Annual Report 2011

Barwon Psychiatric Research Unit

In partnership with Deakin University, Barwon Mental Health Drug & Alcohol Services and Healthscope.

DEAKIN UNIVERSITY AUSTRALIA

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Contents

Forewords

The year 2011 was a momentous one for the Barwon Psychiatric Research Unit.
It became a part of Deakin University, and was also highly successful in attracting a number of significant grants, as you will see from reading this annual report.
I would like to congratulate Professor Michael Berk and his team for their successes in 2011.
I also agree with Professor Berk in the comment he made in a video produced for the Deakin Research website: "Coming to Deakin was the best move we ever made." I commend the team for their excellent discovery, clinical and community based research and wish them every success in 2012.

Prof Lee Astheimer
Faculty of Medicine, School of Medicine
Deakin University

Barwon Health is really proud of the work undertaken by the Barwon psychiatric unit. Looking back across another year has seen the unit continuing to build on its growing reputation at a time where it has smoothly managed the transition to Deakin University. Barwon Health looks forward to close collaboration with the unit and using investments in research to guide reform and changes to health service delivery into the future. The team led by Professor Berk continues to excel and deliver international class research outcomes growing its international reputation within the field.
Congratulations on another successful year!

Mr Paul Cohen
Acting Chief Executive Officer
Barwon Health

Professor Berk and his team continued to produce high quality research in the area of clinical psychiatry. Assistance was provided by The Geelong Clinic's Acceptance and Commitment Therapy and Dialectical Behaviour Therapy Programmes for recruitment and further research purposes. Advanced trainees from Barwon Health have continued to rotate through The Geelong Clinic under the supervision of Professor Berk and Dr Peter O'Keefe, enabling the trainees to gain valuable experience in assessment and treatment of clients with psychiatric disorders such as Eating Disorders, Depression, Anxiety, Posttraumatic Stress Disorder, Borderline Personality Disorder, Bipolar Disorder and Addictions . We look forward to continuing the collaborative relationship between clinical and research and private / public mental health.

Mr Andrew Currie
State Manager Hospitals
VIC/TAS/WA
Healthscope Ltd

Introduction from Prof Michael Berk

2011 was a great year for the Barwon Psychiatry Research Unit. The major event was the smooth and seamless transition to Deakin University. While many in the team had some anxiety about the transition, it clearly was the best thing we ever did. We are truly delighted with the support and dedication of the Deakin team. It is a pleasure to be part of an organisation with the vigour, enthusiasm and optimism of Deakin.

The research game is often one of droughts and floods and this was a La Nina year; it flooded. Our team achieved over a dozen competitive grants, totalling almost $5million, following up our successful partnership in the $23million CRC grant in late 2010. Highlights included an American National Institute of Health grant to study an Internet based treatment for bipolar disorder and an American Simons Foundation grant to study the efficacy of N-Acetyl Cysteine in autism. The team were also successful in obtaining five NHMRC grants. These grants will be used to study the diversity of research projects spanning diet as a treatment for depression, the prevention of high prevalence psychiatric disorders, the use of N-Acetyl Cysteine in the treatment of bipolar depression and a proof of principle study examining anti-inflammatory agents in the treatment of depression. Olivia Dean and Lana Williams obtained an Alfred Deakin Scholarship.

This was buttressed by an increase in both the number and quality of our publications. For a team consisting essentially of four post-doctoral researchers, we were pleased with a productivity rate of over a paper a week. We were also able to publish in a number of high impact journals including two papers in The Lancet, the British Journal of Psychiatry, Neuroscience and Biobehavioural Reviews amongst others.

The team aims to strengthen its links with existing Deakin units to leverage our shared interests and activities. The capacity growth that the recent grant funding allows should provide a very strong foundation for the further growth and productivity of the team. We would like to thank Deakin University, Barwon Health and Healthscope for their ongoing support of our unit.

Bipolar Disorder research

Bipolar disorder research is perhaps the predominant focus within the Barwon Psychiatric Research Unit. Multiple research projects have focus on bipolar disorder, and this is the area for which the unit is internationally best known.

One of the largest studies currently active is the first study to attempt to answer the question of which potential mood stabilising agents have the best neuroprotective properties after a first-episode of mania? In the study, individuals who have had a first-episode of mania will be randomised to receive either lithium or quetiapine and they will be followed up for a period of a year using brain imaging and neuropsychology to determine which agent best protects the brain.

Our oxidative biology program has a major focus on bipolar disorder. Having shown that N-acetyl cysteine effectively treats the symptoms of depression in bipolar disorder, we completed as study to answer the question of whether N-acetyl cysteine has the ability to prevent relapse in individuals with bipolar disorder. As part of this research project we are also examining biomarkers including measures of inflammatory and oxidative stress as well as neuroimaging in conjunction with our research partners led by Professor Gin Malhi at the University of Sydney.

In conjunction with the Geelong Osteoporosis Study, we are currently recruiting a sample of participants with Bipolar Disorder from the community to investigate associated health and lifestyle factors and underlying mechanisms. Findings from this case control study may be used to inform public policy and health service delivery, leading to improved treatment and health outcomes for people with bipolar disorder. We welcome Amanda Stuart who is the coordinator of this study.

We are continuing to analyse the very rich database that exists within the Bipolar Comprehensive Outcomes Study. To date our focus has been on clinical questions including the role of smoking and the impact of mixed states in bipolar disorder. We plan to analyse the data pertaining to illness beliefs and illness behaviour in the forthcoming year.

The Bipolar Depression Rating Scale was developed and first validated by the unit and is a tool that was specifically designed for measuring symptom severity in bipolar depression. It has subsequently been translated into several other languages and validation studies have been replicated.

We have also been fortunate to have a range of collaborations to further investigate issues pertaining to bipolar disorder. These collaborations have allowed our unit access to all the clinical studies of olanzapine in bipolar disorder. We have interrogated the database to see whether a small number of episodes predict a better response to treatment and indeed this appears to be the case. We have done a similar study in the STEP BD database, and confirmed that stage of illness predicts outcome. Our unit was invited to do two editorials on bipolar disorder for the lancet, which were published in late 2011 and early 2012.

Visiting International academics: Left: Gjertrud Svendal from Norway. Right: João Data Franco from Portugal.

A further focus is on carer-burden in bipolar disorder. A Delphi study to develop guidelines for carers of people with bipolar disorder has been completed, and an intervention based on the results of the study has been completed. This intervention is Internet-based, and is found at www.bipolarcaregivers.org.

A new study investigating altered perceptions of time in patients with bipolar disorder commenced and is expected to be completed in 2012. In 2011 we were enriched by the arrival of a visiting post-doctoral fellow from Portugal, and a PhD student from Norway, who joined our bipolar research team.

L-R: Ms Karen Hewitt, Dr Seetal Dodd, Dr Olivia Dean, Prof Michael Berk, Ms Kristy Villagonzalo

Drug safety

The large range of modern drugs available for the treatment of mental illness have helped improve the lives of thousands, perhaps even millions, of people who have suffered from mental illness. These drugs have helped people manage their illnesses, prevented or reduced the recurrence of illness and controlled symptoms of illness. Although people with mental health difficulties have benefited greatly from modern drug treatments, these treatments are also known to have risks. Researchers at the Barwon Psychiatric Research Unit work to understand and reduce the risks associated with drug treatment of mental illness.

Dr Seetal Dodd
of the Drug Investigation team

We have gathered data on adverse effect of drug treatment to improve our knowledge and understanding of associated risks with drug treatment. We have collected considerable data on the adverse effects of the drug clozapine, which can adversely impact blood cells and cardiac health and can cause weight gain and diabetes. Specifically, we have novel data showing that clozapine can adversely impact cardiac muscle function.

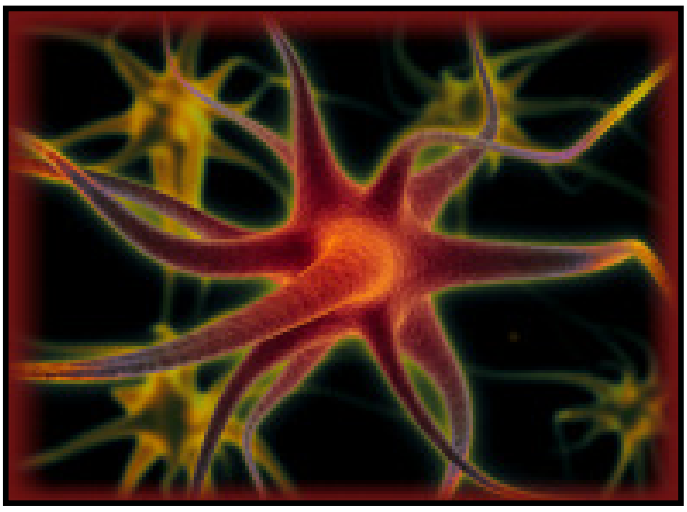
Our Geelong based epidemiological resource provides epidemiological data on medication use. With this data we have already demonstrated a link between treatment with SSRI antidepressants and reduced bone density. An NHMRC project grant ($409,140) lead by Dr Lana Williams was obtained in 2010 to determine the impact of SSRI use on fracture rates and to replicate our findings from Australia in a large scale epidemiology study based in Norway (HUNT 2). A similar study investigating antipsychotic use and bone is planned. The importance of this research was also recognised by Deakin University, with a further $20,000 being awarded to Dr Lana Williams to aid in the data collection for these studies. In collaboration with Barwon Biomedical Research and Deakin University, we are also conducting unique in vitro and in vivo experiments to further investigate the adverse effects of psychotropic drugs on bone. There is growing concern that SSRIs, which sequester in the bone marrow at higher concentrations than brain or blood, may increase bone fragility and fracture risk. Thus, the safety of these agents is being tested using osteoblast and osteoclast cell cultures and animal models.

We have been involved in the publication of many guidelines, which assist clinicians to make well-informed and balanced treatment decisions. These include publications about the safe use of drugs for the evidence-based treatment of various mental illnesses as well as publications about safe treatments in special populations, such as pregnant and breast-feeding women.

Highlighting our global role in this area, Dr Seetal Dodd currently holds the position of Editor-in-Chief of the scientific journal Current Drug Safety.

Our research enables better assessments of the risks and benefits of drug treatment, which allows clinicians to make safer treatment decisions.

Prediction of response to antidepressants – clinical & genetic factors



Dr Ajeet Singh MBBS MPsych FRANZCP
Doctor of Medicine (MD) Scholar

Matching patients with major depression to effective tolerable medication sooner has scope to reduce burden of illness. An international multi-centre candidate gene association study examining the role of polymorphisms of the blood brain barrier (BBB) efflux pump P-glycoprotein (P-gp), the noradrenaline transporter (NET) gene, plus depression severity and history of child abuse were studied for response prediction (theragnostic) utility by Dr Singh at The Geelong Clinic as part of his MD thesis study.

Dr Singh was an invited opening speaker at the 2011 Royal Australian & New Zealand College of Psychiatrists Congress in Darwin where preliminary results were presented. Dr Singh was also invited to present findings at the European Congress of Neuropsychopharamcology in Paris, September 2011. He has been an adviser to the Australian Federal Government on pharmacogentics and has published in the field since 2007.

His study has demonstrated that subjects with greater BBB block are less likely to respond to antidepressants and require higher doses. Subjects with poorer hepatic metabolism and poorer BBB block have a 1.6 fold greater chance of response. Subjects of Chinese ancestry require lower dose and subjects with more severe depression and no history of child abuse are 10 fold more likely to respond to medication. These findings are unique in the literature and if replicated have scope to match patient to effective treatment sooner.

Dr Singh submitted his thesis in September 2011 - outcome pending. He shall publish findings in 2012 and intends to continue theragnostic and therapeutic research into major depressive presentations based at The Geelong Clinic.

Novel Therapies

Dr Olivia Dean

Our unit is currently focusing on alternative targets to treat the symptoms of psychiatric disorders. The trials undertaken are predominantly adjunctive treatment trials meaning that participants remain on any usual treatments and take the trial medication on top of that. This prevents people having to change their existing treatment regimens making recruitment more appealing and the results more applicable to the 'real-world' scenario where people with mental illness often receive multiple therapies as part of their treatment plan. The targets of our novel therapies centre on alterations in oxidative biology, inflammation, neurogenesis and mitochondrial dysfunction, factors that are believed to be important in the pathology of many psychiatric illnesses.

We have a multitude of approaches ranging from basic science through to clinical trials. We have shown that treatment with the antioxidant precursor, N-acetyl cysteine (NAC) can reduce symptoms in people with bipolar disorder and schizophrenia. We have completed a larger maintenance trial in people with bipolar depression. The study involved a two-month open-label phase followed by a six-month randomised, placebo-controlled maintenance phase. Substantial improvements were seen in the open-label phase not only in symptoms but also on clinical impression and overall functioning. These improvements continued through the maintenance phase resulting in a lack of difference between NAC and placebo groups. We are also currently preparing to analyse data from a trial involving NAC in the treatment of unipolar (clinical) depression. This trial involved three months of NAC treatment or placebo in people with moderate to severe depression.

Children with autism are also reported to have alterations in their oxidative biology. Under the direction of the team, this project is being undertaken by a PhD candidate, Ms Kristi Villagonzalo and involves six months of treatment with NAC or placebo in children diagnosed with autism. This study is currently recruiting participants.

In 2012, several new clinical trials will commence that will involve the exploration of novel therapies focused on mitochondrial dysfunction in bipolar disorder and inflammation in depression. In addition to clinical trials, we are currently investigating peripheral markers (blood samples) to measure antioxidant levels, inflammatory markers and mitochondrial dysfunction, and are using brain imaging (magnetic resonance spectroscopy) to directly visualise changes in key brain metabolites.

Overall, our unit is working towards better understanding the underlying mechanisms of psychiatric illness and identifying new therapies to improve outcomes for individuals with these disorders.

Psychiatric disorders and the associated outcomes

Dr Lana Williams

Mood and anxiety disorders impose huge costs, both on the individual and the community, yet we have an incomplete understanding of their impact on lifestyle, social and in particular medical factors. Given the high prevalence and associated public health-care costs of common physical illnesses, such as cardiovascular disease, type 2 diabetes, obesity, osteoporosis, and fragility fracture worldwide, it is important to investigate and better understand the association of these illnesses with mental health issues. Less is known whether personality disorders too are associated. Understanding the association between these factors and psychiatry is vital to successful health promotion, health care delivery, and disease management.

Over the past seven years, we have been developing a program of research investigating medical, lifestyle and social outcomes associated with mood and anxiety disorders and soon personality disorders, within an epidemiological context. This research has been conducted in conjunction with the Geelong Osteoporosis Study (GOS), a large epidemiological study involving a population-based sample of over 2000 women and men randomly selected from electoral rolls for the region (Barwon Statistical Division). The GOS was originally developed to investigate predictors and consequences of osteoporosis, but expanded nearly a decade ago to examine mental illness and other common diseases. At the 10 year follow up each of the participants underwent a structured clinical interview (SCID-I/NP) and are currently being reinterviewed (SCID-I and II) at the 15 year follow up. This research program has been replicated in more than 1000 men from the Barwon region, adding further strength to this large-scale project.

Results of this research to-date have revealed that approximately one in three (35%) women have experienced a mood and/or anxiety disorder. At the time of the study, 14% were identified as having a current illness, with mood disorders being the most common condition. Furthermore, we found depression to be associated with reduced bone mineral density and to increase the risk of fracture by 60%. We were also one of the first to show that the SSRI group of antidepressants may increase the risk for osteoporosis (See section "Drug Safety" for further information regarding this program of research). Associations between mood and anxiety disorder and a range of medical conditions including osteoporosis, irritable bowel syndrome, pain and cardiovascular diseases, lifestyle factors such as smoking and physical activity and social factors such as area based socioeconomic status and quality of life have also been reported.

This program of work will generate important information that can be used to provide an insight into the interaction between physical and mental health. Also, a wide range of social, psychological and biological factors such as the presence of inflammation and/or oxidative stress, are being investigated, which may explain these associations. This project is an invaluable resource for collaborative studies, both nationally and internationally. Existing collaborations include Nord-Trondelag Health (HUNT) Study, Norwegian University of Science and Technology (NTNU), Norway; University of Eastern Finland, Centre hospitalier universitaire vaudois, Lausanne, Switzerland, Institute of Functional Genomics of Lyon, France and Guiyang Medical University, China which allows for further investigations and replication in even larger population based studies.

Prevention of common mental disorders

A/Prof Felice Jacka

Depression and anxiety are highly prevalent conditions, and the burden they impose on individuals and the community is enormous.

Traditionally, mental health problems have been seen as 'separate' from the other common, chronic physical illnesses such as heart disease, type 2 diabetes and cancer. However, many of the lifestyle factors that influence our risk for these physical diseases, such as diet, exercise and smoking, also influence the biological systems that are known to be involved in the development of depression and anxiety, such as the immune system and oxidative stress. Importantly, these lifestyle factors are open to modification, affording the possibility of a preventative approach to these mental illnesses.

In our research unit we have been developing a highly innovative program of research that examines how our lifestyles interact with our risk for mental health problems. This is being done with the ultimate goal of developing an evidence-based public health message for the primary prevention of the common mental disorders. Working with the Geelong Osteoporosis Study (GOS), we are gathering valuable data from a representative sample of adults from the Geelong region, and using these data to investigate the role that lifestyle may play in increasing or decreasing our risk for depression and anxiety.

For example, having recently published data in PLoS One, one of the top international scientific journals, showing that poor diet quality is an independent risk factor for mental health problems in adolescents. In this study we collaborated with the WHO Collaborating Centre for Obesity Prevention at Deakin University to examine data from more than 3000 Australian adolescents, collected at two time points. This study proved that healthier diets in adolescents were associated with better mental health in 2005 and also predicted better mental health in 2007, whilst diets higher in unhealthy foods were associated with increased mental health problems over time. Three quarters of psychiatric illnesses begin before the age of 25 and the average age that depressive illnesses start is only 13 years old. Once an individual experiences depression, they are more likely to experience it again. For these reasons, we believe that this finding, the first such study in adolescents,

has critical public health implications as it suggests that it might be possible to use diet to prevent mental health problems developing in the first place.

Collaboration with researchers at Barts and the London School of Medicine and Dentistry (UK), on a study examining diet as a risk factor for mental health problems in adolescents from areas of social disadvantage in London, showed results that suggest that a poor quality diet may be a risk factor for depression. In 2011 we published data from a large study of Norwegian men and women that supported our previous findings in Australian adults and adolescents regarding the link between diet quality and mental health. 2012 will see us work closely with researchers in Norway to examine the impact of early life nutrition on the development of mental health problems in children.

We are also investigating the relationship between work and leisure time physical activity and the common mental disorders in men and women. This year we have published two important papers showing that inadequate exercise may be a risk factor for depression. The first reported that lower levels of physical activity in childhood was associated with an increased likelihood of depression in adulthood, while another reported that reduced physical activity was an independent risk factor for the development of new depressive illness in older adults. We will be continuing and extending our international and domestic collaborations with other organisations involved in population health research, with further studies expanding the evidence base and our understanding of the contribution of poor lifestyle practices to mental health problems. We will also partner with public health organisations to develop public health messages relating to lifestyle and mental health. Our ongoing investigations will provide important data to support a preventative approach to mental illness that is highly innovative and of real importance in reducing the burden of these illnesses in the community. These studies will provide the evidence for a coherent public message about how to minimise the risk for depression.

Online Psychological Interventions

There has been continued growth in online psychological interventions both in research and as a way of delivering psychologist services. These interventions overcome the barriers to accessing specialist programs and services, particularly in areas where such programs are non-existent.
There is a growing body of evidence regarding the efficacy of on online interventions. These interventions cover a wide range of disorders including, anxiety disorders, unipolar depression and bipolar disorders.

The Barwon Psychiatric Research Unit has just completed evaluating one of the first online self-help programs for Bipolar Disorder called MoodSwings www.moodswings.net.au. This intervention is based on the MAPS program, an effective group based program for bipolar disorder, developed by Lesley Berk, under the stewardship of Professor David Castle.

The MoodSwings program is completely online. It is entirely self-help and offers adjunctive psychosocial tools and information to help manage bipolar disorder. It includes a number of core modules that cover information about bipolar disorder and strategies to assist in staying well. There is also a moderated discussion board, and follow up booster sessions. We have developed two different versions of MoodSwings and are comparing whether there is any difference to the information version (psycho-education), in comparison with a more intensive Cognitive Behavioural Therapy (CBT) approach.

A total of 156 participants were involved in the MoodSwings study, participants were randomised to either interactive CBT or to psychoeducation. Participants in both groups showed benefits of the program in relations to symptoms, functionality, quality of life and medication adherence. The interactive CBT group also showed some additional benefits on symptoms of mania and social support.

Researchers at Barwon Psychiatric Research Unit have also been collaborating with Stanford University and has successfully obtained further funding from the NIH to further extend the evaluation of MoodSwings.

Sue Lauder, PhD candidate

Emma Gliddon, Research Assistant

Dissociation and Changes in the Perception of Time

Dr Frank Giorlando (PhD candidate)

In our everyday lives, we take for granted the cohesive sense of self, our environment and time, all of which are essential for any activity. When people experience dissociation, these normal perspectives become disturbed, resulting in changed perception of the relationships between objects, the placement of their bodies in space and the flow of events.

These symptoms lead to significant impairment and anxiety and are common in psychiatric patients with up to 80% of inpatients have significant dissociation in addition to their primary diagnosis. The causes of these debilitating symptoms are only partially understood, leading to significant difficulty in management and rehabilitation. A particular area where more research is necessary is understanding of how dissociation in time occurs and how it may be measured.

This doctoral study aims to combine a number of research methods to better understand how the perception of time is altered in psychiatric disease. It has involved an ongoing collaboration between the Department of Clinical and Biomedical Sciences and the Department of Physiology, Development and Neuroscience at the University of Cambridge as well as Barwon Medical Imaging. In particular, the research focuses upon changes in the perception of the "flow" of time and ordering of events.

Over the last year, we have conducted two main studies, one with participants who have Bipolar Disorder and another, fMRI experiment with controls. In both experiments, participants are asked to report the ordering of two flashed lights that are presented close to when they make a large eye movement. This often results in an illusion whereby they see the second flash before the first.

Shikha Markanday, Research Assistant

The studies have shown that dissociative symptoms are common in the outpatient population and that changes in the perception of time involve alterations of activity in the frontal as well as temporal areas of the brain. We hope to understand more of how these differences relate to alterations in the perception of time. We have been investigating physiological models that may explain this effect as well as observing how ketamine alters people's perception of the illusion. The studies have also used fMRI imaging to better understand brain regions involved in temporal perception.

This series of studies aim to provide insights into dissociation from a broad perspective, starting with the person's experience and working towards precise descriptions of how brain function may be altered and contributing to these difficult to treat states.

Alcohol use in elderly men

Alcohol abuse and dependence in Australia is estimated to cost in excess of 10 billion annually in lost productivity, treatments costs and alcohol related crime, violence and death. Even relatively low levels of alcohol can impact upon social, psychological and physical health, although the threshold for safe levels of alcohol use is incompletely understood. While the harms of excess alcohol consumption receive frequent media attention, a discrepancy still exists between the guidelines for healthy or safe drinking and the consumption patterns of the population. In addition, the link between level of alcohol use and other psychiatric pathology is incompletely understood.

This project aims to investigate within a large community-based sample of elderly men (aged 65-93) the age related prevalence of alcohol consumption and psychiatric co morbidity including the impact on general health and physical activity and mobility. Specifically we aim to investigate which patterns of alcohol consumption are associated with an increased likelihood of obesity, frequent falls, common medical conditions, mobility limitations and psychiatric disorders such as depression or anxiety disorders.

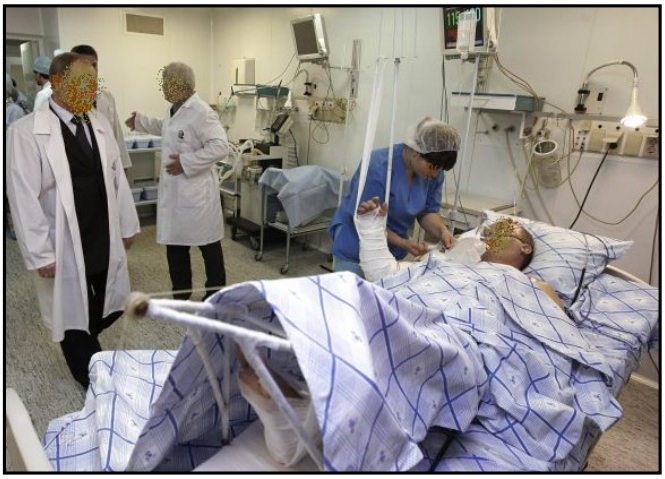
We have currently completed the data collection, with a final total of over nine hundred male participants. The data collected provides us with information about participants' bone health, medical history, clinical measurements (blood pressure, height, weight and waist circumference), psychiatric history, alcohol use, diet, quality of life, subjective wellbeing and physical activity. This data allows us to investigate a wide range of research questions relating to the health of men from the local community. Our research will hopefully enable Australian men to make well-informed decisions about the possible harms associated with alcohol consumption.

Carolyn Coulson, PhD candidate

The impact of accident circumstance variables on mental and physical health outcomes following serious motor vehicle accidents

Jason Thompson, PhD candidate

Close to 300 people are killed on roads each year, and another 16,000 injured require hospitalisation or treatment from allied health professionals. In addition to the tragic loss of life and disability incurred through motor vehicle accidents, the direct financial cost to the Victorian community of medical services and other compensation associated road trauma is around $1billion per year. Further to this, many clients are left permanently disabled, are unable to return to work or other roles within families and communities, or continue to experience poor mental health for a time far beyond the duration of their physical injuries. Whilst the TAC maintains a largely 'no-fault' scheme, it is apparent from initial investigations that individual client demographic and accident circumstance variables, including attributions of responsibility for the accident, may have a large effect on duration and quality of mental and physical health recovery, perceptions of service quality, and treatment costs. This study will attempt to explore this relationship within the context of existing theoretical models of post-trauma recovery processes.



Grants

Barwon Psychiatric Research Unit, in partnership with Deakin University, Barwon Health and Healthscope.

Ongoing funding for 2011

1) Stanley MRI #05T-742. Kulkarni J; Berk M, PFitzgerald; Decastella A; Damodaran S. Maximum $83,842 per year if all milestones met.

2) NHMRC ID 454356. CIA: Berk M, CIB: Pasco J, CIC: Bell C, CID: Leslie E, CIE: Jacka F/ Developing evidence for the primary prevention of depressive disorders: The role of diet and physical activity. (2007: $23,850 2008: $108,150 2009: $108,150 2010 $117,900 201: $87,000) Funding approved $445,050.

3) Stanley MRI Oct 2006. SMRI#06TGF-996. Investigators: Berk M, Dodd S, Ng F, Dean O, Copolov D, Bush A. $769,350.00 over 3 years. Testing the glutathione dysfunction hypothesis of Bipolar Disorder: A Double Blind Randomised Placebo Controlled Trial of N-Acetyl Cysteine.

4) BeyondBlue: Berk M, Lauder S, Dodd S, Chester A, Pitterman L, Castle D. "Moodswings". $134,573.

5) NHMRC Project Grant – AWARED October 2009 ID 628395. CIA: Berk M, CIB: Malhi G, CIC: Dodd S, CID: Dean O, CIE: Lagopoulos J, CIF: Ng F. The Efficacy of N-acetylcysteine as an adjunctive treatment in unipolar depression. $400,000 TOTAL 2010: $207,500 2011: $192,500.

6) Eli-Lilly investigator initiated grant. Evaluation of "Moodswings" - successful $36,150 commencing April 2009 as per 5 milestones of $7,150 then $7,250.

7) National Health and Medical Research Council Project Grant (2011-2013): CIA Dr Lana Williams Selective serotonin reuptake inhibitors (SSRIs) and osteoporosis: Mechanisms and clinical consequences APP1009367 $409,140 AUD

Successful Grants

1) Australian Rotary Health - Ian Scott Scholarship for 2011 to Kristi-Ann Villagonzalo. Top up her APA scholarship to $29,000. Additional funds $6,140. Scholarship can be extended for 2.5 years.

2) Defence Health Foundation. Miller S, Berk M. Investigating a visual test for bipolar disorder. $49,986 for 2011.

3) NARSAD Young Investigator Award. CI: Jacka F. Contribution of early life diet and nutrition to the development of behavioural problems in children: a large cohort study. $16,350 for July 2011 to July 2012.

4) Simons Foundation Autism Research Initiative - SFARI. Pilot Grant. Berk M, Dodd S, Dean O, Gray K, Tonge B. Efficacy of N-Acetyl Cysteine in Autism. 2 years. $146,554/year for 2 years.

5) National Institutes of Health. 1R34MH091384-01A1, 1/1/2012 – 31/12/2014. Suppes T, Berk M. A Randomized Trial of Internet-Based Interventions for Bipolar Disorder. $900,000. $214,457 to UNIVERSITY OF MELBOURNE - Budget Period: 09/20/2011 – 06/30/2012; Project Period: 09/20/2011 – 06/30/2014.

6) NHMRC Project Grant: APP1026265. CIs: Berk M, Pasco J, Williams L, Jacka F, Henry M. Inflammatory cytokines as risk factors for the development of both depression and osteoporosis in men. 3 years commencing 2012. $369,360.

7) NHMRC Project Grant: APP1021345. CIs: Jacka F, Berk M, Pasco J, Williams L. Providing evidence for the primary prevention of the high-prevalence mental disorders in men: the role of diet in the aetiology of depression, anxiety, and psychological distress. 3 years commencing 2012. $292,900.

8) NHMRC Project Grant: APP1021347. CIs: Berk M, Jacka F, Castle D, Brazionis L, Itsiopoulos C. Diet as a therapeutic target in depression: A randomised controlled trial. 3 years commencing 2012. $481,810.

9) NHMRC Project Grant: APP1027315. CIs: Berk M, Chanen A, Harrigan, Davey, Hetrick, Dean O, Dodd S. Proof of principle of the inflammatory and oxidative theory of depression: A treatment study. 5 years commencing 2012. $ 1,475,510.

10) NHMRC Project Grant: APP1026307. CIs: Berk M, Dean P, Cotton S, Dodd S. The Efficacy of N-acetylcysteine as an Adjunctive Treatment in Bipolar Depression: A Double-blind, Randomised, Placebo-controlled Trial. 3 years commencing 2012. $930,844.

11) Deakin University Central Research Grants Scheme 2012. Williams L. Psychotropic use and bone metabolism. One year's funding of $20,000.

12) Deakin University Alfred Deakin Postdoctoral Research Fellowship 2012-2014. Williams L.

13) Deakin University Alfred Deakin Postdoctoral Research Fellowship 2012-2014. Dean O.

Publications

1) Berk M, Kapczinski F, Andreazza AC, Dean O, Giorlando F, Maes M, Yücel M, Gama CS, Dodd S, Dean B, Magalhães PVS, Amminger P, McGorry P, Malhi GS. Pathways underlying neuroprogression in bipolar disorder; Focus on inflammation, oxidative stress and neurotrophic factors. Neuroscience & Biobehavioral Reviews 2011 Jan;35(3):804-17.

2) Callaly T, von Treuer K, van Hamond A, Windle K. Forming and sustaining partnerships to provide integrated services for young people: an overview based on the headspace Geelong experience. Early Intervention in Psychiatry 2011; 5 (Suppl. 1): 28–33.

3) Jacka F, Pasco J, Mykletun A, Williams L, Nicholson G, Kotowicz M, Berk M. Diet quality in bipolar disorder in a population-based sample of women. Journal of Affective Disorders. 2011; 129: 332–337.

4) Berk M, Brnabic A, Dodd S, Kelin K, Tohen M, Gin S Malhi, Berk L, Conus P, McGorry P. Does stage of illness impact treatment response in bipolar disorder? Empirical treatment data and their implication for the staging model and early intervention. Bipolar Disorders 2011; 13(1): 87-98.

5) Magalhães PVS, Dean O, Bush A, Copolov D, Malhi G, Kohlmann K, Jeavons S, Schapkaitz I, Anderson-Hunt M, Berk M. N-acetyl cysteine add-on treatment for bipolar II disorder: a subgroup analysis of a randomized placebo-controlled trial. Journal of Affective Disorders. 2011;129(1-3):317-20.

6) Badcock PB, Moore E, Williamson E, Berk M, Williams L, Bjerkeset O, Nordahl HM, Patton GC, Olsson CA. Modelling gene-environment interaction in longitudinal data: Risk for neuroticism due to interaction between maternal care and the Dopamine 4 Receptor gene (DRD4). Australian Journal of Psychology. 2011; 63:18-25.

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Book Chapters

1) Kalra H, Dean O, Dodd S, Berk M. Glutamatergic Antidepressants. Future Medicine.

Conference presentations

Tokyo, Japan	Japan speaking tour	▪ Berk M. Early intervention, neuroprogression and neuroprotection in bipolar disorder ▪ Berk M. Importance of Early Diagnosis and Early Intervention ▪ Berk M. Biological aspect of bipolar disorder ▪ Berk M. Own research on Olanzapine
Milan, Italy	INNOPSY 11 (Innovation in Psychiatry)	▪ Berk M. Novel therapies for bipolar disorder
Pittsburgh, USA	9th International Conference on Bipolar Disorder (9th ICBD)	▪ Berk M. International Society for Bipolar Disorder (ISBD) Task force reports. ▪ Lauder SD, Berk M, Castle D, Dodd S, Chester A, Gilbert M, Piterman L, Klein B, Austin D, Murray G, White C, Chamberlain JA, Berk L. www.moodswings.net.au Uptake and Outcomes: results of an online self-help intervention for Bipolar Disorder. Poster presentation.
Paris, France	24th ECNP Congress	▪ Berk M. Impact of depressive episodes on brain and mind: consequences for treatment
Melbourne, Australia	3rd World Congress of Asian Psychiatry 2011	▪ Berk M. Novel therapies for mood disorders
Sydney, Australia	Australasian Society for Bipolar and Depressive Disorders Conference	▪ Berk M. Oxidative processes in mood disorders – mechanisms and therapeutics ▪ Berk M. Bipolar I disorder: implementing current evidence to optimise patient outcomes ▪ Lauder SD, Chester A, Castle D, Dodd S, Berk L, Klein B, Austin D, Gilbert M, Chamberlain JA, Murray G, White C, Piterman L, Berk M. From face-to-face to web based.: experience and outcomes of MoodSwings an online intervention for bipolar disorder ▪ Jacka FN. Symposium: Risk Factors and Pathways in Mood Disorders ▪ Jacka FN. Diet quality as a modifiable risk factor for mood disorders ▪ Dodd S. Smoking as a risk factor for mood disorders ▪ Giorlando F. Dissociation and time perception in bipolar disorder (poster presentation) ▪ Williams LJ. Inflammation as a risk factor for mood disorders ▪ Dean OM. New tricks for old dogs- novel treatments for mood disorders ▪ Dean O, Malhi G, Cotton SM, Gama CS,

	Australasian Society for Bipolar and Depressive Disorders Conference Sydney, Australia continued…..	Kapczinski F, Fernandes BS, Kohlmann K, Jeavons S, Hewitt K, Moss K, Allwang C, Schapkaitz I, Cobb H, Bush AI, Dodd S, Berk M. N-acetyl cysteine (NAC) as an adjunctive therapy for bipolar depression. (Poster presentation) ▪ Dean O. Antioxidant and other anti-inflammatory therapy for mood disorders and schizophrenia ▪ Jacka FN, Dodd S, Giorlando F, Williams LJ, Dean O. Risk factors and pathways of mood disorders. ▪ Weisinger DT, Williams LJ, Pasco JA, Jacka FN, Brennan SL, Berk M. Depression and medical conditions in a female cohort of the population-based Geelong Osteoporosis Study
Cape Town, South Africa	Biological Psychiatry Congress 2011	▪ Berk M. From neuroprogression to neuroprotection in bipolar disorder ▪ Berk M. Can we prevent depression?
Seoul, Korea	ISBD Korea Annual Meeting	▪ Berk M. Neuroprogression and staging in bipolar disorder ▪ Berk M. Early intervention and neuroprogression in bipolar disorder ▪
Sydney, Australia	International Society for Research on Internet Interventions	▪ Lauder SD, Chester A, Castle D, Dodd S, Berk L, Klein B, Austin D, Gilbert M, Chamberlain JA, Murray G, White C, Piterman L, Berk M. MoodSwings: an online self help program for bipolar disorder.
Dunedin, New Zealand	Australasian Society for Psychiatric Research 2011 Conference	▪ Dodd S. Safety monitoring guidelines for treatments for major depressive disorder ▪ Coulson C. The association between alcohol consumption and self-reported depression in a population-based study of elderly men ▪ Williams LJ, Pasco JA, Jacka FN, Berk M. Bone quality among women with depression ▪ Pasco JA, Jacka FN, Williams LJ, Brennan SL, Berk M. Physical activity and the relationship with positive and negative affect.

Leiden, The Netherlands	FEDERA Meeting 2011 - Chronic inflammation. New insights and challenges	▪ Dean O. Antioxidant and other anti-inflammatory therapy for mood disorders and schizophrenia.
Gold Coast, Queensland	International Osteoporosis Federation 2nd Asia-Pacific Osteoporsis and Bone Meeting and Australian & New Zeland Bone and Mineral Society (ANZBMS)	▪ Williams, LJ, Pasco JA, Jacka FN, Dodd S, Nicholson GC, Kotowicz MA, Berk M. Quantitative heel ultrasound (QUS) as a measure of bone quality among men and women with depression: Geelong Osteoporosis Study (GOS) (poster presentation)
Kaohsiung, Taiwan	International Federation of Psychiatric Epidemiology (IFPE)	▪ Williams LJ, Pasco JA, Jacka FN, Henry MJ, Nicholson GC, Kotowicz MA, Berk M. Quantitative heel ultrasound (QUS) as a measure of bone quality among men and women with mood disorders ▪ Pasco JA,Jacka FN, Williams LJ, Henry MJ, Cleverdon-Evans M, Brennan SL, Kotowicz MA, Nicholson, Ball MJ, Berk M. Dietary selenium intake and major depressive disorder ▪ Jacka FN, Kremer PJ, Berk M, de Silva-Sanigorski AM, Moodie M, Leslie ER, Pasco JA, Swinburn BA. A prospective study of diet quality and mental health in Australian adolescents ▪ Jacka FN, Rothon C, Taylor S, Berk M, Stansfeld S. Diet quality and mental health problems in adolescents from East London: a prospective study.
Melbourne, Australia	World Congress of Asian Psychiatry	▪ Jacka FN. Diet as a modifiable risk factor for the common mental disorders.
Sydney, Australia	Science of Nutrition in Medicine conference	▪ Jacka FN. Diet as a modifiable risk factor for the common mental disorders: Evidence and mechanisms (poster presentation)
Brisbane, Australia	Diet/MH Research – Happiness and its causes	▪ Jacka FN. Panel discussion with Dr Rosemary Stanton and Maggie Beer

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