting

19 April 2016
Level 6 Seminar room
Charles Perkins Centre
10:00am - 1:00pm

This is a planning meeting for ongoing collaboration among members of the Evidence Synthesis Node. It is open to all current members and others involved in work on evidence synthesis who would like to join. For more information, please contact Barbara.Mintzes@sydney.edu.au
Big Data and Evidence-based Medicine

Professor Ida Sim

Abstract

Big Data is about more than voluminous data. It is a confluence of diverse data, machine learning algorithms, and a belief that larger data sets confer greater accuracy and truth. On the other hand, evidence-based medicine prizes the testing of precise hypotheses in highly controlled studies. What is the nature of evidence in a “big data” world, and how might evidence synthesis methods expand to incorporate aspects of Big Data?

Brief biography

Ida Sim, MD, PhD is a primary care physician, informatics researcher, and entrepreneur. She is Professor of Medicine at the University of California, San Francisco, where she co-directs Biomedical Informatics at UCSF’s Clinical and Translational Sciences Institute. Her research focuses on computational methods for data sharing and decision making for clinical research and mobile health. She is a co-founder of Open mHealth, a non-profit organization building open APIs and tools for integrating mobile health data. In 2005-6, she led the World Health Organization’s International Clinical Trials Registry Platform which established the first global policy on clinical trial registration and defined the common 20-item Trial Registration Data Set.

Dr. Sim has served on National Research Council and Institute of Medicine committees on health information infrastructure for clinical care and research. She is a Fellow of the American College of Medical Informatics and a member of the American Society for Clinical Investigation.
Cochrane's new evidence systems

Dr Julian Elliott

Abstract

Evidence synthesis has provided incalculable benefit to human health and many other fields as a link between research and action. The fundamental principles remain as relevant today as ever, but the processes, inputs and outputs of evidence synthesis will change significantly in the coming years.

Published summary data will remain an important data source for some time to come, but in the health sector - individual participant data, electronic health records and other more diverse data sources will increase in availability and importance. Finding, capturing and analysing relevant data will become more efficient and collaborative, but also more complex as data sources proliferate. Methods will increasingly draw from the worlds of both evidence synthesis and data analytics. Users will demand outputs that are constantly up to date, so synthesis workflows will become more constant and persistent. The structured data created will be as important as the written commentary, and will feed a multitude of downstream systems.

It is in this context that Cochrane is developing new evidence systems - to improve evidence synthesis for both the current and future needs of evidence users and producers. I will present an overview of these systems and place them in the context of the emerging evidence landscape.

Brief Biography

Dr Julian Elliott is Senior Research Fellow at the Australasian Cochrane Centre and Head of Clinical Research in the Department of Infectious Diseases, Alfred Hospital and Monash University. Dr Elliott’s research is focussed on the use of new technology to improve evidence synthesis and knowledge translation. He is leading Cochrane’s development of new evidence systems, including Project Transform, a major Cochrane project that is using new technologies and processes to improve the production of systematic reviews. He is also the founder of Covidence, a non-profit online platform for efficient systematic review production. Dr Elliott also directs HealthMap, a cluster randomised controlled trial of cardiovascular risk reduction in people living with HIV and currently chairs the Australian HIV guidelines panel. He previously worked in the Cambodian government’s HIV program and served as a consultant to WHO, UNAIDS and the World Bank.
Are research-synthesis methods evidence based? A framework for guiding how we identify, evaluate, grade, and implement the many methods used in systematic reviews.

*Dr Joanne McKenzie*

**Abstract**

As systematic reviewers, we devote long hours to scrutinising the evidence underpinning healthcare policy and practice. Yet how often do we question whether there is good evidence for the methods we use? Our confidence in the findings of more than 35,000 systematic reviews rests on the evidence base underpinning the methods. Just as there are consequences arising from the choices we make about health and social care interventions, so too are there consequences when we choose the methods to use in systematic reviews. Methods differ in their performance (e.g. how well a statistical method estimates a true intervention effect), usability, and resource use.

The path from development to eventual implementation of methods for systematic reviews is in many ways analogous to that of a clinical intervention. Yet, the similarities are under recognised. In this presentation I outline stages in the identification, evaluation and implementation of methods for systematic reviews. I propose a framework for considering each stage, which could be used to more clearly and systematically identify where methods research is required and increase the transparency in formulating recommendations about methods.

**Brief biography**

Jo McKenzie is a Senior Research Fellow (biostatistician) at the School of Public Health and Preventive Medicine, Monash University. She holds an NHMRC Australian Public Health Fellowship to undertake methodological research in meta-analysis and evidence synthesis. Her research interests include methodological issues in meta-analysis of randomised trials with continuous outcomes; selective inclusion and reporting of results in randomised trials and systematic reviews; approaches to synthesising evidence in systematic reviews of policy, public health, and health service delivery interventions; overviews of systematic reviews; and evidence based methods. She has been affiliated with the Australasian Cochrane Centre since 2003, and is an active contributor to Cochrane, including being a Co-Convenor of the Statistical Methods Group and a scientific editor of Cochrane Methods.
Evidence for what? The important role of theory in nutrition research

Professor David Raubenheimer

Abstract

Increasing attention is being focussed on the need for rigorous evidence in the formulation of nutrition-related public health guidelines and policies. In this talk I emphasise the importance of a second essential property of research for public health guidelines, relevance, and highlight the role of theory for optimising this aspect. I illustrate this point using data from my own research that has drawn on theory from ecology and evolution to understand the relationships between macronutrient balance in the diets of humans and health.

Brief biography

David Raubenheimer is a nutritional ecologist, who has pioneered new ways of applying ecological and evolutionary theory to the study of nutrition in animals and humans. David obtained his PhD in Zoology at Oxford University in 1991, where he remained until he moved to the University of Auckland in 2003. There he was a founder member of the Centre for Human Evolution, Adaptation & Disease based in the Liggins Institute, before moving to Massey University in 2008 to head the Nutritional Ecology Research Group. In 2013 David took up his current position as Leonard P. Ullman Chair in Nutritional Ecology at the University of Sydney. He has a split appointment between the Faculty of Veterinary Science and the School of Biological Sciences, and leads the Nutrition Theme at the Charles Perkins Centre. David is co-author with Steve Simpson of a recent book The Nature of Nutrition: a unifying Framework from Animal Adaptation to Human Obesity (Princeton, 2012), and has published over 200 papers in scientific journals.

Systematic review and synthesis of qualitative research: relevance, rigour and impact

Associate Professor Allison Tong

Abstract

Qualitative research can generate in-depth and relevant insights about people’s attitudes, beliefs and values that underpin their health-related decisions and actions. Qualitative data may explain reasons for complex problems including non-adherence to treatment, disengagement from health care services, or barriers to the implementation of practice and policy interventions. Systematic reviews and synthesis of primary
qualitative studies can bring together findings from different healthcare contexts and populations to offer new and more comprehensive understandings of social phenomena. With the paradigm shift towards patient-centred care, there is a growing interest in this methodology and how systematic reviews of qualitative research can be used in practice and policy.

Brief biography

Allison Tong is an Associate Professor at the Sydney School of Public Health at The University of Sydney with a NHMRC Career Development Fellowship. Her main research interests are in research priority-setting, development of core outcomes, and using applied qualitative research methods to the areas of chronic disease and health services; to inform practice and policy for improved patient-centred outcomes. She has expertise in social research methods and methodology, including systematic review and synthesis of qualitative research. Allison led the development of the Enhancing the transparency in reporting the synthesis of qualitative research (ENTREQ) guidelines, which has been endorsed by EQUATOR Network and several biomedical journals.

Ensuring data integrity in evidence synthesis: new methods to measure and mitigate reporting bias

Dr Adam Dunn

Abstract

Reporting bias in clinical trial research represent an important burden in evidence-based medicine as a source of waste and because these biases can make unsafe or ineffective interventions appear safe and effective when they are not. There are now well-developed methods for identifying publication bias, outcome reporting bias, selective citation bias, and spin—but studies in the area are often limited in size because of the substantial amount of manual effort and expertise needed to undertake them. In the last five years, we have approached this problem from the medical informatics perspective, translating network science and machine learning methods into the area in an attempt to capture the structure of clinical trial design, reporting, and synthesis for use in measuring biases. As access to very large datasets storing information about clinical trials continues to improve, we see more opportunities to take advantage of structured designs, citation and co-authorship networks, and structured and unstructured result reporting. Here I will demonstrate some of the interesting ways we have used these information sources and discuss the perils and pitfalls of trying to develop system-wide surveillance of biases in the design, reporting, and synthesis of clinical evidence.

Brief biography

Adam Dunn is a senior research fellow in the Centre for Health Informatics at Macquarie University with a background in data sciences, especially network science and machine learning.
His research interests include understanding how funding and competing interests affect clinical evidence production and translation, as well as how clinical evidence is represented in the public domain. His work in clinical epidemiology includes the development of new methods for automatically measuring reporting biases and tools to improve the efficiency of evidence synthesis. His work in computational epidemiology is focused on the surveillance of evidence, misinformation, and opinions about vaccines in social and news media. In the last five years, Adam has contributed more than 30 articles to the field of medical informatics, and is an associate editor for Medical Informatics & Decision Making and Research Integrity and Peer Review.

Informing policy, programs and health services: Horses for courses

Professor Sally Redman

Abstract

Policy makers, program designers and service providers have diverse needs for syntheses of research. This paper will outline a schema to describe the different kinds of syntheses that might be appropriate for different kinds of evidence needs. The paper will consider how to work with policy makers to foster greater engagement with and use of syntheses of research.

Brief biography

Professor Redman is CEO of the Sax Institute. The Sax Institute is funded by NSW Ministry of Health to increase the impact of public health and health services research on policy and practice. It is responsible for the 45 and Up Study, Australia’s largest study on health and ageing, and has developed innovative approaches to increasing the use of evidence by policy agencies. Professor Redman also holds an honorary appointment at the University of Sydney and conjoint appointments at the University of Newcastle and University of Western Sydney.

Professor Redman was awarded the Officer of the Order of Australia Medal, 2013, for distinguished service to public health through leadership in the care of women with breast cancer, contributions to research and higher education and the promotion of relationships between researchers, policy makers and practitioners. Professor Redman’s international standing is attested to by her appointment as chair of the Canadian Institutes for Health Research Expert Review of
the Institute of Health Services and Policy Research, Ottawa, 2011 and as a member of the Health Research Board of Ireland International Review Committee 2014.

She has over 190 publications in peer review journals and currently leads an NHMRC Centre for Research Excellence in increasing the use of research evidence in policy. She is currently a chief investigator on NHMRC grants to the value of $25M. Professor Redman currently chairs the research advisory committees of the National Heart Foundation and of the National Breast Cancer Foundation; she has been a member of NHMRC’s Research Committee for three triennia (including one as deputy chair).

Professor Redman was previously the inaugural Director of the National Breast Cancer Centre, funded by Australia’s federal government to improve evidence-based care & outcomes for women with breast cancer. She received the Centenary Medal, for service to the health and welfare of Australian women diagnosed with breast cancer, 2003 for her work in leading the Centre.

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**Environmental risk assessment: adding evidence to the equation**

*Professor Davina Ghersi*

**Abstract**

Environmental health is the branch of public health that is concerned with all aspects of the natural and built environment that may affect human health. When producing guidelines in environmental health the focus is usually on minimising potential harms to humans that may result from exposure (risk assessment).

Frameworks for assessing the risks from environmental hazards are well established. Traditionally, these risk assessment frameworks are developed through the involvement experts in the field, using selected evidence from the published literature. Systematic reviews are rarely used and the process of making recommendations can be opaque. One reason for this may be the lack of guidance that specifically targets the needs of those involved in environmental health.

A number of agencies internationally are working towards providing the necessary guidance. This includes standards for reporting animal studies, how to systematically review animal studies, methods for considering evidence from animal studies alongside human studies, the development of an evidence-based approach to toxicology, and transparent processes for deriving recommendations in environmental health. This presentation will discuss some of these advances and how they could be applied in an Australian context.

**Brief biography**
Davina Ghersi joined the National Health and Medical Research Council as a Senior Principle Research Scientist in 2011 after 5 years as Team Leader with the Research Policy and Cooperation Department of the World Health Organization in Geneva, Switzerland. At NHMRC she provides methodological support across the agency on issues relating to the creation and translation of research evidence. Before this she led the Systematic Review and Health Care Assessment team at the NHMRC Clinical Trials Centre at the University of Sydney.

Academic interests are in publication bias, selective reporting, research transparency, systematic reviews and the translation of health and medical research into health care decision making and health policy. She holds an MPH and PhD from the University of Sydney and is Adjunct Professor at Sydney Medical School. Current chairing responsibilities include an OECD Working Group developing core competencies for clinical trials and the Environmental and Occupational Health Project Group of GRADE. She is a member of the PROSPERO Advisory Group, the GRADE Working Group and the Editorial Board of PLOS Medicine, and has a long history of involvement with the Cochrane Collaboration.