RSPH conference organizing committee 2016.

Bradley Carron-Arthur - CMHR
Dominique Kazan- CMHR
Kai Hodgkin - NCEPH
Luis Furuya Kanamori - Global Health
Tehzeeb Zulfiqar - NCEPH

Agenda for RSPH student conference 2016

Time	Speaker	Centre	Topic
09.00am	Registration		
09.20am	Opening statements by organization Committee		
09.30am	Opening remarks Kiaran Kirk, Dean CMBE		
15 Minutes presentations			
09.45am	Jenny Welsh	NCEPH	A prospective study of psychological distress, pre-clinical disease and incidence of ischemic heart disease.
10.00am	Kai Hodgkin	NCEPH	Out of hospital birth where maternal mortality is high: a systematic literature review of studies from Indonesia
10.15am	Sidhant Chopra	CRAHW	In-vivo Myelin Mapping: Investigating the Relationship between Myelination and Processing Speed in Mid-life and Old-age
10:30am	Jennifer Ma	CMHR	Suicide risk across latent class subgroups: A test of the Interpersonal Psychological Theory of Suicide
10.45am	Morning tea		
11.30am	Dorothy Broom, Emeritus Professor NCEPH. Guest speaker		
3 Minutes presentations			
12:00pm	Tehzeeb Zulfiqar	NCEPH	Overweight and obesity in children of immigrant parents from developing countries living in Australia
12:06 pm	Dominique Kazan	CMHR	Relationship separation and suicidality: Exploring intervention opportunities.
12:12 pm	Kathina Ali	CMHR	Online help for eating disorders – revolutionary or risky?
12:18 pm	Alexandra Voce	CRAHW	The Symptom Profile and Clinical Course of Methamphetamine-Induced Psychosis: A Systematic Review
12:24 pm	Tianqi Zhang	CRAHW	Higher fasting plasma glucose and smaller striatal volume are associated with poorer fine motor skills in a longitudinal cohort: the PATH 2sweet project
12:30 pm	Naomi Clarke	Global Health	The "War on Worms": control programmes for soil-transmitted helminths
12:45pm	Lunch		
15 Minutes presentations			
1:45 pm	Kinley Wangdi	Global Health	Comparative effectiveness of malaria prevention measures: A systematic review and network meta-analysis

2:00 pm	Kefyalew Addis Alene	Global Health	Trends and predictors of time to poor treatment outcomes in patients with multi-drug resistant tuberculosis in Northwest Ethiopia.
2:15 pm	Thomas Shaw	CRAHW	Healthy Heart, Healthy Brain? The Associations Between White Matter Integrity and Cardiovascular Health.
2:30 pm	Afternoon tea		
15 Minutes presentations			
3:00 pm	Owen Forbes	CMHR	Whose story is it? Mental health consumer and carer perspectives on ethics in research"
3:15 pm	Cameron Moffatti	NCEPH	Examining the incidence of Campylobacter infection in Australia
3:30 pm	Angus McLure	NCEPH	Mathematical model of Clostridium difficile transmission in hospitals
03.45pm	Archie Clements, Director RSPH		
04.00 pm	Presentation of Awards (Best presentation, best three minute presentation, people's choice award) and closing		

Presenting author: Jenny Welsh

Co-authors: Rosemary Korda, Grace Joshy and Emily Banks

A prospective study of psychological distress, pre-clinical disease and incidence of ischaemic heart disease

The risk of ischaemic heart disease (IHD) is elevated in people with high psychological distress. However, it is unclear how much of this relationship is causal, as it may reflect increased psychological distress in those with pre-clinical IHD (or reverse causality). We investigate the extent to which the association between psychological distress and incident IHD can be explained by functional limitation and self-rated health, possible indicators of pre-clinical IHD.

Questionnaire data (2006-2009) from 45 and Up Study participants without previous cardiovascular disease or cancer providing valid scores on the main exposure variables were linked to hospitalisation and mortality data (to Dec 2013). Hazard ratios (HRs) for incident IHD (IHD-related hospitalisation or IHD death) were estimated comparing low (10-<12), mild (12-<16), moderate (16-<22) and high (22-50) psychological distress, adjusting for personal characteristics. HRs were estimated with further adjustment for functional limitation and self-rated health.

Among 150,268 eligible respondents, 5,158 incident IHD events occurred over 850,929 person-years (rate: 6.06/1000py). Without adjustment for pre-clinical disease, IHD risk was increased with mild (HR 1.15, 95%CI 1.08-1.22) moderate (1.26, 1.16-1.37) and high (1.39, 1.24-1.56) versus low distress. Controlling for indicators of pre-clinical disease reduced excess risks substantially; the IHD HR for mild, moderate and high distress dropped to 1.09(1.03-1.16), 1.15(1.05-1.25) and 1.21(1.07-1.36), respectively, after adjusting for functional limitations and 1.08(1.01-1.15), 1.11(1.02-1.22) and 1.16(1.03-1.31) when adjusted for self-rated health.

A substantial proportion of the association between psychological distress and IHD is explained by indicators of pre-clinical disease and is likely to be attributable to reverse causality.

Presenting author: Kai Hodgkin, RM

Out of hospital birth where maternal mortality is high: A systematic literature review of studies from Indonesia

The aim of this presentation is to discuss results of a systematic literature review into birth outcomes for women at low risk of complications, by birth setting or caregiver.

In high income countries, where maternal and neonatal mortality are low, strategies that focus on supporting wellness and normal birth, such as midwifery continuity of care and home or birth centre birth are showing excellent outcomes. These strategies target women at low risk of complications, who choose an alternative to hospital birth, yet have access to emergency obstetric care if needed. Benefits include lower rates of intervention, higher rates of satisfaction, and decreased costs.

However, in places of high maternal and neonatal mortality, which includes many low and middle income countries, the focus is unsurprisingly on risk of death, and reducing that risk, rather than on promoting positive outcomes. This translates to a focus on hospital or other rather than on promoting positive outcomes. This translates to a focus on hospital or other facility birth and increasing access to obstetric lead care. In essence, all women in development situations are imagined to be 'high risk'. However, the evidence is not clear on the benefits of this strategy.

Indonesia is a useful setting for examining birth setting in a place of high maternal mortality, as a large percentage of the population birth out of hospital with assistance by a midwife. A systematic review of studies examining outcomes by place of birth and/or caregiver, particularly focusing on low risk women was undertaken and the results will be presented.

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Presenting author: Sidhant Chopra

Co-authors: Shaw Marnie, Shaw Thomas, Abhayaratna Walter, Sachdev Perminder, Anstey Kaarin, Cherbuin Nicolas

In-vivo Myelin Mapping: Investigating the Relationship between Myelination and Processing Speed in Mid-life and Old-age

The highly myelinated nature of the human brain, as well as the vulnerability of myelin to degeneration, may underlie the exceptional vulnerability of our species to age-related neurocogntive disorders, including Alzheimer's disease (AD). For this reason, indicators of myelin integrity may be important for understanding age-related change in cognition as well as age-related disease. Indeed, white matter integrity was recently found to be a better predictor of age-related differences in processing speed than other imaging measures. Here we used newly described novel method of combined T1-weighted and T2-weighted MRI scans to map brain myelin to investigate the age related association between myelination and processing speed. We used scans from 261 midlife participants (aged 48-54) and 236 old age participants (aged 68-74) from a randomly selected cohort of community-dwelling individuals without cognitive impairment or neurological disorders. For validation, the myelin map images were first compared to Diffusion Tensor Images (DTI) from the same participants. Multiple regression was used to investigate the association between myelin and processing speed, controlling for gender, education and age. The myelin map images were positively correlated with DTI measures of high myelination (r=0.85) and negatively correlated with those of low myelination (r=-0.86). We found myelination was significantly associated with measures of processing speed in the old-age group, with no significant associations in the midlife. Indicators of myelin integrity may be important for the development of biomarkers for early identification of neurocognitive disorders including AD.

Presenting author: Jennifer Ma

Co-authors: Philip Batterham (PhD), Alison Calear (PhD)

Suicide risk across latent class subgroups: A test of the Interpersonal Psychological Theory of Suicide

Context: It remains unclear as to whether the Interpersonal Psychological Theory of Suicide (IPTS; Joiner, 2005) holds more explanatory power for certain subgroups compared to others. Objectives: The aim of the present study was to: (a) identify subgroups of individuals who endorsed suicide ideation in the past month from an online community sample based on a range of mental health and demographic variables, (b) track levels of the IPTS constructs within these subgroups, and (c) test the predictions of the IPTS in relation to suicide ideation and attempt outcomes for each subgroup. Methods: Latent class analysis, and linear and logistic regression analyses were conducted on population-based data obtained from 1,321 adults recruited from Facebook for a study of mental health and suicide ideation outcomes. Results: Among participants reporting suicidal ideation, four distinct patterns of risk factors emerged based on age and severity of mental health symptoms. Groups with highly elevated symptoms reported the highest levels of perceived burdensomeness. Tests of the IPTS interactions across the subgroups only provided partial support for the theory, primarily in young adults with elevated mental health symptoms. Conclusion: Lack of support found of the IPTS predictions across the subgroups raises questions around the broad applicability of the theory, as well as the stability of the interpersonal risk factors over time. Future research would benefit from examining the interpersonal risk factors longitudinally to promote a better understanding of suicide risk across the lifespan.

Presenting author: Tehzeeb Zulfiqar

Co-authors: Lyndall Strazdins, Catherine D'Este, Huong Dinh, Catherine Banwell

Overweight and obesity in children of immigrant parents from developing countries living in Australia; Preliminary results

Background: Evidence indicates that higher proportion of children of immigrant parents from developing countries living in developed countries are at risk of overweight and obesity. However, such evidence is scarce in Australia. **Study objectives**: The study determines the prevalence of overweight and obesity in children of immigrant parents from developing countries living in Australia relative to children of Australian-born parents from birth to 11 years of age.

Method: Secondary data analysis of Birth cohort of longitudinal study of Australian children [LSAC] was conducted. Birth cohort comprised of a nationally representative sample of 5107, 0-1 year-old children, which was followed biennially for 10 years (2608 boys and 2499 girls]. The final sample in wave 6 consisted of 3764, 10-11 year old children (1929 boys and 1835 girls). The exposure variable was parent's birthplace; born in developing countries and Australian-born. The outcome variable was overweight and obesity in children, according to the International Obesity Taskforce age-and sex-specific BMI cut points. A random effect model is used to estimate association of parent's birthplace with children overweight and obesity. The model adjusts for family socioeconomic position, mother's education, employment, duration of stay in Australia and language spoken at home.

Results: Preliminary analysis showed higher risk of overweight and obesity in children of immigrant parents from developing countries compared to children of Australian-born parents.

Conclusions: The results of this study highlight the need for greater consideration of children of overseas-born parents when implementing obesity interventions.

Presenting author: Dominique Kazan

Co-authors: Alison Calear (PhD), Philip Batterham (PhD)

Relationship separation and suicidality: Exploring intervention opportunities

Overview: Intimate partner relationships are an integral factor in the lives of most individuals, influencing the dynamic interplay between individual mental health and overall well-being. However, a relationship separation can be classified as a significant negative life event with research reporting that relationship separations contribute significantly to suicidal thoughts and behaviours.

Challenge: There is an urgent need to address the issue of suicide and provide access to innovative and evidence-based intervention programs. However, research suggests that stigma associated with help-seeking for suicidal thoughts and behaviours is a significant barrier for individuals in accessing services. *What if an intervention provided a different access point?* Would individuals who have recently separated from a partner be more willing to identify a need for help, and engage with an intervention specifically designed for relationship separation but which also addresses the increased risk of suicidal ideation and behaviour following separation?

Objective: The aim of my research is to investigate the impact and influence of intimate partner relationships on suicidality, specifically how relationship separation contributes to suicidality. The primary objective is to create an intervention that will support people who have recently experienced a relationship separation and are at risk of developing suicidal thoughts and/or behaviours

Presenting author: Kathina Ali

Co-authors: Louise Farrer (PhD), Daniel B. Fassnacht (PhD), Markus Moessner (PhD), Elizabeth Rieger (PhD), Stephanie Bauer (PhD), Kathleen M. Griffiths (PhD)

Online help for eating disorders – revolutionary or risky?

Young adulthood is a critical period for the development of mental disorders. Eating disorders such as anorexia nervosa, bulimia nervosa, and binge eating disorder are severe mental illnesses. However, barriers including stigma and shame prevent young people from seeking appropriate help. The Internet is frequently used to seek information and communicate with others online. Thus, online interventions have potential to overcome some of the barriers and improve their mental health. This presentation will provide an overview of online peer-to-peer support, barriers towards seeking help for eating disorders and what role technology can play to improve the lives of young people.

Presenting author: Alexandra Voce

Co-authors: Rebecca Mcketin, Bianca Calabria, , Richard Burns, and David Castle

The Symptom Profile and Clinical Course of Methamphetamine-Induced Psychosis: A Systematic Review

The clinical presentation of methamphetamine-associated psychoses (MAP) often appears indistinguishable from schizophrenia. Although this syndrome may produce a unique array of psychotic symptoms that occur within a distinct clinical course, however these clinical features have likely been obscured by conflicting empirical findings within the field. The current study will systematically review and synthesise research examining psychotic symptoms associated with methamphetamine. Five key databases were searched (*PubMed, Medline, Ovid, PsychInfo* and *Scopus*) to identify studies that examined the either the symptom profile or clinical course of psychiatric symptoms in individuals identified as having MAP. A total of 67 articles were identified: 12 longitudinal, 24 cross-sectional, 27 case studies, and 5 experimental studies. A qualitative synthesis will be presented in full and will identify the clinical characteristics of MAP, including the types of symptoms reported, the duration of symptoms and the clinical course of the syndrome. The discussion will consider the implications of the symptom profile and clinical course of MAP for primary clinical settings. The findings of this review will assist health care providers to manage specific symptoms that occur at different stages of MAP, and improve diagnostic accuracy when distinguishing individuals with MAP from individuals with schizophrenia and co-morbid substance use.

Presenting author: Naomi Clarke

<u>**The "War on Worms": control programmes for soil-transmitted helminths**</u>

Soil-transmitted helminths are intestinal worms which cause a significant burden to the health of the global population. This presentation discusses the global health impacts of intestinal worms, presents current global control guidelines, and describes a research project investigating how these guidelines can be improved.

Presenting author: Tianqi Zhang

Co-authors: Marnie Shaw, Erin Walsh, Perminder Sachdev, Kaarin J. Anstey Nicolas Cherbuin

Higher fasting plasma glucose, striatal volume and fine motor skills in a longitudinal cohort: the PATH 2sweet project

We studied the relationship between higher fasting plasma glucose (FG) or type 2 diabetes (T2D), striatal volumes from brain MRI and fine motor skills among 60-years-and-older participants. Cross-sectionally, morphological differences indicating smaller striatum are associated with higher FG and T2D. Further longitudinal study with 12 years of follow-up showed association between higher FG or T2D and lower fine motor skills performance, but limited association between FG/T2D and striatal volume or between striatal volume and motor skills. Findings suggest managing FG early to improve old-age cerebral health, and studies investigating blood glucose and subcortical morphology in longitudinal cohort are needed.

Presenting author: Kinley Wangdi

Co-authors: Luis Furuya-Kanamori, Justin Clark, Jan J Barendregt, Michelle L Gatton, Cathy Banwell, Gerard C Kelly, Suhail AR Doi, Archie CA Clements.

Comparative effectiveness of malaria prevention measures: A systematic review and network meta-analysis

Background: Malaria causes significant morbidity and mortality worldwide. There are several preventive measures that are currently employed, including insecticide treated nets (ITNs, including long-lasting insecticidal nets and insecticidal treated bed nets), indoor residual spraying (IRS), prophylactic drugs (PD), and untreated nets (UN). However, it is unclear which measure is the most effective for malaria prevention. We therefore undertook a network meta-analysis to compare the efficacy of different preventive measures on incidence of malaria infection.

Methods: A systematic literature review was undertaken across four medical and life sciences databases (PubMed, Cochrane Central, Embase, and Web of Sciences) from their inception to July 2016 to compare the effectiveness of different preventive measures on malaria incidence. Data from the included studies were analysed for the effectiveness of several measures against no intervention (NI). This was carried out using an automated generalized pair-wise modeling (GPM) framework for network meta-analysis to generate mixed treatment effects against a common comparator (NI).

Findings: There were 30 studies that met the inclusion criteria from 1998-2016. The GPM framework led to a final ranking of effectiveness of measures in the following order from best to worst: PD, ITN, IRS and UN, in comparison with NI. However, only ITN (RR 0·49, 95% CI 0·32, 0·74) showed precision with other methods [PD (RR 0·24, 95% CI 0·001, 15·43), IRS (RR 0·55, 95% CI 0·20, 1·56) and UN (RR 0·73, 95% CI 0·28, 1·90)] demonstrating considerable uncertainty associated with their point estimates.

Interpretation: Current evidence is strong for the protective effect of ITN interventions in malaria prevention. The evidence base for the preventive efficacy of other interventions is weak as there is considerable uncertainty associated with their measures of efficacy.

Presenting author: Kefyalew Addis Alene

Co-authors: Kerri Viney[1], Emma S McBryde[2], Adino Tesfahun[3], Archie Clements[1]

Treatment outcomes in patients with multidrug-resistant tuberculosis in Northwest Ethiopia

Background: Multidrug-resistant tuberculosis (MDR-TB) is a major public health problem in Ethiopia. The number of patients diagnosed with MDR-TB has increased over time since the first case was diagnosed thirty years ago. The aim of this study was to assess MDR-TB treatment outcomes and determine predictors of time to poor treatment outcomes.

Methods: We used a retrospective cohort study design. We reviewed the treatment outcomes and predictors of time to poor treatment outcomes of all MDR-TB patients who had complete records and who were enrolled at Gondar University Hospital since the establishment of the MDR-TB program in September 2010. A Cox-proportional hazard model was used to identify the predictors of time to poor treatment outcomes, which were defined as death or treatment failure.

Results: Of the 242 patients who had complete records, 131 (54.1%) were cured, 23 (9.5%) completed treatment, 31 (12.8%) died, 4 (1.6%) experienced treatment failure, 27 (11.1%) were lost to follow up, 6 (2.5%) transferred out, and 20 (8.3%) were still on treatment at the time of analysis. The overall cumulative probability survival of the patients at the end of treatment (which was 24 months in duration) was 80.1% (95%CI: 70.1%, 87.0%). The proportion of patients with poor treatment outcomes increased over time from 6.3% per person-year (PY) during 2010–2012 to 11.6% per PY during 2013–2015. The independent predictors of time to poor treatment outcome were: being anaemic [AHR=4.20; 95%CI: 1.11, 15.90] and being a farmer [AHR=2.24; 95% CI: 1.03, 4.88].

Conclusion: Overall, in northwest Ethiopia, the MDR-TB treatment success rate was high. However, poor treatment outcomes have gradually increased since 2012. Being a farmer and being anaemic were independent predictors of poor treatment outcomes. It would be beneficial to provide nutritional supplementation, especially for farmers during the course of MDR-TB treatment.

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Presenting author: Thomas Shaw

Co-authors: Cherbuin Nicolas, Shaw Marnie, Chopra Sidhant, Sachdev, Perminder[2], Anstey Kaarin.

Healthy Heart, Healthy Brain? The Associations Between White Matter Integrity and Cardiovascular Health

The heart and the brain are reliant on each other for good health throughout life. Cardiovascular (CV) health has significant effects on normal ageing. High blood pressure (BP) and hypertension are significant risk factors for structural brain changes and neurodegeneration. Associations between CV health and ageing in the brain are relatively well understood, though they often ignore the role of myelin in the ageing brain. This is in part due to practical methodologies of assessing myelination in vivo. Myelin is a fatty substance that speeds axonal conductance in the brain. To assess this lack in knowledge, a recently validated method of detecting myelination in vivo has be explored in an existing community dataset. This method, coined 'myelin mapping' from Glasser and Van Essen (2011) provides a reliable picture of myelin distribution. This technique uses MRI to calculate the ratio of T1w and T2w images, creating a myelin-enhanced image. From this measure, associations between myelination and CV health were explored over middle- and older aged individuals from a healthy population. MRI scans from an individual were taken four years apart, from 261 participants aged 48-54 and 236 participants aged 68-74 from a randomly chosen group of community-dwelling persons without neurological disorders. After validating the new T1/T2 ratio image, myelin mapping for participants and measures of CV health were investigated. CV health measures were correlated with myelination such that poorer CV (higher BP) were associated with lower levels of myelin (r = .312 p <.05), indicating CV health is associated with myelination. Comprehending this connection is necessary for identifying and ameliorating risk factors of ageing, and understanding how health factors interrelate. Understanding relationships between brain and heart health are important for pathways towards ageing well.

Presenting author: Owen Forbes

Co-authors: Alyssa Morse, Bethany Jones, Sharon Leigh-Hazell, Dr Michelle Banfield

Whose story is it? Mental health consumer and carer perspectives on ethics in research

Background and objective

Mental health consumers and carers (family and friends) make valuable contributions to mental health research. There are clear ethical guidelines governing the inclusion of consumers in research, but there are no equivalent guidelines for carers. It is important to identify the ethical dilemmas that may affect the participation of carers in mental health research.

The aim of this study was to investigate consumer and carer perspectives on research participation, and inform the future development of a framework for the ethical inclusion of mental health carers in research.

Design, setting and study participants

A one-day discussion forum was convened, consisting of small, consumer and carer-only group discussions followed by a larger discussion with both groups combined. Discussions were guided by prompt questions related to carer participation in research. Themes were developed from the transcripts using a phenomenological approach.Five self-identified mental health consumers and nine carers participated in the forum, held in the Australian Capital Territory (ACT).

Results and conclusions

Participants raised a variety of issues pertaining to carer research participation. The most salient themes included ownership of story, privacy and confidentiality, and the importance of communication and education.

Different narratives around carer research participation emerged from the consumer and carer viewpoints. Areas of discussion highlighted issues of commonality and difference between consumer and carer perspectives on relationship boundaries and research participation. Key differences in understanding and expectations of story 'ownership', privacy, and communication, suggest that researchers and ethics committees need to provide more education and information regarding these issues.

Presenting author: Cameron Moffatt

Co-authors: K. Glass, R. Stafford, C. D'Este M.D. Kirk

Examining the incidence of *Campylobacter* infection in Australia

Campylobacter infections are a globally significant cause of gastroenteritis. Although rates of infection in Australia are among the highest in the industrialized world, studies describing campylobacteriosis incidence in Australia are lacking. Using national disease notification data between 1998 and 2013 we analysed trends by gender, age-group, season and state and territory. Negative binomial regression was used to estimate incidence rate ratios (IRRs) and post estimation commands to calculate predicted incidence. The IRR for males was significantly higher than for females (IRR 1.20, 95% CI 1.18-1.21), while a distinct seasonality was demonstrated with higher rates in both spring and summer (IRR 1.18, 95% CI 1.16-1.20). Age-specific IRRs were significantly lower than the 0-9 year reference group but over time a trend of increasing IRRs with increasing age was shown, with the highest IRRs seen in age-groups over 70 years (IRR 1.07, 95% 1.06-1.08, p<0.001). Predictions for age-specific incidence showed declines among cases under 40 years combined with contemporaneous increases in older age-groups, notably those aged 70-79 years. While crude rates continue to be highest in children, our findings suggest the age structure for campylobacteriosis in Australia is changing, carrying significant public health implications for older Australians.

Presenting author: Angus McLure

Mathematical model of Clostridium difficile transmission in hospitals

Clostridium difficile Infection (CDI) is one of the leading hospital associated infections worldwide, but there is debate as to how much CDI is acquired in hospitals.

We developed a compartmental model of Clostridium difficile transmission in healthcare settings which captures the epidemiological role of immune responses to Clostridium difficile toxins. This flexible model can reproduce observations from hospitals with high and moderate CDI incidence by adjusting the key factors observed to differ between these settings: the length of stay and the immune profile of patients.

The model reproduction number -- the average number of secondary infections arising from each primary infection -- is less than one in high and moderate incidence hospitals. This suggests that the continued presence of Clostridium difficile in hospitals cannot be sustained by transmission alone but requires constant admission of asymptomatic carriers from the community. However, transmission within hospitals does contribute to the burden of disease. Our models show that patients are more than twice as likely to be colonised at discharge than at admission.

We recommend the consideration and evaluation of community-based interventions or protocols to detect and isolate asymptomatic carriers on admission to hospitals.