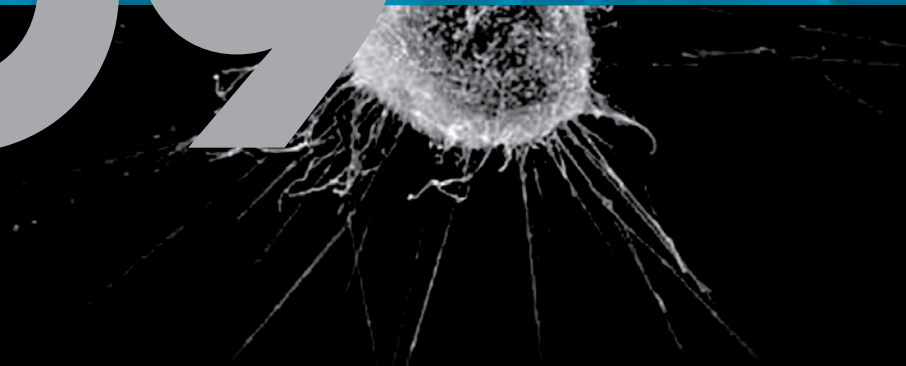


Research Report 2009

a vibrant culture of research





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Cover images include the microarchitecture of osteoporotic bone, and a breast cancer cell as seen under an electron microscope. These images represent Barwon Health's ground breaking trials in the treatment of postmenopausal women with hormone-sensitive early breast cancer. Conventional treatment for these women can lead to bone-thinning and potentially osteoporosis. A human vein scan has also been used for visual effect on the internal pages of this report.

Message from

THE BARWON HEALTH CEO AND THE CHAIR OF THE HUMAN RESEARCH ETHICS COMMITTEE



Since 2001 Barwon Health has had a clear, formalised strategic commitment to developing a vibrant culture and robust expansion of education and research that will foster clinical excellence, effective leadership and build a solid foundation for knowledge and scientific research.

Giant strides have been made in many areas of research over that period notably in epidemiological and scientific research with major contributions from psychiatry, cancer, cardiology, renal, endocrinology/diabetes and developing work in orthopaedics and some other specialties.

With Professor Geoff Nicholson as Head of the University of Melbourne Department of Clinical and Biomedical Sciences; Barwon Health, research activity at Barwon Health has expanded and developed with international recognition of the Geelong

Osteoporosis Study, cancer and medical research, as well as cutting edge research in psychiatry.

In 2008 Associate Professor John Agar and Professor Michael Berk both won Research Awards at the Smart Geelong Network Researcher of the Year Awards with Professor Berk taking away the top Research prize as Researcher of the Year and Associate Professor Agar as runner up.

Within Barwon Health long term efforts to implement a Barwon Health Research Office to co-ordinate and support research activity throughout Barwon Health came to fruition in June 2009 with the appointment of Dr Mary Lou Chatterton. With this appointment about to become reality came the opportunity to review and streamline the Human Research Ethics Committee, which has struggled to maintain some equilibrium under an ever increasing volume and complexity of research applications.

The Barwon Health Human Research Ethics Committee (HREC) makes an important contribution to the research undertaken within Barwon Health by ensuring that all research proposals submitted meet the requirements of the National Statement on Ethical Conduct in Human Research and are ethically acceptable. Research proposals emanate from both internal and external researchers and the HREC also acts as a reviewer for other regional health services. From 1 July 2009 the Barwon Health Human Research Ethics Committee moves from being a Board Committee chaired by a member of the Board, to a CEO Committee with an Independent Chair. We would like to welcome Simon French from Coulter Roache lawyers as the new Independent Chair of the Human Research Ethics Committee.

This publication is yet another new step for Barwon Health and as such it is fitting that we acknowledge all those

who are contributing to research and its administration within Barwon Health and committing to building a brighter research future for us all.

Sue De Gilio

CEO
Barwon Health

John Frame

CHAIR
Barwon Health Human Research
Ethics Committee



Associate Professor Julie Pasco
Epidemiology



Geelong Osteoporosis Study



Current research aims to better identify risk factors that result in osteoporosis-related injuries and what other underlying factors may contribute to its prevalence in certain demographics

Approximately 60 per cent of women and 30 per cent of men aged 60 years and over will suffer an osteoporosis-related fracture. Fractures can cause pain, disability and in the most severe cases, death.

Associate Professor Julie Pasco is part of a Geelong-based Barwon Health research team passionate about generating credible data regarding the causes and consequences of osteoporosis. Once widely thought to be a disorder that only affected elderly women, in recent times medical researchers and community members are more aware of its ability to impact both genders.

Previous work on gender specific population-based studies in Geelong has seen A/Professor Pasco examine genetic, biochemical analyte, diet, lifestyle, quality of life and medical histories to establish profiles of individuals most susceptible to osteoporosis.

Current research aims to better identify risk factors that result in osteoporosis-related injuries and what other underlying factors may contribute to its prevalence in certain demographics.

The unique project in health research was initiated in 1993 by A/Prof Mark Kotowicz, Prof Geoff Nicholson and colleagues, to describe the health burden of osteoporosis. Since 1993, it has been known as the Geelong Osteoporosis Study (GOS), co-ordinated by A/Prof Julie Pasco.

The population-based study is documenting clinical and environmental data to study the determinants of a range of intersecting disorders including bone fragility, mental health, obesity, cardiovascular disease and diabetes.

The GOS was the first to report that circulating high-sensitivity C-reactive protein is an independent risk factor for fracture, suggesting that inflammation may play a role in bone fragility.

GOS data showed that D-blockers are associated with reduction in fracture risk and greater bone mineral density, supporting the hypothesis that bone metabolism is modulated by the adrenergic nervous system.

Research into osteoporosis has led to the development of a fracture risk score for clinical use, based on multiple-site bone mineral density, falls, previous fracture and body weight. These enable prediction of tendency for future fractures to occur.

Geelong Osteoporosis Study reported an association between circulating leptin levels and Bone Mineral Density in humans, which had not been shown before, suggesting that leptin may mediate the link between body fat mass and bone.

Dr Pasco explained that studies have demonstrated that weight gain may contribute to increased fracture risk in women treated with rosiglitazone.

“We are developing a unique dataset that will have ongoing benefits - the archived data is priceless as we will be able to identify risk factors for developing a range of health disorders,” said Dr Pasco.

The Geelong Osteoporosis Study receives external funding from nationally competitive grants and has received major funding from VicHealth and the NHMRC, in addition to smaller grants from the University of Melbourne and philanthropic organisations such as Perpetual Trustees. Despite this there is still a substantial shortfall in funding.

Diabetes at end of life



The ultimate aim of Professor Dunning's research is to produce detailed clinical guidelines that relate to the management of diabetes in palliative care situations

Diabetes is an increasingly common condition, with more than three million Australians diagnosed with the condition.

There is increasing evidence of an association among diabetes, obesity, and some forms of cancer. Likewise, the long term complications of diabetes such as end stage renal disease require palliative care. Professor Trisha Dunning has begun her innovative and ground breaking research to create clinical guidelines to address diabetes management at the end of life.

Prof Dunning commenced the research this year thanks to the Nurses Board of Victoria inaugural Ella Lowe grant of \$50,000. Prof Dunning began her research by interviewing patients in their last stages of life and their carers.

"It's a real privilege to listen to what dying people have to say," Prof Dunning said.

"Surprisingly, patients want to talk about it. They have got nothing left to loose so they are so honest."

"The patients are wider than my role but I have a real interest in people," she said.

Diabetes management in the context of palliative care is extremely complex. Several symptoms of advanced cancer are similar to those of hyperglycaemia, which complicates care decisions and makes it difficult for health professionals to determine the underlying causes of symptoms unless diabetes-related issues such as blood glucose is monitored.

The ultimate aim of Prof Dunning's research is to produce detailed clinical guidelines that relate to the management of diabetes in palliative care situations. The recent palliative care clinical guidelines do not address diabetes management at the end of life.

"The goal is to improve and maintain the patient's quality of life and dignity," Prof Dunning said.

"The complexity of the situation and the lack of guidelines make it difficult for nurses


and medical staff to decide on optimal care to enhance the quality of life for individual patients."

Providing evidence based, tested guidelines specifically for managing diabetes in patients at the end of life will improve their quality of life, health professional satisfaction, and assist patients to have a peaceful death.

Prof Dunning is beginning to analyse the eight patients and three carer interviews her team conducted during the year.

"Although the participants won't see the benefits of the research, future patients in their later stage of life and clinicians will benefit" she said.

"My hope is to see the guidelines adopted, receive feedback and further develop the guidelines to include diabetes in residential aged care. We are very grateful for the support and contribution of the palliative care teams working in Barwon Health."

A portrait of Professor Trisha Dunning, a woman with short brown hair, smiling. She is wearing a dark blue coat with a thick, dark red fur collar and small black earrings. The background is a blurred outdoor scene with green foliage and a white pillar.

Professor Trisha Dunning
Nursing and Allied Health



Associate Professor Richard Bell
Oncology - Andrew Love Cancer Centre

Reducing the risk of osteoporosis in breast cancer patients



The research will provide information on the effects of anastrozole on bone density within the three different groups

Associate Professor Richard Bell of Barwon Health's Andrew Love Cancer Centre identified that a fear of bone deterioration was preventing the use of effective therapy for breast cancer.

In 2004 A/Prof Bell and his research team developed the Bisphosphonate and Anastrozole Trial - Bone Maintenance Algorithm Assessment project. The trial aims to benefit postmenopausal women with early breast cancer.

The current standard of care for postmenopausal women with hormone-sensitive early breast cancer is to suppress the production of the female hormone oestrogen with a class of drug known as aromatase inhibitors.

Research has shown profound oestrogen suppression induced by an aromatase inhibitor can also lead to an increase in bone mineral loss and fractures. This has the potential long-term side effect of osteoporosis.

"Our trial aims to assess the utility of this strategy of monitoring and treating with bisphosphonates, a class of drug that slows or stops the rate of bone thinning in postmenopausal women with hormone-sensitive early breast cancer receiving adjuvant anastrozole, an aromatase inhibitor," said A/Prof Bell.

There is some evidence that major bone loss occurs in the first one or two years of aromatase inhibitor (AI) treatment. The trial will also test whether three years of bisphosphonate use is enough to overcome the initial AI treatment effect, or whether five years of bisphosphonate is more appropriate.

Women who participate in the study may have normal bone density or suffer osteopaenia or osteoporosis. The research will provide information on the effects of anastrozole on bone density within the three different groups. The information obtained through the research can then be used to guide the management of patients presenting with hormone-sensitive early breast cancer.

"This is the only trial to date to include osteoporotic women in the patient population. We will therefore be able to study the effects of anastrozole in the group of patients who will also receive bisphosphonate treatment for their established osteoporosis," said A/Prof Bell.

The Andrew Love Cancer Centre received a grant from AstraZeneca to support the cost of trial investigations. The grant is also used towards a nominal per patient fee to support sites with their costs associated with managing trial data.

The amount of funding available does not reflect the true cost of performing this clinical trial. Additional funding would assist in providing further support to sites and also allow rigorous monitoring of collected data.

Seven other Australian hospitals are now taking part in the study, with overall project management and ongoing support from Andrew Love Cancer Centre.



Research Week

SMART GEELONG NETWORK RESEARCH & LEARNING EXPO 10 TO 16 AUGUST 2008

Smart Geelong Network's fourth Research and Learning Expo gave the Geelong community the opportunity to expand their horizons by attending over 15 events hosted by the likes of CSIRO Australian Animal Health Laboratory, Barwon Health, Deakin University, CSIRO Textile and Fibre Technology, BioGeelong, Department of Education and the Department of Primary Industries.

The Smart Geelong Network was established as a limited company by the Geelong Chamber of Commerce with Geelong's key education and research stakeholders as members committed to profiling and developing research and lifelong learning in the Geelong Region.

The Research and Learning Expo is a great opportunity to showcase the research effort at Barwon Health during Research Week.



The Smart Geelong Network Research and Learning Expo is a great opportunity to showcase the research effort at Barwon Health during Research Week

BARWON HEALTH EVENTS FOR 2008

BARWON HEALTH WALK FOR HEALTHY BONES

Held annually to raise awareness of osteoporosis, this event is run by the Geelong Osteoporosis Study group from the department of Clinical and Biomedical Sciences at Barwon Health. Men, women and children enjoyed a walk along Geelong's waterfront followed by a sausage sizzle.

BARWON HEALTH AND DEAKIN UNIVERSITY SEMINAR

Staff and students enjoyed a seminar called "Talking to the Other Side (Ethics)" which investigates what the researchers and HREC members understand about ethics in research and how the decisions are made about what constitutes ethical conduct in human research. This was a fantastic opportunity for the different 'sides' of research to discuss research and review.

BARWON HEALTH SEMINAR

The Department of Clinical and Biological Sciences and Barwon Biomedical Research ran the seminar - "Functionalising Orthopaedic Implants".

Prof Chris Berndt, Director of Industrial Research Institute at Swinburne University of Technology, spoke about his expertise in biomaterials.

BARWON HEALTH RESEARCH HONOURS AND POST GRADUATE INFORMATION SESSION

World-class medical research is conducted at Barwon Health by several research teams including laboratory based research, clinical studies and clinical trials, and epidemiology. At the information session, researchers discussed research opportunities for students at Barwon Health and presented a range of research projects offered to students considering enrolment.

BARWON HEALTH RESEARCH AFTERNOON

Barwon Health conducts biomedical research across a number of areas including stem cell, oncology, cardiac, clinical trials, nursing, psychiatry, osteoporosis, orthopaedics and epidemiology. The research afternoon involved presentations, prize-giving for the podium and poster presentation and a guest speaker. This was an excellent chance to network over afternoon tea. The winners are listed below.

POSTER AND PODIUM PRESENTATIONS

Judging team combined expertise from Barwon Health and Deakin University:

- A/Professor Mark Kotowicz
- Professor Michael Berk
- Dr Paul Lewandowski
- Dr Tess Toop
- Professor Alister Ward
- Dr Jane Redden-Hoare

A total of 25 abstracts were received with the winners being:

Sheree Martin

Winning Category A Poster (basic science, clinical science) \$500 towards conference registration of the winner's choice

Amanda Jones

Winning Category B Poster (public health/promotion/education; audit or program evaluation) \$500 towards conference registration of the winner's choice

Peter Vuillermin

Winning Podium Presentation \$500 towards conference registration of the winner's choice.

Future of Research AT BARWON HEALTH

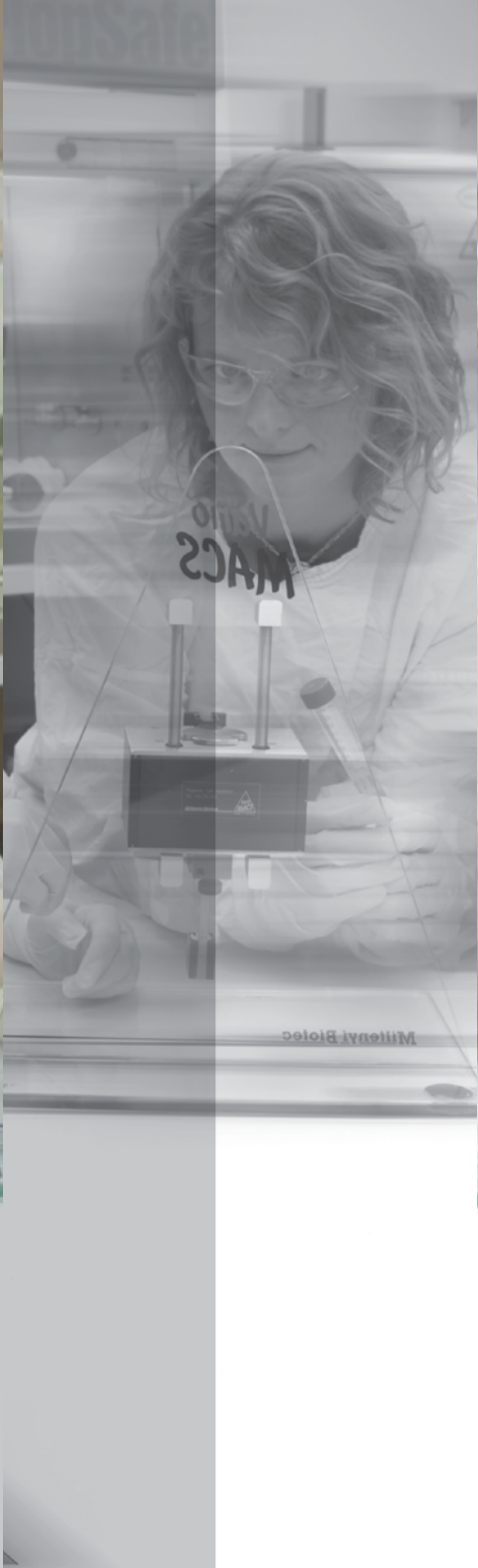
This is an exciting and challenging time for the Barwon Health Research Office. With the appointment of Mary Lou Chatterton as Manager of this department, we are positioned to capitalise on relationships with key stakeholders such as Deakin University and improve upon our processes and functions. Work is underway to streamline our current review processes, strengthen our governance functions, and expand our services.

By combining our research capacity with that of Deakin University, we will be able to allow the full spectrum of laboratory to clinic to population studies across a wide range of health disciplines in Geelong and the surrounding area.

In working with the Deakin Medical School we have the opportunity to enhance research and development through the integration of clinical education with clinical research. The future aim is to develop the Deakin University Barwon Health Clinical Research Centre at the rear of Kitchener House. This facility will play a significant role in contributing to the Victorian Government's strategic aim of developing Melbourne and Victoria as one of the top 5 international bio-technology hubs.



Changes in standards
require careful review and
updating of procedures



Dr Fiona Collier
Barwon Biomedical Research

Barwon Health Research Office



Research is integral to Barwon Health in achieving our vision for excellence and, in particular, provision of better health for our community

THE TEAM

In 2009 Barwon Health welcomed Dr. Mary Lou Chatterton to the appointment of Manager of the office.

Executive Officer

Bernice Davies

Administrative Support

Sophie Green

OUR WORK

Research doesn't happen in a vacuum. Within the broader competitive research environment is the enabling environment that allows research to happen at Barwon Health. What constitutes an 'enabling environment' is one of the more interesting challenges in the research industry. To the researcher, this might be the financial or resource availability to enable the research to be undertaken. To the department, this might be the mechanism to promote the kudos from the research. However from an organisational perspective, the enabling environment must extend into mechanisms that sustain the business of research. To this end the Research and Ethics Office provides oversight on governance and ethics to ensure that acceptable outcomes are achieved for all stakeholders in the research process.

The current role of the office includes provision of the secretariat for the Research Review and the Human Research Ethics Committees as well as providing the first line of contact for all research enquiries.

The Human Research Ethics Committee meets monthly and includes members of the community as well as Barwon Health physicians, nurses and executives. The committee focuses their review on facilitating ethically sound research as defined by the National Statement on Ethical Conduct in Human Research (NHMRC, 2007).

In 2005, the Research Review Committee was established in recognition that there was a growing need to capture organisational governance issues as well as reviewing each project's methodology and science. The Research Review Committee has been successful in relieving the HREC of the review burden by approving low risk projects, and addressing methodological and organisational issues facing healthcare research at Barwon Health.

OUR STATISTICS

Research is integral to Barwon Health in achieving our vision for excellence and, in particular, provision of better health for our community. The role of the Human Research Ethics Committee and the Research Review

Committees includes not only the initial review but also the ongoing oversight of projects under the auspices of Barwon Health. Since 2000, the total number of open trials under the auspices of Barwon Health has doubled; with the average time a study remains open being 3 years. In 2008 the Research and Ethics office provided oversight to more than 400 research projects ranging from low risk record audits to clinical drug trials evaluating the efficacy and safety of new medications (figures 1 & 2).

Figure 1

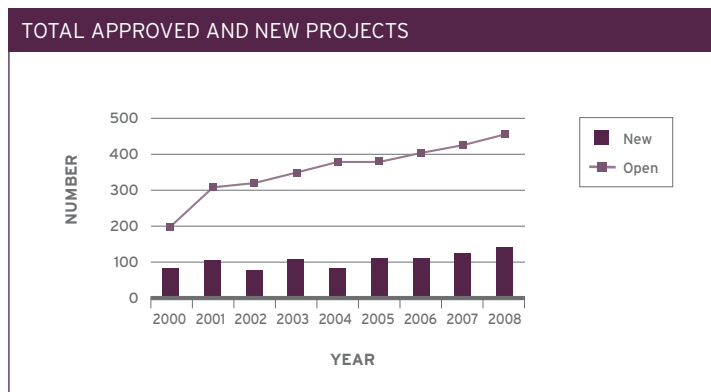
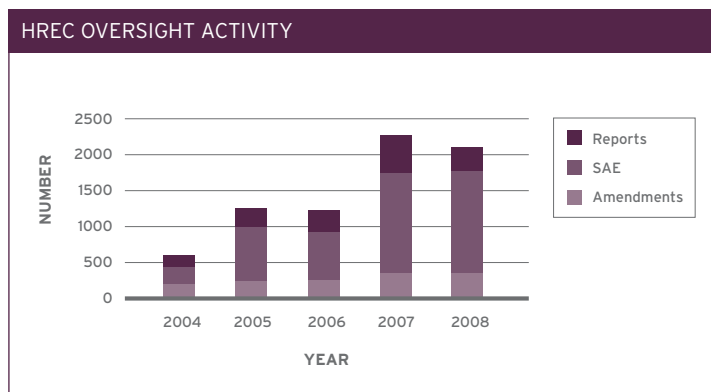


Figure 2 HREC oversight





Human Research Ethics Committee

We thank the past and present Board members for their input. The Barwon Health Human Research Ethics Committee makes an important contribution to the research undertaken within Barwon Health by ensuring that all research proposals submitted meet the requirements of the National Statement on Ethical Conduct in Human Research and are ethically acceptable.

HUMAN RESEARCH ETHICS COMMITTEE (HREC)

Chair Mr John Frame
Secretary Ms Bernice Davies

Mr Peter Ball
Professor Thomas Callaly
Mr David Dethridge
Ms Janet Farrow
Dr Rod Fawcett
Mr Hans Fikkers

A/Professor Mark Kotowicz
Dr Sarah Leach
Dr Neil Orford
Dr Jane Redden-Hoare
Dr Simon Tomlinson
Ms Lyn Touzel
Mr Greg Weeks
Reverend Kevin Yelverton

Research Review Committee

Barwon Health thanks the members of the committee for their time and wisdom, which has allowed the research projects to continue.

RESEARCH REVIEW COMMITTEE

Chair Professor Thomas Callaly
Secretary Ms Bernice Davies

A/Professor John Amerena

Mr Jack Beever

Professor Michael Berk

Dr Lucy Cuddihy

Ms Pam Dolley

Professor Trisha Dunning

Ms Tania Elderkin

Dr Helen Fairweather

Ms Marjan Geertsema

A/Professor Mark Kotowicz

Mr Paul Muir

Dr Jane Redden-Hoare

Dr Tony Weaver



Staff & Students

AGED CARE

Associate Professor Caryl Nowson
Professor Tony Worsley
Associate Professor Heather Jarman
Dr Rob Malon

BARWON BIOMEDICAL RESEARCH

Professor Geoff Nicholson
Associate Professor Mark Kirkland
Dr Fiona Collier
Dr Jason Hodge
Dr Cynthia Wong
Dr Gil Stynes
Tamara Gough
Melinda Tursky
Matt Constable
Nadine Blyth
Tania Fernandes
Andrea Loving
Joel Symons

CARDIOLOGY

Dr John Amerena
Dr Martin Sebastian
Dr Alan Appelbe

Associate Professor Sandy Black

Donna Campbell
Karen Fogarty
Anita Long
Lyn Wilson
Charisse Spence
Toni Shanahan
Monika Piroch

CLINICAL RESEARCH

Associate Professor Kerrie Sanders
Amanda Hayles
Alison Hunt
Cathy Verecondi
Eileen Moore

EMERGENCY MEDICINE

Dr Julian Stella
Dr Bruce Bartley
Dr Michael Ragg
Dr Matt Ryan
Dr Nicole Reid
Dr Julia Fisher
Dr Ameera Khan
Dr Megan Cooney
Dr Manoj Samuel

Dr Belinda Carne

Dr Tanya Wilton
Dr Anna Davis
Dr David Alexander
Mr Paul Jennings
Dr Emad Hassan

EPIDEMIOLOGY AND BIOSTATISTICS

Professor Geoff Nicholson
Associate Professor Mark Kotowicz
Associate Professor Julie Pasco
Dr Margaret Henry
Dr Sam Korn
Elizabeth Merriman
Eloise Clark
Gosia Bucki-Smith
Meryn Chalmers
Rumbi Tichawangana
Kathy Kolk
Rosalynn Korn
Dr Lana Williams
Dr Felice Jacka
Carolyn Coulson
Sharon Brennan
Yu Zhang

INFECTIOUS DISEASES

Dr Eugene Athan
Dr Andrew Hughes
Dr Daniel O'Brien
Dr Deborah Friedman
Dr Aaron Walton
Amanda Wade
Rick Milner
Jill Low
Kaylene Styles
Ann Gray
Leah Scheppers
Margaret Wardrop
Kevin Kendall
Penny Radalj
Lorraine Wilson
Julie Heath
Eileen Stubbs
Liz King

INTENSIVE CARE

Dr Neil Orford
Dr Claire Cattigan
Dr Charlie Corke
Dr David Green
Dr Peter Stow

Melissa Fraser

Tania Elderkin
Anne Kinmonth

MENTAL HEALTH

Professor Michael Berk
Hanette Neethling-Casey
Professor Tom Callaly
Dr Seetal Dodd
Dr Felicity Ng
Associate Professor Richard Harvey
Dr Clarissa Gama
Associate Professor Julie Pasco
Felice Jacka
Simone Kurlender
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Dr Barbara Hanna
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Leanne Bourke
Sue Lauder



Dr John Amerena
Cardiology

Staff & Students

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Joanna Fitzsimons
Dr Frank Giorlando
Carolyn Coulson
Jason Thompson
Dr Lana Williams

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Associate Professor Ross Carne
Dr Paul Talman
Dr Cameron Shaw
Dr Ben Clissold
Dr Thomas Kraemer
Dr Peter Batchelor
Associate Professor John Balla

Dr Caron Chapman
Dr Mark Mackay
Mr Peter McNeill

NURSING AND ALLIED HEALTH

Professor Trisha Dunning AM
Dr Sally Savage
Susan Dabkowski
Dr Beth Costa
Kristine Fitzgerald

ONCOLOGY

Associate Professor Richard Bell
Dr Adam Broad
Dr Graham Pitson
Dr Helen Fairweather
Dr Karen White
Dr Madhu Singh
Dr Maitham Mathlum
Dr Michael Francis
Dr Philip Campbell
Dr Rod Lynch

Dr Roger McLennan
Dr Theresa Hayes

ORTHOPAEDICS

Mr Richard Page
Sally Beattie
Mr Richard Angliss

Dr Margaret Henry
Mr David Bainbridge
Pam Kennedy
Mr Graeme Brown
Mr John Skelley
Mr Simon Williams
Mr David Bowyer
Mr Andrew Thomson

PAEDIATRICS

Dr Peter Vuillermin
Dr Mike Forrester
Kaye Hollingworth
Elizabeth Sykes

PERIOPERATIVE MEDICINE, ANAESTHESIA AND PAIN MANAGEMENT

Dr Simon Tomlinson
Dr Colin Gordon
Associate Professor Steve Bolsin
Dr Liam Broad
Dr Brett Coleman
Dr Mark Colson
Dr Myles Conroy
Dr Dean Dimovski

Dr Britt Fraser
Dr Simon Gower
Dr Jo Kara-Brightwell
Dr Adrian Lee
Dr Christine Lee
Dr Ross Mackenzie
Dr Diarmuid McCoy
Dr Frank Raineri
Dr Amutha Samuel
Dr Melissa Viney

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Mr Paul Muir
Claire Passlow
L Abbott
Sylvia Cuell

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Glenn Guest
Associate Professor Kerrie Sanders
Judith Roberts

Leesa Jenkins
Eileen Moore
Vinay Rane
Mugahid Al-Hassan
Dr George Kalogeropoulos
Melissa Holmes
Suemei Hoh

WOMEN'S AND CHILDREN'S SERVICES

Dr Helen McLachlan
Dr Della Forster
Dr Jane Yelland
Jo Rayner

Professor Michael Berk
Mental Health





Rosemary Simmonds
(Dialysis)



Contact

Executive Officer
Research and Ethics Office

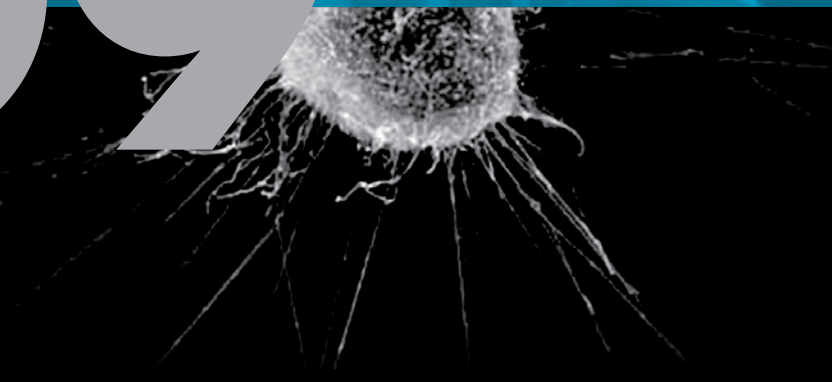
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Research Report PART **B**

a vibrant culture of research



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ARMADILLO

Linencare
GEELOONG

4M

4L

4K

4J

45

TAYLOR WARRIMUR

Scient

Aged Care

THE TEAM

A/Professor Caryl Nowson

Professor Tony Worsley

A/Professor Heather Jarman

Dr Rob Malon

ABOUT US

In 2004, a joint research program (Deakin University and Barwon Health), funded by the Australian Research Council, Murray Golbourn, and Sigma Pharmaceuticals commenced. The overall aim of the research program was to investigate ways of improving the health and quality of life of residents in the aged care setting of Barwon Health. We would like to thank all the staff for their assistance with this research program including: Unit Nurse Managers, Dietitians, Food Service staff, as well as the co-operation and contribution of the residents from McKellar Centre.

PROJECTS IN PROGRESS OR COMPLETED

- Improving Health and Quality of Life with Improved Nutrition in Residential Care
- Inadequate nutrition in elderly residents of care establishments is associated with poor physical and mental health. Deakin University researchers collaborated with Barwon Health, Murray Goulburn Co-op and Herron Pharmaceuticals to investigate the role of fortified foods and supplements in improving nutrition in this population.

HIGHLIGHTS

- Residents who consumed the equivalent of a small glass of fortified milk each day reached adequate levels of Vitamin D
- Residents who consumed 320ml of fortified milk each day showed improvements in bone quality
- Residents taking a multivitamin had a major improvement in Vitamin D levels and a beneficial effect on bone quality

GRANTS

Australian Research Council Grant of \$270,811 over 3 years

PUBLICATIONS

Grieger JA, Nowson CA, Ackland ML (2007) *Anthropometric and biochemical markers for nutritional risk among residents within an Australian residential care facility*, Asia Pac J Clin Nutr

Grieger JA, Nowson CA (2007) *Nutrient intake and plate waste from an Australian residential care facility* Euro J Clin Nutr

Barwon Biomedical Research (BBR)

THE TEAM

The Research Team

Professor Geoff Nicholson
MBBS PhD FRCP FRACP

A/Professor Mark Kirkland
MBBS, PhD, FRCPA

Dr Fiona Collier, PhD

Dr Jason Hodge, PhD

Dr Cynthia Wong, PhD

Dr Gil Stynes, MBBS

Tamara Gough, MSc

Melinda Tursky, BSc Hons

Matt Constable, BSc Hons

Nadine Blyth, BSc Hons

Tania Fernandes, BSc Hons

Andrea Loving, BSc Hons

Joel Symons, BSc Hons

The Bone Bank Team

Gavin van der Meer BSc

Valentina Novak BSc

Anthea Reid BSc

ABOUT US

Barwon Biomedical Research (BBR) is a department of Barwon Health that incorporates all the laboratory-based research within the Geelong Hospital. It is run by a management committee that is headed by Professor Geoff Nicholson and Associate Professor Mark Kirkland; two researchers with Melbourne University appointments and 40 years combined experience in bone cell and hematopoietic stem cell research respectively.

The research at BBR is focused on the use of umbilical cord blood (donations collected after birth) and the purification of the white cells in the cord blood for investigation of:

- the expansion of sub-populations of these cells (stem cells) for clinical use in treatment of disorders such as leukemia
- a novel signalling gene in a population of T-cells that are critical in maintaining the immune system
- differentiation of the cord blood stem cells into bone resorbing cells (osteoclasts), and the factors that control this process

In addition cells are extracted and isolated from the actual cord veins, cord tissue and placental membranes, and then used in culture to produce bone forming cells (osteoblasts).

As well as the research being carried out, BBR also operates a Bone Bank licensed by the Therapeutic Goods Administration (TGA) to provide fresh frozen bone for local orthopaedic surgery. Bone is donated by patients having total hip replacement surgery and then utilized for bone graft procedures.

PROJECTS IN PROGRESS OR COMPLETED

Hematopoietic Cell Expansion

Hematopoietic stem cells (HSC) are a valuable resource for the treatment of various blood and immunological disorders. As the numbers of HSC available in donated samples often limits their usability, ex vivo expansion is a safe and viable means to increase cell numbers and the likelihood of transplant success. In the literature to date there is no consensus in methodology so the research at BBR focuses on the optimisation of techniques and clinical reagents to enhance cell numbers and make it clinically relevant.

RTKN2 and Inhibition of Apoptosis in T-cells

Rhotekin 2 (RTKN2) is a protein that is very highly expressed in T-cells and appears to play a role in the inhibition of apoptosis and enhancement of cell survival. The project aims to understand the signalling events activated by RTKN2 within the T-cell and hence has important implications for diseases such as HIV and leukemia.

Osteoclasts

Work performed by this group centres on the study of the differentiation and activation of human osteoclasts and osteoblasts, bone cells that resorb bone or build bone, respectively. Osteoclasts are responsible for the destruction of bone in many bone diseases including osteoporosis, Paget's disease and bone cancers. We have demonstrated that umbilical cord blood provides an excellent source of osteoclast precursors. In addition, umbilical cord tissue provides an important source of stem cells that act as precursors to osteoblast cell development. Using these cell models has provided a robust foundation in which to identify the key genes involved in osteoclast/osteoblast formation and function, as well as identifying signalling pathways critical to these processes.

Differentiation of MSC

Mesenchymal stem cells (MSC) are multipotent progenitor cells capable of differentiating into various cell types such as bone, fat and cartilage, and so they are ideal candidates for bone tissue engineering. We aim to develop methods to isolate and characterise MSC derived from the umbilical cord, blood, amnion and placenta. Various methods will be used to investigate MSC expansion and their capacity to differentiate. These include low oxygen, 3-D structures, surface coatings, growth factor combinations and protein additives.

Biomaterials: two separate programs

(i) The project aims to develop biocompatible three-dimensional (3D) macroporous polymeric scaffolds that can be utilised as a device for cell growth and expansion. The scaffolds have been successfully functionalised with biotin so as to produce a surface that is conducive to cell attachment. Proliferation and expansion of the cord blood HSC and autologous MSC will be tested for clinical use.

(ii) Creation of a permanent and functional external interface between biomaterials and skin. Polymer and metal biomaterials with new chemical methods for attaching proteins will be used to bind to skin and skin cells

with the additional use of vacuum wound dressings. If a long-term interface can be created between skin and biomaterials, it will enable infection-free access to blood vessels and body cavities (eg peritoneal dialysis). In addition, this technology will enable the permanent implantation of prosthetic and robotic devices and the reconstruction of surgical defects without the need for tissue transfer.

HIGHLIGHTS

- A/Prof Mark Kirkland - G-Force Researcher of the Year Award 2007, Smart Geelong Research and Learning Expo, Aug 2007
- A/Prof Mark Kirkland - Department of Innovation, Industry and Regional Development Biomedical Award 2007, Smart Geelong Research and Learning Expo, Aug 2007
- Melinda Tursky - Best Basic Science/ Clinical Science Poster '*Ex vivo expansion of Cord Blood Hematopoietic Stem Cells*', Smart Geelong Research and Learning Expo, Aug 2007
- Sheree Martin - Best Basic Science Poster, '*Oxygen Mediated Regulation of Skeletal Muscle Stem Cell Proliferation and Differentiation*', Smart Geelong Research and Learning Expo, Aug 2008

PRESENTATIONS

Kirkland, MA, Public-Private partnerships in biotechnology - lessons from cord blood banking in Australia, Indian Chamber of Commerce Healthcare Summit, Kolkata, India, Jan 2009

Kirkland, MA, Transducible transcription factor proteins in the control of cell differentiation, 34th Annual Conference on Protein Structure and Function, Lorne, Australia, Feb 2009

Kirkland, MA, Expansion of Cord Blood Stem Cells, Stem Cell Awareness Day, Monash University, Sept 2008

Stynes, G A new biochemical method for attaching collagen to titanium and tantalum. Royal Australasian College of Surgeons and The College of Surgeons of Hong Kong Conjoint Annual Scientific Congress, Hong Kong, China, May 2008

JM Hodge, L Williams, S Dodd, GC Nicholson, M Berk Effect of SSRIs on Human Osteoclast Formation and Function, CINP 26th Annual Congress Munich, Germany, July 2008

JM Hodge, L Williams, S Dodd, GC Nicholson, M Berk, Effect of SSRIs on Human Osteoclast Formation and Function, ASPR Conference Newcastle Australia, Dec 2008

Tursky, ML, Fabb, SA, Kirkland, MA Optimisation of Conditions for Ex vivo Hematopoietic Stem Cell Expansion, International Society for Cellular Therapy, May 2008

Loving, AC, Collier, FC, et al; Over Expression of RTKN2, a GTPase Effector, Increases Cell Survival and Confers Resistance to Apoptosis, Research Week, Geelong Hospital, Aug 2008

Martin S, Collier FM, Stupka N, Oxygen Mediated Regulation of Skeletal Muscle Stem Cell Proliferation and Differentiation, Research Week, Geelong Hospital, Aug 2008

JM Hodge, MA Kirkland, GC Nicholson, M-CSF Stimulates Bone Resorbing Activity of Mature Human Osteoclasts Via Increased Activation of AP-1 and NF κ B, ASBMR 29th Annual Meeting, Honolulu, Hawaii USA, 2007

JM Hodge, S Su, M Joffe, CJ Burns, AF Wilks, MA Kirkland, GC Nicholson, The Novel C-FMS Inhibitor CYC11645 Potently Inhibits Human Osteoclast Formation and Function, ANZBMS Annual Scientific Meeting, Queenstown, New Zealand, Sept 2007

JPL Skinner, JM Hodge, MA Kirkland, GC Nicholson, Effect of Oxygen Tension on Human Osteoclast Formation and Function, ANZBMS Annual Scientific Meeting, Queenstown, New Zealand, Sept 2007

MJ Constable, N Zimmerman, JM Hodge, MA Kirkland, A Parratt, GC Nicholson, Effects of Dietary Antioxidants on Human Osteoclast Formation and Function, ANZBMS Annual Scientific Meeting, Queenstown, New Zealand, Sept 2007

TJ Fernandes, MJ Constable, JM Hodge, N Zimmerman, MA Kirkland, GC Nicholson Generation of Bone Forming Osteoblasts Derived from Wharton's Jelly Mesenchymal Stem Cells - Effect of Oxygen Tension, ANZBMS Annual Scientific Meeting, Queenstown, New Zealand, Sept 2007

Tursky, ML, Tichawangana, RS, Fabb, SA, Kirkland MA, Ex vivo Expansion of Cord Blood Hematopoietic Stem Cells, Research Week, Geelong Hospital, Aug 2007

Collier, FM, Baker, AJ, Walder, K, Kirkland, MA, A Rho-GTPase Effector, Rhotekin 2, is associated with BMP8b and IL-16 cytokine Expression and Knockdown results in Increased Sensitivity to Apoptosis in Lymphocytes, American Society of Hematology Meeting, Atlanta, US, Dec 2007

Baker AJ, Collier FM, Stupka N, Walder K, Kirkland MA, The Silencing of Rhotekin 2 in CD4+ T-helper Cells, Research Week, Geelong Hospital, Aug 2007

Blyth NJ, Gough T, Vo LT, Kirkland C, Kirkland MA, Using Homeoproteins to Reprogram Target Cells and Initiate Insulin Production International Society for Stem Cell Research, Cairns, Australia, 2007

Vo LT, Gough T, Kirkland C, Blyth NJ, Crewe J, Kirkland MA, Homeobox Proteins Transform Mouse Satellite Cells Into Beating Heart Cells *In Vitro*, International Society for Stem Cell Research, Cairns, Australia, 2007

PRIZES AND AWARDS

ARC Discovery Project Grant DP0770021: Titanium alloy scaffolds for Osseointegration Implant Materials

PhD scholarship awarded to Tania Fernandes

GRANTS

ARC Linkage

Title: Three-dimensional polymer fibre scaffolds with functional nano-structured surface

Duration: 2007-2010, \$345, 000

Investigators: Tong Lin, Yufeng Zhao, Xungai Wang and Mark Kirkland

Project Participants: Deakin University and Cytomatrix Pty Ltd

AMCRC Project

Title: Development of macroporous scaffolds for biomedical applications

Duration: 2008-2010 \$1.2 million

Project Participants: Advanced Manufacturing Cooperative Research Centre, Deakin University, Cytomatrix Pty Ltd and VCAMM

ARC Linkage

Title: Application of direct protein transduction of Stem Cell Factors to reprogram mouse and human somatic cells into pluripotent stem cells

Duration: 2009-2011, \$640,000

Investigators: Richard Boyd, A Mikalska, Mark Kirkland

Project Participants: Monash University and Cytomatrix Pty Ltd

ARC Discovery Project Grant DP0770021:

Title: *Titanium alloy scaffolds for Osseointegration Implant Materials*

Duration: 2007-2010 \$250,000

Investigators: Cui'e Wen, GC Nicholson

Project Participants: Deakin University and Department of Clinical Biomedical Science, University of Melbourne (BBR, Geelong Hospital)

PUBLICATIONS

Collier FM, Loving AC, Baker AJ, Walder K, McLeod J, and Kirkland MA, 2009, *Expression of RTKN2 plays a direct role in NF-KappaB dependent resistance to apoptosis and regulation of Bcl-2 genes in Primary Human CD4+ Cells* Journal of Cell Death

Love, D, Pritchard M, Burgess, T, Van Der Meer, G, Page, R, Williams, S, 2009 *Audit of the Douglas Hocking Research Institute bone bank: ten years of non-irradiated bone graft* ANZ J Surg., 79(1-2): 55-61

Li Y, Xiong J, Wong CS, Hodgson PD, Wen C, 2009 *Ti6Ta4Sn Alloy and Subsequent Scaffolding for Bone Tissue Engineering* Tissue Eng. Part A.

Li Y, Xiong J, Wong CS, Hodgson PD, Wen C, 2009 *Bioactivating the surfaces of titanium by sol-gel process* Materials Science Forum 614: 67-71

Pasco JA, Nicholson GC, Ng F, Henry M, Williams L, Kotowicz M, Hodge JM, Dodd S, Kapczynski F, Gama C and Berk M, 2008 *Oxidative stress may be a common mechanism linking major depression and osteoporosis* Acta Neuropsychiatrica, 20: 112-116

Turner AG, Notini AJ, Chiu WSM, Hodge JM, Nicholson G, Zajac JD, and Davey RA, 2008 *Androgen Receptor Expression and Function in Osteoclasts* The Open Physiology, Journal 1: 38-43

Stynes G, Kiroff GK, Morrison WA, Kirkland MA, 2008 *Tissue compatibility of biomaterials: benefits and problems of skin biointegration* ANZ J Surg., 78(8): 654-9

Morsi YS, Wong CS, 2008 *Current developments and future challenges for the creation of aortic heart valve* J Mech Med Biol., 8(1): 1-15

Collier, FM, Baker AJ, Walder K, Kirkland MA, 2007 *A Rho-GTPase Effector, Rhotekin-2 (RTKN2) is Associated with BMP8b and IL-16 Cytokine Expression and Knockdown*

Leads to Increased Sensitivity to Apoptosis in Lymphocytes. Blood, ASH Annual Meeting Abstracts, 110(11): 2293

Hodge JM, Kirkland MA, Nicholson GC, 2007 *Multiple roles of M-CSF in human osteoclastogenesis* J Cell Biochem., 102(3): 759-68.

Morsi YS, Yang W, Owida A, Wong CS, 2007 *Development of a novel pulsatile bioreactor for tissue culture* J Artif Organs, 10(2): 109-114

Morsi YS, Yang WW, Wong CS and Das S *Transient fluid-structure coupling for simulation of a tri-leaflet heart valve using weak coupling* J Artif Organs 2007, 10(2): 93-103

Cardiology

THE TEAM

Medical staff

Dr John Amerena
(Principal Researcher)

Dr Martin Sebastian

Dr Alan Appelbe

A/Professor Sandy Black

Nursing staff

Donna Campbell

Karen Fogarty

Anita Long

Lyn Wilson

Charisse Spence

Toni Shanahan

Monika Piroch

ABOUT US AND PROJECTS IN PROGRESS OR COMPLETED

The Geelong Cardiology Research Unit has been involved in the conduct of clinical trials since 2000, and is recognised for conducting high quality clinical research and exceeding expected recruitment targets.

The research unit is located on Level 3 Kardinia House, Geelong Hospital. On an ongoing basis, the unit is involved in the conduct of large-scale international Phase II - IV clinical trials in cardiovascular disease.

In addition, the unit is involved in the conduct of several academic trials of its own undertaking. Therapeutic areas of interest include hypertension, ischaemic heart disease including ACS, atrial fibrillation, hypercholesterolaemia, diabetes, rhythm disturbances, peripheral vascular disease and heart failure.

Dr John Amerena (Principal Researcher) has been involved in clinical trials for more than 15 years, both in Australia and in the United States, and holds joint appointments as Senior Lecturer (Cardiology) at both Melbourne and Monash Universities.

Both Dr Amerena and Donna Campbell (Research Manager) currently hold positions on International Steering Committees overseeing the conduct of various clinical trials. In addition, Dr Amerena fulfills the role of Australian National Co-ordinator for a number of ongoing global clinical trials.

HIGHLIGHTS

- Excellence in research participant clinical care
- Being consistently amongst the highest recruiting centres in Australia for studies performed
- Receiving consistent positive feedback from sponsors and auditors in relation to the quality and standard of data collection
- The willingness of research participants to so generously give their time to be involved in research studies
- Being able on an ongoing basis to be involved in the process of development of new therapies for patients with heart disease

PRIZES AND AWARDS

Dr John Amerena

- Australian National Co-ordinator for a number of large scale global clinical research studies

Donna Campbell

- Australian representative on International Study Co-ordinator Steering Committee for a large-scale global clinical research study

Clinical Research Unit

THE TEAM

Kerrie Sanders BSc; Grad Dip Diet; M Hum Nutr;
Grad Cert Hlth Econ; PhD

Amanda Hayles BAppSc (Hons).

Alison Hunt RN (Div 1); BA.

Cathy Verecondi Cert 4 (Admin. Duties)

Eileen Moore (Honours student)

ABOUT US

The Clinical Research Unit designs and conducts clinical intervention trials. Often clinical trials evolve as a result of findings from cellular work in the laboratory or population-based studies. The evidence from population-based studies might suggest people with a particular lifestyle or heritage have an increased risk of a chronic disorder such as type 2 diabetes. Conducting a randomized clinical trial often tests the theory or hypothesis.

The unit is currently involved in trials investigating (1) vitamin D supplementation and the risk of falls and bone fractures; (2) the role of anti-oxidant supplements in preventing bone loss; (3) a health economics study on osteoporotic fractures as well as; (4) a project investigating the role of resistance exercise in strengthening bones in older adults. The research team has expertise in all aspects of randomized controlled trials from designing the intervention trial, deciding what tools and assessments to utilize, preparation of budgets and grant applications, ethics submissions in addition to recruiting participants, conducting the clinical trial, analysing the results and writing the final reports and publications. A major focus of the unit's research is related to osteoporosis although the team has broad expertise and has recently investigated interventions

to decrease the risk of type 2 diabetes; hay fever and other allergies as well as an intervention aiming to improve mental well-being.

The unit undertakes research funded through competitive government grants such as the National Health and Medical Research Committee (NHMRC) but also designs and conducts clinical trials through collaboration with industries such as the dairy industry. The largest clinical trial conducted by the research team is the Vital D study that recruited over 2,000 older women with approximately 1,500 of these women residing in the Geelong region.

PROJECTS IN PROGRESS OR COMPLETED

Vital D Study:

Primary Care Prevention of Falls and Fractures in Older Women by Annual Vitamin D Supplementation

A 5-year NHMRC funded project that recruited over 2,300 women aged 70+ years. It is a randomised, placebo-controlled double blind trial that was completed in October 2008 and is currently in the data analyses and manuscript preparation stage. The women were followed on a monthly basis to document all falls and bone fractures. They took one dose of study medication a year

(500,000 IU vitamin D or placebo). This dose was taken during the autumn/winter period when vitamin D status is known to decline. Since adequate vitamin D status is necessary for optimum bone health and may also benefit muscle strength, the hypothesis is that the participants who have been randomised to vitamin D would sustain fewer fractures compared with those on placebo. The improved vitamin D status may also protect against falls or result in less injury from falls. If the results are positive, an annual high dose of vitamin D tablets could ideally be administered to older people through their GP at the time of flu vaccination. The study has the potential to demonstrate a safe, economical way to decrease the escalating burden of hip and other fractures in our older population.

Vital D Study Part 2:

The effect of high-dose vitamin D supplementation on mental health in a randomised, controlled trial of 1500 older women.

The research team have collaborated with our department's psychiatry unit and successfully obtained further NHMRC funding to also investigate if those women taking the high dose vitamin D for several years have an improved sense of well-being and mental health compared with those on placebo.

Vital D Study Part 3:

Does an annual high dose of vitamin D supplement decrease healthcare utilization in older women?

The team have recently gained further NHMRC funding to also investigate if the women taking the high dose vitamin D for several years have used fewer healthcare services than women of the same age who have been on placebo tablets for the same length of time. Recent research suggests that high serum levels of vitamin D may protect the body from developing certain cancers and autoimmune disorders. The research team have gained permission from Medicare Australia to compare usage of all health care services between groups of similarly aged women who have been on the vitamin D supplementation for several years compared with those on placebo. This project would be the first intervention study worldwide to report on total healthcare and vitamin D status.

First Leaf Allergy Study: Stage 2 Allergy

'First Leaf' is a health supplement sold in Japan that contains lactoferrin and antioxidants. The CRU was sponsored to design and conduct a placebo-controlled clinical trial to investigate the health benefits of the supplement in alleviating the

symptoms of allergic rhinitis (hay fever). Ninety men and women who suffer from hay fever were recruited during spring/summer. The study measured blood indicators of histamine reactions, skin and lung function relating to mild allergic reactions and also frequency of symptoms relating to hay fever. Individuals randomised to the 'First Leaf' supplement took fewer antihistamines and had an improved sense of well-being and showed some beneficial changes in blood parameters indicative of a healthy immune system.

First Leaf Study: Stage 3 Well-Being Stage

This randomised placebo controlled trial was designed by the team to further investigate an association between the 'First Leaf' supplement and one's sense of well-being. The trial will recruit 82 men and women with non-clinical signs of stress and anxiety. Results from our two previous trials have indicated some benefits to an individuals' sense of well-being. This will be tested using validated tools in a double-blinded placebo-controlled trial.

Surgery: An Audit of Patient's Knowledge of the Colonoscopy Procedure

This study was conducted under the direction of Professor David Watters,

the department's Professor of Surgery with Dr Masood Ansari. Surgical fellows designed and conducted the study. The CRU was responsible for advice on database management of results and the statistical analysis of results. The project had benefits by providing feedback to surgeons who routinely perform colonoscopies and also provided research experience to the surgical registrars involved in the project.

Geelong Exercise and Nutrition Trial in Men (GENTS Study)

This study was initiated by Deakin University 'Centre for Physical Activity and Nutrition.' In total 180 men aged 50+ years from the Barwon region completed the 18-month trial conducted through our unit. The study investigated the role of specific exercises with and without calcium and vitamin D-supplementation to improve bone health in older men. The study is currently in the data analysis phase although initial results show positive improvements in bone health with exercise and adequate calcium intakes. However there was no additive improvement in muscle or bone status in those that both had the supplement and participated in the regular exercise program. It is hypothesised that this may be due to the participants' adequate status relating to vitamin D and dietary calcium intake. The project addresses a previous gap in

clinical trial research of bone health in men. Since fractures are more common among older women previous research focussed on females with little knowledge gained regarding possible therapies to prevent fractures in susceptible males.

'Osteo-cise: Strong Bones for Life'

A/Prof Sanders is a chief investigator in this new 3-year study. The primary aim is to evaluate the feasibility and effectiveness of a community-based, multidisciplinary exercise and osteoporosis program in community-dwelling older adults. The main study site is the Western General hospital in Footscray although some participants may be recruited from Geelong. The project also involves a cost-effectiveness analysis of the proposed intervention.

HIGHLIGHTS

- Two projects funded through National Health and Medical Research Committee (NHMRC)
- Key role (chair) in the development of a 'Calcium and Bone Health Position Paper' that has been endorsed by Osteoporosis Australia, Australian and New Zealand Bone and Mineral Society and the Endocrine Society of Australia. This statement is now published in the Medical Journal of Australia
- 2007 Award from Smart Geelong Highly Commended Poster 'Is BMD a surrogate measure of long term exposure of risk factors for breast and bowel cancer?' Sanders KM, Hunt A, Nicholson GC, Pasco JA, Watters DA
- 2007 Applied research in Sport and Recreation Science Award for the GENTS Osteoporosis Prevention Study, Daly R, Kukuljan S, Bass S, Salmon J, Turner C, Sanders KM, Nicholson GC

PRESENTATIONS

Sanders KM, *Effectiveness of Fracture Prevention* ANZBMS Annual Scientific Meeting 9th - 12th Oct 2007, Queenstown, New Zealand

Hayles AL, Nicholson GC, Kotowicz MA, Sanders KM *Feedback on Calcium Intake is an Effective Tool to Increase Intake in Older Women* ANZBMS Annual Scientific Meeting, 9th - 12th Oct 2007, Queenstown, New Zealand

Sanders KM, Hunt A, Nicholson GC, Pasco JA, Kotowicz MA and Watters DAK *Is BMD a surrogate measure of long-term exposure of risk factors for breast and bowel cancer* ANZBMS Annual Scientific Meeting, 9th - 12th Oct 2007, Queenstown, New Zealand

Sanders Kerrie M, Michelle Rowney, Genjiro Katayama, Masayuki Yokota, Geoffrey C Nicholson *A randomised clinical trial investigating lactoferrin supplements on health parameters of chronic diseases* VIIIth International Conference on Lactoferrin: Structure, Function & Applications 21st-25th Oct 2007, Nice, France

Sanders KM, Hayles AL, Kotowicz MA, Nicholson GC *The possible role of vitamin D and falls in relation to lower fracture rates in rural communities* 7th European Congress for Clinical and Economic Aspects of Osteoporosis and Osteoarthritis

Sanders KM, Hayles AL, Kotowicz MA, Nicholson GC *Does Vitamin D Explain the Lower Fracture Rates in Rural Communities?* 17th Scientific Meeting of the International Bone and Mineral Society, Montreal, Canada, 24-30th June

Daly RM, Kukuljan S, Bass S, Sanders K, Salmon J, Nicholson G, Nowson C *The effects of a community-based multi-component exercise program on functional performance, muscle mass and strength in older men* Sports Medicine Australia Meeting, Adelaide, SA 2007

Kukuljan S, Bass S, Sanders K, Salmon J, Nicholson G, Nowson C Daly RM *Does Calcium-Vitamin D3 fortified milk enhance the effects of exercise on BMD in older men: An 18-month community-based RCT* Sports Medicine Australia Meeting, Adelaide, SA 2007.

PRIZES AND AWARDS

- 2007 Award from Smart Geelong Highly Commended Poster 'Is BMD a surrogate measure of long term exposure of risk factors for breast and bowel cancer?' Sanders KM, Hunt A, Nicholson GC, Pasco JA, Watters DA
- 2007 Applied research in Sport and Recreation Science Award for the GENTS Osteoporosis Prevention Study. Daly R, Kukuljan S, Bass S, Salmon J, Turner C, Sanders KM, Nicholson GC

GRANTS

NHMRC 1-year project grant: 'The effect of high-dose vitamin D supplementation on mental health in a randomised, controlled trial of 1500 older women' 2008 - \$80,250.

NHMRC 1-year project grant: 'Does an annual high dose of vitamin D supplement decrease healthcare utilization in older women?' 2008 - \$102,850

Osteoporosis Australia - Wicking Trust 3-year project grant: 'Osteo-cise: Better Bones for Life' 2008-2011 - \$450,000.

PUBLICATIONS

Pasco JA, Kotowicz MA, Henry MJ, Sanders KM, Nicholson GC *Health outcomes with hormone therapy in Australian women*, Current Drug Safety (Accepted 22nd Jan 2009)

Sanders KM, Hayles A, Kotowicz MA, Nicholson GC *Monitoring Falls in Cohort Studies of Community-Dwelling Older Women*, Letter to the Editor JAGS (Accepted 15 Nov 2008)

Sanders KM, Hayles A, Kotowicz MA, Nicholson GC *Vitamin D link to pain: SF-12 responses and PTH status*, eLetter to the Editor Ann Rheum Dis (Epub 1 Oct 2008)

Sanders KM, Nowson C, Kotowicz MA, Briffa K, Devine A, Reid IR *Calcium and Bone Health: Position Paper for the Australian and New Zealand Bone and Mineral Society and Osteoporosis Australia* MJA 2009 190(6) 316-19

Kukuljan S, Nowson CA, Bass S, Sanders K, Nicholson G, Siebel M, Salmon J, Daly RM *Interactive and Independent Effects of Exercise and Calcium-Vitamin D3 Fortified Milk on Bone Mineral Density in Older Men*, Osteoporos Int 2008 Oct 28

Henry MJ, Pasco JA, Sanders KM, Kotowicz MA, Nicholson GC *The application of epidemiology to change health policy: Defining age-related thresholds of BMD for primary prevention of fracture*, J Clin Densitometry 2008 Oct-Dec;11(4):494-7

Bowles TA, Sanders KM, Colson M, Watters DA *Simplified risk stratification in elective colorectal surgery*, ANZ J Surg 2008 Jan; 78(1-2):24-7

Kanis JA, Oden A, Johnell O, Johansson H, De Laet C et al (alphabetical including Sanders K) *The use of clinical risk factors enhances the performance of BMD in the prediction of hip and osteoporotic fractures in men and women* Osteoporos Int. 18(8):1033-46 2007 Epub 2007 Feb 24

Berk M, Sanders KM, Pasco JA, Jacka FA, Williams L, Hayles AL, Dodd S *Vitamin D deficiency may play a role in depression* Medical Hypotheses 2007; 69:1316-1319

Henry MA, Pasco JA, Sanders KM, Nicholson GC, Kotowicz MA *Fracture Risk Score (FRISK)* Reply Radiology, Oct 2007

Sanders KM, Kotowicz MA, Nicholson GC *The Potential Role of the Anti-oxidant N-acetylcysteine in Slowing Bone Resorption in Early Post-menopausal women: A Pilot Study* Translational Research 2007; Oct 150(4):215.

Emergency

THE TEAM

Dr Julian Stella MBBS, FACEM

Dr Bruce Bartley MBBS, FRCSE, FACEM

Dr Michael Ragg MBBS, DipRACOG, FACEM

Dr Matt Ryan MBBS, DRANZCOG, Grad.Dip Forens. Med., FACEM

Dr Nicole Reid MBBS, FACEM

Dr Julia Fisher MBBS, FACEM

Dr Ameera Khan MBBS, FACEM

Dr Megan Cooney MBBS, FACEM

Dr Manoj Samuel MBBS

Dr Belinda Carne MBBS, FACEM

Dr Tanya Wilton MBBS, FACEM

Dr Anna Davis MBBS, FACEM

Dr David Alexander MBBS

Mr Paul Jennings RN BN, Grad Cert Adv Nur ADHS (Amb Paramedic), ADipMICAstudies, GradDipClinEpi

Dr Emad Hassan MBBS

ABOUT US AND PROJECTS IN PROGRESS OR COMPLETED

Bombs, Bushfires and Big Bingles. What a disaster?!

This project was an exercise in disaster preparedness and involved a preparatory lecture and a compressed time disaster simulation. This was followed up by a debrief session. Surveys were completed both before and after the interventions. In addition an educational DVD of the simulated disaster was also produced entitled 'Bombs, Bushfires and Big Bingles. Are you ready for the next one?' This served as the basis for an ongoing education tool. Pre and post surveys were conducted to evaluate the utility of the DVD as an educational tool.

There have been two papers published using data from this project. Several conference presentations also resulted from the project. The project is now completed though the educational DVD is still used and has been sold nationally and internationally.

Use of ultrasound to facilitate accurate femoral nerve block in the emergency department

This was a prospective unblinded pseudo-randomised controlled trial of ultrasound assisted (US) versus fascial pop femoral

nerve block techniques. The project demonstrated the utility of the US assisted FNB, showing an earlier and more complete block compared to the more traditional approach used in this department. The trial has now officially been completed. A conference presentation with mid project results was also presented. A paper detailing the project results has been published this year.

Compression ultrasonography for suspected lower limb deep vein thrombosis in the Emergency Department

This study is a prospective observational study. The main outcome measures will be the accuracy of compression ultrasonography compared with formal duplex ultrasonography performed in the radiology department and the turn around time from presentation to time of study. Other outcome measures examined will be correlation of quality of study and subjectively assessed BMI and the likely utility of the emergency physician compression ultrasonography study when combined with D-dimer and clinical risk assessment. The study has been completed.

Preliminary analysis has shown promising results so far with near 100% sensitivity. A conference presentation of the results occurred in 2008.

The use of Emergency Department Ultrasound in evaluating the patient with renal colic

In this prospective comparative cohort study the use of ultrasound by ED physicians was evaluated for the detection of hydronephrosis in patients with renal colic. The gold standard comparison was against CT KUB. The study progressed well and has now been completed. A presentation at a conference was undertaken. There is no plan to publish the results as a near identical paper has already recently been published.

ED ultrasound for the investigation of RUQ abdominal pain

This prospective comparative cohort study on the use of US by ED physicians to evaluate biliary disease in patients with RUQ pain is nearing completion. The gold standard of comparison is formal US as performed in the radiology department.

Current enrolment is approaching 60. An interim analysis has been presented at a recent conference (Australasian College of Emergency Medicine annual scientific meeting). It has been decided not to progress further with ongoing enrolment.

Critical incident monitoring and audit in a pre-hospital setting

This large project is a funded collaboration between the Rural Ambulance Victoria and the Geelong Hospital Emergency Department. It is an implementation study of the introduction of a formalised critical incident monitoring system into the regional RAV service. The project is being run over three years and was initiated with a six month pilot study. A part time junior research assistant has been employed by the Emergency Department to facilitate the research aspects of this study. Several presentations and a paper (in print) have already resulted from this project. Several large-scale changes both within and outside the project have been directly influenced by the findings so far and include initiating GPS markers in parts of the You Yangs regional state park, changes to the regulations governing the conduct of large-scale sporting events and recommendations for consideration to the Equipment Committee of RAV. The project has now reached the end of its lifespan though analysis of results is ongoing and several potential publications are underway.

Delivering Bad News – Using Simulation to enhance learning

This study examined the use of simulation learning in teaching junior doctors and nurses key points in optimally delivering bad news. It evaluated the knowledge gained and the confidence of these junior staff members in delivering bad news. It showed several aspects of knowledge gain and improved confidence amongst participants. It was conducted through the Southern Health Simulation Centre. The study is completed and a conference presentation has occurred and a paper submitted for evaluation for publication.

Implementation of evidence based guidelines for the radiological evaluation of adult cervical spine injury

In this study the implementation process of a set of evidence based guidelines for evaluation of neck injury in adults was described and its effects on the confidence and knowledge of participants examined. A multimodal education package and implementation roll out process occurred and pre- and post implementation surveys were conducted to measure its effects. A presentation of its results has already occurred and a paper has been submitted for publication in the Emergency Medicine literature.

Evaluation of Victorian Emergency Medicine Trainees' ability to use 3 types of transport equipment

This multi centre study examined Emergency Medicine trainees in metropolitan and regional hospitals for their ability to use equipment in an isolated setting. The equipment and settings required of participants would be applicable to many transport medicine situations these trainees have been in or might be expected to be in. The results of this study have been presented at a conference and a paper has been accepted for publication in the Emergency Medicine literature.

The accuracy and time saving of a bedside troponin T test in patient with Acute Coronary Syndrome – a pilot study

This study aims to evaluate the accuracy and efficacy of bedside troponin testing versus formalized laboratory testing. It commenced mid 2008 and is nearing completion. It is showing promise as an ongoing clinical tool. A presentation will occur in late June 2009

HIGHLIGHTS

- Establishment of the 'Critical incident monitoring and audit in a pre-hospital setting project' which required close collaboration with RAV and significant cultural change to be successful
- Use of U/S in several different projects, expanding the skills and scope of the Emergency Department
- Successful completion of a series of registrar driven projects despite limited resources

PRESENTATIONS

Delivering bad news: Using simulation to enhance learning Poster: June 2006, Emergency Medicine Conference, Townsville: by Dr Belinda Carne

Introduction of a Prehospital Critical Incident Monitoring System - Pilot Project Results Poster: Australasian College of Emergency Medicine Annual Scientific Meeting in Wellington in July 2006 by Dr Anna Davis

Critical Incident Monitoring and Audit in a Prehospital setting - an implementation project Oral Presentation: Australian College of Ambulance Professionals (ACAP) conference in Nov 2006 by Mr Paul Jennings

Introduction of a Prehospital Critical Incident Monitoring System - Pilot Project Results Poster Presentation: Australian College of Ambulance Professionals (ACAP) conference in Nov 2006 by Mr Paul Jennings

Implementation of evidence based guidelines for the radiological evaluation of adult cervical spine injury Poster presentation: Queensland Autumn Symposium Australasian College of Emergency Medicine at Gold Coast, April 2007 by Dr Ameer Khan

Use of ultrasound to facilitate accurate femoral nerve block in the emergency department Oral presentation: 3rd World Congress on Ultrasound in Emergency and Critical Care Medicine, Paris, France, May 9 - 11, 2007 by Dr Michael Ragg

Introduction of a Prehospital Critical Incident Monitoring System - Pilot Project Results Poster: Second International Clinical Skills Conference, Prato July 2007 by Dr Julian Stella

Bombs, Bushfires and Big Bingles: Describing the utility of video in hospital disaster planning Oral Presentation: Second

International Clinical Skills Conference, Prato July 2007 by Dr Bruce Bartley

Introduction of a Prehospital Critical Incident Monitoring System - Pilot Project Results Oral Presentation: National Trauma Research Institute - Trauma Research Education Seminar in July 2007 by Mr Paul Jennings

The use of Emergency Department Ultrasound in evaluating the patient with renal colic Oral presentation: Adelaide Emergency Medicine Conference Aug 2007: by Dr Megan Cooney

ED ultrasound for the investigation of RUQ pain Oral presentation: Australasian College of Emergency Medicine annual scientific meeting Surfers Paradise, November 2007 by Dr David Alexander

Evaluation of Victorian Emergency Medicine Trainees' ability to use 3 types of transport equipment Poster and oral presentation: Australasian College of Emergency Medicine annual scientific meeting Surfers Paradise, Nov 2007 by Dr Manoj Samuel

Critical incident monitoring and audit in a pre-hospital setting: the first nine months Poster: Australasian College of Emergency

Medicine annual scientific meeting Surfers Paradise, Nov 2007 by Dr Julian Stella

Compression ultrasonography for suspected lower limb deep vein thrombosis in the Emergency Department Oral presentation: Spring Seminar in Emergency Medicine, Oct 2007 by Dr Anu Kumar

GRANTS

Trauma research grant for Critical Incident Monitoring Project in a Regional Prehospital Setting

Grant from TAC Research (formerly Victorian Trauma Foundation)

Approved: 7/7/2005

Duration: 3 years

Grant of \$232,997

Now completed

PUBLICATIONS

Bartley B, Fisher J, Stella J, *Video of a disaster drill is effective in educating registrars on the hospital disaster plan*, Emerg Med Australas 2007;19(1):39-44

Reid N, Stella J, Ryan M, Ragg M, *Use of ultrasound to facilitate accurate femoral nerve block in the emergency department*, Emerg Med Australasia 2009; 21:124-130

Samuel M, Stella J, *Evaluation of emergency medicine trainees' ability to use transport equipment*, Emerg Med Australasia 2009; 21(3):170-77

Epidemiology and Biostatistics

THE TEAM

Geoff Nicholson
Professor of Medicine/Head of Department

Mark Kotowicz
Associate Professor of Medicine

Julie Pasco
Principal Fellow/Unit Head

Margaret Henry
Research Fellow

Sam Korn
Research Fellow

Elizabeth Merriman
Research Fellow

Eloise Clark
Research Assistant

Gosia Bucki-Smith
Research Assistant

Meryn Chalmers
Research Assistant

Rumbi Tichawangana
Research Assistant

Kathy Kolk
Research Nurse

Rosalynn Korn
Administration

Lana Williams
PhD candidate
(The University of Melbourne)

Felice Jacka
PhD candidate
(The University of Melbourne)

Carolyn Coulson
PhD candidate
(The University of Melbourne)

Sharon Brennan
PhD candidate
(Monash University)

Yu Zhang
Honours student
(The University of Melbourne)

ABOUT US

The Epidemiology and Biostatistics Unit emerged in 2002, when the Division of Medicine was divided into complementary units. The Unit evolved from the Geelong Osteoporosis Study (GOS), a large population-based study designed in the early 1990s by A/Professor Mark Kotowicz, Professor Geoff Nicholson and collaborators to investigate the epidemiology of osteoporosis in Australia. The GOS has continued prospectively to document clinical and environmental data for large contemporary cohorts of young, middle-aged and elderly men and women. These data are now being used to study the determinants of a range of non-communicable disorders, such as obesity, osteoarthritis, cardiovascular disease, diabetes, cancer, psychiatric illness and coeliac disease, as well as bone fragility.

We are the sole research group in Australia to have recruited large numbers of randomly selected participants, spanning the full adult age spectrum, from young adults aged 20 years through to the very elderly, including nonagenarians. This unique characteristic means we are able to investigate a range of health issues currently faced by young adults in conjunction with those associated with ageing. Another important feature of the GOS is its study region, which

encompasses Geelong and environs, a region referred to as the Barwon Statistical Division. This region is an excellent base for epidemiological research because it presents as a microcosm of the Australian continent, with a mixture of rural and urban populations, a representative range of socio-economic and multicultural groups, with a centralised health provider in Barwon Health.

PROJECTS IN PROGRESS OR COMPLETED

Prospective assessment of health issues for men and women in the Barwon Statistical Division

Julie Pasco, Margaret Henry, Mark Kotowicz, Eloise Clark, Sam Korn, Lana Williams, Felice Jacka, Geoff Nicholson

This year the GOS team has welcomed many women and men who have returned for follow-up assessments. We finalised recruitment of the male population cohort, comprising 1540 men who were randomly selected from the electoral roll and ranging in age from 20 to 97 years. The participation rate of 67 per cent was an excellent response for a men's health study. The women's 10-year follow-up was finalised, with over 900 attending, and

this was complemented by recruitment of a new group of 200 women aged 20-29 years. During these assessments, detailed information was documented on lifestyle, including diet, alcohol consumption, physical activity, smoking habits and exposure to medications, as well as fracture history, exposure to diseases and quality of life. Clinical measures performed included bone mineral density and other aspects of body composition using bone densitometry, anthropometry, blood pressure, muscle strength, balance and functional mobility assessments. Psychiatric assessments are now routinely performed at interview. The ongoing data collection will continue, subject to funding.

Temporal changes in fracture rates

Elizabeth Merriman, Gosia Bucki-Smith, Sam Korn, Yu Zhang, Margaret Henry, Mark Kotowicz, Geoff Nicholson, Julie Pasco

A recent comparison of fracture rates in the Barwon Statistical Division from 1994-7 and 2006-7 indicated that hip fracture rates in women have decreased, even though the number of hip fractures has increased as a result of population growth, especially among the elderly. It is notable that similar data have been reported from a nation-wide survey using hospital discharge records. We are exploring reasons for this decline and

investigating temporal changes in fracture rates in men and at other skeletal sites in women.

Defining age-related thresholds of bone mineral density for primary prevention of fracture

Margaret Henry, Julie Pasco, Kerrie Sanders, Mark Kotowicz, Geoff Nicholson

The Health Insurance Commission funding for bone densitometry in men and women aged 70 years or more and the Prescriber Benefits Schedule (PBS) subsidy for treatment of very low bone mass without fracture in this age group have eventuated as a direct result of the analysis of GOS data. This initiative, if fully implemented, should bring about substantial reductions in fracture rates and fracture-related disability. The data are being continually updated using absolute fracture risk as the outcome.

Bone mineral density reference ranges for men

Margaret Henry, Julie Pasco, Sam Korn, Mark Kotowicz, Geoff Nicholson

Bone densitometry is a valuable tool for predicting fracture risk across the range of adult bone mineral density measurements. As these measurements vary between anatomical sites and types

of bone densitometers and are strongly age-dependent, bone mineral density results for particular anatomic sites are expressed as T- and Z-scores. Accurate calculation of these scores is dependent on accurate reference data to provide the peak adult bone mass, the age-related means and age-related standard deviations for each anatomical site and gender. Using the GOS sample of Australian white men, normative bone mineral density data at multiple anatomical sites have been developed. Large, population-based reference ranges are rare, largely due to the enormous cost involved and the lack of sampling frames that allow the collection of a reliable, random population-based sample. The Australian electoral roll is ideal for this purpose, given that voter registration is compulsory. These normative reference ranges will standardise bone densitometry for men in Australia.

Epidemiology of fractures in men

Sam Korn, Margaret Henry, Mark Kotowicz, Geoff Nicholson, Julie Pasco

This project aimed to determine the current fracture rates for Australian men and to address the paucity of data on the impact of fracture, in both fiscal and human terms. Comprehensive ascertainment was made of all incident fractures occurring in men residing in the region. Demographic

and clinical information, together with details pertaining to the cause of fracture, consequent treatment and the impact of fracture, were documented from radiological reports and questionnaires. Bone densitometry, clinical and lifestyle data are being combined with data from men who are fracture-free, to identify age-specific risk factors for fracture.

Magnetic resonance imaging (MRI) of the knee

Sharon Brennan, Margaret Henry, Anita Wluka, Mark Kotowicz, Julie Pasco

Approximately 160 women have participated in a study examining early predictors for knee osteoarthritis. During the recruitment phase, participants underwent an MRI scan of their dominant knee, to obtain 3D images of the knee structure. These images will assist in gaining a better understanding of the relationships between lifestyle, bone metabolism and changes in the knee structure.

Bone health and socio-economic status

Sharon Brennan, Margaret Henry, Anita Wluka, Geoff Nicholson, Mark Kotowicz, Jo Williams, Julie Pasco

With few exceptions, an inverse relationship exists between social disadvantage and disease. However, there are conflicting data of the relationship between socio-economic status (SES) and bone health. The novel finding of this study was that individuals from upper SES groups had patterns of relatively low bone mineral density, which was sustained after adjusting for many of the known lifestyle risk factors. The pattern of low bone mineral density in individuals from more disadvantaged SES groups also tended to support the widely documented relationship between these individuals and poorer health. These data suggest that women from both ends of the SES continuum may face unique barriers to robust skeletal health. SES and health is a complex concept, and the explanation of differences in bone health between SES quintiles warrants further investigation as an antecedent to potential interventions or preventive public health campaigns.

Physical consequences of depressive and anxiety disorders

Lana Williams, Julie Pasco, Margaret Henry, Felice Jacka, Mark Kotowicz, Geoff Nicholson, Michael Berk

This population-based, observational study of women in the GOS was designed to investigate the prevalence and physical consequences of common psychiatric disorders in the community, including association with bone mineral density, falls and fractures, body habitus and physical pain, and somatic symptoms. More than 1000 female participants have undergone a semi-structured clinical interview (SCID-I/NP), designed to assess past or current psychopathology, and have completed a comprehensive range of medical and lifestyle assessments. Currently this project is in the analytical phase and already a number of significant findings have been published and presented at both international and domestic conferences. A follow-up is scheduled, and the study will also be replicated in men.

Nutrition and depression and anxiety in the community

Felice Jacka, Julie Pasco, Lana Williams, Allison Hodge, Sharleen O'Reilly, Mark Kotowicz, Geoff Nicholson, Michael Berk

In this study we investigated the association between dietary variables and diet quality, and high-prevalence psychiatric disorders among women living in the community. Diet is assessed using validated food frequency questionnaires, and depression and anxiety disorders (current and lifetime) are assessed using a semi-structured clinical interview (SCID-I/NP). Depressive symptomatology is also assessed using the General Health Questionnaire (GHQ-12). The information gathered will also form the baseline dataset for an ongoing prospective extension that seeks to examine the influence of both diet and physical activity on depression and anxiety illnesses over time.

Human genetics of osteoporosis

Geoff Nicholson, Rumbi Tichawangana, Kathy Kolk, Julie Pasco, Emma Duncan, Matthew Brown

A family history of hip fracture is known to double the risk of fracture among descendants, and it has been known for some time that family members tend to have a similar bone density. These observations suggest that osteoporosis has a large genetic or inherited component. Genes, coded by DNA, carry information in the body that determines many characteristics of a person. GOS data are contributing to a nation-wide study known as the

'Australian Genomewide Association Study in Osteoporosis', to look for genes that affect bone density and osteoporosis risk. The aim is to find out which genes control the development of both high and low bone density. This information will add to the understanding of how some people develop osteoporosis, and this will help guide research into prevention and treatment.

HIGHLIGHTS

In October 2008, international, national, state and local media outlets publicised our findings on links between smoking and risk of developing depression.

Metro (UK), Smoking 'depressing for women', 30/09/2008

Medical News Today (Royal College of Psychiatrists), Smoking increases risk of major depression for women, 1/10/2008

AAP Newswire, 1/10/2008, Smoking may trigger depression in women

The Age, Smoking may trigger depression in women, 1/10/2008

Herald-Sun, Smoking may depress women, 1/10/2008

The Scotsman (UK), Smoking 'raises depression risk', 2/10/2008

Business Spectator, Smoking gun in depression cases, 2/10/2008

The Australian, page 3, Smoking gun in depression cases, 2/10/2008

Border Mail, page 16, Smoking risking the blues, 2/10/2008

Daily Telegraph, page 15, Smoking depresses, 2/10/2008

Adelaide Advertiser, page 4, Smokers 'depressed', 2/10/2008

Canberra Times, page 7, Study links cigarettes to depression, 2/10/2008

The University of Melbourne, *UniNews*: Smoking increases depression in women, study reveals, 2/10/2008

Geelong Advertiser, page 13, Smokers are more depressed, 8/10/2008

Several notable research findings have emerged from our work. Key data developed by Margaret Henry led to changes in health policy regarding government subsidies for bone densitometry and treatment of very low bone mass in the absence of fracture. A strong team effort was demonstrated by Elizabeth Merriman, Gosia Bucki-Smith, Sam Korn, Yu Zhang, Sharon Brennan

and Rosalynn Korn, who together collated comprehensive fracture data for the region. Sam Korn reported that men under 60 years contributed a greater fracture burden than men over 60 years. We found that, compared with their healthy peers, men with morphometric vertebral fractures had poorer quality of life, even if the deformity was undiagnosed. Sharon Brennan reported that the most disadvantaged and the most advantaged women in our community had low bone density. Using longitudinal data, Julie Pasco identified that cigarette smoking was associated with an increased risk for developing depression. Lana Williams revealed that SSRI antidepressants were associated with diminished bone density. Felice Jacka demonstrated an association between diet and psychiatric illness.

PRESENTATIONS

Williams LJ, Pasco JA, Jacka FN, Dodd S, Nicholson GC, Berk M, Depressive disorders and bone mineral density in a community based sample of premenopausal women ISAD, Cape Town, South Africa, 14-17 Mar 2008 *J Affect Disord* 2008;107(suppl 1):S96-97 POSTER

Jacka FN, Pasco JA, Dodd S, Williams LJ, Nicholson GC, Berk M Lower levels of physical activity in childhood predict

adult depression, ISAD, Cape Town, South Africa, 14-17 Mar 2008 *J Affect Disord* 2008;107(suppl 1):S58-59 ORAL

Brennan SL, Henry MJ, Wluka AE Nicholson GC, Kotowicz MA, Williams JW, Pasco JA, Bone mineral density in population-based adult females is associated with socioeconomic status ANZBMS, Melbourne, 28-30 Aug 2008 POSTER

Henry MJ, Pasco JA, Korn S, Gibson J, Kotowicz MA, Nicholson GC Bone mineral density at the PA-spine in a population-based sample of Australian men: Geelong Osteoporosis Study, ANZBMS, Melbourne, 28-30 Aug 2008. POSTER

Korn S, Zhang Y, Pasco JA, Henry MJ, Nicholson GC, Sanders KM, Kotowicz MA, Hip fractures presenting at the Geelong Hospital 1994-7 to 2005-7, ANZBMS, Melbourne, 28-30 Aug 2008 POSTER

Merriman EN, Henry MJ, Kotowicz MA, Nicholson GC, Pasco JA, Reliability of self-reported non-vertebral fractures: Geelong Osteoporosis Study, ANZBMS, Melbourne, 28-30 Aug 2008 POSTER

Pasco JA, Henry MJ, Nicholson GC, Brennan SL, Kotowicz MA, BMD and other characteristics associated with vitamin D status ANZBMS, Melbourne, 28-30 Aug 2008 POSTER

Pasco J, Henry M, Korn S, Kotowicz M, Nicholson GC, Falls among community-dwelling women: Geelong Osteoporosis Study, ANZFP Melbourne, 12-14 Oct 2008 POSTER

Williams LJ, Henry MJ, Jacka FN, Berk M, Dodd S, Kotowicz MA, Nicholson GC, Pasco JA, Depression and falls: Geelong Osteoporosis Study, ANZFP Melbourne, 12-14 Oct 2008 POSTER

Pasco JA, Berk M, Henry MJ, Williams LJ, Jacka FN, Kotowicz MA, Schneider HG, Nicholson GC The association of high sensitivity C-reactive protein levels with major depression: a ten-year longitudinal study ASPR, Newcastle, 2-5 Dec 2008 ANZJPsych 2008; 42 (suppl 3): A50 ORAL

Jacka FN, Pasco JA, Williams LJ, Kotowicz MA, Nicholson GC, Berk M, Diet quality is associated with depressive symptoms, major depression and dysthymia, ASPR, Newcastle, 2-5 Dec 2008 ANZJPsych 2008;42 (suppl 3):A47 ORAL

Williams LJ, Bjerkset O, Forsmo S, Langhammer A, Schei B, Pasco JA, Berk M. Anxiety and bone mineral density in community samples of men and women. ASPR, Newcastle, 2-5 Dec 2008. ANZJPsych 2008;42(suppl 3):A92. POSTER

Coulson CE, Williams LJ, Henry MJ, Berk M, Pasco JA, Prevalence of risky alcohol consumption in a community sample of men, ASPR, Newcastle, 2-5 Dec 2008 ANZJPsych 2008; 42 (suppl 3): A112 POSTER

PRIZES AND AWARDS

Smart Geelong Network Research and Learning Expo

Felice Jacka, Researcher of the Year Award for the Early Career category, donated by Deakin University, for the project 'Diet, depression and anxiety'

Lana Williams, Highly Commended Award for the poster 'BMD and depression'

Sam Korn, Finalist, Safer Communities category, sponsored by the TAC, for the project 'Fractures due to road accidents'

Early Career Awards

Felice Jacka, Australasian Society for Psychiatric Research, Early Career Award

Lana Williams, The University of Melbourne, Early Career Award

GRANTS

Risk factors that affect knee structure in healthy women, Anita Wluka, Julie Pasco, Mark Kotowicz, Margaret Henry, NHMRC Project Grant (436665), \$190,950, duration 2007-9

Developing evidence for the primary prevention of depressive disorders: the role of diet and physical activity, Michael Berk, Julie Pasco, Colin Bell, Evie Leslie, Felice Jacka, NHMRC Project Grant (454356), \$445,050, duration 2007-11

A prospective study of inflammatory cytokines as common factors in the aetiology of both depression and osteoporosis, Julie Pasco, Michael Berk, Margaret Henry, Seetal Dodd, NHMRC Project Grant (509103), \$280,464, duration 2008-10

Foot and ankle fractures in men Julie Pasco, Perpetual Trustees, \$32,000, duration 2008

PUBLICATIONS

Published 2007

Pasco JA, Kotowicz MA, Henry MJ, Nicholson GC, Spilsbury H, Box J, Schneider HG, *High-sensitivity C-reactive protein test results predict fracture risk in elderly women* Nature Clinical Practice Rheumatology 2007; 3:5-6

Jacka FN, Pasco JA, McConnell S, Williams LJ, Kotowicz MA, Nicholson GC, Berk M, *Self-reported depression and cardiovascular risk factors in a community sample of women* Psychosomatics 2007; 48:54-59

Henry MJ, Pasco JA, Sanders KM, Nicholson GC, Kotowicz MA, *Fracture Risk Score (Letter)* Radiology 2007; 245:298

Berk M, Sanders KM, Pasco JA, Jack FN, Williams LJ, Hayles A, Dodd S, *Vitamin D deficiency may play a role in depression* Med Hypotheses 2007; 69:1316-1319

Pasco JA, Henry MJ, Nicholson GC, *Weight gain may contribute to increased fracture risk in women treated with rosiglitazone* Diabetic Medicine 2007; 24:1172-1178

van der Mei IAF, Ponsonby AL, Engelsen O, Pasco JA, McGrath JJ, Eyles DW, Blizzard L, Dwyer T, Lucas R, Jones G, *The high prevalence of vitamin D insufficiency across Australian populations is only partly explained by season and latitude* Environ Health Perspect 2007;115:1132-1139

Pasco JA, Henry MJ, Korn S, Nicholson GC, Kotowicz MA, *The metabolic syndrome and bone mineral density in a random sample of Australian men* J Mens Health Gend 2007; 4:298-299

Jacka FN, Pasco JA, Henry MJ, Williams LJ, Korn S, Kotowicz MA, Nicholson GC, Berk M, *Depression and bone mineral density in a community sample of men: Geelong Osteoporosis Study* J Mens Health Gend 2007; 4:292-297

Quek TYJ, Henry MJ, Pasco JA, O'Brien DP, Johnson P, Hughes A, Cheng A, Redden-Hoare J, Athan E, *Mycobacterium ulcerans infection - factors influencing diagnostic delay* Med J Aust 2007; 187: 561-563

Quek YJ, Athan E, Henry MJ, Pasco JA, Redden-Hoare J, Hughes A, Johnson PDR, *Risk factors for Mycobacterium ulcerans infection, southeastern Australia* EID 2007; 13: 1661-1666

O'Brien DP, Hughes AB, Cheng A, Henry MJ, Callan P, McDonald A, Holten I, Birrell M, Sowerby J, Johnson PD, Athan E, *Outcomes for Mycobacterium ulcerans infection with combined surgery and antibiotic therapy: findings from a southeastern Australian case series* Med J Aust 2007; 186: 58-61

Published 2008

Pasco JA, Jacka FN, Williams LJ, Henry MJ, Nicholson GC, Kotowicz MA, Berk M *Leptin in depressed women: cross-sectional and longitudinal data from an epidemiologic study* J Affect Disord 2008; 107: 221-225

Williams LJ, Henry MJ, Berk M, Dodd S, Jacka FN, Kotowicz MA, Nicholson GC, Pasco JA, *Selective serotonin reuptake inhibitor use and bone mineral density in women with a history of depression* Int Clin Psychopharmacol 2008; 23:84-87

Pasco JA, Nicholson GC, Ng F, Henry MJ, Williams LJ, Kotowicz MA, Hodge JM, Dodd S, Kapczynski F, Gama CS, Berk M *Oxidative stress may be a common mechanism linking major depression and osteoporosis* Acta Neuropsychiatrica 2008; 20: 112-116

Pasco JA, Wark JD, Carlin JB, Ponsonby AL, Vuillermin PJ, Morley R, *Maternal vitamin D in pregnancy may influence not only offspring bone mass but other aspects of musculoskeletal health and adiposity* Med Hypotheses 2008; 71: 266-269

Henry MJ, Pasco JA, Sanders KM, Kotowicz MA, Nicholson GC, *The application of epidemiology to change health policy: Defining age-related thresholds of BMD for primary prevention of fracture* J Clin Densitom 2008; 11: 494-497

Pasco JA, Williams LJ, Jacka FN, Ng F, Henry MJ, Nicholson GC, Kotowicz MA, Berk M, *Tobacco smoking as a risk factor for major depressive disorder: a population-based study* Brit J Psychiat 2008; 193: 322-326

Berk M, Jacka FN, Williams LJ, Ng F, Dodd S, Pasco JA, *Is this D vitamin to worry about? An audit of vitamin D insufficiency in an inpatient sample* ANZJP 2008; 42: 874-878

Lucas RM, Ponsonby A-L, Pasco JA, Morley R, *Future health implications of prenatal and early life vitamin D status* Nutr Rev 2008; 66: 710-720

Infectious Diseases

THE TEAM

Infectious Diseases Director

E Athan MBBS, FRACP, MPH (Infec Dis)

Infectious Diseases Deputy Director

A Hughes MBBS, FRACP (Infec Dis)

Infections Diseases Physicians

D O'Brien MMBS, FRACP, (Infec Dis), Dip Anat

D Friedman MBBS (Hon) FRACP, MD

A Walton MD, FRACP

A Wade MB BS (Hons) FRACP

Sexual Health Physician

Ric Milner M.B.S. Dip.Ven.

Clinical Nurse Consultants

J Low, RN, Grad Dip Inf. Cont, Cert Sterilization & Inf. Cont, Cert in Management, Cert IV Workplace Assessment & Training

K Styles, RN, BN, Cert Sterilisation & Inf Control, Acc HIV Counsellor, Cert IV Workplace Assessment & Training

A Gray, RN, RM, Cert Sterilisation & Inf Control, Nurse Immuniser, ACC HIV Counsellor, Cert IV Training & Assessment, Adv Dip Business Management, Adv Dip Human Resources Management

L Scheppers, RN, Cert Sexual & Reproductive Health, Cert Pregnancy Choice Course, HIV Counsellor, Pap Test Provider

M Wardrop, RN, BN, Cert Sterilisation & Inf Cont, Acc HIV & HCV Counsellor, Reg Sick Children's Nurse (UK), Cert IV Workplace Assessment & Training

K Kendall RN, Cert Sterilisation & Inf Cont, Acc HIV Counsellor, Cert Wound Management, Cert IV Workplace Assessment & Training, Dip Workplace & Assessment Training

P Radalj, RN, Cert of Intensive Care, Grad Dip Critical Care Nursing

L Wilson, Ph.D, RN, M.Ed (Health), PG Cert Nursing Sc (Inf Cont)

J Heath, RN, BN, Cert Sterilisation & Inf Cont, Cert of Intensive Care, Dip in Public Health, Cert IV Workplace Assessment & Training

Secretarial Support

Eileen Stubbs

Liz King

ABOUT US AND PROJECTS IN PROGRESS OR COMPLETED

Mycobacterium ulcerans

Case control study submitted to EID for publication

Case series MJA accepted

Treatment and Outcomes of M ulcerans published MJA citation - see publications

Cost analysis underway by Dr Jason Pak

Prosthetic joint infections: long term outcomes in collaboration with Orthopedic Service.

Dr Christina Chang Analysis underway

Presented at ASID 2007 Hobart

HIGHLIGHTS

- M Ulcerans Publications
- Dr Daniel O'Brien sabbatical with Medecins Sans Frontieres - HIV treatment programs in resource poor setting.
- A/Prof Eugene Athan undertaking Masters in Public Health in London UK

PRESENTATIONS

A/Prof Eugene Athan

ASID Hobart April 2007 (presented)

ISCVID Heidelberg Germany June 2007 (presented)

Dr Deb Friedman

ASID Hunter Valley NSW March 2009

(presented)

Dr Daniel O'Brien

15th IAS Dakar, Senegal December 2008 (presented)

4th IAS Sydney July 2008 (presented)

Asia Pacific Travel Conference Melbourne Feb 2008

Dr Andrew Hughes

Asia & Pacific International Conference on Travel Medicine, Melbourne 24-27 Feb 2008
ASID Conference Twin Waters Qld, August 2008

Health Round Table on Patient Safety Qld, August 2007

PRIZES AND AWARDS

Sir Richard Stawell Memorial prize,
Australian Medical Association 9th April
2008

Improved outcomes for Mycobacterium
ulcerans infection with combined surgery
and antibiotic therapy: findings from a
southeastern Australian case series.
A/Prof Eugene Athan Director Infectious
Diseases

Dr Daniel O'Brien Infectious Diseases
Consultant

Dr Andrew Hughes Director General
Medicine

Research Prize

2008
Staphylococcal aureus bacteremia:
a prospective study of the role of
transesophageal echocardiography
in identifying clinically unsuspected
endocarditis.
Manuscript in preparation for publication.
Dr Alex Incani Senior Registrar BH
A/Prof E Athan Director Infectious Diseases
(supervisor)

PUBLICATIONS

Eugene Athan

Murdoch DR, Corey GR, Hoen B, Miró JM,
Fowler VG Jr, Bayer AS, Karchmer AW,
Olaison L, Pappas PA, Moreillon P, Chambers
ST, Chu VH, Falcó V, Holland DJ, Jones P,
Klein JL, Raymond NJ, Read KM, Tripodi
MF, Utili R, Wang A, Woods CW, Cabell
CH; Clinical presentation, etiology, and
outcome of infective endocarditis in the
21st century: the International Collaboration
on Endocarditis-Pro prospective Cohort Study.
International Collaboration on Endocarditis-
Prospective Cohort Study (ICE-PCS)
Investigators. Arch Intern Med. 2009 Mar
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C, Tripodi MF, Barsic B, Bouza E, Cabell CH,
Ramos AI, Fowler V Jr, Hoen B, Konečný
P, Moreno A, Murdoch D, Pappas P, Sexton
DJ, Spelman D, Tattévin P, Miró JM, van
der Meer JT, Utili R; Current features of
infective endocarditis in elderly patients:
results of the International Collaboration
on Endocarditis Prospective Cohort Study
International Collaboration on Endocarditis
Prospective Cohort Study Group. Arch Intern
Med. 2008 Oct 27;168(19):2095-103

Chu VH, Miro JM, Hoen B, Cabell CH, Pappas
PA, Jones P, Stryjewski ME, Anguera I,

Braun S, Muñoz P, Commerford P, Tornos
P, Francis J, Oyonarte M, Selton-Suty C,
Morris AJ, Habib G, Almirante B, Sexton
DJ, Corey GR, Fowler VG Jr; Coagulase-
negative staphylococcal prosthetic valve
endocarditis - a contemporary update
based on the International Collaboration
on Endocarditis: prospective cohort study.
International Collaboration on Endocarditis-
Prospective Cohort Study Group, Heart
2009 Apr;95(7):570-6

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E. Staphylococcal pyomyositis in a
temperate region: epidemiology and
modern management. Med J Aust. 2008
Sep 15;189(6):323-5. Chang CC, Athan E,
Morrissey CO, Slavin MA, Preventing invasive
fungal infection during hospital building
works.

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O'Brien DP, Athan E, Hughes A, Johnson
PD. Successful treatment of Mycobacterium
ulcerans osteomyelitis with minor surgical
debridement and prolonged rifampicin and
ciprofloxacin therapy: a case report. J Med
Case Reports, 2008 Apr 27;2:123

Chang CC, Cheng AC, Devitt B, Hughes
AJ, Campbell P, Styles K, Low J, Athan E.
Successful control of an outbreak of invasive
aspergillosis in a regional haematology unit

during hospital construction works. J Hosp
Infect. 2008 May;69(1):33-8, Epub 2008 Apr 3

Petti CA, Simmon KE, Miro JM, Hoen B,
Marco F, Chu VH, Athan E, et al. Genotypic
diversity of coagulase-negative staphylococci
causing endocarditis: a global perspective.
International Collaboration on Endocarditis-
Microbiology Investigators. J Clin Microbiol.
2008 May;46(5):1780-4. Baddley JW,
Benjamin DK Jr, Patel M, Miró J, Athan E,
Barsic B, Bouza E, Clara L, Elliott T, Kanafani
Z, Klein J, Lerakis S, Levine D, Spelman D,
Rubinstein E, Tornos P, Morris AJ, Pappas
P, Fowler VG Jr, Chu VH, Cabell C. Candida
infective endocarditis. International
Collaboration on Endocarditis-Pro prospective
Cohort Study Group (ICE-PCS).

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cellulitis associated with vein sclerotherapy.
Emerg Infect Dis. 2008 Jan;14(1):180-1

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C, Athan E, Braitberg G, Catton MG, Cooley L,
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Hughes AJ, Johnson PD, Maclean AV, O'Reilly
M, Peters SE, Stuart RL, Moran R, Grayson ML.
Personal protective equipment and antiviral
drug use during hospitalization for suspected

avian or pandemic influenza. *Emerg Infect Dis.* 2007 Oct;13(10):1541-7

Quek TY, Athan E, Henry MJ, Pasco JA, Redden-Hoare J, Hughes A, Johnson PD. Risk factors for *Mycobacterium ulcerans* infection, southeastern Australia. *Emerg Infect Dis.* 2007 Nov;13(11):1661-6

Chu VH, Woods CW, Miro JM, Hoen B, Cabell CH, Pappas PA, Federspiel J, Athan E, Stryjewski ME, Nacinovich F, Marco F, Levine DP, Elliott TS, Fortes CQ, Tornos P, Gordon DL, Utili R, Delahaye F, Corey GR, Fowler VG Jr. Emergence of coagulase-negative staphylococci as a cause of native valve endocarditis. International Collaboration on Endocarditis-Pro prospective Cohort Study Group. *Clin Infect Dis.* 2008 Jan 15;46(2):232-42

Quek TY, Henry MJ, Pasco JA, O'Brien DP, Johnson PD, Hughes A, Cheng AC, Redden-Hoare J, Athan E. *Mycobacterium ulcerans* infection: factors influencing diagnostic delay. *Med J Aust.* 2007 Nov 19;187(10):561-3

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Deb Friedman
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Aaron Walton

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Daniel O'Brien

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Andrew Hughes

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Intensive Care

THE TEAM

Dr Neil Orford

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Tania Elderkin RN, Grad Dip CCN, MHSc

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ABOUT US

Barwon Health Intensive Care Unit (ICU) is a 19 bed, tertiary level ICU with five Intensivists, 12 registrars plus resident medical staff, and approximately 100 nursing staff. Admissions include patients from all Medical, Surgical and Specialty units and number 1400 per year with an average length of stay of 2.7 days.

Barwon Health ICU commenced its first ANZICS-CTG trial in 2004. Prior to this, funded clinical research in the ICU had been limited to a few pharmaceutical trials. Research has subsequently grown and we have been involved in seven ANZICS-CTG studies, some 'in-house' initiated projects and have contributed to several national/international practice audits. We are also about to embark on three multi-centre pharmaceutical studies.

PROJECTS IN PROGRESS OR COMPLETED

The Early Nasojejunal Tube to Meet Energy Requirements in Intensive Care Study (ENTERIC)

ENTERIC is a multi-centre randomised controlled trial comparing early jejunal feeding (using a frictional nasojejunal tube) and standard feeding (commenced through

a nasogastric tube) in critical illness. The primary objective of the study is to establish whether early jejunal feeding increases the amount of enteral nutrition delivered during ICU admission (which will be calculated as a proportion of predicted energy requirements) in mechanically-ventilated, medical-surgical critically ill patients with reduced gastric motility when compared to standard feeding. Secondary objectives are to compare the effects of both feeding strategies on other clinical outcomes and to examine success and complication rates of the frictional nasojejunal tube.

A randomised evaluation of normal versus augmented level of Renal Replacement Therapy in ICU (RENAL)

The RENAL Study is a multi-centre, unblinded, randomised, controlled trial of severe acute renal failure management with an augmented versus normal continuous renal replacement therapy (CRRT) regimen in ICU Patients. Candidate patients with acute renal failure are evaluated by the treating clinician as to their suitability for CRRT. With patient consent, the clinician treats the patient with CRRT for at least 72 hours. The study primarily measures the survival of patients at 28 and 90 days following admission to ICU.

Early Parenteral Nutrition versus standard care in the critically ill patient (Early PN)

EARLY PN is a phase III level I multi-centre randomised controlled trial of early parenteral nutrition (PN) versus standard care in critically ill patients. The study will test the hypothesis that in patients who are not expected to receive nutritional support within 2 days of ICU admission, the provision of early PN (within 24 hours of ICU admission) reduces 60-day landmark mortality, and associated measures of morbidity, compared to standard care.

The Prophylaxis for Thromboembolism in Critical Care Trial (PROTECT)

PROTECT is a Canadian federal government funded randomised trial of 3,600 patients comparing heparin unfractionated (UFH) and low molecular weight heparin (LMWH) for prophylaxis of venous thrombosis in ICU patients. The study aims to determine the effect of LMWH versus UFH on proximal lower limb deep vein thrombosis, pulmonary embolism, bleeding, heparin-induced thrombocytopenia, and clinically suspected, objectively confirmed venous thrombosis in medical-surgical ICU patients. This study is being conducted in collaboration with the Canadian Critical Care Trials Group.

A Phase II Randomised Controlled Trial of Atorvastatin Therapy in Intensive Care Patients with Severe Sepsis (STATiNS)

STATiNS is a phase II multi-centre randomised placebo-controlled trial of atorvastatin in severe sepsis. The aim of this study is to assess:

- the effects of atorvastatin on biological markers and clinical outcomes in severe sepsis,
- atorvastatin population pharmacokinetics and safety profile,
- the number of eligible patients, potential recruitment rates and barriers to recruitment, and
- the feasibility and cost of a definitive phase III trial.

PROWESS-Shock Efficacy and Safety of Drotrecogin Alfa (Activated) in Adult Patients with Septic Shock

PROWESS is a Phase III trial. The aims are to:

- Show that treatment with drotrecogin alfa (activated) at 24mcg/kg/hr administered as an intravenous infusion for 96 hours reduces 28-day all-cause

mortality in adult patients with septic shock compared with placebo

- Demonstrate that treatment with drotrecogin alfa (activated) improves cardiovascular, respiratory and renal organ function compared with placebo
- Demonstrate a reduction in 90-day and 180-day all-cause mortality in patients treated with drotrecogin alfa (activated) compared with placebo
- Demonstrate that patients treated with drotrecogin alfa (activated) have a similar quality of life as those treated with placebo
- Demonstrate that drotrecogin alfa (activated) has an acceptable safety profile in this patient population.

ARTISAN A Randomized, Double-Blind, Placebo-Controlled, Phase-2b Study to Assess the Safety and Efficacy Effects of ART-123 on Subjects with Sepsis and Disseminated Intravascular Coagulation

ARTISAN is a phase II-b trial. The aims of this trial are to:

- Evaluate the safety and efficacy of ART-123 in reducing mortality in subjects with DIC due to sepsis

- To assess the establish a predictive value of a DIC score based on platelet count and INR compared to ISTH DIC criteria
- To evaluate several coagulation parameters in predicting response to ART-123
- To obtain an accurate risk of death in subjects with DIC due to sepsis
- To assess the safety of ART-123 in subjects with DIC due to sepsis.

Skeletal morbidity among survivors of critical illness

Epidemiological study of fracture rates amongst patients following an intensive care admission.

Palliative Care Practice in the intensive care unit

Survey of nurses perceptions of palliative care practice in the ICU.

ASAP - Audit of Severe Acute Pancreatitis feeding practices

6 month multi-centre audit of patients presenting to Australian ICUs with severe pancreatitis.

Blood Observational Study - Prospective Observational Study of Blood Product Transfusion Practices in Australian Intensive Care Units

HIGHLIGHTS

- Development of an active research program within the Intensive Care Unit including studies undertaken under the auspices of the Australian & New Zealand Intensive Care Society Clinical Trials Group (ANZICS-CTG), commercially funded research and investigator initiated projects
- Employment of Research Coordinator full-time facilitating the development of a research culture in this challenging clinical area
- Development of:
 - electronic system for recording research consent
 - ICU research web page
 - patient and relative information brochure

PRESENTATIONS

Orford, N. ANZIC - Clinical Trials Group Annual Scientific Meeting. Presentation of Skeletal morbidity among survivors of critical illness.

Elderkin, T., Kinmonth, A., Fraser, M. Poster presentation - The Challenges of Research in ICU. Barwon Health Research Week, 2008

Elderkin, T. Poster presentation - An Audit of Anticoagulation Algorithms for Continuous Renal Replacement Therapy ANZICS/ACCCN Annual Scientific Meeting, 2007

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GRANTS

Current application to the Intensive Care Foundation for a grant to undertake an interventional study into skeletal morbidity of intensive care patients - Dr Neil Orford.

PUBLICATIONS

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Mental Health

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Dr Sue Jeavons

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Jenny Robbins

Trial Clinician
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Trial Clinician
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Sue Lauder

Psychologist/PhD student
Lesley Berk

PhD Student
Joanna Fitzsimons

PhD Student
Dr Frank Giorlando

PhD Student
Carolyn Coulson

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Jason Thompson

ABOUT US

Mental health research has a long history at Barwon Health. Recently there has been a rapid growth in academic and research activities since 2002 when an academic chair in Barwon Health and the Geelong Clinic was established and Prof Michael Berk appointed. The new unit, called the Barwon Psychiatric Research Unit, is located on the 1st Floor of Kitchener House, Ryrie St, Geelong.

The unit is supportive of a broad range of research fields. While the primary focus is in mood disorders and schizophrenia, research spans service evaluation and audit, psychosocial research, psychopharmacology, clinical trials, imaging, psychophysiology, nutrition, suicide, population health and epidemiology. The team has a strong multidisciplinary focus including nursing, psychology, psychophysiology, pharmacology, epidemiology, psychiatry and management.

The Barwon Psychiatric Research Unit is a partnership between the Department of Clinical and Biomedical Sciences - University of Melbourne, Healthscope and Mental Health and Drug and Alcohol Services, Barwon Health. The Unit is internationally recognised as an important centre for research into bipolar disorder and has established many research collaborations

both nationally and internationally. A significant number of research publications are produced each year, as well as books and book chapters, conference presentations and many other academic activities. The unit has taken on a significant teaching load including honours and PhD students, which complements the work being conducted by professional research and academic staff. The unit takes full advantage of its access to extensive, modern clinical facilities, infusing the research with a strong, clinically relevant edge.

PROJECTS IN PROGRESS OR COMPLETED

Testing the glutathione dysfunction hypothesis of Bipolar Disorder: A Double Blind Randomised Placebo Controlled Trial of N-Acetyl Cysteine

Michael Berk, Olivia Dean, David Copolov, Ashley Bush, Karen Hewitt, Clarissa Gama, Flávio Kapczinski, Brisa Fernandes, Kristy Lu, Ian Schapkaitz, Christine Allwang, Kirsteen Moss, Gin Malhi and Sue Jeavons

Oxidative changes in bipolar disorder have been reported. Specifically, increases in oxidative stress and changes in the levels of antioxidants have been reported. One

of these antioxidants, glutathione, may be involved in the underlying mechanisms of this illness. Glutathione is responsible for removing free radicals and hydrogen peroxide in the brain. This trial tests the concept that by replenishing glutathione, decreases in oxidative stress will occur, with resultant improvement in the participant's symptom. This trial is an enriched maintenance design, and should determine if N-acetyl cysteine (NAC; a glutathione precursor) reduces relapse risk. Participants are diagnosed as having bipolar disorder using the MINI scale. They are required to take 2 grams of NAC per day; a dose that is well under the maximal tolerable dose and has been shown to significantly raise plasma cysteine levels. Participants are asked to participate for a total of 8 months. The first 2 months includes an open-label phase where all participants take NAC. Following this, there is a 6-month randomized, placebo-controlled phase where participants are randomly assigned to either continue NAC treatment or take a placebo. Participants are interviewed over the course of the trial and a series of rating scales are conducted to assess participant's symptoms and functioning. This trial is being conducted in conjunction with the Mental Health Research Institute, and has been funded by the Stanley Medical Research Institute.

To date, a total of 155 participants have been recruited onto the trial fulfilling the target recruitment numbers. This trial has sites located in Melbourne, Geelong, and Bendigo in Victoria and also in Sydney and Porto Alegre, Brazil. Previous results of a pilot study conducted recently were strongly positive and hence, this study aims to extend the previous findings by conducting a larger study. Blood samples have also been collected and will be used to assess markers of oxidative stress, levels of antioxidants and genetic markers believed to be involved in the pathophysiology of bipolar disorder.

The Efficacy of N-acetylcysteine as an Adjunctive Treatment in Unipolar Depression: A Double-blind, Randomised, Placebo-controlled Trial

Felicity Ng, Michael Berk, Kristy Lu, Jennifer Robbins, Ian Schapkaitz, Sue Jeavons, Gin Malhi, Kirsteen Moss, Christine Allwang, Ashley Bush, Seetal Dodd, and David Copolov

There is accumulating evidence for the pathophysiological role of oxidative stress in psychiatric disorders and the therapeutic potential of antioxidants in these conditions. N-acetylcysteine, (NAC), in particular, has shown efficacy in schizophrenia, bipolar depression and cocaine dependence. Extending from its large effect sizes on measures of bipolar depressive severity in

a previous study completed by this unit, the present study aims to investigate the efficacy of adjunctive NAC in moderate to severe Major Depressive Disorder.

This is a multi-site, randomised, placebo-controlled trial with a targeted sample size of 120. Patients with a current episode of Major Depressive Disorder, Single or Recurrent Episode (DSM-IV-TR criteria), who score at least 18 on the Montgomery-Åsberg Depression Rating Scale (MADRS), and have been on stable pharmacotherapy for at least two weeks, are randomised to receive adjunctive NAC (1g bd) or placebo for 12 weeks. The MADRS will be the primary outcome measure. Secondary outcome measures include the Hamilton Anxiety Rating Scale, Clinical Global Impressions, Global Assessment of Functioning, Social and Occupational Functioning Assessment Scale, SLICE LIFE, LIFE RIFT, and the Quality of Life Enjoyment and Satisfaction Questionnaire. Blood samples are also collected at baseline and on completion of the trial for assays of oxidative enzymes, their genetic polymorphisms, and oxidative end products.

Recruitment started in August 2007, and is currently running at Geelong, Bendigo and Melbourne. It is anticipated that recruitment will complete in 2009.

This study has the potential to investigate a novel pharmacological treatment for MDD, which is a prevalent, chronic/recurrent, and often poorly treatment-responsive condition. This can be important not only in offering a new efficacious treatment option, but also in expanding the current pharmacopaedia for depression to include agents that act on non-neurotransmitter targets.

Magnetic resonance spectroscopy of glutathione in unipolar depression and bipolar disorder

Gin Malhi, Kirsteen Moss, Michael Berk

In conjunction with the current trials investigating N-acetyl cysteine in unipolar depression and bipolar disorder, our Sydney collaborators are currently conducting a magnetic resonance spectroscopy (MRS) study. The aim of this study is to determine changes in glutathione levels as a consequence of NAC treatment. The changes in these levels may then be correlated with changes in symptoms experienced by participants on the trial.

Physical consequences of depressive and anxiety disorders

Lana Williams, Felice Jacka, Julie Pasco, Seetal Dodd and Michael Berk

This is a population-based, observational study of women aged 20+ years that aims to investigate the prevalence and physical consequences of common psychiatric disorders in the community including the association with osteoporosis and bone mineral density, falls and fractures, body habitus and physical pain and somatic symptoms. Over one thousand female participants have undergone a semi-structured clinical interview (SCID-I/NP), designed to assess past or current psychopathology, and have completed a comprehensive range of medical and lifestyle assessments. Currently this project is in the analytical phase and already a number of significant findings have been published and presented at both international and domestic conferences. A follow up is scheduled to start early 2010 and this study will be replicated in a sample of over 1000 men from the Barwon region over the next three years, adding further strength to this large-scale project. In 2008, the team was successful in gaining a NHMRC grant (\$280,000), which will allow for analyses of blood samples to investigate the mechanisms behind many of these associations. Blood samples will be analysed in 2009.

The association between nutrition and the common mental disorders in a population based sample of women

Felice Jacka, Lana Williams, Julie Pasco, and Michael Berk

This is a population-based, observational study of women aged 20+ years that aims to investigate the association between dietary patterns and overall diet quality, and the high-prevalence psychiatric disorders in the community. The study sample comprises women enrolled in the Geelong Osteoporosis Study (GOS) who attend Barwon Health biennially as part of the ongoing epidemiological study. Diet is assessed using validated food frequency questionnaires, and depression and anxiety disorders (current and lifetime) are assessed using a semi-structured clinical interview (SCID-I/NP). Depressive symptomatology is also assessed using the General Health Questionnaire (GHQ-12). Information regarding other relevant medical and lifestyle variables is also gathered as women attend the study centre for assessment. To date approximately 1060 women have been assessed and data collection is complete. Analyses commenced in late 2008, and the results are currently being prepared for publication. The information gathered for this study will also form the baseline dataset for an ongoing prospective extension that seeks to examine the influence of both

diet and physical activity on depression and anxiety illnesses over time. This prospective component is supported by an NH&MRC project grant for the years 2007-11 (\$455,000). The examination of systemic inflammation as a possible mediator in the relationship between diet and psychopathology will be afforded by another NH&MRC grant, awarded in 2007 for \$280,000. It is expected that this study will produce several important publications in high-impact scientific journals.

Physical activity and its association with the high prevalence mental disorders

Felice Jacka, Evie Leslie, Lana Williams, Julie Pasco, and Michael Berk

This is a population-based, observational study of women aged 20+ years that aims to investigate the association between physical activity (PA) levels and high-prevalence psychiatric disorders in the community. The study sample comprises women enrolled in the Geelong Osteoporosis Study (GOS) who attend Barwon Health biennially as part of the ongoing epidemiological study. PA is assessed using validated questionnaires, and depression and anxiety disorders (current and lifetime) are assessed using a semi-structured clinical interview (SCID-I/NP).

Depressive symptomatology is also assessed using the General Health Questionnaire (GHQ-12). Information regarding other relevant medical and lifestyle variables is also gathered as women attend the study centre for assessment. This study will examine the proposed relationships both cross-sectionally and prospectively. This study is being undertaken in collaboration with Deakin University.

Olanzapine versus mood stabilisers in the treatment and outcome of outpatients with bipolar I disorder – an observational study

Jayashri Kulkarni, Michael Berk, Seetal Dodd, Lesley Berk, Bill Montgomery, Renee Granger, Katrina Kelin, Anthony de Castella, Paul Fitzgerald, Francis Biffin, Kate Filia, Sacha Filia, Alan Brnabic, Meg Smith

This is a prospective observational, open label, multi-centre study to examine the effectiveness of olanzapine versus conventional mood stabilisers (lithium carbonate, sodium valproate or carbamazepine), in oral form, for the treatment and outcome of 240 patients fulfilling the diagnostic DSM-IV_TR criteria for bipolar I disorder or schizoaffective disorder. The duration of observation is 2 years and includes 9 assessments. Olanzapine and conventional

mood stabilisers are prescribed as per usual practice in the treatment of these disorders. Primary outcome measures include, 1) the proportion of patients with symptomatic relapse as assessed by the Young Mania Rating Scale or the 21-item Hamilton Depression Rating Scale and/or (2) a psychiatric hospital admission. Other measures include syndromal remission/relapse, Clinical Global Impression Bipolar Version (CGI-BP), Quality of Life (EQ-5d, SLICE/LIFE, SF-36 and D.I.P), substance use, Rosenberg Self-Esteem scale, Social Provisions Scale and Illness Attitude Scale, medication information and health costs. Participants have completed their interviews at this site and the first papers from the study have been published. A complete data set that includes both sites was produced in May 2008. Data analysis and manuscript submission is expected to continue through 2009.

www.moodswings.net.au: an online intervention for bipolar disorder

Sue Lauder, Michael Berk, David Castle, Seetal Dodd, Andrea Chester, Leon Piterman, Britt Klein, David Austin, Greg Murray, Monica Gilbert, James Chamberlain, Carolynne Holdsworth and Lesley Berk

MoodSwings has been developed from the MAPS face-to-face group therapy program

developed by Lesley Berk under the stewardship of Professor David Castle. It is an online self-help program for bipolar disorder, designed to reduce episodes of relapse and improve psychosocial functioning and is Sue Lauder's PhD project. The online format removes many of the resource barriers people face in attending specialized programs and to our knowledge MoodSwings is the first Cognitive Behavioural Therapy (CBT) program available online for bipolar disorder. The project has received two *beyondblue: centre of excellence* awards which have enabled the development of an interactive website. The project is about to begin active recruitment to evaluate its effectiveness. Already the site has received 793 unique visitors from all over the globe in just eight months, without active promotion. We are excited about the implications this innovative approach will have in the treatment of bipolar disorder.

An investigation of the use of clozapine in schizophrenia

Joanna Fitzsimons, Bill Kuluris, Seetal Dodd, Michael Berk, Tom Callaly, Tim Lambert

The Clozapine program will be looking at a number of issues arising from the use of clozapine. These include Clozapine levels

over the last 6 years, blood sugars, lipids and other related medical issues, especially with regard to cardiac health. Outcome measures for Clozapine will be compared with other antipsychotics.

Multi-site Double-blind Randomized Controlled Study of Estradiol plus Neuroleptic versus Placebo plus Neuroleptic in the Treatment of Psychotic Symptoms in Women with Schizophrenia

Jayashri Kulkarni, Michael Berk, Seetal Dodd, Kathrine Roberts

The aim of this study is to examine the effects of using oestrogen as an adjunctive treatment in treating women with Schizophrenia. To date, over 90 participants have already completed the trial, and preliminary data analysis looks very promising in reducing the symptoms that these individuals experience! Recruitment will continue for this clinical trial at the Alfred in Melbourne, Barwon Health and Southern Health and is scheduled to be completed in 2009.

Investigation of neuroanatomical and neuropsychological changes in bipolar disorder

Simone Kurlender, Michael Berk, Christos Pantelis, Seetal Dodd, Dennis Velakoulis, Murat Yücel, Peter Brotchie, Kate Negus, Stephen Wood, Renee Testa, Simon Crowe

This project aims to investigate whether there are any correlations between neuropsychological performance and alterations to brain structures in bipolar disorder. Furthermore, this project intends to explore potential differences in neuropsychological performance between early- and late- onset forms of the illness, thereby exploring a developmental perspective. Such information may help guide strategies for early intervention.

To date, a total of 62 bipolar disorder patients have been seen for neuropsychological assessment. Five participants are still scheduled to undergo an MRI scan and this will complete data collection for the study. The neuropsychological data is currently being written up for a doctoral thesis, following which these findings will be used for publication purposes.

A study of the potential causes of psychosis in an Australian twin sample

Bryan Mowry, Chris Pantelis, Stephen Wood, Jonathon Chalk, Stephen Rose, John McGrath, Nicolas Martin, Dennis Velakoulis, David Chant, Michael Berk, Seetal Dodd, Jennifer O'Connor

The Australian Study of Twins and Psychosis is a national multi-centre study headed by A/Prof Bryan Mowry from the Queensland Centre for Mental Health Research and Prof Christos Pantelis from the Melbourne Neuropsychiatry Centre. The study aims to identify neuroimaging and cognitive markers of genetic vulnerability to psychotic disorders, such as schizophrenia and bipolar disorder, by investigating twins where both, one or neither twin has experienced psychosis. Over one hundred participants have been recruited so far.

A naturalistic study of treatment outcomes with Aripiprazole in 15 to 25 year olds with first episode psychosis

Michael Berk, Tom Callaly, Seetal Dodd, Stephen McConnell, Paul Hantz and Kristy Lu

The study investigates Aripiprazole as a first line treatment in patients with early onset of psychosis. Aripiprazole has a lower propensity for weight gain, metabolic disturbances and sedation, and this study tests the hypothesis that Aripiprazole

would be more acceptable and manageable antipsychotic treatment for use among these patients. Patients with first episode psychosis age between 15 to 25 years are studied. It is an audit study that examines Aripiprazole in a dose range of 5mg to 15mg among first episode patients within Youth Mental Health at Barwon Health. Several symptomatic assessments are used as outcome measures for this study. These include BDRS, CGI, SOFAS and GAF, which conduct six times over 12 months period. Overall, 12 patients have been recruited into the study. Data has been analysed and submitted for publication.

A mental health investigation of a methadone maintenance population

Kristi-Ann Villagonzalo, Stephen Mihaly, Felicity Ng, and Seetal Dodd

Psychiatric disorders are more prevalent among substance-abusing populations than in the general population, and their presence is often associated with negative substance abuse treatment outcomes. This project aims to test the practical utility of psychiatric screening tools in the substance abuse treatment setting and to examine the relationship between patterns of substance use and possible psychiatric disorders. Eighty clients of the methadone maintenance programme at Barwon Health

completed the Kessler Psychological Distress Scale (K10), Mood Disorder Questionnaire (MDQ), Post-traumatic Stress Disorder Checklist - Civilian Version (PCL-C) and a substance use questionnaire consisting of questions on age at first substance use, number and type of substances used, amount and frequency of substance use, and continuing substance use during treatment. Of these, 53 (67.9%) screened positive on the K10, 36 (48.7%) screened positive on the MDQ, and 39 (52.7%) screened positive on the PCL-C. While the results for the K10 were similar to those obtained in previous, similar studies, the estimated prevalence rates of bipolar disorder and post-traumatic stress disorder obtained through use of the MDQ and PCL-C, respectively, were much higher than those found in previous studies. The presence of psychiatric symptoms was associated with higher unemployment rates and lower subjective ratings of quality of life, as well as negative substance abuse outcomes including continuing substance use during treatment and greater amount of substances used.

SSRIs and bone

Jason Hodge, Lana Williams, Michael Berk and Seetal Dodd

Evidence from an epidemiological study conducted by our unit has associated SSRI use with reduced bone mineral density. Laboratory experiments are being conducted to determine if SSRI directly affect osteoclast and osteoblast cell functioning.

Glutathione depletion in animal models

Olivia Dean, Maarten van den Buuse, Michael Berk, David Copolov and Ashley Bush

In addition to the current clinical trials investigating oxidative stress in psychiatric illnesses, a project is also underway focusing on the antioxidant glutathione (GSH) in basic research. This project has investigated behavioural testing of both Sprague-Dawley rats and C57Bl/6 mice using prepulse inhibition (PPI), a measure of sensorimotor gating and Y-maze testing, a measure of spatial working memory. Both of these tests reflect impairments reported in schizophrenia. After testing spatial memory using the Y-maze, results showed that CHX-induced brain GSH depletion lead to impairment in spatial memory in both rats and mice. This may indicate a role of GSH in this aspect of schizophrenia

and bipolar disorder. Previously in rats and mice, treatment with drugs including amphetamine, methamphetamine and MK-801 have been extensively used to induce deficits in PPI similar to the deficits seen in schizophrenia and models of mania. Brain GSH depletion either prior to, or in combination with drug treatment did not alter PPI in mice. This indicates that brain GSH depletion alone does not appear to directly affect sensorimotor gating. However, in rats, PPI was no longer disrupted in amphetamine-treated rats that were depleted of brain GSH. MK-801 treatment in rats following CHX-induced brain GSH depletion did not show any differences in PPI when compared to drug-alone treatment. It is postulated that the increase in oxidative stress produced by treatment with amphetamine treatment in a situation where the system was vulnerable (lacking brain GSH) may lead to damage to neuronal function and therefore prevent the expected effects of these drugs from being displayed. This is speculative and further studies are required to elucidate the lack of PPI deficits in rats.

Bipolar Depression Rating Scale

Michael Berk, Seetal Dodd, Gin Malhi and Philip Mitchell

There are significant differences between the phenomenology of unipolar and bipolar depression. Most of the standard rating scales for depression have been developed for unipolar disorder, and are thus of questionable utility in bipolar disorder. A paper validating the BDRS was published in 2007 and further work is continuing in clinical populations. The BDRS and user's manual has been translated into several different languages and is available on www.barwonhealth.org.au/bdrs.

An Investigation of Psychosis-Proneness in Amphetamine Users: A Multisite Study

Sharon Dawe, Rebecca McKetin, Leanne Hides and Marjan Geertsema

Amphetamine use has emerged as a major drug problem in Australia, and causes mental and physical health problems, stemming from its psychostimulant and sympathomimetic properties. Among amphetamine users there appears to be a substantial but poorly described experience of mental disorders, ranging from frank psychoses to subclinical symptoms that

include abusive and aggressive behaviors, suspiciousness and impulsivity. Nonetheless, the majority of subclinical symptoms go undetected, and essentially only amphetamine users with an overt florid psychosis receive treatment and care.

This project is a multisite cohort study and aims to define the extent and nature of mental health and other problems among amphetamine users over a 12-month period. A total of 196 amphetamine users, have been recruited from the Barwon Health Drug and Alcohol Services, Geelong, the Biala Needle Exchange Program, Brisbane and the National Drug and Alcohol Research Centre, Sydney.

Neuroprotective Properties of Quetiapine versus Lithium in a First Episode Mania Cohort: 12-month Neuroanatomical, Neurochemical and Neuro-cognitive Effects and Preliminary Data of Prophylactic Properties (study code D1443C00002)

Michael Berk, Pam Callaly, Karen Hallam, Nellie Lucas, Craig Macneil, Melissa Hasty, Linda Kader, Michaela O'Regan, Thomas Callaly, Philippe Conus, Saji Damodoran, Peter Brotchie, Christos Pantelis, Murat Yucel, and Patrick D McGorry.

The aim of this study is to investigate the effectiveness of two different compounds that are used in the treatment of bipolar disorder (lithium and quetiapine) for preventing the neurological damage that is now known to occur over the first year of bipolar disorder. Further, the aim extends to assessing the effectiveness of these drugs in sparing cognitive (thought processing) functions and improving both symptoms and patients quality of life. People between the ages of 15 and 25 who experience their first episode of mania will be recruited from the Early Intervention Service (EIS). After the acute phase has subsided, participants will be randomised to either Lithium monotherapy or Quetiapine monotherapy. Eight assessment visits over twelve months will be carried out, during which time the participant's psychological and neurocognitive function will be assessed. An MRI scan will be carried out 3 times during the 12 months. The MRI and neurocognitive testing will provide the first test of whether Quetiapine has neuroprotective properties. This new study is a collaboration between Barwon Health, ORYGEN Youth Health and Southern Health early psychosis treatment centre. After two years of development and a recent lengthy review and ethics assessment, ethics approval has been granted for the trial with the first patient enrolled in August 2007 at the ORYGEN

site with recruitment now rolling out at the Barwon site under the direction of Professor Michael Berk and work of Deb Pierlot. This study will run over a period of four years with a total expected completion sample size of 60 patients from the three sites.

Predicting response to antidepressants - relevance of norepinephrine transporter gene (net) polymorphisms & blood-brain transporter gene (mdr1) polymorphisms.

Ajeet Singh, Chee Ng, Isaac Schweitzer, Michael Berk, Keith Byron and Trevor Norman

The role of genetic variations between depressed patients and their response to antidepressant medications is investigated in this project. Specifically, the role of norepinephrine gene and the MDR1 gene alleles in prediction of efficacy and tolerability of escitalopram or venlafaxine in a clinical sample of patients. The study will be woven into a larger study and includes blood analysis for relevant single nucleotide polymorphisms. If a differential medication response can be predicted it would be possible to place patients on the best medication first time round rather than through trial and error. This would potentially reduce the morbidity

and mortality of depressive disorders. Participant recruitment for this study is currently underway.

Selective Estrogen Receptor Modulators (SERMs) - A Potential Treatment for Psychotic Symptoms of Schizophrenia?

Jayashri Kulkarni, Anthony de Castella, Paul Fitzgerald, and Michael Berk

Schizophrenia is a serious debilitating disease with increasing social and economic costs to the individual, their family and society. The cornerstone of treatment is pharmacotherapy, however a large number of patients still experience ongoing symptoms. We desperately need new treatments to improve the quality of life and functioning of people with schizophrenia. We have published studies showing that oestrogen is potentially a new treatment for schizophrenia. It appears to work through the two main brain chemicals (dopamine and serotonin) that are implicated in the production of the key symptoms of schizophrenia. In a recent study of 93 women with schizophrenia, we used 100mcg skin patch oestrogen as a treatment enhancer and showed that the women who received oestrogen made a significantly better recovery than a matched group of women who received placebo. There has

been some recent concern over the longer-term use of hormone replacement therapy in women, in particular, questions about the relationship between breast, uterine cancers and HRT. A new 'brain oestrogen' has been developed (Selective Oestrogen Receptor Modulator, SERM) which has fewer side effects than oestrogen and has a mechanism of action specifically designed to improve memory and osteoporosis. SERMs are non-feminising as they do not act on reproductive organs. The project proposed within is to conduct a clinical trial of a SERM (Raloxifene) compared with placebo in 90 postmenopausal women with schizophrenia. All patients also receive standardised antipsychotic medication. We have conducted a pilot study demonstrating feasibility for the proposed project. If our proposed trial is successful, SERMs may be a useful new treatment for both women and men with schizophrenia.

Investigating oxidative makers in postmortem brain tissue of individuals diagnosed with schizophrenia, bipolar disorder and unipolar depression.

Olivia Dean, Michael Berk, Brian Dean

Based on reports of altered antioxidant levels including a deficit in some brain regions in levels of glutathione (GSH), the current study aims to investigate levels of GSH in postmortem brain tissue. Previous reports have found decreased GSH levels in the caudate and dorsolateral prefrontal cortex regions in schizophrenia. Another brain region of interest in these disorders is the anterior cingulate cortex. This region plays a role in executive functioning and emotional response and changes in this brain region have been implicated in bipolar disorder and schizophrenia. The aim of the current study is to investigate, initially, GSH in this brain region. Following this additional oxidative markers including antioxidant levels and markers of oxidative stress will be investigated in these samples. The latter part of this project will be undertaken as part of a collaborative effort with our Brazilian colleagues.

The association between diet quality and depression in adolescents: The Healthy Neighbourhoods Study.

Felice Jacka, Peter Kremer, Evie Leslie, Michael Berk, John Toumbourou

Data have been collected from more than 8000 Victorian adolescents aged 11-16yrs participating in the Healthy Neighbourhoods Study. This sub-study examines the associations between measures of diet quality and self reported symptomatology and case level depression, taking into account many other factors that may confound this relationship. This study is being undertaken with researchers at Deakin University.

The association between dietary intakes, nutrient status, and late life depression.

Felice Jacka, David Ames, Michael Berk

This study is being undertaken in collaboration with the National Ageing Research Institute (NARI), and will examine the associations between habitual diet, nutrient status, and measures of psychological distress in elderly Australians.

Diet quality and the common mental disorders: The Hordaland Health Study (HUSK).

Felice Jacka, Arnstein Mykletun, Ingvar Bjelland, Grethe S Tell

This study will examine the associations between habitual diet quality and the high prevalence psychiatric disorders in more than 5000 middle-aged and elderly adults from western Norway. This study is being undertaken in collaboration with the University of Bergen, Norway.

Prevalence of mood and anxiety disorder in irritable bowel syndrome (IBS). An epidemiological, population based study of women.

Arnstein Mykletun, Felice Jacka, Lana Williams, Julie Pasco, Mark Kotowicz, Geoff Nicholson and Michael Berk

This is a population-based, observational study of women aged 20+ years that aims to investigate the association between self-reported irritable bowel syndrome (IBS) and high-prevalence psychiatric disorders in the community. The study sample comprises women enrolled in the Geelong Osteoporosis Study (GOS) who attend Barwon Health biennially as part of the ongoing epidemiological study. IBS is assessed using

self-report questionnaires, and depression and anxiety disorders (current and lifetime) are assessed using a semi-structured clinical interview (SCID-I/NP). Depressive symptomatology is also assessed using the General Health Questionnaire (GHQ-12). IBS is a common, functional disorder, the aetiology of which is unclear. This study aims to examine the degree of overlap between IBS and depression and anxiety disorders in the community.

The Nord-Trøndelag Health Study (HUNT study) collaboration

Lana Williams, Ottar Bjerkeset, Craig Olsson, Noami Wray, Ulla Romild, Arnulf Langhammer, Julie Pasco, Berit Schei, Siri Forsmo and Michael Berk

A collaboration between the Norwegian University of Science and Technology (NTNU), Trondheim, Norway and The University of Melbourne, Department of Clinical and Biomedical Sciences: Barwon Health was formed approximately 2 years ago. Already this relationship has grown and developed to include numerous members from both universities and is continuing to expand as new projects are created. Already several cross sectional and prospective research proposals capable of being published in high impact journals have been accepted and work on many of these

projects has already begun. The following projects (see below) examine data collected from both men and women enrolled in each phase of the world renowned Nord-Trøndelag Health Study (HUNT study) and associated registry (fracture and medication) databases which has been in existence for in excess of 25 years. Clinical, demographic and biological information from a total of 55,000 participants will be utilised for these studies.

a) Antioxidant defence in Unipolar Depression: Candidate genes in the HUNT

Lana Williams, Michael Berk, Craig Olsson, Naomi Wray and Ottar Bjerkeset

Evidence is accumulating to support the presence of oxidative stress states in a number of psychiatric disorders, suggesting that oxidative pathways are intrinsic to the pathophysiology of these conditions, and may thus be amenable to therapeutic intervention. Glutathione, being the predominant intracellular antioxidant in the brain and the most generic of all endogenous antioxidants in terms of action, is a promising treatment target. This project aims to investigate whether there are any differences in frequencies of polymorphisms of key genes regulating antioxidant defenses in depression, as measured by the Hospital Anxiety and Depression Scale (HADS). This year, the team was successful in gaining

a Joint Project Grant from the University of Melbourne, which will contribute to the funding already secured for this project from Norway.

b) Symptom burden, impairment and use of health care services in pure and comorbid anxiety and depression in 61,352 adults: The HUNT study

Ottar Bjerkeset, Lana Williams, Ulla Romild and Michael Berk

Clinically, a mixed expression of anxiety and depression is common and overlap increases with symptom severity. Clinical outcome is also poorer for patients diagnosed with this common syndrome than in those with “pure conditions”, yet current classification only allows for a mixed diagnosis at subclinical levels. Therefore, our aim was to examine the association between pure anxiety, pure depression, and mixed anxiety and depression with a wide range of self reported health variables including psychological burden, quality of life, functional impairment, help-seeking patterns, use of psychotropic age, symptom severity, impairment, work disability and excess mortality in adult men and women. We hypothesise that persons with mixed anxiety and depression will manifest greater burden of disease and poorer quality of life than individuals with non-comorbid depression or anxiety in a graded pattern.

c) Association of self-reported depression with vitality and energy level in 64,000 adults. The HUNT Study

Michael Berk, Lana Williams, Craig Olsson, Ulla Romild, Gordon Parker and Ottar Bjerkeset

Depression has traditionally been associated with loss of energy. However, clinical studies indicate that a substantial percentage of depressed populations have increased energy levels and therefore better classify as bipolar depression. The symptom expression is often mixed, with co-occurring depression and elevated energy levels. There is great focus on detecting these subgroups in clinical practise, as they often require different treatment than unipolar depression. These different symptom profiles have to our knowledge not been studied adequately in population settings. In order to possibly distinguish between uni- and bipolar depression, we will try to identify and estimate the prevalence of different subgroups (subjects with depression and low energy levels; subjects with depression and normal energy levels; subjects with depression and high energy levels-mixed state) utilising the Hospital Anxiety and Depression Scale (HADS).

d) Psychiatric disorders, bone health and possible mediating factors: Cross sectional and longitudinal data from the HUNT study

Lana Williams, Ottar Bjerkeset, Michael Berk, Arnulf Langhammer, Julie Pasco, Berit Schei and Siri Forsmo

The possible association between psychiatric illness, osteoporosis and subsequent fracture has been the subject of a growing body of research. Given that endocrine, inflammatory, genetic and behavioural factors may play a role in bone loss, and that there is a demonstrated association between psychiatric disorders and excess cortisol, specific genes, increased pro-inflammatory cytokines and deleterious behavioural factors, it is not unrealistic to suggest a link exists. Limited data exists examining the cross sectional association between psychotropic medications and BMD, although study designs, power issues and a failure to delineate between specific classes and agents of mediations has restricted the interpretation of these studies.

The aims of this study are to investigate both cross-sectionally and prospectively, the association between psychiatric disorders and BMD and fractures utilising a fracture registry. Furthermore, we will investigate the effect of antidepressant (all classes and specific agents), antipsychotic and anxiolytic medications utilising the Norwegian Drug Prescription Registry on BMD and fracture. Potential mediating links utilising available biological data will also be examined. This is a replication study, based on the previous studies undertaken in the Geelong Osteoporosis Study.

HIGHLIGHTS

The unit produced a number of novel research findings that are clinically and practically significant. The strongly positive results of our two randomised controlled trials of NAC in both schizophrenia and bipolar disorder have led to a number of new developments. These trials strongly invoke deficits in oxidative biology, in particular the glutathione system, in the pathophysiology of major psychiatric disorders, and support a role of NAC in the adjunctive management of these disorders. Two follow up studies have commenced; a large-scale maintenance trial of NAC in bipolar disorder, and an acute treatment study of NAC in depression.

Further supportive in vivo studies are ongoing. In addition, Felice Jacka produced the first epidemiological data showing that habitual diet influences the likelihood of having depression and anxiety. Julie Pasco produced long-term follow up data demonstrating that smokers have a doubled risk of developing depression. We showed that suicide rates spike following the shift to daylight saving, suggesting that even modest disruption in diurnal rhythms is deleterious. Lana Williams reported that SSRI antidepressants, the most widely used class of antidepressants, increase the risk of osteoporosis. We showed that ECT is far less useful in Bipolar than Unipolar depression, and highlighted the fact that there are very high rates of Vitamin D insufficiency in psychiatric cohorts. Sue Lauder developed one of the first Internet based psychotherapies for bipolar disorder. Felicity Ng produced the International Society of Bipolar Disorder guidelines for safety monitoring of psychotropic agents. Olivia Dean produced data showing that glutathione has a key role in spatial memory. We have a range of similarly exciting projects underway that should provide an increasing amount of clinically useful data.

PRESENTATIONS

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Dodd S. *History of illness prior to a diagnosis of bipolar disorder or schizoaffective disorder.* International Society of Affective

Disorders regional congress, Brisbane convention and exhibition centre, Brisbane 28 Feb - 2 Mar, 2009.

Berk M. *Disease burden of bipolar and schizoaffective disorders in an Australian cohort.* International Society of Affective Disorders regional congress, Brisbane convention and exhibition centre, Brisbane 28 Feb - 2 Mar, 2009.

Berk M. *Rhythm and Blues.* International Society of Affective Disorders regional congress, Brisbane convention and exhibition centre, Brisbane 28 Feb - 2 Mar, 2009.

Berk M. *The role of oxidative biology and glutathione in mood.* International Society of Affective Disorders regional congress, Brisbane convention and exhibition centre, Brisbane 28 Feb - 2 Mar, 2009.

Berk M. *From reality of secondary prevention to the hope of primary prevention.* International Society of Affective Disorders regional congress, Brisbane convention and exhibition centre, Brisbane 28 Feb - 2 Mar, 2009.

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Jacka FN, Pasco JA, Mykletun A, Williams LJ, Kotowicz MA, Nicholson GC, Berk M. *Diet quality is associated with the common mental disorders.* International Federation for Psychiatric Epidemiology (IFPE) conference, Vienna, Austria, April 16-19, 2009.

PRIZES AND AWARDS

- 2009 Samuel Gershon Award - Presented to Dr Seetal Dodd at the International Conference on Bipolar Disorder, 25-27th June 2009, Pittsburgh, USA.
- 2009 Faculty of Science Dean's Honour list - Presented to Kristi Villagonzalo at the Dean's Awards, 20th May 2009, University of Melbourne
- 2008 Barwon Health Research and Learning Expo Poster Award - Presented to Dr Lana Williams, 13th August 2008.
- 2008 Eli Lilly Oration award - Presented to Prof Michael Berk at the Australasian Society for Psychiatric Research conference, Newcastle, Australia, 5th December, 2008.
- 2008 Smart Geelong Research Health and Lifestyle award - Presented to Prof Michael Berk, 16th August, 2008.

- 2008 G Force Recruitment Researcher of the year award, Smart Geelong Network - Presented to Prof Michael Berk, 16th August, 2008.
- 2008 Early Career Researcher award - Presented to Felice Jacka at the Australasian Society for Psychiatric Research conference, Newcastle, Australia, 5th December, 2008.
- 2008 Deakin Early Researcher Award, Smart Geelong Network - Presented to Felice Jacka, 16th August, 2008.

GRANTS

- *Neuroprotective Properties of Quetiapine versus Lithium in a First Episode Mania Cohort: 12-month Neuroanatomical, Neurochemical and Neuro-cognitive Effects and Preliminary Data of Prophylactic Properties.* Michael Berk, Karen Hallam, Nellie Lucas, Craig Macneil, Melissa Hasty, Linda Kader, Michaela O'Regan, Thomas Callaly, Philippe Conus, Saji Damodaran, Peter Brotchie, Christos Pantelis, Murat Yucel, Patrick D McGorry. Astra Zeneca - \$1.68 million awarded June 2006. Duration 2006-2010.
- *Testing the glutathione dysfunction hypothesis of Bipolar Disorder: A Double Blind Randomised Placebo Controlled Trial of N-Acetyl Cysteine.* Michael Berk, Seetal Dodd, Felicity Ng, Olivia Dean, David Copolov, Ashley Bush. Stanley Medical Research Institute - USD \$ 769,390. Duration 2007-2009
- *Developing evidence for the primary prevention of depressive disorders: The role of diet and physical activity.* Michael Berk, Julie Pasco, Colin Bell, Evie Leslie, Felice Jacka. NHMRC Project Grant - \$445,050. Duration 2006-2011.
- *The effect of high-dose vitamin D supplementation on mental health in a randomised, controlled trial of 1500 older women.* Michael Berk, Kerrie Sanders, Seetal Dodd, Felice Jacka. NHMRC Project Grant - \$80,250. Duration 2008.
- *A prospective study of inflammatory cytokines as common factors in the aetiology of both depression and osteoporosis.* Julie Pasco, Michael Berk, Margaret Henry, Seetal Dodd. NHMRC Project Grant - \$280,464. Duration 2008-2010.
- *Mood swings: an online intervention program for bipolar affective disorder.* Sue Lauder, Michael Berk, Seetal Dodd, Andrea Chester, David Castle. Beyond blue -\$134,573. Duration 2007-2008.
- *A Naturalistic study of treatment outcomes with Aripiprazole in 15-25 year olds with first episode psychosis.* Michael Berk, Tom Callaly, Annette Thampi, Stephen McConnell, Paul Hantz, Derek Goodman. Bristol-Myers Squibb - \$157,428. Duration 2007-2008.
- *Depression and Physical illness: The link with pain, cardiovascular factors and osteoporosis.* Michael Berk, Lana Williams, Julie Pasco, Seetal Dodd, Felice Jacka. Eli-Lilly- \$ 50 000. Duration 2006-2008.
- *Depression and Physical illness: The link with pain, cardiovascular factors and osteoporosis (extension study).* Michael Berk, Lana Williams, Julie Pasco, Seetal Dodd, Felice Jacka. Eli-Lilly- \$ 50 000. Duration 2009-2010.
- *Preventative and early intervention strategies in emerging mental disorders in young people.* Pat McGorry, Ian Hickie, Henry Jackson, Alison Yung, Nick Allen, Jane Edwards, Andrew Chanen, Daniel Lubman, Gregor Burger, John Gleeson, Michael Berk, Warrick Brewer. NHMRC - Centre of Clinical Research Excellence (CCRE) -Orygen Youth Health. \$ 2 million. Duration 2005-2010.
- *Multi-site Double-blind Randomized Controlled Study of Estradiol plus Neuroleptic versus Placebo plus Neuroleptic in the Treatment of Psychotic Symptoms in Women with Schizophrenia.* Jayashri Kulkarni, Michael Berk, Paul Fitzgerald, Anthony Decastella, Saji Damodaran. Stanley Medical Research Institute \$83,842 per year for 3 years at BPRU site. Duration 2006- 2008.
- *Antioxidant defences in Unipolar Depression: Candidate genes in the HUNT study.* Lana Williams, Michael Berk, Ottar Bjerkeset. The University of Melbourne Joint Research Project Grant. \$14,237 Duration 2009.
- *Physical outcomes of depressive and anxiety disorders.* Lana Williams. The University of Melbourne Early Career Researcher Grant Scheme. \$26,000 Duration 2009.
- *Antioxidants In Unipolar Depression: A Double Blind Randomised Placebo Controlled Trial of N-Acetyl Cysteine.* Michael Berk, Felicity Ng, Seetal Dodd, Ashley Bush, Gin Malhi. Australian Rotary Health Research Fund (ARHRF), \$60,000 for 2008-2009

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Neurosciences

THE TEAM

Head of Unit

A/Professor Peter Gates

Neurologists

A/Professor Ross Carne

Dr Paul Talman

Dr Cameron Shaw

Dr Ben Clissold

Dr Thomas Kraemer

Dr Peter Batchelor

Visiting Neurologists

A/Professor John Balla

Dr Caron Chapman

Dr Mark Mackay Paediatric Neurologist

Visiting Neurosurgeons

Mr Peter McNeill

Director of Stroke

A/Professor Peter Gates

Director of Epilepsy

A/Professor Ross Carne

ABOUT US

The Neurosciences Department is a group of neurologists with varied clinical interests and thus varied research interests.

The team is doing research in stroke, motor neurone disease, multiple sclerosis and medical education.

PROJECTS IN PROGRESS OR COMPLETED

Cerebral Vascular Disease

A pharmaceutical sponsored study comparing a novel antiplatelet drug called Terutroban versus aspirin and Persantin.

Atrial fibrillation studies

A prospective study of atrial fibrillation and withdrawal of anticoagulation for a procedure - this was an audit and continues.

ENGAGE AF TIMI 48 study:

Phase 3, multi-national, multi-center, randomized, double-blind, double-dummy, and parallel-group study of DU-176b (Enoxaban) treatment versus Warfarin in reducing the risk of the composite primary endpoint of stroke and systemic embolic events (SEE) in subjects with Atrial Fibrillation.

Motor Neuron Disease

A study of prognosis in relation to the clinical features at presentation.

Multiple Sclerosis

- Ausimmune study

A nationwide study of the incidence of multiple sclerosis and also a study looking at possible environmental factors that may influence aetiology.

- Cogni MS

A pharmaceutical sponsored study looking at the effect of interferon on cognitive function

- An open-label study to examine the difference in tolerability associated with Titration Of Dose on initiation of Avonex therapY (TODAY)

A pharmaceutical sponsored study examining variable rates of introduction of interferon therapy for multiple sclerosis.

EFC6260

A pharmaceutical sponsored study, an international, multi-center, randomised, double-blind, placebo-controlled, parallel group study to evaluate the efficacy and safety of two year treatment with teriflunomide 7 mg once daily and 14 mg once daily versus placebo in patients with a first clinical episode suggestive of multiple sclerosis.

HIGHLIGHTS

Prof Gates reported the first study in the world to examine possible reversal of Atrial Fibrillation with exercise.

Dr Talman published his paper on phenotypes in MND.

PRESENTATIONS

Gates PC, Saheb Al-Daher, Daryl Ridley Alexander Black. *Possible reversion of atrial fibrillation with exercise*, ANZAN meeting May 2008 Brisbane

PRIZES AND AWARDS

Associate Professor Ross Carne Grad Dip Med Ed (Dundee)

Dr Paul Talman appointed Clinical Associate Professor (Deakin Medical School)

PUBLICATIONS

Gates PC, Carne R. *Job variation in Australian advanced training in neurology: what are the implications?* Int. Med. J. 2008;38 (7):546-548

Gates PC, Saheb Al-Daher, Daryl Ridley Alexander Black. *Could exercise be a new strategy to revert some patients with atrial fibrillation?* Int. Med. J. In Press

Whitehand B and Gates PC. *A Nose Peg. A Possible Simple Solution for Velopharyngeal Incompetence*, Otolaryngology-Head and Neck Surgery (2009) In Press

Clissold B, Kraemer T and Gates PC. Editorial. *Increasing complexities of stroke care*, Internal Medicine Journal 2009 In Press

Talman P, Forbes A, Mathers S. *Clinical phenotypes and natural progression for motor neuron disease: Analysis from an Australian database*. Amyotrophic Lateral Sclerosis. 2008;9(6):1 - 6.

Wijeserker L, Mathers S, Talman P et al. *Natural History and clinical features of the flail arm and flail leg ALS variants*, Neurology 2009 72: 1087-1094.

Dodson M, Crotty B, Prideaux D, Carne R, Ward A, de Leeuw E. *The multiple mini-interview: how long is enough*, Med Educ: 2009; 43(2): 168-174

Nursing and Allied Health

THE TEAM

Prof Trisha Dunning AM

Dr Sally Savage

Susan Dabkowski

Dr Beth Costa

Kristine Fitzgerald

Nicole Duggan
Nurse Researcher

ABOUT US AND PROJECTS IN PROGRESS OR COMPLETED

Chronic disease management network (CDM-Net)

The overall aims of the project are to create a broadband-based network of health services for monitoring and supporting chronic disease management. In the first instance this will involve diabetes. The aims and hypothesis being tested in the clinical evaluation aspect of the research are:

- To test CDM-Net in 'real life' general practice settings in Barwon Health
- Demonstrate health professional and consumer adherence to CDM-Net care plans
- Undertake formative evaluation of CDM-Net

The hypothesis is: The use of CDM-Net will improve metabolic control, general health, and quality of life outcomes for people with type 2 diabetes and consequently reduce health costs. The indicators of improvement should be apparent after six months. The methodology consists of a single cohort before and after study conducted over nine months. Data are being collected at baseline and at six (time 1) and nine (time

2) months. Currently, 16 GPs are enrolled in the study; 92 time 1 and 15 time 2 patients' questionnaires have been returned. GPs will attend two education/evaluation workshops and individual interviews, which are currently in process, will be conducted with GPs and patients to assess usability and acceptability of CDM-Net.

Diabetes self-management education information needs of younger people with type 2 diabetes

The aims of the project were:

- To identify the education and information people aged 25 to 45 who have type 2 diabetes need to enable them to effectively self-manage their diabetes
- To identify preferred education and information delivery mode of people with type 2 diabetes aged 25 to 45
- To develop recommendations regarding the key content areas, format, appropriate language and preferred means of distributing diabetes self-management education and information to younger people with type 2 diabetes

The methodology included a systematic literature review, a 'one shot' cross-sectional survey of diabetes educators, general practitioners (GPs) and endocrinologists

using self-completed, anonymous questionnaires, a focus group and telephone interviews with members of the target group and consultation with a project Reference Group established in collaboration with the Australian Diabetes Society (ADS) and the Australian Diabetes Educators Association (ADEA).

The draft report and recommendations were submitted to the ADEA and the ADS in late October 2008 to be circulated to members of each Association as part of the consultation process.

Developing an evidence-based model for managing diabetes at the end of life

The aim of this project is to develop and test a framework for managing diabetes in palliative care patients with a focus on the stages at the end of life (stable, deteriorating and terminal). The framework will be developed based on a literature review, advice from a multidisciplinary expert panel, and information collected from interviews with patients and their families. In a later part of the project the draft framework will be implemented and evaluated in Barwon Health Palliative Care Service to determine the acceptability to palliative care doctors and nurses, whether the framework helps them provide the best possible care for people with diabetes at the end of life, as well as the usability of the framework.

Recruitment of patients and family members or carers to participate in a focus group or individual interview commenced in February 2009.

A randomised controlled trial of individualised medicine education for people with type 2 diabetes

The aim of the research is to determine whether personalised medicine self-management education delivered by diabetes educators improves medicine-related self-care and adherence. A randomised controlled trial will be conducted. Sixty-six people with type 2 diabetes will be recruited and will be randomised to either a usual care group or a group that receives individualised medicine education relevant to each oral hypoglycaemic agent (OHA) or insulin the individual is prescribed. The medicine adherence score, attitudes to diabetes medicines, knowledge of diabetes medicines, and metabolic control in both groups will be measured at baseline and six months after the intervention. In addition, people's actual medicine knowledge and medicine administration behaviours relevant to their OHA/insulin will be observed to compare actual knowledge and behaviours with self-reported behaviours. Assisting people with type 2 diabetes to take their medicines appropriately should reduce the likelihood of medicine-related adverse events and improve metabolic outcomes.

Audit of people with type 2 diabetes experience of using Byetta

Byetta is a recently introduced medicine for regulating blood glucose. Although there is substantial phase one, two and three data to support the safety and efficacy of Byetta, there is limited phase four information about the use of the medicine in routine clinical care or people's perceptions of the medicine. Data such as the effects on blood glucose control and side effects were systematically collected as part of routine dose adjustment and monitoring patients prescribed Byetta in the Diabetes Referral Centre. In addition, a self-completed anonymous questionnaire will be distributed to determine patients' satisfaction with Byetta, details about any side effects experienced and their level of satisfaction with the education and written information they received when Byetta was initiated.

Patient Engagement and Coaching for Health: The PEACH Study

Professor Dunning is an associate investigator on this NHMRC funded study being undertaken by The Department of General Practice at The University of Melbourne. PEACH is a cluster randomised controlled trial using telephone coaching to coach people with type 2 diabetes to engage with their GPs and achieve optimal health outcomes. The aims of the study are to

determine whether goal-focused telephone coaching delivered by practice nurses improves diabetes control and reduces the treatment gap between guideline-based standards and actual clinical practice. The practice nurses managing patients in the intervention group are trained to deliver goal focused telephone coaching according to a standardised protocol. Patients with poorly controlled type 2 diabetes attending their GP are randomised to either the intervention (goal-focused telephone coaching) or the control group. During the coaching telephone calls the practice nurses in the intervention group discuss metabolic targets, the individual's biochemical test results, medicines and self-care. Each patient receives eight telephone calls during the intervention.

HIGHLIGHTS

- Receiving the inaugural Ella Lowe annual grant from the Nurses Board of Victoria for the *Managing diabetes at the end of life* project.
- The enthusiastic response of nursing and allied health staff from Barwon Health and Deakin University to the series of five research and writing workshops conducted by the Centre in 2008.
- The presentation of the Inaugural Deakin-Barwon Health World Diabetes Day Professorial Lecture by Professor Dunning to an appreciative audience comprising a range of medical professionals, academics, students and members of the public.
- Prof Dunning's book - *Managing Clinical Problem in Diabetes* will be translated into Turkish. 10,000 copies will be produced and distributed to the physicians in Turkey.
- The impressive degree of collaboration exhibited by the partnership between Barwon Health and Deakin University in establishing and supporting the Centre for Nursing and Allied Health Research in 2007.
- The growth of the Centre with five new research staff commencing in 2008.

PRESENTATIONS

Conference Presentations

Sydney

Dunning, T. Australasian Integrative Medicine Association (AIMA). *Spirituality and coping in young adults with diabetes: validation of the spirituality tool.*

Rome

Dunning, T. Federation of European Nurses annual conference. *Spirituality and coping in young adults with diabetes: validation of the spirituality tool.*

Melbourne

Dunning, T. Australian Diabetes Educators Association annual conference. *Developing a tool to measure spirituality in young people with type 1 diabetes.*

Invited speaker presentations

Dunning, T. ADEA Victorian Branch lecture: *Helping people with diabetes use CAM safely.* Melbourne.

Dunning, T. Auckland AIMANZ Plenary lecture *CAM and Diabetes: useful tool or dangerous liaisons?* Workshop *How can CAM be safely integrated into conventional diabetes care?* Auckland, New Zealand.

Dunning, T. Diabetes Australia Leadership Forum *How to plan research.* Melbourne.

Dunning, T. DANSAC Health Professional Development Forum: *How to critically appraise clinical papers and apply the information to practice.* Melbourne.

Dunning, T. University of Melbourne: *Diabetes—the disease, Medication management and Ethical issues in medication management.* Master's Of Nursing Practice Course, Melbourne.

Dunning, T. ISPAD Annual Science School faculty member, Durban, South Africa.

Dunning, T. IDF Translational research workshop. *How to write a translational research grant application.* Hong Kong

Dunning, T. Mayfield Education Centre Diabetes Education Certificate Course: *How to critically appraise clinical papers.* Melbourne.

Dunning, T. Australian Nurse Practitioner Association annual conference *Writing Abstracts.* Melbourne.

Dunning, T. Alzheimer's Association of Tasmania Plenary: *Using aromatherapy in dementia care,* and workshop: *The practical art of smelling the roses.* Hobart.

Dunning T. General Practice Association Continuing Education Conference *Using case discussions to meet metabolic targets in people with type 2 diabetes.* Melbourne.

Dunning, T. Public forum Colac Diabetes Australia Victorian Branch Network: *Helping people with diabetes make informed decisions about CAM use.* Colac.

Dunning, T. Palliative Care in Aged Care Special Interest Group. *Managing diabetes in palliative care situations.* Melbourne.

GRANTS

Trisha Dunning Diabetes self-management education information needs of younger people with type 2 diabetes Australian Diabetes Educators Association (ADEA). 12 months. \$29,449

Trisha Dunning, Peter Martin, Sally Savage Developing an evidence-based model for managing diabetes at the end of life. Nurses Board of Victoria (NBV) Inaugural Ella Lowe Grant. Two years. \$50,000

Trisha Dunning, Sally Savage, Paul Muir A randomised controlled trial of individualised medicine education for people with type 2 diabetes Australian Diabetes Society (ADS) Servier National Diabetes Strategy Grants in memory of Barry Young. Two years. \$19,816

Sally Wellard, Martina Hasseler, Trisha Dunning, Bodil Rasmussen, Rosey King Exploring nurses' diabetes knowledge and perceptions of the quality of diabetes care in Barwon and Ballarat public residential aged care. Deakin University and the University of Ballarat Collaboration Fund. 12 months. \$25,000

B Rasmussen, Sing Kai Lo, Trisha Dunning, W Duan, T Zan The effect of Tai Chi on psychosocial status: a systematic review. Faculty Research Development Grants. 12 months. \$18,485

Young D, Furler J, Walker C, Vale M, Best J, Segal L, Dunning T. Patient engagement and coaching for health: an intensive treatment intervention for Type 2 diabetes in disadvantaged communities (PEACH). NHMRC General Practice Grant Three years. \$4999.263/year. Funded for another 12 months in 2009 \$298,125

PUBLICATIONS

Peer-reviewed papers

1. Kapur K, Dunning T (2008) Global Nutrition recommendations: a combination of evidence and food availability? *Practical Diabetes International* 25(1) 19-26.
2. Kapur K., Dunning T. (2008) A global survey of eating preferences, dietary habits and food beliefs. *Journal of Diabetes Nursing* 12 (2).
3. Furler J., Walker C., Blackberry I., Dunning T., Sulaiman N., Dunbar J., Best J., Young D. (2008) The emotional base of self-care in chronic illness: A qualitative study of the role of health professional support in the self-management of type 2 diabetes. *BMC Health Services Research*. doi: 10.1186/1472-6963-8-214.
4. Rasmussen B., Dunning T., Cox H., O'Connell B. (2008). The mother-daughter guilt dynamic: effects of type 1 diabetes during life transitions. *Journal of Clinical Nursing* 17 (11c): 380-389.
5. Abdoli S, Ashktorab T, Ahmadi F, Parvizi S, Dunning T (2008) The empowerment process in people with diabetes: an Iranian perspective. *International Nursing Review* 55 (4): 447-453.

6. Dunning T., Manias E. (2008) Diabetes nurse educators' perceptions of leadership characteristics. *Journal of Diabetes Nursing* (in press November 2008).

Invited papers

1. Dunning T. 2008 Creative writing - a useful therapeutic tool. *The Art of Healing* 1(22):24-26.
2. Dunning T. 2008 Diagnosing diabetes. *The Art of Healing* 2 (23):26-28.
3. Dunning T. 2008 Cinnamon and Diabetes. *Healthy Heart* (September 2008 in press)

Books

1. Dunning T., Ward G (eds) (2008). *Managing Clinical problems in Diabetes*. Wiley Blackwell, Chichester.
2. Dunning T. 2008 *Care of People with Diabetes Mellitus: A Manual of Nursing Practice*. (3rd edn) Wiley Blackwell, Chichester (in press).

Chapters in books

1. Dunning T (2008) Chapter 61 The glucose lowering effects of plants In *Botanical Medicine* Watson R & Preedy V (eds) Cabi Publishing, Wallingford UK, 575-586.

2. Dunning T (2008) Chapter 8 Diabetes in the older road user in *Driving and Older Road Users* O'Dell M (ed.) Lawyers & Judges Publishing Company, Arizona, USA (book title to be confirmed accepted for publication in September 2008).
3. Dunning T, Evans T (2008) What can I do with my PhD? *Deakin University Press*, Burwood, Melbourne (in press).

Oncology

THE TEAM

A/Professor Richard Bell MBBS FRACP
FRCPA FChPM MRACMA

Dr Adam Broad MBBS FRACP

Dr Graham Pitson MBBS FRACR

Dr Helen Fairweather FRACP FRCPA

Dr Karen White MBBS FRACP

Dr Madhu Singh MBBS FRACP

Dr Maitham Mathlum MBChB FRANZCR

Dr Michael Francis MBBS FRACR

Dr Philip Campbell MB ChB MRCP MRCPATH
FRACP FRCPA

Dr Rod Lynch BMedSc MBBS FRACR
MRACMA

Dr Roger McLennan MBBS FRCP (Lond)
FRACP

Dr Theresa Hayes MBBS (Hons) BMedSc
(Hons) FRACP

ABOUT US

The Haematology and Oncology Trials Team (HOTT) was established in 1997 to provide comprehensive management of all aspects of haematology and oncology clinical research conducted in the Barwon South Western region of Victoria. As a result, thousands of cancer patients from this region have been able to access clinical trials of international repute, quality and integrity, ultimately resulting in improved patient care.

Our research portfolio is clinically based, and aimed at providing coverage for a wide range of malignant and haematological conditions. These include cancers of the lung, breast, prostate, gastrointestinal tract and skin as well as lymphoma and leukaemia. Trials are selected if they address an important issue relevant to our patient population and are both scientifically and ethically sound.

PROJECTS IN PROGRESS OR COMPLETED

Active recruitment to 32 clinical trials in 2008

Clinical trial conduct and Data management on an additional 51 clinical trials in 2008

HIGHLIGHTS

- Highest Regional recruiting centre to Oncology clinical trials in Victoria
- Development of a web based Good Clinical Research Practice Training module for new researchers
- Successful recipient of three Victorian Cancer Agency Grants
- Successful initiation of the first phase I oncology clinical trial
- National Representative for National Cancer Data Strategy Advisory Group, Cancer Australia

PRESENTATIONS

A/Professor Richard Bell

Cancer Council of Victoria March 2008 -
CANCER RESEARCH Why Should You Care?

ESMO 2008 Prevention of Metastasis to
Bone: Insights From Ongoing Trials

San Antonia Breast Symposium December
2008 - Optimizing treatment in HER2-
positive early breast cancer

BSWRICS OCT 2008 - Targeted Biological
Therapies "nibs and mabs"

Anne Woollett

AGITG 2008: Preliminary results from
Workload Measurement Feasibility Study
using sites participating in the MAX study.

COSA Annual scientific meeting 2007: -
Budgeting for Real Trial Costs

COSA Annual scientific meeting 2008: -
Structure and Function of Clinical Trial Units

PUBLICATIONS

Broad A. *Safety analysis of an International multi-centre randomised Phase II/III study of capecitabine (Cap), bevacizumab (Bev) and Mitomycin C (MMC) in metastatic colorectal cancer (mCRC): AGITG - Poster ESMO 2008 MAX trial*

Bell R. *1 year of treatment with trastuzumab after adjuvant chemotherapy has a significant overall survival benefit after a median follow-up of 2 years*, The Lancet - Vol 369, Number 9555, Pages 1 - 78 - January 6-12, 2007

Bell R. *Familial Breast Cancer - Double heterozygosity for BRCA1 and BRCA2 mutations with differing phenotypes*, Familial Cancer - 17 July 2007

Bell R. *Assessing the risk of Bone fracture among postmenopausal women who are receiving adjuvant hormonal therapy for breast cancer*, Current Medical Research and Opinion Journal - March 2007

Untch M, Gelber R, Jackisch C, Procter M, Baselga J, Bell R, Cameron D, Bari M, Smith I, Leyland-Jones B, deAzambuja E, Wermuth P, Khasanov R, Feng-yi F, Constantin C, Mayordomo J, Su C, Yu S, Lluch A, Senkus-Konefka E, Price C, Haslbauer F, Suarez Sahui T, Srimuninnimit V, Colleoni M, Coates

A, Piccart-Gebhart M, Goldhirsch A, for the HERA Study Team. *Estimating the Magnitude of Trastuzumab Effects Within Patient Subgroups in the HERA Trial*. Annals of Oncology - 2008 doi: 10.1093

Bell R. *An open-label, multicentre study of outpatient Capecitabine monotherapy in 631 patients with pretreated advanced breast cancer*, Oncology 2007;72:51-57 - November 2007

Cameron D, Bell R. *Future use of Bevacizumab and other anti-angiogenic agents in breast cancer*, EJC Supplements 6, No. 6 (2008) 40-50 - February 2008.

Bell R, Cameron D. *Bevacizumab: the first anti-angiogenic agent approved for the treatment of metastatic breast cancer*, EJC Supplements 6, N. 6 (2008) 1-6 -February 2008.

Chionh F, Lee C, Tan C, Sewak S, Bell R. *A retrospective study of the effectiveness of pyridoxine to treat palmar plantar erythema in patients receiving Capecitabine or liposomal doxorubicin*, MOGA, August 2008

Muehlbauer S, Revil C, Leyland-Jones B, Bell R, Baselga J, Marty M, Jones A, Feyereislova A. *Pooled cardiac safety analysis of patients with HER2-positive metastatic breast cancer receiving Trastuzumab*, SABCS, December 2008

Orthopaedics

THE TEAM

Mr Richard Page

Mr Richard Angliss

Mr David Bainbridge

Mr Graeme Brown

Mr John Skelley

Mr Simon Williams

Mr David Bowyer

Mr Andrew Thomson

The Research Team

Sally Beattie - Research Co-ordinator

Dr Margaret Henry - bio-statistician

Pam Kennedy - Data entry Clerk

ABOUT US

The Barwon Orthopaedic Research Unit (BORU) is situated on the 5th floor in the Heath Wing, Barwon Health. A small, but dedicated, group of people, BORU has many in-house, as well as multi-centre, studies currently being undertaken.

PROJECTS IN PROGRESS OR COMPLETED

The Geelong Hospital Joint Replacement Registry (for Hip, Knee & Shoulder Surgery)

Established in January 2002 this registry records all joint replacement surgery performed at Geelong Hospital. The aim of this long term project is to examine factors which may affect the success of the operation. Three different outcome measures are used: a general health survey, a disease-specific survey, and a joint specific survey completed by the patient, independent of the surgeon's evaluation.

Total knee arthroplasty (TKA) versus Unicompartmental knee arthroplasty (UKA): A prospective randomised trial (G Brown)

TKA is an established and highly successful treatment for patients with severe

arthritis of the knee. UKA has run a more controversial course with variable results probably due to patient selection and surgical technique. With appropriate patient selection, excellent results are now being reported. Theoretical advantages of UKA over TKA include faster rehabilitation, less blood loss, better postoperative range of movement, and easier revision surgery if required. The study researchers are looking at both functional outcome and long-term survivorship of UKA vs TKA.

A prospective randomised study of cannulated screws versus a dynamic hip screw for the fixation of undisplaced subcapital neck of femur - SNOFF study (R Page)

Hip fractures are an increasingly common problem. Surgery aims to fix the fracture to allow patients to get out of bed and mobilise in the minimal possible time, reducing the risk of serious complications. An undisplaced subcapital fracture can be treated by either a Dynamic Hip Screw or Cannulated screws. Both are successful and commonly used all over the world, each with potential benefits. The purpose of this study is to compare the two types of fixation to determine if there is a difference in outcome after surgery.

The effect of total knee arthroplasty on the knee jerk response (Dr D Love)

The knee reflex (patellar reflex) is tested by gently tapping the front of the bent knee with a tendon hammer. The leg normally extends at the knee in response - a knee jerk. The study examines patient's knee reflexes before & after TKA to determine if surgery like a knee replacement affects the response.

Prospective cohort study to determine the risk factors for recurrent patellofemoral dislocations (G Brown)

The best way of treating someone the first time their patella dislocates is controversial. Once the patella does dislocate there is a 70% chance it may go on to dislocate recurrently. Long term, recurrent dislocations may cause loss of articular cartilage, leading to premature osteoarthritis. The study is to determine the risk factors that predispose a person with their first dislocation to have further episodes.

A prospective randomised controlled multiple variable trial comparing simple wire fixation, wires and MIIG X3 Bone Graft substitute in distal radial fractures (R Page)

Displaced Fractures of the forearm may be stabilised in a number of ways. This study is to determine the best method to treat these fractures.

Outcome of Complex Distal Radial Fractures (Craig Brown, Andrew Oppy, Richard Page)

Distal radial fractures are a common orthopaedic problem. Current trends in complex intra-articular fractures are to correct with distal radial volar locking plates (DRVLP). Advantages in this technique include fewer extensor tendon problems, higher resistance to fracture motion and displacement, less volar collapse, early rehabilitation and bone grafting possible. The disadvantages at the moment include cost and the lack of long term data to determine outcomes. This study aims to provide such data including functional and clinical outcome measures and any preceding predictors that will identify those who are more likely to suffer from a poorer outcome.

Clinical and Functional outcomes in Prosthetic Joint Infections: A Case-control study. (Dr Christina Chang, Dr Andrew Hughes, Dr Carly Vuillermin, Dr Allen Cheng, Dr Eugene Athan, Mr Richard Page, Mr Simon Williams)

The purpose of this project is to see how infection of a joint replacement affects the joint and the participant's general health.

Development Of Biomaterials Testing Of Contemporary Sutures and Tendon Fixation Devices (Deepak Bhatia, Richard Page)

Outcomes Of Proximal Humeral Fracture Fixation Using Locking Proximal Humeral Plates Plus Or Minus Bone Graft Substitute. (Richard Page, Pon Pak and Francis Ma)

This study was designed to investigate whether the use of a specifically designed plate to treat a type of humerus fracture provides a good outcome. Functional recovery, complications and quality of life were taken into consideration in the evaluation.

MRI in The Acute Wrist Injury - Mid term patient outcomes (Theo Partsalis, Tim Lording, Richard Page)

MRI scanning has been proposed as the gold standard for the diagnosis of acute

wrist injuries. This retrospective study investigates the impact of MRI scanning on the diagnosis of acute wrist injuries and their treatment, and to document the outcome of MRI diagnosed injuries.

Arthroscopic Glenohumeral Labral Repair Using Knotless Suture Anchors: two to five year results (Deepak Bhatia, Richard Page)

Arthroscopic repair of labral lesions is an accepted modality of treatment of this pathology. This study is to investigate the medium-term and long-term clinical and radiographic outcomes of arthroscopic glenoid labral repair with BIOKNOTLESS® suture anchors.

Lateral Clavicle Fractures - Outcomes Of Fixation (Deepak Bhatia, Richard Page)

An audit on fractured clavicle outcomes for difficult to treat fractures.

Use of New Portals in Complex Shoulder Instability (Deepak Bhatia, Richard Page)

HIGHLIGHTS

- Development of evidence based guidelines for the management of post-operative infection following rotator cuff repair around the shoulder
- Validation of protocols and pathways for assessment of the acute wrist injury in the presence of a normal XRay, with proven cost benefit analysis over injury course
- Improvement in understanding of management and outcomes following stabilization of osteoporotic related proximal humeral fractures
- Improvement in understanding of management and outcomes following stabilization of osteoporotic related distal radial fractures - with increased predictability of outcomes for complex high-grade intra-articular fractures
- Co-development of a National Upper Limb Arthroplasty Outcomes Registry In conjunction with the Australian Orthopaedic Association, National Joint Replacement Registry
- Initiation of Collaboration with Deakin University Institute Of Technology and Material Sciences

- Collaboration with VOTOR (Victorian Orthopaedic and Trauma Outcomes Registry)
 - Humeral shaft fractures
 - Proximal humeral fracture outcomes
 - Clavicular fracture outcomes

PRESENTATIONS

Osborne, R.H. et al OWL MAPT tool (OWL study results) Australian Rheumatology Association

Oppy A, Page R. *Distal Radial Locking Plates For Complex Intra-articular Distal Radial Fractures*, Victorian Hand Surgery Society meeting

Bhansali HD, Page RS, Murali SR. *Driving Function Following Carpal Tunnel Surgery*, British Orthopaedic Specialists Association Birmingham

Page R, Oppy A. *Complex Unstable Distal Radial Fracture Management with Locking Plates and Injectable Bone Graft*, 10th triennial congress of the International Federation of Societies for Surgery of the Hand (IFSSH), Sydney 2007

Page R, *Anatomic Pyrocarbon Metacarpal Hemiarthroplasty in Thumb*, CMC Osteoarthritis.

Page R, Partsalis T. *Scaphoid Fractures and MRIs*, Australian Hand Surgery Society Conference, Noosa 2008

Pak P, Page R. *Angular Stable Proximal Humeral Locking Plates For The Treatment Of Displaced And Comminuted Proximal Humeral Fractures*, Australian Orthopaedic Association ASC, Hobart, 2008

Page R, Graves S de Steiger R, Tomkins A, Miller L, Stanford T, Pratt N, Ryan P, Griffith E, McDermott B, *The AOA National Joint Replacement Registry - Shoulder Joint*. Arthroplasty Report - 2008

Page R, Pak P. *Proximal Humeral Locking Plate Fixation For The Treatment Of Displaced And Comminuted Proximal Humeral Fractures*, Shoulder And Elbow Society Of Australia, ASM - Perth, 2008

Page R, Brown C, Henry MJ, *Distal Radial Fractures: Patients With Distal Radial Volar Locking Plating*, Australian Hand Surgery Society Conference, Moonah Inks 2009.

PRIZES AND AWARDS

- De Puy, Johnson and Johnson Australia - 2007 - 2008. Clinical Research Fellow Position Funding
- Stryker Australia - 2008. Data Management Coordinator Funding
- Synthes Australia - 2008. Research Fellow Funding - Biostatistician

Total Annual Funding Awarded - \$147, 500

GRANTS

Geelong Regional Medical Research Foundation - GRMRF. Research Grant Award, 2003

Victorian Orthopaedic Research Foundation - VORT Grant. Research Grant Award, 2004 and 2005

Geelong Regional Medical Research Foundation - GRMRF. Research Grant Award, 2004

PUBLICATIONS

Page R, Oppy A. *Complex Unstable Distal Radial Fracture Management*, Medimond, H311C0407: 27-31 2007

Page R. *Managing chondral lesions of the glenohumeral joint*, Int J Shoulder Surg; 2:77-8 2008,

Karanicolas P, Bhandari M, Walter S, Heels-Ansdell D, Guyatt G. *Collaboration for Outcomes Assessment in Surgical Trials (COAST) Musculoskeletal Group*, J Clin Epidemiol. 62(2):214-223.2008 Feb

Love D, Pritchard M, Burgess T, Van Der Meer G, Page R, Williams S. *Audit of the Douglas Hocking Research Institute bone bank: ten years of non-irradiated bone graft*, ANZ J Surg: 79(1-2):55-61. 2009 Jan

Paediatrics

THE TEAM

Dr Peter Vuillermin

Dr Mike Forrester

Kaye Hollingworth

Elizabeth Sykes

ABOUT US

The Child Health Research Unit at Barwon Health has taken a population-based approach to investigating common health issues in children. Our team is comprised of local paediatricians and researchers. We work in close collaboration with researchers at the Murdoch Children's Research Institute at the Royal Children's Hospital in Melbourne.

The Barwon Childhood Asthma Study involved measuring how common asthma is among school children in the Barwon region, a measurement of the association between asthma and anxiety, and an assessment of whether it is effective for parents of children with asthma to start the drug 'prednisolone' when their child suffers an asthma attack without waiting for a medical review. This has been a highly successful project that will inform clinical practice.

We are currently in the pilot phase of two separate birth cohort projects. Broadly speaking, the objective of these projects is to determine the optimal early life environment for healthy respiratory and immune development in children.

PROJECTS IN PROGRESS OR COMPLETED

Antenatal vitamin D and offspring risk of asthma and allergic disease: a cohort study.

A number of countries have introduced routine antenatal vitamin D supplementation, but not Australia. There is an urgent need for improved evidence to inform this important public health decision. During 2008 we measured asthma symptoms among a cohort of Barwon children aged five to seven years whose mother had participated in the Vitamin D in Pregnancy (VIP) project in 2003. We found evidence of an inverse association between maternal antenatal serum vitamin D levels and the risk of asthma in girls but not boys. We are currently planning to conduct skin prick allergy testing and lung function testing among these children to evaluate the association between antenatal vitamin D and the offspring risk of allergic sensitisation and lung development.

The Barwon Infant Study

This large, collaborative, project will be based in the Barwon region, but involves some of the top immunologists, geneticists, and epidemiologists in the country. The study is designed to evaluate the relationship between the early life

environment, the development of the immune system, and the risk of a wide range of diseases.

HIGHLIGHTS

We recently completed the Barwon Childhood Asthma Study. The project recorded exceptionally good response, participation, and attrition rates: surveying over 22,000 primary school children with a better than 80% response rate, recruiting more than 60% of the eligible children in the population into the Parent-Initiated Prednisolone in Asthma (PIPA) trial, and maintaining greater than 96% of these in the study for more than three years.

We produced world first evidence that PIPA is associated with a decrease in asthma-related urgent medical reviews (OR=0.57, 95% CI 0.36 to 0.90, p=0.016) (publication in review). This is a high impact finding with important clinical implications.

During the last 2 years we have received two local, and three national awards, including the National Asthma Council of Australia's Asthma Research Award (18th ASCIA Conference, 2007), the Wiley Blackwell Young Investigator Award (RACP Annual Scientific Meeting, 2008), and The PRSANZ AWARD (RACP Physician's week, 2009).

PRESENTATIONS

Royal Australian College of Physicians Further Education and Training (FEAT), February meeting: Invited speaker on the topic of the management of childhood asthma.

The Royal Australian College of Physicians 2007 Congress: Asthma among school children in the Barwon region of Victoria.

The Royal Australian College of Physicians Congress, Melbourne 2009: Parent-initiated oral corticosteroids for intermittent wheezing illnesses in children: a systematic review.

The Royal Australian College of Physicians Congress, Adelaide 2008: A cross-sectional study of anxiety in school aged children with and without asthma.

The TSANZ, Darwin 2009: Parent-Initiated Prednisolone in Asthma: A Randomised Controlled Trial.

RACP Physicians Week, Sydney 2009: Parent-Initiated Prednisolone in Asthma: A Randomised Controlled Trial.

PRIZES AND AWARDS

ASCIA 18th Annual Scientific Meeting 2007: National Asthma Council Australia, Asthma Research Award.

Royal Australasian College of Physicians Annual Scientific Meeting 2008: Wiley. Blackwell Young Investigator Award.

Smart Geelong Research and Innovation Expo, 2008. Best Podium Presentation.

PRSANZ Award, RACP Physician's Week 2009.

GRANTS

Percy Baxter Foundation, Parent-initiated prednisolone in asthma. Vuillermin PJ, Robertson CF, South M, Carlin J, Hewson PH. 2005: \$8,200

The Murdoch Childrens Research Institution, Parent-initiated prednisolone in asthma. Vuillermin PJ, Robertson CF, South M, Carlin J, Hewson PH. 2005: \$60,000

The Jack Brockhoff Foundation, Parent-initiated prednisolone in asthma. Vuillermin PJ, Robertson CF, South M, Carlin J, Hewson PH. 2005: \$100,000

The Murdoch Childrens Resresearch Institute, Trainee Research Scholarship, Parent-initiated prednisolone in asthma. Vuillermin PJ, Robertson CF, South M, Carlin J, Hewson PH. 2005: \$27,489

NHMRC Medical Postgraduate Scholarship, Parent-initiated prednisolone in asthma. Vuillermin PJ, Robertson CF, South M, Carlin J, Hewson PH. 2006: \$30,600. 2007: \$30,600

NMRC Project Grant, Parent-initiated prednisolone in asthma. Vuillermin PJ, Robertson CF, South M, Carlin J, Hewson PH. 2006: \$137,500

NHMRC Post-doctoral training scholarship, A population-based study of lung and immune development. Vuillermin PJ. 2009: \$41,000, 2010: \$41,000, 2011: \$41,000, 2012: \$41,000

PUBLICATIONS

Vuillermin PJ, Robertson CF, South M. *Parent initiated oral corticosteroid therapy for intermittent wheezing illnesses in children: a systematic review*, J Paediatr Child Health. 2007 Jun;43(6):438-442.

Vuillermin PJ, Biscan M, Brennan S, Carlin J, Robertson C, South M. *Parent-initiated oral corticosteroid therapy for asthma: a survey of current practice*, J Paediatr Child Health. 2007 Jun;43(6):443-445.

Vuillermin PJ, Biscan M, Brennan S, Carlin J, Robertson C, South M. *Asthma among school children in the Barwon region of Victoria*, Med J Aust. 2007 Aug 20;187(4):221-4.

Vuillermin PJ, Starr MJ. *A review of the rate of meningitis in association with urinary tract infection in infants 90 days of age or younger*, Emerg Med Australas. 2007 Oct;19(5):464-9.

Pasco JA, Wark JD, Carlin JP, Ponsonby A, Vuillermin PJ, Morley R. *Maternal vitamin D in pregnancy may influence not only offspring bone mass but other aspects of musculoskeletal health and adiposity*, Med Hypoth. Accepted 6/2/2008.

Plunkett A, De Marco P, Vuillermin P, Duke T. *Klebsiella: caught on film*, Arch Dis Child. Accepted 16/7/2008.

Hayden G, Hewson PH, Eddey D, Smith D, Vuillermin P. *The implementation of a checklist to assist in the rapid identification of seriously ill children in the emergency department: an observational study*, J Paediatr Child Health. Accepted 12/10/2008.

Vuillermin PJ, Ponsonby AL, Saffery R, Tang ML; Ellis JL, Sly P, Holt, P. *Microbial exposure, INFD gene demethylation in naive T-cells, and the risk of allergic disease*, Eur J All CI Imm. Accepted 20/11/2008.

Perioperative Medicine, Anaesthesia and Pain Management

THE TEAM

Director - Dr Simon Tomlinson MBChB,
FANZCA, Dip Health Services Mgt

Deputy Director - Dr Colin Gordon FANZCA,
Dip Comp Tech

Associate Professor Steve Bolsin BSc, MBBS,
FRCA, FANZCA, MRACMA, MHSM, DLitt(Hon)

Dr Liam Broad MBBS, FANZCA

Dr Brett Coleman MBBS, FANZCA

Dr Mark Colson MBBS, FANZCA, Dip Comp
Tech

Dr Myles Conroy MBBS, DRANZCOG, FANCA,

Dr Dean Dimovski MBBS, FANZCA, PG Dip
Echo

Dr Britt Fraser MBBS, FANZCA

Dr Simon Gower MBBS, FANZCA

Dr Jo Kara-Brightwell MBChB, FANZCA

Dr Adrian Lee BSc, DIS, MBBS, FRCA,
FANZCA

Dr Christine Lee MBBS, FANZCA

Dr Ross Mackenzie MBChB, FANZCA

Dr Diarmuid McCoy MBChB, BAO(NUI),

FFARCSI, FFPANZCA, DPM(CARCSI)

Dr Frank Raineri MBBS, FANZCA

Dr Amutha Samuel MBBS, FANZCA

Dr Melissa Viney MBBS, FANZCA,
FFPMANZCA, MMed (Pain Med)

Kate Lynch BN Grad Cert Crit Care

Colleen Ward

ABOUT US

The Department of Peri-Operative Medicine, Anaesthesia and Pain Management delivers approximately 18,000 anaesthetics per year, including general and regional anaesthesia and sedation. We provide a comprehensive pre-operative medical assessment and post-operative acute pain service, as well as a multi-disciplinary chronic pain service.

The Department is constantly striving to improve patient outcomes through improved anaesthesia and pain management. The Department's current research reflects this focus and involves local audit projects, as well as participation in national and international multi-centre studies and locally initiated clinical research studies. We have a particular interest in the management of peri-operative anti-thrombotics, the role of regional anaesthesia in the management of post-operative pain, and peri-operative risk assessment and management.

PROJECTS IN PROGRESS OR COMPLETED

Stopping Anti Platelet Therapy with Drug Eluting Stents - Dr Myles Conroy

This trial focused on a new therapeutic approach to stopping clopidogrel & aspirin in patients with drug-eluting coronary artery

stents prior to surgery, in association with Department of Cardiology.

The Enigma 11 Trial: Nitrous Oxide Anaesthesia & Cardiac morbidity after major surgery: a randomized controlled trial - Associate Professor Steve Bolsin, Dr Dean Dimovski

Large, multi-centre (7000 patients worldwide), randomised, blinded clinical trial. Patients will be either randomised to either nitrous oxide anaesthetic or nitrous free anaesthetic. This trial commenced in June 07 and Barwon Health has had 115 participants to date.

Enigma: Evaluation of Nitrous Oxide in the Gas Mixture for Anaesthesia: a long-term follow-up study - Associate Professor Steve Bolsin

This follow-up study is monitoring long-term morbidity and mortality of the initial Enigma trial conducted in 2003-04. This involved 71 participants from Barwon Health. Results are currently under analysis.

Avoiding Awareness During Anaesthesia: A Randomised Controlled Trial of BIS Monitoring to Prevent Awareness During Anaesthesia-Extension - Associate Professor Steve Bolsin

This trial assesses the effect of BIS (bispectral index monitoring) on long-term morbidity and mortality. Patients in this trial were either randomised to BIS monitoring or routine care. This involved the follow-up of 100 patients. Results are currently under analysis.

The ATACAS trial: Aspirin and Tranexamic Acid for Coronary Artery Surgery - Associate Professor Steve Bolsin, Dr Dean Dimovski

The ATACAS trial: a large multicentre randomised trial that was established to answer whether aspirin or tranexamic acid, or both, should be used in patients having coronary bypass surgery. The first Barwon Health patient was recruited in January 2007 and we have enrolled 100 participants to date.

The Analgesic Efficacy of Ultrasound Guided Transverse Abdominis Plane Block After Radical Prostate Surgery: A Prospective Randomised Controlled Trial - Dr Myles Conroy

This trial focuses on the analgesic efficacy of ultrasound guided transverse abdominis plane (TAP) blocks after radical prostatectomy. This trial commenced in November 2007 and has recruited 45 participants to date.

CPX Testing and Prediction of Early and Late Mortality after major surgery - Dr Mark Colson

This is looking at cardiopulmonary exercise testing as a predictor of peri-operative mortality. It has involved 2100 patients (since Jan 96) from Barwon Health and is an ongoing investigation.

Use of local anaesthetic wound infusions to reduce morphine requirements following major abdominal surgery - Dr Simon Tomlinson

This trial involved 26 participants from Barwon Health, but was abandoned due to changes in surgical practices.

Victorian Anaesthesia Safety Project - Dr Simon Tomlinson, Dr Brett Coleman

A multi-centre pilot project, to test a newly developed web-based anaesthesia incident and denominator data collection process, sponsored by VMIA and under the auspices of VCCAMM.

PRESENTATIONS

A/Prof Steve Bolsin, *Medical Education Special Interest Group: Innovations in Education*, ANZCA - ASM, Cairns. May 2009

A/Prof Steve Bolsin, *Dubious Operations*, ANZCA - ASM, Cairns, May 2009

A/Prof Steve Bolsin, *Personal Monitoring and Incident Reporting. The bar is raised in our level of practice*. ASA/ANZCA Conference Hamilton Island 2008

A/Prof Steve Bolsin, *Errors in Medicine*, Princess Margaret Hospital for Children, Perth, April 2008

A/Prof Steve Bolsin, *Better Models of health care*, Princess Margaret Hospital for Children, Perth, April 2008

A/Prof Steve Bolsin, *Modern Medical Ethics*, Princess Margaret Hospital for Children, Perth, April 2008

A/Prof Steve Bolsin, *Clinical Paediatric Conference - Report Cards, Incident Reporting, Patient safety, Open Disclosure & Medical Liability Insurance; Conflicts of Interest or Common Goals?* Princess Margaret Hospital for Children, Perth, April 2008

A/Prof Steve Bolsin, *Drug-Eluting Stents and Non-Cardiac Surgery*, Princess Margaret Hospital for Children, Perth, April 2008

A/Prof Steve Bolsin, *Attitudes of Medical Personnel and the use of an Ethnographic Survey*, Department of Community Medicine, Glasgow University, May 2008

Dr Liam Broad, *Paediatric Anaesthesia: Brain and Mind*, ANZCA - ASM, Cairns, May 2009

Dr Liam Broad, *Autism and Anaesthesia*, Royal Children's Hospital Anaesthetic Symposium, Melbourne, September 2008

Dr Mark Colson, *ASA GASACT 3rd Part Course*, Melbourne, October 2008

Dr Myles Conroy, *Stopping Anti Platelet Therapy with Drug Eluting Stents*, ANZCA - ASM 2007

Dr Myles Conroy, *Workshop facilitator at ASURA 2008 - Symposium on US Guided Regional Anaesthesia*, Melbourne, February 2008

Dr Myles Conroy, *Invited lecturer*, Ballarat Base Hospital - Peri-operative Stent Management; May 2008

Dr Myles Conroy, *Nerve blocks workshop facilitator at Royal Australian College of Surgeons surgical skills course* July 2008

Srinivas C, Gower S, Ghaffari R, Mitsakakis N, McCluskey S; *Tranexamic Acid and Blood Transfusion in Orthotopic Liver Transplantation: A Propensity Score Case Control Analysis* Poster presentation at World Congress of Anaesthesiologists (WCA), Cape Town, South Africa in March 2008 and Canadian Association of Anaesthesiologists (CAS) Annual Meeting, Halifax, Nova Scotia, Canada in June, 2008

Gower ST, Green D, Tomlinson S, Orford N; *An Audit of Medical Emergency Team (MET) Calls Triggered in Patients During the First 24 Post-operative Hours*, Poster presentation at ANZCA Annual Scientific Meeting, Melbourne, Australia in May, 2007

Dr Diarmuid McCoy, *Interventional Pain Medicine* ANZCA - ASM, Cairns, May 2009

Dr Diarmuid McCoy, *Primary Management of a Trauma Patient* Grand Prix, Melbourne 2008

Dr Diarmuid McCoy, *Residents Career Seminar*, Geelong, May 2008

Dr Diarmuid McCoy, *Taught nerve blocks to rural GPs at Royal Australian College of Surgeons surgical skills course* February 2008

Dr Frank Raineri, *Cardiac complications and mortality rates in diabetic patients following non-cardiac surgery in an Australian hospital*, ANZCA - ASM 2007, Auckland

PRIZES AND AWARDS

A/Prof Steve Bolsin "Outstanding Scientist of 21st Century Award for Medicine, Medical Ethics & Humanity" from the International Biographical Centre, England in January 2007

PUBLICATIONS

Wolfe R, Bolsin S, Colson M, Stow P. *Monitoring the rate of re-exploration for excessive bleeding following cardiac surgery in adults*. Qual Saf Health Care, 2007; 16: 192-6

Bolsin S, Kara-Brightwell J. *Ethics, Moral Philosophy, Safety & Incident Reporting: Using Moral Philosophy to Deal with Professional objection to incident reporting*. Health Care Risk Report, 2007 April 13 (5):12-13

Bolsin S, Colson M, Conroy M. *B Blockers and statins in non-cardiac surgery*, Br Med J. 2007; 334:1284-5

Broad L, Lee T, Conroy M, Bolsin S, Orford N, Black A, et al. *Successful management of patients with drug-eluting coronary stent presenting for elective, non-cardiac surgery*. Br J Anaesth, 2007; 98(1):19-22

Broad L, Lee T, Conroy M, Bolsin S, Orford N, Black A, et al. *Successful management of patients with drug-eluting coronary stent presenting for elective, non-cardiac surgery* Br J Anaesth, 2007; 98(6):841-2 (author reply)

Bowles T, Sanders K, Colson M, Watters D. *Simplified risk stratification in elective colorectal surgery*, ANZ J Surg, 2008; 78:24-27 January

Colson M. *How IT Impacts Healthcare, Performance, Errors and Safety*, Handbook of Research on Information Technology Management and Clinical Data Administration in Healthcare. Release Date May 2009

Yap C-H, Colson M, Watters D. *Cumulative Sum Techniques for Surgeons: A brief Review*, ANZ J Surg, 2007; 77: 583 - 586

Pharmacy

THE TEAM

Greg Weeks (BPharm, MPharm, MHA, FSHP)

Rachel Baltesch (BPharm)

Dr Diana Bortoletto (BPharm, PhD)

Paul Muir (BPharm, BA)

Claire Passlow (BPharm)

L Abbott BPharm

Sylvia Cuell B Pharm MHA FACPP

ABOUT US

The Pharmacy Department has developed practice research links with Monash University Department of Pharmacy Practice within the Faculty of Pharmacy and Pharmaceutical Sciences. The primary focus of research activities is the development and evaluation of extended roles for hospital pharmacists to improve medication safety, patient flow, and access to care. The Department also has a focus on using computerisation to enhance medication safety.

PROJECTS IN PROGRESS OR COMPLETED

Safety and efficiency outcomes of emergency pharmacist transcribed medication histories in three Victorian teaching hospitals (G Weeks, L Abbott, Dr M Ragg, Assoc Prof J Marriott, Dr J George)

The aim of the project is to evaluate the outcomes of an advanced emergency pharmacist practitioner (AEPP) on avoidable errors and time delays associated with drug therapy in the emergency department. Emergency pharmacists participating in this study have undertaken additional credentialing through Robert Gordon University Aberdeen.

Base line data has been collected at Barwon Health and is in the process of being collected at Monash Medical Centre and St Vincent's Hospital. Early analysis of data reveals duplication of medication history taking by doctors and pharmacists and significant errors in medication charts when patients arrive in the ward from the emergency department without pharmacist intervention.

In the intervention phase, the AEPP will directly prepare the medication chart at the time the decision is made to admit the patient. The AEPP will document any medication recommendations on the admission medications requiring a medical consultation, for example, ceasing medications. A removable sticker will prevent administration of drugs by nursing staff until a medical officer has checked and signed the chart. Time elements and medication error rates will be compared with base line data. Clinical pharmacists on the ward will review the medication history to verify the accuracy of the AEPP's medication history. A multi campus expert panel will evaluate the clinical significance of medication errors.

A pilot collaborative protocol-driven ambulatory care service led by hospital pharmacists for the management of hyperlipidaemia. Weeks GR, George J, Baltetsch R, Birdsey G, Amerena J, Stewart K.

The aim of this study is to develop and evaluate a protocol driven ambulatory care service run by pharmacists working under medical supervision for the management of hyperlipidaemia in patients with peripheral vascular disease attending Barwon Health.

Collaborative pharmacist prescribing: views of SHPA pharmacist members - G Weeks, J Marriott

A survey of 1367 members of the Society of Hospital Pharmacists of Australia was undertaken to determine levels of defacto prescribing being undertaken by hospital pharmacists, system delays where a collaborative prescribing role would help patient flow and general views on collaborative prescribing. 509 (95%) of pharmacists observed that a collaborative prescribing role could circumvent hospital delays with timely service delivery during the admission, inpatient, discharge and outpatient process. Defacto prescribing was undertaken by 141 (37%) of pharmacists across a range of drug schedules and practice settings. If a legal and

credentialing framework existed 406 (75%) of pharmacists would consider becoming a prescribing pharmacist in a specialised clinical area while 81 (15%) were undecided and 57 (11%) would not consider the option.

Venous Thromboembolism Prevention: An electronic risk assessment and decision support tool - Passlow C, Reed M

The aim of the project was to have all patients assessed for their VTE risk and to increase the rate of appropriate prophylaxis through implementation of an electronic risk assessment and decision support tool. Initial audit results at the commencement of the project revealed appropriate VTE prophylaxis for high-risk patients prescribed for only 40% of medical patients, 76% of surgical patients and 83% of sub-acute patients. The electronic risk assessment tool went live on 20/09/06 and by November completion of risk assessments averaged 80%. Compliance with completing risk assessments is regularly fed back to the doctors. The final audit showed appropriate VTE prophylaxis for high-risk patients at 85% of medical patients, 88% of surgical patients and 94% of sub-acute patients. The electronic VTE risk assessment and decision support tool is routinely used across the acute and sub-acute sites. The tool has changed clinical behaviour and improved compliance with evidence based VTE prevention practice.

Preparing the medication chart: pre-emptive intervention by the peri-operative pharmacist - Baltetsch R, Cuell S

A pharmacist role was commenced in the peri-operative setting focusing on short stay surgical patients to be admitted to a short stay ward after the procedure. This involved gathering a complete medication history, documenting allergy status, ordering the patient's regular medications on the MR21 ready for the treating doctor to review and sign. Data was collected for 10 working days pre and post the introduction of the POC pharmacist. The average time from admission until a pharmacist completed a medication interview was 24hr 2min (+/- 4hr 35min) in the pre-group (31 patients), compared to 1hr 23min (+/- 1hr 19min) in the post-group (55 patients).

In the pre-group, 52.38 per cent of patients had errors on their drug chart (either regular medications omitted or inaccurate medications prescribed), compared to 5.13 per cent of patients in the post-group. In the post group, five out of 39 patients MR21s were written by the doctor prior to the pharmacist review in the POC. This reduction of omissions or inaccurate medications prescribed on the MR21 improved the continuity of care between home and hospital for patients admitted after theatre.

Overall, the continuity of patient care for overnight stay surgical patients was improved. The number of regular medications either omitted or prescribed incorrectly was significantly reduced when the POC pharmacist transcribed the medications onto the drug chart.

A Collaborative Approach to Improving Admission Medication Recording in the Emergency Department - Bortoletto DA, Weeks G, Abbott L

In a collaborative approach between the SSSL (Safer Systems Saving Lives) team, Emergency and Pharmacy Department, the ED doctors' admission form (MR9) was altered to allow for more consistent notations of patients' admission medications. This new MR9 enables the ED pharmacist to make additions or changes to admission medication lists and sign off when completed. The aim was to test any improved accuracy of admission medication listing in ED and subsequently to reduce the number of prescribing errors of admission medications made on the drug chart for admitted patients. Admission medication recording by ED doctors improved and less medications were omitted. The number of reconciliations made by ward pharmacists on the drug chart had dropped from 12.4 to 7.7% in the post stage. Where the ED pharmacist had verified the admission

list, the reconciliation rate was only 3.7% compared to 10.9% compared to no pharmacist involvement. The new MR9 with its additional feature for ED pharmacist has significantly improved the errors to admission medications on the drug charts.

Burnout among Australian Hospital Pharmacists - Muir PR, Bortoletto DA

This project assessed the level of burnout among Australian hospital pharmacists. A questionnaire including the Maslach Burnout Inventory was sent to all members of the Society of Hospital Pharmacy. It was found that there was a high level of burnout based on emotional exhaustion (39%) and personal accomplishment (49%), while 60% felt low levels of burnout based on depersonalisation. Recent graduates were found to demonstrate a low level of personal accomplishment ($p = 0.01$), indicating greater burnout within this subscale. Around 1 in 20 of all pharmacists displayed a high level of burnout in all three subscales of the Maslach Burnout Inventory. Strategies that decrease burnout must be instituted and there should be specific consideration to support young pharmacists.

HIGHLIGHTS

The level and participation in practice research by pharmacists as evidenced by conference presentations and publications.

PRESENTATIONS

Society of Hospital Pharmacists of Australia Federal Conference 2008:

Cuell S, Passlow C. *Introduction of an electronic interim medication chart for residential aged care facilities.*

Ball M, Cuell S, Glen K, Kenna K, O'Toole L. *Technician entry of admission medications into an electronic discharge module.*

Fyfe R, Cuell S. *Preparing the medication chart: pre-emptive intervention by the peri-operative pharmacist.*

Armstrong M, Birdsey G, Munzel R, Weeks G. *Clinical pharmacists as teachers of medical students.*

Weeks G, Marriott J. *Collaborative pharmacist prescribing roles within Australian hospitals: views and activities of SHPA members.*

Society of Hospital Pharmacists of Australia Federal Conference 2007:

Bortoletto D, Abbott L, Weeks G. *A Collaborative Approach to Improving Admission Medication Recording in the Emergency Department*

Passlow C, Reed M. *Venous Thromboembolism Prevention: An electronic risk assessment and decision support tool.*

Menner A. *PROMPT: Protocol Management and Production Tool: a safe and effective method for the distribution and maintenance of protocols and guidelines.*

Birdsey G, Black A, Bolsin S. *Improving the safety of non-cardiac surgery in patients who have received drug eluting stents.*

Flentje K, Martin E. *Are Pharmacists up to scratch with the guidelines for Methadone and Buprenorphine?*

G Weeks. *Collaborative pharmacist prescribing in Australia: first steps.*

Weeks G. *Pharmacist Prescribing Models - Prescribing in Hospitals*, Australia Pharmacy Congress 2007

Society of Hospital Pharmacists of Australia Victorian Branch Conference 2006:

Weeks G. *Pharmacist Prescribing - introduction, history and background.*

Cuell S, Passlow C, Papas C, G Weeks. *Development of an electronic pharmacy medication care plan.*

PRIZES AND AWARDS

SHPA Federal Conference 2007 Best paper in 3 sections

Teamwork G Weeks Collaborative pharmacist prescribing roles within Australian hospitals: views and activities of SHPA members.

Professionalism R Fyfe Preparing the medication chart: pre-emptive intervention by the peri-operative pharmacist.

Best First Time Presenter Ball M Technician entry of admission medications into an electronic discharge module.

2007 Barwon Health Annual Quality Improvement Awards - Project of the Year "PreVenT - Venous thromboembolism risk assessment and decision support"

2006 Barwon Health QI & Risk Management Award - Medical Services Award Category "Pharmacist-Initiated Electronic Discharge Prescribing for Cardiology Patients"

GRANTS

2007: The DBL Development Fund (\$3,500) for Collaborative pharmacist prescribing: Views of SHPA Pharmacist Members (G. Weeks)

2007: SHPA Sanofi Aventis Continuum of Care Research Grant (\$10,000) A pilot collaborative protocol-driven ambulatory care service led by hospital pharmacists for the management of hyperlipidaemia G Weeks, J George

2007 Department of Human Services Workforce Innovation (\$30,332) Non-medical prescribing with particular reference to the role of the pharmacist (G Weeks)

2008 Safety and efficiency outcomes of emergency pharmacist transcribed medication histories in three Victorian teaching hospitals. Department of Human Services Workforce Innovation (\$75,486)

PUBLICATIONS

Weeks GR, Marriott JL. *Collaborative Prescribing: Views of SHPA Pharmacist Members*, J Pharm Pract Res 2008;38: 271-5

Muir PR, Bortoletto DA. *Burnout among Australian Hospital Pharmacists* J Pharm Pract Res 2007; 37: 187-9

Surgery

THE TEAM

David Watters, BSc, MB, ChB, FRCSEd, ChM, FRACS

Glenn Guest, MBBS, B.Sc (Hons), FRACS

Kerrie Sanders, BSc, GradDipDiet, MHN (Deakin), PhD (Melb)

Judith Roberts, RN, BAppSci (Nursing)

Leesa Jenkins, RN, Bapp Sci (Nursing), Post GradDip in Advanced Nursing (Community Health)

Eileen Moore, Honours Student

Vinay Rane, MBBS, LLB, BMedSci (Hons), LLM, PDLP, FACLM, MFFLM(U.K.)

Mugahid Al-Hassan, MBBS

George Kalogeropoulos, MBBS

Melissa Holmes, Student

Suemei Hoh, MBBS

ABOUT US

The Department of Surgery is a division within the University of Melbourne Department of Clinical and Biomedical Sciences. The Head of the Department is Professor David Watters, Professor of Surgery, who is a practicing general surgeon with a sub specialty in endocrine and colorectal surgery. Professor Watters has interests in Medical IT and the development of electronic health records, surgical audit and surgical history. Professor Watters is Director of PNG Tertiary Health Services Project and Pacific Islands Project. The Deputy Head of the Department is Mr Glenn Guest, Senior Lecturer in Surgery, who is a practising general surgeon with a sub specialty in colorectal and laparoscopic surgery. Mr Guest is Deputy Director of the RACS Australia Timor Leste Program of Assistance for Specialist Services (ATLASS). Both have a special interest in Health in Developing Countries, and make regular visits to Indonesia, East Timor, Papua New Guinea and the Pacific Islands to support clinical services and surgical education.

The Department's Research focus areas are:

- Colorectal Surgery and Colorectal Audit - extend further with studies on: Colorectal MD Meetings - Effectiveness Study; Retroperitoneal Colonic Injuries; Colonic Perforations: Anatomical and Risk Factor Assessment; TEMS - Impact on a Rural Colorectal Service.
- Diverticular Disease
- Thyroid Surgery Audit
- "B12 and Neurological Impairment" - this Study commenced in February 2009 by Eileen Moore, PhD Student and Supervisors: Professor David Watters, A/Professor Kerrie Sanders, A/Professor Ross Carne and Dr Alastair Mander
- Safety and Quality - Studies on Adverse Events in General Surgery and Early Recovery after Elective Surgery (Multicentre)
- Trauma - A 2-year Overview and a Falls Study using data compiled by the Trauma Audit Officer for the Multi Trauma Audit Committee. We have developed our own Surgical Audit Tool for Trauma.
- Rural Craft Group Audit
- 8 Surgical Audit - a new Study on Hartmann's: follow up and outcomes.

- International Health - new Studies to commence on: Projects in the Pacific (1995 to 2009); Cleft Palate/Lip in Developing Countries; Hernia Study: Impact on Life in East Timor.

PROJECTS IN PROGRESS OR COMPLETED

Barwon Breast and Bowel Population Studies

Data collection phase has now been completed and results are currently being analysed. In these two studies, approximately 350 women with recently diagnosed breast cancer and 150 adults with bowel polyps or bowel cancer attended a study visit at Geelong Hospital. The participants had a bone density scan performed and answered an extensive questionnaire regarding lifestyle and health. They also completed a validated questionnaire on their food intake that was developed by the Cancer Council of Victoria. Their results are being compared with those from the population sample of the Geelong Osteoporosis Study. These two studies will investigate possible links between eating habits, bone health and predisposition to certain cancers.

Colorectal Surgery

Laparoscopic resectional colorectal surgery (LRCS) was introduced to Australia in the early 90s but gained widespread acceptance only recently. Most published studies demonstrating safety, benefits and acceptable outcomes are from centres with established colorectal units with extensive experience in LRCS. In introducing LRCS to Geelong Hospital, surgeons and theatre nurses undertook additional training courses and were encouraged to undertake initial cases with support from a colleague. Clinical pathways were introduced for post operative care. A well established colorectal database was used to prospectively gather data. All LRCS cases during the initial 9 months were included. Comparison is made with non LRCS from the same period, data from the previous year and published studies. Study demonstrated that LRCS can be rapidly, safely and effectively introduced to a LRCS naïve health service.

Paper presented at the RACS ASC 2007.

Impact of Multidisciplinary Meetings on a Colorectal Service of a Regional Hospital

A study was undertaken to assess whether multidisciplinary meetings (MDM) improve the management of patients requiring surgery for colorectal cancer, as this has never been examined.

Safety and Quality

• Learning From Mistakes : A Systems Approach to Pathology Auditing

For a period of six months (August 2006 to February 2007), the Colorectal Unit conducted a weekly histopathology audit. All new results and highlighted issues were updated and reviewed each week. Issues identified on these audits were delegated to the Registrar/Resident and outcomes reviewed the following week. This method ensured that all histology results for this period were signed off by at least one Consultant Surgeon. This model of histopathology auditing represents a simple and effective tool that is readily accessible and highly adaptable system, which can be tailored to individual surgical units.

• Test Result, Review, Respond

Poor outcomes from failure to adequately follow up patient histopathology results led to a review of significant pathology and the follow up process to minimize the risk of missing pathology results or failing to carry out planned follow up. Development of a reliable system of pathology follow up was undertaken. This system included: reliable identification of histo pathology, timely review of results, creation of appropriate management plans, satisfactory follow up

by Clinicians and the development of a tool to facilitate and document these activities. The BOSS system was used and the program was trialled for an 8-month period in a single surgical unit. The next step is to introduce to other clinical units with feedback to make adjustments etc. The challenges will be maintaining the system (manpower/finances), educating new users and quality assurance activities to assess effectiveness.

Presented in a Workshop at the Health Informatics in 2008

Won the Project of the Year in the BH Annual Quality Improvement Awards in 2008

• Identifying, Classifying and Learning from Unplanned Returned to Theatres

Unplanned return to theatre (URT) is an important key performance indicator (KPI) that affects other KPIs such as length of stay and mortality. The study reviewed all URT's over one year at The Geelong Hospital. URT's and their outcomes were identified using the electronic information system, unit surgical audits presented for peer review and theatre manager reports. There was a low mortality in cases undergoing URT.

Paper presented at the RACS ASC 2008.

• What Do Patients Understand About Colonoscopy and Its Risks? Do Doctors Record These Risks In The Patient's Notes?

Informed consent is an important aspect of surgery. Patients should be aware of procedure and its complications for ethical and medico-legal reasons. The aim of the study was to evaluate whether the patients have enough knowledge regarding the colonoscopy and its complications at the time of the procedure. Findings showed that the information provided to the patients regarding the colonoscopy and its complications was insufficient and its documentation in clinical notes by the doctors was unsatisfactory.

• Adverse Events in General Surgery

Study using data derived from General Surgical Unit Audits for the period 2004 to end of 2008 and also from the RiskMan program. Paper to be presented at the RACS ASC 2009.

Surgical Audit

• Rural Craft Group Audit

Commonwealth and Support Scheme for Rural Specialists (SSRS) has been received to establish a Craft Group Audit for Rural Surgery. Geelong, Ballarat, Bendigo, Wagga Wagga and Lismore plus smaller centres: Rockhampton, Alice Springs and Kalgoorlie. The five specialties were: Thyroid, Colorectal Cancer, Breast Cancer, Cholecystectomy and Hernia. Data from 1300 patients was collected. Professor Watters heads the Rural Craft Group Audit Project. Paper presented at the RACS ASC 2007. The second phase of the Project (more than 2800 patients) was presented at the PSA October 2008. A third phase has been funded and is currently accumulating cases.

• Laparoscopic Procedures Audit

Laparoscopy in Gynaecology and Surgery

A joint Project of the Royal Australasian College of O&G and Royal Australasian College of Surgeons to undertake an audit of all Laparoscopic procedures in Victoria and elsewhere. Mr Glenn Guest is part of the Project Management Committee. Paper presented at the RACS ASC 2007. Project completed and presented to SSRS Forum 2007.

• Laparoscopic Cholecystectomy

Cumulation summation (CUSUM) techniques are an intuitive, visual and powerful way of presenting data on surgical outcomes. They have the ability to detect deteriorating surgical performance faster than waiting for an aggregate complication or success rate. Surgical outcomes after laparoscopic cholecystectomy at Geelong Hospital were found to be acceptable. CUSUM is a powerful tool for monitoring and improving surgical outcomes. Poster presented at Smart Geelong 2007. Paper being prepared for publication.

• Colorectal Audit

Surgical Audit Improves Colorectal Outcomes

Geelong Hospital initiated involuntary colorectal audit and retrospectively collected data to the commencement of 2002. The Audit was constructed using Filemaker Pro and includes the Royal Australasian College of Surgeons minimum data set (12 fields), the expanded data set for risk stratification (12 fields), specific colorectal fields (12 fields). The database has 805 cases. The introduction of surgical audit has led to improved patient outcomes and improved performance in colorectal surgery at Geelong Hospital. Two papers published in 2007, one in 2008 and a fourth paper accepted for publication.

• Thyroid Surgery Audit

Thyroid Surgery outcomes – The advantage of cumulative sum (CUSUM) monitoring over traditional audit

Prospective audit of 216 patients undergoing thyroidectomy between January 2003 and December 2006 was completed, with measurement of primary outcomes including temporary or permanent hypocalcaemia or vocal cord paralysis and post operative haematoma. Cumulative sum monitoring of outcomes was compared with traditional means upon completion of the audit.

Monitoring Performance: Cusum Analysis of Thyroidectomy Outcomes – Paper presented at the RACS ASC 2008, which won the Endocrine Prize for Best Paper by a Trainee.

The Effects of Calcium Homeostasis and Thyroidectomy: Postoperative Hypocalcaemia complicating thyroid surgery

Honors Project Undertaken by Eileen Moore (February to December 2008)

Hypocalcaemia is a complication of total or at least bilateral thyroidectomy and is related to impairment of parathyroid blood supply or removal of the glands. Rates for this complication are established in the literature, however difficulties occur in the early recognition of which patients will

require calcium therapy. Also the causes of symptomatic or actual hypocalcaemia are affected by normal calcium homeostasis for that individual. This may be affected by bone density, which may be reduced in hyperthyroidism and hyperparathyroidism leading to a so-called bone-hunger after operation. Vitamin D is another factor and is related to sunlight and diet or supplementation.

• Breast Audit

Review: Imprint Cytology of Sentinel Lymph Nodes in Breast Cancer in Geelong

Project to interchange Breast Audit data with National Breast Cancer Audit to avoid duplication. Won the Dr Leslie Prize for Best Paper at the Victorian State Meeting in 2007. Paper also presented at the RACS ASC 2008.

- **Trauma Audit**

A Clinical Information Project Officer collects and analyses data from Barwon Health's information systems as well as patient notes for all trauma cases that present to Barwon Health. This data is then presented at the Multi Trauma Audit Committee for review regarding the care and management of trauma patients. The Committee meets bi-monthly. A Trauma Grand Round presentation, "Smashed and Bashed in Geelong" is held on an annual basis and highlights the most interesting trauma cases for the preceding 12 months.

Surgical Education

- **Public/Private Training Model**

2007 saw a new model of Surgical Training in the Public and Private sector. The Geelong Hospital chose to have a combined post with St John of God Hospital. A paper prepared by the Department of Surgery and the Registrars involved, Dr David Wardill, Dr Michael O'Keefe, Dr Basil D'Souza and Dr Sydney Levy for publication in 2009.

- **Information Technology in Healthcare**

Mind the Gap: Reviewing test results and ensuring decisions are made enacted.

Professor David Watters and Mr Glenn Guest

ran a Workshop at the Health Informatics Conference in Melbourne Aug/Sept 2008. Electronic paper presented.

- **International Health**

PNG Cancer Manual

Funded by AusAid, together with the Royal Australasian College of Surgeons. A major work that required almost a complete rewrite, spanning three years (2004 to 2006). Total of 218 pages. Published in 2007.

- **Focus Issue of Neurosurgery in the PNG Medical Journal**

Professor Watters was Guest Editor of the 2007 March-June Papua New Guinea Medical Journal and edited the following papers:

Neurosurgery Services in PNG; Editorial: Don't Be Afraid of Neurological Assessment and Keep It Simple; Editorial: Why Computed Tomography Is Needed At Port Moresby General Hospital; Clinical Practice: Traumatic Brain Injury Management in PNG; Big Heads in Port Moresby General Hospital. An Audit of Hydrocephalus Cases Seen From 2003 to 2004; Neuroprotection in Traumatic Brain Injury Practical Principles for Papua New Guinea and Research Developments; Open Depressed and Penetrating Skull Fractures in Port Moresby General Hospital From

2003-2005; Trends in Traumatic Brain Injury Outcomes in Port Moresby General Hospital from January 2003 to December 2004; Monitoring Traumatic Brain Injury in Papua New Guinea; Paraplegia in a 10 Year Old - A Case Report. Five of these articles have been published in the PNG Medical Journal March-June 2007.

- **Skull Trepanation in PNG**

Skull trepanation is an ancient art and has been recognized in many, if not most, primitive societies. PNG came into contact with Europeans in the late 1800's and therefore it was possible for the art to be documented at a time when cranial surgery in Europe was still in its infancy. Research conducted of historical techniques leading to presentations and a paper published in 2007.

Surgical History

The following Abstracts were presented by Professor Watters at the RACS ASC 2007:

History of Surgery in New Guinea 1921-1942; Loch Ness SAS and The First Surgeon in Paradise.

The following Abstracts were presented by Professor Watters at the RACS ASC 2008:

Christian Albert Theodor Billroth (1829-1894) - Success and Progress Despite Setbacks; Surgery in Captivity - John Allison Page

HIGHLIGHTS

- Breast and Bowel Cancer Population Study

Key role (chair) in the development of a "Calcium and Bone Health Position Paper" that has been endorsed by Osteoporosis Australia, Australian and New Zealand Bone and Mineral Society and the Endocrine Society of Australia.

- Safety and Quality

CORDis - Clinical Information System used for discharge summaries, operation notes and outpatient letters at Barwon Health.

Clinical Handover - publication in 2004 of pioneering paper on dataset for handover, together with implementation study using The BOSS.

Health Informatics Workshop (annual conference), Melbourne 2008

Professor Watters has presented at many seminars and workshops on Clinical Handover.

- Barwon Health Annual Quality Improvement Awards 2008

Won Project of the Year Award - Category 4: Improving health service safety and quality

“TR3: Test Result Review Respond” Breed M, Cohen P, Guest G, Plueckhahn D.

PRESENTATIONS

Royal Australasian College of Surgeons Annual Scientific Conference. 7 - 11 May 2007. Christchurch NZ

Watters DAK. *Pacific Islands Project - Past, Present and Future.*

Watters DAK. *Cumulative Sum (CUSUM) Techniques to Monitor Performance and Provide Feedback.*

Ragg J, Guest G, Thorne M, Watters DAK, Hurley J, Crowley S. *Introduction of Laparoscopic Resectional Colorectal Surgery to Naive Hospitals.*

Guest G, Pettigrew I, Anderson A, Hall P, Peterson H. *Laparoscopy in Gynaecology and Surgery: Practice Review Using Audit of Errors for Improving Safety.*

Watters DAK, Campbell G, Pennington B, Richardson G, Lowe A, Graham J. *Craft Group Audit for Rural Surgeons.*

Watters DAK, *Loch Ness, SAS and The First Surgeon in Paradise.*

Watters DAK, *History of Surgery in New Guinea 1921-1942*, Royal Australasian College of Surgeons Annual Scientific Conference 10 - 18 May 2008. Hong Kong

Connolly TM, Watters DAK. *Monitoring Performance : Cusum Analysis of Thyroidectomy Outcomes.*

Al-Hassan M, Watters DAK. *Identifying, Classifying and Learning From Unplanned Returned to Theatres.*

Watters DAK. *Lend a Hand But Let Us Take The Lead.*

Watters DAK. *Christian Albert Theodor Billroth (1829-1894) - Success and Progress Despite Setbacks.*

Watters DAK. *Surgery in Captivity - John Allison Page.*

PRIZES AND AWARDS

- 2007 Award from Smart Geelong Highly Commended Poster 'Is BMD a surrogate measure of long term exposure of risk factors for breast and bowel cancer?' Sanders KM, Hunt A, Nicholson GC, Pasco JA, Watters DA.
- 2007 Smart Geelong Research and Learning Expo Award for Best Public Health/Education Poster "Learning from mistakes: a systems approach to pathology auditing" Lin F, Guest G, Watters DAK.
- 2008 Smart Geelong Research and Innovation Expo Certificate of Merit for Abstract "How do nonagenarians fare with abdominal surgery?" Mirbagheri N, Dark J, Watters DAK.
- BH Annual Quality Improvement Awards 2008

Category 4: Improving health service safety and quality Project of the Year Award "TR3: Test Result Review Respond" Breed M, Cohen P, Guest G, Plueckhahn D.

- 2008 (October) RACS Victorian State Scientific & Fellowship Meeting, Traralgon. "Best Poster Displayed". "Informed Consent for Endoscopy: How "Informed" should it be? How Could We Improve it?" Ansari, Masood

GRANTS

Royal Australasian College of Surgeons (RACS) Support Scheme for Rural Specialists (SSRS) funding since 2003 (\$30,000 per year)

RACS International Projects more than \$25 million under the Directorship of Professor Watters.

PUBLICATIONS

Watters D. *Health Issues in the Pacific Islands, The Far East & Australasia 2007.* Europa Publications, London, UK, Total Pages: 899-908

Bowles TA, Watters DA. *Time to CUSUM: Simplified Reporting of Outcomes in Colorectal Surgery.* ANZ Journal of Surgery 2007;77:587-591

Yap C-H, Colson ME, Watters DA. *Cumulative Sum Techniques for Surgeons: A Brief Review.* ANZ Journal of Surgery 2007;77:583-586

Watters DAK. *Loch Ness, Special Operations Executive and The First Surgeon in Paradise: Robert Kenneth Wilson (26.1.1899 - 6.6.1969).* ANZ Journal of Surgery 2007; 77:1053-1057

Watters DAK, Wall J. *Thyroid Surgery in the Tropics*. ANZ Journal of Surgery 2007;77:933-940

Watters D. *Editorial: Don't be afraid of neurological assessment and keep it simple*. PNG Med J 2007Mar-Jun;50:1-4

Watters D. *Editorial: Neurosurgery in Papua New Guinea: quo vadis?* PNG Med J 2007 Mar-Jun;50:5-7

Watters D. *Editorial: Why computed tomography is needed in Papua New Guinea*. PNG Med J 2007 Mar-Jun;50:8-9

Watters DAK. *Skull trepanation in the Bismarck Archipelago*. PNG Med J 2007 Mar-Jun;50:20-24

Thomas S, Watters DAK, Rosenfeld JV. *Paraplegia in a 10-year old child: case report*. PNG Med J 2007 Mar-Jun;50:72-73

Bowles TA, Sanders KM, Colson M, Watters DAK. *Simplified Risk Stratification in Elective Colorectal Surgery*. ANZ Journal of Surgery 2008;78:24-27

Chung S, Watters DAK. *Academic Surgery in Papua New Guinea*. ANZ Journal of Surgery 2008;78: 347-349.

Watters DAK, Knight RE. *Isolated Specialists: How Many Procedures Do They Need to Carry Out and How Do We Measure Whether They are Competent?* ANZ Journal of Surgery 2008;78: 731-732.

Rosenfeld JV, Watters DAK. *Surgery in Developing Countries*. Journal of Neurosurgery - Letters to the Editor.

Watters D. *Health Issues in the Pacific Islands, The Far East & Australasia 2008*. Europa Publications, London, UK , total chapters : 1
Pages: 934-943.

Watters DAK and the Surgical Competence and Performance Working Party. *A Guide by The Royal Australasian College of Surgeons*. Surgical Audit and Peer Review, 3rd Edition.

Women's and Children's

THE TEAM

Dr Helen McLachlan, PhD

Dr Della Forster, PhD

Dr Jane Yelland, PhD

Jo Rayner

A/Prof Stephanie Brown, PhD

Professor Jane Gunn, PhD

A/Prof Kelsey Hegarty, PhD

Rebecca Collins

Dr Jenny Kelly PhD

Dr Helen McLachlan

Dr David McConnell PhD

Gabrielle Hindmarsh BA (Hons)

Kathryn Laidlaw, G. Dip. Sc (Psych), B. Sc (Psych)

Robyn Mildon BA, MA

Jane Morrow

Michelle Newton

Mary Anne Davey

Arthur Hseuh

ABOUT US AND PROJECTS IN PROGRESS OR COMPLETED

PinC ANEW

This project is an evaluation of a pilot education program aimed at enhancing the knowledge and skills of midwives to identify and support women with psychosocial issues during the postnatal period. The aim of this project is to adapt the ANEW program to make it suitable to postnatal care and pilot the use of the modified program in postnatal settings. Barwon Health (along with the Mercy Hospital for Women) was selected as a pilot site. It is the only site outside of metropolitan Melbourne to pilot this program.

PinC Packages

Focus groups were set up to inform the development of a patient preference of postnatal care. The aim of this research is to explore how women who are pregnant or women who have recently given birth would respond to being given the option in pregnancy to consider alternative packages of postnatal care. These packages may include a shorter length of hospital stay combined with home-based midwifery care and practical support.

Utility of a health care resource for pregnant women with learning difficulties - Healthy Start for Me and My Baby

This project investigated the utility of a resource designed for pregnant women with learning difficulties. The purpose of the resource is to provide useful and accessible information about pregnancy, antenatal care and childbirth and promote informed choice and participation in health care. Barwon Health was one of two pilot sites in Victoria.

WAVE Evaluation

In 2008 Barwon Health implemented two major changes to its maternity service provision. These changes include: a re-organisation of postnatal care, which commenced from January 2008 and the implementation of a caseload midwifery model of maternity care, in July 2008. An evaluation of the changes is currently underway by Mother & Child Health Research, LaTrobe University in partnership with Women's Services, Barwon Health. The evaluation is a mixed method design including three cross-sectional surveys of women (550 at each time point); two cross-sectional surveys of midwives (all midwives in maternity services at each time point); key informant interviews with women, midwives and other key stakeholders; and two focus groups with midwives. The aim of this

study is to evaluate changes to maternity care provision at Barwon Health from the perspectives of women, care providers and other key stakeholders, in terms of views, experiences and health outcomes.

HIGHLIGHTS

- All midwives employed in the postnatal unit will undertake the PinC ANEW course.
- Postnatal care at Barwon Health is now provided based upon evidence-based guidelines. We are the first hospital in Victoria to introduce evidence-based postnatal care. A Melbourne tertiary hospital is interested in our process. We are currently conducting a robust evaluation of this initiative.
- Introduction of caseload midwifery in July 2008 provides known carer for 25% of women accessing Barwon Health for maternity services, across the continuum of care from pregnancy to extended postnatal care.
- A limited number of the Healthy Start for Me and My Baby booklets will be available for women with learning difficulties accessing Barwon Health for their maternity care at no cost to the hospital (or to the women).

- Other services within the Greater Geelong region are considering introducing the Healthy Start for Me and My Baby booklet.

PRESENTATIONS

Dr Helen McLachlan on behalf of Dr D Forster, Dr J Yelland, Ms J Rayner, Professor J Gunn, A/Prof K Hegarty, Ms. R Collins, Dr Jenny Kelly PhD. *Supporting women after childbirth: adapting and piloting an educational program aimed at enhancing the knowledge and skills of midwives to identify and support women with psychosocial issues during the postnatal period.* Big, Bold and Beautiful Conference, Australian College of Midwives, 15th National Conference, Canberra 26 September 2007.

Patrice Hall ANUM/CNE SCN, *Managing Pain in the Newborn*, Academy of NN Nurses (American) 2008

Kim Layton, *NICE postnatal care*, Perinatal society Aust & NZ 2009

Diane Watkins, *Improving postnatal care*, Women's Health Australasia 2008

Therese Cotter DND, *New Look Postnatal care*, RWH Postnatal Care Forum 2008

Ann Evans, *Sharing the Care: the family, midwife and maternal and child health nurse*, Big Bold and Beautiful ACM conference Canberra 2007

Dr Jenny Kelly, formerly Project Manager Women's Services, now Senior Lecturer Nursing and Midwifery at James Cook University, Townsville, *Mental Health First Aid: Assisting Mothers and Midwives*, Ausmed Midwifery and Mental Illness Conference, Melbourne, February. 2007

Dr Jenny Kelly, formerly Project Manager Women's Services, now Senior Lecturer Nursing and Midwifery at James Cook University, Townsville, *Midwives, Mothers and Mental Health First Aid* Mental Health First Aid Instructor's Conference, May 2008

PRIZES AND AWARDS

BH Annual QI award: Improving Health Service Safety and quality, New Look Postnatal Care project 2008



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