

2013
AUSTRALIAN
PAIN SOCIETY
33RD ANNUAL
SCIENTIFIC
MEETING
PERSISTENT
PAIN:
A NATIONAL
CHALLENGE



17-20 March 2013

National Convention Centre
Canberra, ACT, Australia

Conference Handbook

MARCH 2013

CENTENARY OF CANBERRA



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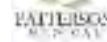
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Breakfast Session Sponsors



Pre-Conference Workshop Sponsors



Convenor's Welcome

*On behalf of the Local Organising Committee I welcome you to Canberra for the 2013 Australian Pain Society 33rd Annual Scientific Meeting. **Persistent Pain: A National Challenge** is the overriding theme of this year's meeting, being held at the National Convention Centre, Canberra from 17 - 20 March 2013. The meeting coincides with Canberra's centenary year, occurring one week after the centenary date 11 March 2013.*

*International keynote speakers include **Dr Rollin Gallagher** from Penn Pain Medicine Center, Pennsylvania, USA, **Professor Jürgen Sandkühler** from the University of Vienna, Austria, **Professor Geert Crombez** from Ghent University, Belgium, and **Dr Katja Wiech** from the University of Oxford, United Kingdom. They will cover topics such as precipitating change in pain management, pain management in war vets, and clinically exciting basic sciences. Our keynote speakers will be complemented by a coterie of well established Australian speakers many of whom have international profiles in their own fields.*

On behalf of my colleagues in the Organising Committee I look forward to welcoming you to Canberra!

Dr Geoff Speldewinde, Conference Convenor

Parliament House | Image supplied by Australian Capital Tourism



Scientific Program | Sunday 17 March 2013

Pre Conference Workshop 1 | Acute pain - also a national challenge | 8.30am - 5.00pm | Bradman Theatre

Pre Conference Workshop 2 | Fundamentals of pain | 8.30am - 5.00pm | Menzies Theatre

Pre Conference half-day Workshop 3 | Physiotherapy in pain management | 1.30 - 5.00pm | Swan & Torrens Room

Pre Conference half-day Workshop 4 | The challenge of persistent pain in paediatrics | 1.00 - 5.00pm | Nicholls Theatre



Neuromodulation Society of Australia & New Zealand Annual Scientific Meeting | 8.30am - 5.00pm | Sutherland Theatre

Evening



5.00 - 7.00pm Welcome Reception | Exhibition Hall, Ground floor, National Convention Centre Canberra

7.15 - 10.30pm Neuromodulation Society Dinner | The Chairman and Yip Restaurant, 108 Bunda St, Canberra

Scientific Program | Monday 18 March 2013

7.15am for 7.30 - 8.30am	Boston Scientific Breakfast Session 1 Swan & Torrens Room <i>Innovation focused on pain relief</i>		
7.15am for 7.30 - 8.30am	Pfizer Breakfast Session 2 Ballroom <i>Neuropathic Pain Update: From mechanism to management</i>		Breakfast will be served on arrival at 7.15am
9.00	Welcome to Country. Official Opening by Dr David Headon , History and Heritage Adviser to Centenary of Canberra PLENARY SESSION 1 Royal Theatre Chair: <i>Tim Semple</i> 9.20 Geert Crombez Beyond fear of pain: Threats and opportunities 9.55 Katja Wiech Functional brain imaging and pain: An update		
10.30	M O R N I N G T E A		
11.00	PLENARY SESSION 2 Royal Theatre Chair: <i>Geoff Speldewinde</i> 11.00 Jürgen Sandkühler Novel actions of opioids on nociception 11.30 Philip Bolton Neurobiological mechanisms underlying cervicogenic headache 12.00 Sunderland Lecture Rollin Gallagher Pain management in the cross-hairs: Documenting failure, precipitating change		
12.25pm	RAPID COMMUNICATION SESSION 1 Royal Theatre Chair: <i>Tim Austin</i> See Presenter list pg 28		
12.35	L U N C H		
1.30	Topical Concurrent Sessions 1 1A Ballroom Chair: <i>Michele Sterling</i> A multidisciplinary approach to headache management 1B Bradman Theatre Chair: <i>Lorimer Moseley</i> Pain representation in the human brain 1C Menzies Theatre Chair: <i>Matthew Crawford</i> Chronic pain across the ages: Cultural, family & caregiver implications 1D Swan & Torrens Room Chair: <i>Jane Muirhead</i> Towards pragmatic multi-axial labelling & management planning in pain medicine 1E Sutherland Theatre Chair: <i>Ann Yeomanson</i> Implementing an entry-stage group information session for clients referred to attend a pain rehabilitation service: A Victorian experience 1F Nicholls Theatre Chair: <i>Geoff Speldewinde</i> Quirky clinical conundra		
3.00	A F T E R N O O N T E A		
3.30	Topical Concurrent Sessions 2 2A Sutherland Theatre Chair: <i>Megan James</i> Lost in Transition: Challenge of transitional care for adolescents with persistent pain 2B Menzies Theatre Chair: <i>George Mendelson</i> Psychiatry and pain 2C Ballroom Chair: <i>Kathryn Nicholson Perry</i> Teaching and learning about pain in the information age 2D Swan & Torrens Room Chair: <i>Steven Jensen</i> Improving back pain with motion sensing technology 2E Bradman Theatre Chair: <i>Flavia Di Pietro</i> The mystery of complex regional pain syndrome: The latest evidence on inflammation, the brain & how CRPS might be optimally managed 2F Nicholls Theatre Chair: <i>Tim Semple</i> Interventional options in pain management: The controversies continue		
Evening	5.00pm Sessions close for the day - Free evening 5.15 - 6.30pm Pain in Childhood SIG Meeting Swan & Torrens Room 7.30pm Pain in Childhood SIG Dinner Ardeche Restaurant, Cnr City Walk and Ainslie Ave, Canberra		

Scientific Program | Tuesday 19 March 2013

7.15am for 7.30 - 8.30am	Hospira Breakfast Session 3 Ballroom <i>Wound Infiltration: An examination of current practice, emerging technologies & practical solutions for the safe delivery of medications</i>		Breakfast will be served on arrival at 7.15am
7.15am for 7.30 - 8.30am	Grünenthal Breakfast Session 4 Swan & Torrens Room <i>Tapentadol abuse in the US: The first 24 months</i>		
9.00	PLENARY SESSION 3 Royal Theatre Chair: <i>Fiona Blyth</i>		
9.00	<i>Justin Kenardy</i> Injury, pain and traumatic stress in children		
9.30	<i>Geoffrey Mitchell</i> New opportunities for community-based multi-disciplinary teamwork in chronic pain management in Australia		
10.00	Tess Cramond Lecture <i>Mark Hutchinson</i> The toll of CNS immunology: A non-classical pain generator and manipulator of opioid pharmacology		
10.30	M O R N I N G T E A		
11.00	PLENARY SESSION 4 Royal Theatre Chair: <i>Tiina Jaaniste</i>		
11.00	<i>Louise Sharpe</i> Doctor-patient communication: The importance in working with pain patients		
11.30	<i>Meredith Craigie</i> Pain and prejudice: Pain management in the emergency room		
12.00	<i>Elena Bagley</i> Pain induced synaptic plasticity in the amygdala		
12.25pm	RAPID COMMUNICATION SESSION 2 Royal Theatre Chair: <i>Tim Austin</i> See Presenter list pg 28		
12.35	L U N C H & P O S T E R V I E W I N G S E S S I O N See Poster list pgs 26 - 27		
1.30	Free Paper Concurrent Sessions see Free Paper list pgs 24 - 25		
	Session 1	Sutherland Theatrette	Chair: <i>Mark Catley</i> Brain processes in pain and pain control
	Session 2	Nicholls Theatrette	Chair: <i>Julia Hush</i> Processes and management of musculoskeletal conditions
	Session 3	Menzies Theatrette	Chair: <i>Joy Burdack</i> Pain measurement and pain management programs
	Session 4	Bradman Theatrette	Chair: <i>Malcolm Hogg</i> Pharmacological and surgical approaches to pain management
	Session 5	Ballroom	Chair: <i>Susie Lord</i> Pain in children and older people
	Session 6	Swan & Torrens Room	Chair: <i>Paul Austin</i> Animal and clinical models of pain processes
3.00	A F T E R N O O N T E A		
3.30	Australian Pain Society Annual General Meeting Royal Theatre		
5.30	Close for the day		
Evening	6.30 - 7.00pm (Pre-booked) Pre Dinner tour of the Australian War Memorial		
	7.00 - 11.00pm Conference Dinner at the Australian War Memorial		
Transport	6.00pm	<i>War Memorial Tour</i>	} Buses will depart from outside the National Convention Centre main entrance and selected hotels (See Dinner ticket for details)
	6.30pm	<i>Dinner only</i>	


Scientific Program | Wednesday 20 March 2013

9.00	PLENARY SESSION 5 Royal Theatre Chair: <i>Jac Cousin</i> 9.00 David Butler Pain, language and conceptual change 9.30 Geert Crombez Attention to pain and its disabling consequences 10.00 Jürgen Sandkühler New insights into central pain processing and neuroplasticity
10.30	M O R N I N G T E A
11.00	PLENARY SESSION 6 Royal Theatre Chair: <i>Maree Smith</i> 11.00 Rollin Gallagher Managing pain in wounded warriors: Battlefield to bedside and back home 11.30 Bonica Lecture Philip Siddall Losing your inhibitions: Pain is all about the gain 12.00 PhD SCHOLARSHIP PRESENTATION Sarah Kissiwaa Pain induced synaptic plasticity in the amygdala 12.10 DISTINGUISHED MEMBER AWARD 12.20 PROGRESS WITH THE NATIONAL PAIN STRATEGY Lesley Brydon
12.35pm	L U N C H
1.30	Topical Concurrent Sessions 3 3A Bradman Theatre Chair: <i>Lester Jones</i> Pain education 3B Ballroom Chair: <i>Tiina Jaaniste</i> Pay attention! Why we focus on what we do and why it hurts 3C Nicholls Theatre Chair: <i>Fiona Thomas</i> Work as a therapeutic intervention not just an outcome 3D Swan & Torrens Room Chair: <i>Melanie Lovell</i> Patient-centred approaches to cancer pain 3E Sutherland Theatre Chair: <i>Lorimer Moseley</i> Pain and human performance 3F Menzies Theatre Chair: <i>Susan Evans</i> Vulvodynia and chronic pelvic pain
3.00	A F T E R N O O N T E A
3.30	PLENARY SESSION 7 Latest and Greatest Session Royal Theatre Chair: <i>Kevin Keay</i> <i>Janet Keast, Richard Halliwell and Paul Rolan</i> AWARD PRESENTATIONS - BEST PAPER, BEST POSTER AND BEST RAPID COMMUNICATION
5.00	Invitation to the 2014 APS Annual Scientific Meeting Conference close

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Innovation focused on pain relief

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Neuropathic Pain Update: From mechanism to management

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Mundipharma focuses on the therapeutic area of moderate to severe pain. We provide a broad range of short- and long-acting strong analgesic medicines to accommodate the wide-ranging needs of Australian and New Zealand patients.

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Orphan Australia - A division of Aspen Australia

Aspen Pharma Pty Ltd is a dynamic company with an established reputation in Australia since 2001. In 2011, Aspen acquired Sigma Pharmaceuticals including Orphan Australia. Aspen has assembled a diverse product range including branded and generic pharmaceuticals, healthcare, nutritional, specialty pharmaceutical and advanced technology wound care products. Aspen products are some of the most prescribed brands in Australia, touching the lives of many Australians.



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Reckitt Benckiser (RB) is one of the fastest growing companies across household, health and personal care. Our brands are found in millions of homes around the world, with many products holding 'icon' status, such as **Aerogard**, **Mortein**, **Finish** and **Dettol**.

In recent years, healthcare has become a driving force behind the growth of our company worldwide. Our vision is a world where people are healthier and live better lives. Meaningful innovation is key to achieving that vision, and we are committed to developing medicines that encourage self-care.

With brands such as **Nurofen** and **Nurofen for Children**, **Gaviscon** and **Strepsils**, we continue to find new ways to meet the needs of consumers and to support healthcare professionals through professional and business development opportunities.

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Secretary

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Immediate Past President

Professor Stephen Gibson

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Dr Richard Sullivan

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Past Conference Convenor,
Royal Melbourne Hospital, VIC

Professor Stephen Gibson

National Ageing Research
Institute, VIC

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Royal Prince Alfred Hospital, NSW

Professor Lorimer Moseley

Sansom Institute of Health Research,
University of South Australia, SA

Professor Michele Sterling

University of Queensland, QLD

Dr Stephen Leow

Munro Para Medical Centre, SA

Dr Jane Trinca

Barbara Walker Centre, St Vincent's, VIC

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Macquarie University, NSW

Dr Susie Lord

John Hunter Hospital, NSW

Mr Karl Bagraith

Royal Brisbane and Women's Hospital,
QLD

Dr Julia Hush

Macquarie University, NSW

Assoc. Professor Kevin Keay

University of Sydney, NSW

Local Organising Committee

Dr Geoffrey Speldewinde

Conference Convenor,
Capital Rehabilitation, ACT

Ms Joy Burdack

Calvary-Bruce Campus ACT Health

Ms Heather Collin

The Canberra Hospital, ACT

Ms Fran Dumbrell

The Canberra Hospital, ACT

Ms Amanda Lucas

Capital Rehabilitation and Pain
Management Centre, ACT

Ms Jude Vaughan

Capital Rehabilitation and Pain
Management Centre, ACT

Lecturers

Sunderland Lecturers

- 1987 Dr Gerald Aronoff
- 1988 Professor John Loeser
- 1989 Ms Nessa Coyle
- 1991 Dr Richard Williams
- 1992 Professor Nikolai Bogduk
- 1993 Professor Harold Merskey
- 1994 Dr Ed Charlton
- 1996 Professor Arthur Duggan
- 1997 Dr Tony Dickenson
- 1998 Professor Kim Burchiel
- 1999 Dr John Banja
- 2000 Professor Marshall Devor
- 2001 Dr Richard Payne
- 2002 Professor Herta Flor
- 2003 Professor Steven Linton
- 2004 Dr C Richard Chapman
- 2006 Ms Margo McCaffery
- 2007 Dr Amanda Williams
- 2008 Professor Clifford Woolf
- 2009 Professor Rolf-Detlef Treede
- 2010 Professor Irene Tracey
- 2011 Professor Gary Bennett
- 2012 Professor Allan Basbaum
- 2013 Dr Rollin Gallagher

Bonica Lecturers

- 1984 Professor John Bonica
- 1985 Professor Manfred Zimmerman
- 1986 Professor Kathleen Foley
- 1987 Dr Henry Kilham
- 1988 Professor Issy Pilowsky
- 1989 Dr David Cherry
- 1991 Dr Geoffrey Gourlay
- 1992 Dr Bob Large
- 1993 Professor Tess Cramond
- 1994 Professor Gwendolen Jull
- 1996 Professor Mervyn Eadie
- 1997 Dr Margaret Sommerville
- 1998 Valedictory Address:
Professor Issy Pilowsky
- 1999 Associate Professor Geoff Riley
- 2000 Ms Suzi Duncan
- 2001 Assoc Professor Maree Smith
- 2002 Professor Arthur Duggan
- 2003 Professor Nikolai Bogduk
- 2004 Dr Lorimer Moseley
- 2006 Professor Robert Helme
- 2007 Mr David Butler
- 2008 Professor Milton Cohen
- 2009 Professor Michael Cousins AM
- 2010 Professor Colin Goodchild
- 2011 Professor Stephan Schug
- 2012 Assoc Professor David Scott
- 2013 Assoc Professor Philip Siddall

Tess Cramond Lecturers

- 2007 Professor Maree Smith
- 2008 Dr Mark Connor
- 2009 Dr Fiona Blyth
- 2010 Professor Paul Hodges
- 2011 Dr Kathryn Nicholson Perry
- 2012 Dr Paul Wrigley
- 2013 Dr Mark Hutchinson

APS Honour Roll

Distinguished Members

- 2007 Professor Tess Cramond
Dr Geoff Gourlay
- 2008 Professor Nikolai Bogduk
Professor Michael Cousins AM
Dr John Ditton
- 2009 Dr Carolyn Arnold
Dr Leigh Atkinson
Dr David Cherry
Professor Arthur Duggan
Dr David Gronow
Professor George Mendelson
Dr Connie Peck AO
- 2010 Dr Roger Goucke
- 2012 Dr Bruce Rounsefell
- 2013 Ms Amal Helou

APS Presidents 1979 - 2013

- Professor Michael Cousins AM
- Professor Issy Pilowsky
- Dr Leigh Atkinson
- Professor Arthur Duggan
- Professor George Mendelson
- Dr John Ditton
- Dr David Cherry
- Dr David Gronow
- Dr Roger Goucke
- Dr Carolyn Arnold
- Ms Amal Helou
- Professor Stephen Gibson
- Dr Tim Semple

APRA PhD Scholars

APS

- 1996 - 1999 Dr Samantha South
2003 - 2006 Dr Debbie Tsui
2006 - 2009 Ms Susan Slatyer
2009 - 2012 Ms Amelia Edington

CSL

- 2001 - 2003 Dr Lara Winter
2004 - 2007 Dr Ann Pitcher

MUNDIPHARMA

- 2005 - 2008 Dr Kathryn
Nicholson Perry
2008 - 2011 Ms Zoë Brett
2012 - 2015 Ms Audrey Wang

JANSSEN-CILAG

- 2008 - 2011 Ms Mary Roberts
2012 - 2015 Ms Sarah Kissiwa



General Conference Information

Registration

The Conference Registration Desk is located on the ground floor of the National Convention Centre Canberra.

Opening times are as follows:

Pre-Conference Workshop delegates only

Sunday 17 March 7:30am - 1:30pm

Exhibitors

Sunday 17 March 8:00am - 3:30pm

APS Conference delegates

Sunday 17 March 3:30pm - 7:00pm

Monday 18 March 7:00am - 5:00pm

Tuesday 19 March 7:00am - 5:00pm

Wednesday 20 March 8:00am - 5:00pm

Staff at the registration desk will be happy to help with any queries.



The National Carillon | Image supplied by Australian Capital Tourism

Registration Entitlements

Registration for full registrants includes entry into all sessions, the conference satchel, conference handbook, attendance certificate, morning and afternoon teas, lunches on each day of the conference and the Welcome Reception on Sunday 17 March.

Day registration includes entry into all sessions for that day, the conference satchel, conference handbook, attendance certificate, morning & afternoon teas and lunch on the day of registration.

Conference Message Board

There is a message board located adjacent to the registration desk for delegates wishing to communicate with colleagues. The list of attendees for the Conference Gala Dinner and pre-dinner War Memorial tour will be displayed there. This is a ticketed event, should you wish to purchase a ticket or if you have selected to attend but no longer wish to, please contact the Conference Secretariat as soon as possible.



Canberra Festival Balloons | Image supplied by Australian Capital Tourism

Catering and Break Times

Morning tea, afternoon tea and lunch will be served in the conference exhibition area.

Monday 18 March 2013

10.30am - 11.00am Morning Tea
12.35pm - 1.30pm Lunch
3.00pm - 3.30pm Afternoon Tea

Tuesday 19 March 2013

10.30am - 11.00am Morning Tea
12.35pm - 1.30pm Lunch
3.00pm - 3.30pm Afternoon Tea

Wednesday 20 March 2013

10.30am - 11.00am Morning Tea
12.30pm - 1.30pm Lunch
3.00pm - 3.30pm Afternoon Tea

Dietary Requirements

If you have not already done so, please advise the Conference Secretariat of any specific dietary requirements and / or food allergies. If you have made a special diet request, please make yourself known to banqueting staff in order to collect your special meal. Please note that vegetarian options are available within the standard menu.

Name Badges

All delegates are provided with a name badge included in the registration pack. Delegates are required to wear their name badges at all times throughout the Conference as this badge is your official pass to sessions and lunches.

Disabled Facilities

If you require disability specific facilities, please notify the Conference Secretariat at the registration desk.

General Conference Information

Breakfast Sessions

The industry sponsored breakfasts will take place from 7.30am - 8.30am on Monday and Tuesday. Breakfast will be served on arrival at 7.15am. If you have booked a place at any of the breakfast sessions but no longer wish to attend, please notify the Conference Secretariat so your place can be re-allocated. Should you wish to attend these sessions but missed out, please inform the Conference Secretariat when you register to be added to a waiting list.

Monday 18 March

- Boston Scientific Breakfast Session**
Innovation focused on pain relief
Swan & Torrens Room
- Pfizer Breakfast Session**
Neuropathic Pain Update: From mechanism to management
Ballroom

Tuesday 19 March

- Hospira Breakfast Session**
Wound Infiltration: An examination of current practice, emerging technologies and practical solutions for the safe delivery of medications | Ballroom
- Grunenthal Australia Breakfast Session**
Tapentadol abuse in the US: The first 24 months | Swan & Torrens Room

Speaker Preparation Room

The Speaker Preparation room will be open from 7.00am on Sunday 17 March until 3.00pm on Wednesday 20 March. All presenters must check-in at the Speaker Preparation room, located in the Executive Room on level 1, (See floorplan on page 20) at least 2 hours prior to the start of their session time. Presentations must be brought on either USB memory stick or CD.

Canberra city centre



National Convention Centre Canberra | 31 Constitution Ave (cnr with Coranderrk St)

1	Crowne Plaza Canberra	1 Binara St	400m (2 mins walk) from NCC
2	Mercure Canberra	Cnr Ainslie & Limestone Aves	1.6kms (20 - 25 mins walk) from NCC
3	Clifton on Northbourne	100 Northbourne Ave	1.8kms (20 - 25 mins walk) from NCC
4	The Rex Hotel	150 Northbourne Ave	2.3kms (25 - 30 mins walk) from NCC

Business Centre

The Business Centre is located on the ground floor at the National Convention Centre Reception Desk (See floorplan page 20), where printing, scanning and photocopying services are available.

Cloak Room

The Cloak Room is located on the ground floor at the National Convention Centre Reception Desk.

Restaurant Guide

A local restaurant guide is available from the National Convention Centre Reception Desk, located on the ground floor.

Accreditation / CPD Points

All delegates attending a Pre-Conference Workshop and/or the APS Conference will receive a Certificate of Attendance. The attendance certificate will note the number of educational hours completed. You will need this certificate to apply for CPD accreditation points through your chosen college. We recommend that all delegates self-record as college professional development point systems differ.

Conference attendance certificates will be available from the registration desk at morning tea on Wednesday 20 March. Day delegates should request their certificate from the registration desk.

General Conference Information

NCC Parking



The National Convention Centre has undercover parking accessible at its western end from Constitution Avenue. (see map above) The top level of the car park provides direct lift access to both levels of the Centre.

Parking Fees Full Day	\$16.00
4 Hours (before 5pm)	\$8.00
Weekend and After Hours	\$2.00

For your convenience a cashcard ATM is located inside the front entry to the National Convention Centre foyer. The ATM accepts cards from major Australian banks, most major overseas banks and most Australian credit unions. A \$2.50 service charge applies.



Australian War Memorial | Image supplied by Australian Capital Tourism

Public Transport and Taxis

Taxis A taxi rank is located outside the National Convention Centre's Constitution Ave entrance.

Buses Buses pass the Centre travelling east and west on Constitution Ave including routes 2, 3, 4, 5, 6, 80, and 200.

Poster Display

The poster display will be located in the Exhibition Hall, on the ground floor of the National Convention Centre. Posters should be in place by 8.30am on Monday 18 March and will be displayed for the duration of the conference. Poster presenters are to stand by their poster to answer any questions during the lunchtime poster viewing session on Tuesday 19 March from 12.35pm - 1.30pm.

Exhibition Opening Hours

The exhibition will be located in the Exhibition Hall, on the ground floor of the National Convention Centre and will be open during the following hours:

Sunday 17 March	5.00pm - 7.00pm
Monday 18 March	8.30am - 5.00pm
Tuesday 19 March	8.30am - 5.00pm
Wednesday 20 March	8.30am - 5.00pm

Social Program

Welcome Reception

Sunday 17 March 2013

5.00pm - 7.00pm | Exhibition Hall, Ground floor, National Convention Centre
Dress | Smart casual
Additional adult ticket | \$60.00 pp

The Welcome Reception is included in the registration fee for full registrants. Should you wish to purchase a ticket or if you selected to attend but no longer wish to, please contact the Conference Secretariat as soon as possible.

Conference Gala Dinner

7.00pm - 11.00pm | ANZAC Hall

and War Memorial Tour

6.30 - 7.00pm

Tuesday 19 March 2013

The Australian War Memorial
Dress | Cocktail

\$125 per person (excl. pre-dinner tour)

\$145 per person (incl. pre-dinner tour)

Transport

Buses will depart outside the National Convention Centre main entrance in Constitution Ave and from selected hotels (see Dinner ticket for details).

For delegates attending the pre-dinner War Memorial tour:

Buses depart at 6.00pm

For those attending dinner only:

Buses depart at 6.30pm.

The War Memorial is located in Treloar Crescent - at the top of ANZAC Parade, in Campbell. (See map on previous page)

This is a ticketed event, should you wish to purchase a ticket or if you selected to attend but no longer wish to, please contact the Conference Secretariat as soon as possible.

International Keynote Speakers

Professor Geert Crombez



Professor Crombez is Professor of Health Psychology at the Ghent University, Gent,

Belgium and Head of the Department of Experimental-Clinical and Health Psychology. He is actively involved in sports, experimental and applied research related to clinical psychology (anxiety and phobia) and health psychology (pain). His main interests in pain research are pain-related fear, attention to pain, and problem-solving.

Dr Rollin Gallagher



Dr Gallagher is a Clinical Professor of Psychiatry and of Anesthesiology and Critical Care and

Director for Pain Policy Research and Primary Care, at Penn Pain Medicine Center, University of Pennsylvania School of Medicine, USA and Director of Pain Management at the Philadelphia Veterans Affairs Medical Center. Dr Gallagher is a pioneer in the field of pain medicine, wrestling with the phenomenological, biopsychosocial, and neurological components of chronic pain that make it a formidable public health challenge.

Professor Jürgen Sandkühler



Professor Sandkühler has been Head of the Centre for Brain Research at the University

of Vienna since 2007. With his team he examines the neuronal causes of chronic pain, mechanism-oriented methods of pain therapy and procedures for preventing pain. Professor Sandkühler has received many scientific prizes and speaks regularly at scientific and clinical congresses throughout the world.

Dr Katja Wiech



Dr Wiech is a senior scientist at the Oxford Centre for Functional Magnetic Resonance

Imaging of the Brain (University of Oxford, UK). Her main interest is to develop an understanding of brain systems involved in the modulation of pain by beliefs people hold about pain and their ability to cope with it.

Invited Speakers

Dr Elena Bagley



Dr Bagley trained as a pharmacist and then returned to do a PhD in neuropharmacology at

the University of Sydney, where she was awarded a C.J. Martin Fellowship. She travelled to the Vollum Institute in the USA for the first half and then returned to the Pain Management Research Institute for the Australian component. In 2011 Dr Bagley was appointed as a senior lecturer in Pharmacology at the University of Sydney. Her laboratory focuses on how synapse function or dysfunction contributes to pathophysiological processes, such as persistent pain, drug addiction or anxiety.

Dr Philip Bolton



Dr Bolton received his PhD (Neuroscience) from the University of New South Wales in 1990 then held a

postdoctoral appointment in neurophysiology at Rockefeller University (NY, USA), before taking up an academic appointment at the University of Newcastle in 1993. Dr Bolton is a senior investigator in the Pain and Sensory Dysfunction Group at the University of Newcastle's Priority Research Centre for Translational Neuroscience and Mental Health. He was a member of the review team

regarding Acute Neck Pain for the 2003 Australian Acute Musculo-skeletal Pain Guidelines Group.

Dr David Butler



Dr Butler's base degree is physiotherapy. He also has degrees in manipulative therapy and a doctorate in

the area of changing the way people think about pain. Based in Adelaide and a senior lecturer at the University of South Australia, Dr Butler is head of the Neuro Orthopaedic Institute, a worldwide organisation holding 200 seminars per year on modern neuroscience backed rehabilitation. He has authored / co-authored 5 textbooks including *Explain Pain*, a book for patients. His professional interests include translating and taking the brain plasticity revolution to health professionals and the public.

Dr Meredith Craigie



Dr Craigie is a specialist pain medicine physician who works in the Royal Adelaide Hospital Pain

Management Unit as well as Flinders Medical Centre Department of Anaesthesia and Pain Management. There she heads a Paediatric Pain Management Clinic and is a Clinical Senior Lecturer at Flinders

University. Dr Craigie is also a Faculty of Pain Medicine Board member, FPM Examinations Committee and Paediatric Pain Working Party Chair, on the FPM Education Committee and the Curriculum Revision Sub-committee and examines for the ANZCA Final Examination. Her interests include paediatric anaesthesia and pain medicine, acute pain medicine and medical education.

Dr Richard Halliwell



Dr Halliwell is Head of the Acute Pain Service and Deputy Director of Anaesthesia, and Head of

the Research Department of Anaesthesia at Westmead Hospital, Sydney. He is also the Clinical Senior Lecturer, Discipline of Anaesthesia, Sydney Medical School, at the University of Sydney. Dr Halliwell's clinical interests include acute pain, cancer pain, palliative care, and his research includes clinical trials, postoperative morbidity and mortality. He has involvement in the following groups: Executive Member, Acute Pain Special Interest Group, ANZCA; Executive Member, Clinical Trials Group, ANZCA; Chair, Safe Use of Medicines Committee, Westmead Hospital; Member of the Advisory Committee on Prescription Medicines (ACPM), Therapeutic Goods Administration, Federal Department of Health; Member of the Therapeutic Guidelines – Analgesia; and, Contributor, *Acute Pain Management. Scientific Evidence*. 3rd edition. 2010.

Invited Speakers

Dr Mark Hutchinson



Dr Hutchinson completed a BSc majoring in Pharmacology, Microbiology and Immunology at University

of Adelaide (1998). He continued his studies in Pharmacology with honours (1999) and a PhD (2004) examining opioid metabolism & opioid immunomodulation, respectively. In 2004 he was awarded the FreshScience prize for communication of science in the media. He moved to Boulder, Colorado in 2005 to undertake Postdoctoral training in the world leading research group of Professor Linda Watkins in the Center for Neuroscience at the University of Colorado at Boulder. Here he pioneered with Professor Watkins the research which has led to the discovery of novel drugs activity at innate immune receptors. Moreover, his research has led to the implication of the brain immune cells in the action of drugs of dependence and the negative side effects of pain killers. Dr Hutchinson was awarded an NHMRC CJ Martin Fellowship in 2007. He returned to Adelaide in 2009 to continue his research in the Discipline of Pharmacology, University of Adelaide. In 2011 he was awarded an Australian Research Council Fellowship for research into sex differences in pain and drug response.

Professor Janet Keast



Professor Keast graduated with a BSc (Hons) from the University of Adelaide and a PhD

from Flinders University. After post doctoral training at the University of Pittsburgh, she held an academic position at the University of Queensland for 10 years, followed by an NHMRC Senior Research Fellowship at the University of NSW then the University of Sydney, where she was also Director of Basic Research at the Pain Management Research Institute, Royal North Shore Hospital. In February 2012 Professor Keast was appointed to the Chair of Anatomy and Neuroscience at the University of Melbourne. Her interest in the neurobiology of pain is focused on pelvic visceral pain and spinal cord injury pain, especially in the context of plasticity of sensory and spinal neurons, as well as the actions of sex steroids and neurotrophic factors. She is also recognised internationally in the area of autonomic neuroscience, especially the neural regulation of urogenital organs and the impact of injury on these nerves.

Professor Justin Kenardy



Professor Kenardy works in the broad area of behavioural medicine and clinical health psychology,

with particular interests in anxiety and post-traumatic stress in relation to physical illness or injury. He has obtained two NIH and several NHMRC and ARC grants to study and develop interventions for mental health problems in populations with physical illness or injury. He also works on e-mental health and holds an NHMRC Grant to develop and evaluate internet interventions. He was awarded the Ian Campbell Prize for his contribution to clinical psychology in Australia. Justin Kenardy is currently Acting Director of the Centre of National Research on Disability and Rehabilitation Medicine. He has published over 170 peer-reviewed articles, books and book chapters. Medicine. He has published over 150 articles, books and book chapters.



Invited Speakers

Professor Geoff Mitchell



Geoff Mitchell is Professor of General Practice and Palliative Care at the University of Queensland,

and Head of the MBBS program at Ipswich. His main research interest is in the role of General Practitioners in palliative care, cancer in general, and complex conditions.

Professor Mitchell's current research includes interventions to improve outcomes for caregivers with advanced cancer, health services research in palliative care and primary care and single patient trials. As of July 2012 he has published 124 peer-reviewed papers and 27 book chapters, and he has been a CI on over \$13m of research funding. Professor Mitchell maintains a clinical general practice in Ipswich, Queensland.

National Museum of Australia | Image supplied by Australian Capital Tourism



Professor Paul Rolan



Professor Rolan is a clinical pharmacologist who has largely worked in drug development

in the United Kingdom. He returned to the University of Adelaide in 2005 as Professor of Clinical Pharmacology where his principal research focus is on the prevention and treatment of chronic pain. His main clinical focus is on management of problematic headache.

Professor Louise Sharpe



Professor Sharpe is Professor of Clinical Psychology and Director of Clinical Research in

the School of Psychology, the University of Sydney. She did her BA (Hons) and Masters in Psychology at the University of Sydney and completed her PhD at the University of London. Professor Sharpe has published a number of randomised controlled trials of psychological interventions in pain patients and patients with rheumatoid arthritis and has held numerous NHMRC and ARC grants in the area of pain. She has a particular interest in the role of attentional processes in the development, maintenance and management of pain.

Assoc. Professor Philip Siddall



Philip Siddall is Director of the Pain Clinic at Greenwich Hospital, Hammond-Care and

Associate Professor of Pain Medicine at the University of Sydney. He has been working clinically in the field of pain management for over 25 years with previous appointments at Royal Prince Alfred and Royal North Shore Hospitals. A/Prof Siddall is involved in graduate and postgraduate teaching at the University of Sydney and is currently Chair of the IASP Education Initiatives Working Group. He has a PhD in pain physiology and leads a research program primarily focussed on the mechanisms and management of pain following spinal cord injury.

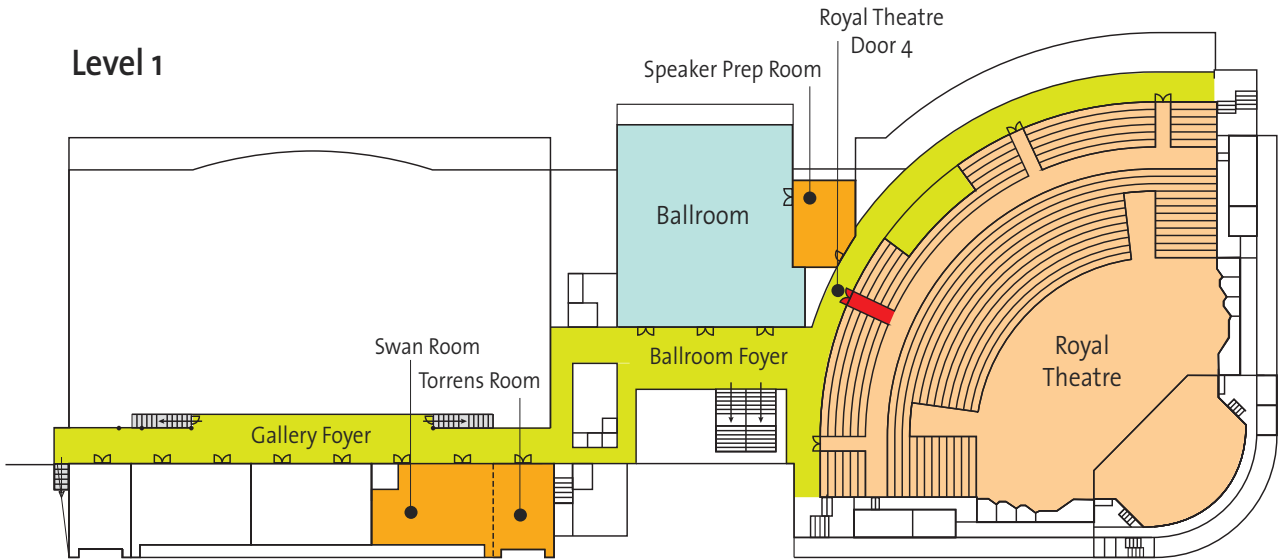
Parliament House | Image supplied by Australian Capital Tourism



Venue Floorplans

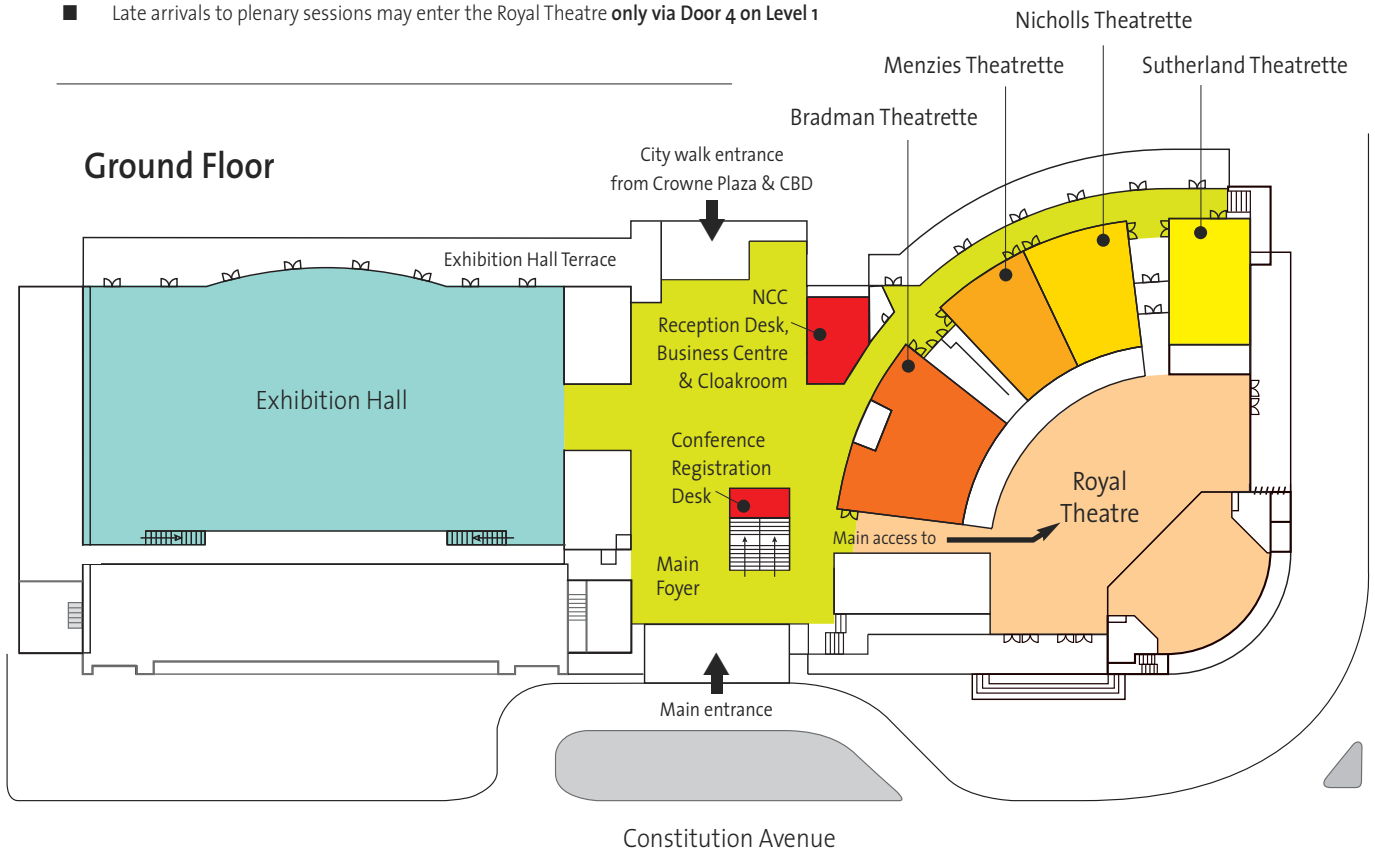
National Convention Centre Canberra

Level 1



- The Royal Theatre (plenary sessions) spans both the ground floor and level 1.
- The Bradman, Menzies, Nicholls and Sutherland Theatrettes are located on the ground floor underneath the Royal Theatre's tiered seating
- **NB** Main access to Royal Theatre is from the ground floor via the corridor beside the Bradman Theatrette - *see below*.
- Late arrivals to plenary sessions may enter the Royal Theatre **only via Door 4 on Level 1**

Ground Floor



Room Allocations

Monday 18 March 2013

BREAKFAST SESSION 1 Boston Scientific
Innovation focused on pain relief
Swan & Torrens Room

BREAKFAST SESSION 2 Pfizer
*Neuropathic Pain Update:
From mechanism to
management* **Ballroom**

PLENARY SESSION 1 **Royal Theatre**

PLENARY SESSION 2 **Royal Theatre**

RAPID
COMMUNICATION
SESSION 1 **Royal Theatre**

TOPICAL CONCURRENT SESSIONS 1

1A **Ballroom**
1B **Bradman Theatre**
1C **Menzies Theatre**
1D **Swan & Torrens Room**
1E **Sutherland Theatre**
1F **Nicholls Theatre**

TOPICAL CONCURRENT SESSIONS 2

2A **Sutherland Theatre**
2B **Menzies Theatre**
2C **Ballroom**
2D **Swan & Torrens Room**
2E **Bradman Theatre**
2F **Nicholls Theatre**

PAIN IN CHILDHOOD
SIG MEETING **Swan & Torrens Room**

Tuesday 19 March 2013

BREAKFAST SESSION 3 Hospira
*Wound Infiltration: An examination of
current practice, emerging technologies
& practical solutions for the safe delivery
of medications* **Ballroom**

BREAKFAST SESSION 4 Grunenthal
*Tapentadol abuse in the US: The first
24 months* **Swan & Torrens Room**

PLENARY SESSION 3 **Royal Theatre**

PLENARY SESSION 4 **Royal Theatre**

RAPID
COMMUNICATION
SESSION 2 **Royal Theatre**

FREE PAPER CONCURRENT SESSIONS

Session 1 **Sutherland Theatre**
Session 2 **Nicholls Theatre**
Session 3 **Menzies Theatre**
Session 4 **Bradman Theatre**
Session 5 **Ballroom**
Session 6 **Swan & Torrens Room**

AUSTRALIAN PAIN SOCIETY
ANNUAL GENERAL
MEETING **Royal Theatre**

Wednesday 20 March 2013

PLENARY SESSION 5 **Royal Theatre**

PLENARY SESSION 6 **Royal Theatre**

TOPICAL CONCURRENT SESSIONS 3

3A **Bradman Theatre**
3B **Ballroom**
3C **Nicholls Theatre**
3D **Swan & Torrens Room**
3E **Sutherland Theatre**
3F **Menzies Theatre**

PLENARY SESSION 7 **Royal Theatre**

National Museum of Australia | Photo by John Gollings - copyright John Gollings, All Rights Reserved



Industry Exhibition and Booth Allocations

The industry exhibition is an integral and important component of the conference. We thank our industry partners for supporting this conference and acknowledge that their support has subsidised the registration fees. All delegates are encouraged to show their appreciation by frequenting and supporting all the exhibition displays throughout the conference.

Booth Exhibiting Company

3	Boston Scientific
4	Hospira
5	Boston Scientific
6	Hospira
7	Pain Management Research Institute, University of Sydney
8	Australian Pain Management Association
9	Australian College of Nursing
10	Slade Pharmacy
11	Mundipharma
12	Mundipharma
13	Mundipharma
14	Mundipharma

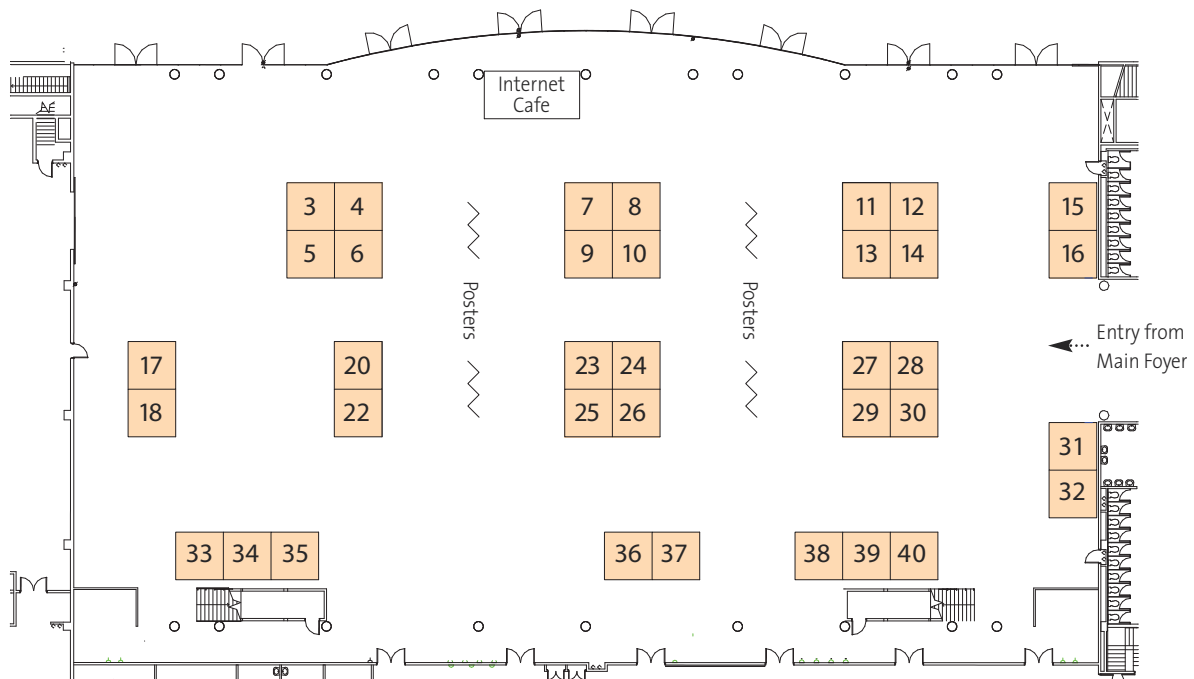
Booth Exhibiting Company

15	Janssen
16	Janssen
17	Pacific Healthcare
18	Diros Technology Inc
20	St Jude Medical
22	St Jude Medical
23	Dorsavi
24	LifeHealthCare
25	Reckitt Benckiser
26	Reckitt Benckiser
27	Pfizer
28	Pfizer
29	Pfizer
30	Pfizer

Booth Exhibiting Company

31	Orphan Australia Pty Ltd - A division of Aspen Australia
32	Orphan Australia Pty Ltd A division of Aspen Australia
33	Grunenthal Australia Pty Ltd
34	Grunenthal Australia Pty Ltd
35	Phebra
36	Nevro Medical Pty Ltd
37	Diversionary Therapy Technologies
38	REM Systems
39	Medtronic
40	Medtronic

Exhibition Hall, National Convention Centre, Canberra, ACT, Australia



Exhibitors



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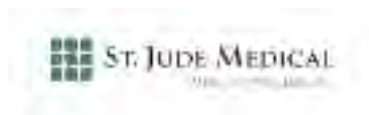
Diversionary Therapy Technologies



Dorsavi



Pain Management Research Institute



Free Paper Presentations

Tuesday 19 March 2013

FREE PAPER CONCURRENT SESSION 1 Sutherland Theatre | (See pages 52 - 56)

BRAIN PROCESSES IN PAIN AND PAIN CONTROL | Chair *Mark Catley*

- 1.1 **Andrew Youssef** Ongoing brain activity during acute, tonic and chronic orofacial musculoskeletal pain
- 1.2 **Jenna Reeves** Thalamocortical connectivity during acute pain and temperature: Evidence of a VMpo-insula connection
- 1.3 **Leonie Cole** Determining the brain mechanisms that underpin the analgesia induced by pain coping skills training
- 1.4 **Michael Farrell** Brain activation associated with evoked and postural pain in people with osteoarthritis of the knee
- 1.5 **Sophie Wilcox** Brainstem anatomical changes in Temporomandibular Disorder
- 1.6 **Tasha Stanton** Is pain downregulated when you expect a painful stimulus close by?

FREE PAPER CONCURRENT SESSION 2 Nicholls Theatre | (See pages 57 - 61)

PROCESSES AND MANAGEMENT OF MUSCULOSKELETAL CONDITIONS | Chair *Julia Hush*

- 2.1 **Andrew Hahne** 6 month results of a randomised controlled trial comparing specific physiotherapy versus advice for people with subacute low back disorders
- 2.2 **Andrew Hahne** Multimodal physiotherapy functional restoration versus advice for lumbar disc herniation with associated radiculopathy: A pilot randomised controlled trial
- 2.3 **Nicole Sumracki** Altered response to the thermal grill illusion in patients with unilateral sciatica
- 2.4 **Ashley Pedler** Posttraumatic stress and sensory hypersensitivity can be used to identify sub groups of patients with chronic whiplash
- 2.5 **Helen Slater** Low back pain-related beliefs and self-reported practice behaviours among final-year cross-discipline health students
- 2.6 **Rachael Dunne-Proctor** The impact of posttraumatic stress disorder on physiological arousal, disability and sensory pain threshold in patients with chronic whiplash

FREE PAPER CONCURRENT SESSION 3 Menzies Theatre | (See pages 62 - 66)

PAIN MEASUREMENT AND PAIN MANAGEMENT PROGRAMS | Chair *Joy Burdack*

- 3.1 **Karl Bagraith** Personalised outcome measurement in persistent pain: Time to let the cat (computerised adaptive test) out of the bag?
- 3.2 **Bruce Mitchell** Concordance between referred conditions and pain charts
- 3.3 **Fiona Thomas** Does pain self efficacy predict those who maintain their functional status post a multidisciplinary pain management group
- 3.4 **Michael Nicholas** Improving outcomes from pain management programs: The contribution of adherence
- 3.5 **Susan Slatyer** Seeking empowerment to provide comfort: Strategies used by nurses when caring for patients in severe pain
- 3.6 **Daina Hyatt** Sex life and the Oswestry Disability Index

Free Paper Presentations

Tuesday 19 March 2013

FREE PAPER CONCURRENT SESSION 4 Bradman Theatre | (See pages 67 - 70)

PHARMACOLOGICAL AND SURGICAL APPROACHES TO PAIN MANAGEMENT | Chair *Malcolm Hogg*

- 4.1 **Jane Trinca** How an acute pain service helped improve management and cost of the fractured hip journey
- 4.2 **Janet Hardy** A randomized, double-blind, placebo-controlled study to assess the efficacy and toxicity of subcutaneous ketamine in the management of cancer pain
- 4.3 **Nicola Swain** Positive post-surgical pain experiences for most with distraction providing some effective relief
- 4.4 **Ee-Yuee Chan** Pain management: What happens after hospital discharge?
- 4.5 **Geoff Speldewinde** Analysis of the contribution of placebo to the outcome of percutaneous zygapophysial and sacroiliac joint neurotomy
- 4.6 **Cheryl Chooi** Pain versus comfort scores after caesarean section: A randomised trial

FREE PAPER CONCURRENT SESSION 5 Ballroom | (See pages 71 - 75)

PAIN IN CHILDREN AND OLDER PEOPLE | Chair *Susie Lord*

- 5.1 **Tamara Lang** Parental impact on children with chronic pain: How are parental beliefs reflected by parental behaviours within a cognitive behavioural framework?
- 5.2 **Melita Giummarra** Pain and motor restlessness: Prevalence of restless legs syndrome symptoms in chronic pain
- 5.3 **Annabel Barton** Paediatric recurrent abdominal pain: Twin family case-control study of heritability and associations
- 5.4 **Amy Chan** A twin family case-control study on paediatric non-specific low back pain: Investigating heritability & comorbidities
- 5.5 **Nicole Andrews** Predictors of sleep quality in adults with chronic pain: A momentary, within-persons perspective
- 5.6 **Seema Parikh** Clinical register of older patients attending a specialist geriatric pain service

FREE PAPER CONCURRENT SESSION 6 Swan & Torrens Room | (See pages 76 - 80)

ANIMAL AND CLINICAL MODELS OF PAIN PROCESSES | Chair *Paul Austin*

- 6.1 **Vaskar Das** Varicella zoster virus (VZV) induced neuropathic pain: Establishment and characterization of a rat model
- 6.2 **Nematullah Khan** Establishment and optimization of a mouse model of multiple sclerosis induced neuropathic pain
- 6.3 **Ya-Qin Han** Establishment & pharmacological characterization of a cisplatin-induced rat model of peripheral neuropathic pain
- 6.4 **Elisabeth Kilburn-Watt** Altered thyroid hormone regulation and behavioural change in an animal model of neuropathic pain
- 6.5 **Sumaiya Shaikh** Rat models of post-surgical pain
- 6.6 **Saad Nagi** Investigations into the mechanisms underlying mechanical & cold allodynia with emphasis on the c-tactile fibres

Poster Presentations

Lunchtime poster viewing session | Tuesday 19 March | 12.35pm - 1.30pm

The poster display is located in the Exhibition Hall on the ground floor of the National Convention Centre.

Posters will be displayed for the duration of the conference | (See pages 91 - 117)

1. **Janelle White** Paramedic management of patients with persistent pain: A new perspective on a current concept
2. **Geoff Speldewinde** **Patient-directed shared decision-making pain management in a private community setting**
3. **Nicole Muscat** Opioid risk assessment: Screening of patients at first presentation to a pain clinic
4. **Abdulbari Bener** **Prevalence of low back pain and factors affecting low back pain in general population**
5. **Abdulbari Bener** Anxiety, depression and somatisation symptoms in low back pain patients
6. **Bruce Mitchell** **Prolotherapy for sacroiliac joint pain**
7. **Murray Taverner** Double blind randomised control trial of active and inactive transcutaneous pulsed radiofrequency treatment for shoulder pain booked for surgery
8. **Bruce Mitchell** **Radiofrequency neurotomy for sacroiliac joint pain: A prospective study**
9. **Janet Firth** Which factors predict treatment pathway destination in a multi-disciplinary pain management centre?
10. **A. Breck McKay** **Entheses: Are they the source of CLBP / failed back surgery syndrome (relieved by periosteal LA & steroid or 5% dextrose injections and dorsal ramus injections) and where TRPV1 receptors may exert affects?**
11. **Julia Hush** Neuropathic features of low back pain are more common in primary care than recognised: A systematic review
12. **Larissa Westhuyzen** **The development of a follow up 'refresher day' service to enable continuing support post discharge from a pain management program**
13. **Karin Plummer** Comfort first: A program to reduce pain and distress associated with medical procedures for children with cancer and their families
14. **Shinn Long Lin** **Inflammatory impact on the pathogenesis of morphine tolerance: Relationship between cytokine/chemokine, microglial and cytoskeleton**
15. **Steven Savvas** Implementation of sustainable evidence-based practice for the assessment and management of pain in residential aged care facilities
16. **Aaron Bowes** **Development of an exercise/activity handover tool for use in a pain management setting**
17. **Daniel Harvie** Classical conditioning and chronic pain: A systematic review
18. **Manasi Gaikwad** **Pilot study to determine effectiveness of low level laser therapy and digital infrared thermal imaging treating chronic low back pain**
19. **Richard Kwiatek** The Fibromyalgia Australia website: A new paradigm in community management of persistent musculoskeletal pain

Poster Presentations

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20. **Ann Yeomanson** Redesigning a public ambulatory pain service to optimise wait times and care quality
21. **Jane Trinca** **Utility of general outcome measures and tracking for Tertiary Pain Management Outpatient Service**
22. **Huong Nguyen** An adolescent pain management program: More family oriented
23. **Murray Taverner** **What is the data we collect from our psychometric screening tests telling us?**
24. **Rianne Kofman** Paediatric restless legs syndrome is associated with multiple functional pain syndromes in childhood:
A twin family case control study
25. **Tamara Lang** **Provider approaches to chronic and recurrent pain in paediatric outpatients**
26. **Arun Aggarwal** Long term effectiveness of subanesthetic inpatient intravenous ketamine infusion therapy in the management of chronic non-cancer pain
27. **Brooke Stemm** **The effect of brief mindfulness meditation on sensory and affective pain experience**
28. **Mark Catley** Assessing tactile acuity in musculoskeletal medicine:
How good are two point discrimination tests at the neck, hand, back and foot?
29. **James Kang** **Epigenetic changes in the gene for brain derived neurotrophic factor (BDNF) in the dorsal hippocampus correlate with the degree of disability triggered by nerve injury in the rat**
30. **Bruce Mitchell** Neuromodulation for chronic pain conditions
31. **Bruce Mitchell** **Diagnostic sacroiliac joint injections: Is a control block necessary?**
32. **Wendy Barsdell** Persistent pain and perceptual rivalry interactions: An exploratory study
33. **Anne Daly** **Do pain management programs keep working for compensable patients? A three year follow up**
34. **Abby Tabor** Threat alters the perceptual construction of our world
35. **Grace Larson** **"Behave yourselves" – Children and adults behaviour during routine procedures**
36. **Carolyn Arnold** A standardised minimum data set of measures for assessment of patients attending multidisciplinary pain management services
37. **Paul Austin** **Anatomically specific patterns of tyrosine hydroxylase phosphorylation in the nucleus accumbens of rats with 'pain alone' or 'pain and disability'**
38. **Murray Taverner** Using CAGE-AID instrument to measure substance abuse risk in patients attending a private pain clinic
39. **Olivier Vitton** **Which baseline characteristics influence the response to Milnacipran (Joncica®) in patients with fibromyalgia?**

Rapid Communication Presentations

Monday 18 March 2013

12.25pm - 12.35pm | Royal Theatre | Chair *Mr Tim Austin* | (See Poster Abstracts pages 91 - 117)

1. **Mark Catley** Assessing tactile acuity in musculoskeletal medicine: How good are two point discrimination tests at the neck, hand, back and foot?
2. **Bruce Mitchell** **Neuromodulation for chronic pain conditions**
3. **Bruce Mitchell** Diagnostic sacroiliac joint injections: Is a control block necessary?
4. **Janet Firth** **Which factors predict treatment pathway destination in a multi-disciplinary pain management centre?**
5. **Wendy Barsdell** Persistent pain and perceptual rivalry interactions: An exploratory study
6. **Anne Daly** **Do pain management programs keep working for compensable patients? A three-year follow up.**
7. **Steven Savvas** Implementation of sustainable evidence-based practice for the assessment and management of pain in residential aged care facilities
8. **Shinn Long Lin** **Inflammatory impact on the pathogenesis of morphine tolerance: Relationship between cytokine/chemokine, microglial and cytoskeleton**

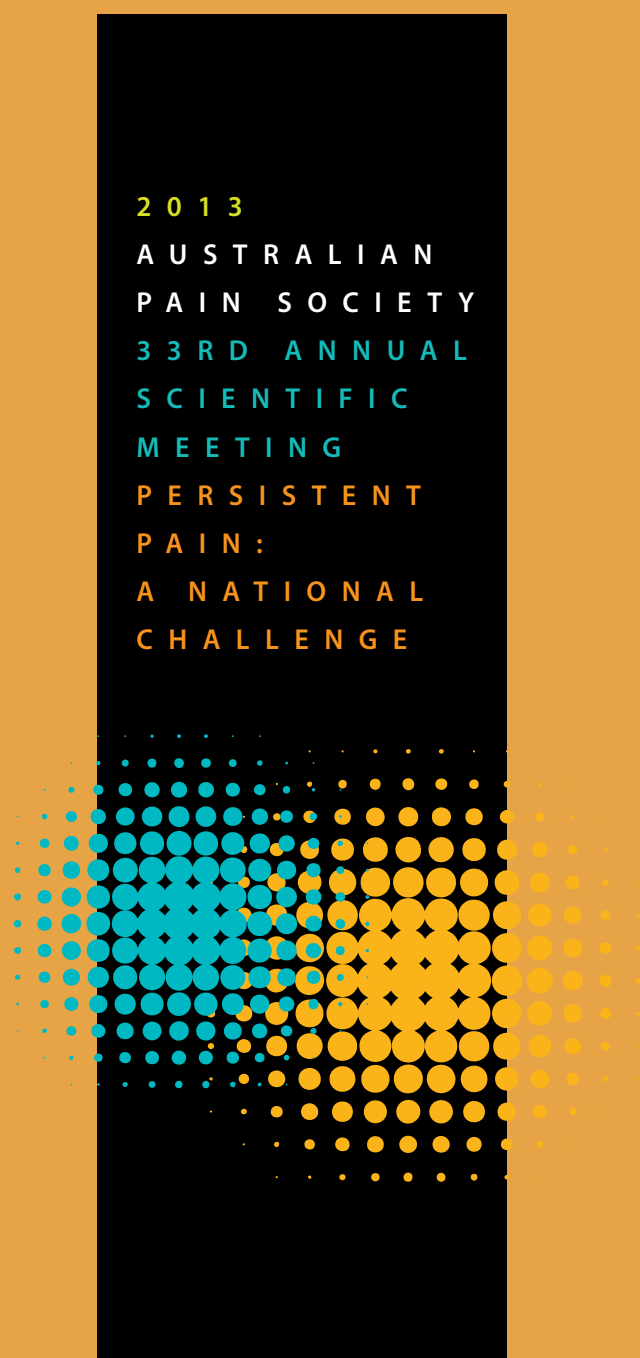
Tuesday 19 March 2013

12.25pm - 12.35pm | Royal Theatre | Chair *Mr Tim Austin* | (See Poster Abstracts pages 91 - 117)

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2. **Grace Larson** **"Behave yourselves"- Children and adults behaviour during routine procedures**
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8. **James Kang** **Epigenetic changes in the gene for Brain Derived Neurotrophic Factor (BDNF) in the dorsal hippocampus correlate with the degree of disability triggered by nerve injury in the rat**

Session Abstracts

Monday 18 March 2013



Monday 18 March 2013

Breakfast Sessions | 7:30am - 8:30am

BREAKFAST SESSION 1 | Swan & Torrens Room

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BREAKFAST SESSION 2 | Ballroom

Sponsored by 

**Neuropathic Pain Update:
From mechanism to management**

In the past decade there has been an increase in the understanding of the multiple mechanisms responsible for the development of neuropathic pain. It is important to review the basic science behind current treatment options especially since clinically more than 50% of patients will require multiple medications, each targeting different pain mechanisms. This talk will review the pharmacology (including drug to drug interactions) of today's most commonly prescribed medications and the impact drug selection has on pain pathways. The presentation will address the importance of a collaborative team management approach to help reduce chronic neuropathic pain.

The presentation aims to:

- Explain the mechanisms involved in neuropathic pain
- Review the pharmacology of current neuropathic pain medications
- Examine possible drug-to-drug interactions of neuropathic pain medications
- Discuss the current management of neuropathic pain
- Discuss the impact of pharmacology on the long term management of chronic neuropathic pain.

Presenter | Professor Robert Helme, PhD, FRACP, FFPMANZCA

Professor Helme gained a PhD from Monash University then trained in Clinical Neurology at Massachusetts General Hospital. He became Professor of Geriatric Medicine at the University of Melbourne and Director of the National Ageing Research Institute in 1987. Most recently he was appointed Director of Neurology, Western Health, Melbourne. His research lies in the area of pain measurement and management, especially as it affects older people. Professor Helme has participated in international multicentre trials of treatment for pain, dementia and stroke, has undertaken medicolegal work for over ten years in these areas and has published over 350 papers as chapters, peer reviewed publications and abstracts. Current appointments are as Honorary Professorial Associate in the Department of Medicine, Royal Melbourne Hospital, University of Melbourne, and Consultant Neurologist, Epworth Hospital, Melbourne.

Monday 18 March 2013Plenary Session 1 | 9.20am - 10.30am | Royal Theatre | Chair: *Dr Tim Semple*

9.20am - 9.55am

Beyond fear of pain: Threats and opportunities**Professor Geert Crombez***Ghent University, Ghent, Belgium*

Fear of pain has become one of the key psychological variables to explain pain problems, distress and disability. A wealth of experimental and observational studies has substantiated its predictive value and its potential for treatment. One of the most influential models regarding fear of pain is the fear-avoidance (FA) model of chronic pain, which describes how individuals experiencing acute pain may become trapped in a vicious circle of chronic disability and suffering.

In this presentation I analyze available evidence and point to some potential threats for the model. I argue that these threats also provide opportunities for better theoretical understandings of distress and suffering in chronic pain, including better management of distress and suffering.

More specifically, I will focus on three key challenges for the FA model. First, the FA model has its roots in psychopathology and investigators will have to find a way to account for findings that do not easily fit within such a framework. Second, the FA model needs to address the complexities of disability and functional recovery. Third, the FA model will have to incorporate the idea that pain-related fear and avoidance occurs in a context of multiple and often competing personal goals. To address these three key challenges, we argue that the FA model needs to more explicitly adopt a motivational perspective, one that is built around the organizing powers of goals and self-regulatory processes. Using this framework, I will recast the FA behavior as the persistent but futile attempts to solve pain-related problems in order to protect and restore valued goals.

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9.55am - 10.30am

Functional brain imaging and pain: An update**Professor Katja Wiech***Oxford Centre for Functional Magnetic Resonance
Imaging of the Brain, University of Oxford, UK*

The brain undoubtedly plays a critical role in the perception of pain. Particularly in clinical pain conditions, aberrant processing of incoming nociceptive information and altered cognitive-affective processing seem to contribute to the induction and maintenance of pain. Modern functional neuroimaging techniques have begun to unravel these mechanisms and inspire novel treatment approaches to address them.

The presentation will give an overview on the recent insights into brain processes underlying pain processing in the human brain and spinal cord of chronic pain patients (neuropathic, inflammatory and functional pain), in experimental models of chronic pain and acute pain. I will present latest attempts to identify an objective marker of pain in the brain and factors that predict the development and maintenance of chronic pain. The presentation will also focus on the influence of cognitive and affective processes and explain how they can influence perception. Furthermore, I will discuss studies investigating the neural basis for pain relief, induced either behaviourally or pharmacologically. Finally, I will portrait latest technical developments in brain imaging and discuss their potential to combine information about structure and function of the brain to understand the perception of pain in health and disease.

Monday 18 March 2013Plenary Session 2 | 11.00am - 12.25pm | Royal Theatre | Chair: *Dr Geoff Speldewinde*

11.00am - 11.30am

Novel actions of opioids on nociception**Professor Jürgen Sandkühler***Medical University of Vienna, Center for Brain Research, Austria*

Painful stimuli activate nociceptive C-fibers and induce synaptic long-term potentiation (LTP) at their spinal terminals (Sandkühler, 2009). LTP at C-fiber synapses represents a cellular model for pain amplification (hyperalgesia) and for a memory trace of pain and constitutes a novel target for pain therapy (Ruscheweyh et al., 2011). μ -Opioid receptor (MOR) agonists exert a powerful but reversible depression at C-fiber synapses (Heinke et al., 2011) which renders the continuous application of low opioid doses the gold standard in pain therapy. We discovered that brief application of a high opioid dose reversed various forms of activity-dependent LTP at C-fiber synapses (Drdla-Schutting et al, 2012). Depotentiation involved Ca^{2+} -dependent signaling and normalization of the phosphorylation state of α -amino-3-hydroxy-5-methyl-4-isoxazolepropionic acid receptors (AMPA). This also reversed hyperalgesia in behaving animals. Opioids thus not only temporarily dampen pain but may also erase a spinal memory trace of pain.

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Monday 18 March 2013Plenary Session 2 | 11.00am - 12.25pm | Royal Theatre | Chair: *Dr Geoff Speldewinde*

11.30am - 12.00 noon

Neurobiological mechanisms underlying cervicogenic headache

Professor Philip S Bolton*School of Biomedical Sciences & Pharmacy,
University of Newcastle Callaghan, NSW, Australia*

The diagnosis and thereby treatment of cervicogenic headache can prove to be a significant clinical challenge. Anatomical and physiological evidence supports the notion that tissues in the neck and cervical spine can refer pain to the head. Animal studies provide clear evidence of convergence of afferents from the head and neck onto individual trigeminocervical neurones in the brainstem and upper cervical spinal cord.¹ Transient or long lasting hyper excitability of these convergent neurones following dura and neck muscle (greater occipital nerve) afferent stimulation involves an increase in their receptive fields and a reduction in threshold for activation.^{2,3} These mechanisms provide a putative substrate for the provocation or exacerbation of head pain with neck afferent stimulation.

In principle, activation of nociceptive afferents arising from any tissue in the neck projecting to these convergent neurones may induce cervicogenic headache. However, valid and reliable data sets impugning specific causes or tissue involvement in humans are limited. In spite of the lack of a clinically demonstrable patho-anatomical lesion in humans, clinical studies in humans suggest a role for afferents innervating the atlanto-axial joint⁴ and zygapophysial joints, particularly C2-3 following injurious loads such as those during a whiplash event.⁵ Less rigorous evidence suggests involvement of afferents innervating the C2-3 intervertebral disc.

While more recent animal studies show changes in neuropeptides in cervical dorsal root ganglia⁶ and spinal cord⁷ following injury to cervical zygapophysial joints and that muscle inflammation changes the electrophysiological characteristics and excitability of cervical superficial dorsal horn neurones,⁸ it remains to be determined if these changes play a specific role in headache or provide a legitimate focus for therapy.

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Monday 18 March 2013

Plenary Session 2 | 11.00am - 12.25pm | Royal Theatre | Chair: *Dr Geoff Speldewinde*

THE SUNDERLAND LECTURE

12.00 noon - 12.25pm

Pain management in the cross-hairs: Documenting failures, precipitating change

Dr Rollin M. Gallagher

*Deputy National Program Director for Pain Management, VA Central Office
Co-Chair, Pain Management Working Group,
Health Executive Council of the Departments of Defense and Veteran Affairs,
Director for Pain Policy Research and Primary Care, Penn Pain Medicine,
Clinical Professor of Psychiatry and Anesthesiology, University of Pennsylvania,
Pain Medicine Service, Philadelphia VA Medical Center*

The American Decade of Pain, 2000-2009, came and went. New versions of old treatments and new journals proliferated without appreciably changing the rising prevalence and costs of chronic pain and its consequences for our patients and society. Academic medicine, focused on economic survival, did not take up the challenge of better pain care. Thus pain curricula in medical and health professional education remained inadequate and fragmented and pain education and training were largely ceded to lecture programs funded by pharmaceutical and device industries with focus on promoting product utilization, not population health.

Pain medicine specialty practice, fragmented by inter-specialty turf battles and focused on highly reimbursed procedures to sustain incomes, relinquished responsibility for patients' quality of life and longitudinal outcomes and for the public's health. NIH's focus on biomedical mechanisms, and industry's focus on product marketing to profits, left a proverbial 'donut hole' of clinical implementation research. Recent analyses of large federal and insurance databases has revealed the hazards of prolific interventionists, opioid pill mills and poor medical training - the present public health crises of prescription drug abuse, overdose deaths, and the rapidly escalating costs of pain care without substantial benefit.

In the absence of leadership by organized medicine, the passion of clinical pain specialists, pain scientists and patient organizations in our societies (in America precipitated by a grass roots campaign for a societal response to the suffering of wounded warriors), is

precipitating change through the political process. In America, 3 laws now require the Department of Defense, the Department of Veteran Affairs, and the NIH to report yearly on their progress in developing an effective pain management model and a robust clinical research and education programs. Australia and New Zealand now deem pain medicine a specialty; they, along with American federal agencies, are implementing new models of stepped pain care that rely on patient self-management and interdisciplinary collaboration of primary care and specialty care teams to deliver cost-effective, measurement-based care to populations. The preliminary results of these programs promise a brighter future for pain management practice and a better life for the populations we serve.

Rapid Communication Session 1

12.25pm - 12.35pm | Royal Theatre

Chair *Dr Tim Austin*

(See Poster Abstracts pages 91 - 117)

Monday 18 March 2013

Topical Concurrent Sessions 1 | 1.30pm - 3.00pm

1A A multidisciplinary approach to headache management

Ballroom

CHAIR | *Professor Michele Sterling*

*Centre of National Research on Disability and Rehabilitation
Medicine, University of Queensland, QLD*

PRESENTERS

Dr Paul Verrills, Metro Spinal Clinic, VIC

Dr Stuart Cathcart, University of Canberra, ACT

Mr Ken Niere, La Trobe University, VIC

A multidisciplinary panel will discuss approaches to the management of headache. Participants will understand the current knowledge and evidence base of the management of headache and the integration of medical, psychological and physical approaches to the management of various headache types.

1B Pain representation in the human brain

Bradman Theatre

CHAIR | *Professor Lorimer Moseley,*

University of South Australia, SA

PRESENTERS

Dr Michael Farrell, Florey Institute of Neuroscience and Mental Health, VIC

Dr Katja Wiech, Oxford Neuroscience, UK

Professor Lorimer Moseley, University of South Australia, SA

Interest in pain and the brain is understandably intense. Contemporary imaging tools have made it possible to test associations between pain and brain structure and function, fuelling a burgeoning literature of pain imaging studies. This body of research has produced important insights into the representation of pain in the brain. However, the inherent complexity of the subject matter combined with arcane experimental procedures and analysis techniques can make outcomes from brain imaging studies difficult to understand. The purpose of this topical session is to provide delegates with a framework with which to make sense of pain imaging research. Dr Michael Farrell will speak about brain imaging techniques and the type of conclusions that can be drawn from the most common experiments. Dr Katja Wiech will

draw upon her research outcomes to illustrate how imaging can implicate brain processes in the nexus between beliefs and pain experience. Professor Lorimer Moseley will discuss a conceptual model of pain that integrates what the pain imaging research has helped us to understand in a way that can be applied to our clinical approach to people in pain.

1C Chronic pain across the ages: Cultural, family and caregiver implications

Menzies Theatre

CHAIR | *Dr Matthew Crawford,*

Department of Pain and Palliative Care, Sydney Children's Hospital, NSW

PRESENTERS

Assoc Prof Fiona Blyth, Concord Clinical School, University of Sydney, NSW

Mrs Marianne McCormick, Allied Health Department, Sydney Children's Hospital, NSW

Dr Jordan Wood, Department of Anaesthesia and Pain Medicine, Sydney Children's Hospital, NSW

Dr Winnie Hong, Multidisciplinary Pain Clinic, Concord Repatriation General Hospital, NSW

It is important to determine factors that are associated with age-related differences in chronic pain within the context of both health and environmental variables. Furthermore, it must be recognised that child to adult transitions in health care involves not only clinical changes, but also systemic and cultural changes. This session will review important features of the chronic pain experience, behaviours and management across the ages from children to older adults, with particular focus on the influences of family and caregivers including cultural influences.

Fiona Blyth will set the temporal perspective by reviewing the developmental origins of health and chronic diseases, emerging evidence from life course studies about the life course of chronic pain, and the potential gains from interventions early in life to prevent or mitigate the adult burden of chronic conditions.

Marianne McCormick will present the paediatric perspective on chronic pain, its implications for adult life, and the bidirectional

Monday 18 March 2013

Topical Concurrent Sessions 1 | 1.30pm - 3.00pm

influences between children and adolescents and their parents, siblings and peers. Multidisciplinary management issues specific to paediatric chronic pain will be reviewed.

Jordan Wood will discuss some of the key challenges patients, families and health systems face during transition from paediatric to adult services in order to maximize potential and quality of life.

Winnie Hong will highlight the complex biological, social and cultural factors that are particular to older adult people with chronic pain and the special issues in management.

1D Towards pragmatic multi-axial labelling and management planning in pain medicine

Swan and Torrens Room

CHAIR | *Ms Jane Muirhead, Pain Care, WA*

PRESENTERS

Dr John Quintner, Pain Medicine Unit, Fremantle Hospital, WA

Assoc Professor Milton Cohen, St Vincent's Campus, NSW

Dr Graham Wright, Complex Injury Group, SA

Although chronic pain is now conceptualised in a biopsychosocial framework, our diagnostic language - and therefore our formulation of management - does not reflect that. None of the three current nosological taxonomic systems (ICD-10, DSM-IV, IASP) captures the complex diagnostic dimensions of the patient presenting with chronic pain. In an attempt to fill gaps in these systems, clinicians have invoked unproven bodily pathology as well as hypothetical psychopathology, and have ignored the social dimension. These attempts have been scientifically and clinically unsatisfactory. The presenters will address the inherent problems in current nosology, will offer a rational biopsychosocial-based nomenclature taking a lead from DSM-4 and introduce a triaxial adaptation of ICD-10 for the purpose of clinical problem solving and management.

1E Implementing an entry-stage group information session for clients referred to attend a pain rehabilitation service: A Victorian experience

Sutherland Theatre

CHAIR | *Mrs Anne Yeomanson, Eastern Health, VIC*

PRESENTERS

Mrs Ann Yeomanson, Eastern Health, VIC

Ms Sue Yencken, Eastern Health and Cabrini Health, VIC

Mr Paul Beaton, Deakin University, VIC

Several scientific publications have proposed within Specialist Pain Service settings, the use of group client entry session(s) prior to 1:1 appointment allocation. Lengthy wait times for many Pain Services have arguably been the most significant impetus to explore the care value of such session(s).

Multiple potentially achievable positive client and service outcomes can be hypothesised including:

1. Faster client access to:

- Early (if broad) clinical advice
- Face-to-face pain neuroscience education
- Service information beyond that deliverable via a Service brochure &/or referral intake phone conversation

2. Greater sustainability of Services through:

- Elimination from the waitlist of clients not meeting Service attendance policy
- Reduced reliance on 1:1 appointments as where client neuroscience education occurs
- Creation of a forum for medically appropriate clients (once informed about the Pain Service's care components), to request to progress directly to further group programs rather than await a 1:1 appointment program

This session will include:

- An overview of an entry-stage group information session package implemented within a large Melbourne Public health network
- Presentation of early clinical and service efficiency outcomes achieved through the program's implementation
- An interactive discussion of the practical challenges and rewards encountered

Monday 18 March 2013

Topical Concurrent Sessions 1 | 1.30pm - 3.00pm

1F Quirky clinical conundra

Nicholls Theatre

CHAIR | *Dr Geoff Speldewinde,*

Capital Rehabilitation and Pain Management Centre, ACT

PRESENTERS

Professor Benny Katz, *Consultant Geriatrician, St Vincent's Hospital, and Director, Victorian Geriatric Medicine Training Program, Melbourne, VIC*

Dr Geoff Speldewinde, *Capital Rehabilitation and Pain Management Centre, ACT*

Mr Jac Cousin, *Canberra Physiotherapy Centre, ACT*

Have you ever had an experience in your pain practice that you would have loved to share with others? In this novel and unique session, a panel of presenters will discuss their weird and wonderful experiences and cases including diagnostic difficulties and things that compel you to think laterally. The presenters will share their conclusions, noting their case may be ongoing without a definite conclusion by the time of the presentation. Discussion from the audience is sought and welcome.

Monday 18 March 2013

Topical Concurrent Sessions 2 | 3.30pm - 5.00pm

2A Lost in transition: The challenge of transitional care for adolescents with persistent pain

Sutherland Theatrette

CHAIR | *Ms Megan James,*

Sydney Children's Hospital, NSW

PRESENTERS

Mrs Maria Heaton, *Sydney Children's Hospital, NSW*

Dr Paul Vroegop, *Counties Manukau, Auckland, New Zealand*

Ms Huong Nguyen, *St Vincent's Hospital, QLD*

Dr Jane Thomas, *Starship Children's Hospital, Auckland, New Zealand*

The journey from adolescence to adulthood is a challenging time of physical, psychological and social change. Young people with persistent pain face even greater challenges, having to also deal with major changes to the way they receive care as they gain independence, as well as the way care is delivered through an adult service. Due to various factors, health services often struggle to meet the needs of young people and families during this emotive period of transition.

In this highly topical session, our panel of experts will provide a range of perspectives on transitional care:

- Through the eyes of the consumer: Parent of an adolescent facing transition to adult services on the horizon;
- A paediatric and adult pain specialist will discuss a model of transitional care from paediatric and adult services;
- The psychosocial considerations pertinent to the period of development will be discussed and how this impacts on the adolescent living with persistent pain; in addition to
- The important role of occupational engagement in adolescents with persistent pain.

A poignant topic for paediatric and adult pain clinicians alike, this session promises to be both thought provoking and engaging. An interactive panel of experts' discussion will conclude.

2B Psychiatry and pain

Menzies Theatrette

CHAIR | *Professor George Mendelson, Monash University, VIC*

PRESENTERS

Professor George Mendelson, *Monash University, VIC*

Dr Newman Harris, *University of Sydney Pain Management and Research Institute, NSW*

Dr Stephanie Oak, *Hunter New England Health, NSW*

The presenters will discuss the influence of personality traits and psychiatric illness on both acute pain and chronic pain, with a particular emphasis on the psychiatric aspects of pain and their treatment; the importance of borderline personality traits and attachment style will be described in detail. Participants will have the opportunity to learn how to evaluate these important personality and psychiatric factors that contribute to the experience and presentation of pain, and how to initiate appropriate treatment.

2C Teaching and learning about pain in the information age

Ballroom

CHAIR | *Dr Kathryn Nicholson Perry,*

University of Western Sydney, NSW

PRESENTERS

Ms Diana Aspinall, *Community Representative, PainAustralia Limited, NSW*

Mr Tim Austin, *Camperdown Physiotherapy and University of Sydney, NSW*

Dr Kathryn Nicholson Perry, *University of Western Sydney, NSW*

The web has delivered unprecedented opportunities for information gathering and sharing. However, has the information age delivered better outcomes for people with pain and care providers? This session will include presentations from health care providers, educators and consumers who will discuss the benefits and pitfalls of online communication.

Diana Aspinall will provide a consumer perspective on how people with persistent pain and health problems use the web to share experience, advocate for support, and gather information.

Tim Austin will discuss the opportunities for improving knowledge of pain and its management among health care providers and students.

Kathryn Nicholson Perry will share her experience with the development and implementation of online resources for people with persistent pain.

2D Improving back pain with motion sensing technology

Swan and Torrens Room

CHAIR | *Dr Steven Jensen, Stanlake Specialist Centre, VIC*

PRESENTERS

Dr Stephen de Graaff, Epworth HealthCare, VIC

Associate Professor Terry Haines, Monash University, Southern Health, Hospital Falls Prevention Solutions Pty Ltd, VIC

Dr Rob Laird, Superspine, VIC

Advances in motion sensing technology are opening new windows of clinical diagnostics and therapeutic intervention spanning pain management, occupational health, sport and musculoskeletal rehabilitation fields. Small accelerometry and electromyography sensors that adhere to skin, wirelessly communicating to both clinician and patient, are creating new affordable diagnostic and treatment options. Monitoring movement and body position of people who have pain provides insight about the complex relationship of pain to movement. When aberrant movement can be identified, visual and auditory biofeedback can provide real-time retraining, creating opportunity for neural plasticity and musculoskeletal adaptation towards healthier movement in work, sport and home environments. This topical session will present the rationale and scientific basis for modifying movement in people with back pain, and demonstrate the application of this technology to multidisciplinary pain management clinical practice.

An interim analysis of a recent randomised, controlled, pilot trial (n=96) investigating the use of this biofeedback technology in participants with low back pain has revealed a significant group-by-time interaction effect for the pain (QVAS) outcome indicating that intervention group participants are recovering at a faster rate, when followed over a 12 month period [Linear mixed model coefficient (95%CI)=-0.029 (-.053, -.005), p=0.02].

2E The mystery of complex regional pain syndrome: The latest evidence on inflammation, the brain and how CRPS might be optimally managed

Bradman Theatrette

CHAIR | *Ms Flavia Di Pietro,*

Neuroscience Research Australia, NSW

PRESENTERS

Mr Luke Parkitny, Neuroscience Research Australia, NSW

Ms Flavia Di Pietro, Neuroscience Research Australia, NSW

Dr Anne Daly, Austin Health, VIC

Complex Regional Pain Syndrome (CRPS) is a persistent and multi-system disorder that is most commonly precipitated by minor trauma. Two dominant theories proposed to underpin CRPS are an abnormal inflammatory profile and functional reorganisation in the brain.

In this session we will summarise the evidence for the role of inflammation in CRPS. Can inflammation trigger CRPS after injury, and/or maintain the signs and symptoms of the condition? What about the brain? We will present the latest findings on cortical reorganisation and how they might shed light on what is seen in the clinic - 'neglect', perception of a bigger limb, and feelings of foreignness towards the CRPS-affected limb.

We will present the latest evidence concerning treatment of CRPS with these two theories in mind. Finally we will address what we are yet to discover and how this knowledge might impact on research and the clinical setting.

2F Interventional options in pain management:

The controversies continue

Nicholls Theatre

CHAIR | *Dr Tim Semple, Royal Adelaide Hospital, SA*

PRESENTERS

Dr Jean-Pierre Van Buyten, St Nikolass Hospital, Belgium

Professor Nik Bogduk, Newcastle Bone and Joint Institute, NSW

Dr David Vivian, Metro Spinal Clinic, VIC

There are many challenges in the ever-evolving utility of a wide range of interventional options that contribute so valuably if variably to pain management. This session brings together 3 people eminent in interventional pain internationally.

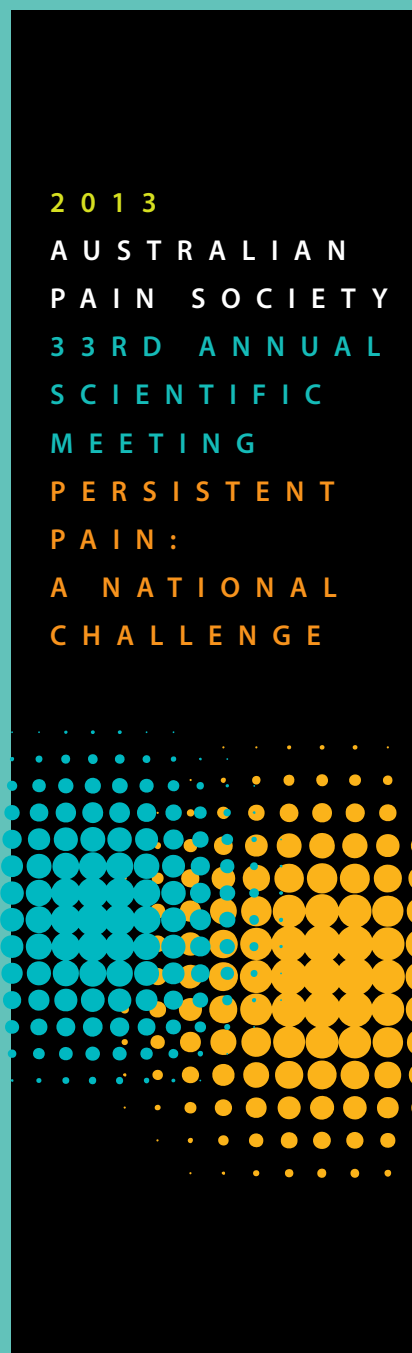
Dr Jean Pierre van Buyten from Belgium will describe the current and future uses of spinal and peripheral stimulator implants including the exciting developments in High Frequency stimulation which delivers no paraesthesia so much a part of traditional stimulation.

Professor Nik Bogduk will describe the literature on the outcomes of interventions (and pain management) for those in receipt of worker's compensation or motor accident insurance where he may confirm or dispel the rumour that such patients or clients of ours do as well as others, or have worse outcomes.

Dr David Vivian will describe and illustrate why interventions are ineffective. This will be a delightful session which will inform participants of all backgrounds of what, and why, they can expect the results that they observe or strive to achieve across the full range of the interventions used commonly in pain practice.

Session Abstracts

Tuesday 19 March 2013



Tuesday 19 March 2013

Breakfast Sessions | 7:30am - 8:30am

BREAKFAST SESSION 3 | Ballroom

Sponsored by



Wound Infiltration: An examination of current practice, emerging techniques and practical solutions for the safe delivery of medications

Perioperative incisional wound infiltration and continuous wound infiltration are important parts of the postoperative multimodal analgesia toolkit. Various methods and medications may be utilised for anaesthetic administration, with their own distinct advantages and disadvantages. Additionally, new, specialised equipment such as dedicated pumps and wound infiltration catheters are becoming more widely utilised, precipitating the need for defined regimes and practical guidance on usage. With continuous wound infiltration still being a relatively new modality of analgesia there remain several unanswered questions to ensure safe delivery of medications while maintaining effective postoperative analgesia.

BREAKFAST SESSION 4 | Swan & Torrens Room

Sponsored by



Tapentadol abuse in the US: The first 24 months

Tapentadol is new centrally acting analgesic for moderate to severe pain with two mechanisms of action - MOR-NRI. Abuse and diversion rates of tapentadol IR in the US have been low during the first 24 months after its launch compared with tramadol, and notably lower than that of oxycodone and other more potent opioid analgesics.

Presenter | Dr Richard C. Dart, MD, PhD

Dr Dart is trained as a medical doctor specializing in emergency medicine and toxicology. Dr Dart is certified by the American Board of Emergency Medicine and the American Board of Medical Toxicology. Since 1992 he has served as the Director of the Rocky Mountain Poison and Drug Center. He is the Executive Director of Researched Abuse, Diversion, and Addiction-Related Surveillance (RADARS®) System. He has published more than 200 papers and chapters as well as served as editor for the book The 5-Minute Toxicology Consult and the 3rd edition of Medical Toxicology. In 2002 he was recognized with a special citation from the Commissioner of the U.S. Food and Drug Administration. He was the 2004 recipient of the American College of Medical Toxicology Matthew J. Ellenhorn Award for Excellence in Medical Toxicology. He also serves as a Deputy Editor of the medical journal Annals of Emergency Medicine and is immediate Past-President of the American Association of Poison Control Centers.

Tuesday 19 March 2013

Plenary Session 3 | 9.00am - 10.30am | Royal Theatre | Chair: A/Prof Fiona Blyth

9.00am - 9.30am

Injury, pain and traumatic stress in children

Professor Justin Kenardy

*Centre of National Research on Disability and Rehabilitation
Medicine, University of Queensland, Australia*

Given the recent focus on youth mental health and the frequency of injury-related hospital presentations and admissions in children and adolescents it is surprising that there has not been more extensive research on pain and posttraumatic stress in children. Evidence from our work and that of others indicate that posttraumatic stress disorder (PTSD) occurs at higher than expected rates in children with painful traumatic injuries such as burns and traumatic brain injury, as well as in painful non-traumatic illness such as cancer, and generally is the most common psychiatric disorder in children who experience pain.

Few studies have examined the relationship between the course of posttraumatic stress and pain. Work by Saxe and colleagues found that pain medication positively influenced the course of PTSD in a small sample of children with burn injuries. However they concluded that pain reduction was not the mechanism. Our work has shown that recovery from pain is adversely affected by the presence of PTSD in injured children. A significant complicating factor is that childhood is very dynamic in terms of both physical and psychological development. Assessment of both pain and PTSD in infants and pre-schoolers is different to that of school-aged children and adolescents. Furthermore there are developmental nuances in the expression of pain and PTSD. This challenges both assessment and treatment of these conditions, however clinicians should assess for both conditions regardless of age, and our work with adults indicates that treatment of PTSD in the context of chronic pain is effective. This model of care needs to be tested with children in future research.

9.30am - 10.00am

New opportunities for community-based multidisciplinary teamwork in chronic pain management in Australia

Professor Geoffrey Mitchell

*General Practice and Palliative Care, School of Medicine,
Ipswich, QLD, Australia*

Multidisciplinary management of complex pain problems is widely accepted as essential. However, the development of such services is complex, and access from the community can be very difficult. The critical connection to be made is between general practitioners and specialist services. Research in a range of clinical areas demonstrates the benefit of close collaboration between GPs and specialist services in planning for the care of people with complex health problems like pain. Further, access to federal funding of multidisciplinary care becomes possible through the patient's GP.

This talk will present evidence of the benefits of close collaboration between GPs and Specialist services, and explore how the health system can be organised at the interface between primary care and specialist and hospital care, including employing telehealth technology.

Tuesday 19 March 2013

Plenary Session 3 | 9.00am - 10.30am | Royal Theatre | Chair: A/Prof Fiona Blyth

TESS CRAMOND LECTURE

10.00am - 10.30am

The toll of CNS immunology: A non-classical pain generator and manipulator of opioid pharmacology

Dr Mark R Hutchinson

*Discipline of Physiology, School of Medical Sciences,
University of Adelaide, Australia*

Despite their abundance within the central nervous system (CNS), the non-neuronal immune-like cells of the brain and spinal cord have long been overlooked as significant players in health or disease. This "JUST glue" stereotype of glia has steadily changed over the past few decades, such that now it is appreciated that glia are crucial to the maintenance of CNS homeostasis as well as a myriad of pathological CNS conditions.

However, there has been a much slower acknowledgement that immune signals from neuronal or non-neuronal, central and peripheral origins might also contribute substantially to CNS function. The ramifications of mechanistically viewing pain and analgesia systems without an appreciation for CNS immunology are profound. For example, layering of an understanding of CNS immunology onto neuronal hypotheses of how acute pain becomes chronic, or why chronic pain is more prevalent in females than males may prove central to the future effective pharmacological and non-pharmacological interventions. Excitingly, the CNS immunology research has focused in on a class of pivotal innate immune receptors, Toll Like Receptors as being initiators of several CNS immune signals associated with chronic pain.

Interestingly, such CNS immunology-induced paradigm shifts are also occurring in our understanding of opioid pharmacology. Vastly stimulated by the discovery of opioid receptors in the early 1970s, significant efforts of opioid research were directed at the study of stereoselective neuronal actions of opioids, owing to their crucial

role in opioid analgesia and opioid reward. However, during the past decade a new appreciation of the non-neuronal actions of opioids has emerged, with specific appreciation for the non-classical and non-stereoselective sites of action. Opioid activity at these non-classical sites, such as the xenobiotic activity at Toll-like receptors, adds substantially to this unfolding story. It is now apparent that the consequences of these newly identified CNS immunology signalling events substantially modify the pharmacodynamics of opioids.

These CNS immunology signalling events associated with chronic pain and opioid exposure, include the release of factors such as cytokines and chemokines, and the associated disruption of glutamate homeostasis, causing elevated neuronal excitability that decreases opioid analgesic efficacy and heightened pain states. However, this decreased opioid pharmacodynamics is not global, as preclinical evidence supports the role of proinflammatory central immune signalling in heightening opioid reward. This presentation will examine the current literature supporting pain and opioid-induced CNS immune signalling by unifying the pharmacology, neuroscience and immunology literature of pain and opioids. Novel pharmacological targets for future drug development will be discussed, in the hope that disease-modifying treatments for the treatment of pain and the avoidance of abuse potential may become reality.

Tuesday 19 March 2013

Plenary Session 4 | 11.00am - 12.25pm | Royal Theatre | Chair: *Dr Tiina Jaaniste*

11.00am - 11.30am

Doctor-patient communication: The importance in working with pain patients

Professor Louise Sharpe

Clinical Psychology, The University of Sydney, NSW Australia

Health professionals often feel challenged in their interactions with pain patients. The lack of clear information about the origin, diagnosis and prognosis of their condition can provide a challenging environment in which to communicate effectively with patients about their health. In recent years, there is an increasing expectation from health care providers and patients for shared decision making to be a part of the medical consultation. And yet, studies show that there remains considerable unmet need in the management of pain. Some unmet need arises from the lack of effective interventions. However, even where the evidence indicates that interventions, such as medication, exercise or pain management are effective, patients are not always adherent with these treatment recommendations. How can we, as health professionals, improve adherence?

There are numerous models in health psychology which aim to explain why people engage (or opt not to) various health behaviours, such as the health belief model, the self-regulation model and the theory of planned behaviour. What all of these models highlight as being important predictors of adherence are the patient's beliefs about their health condition and the recommended behaviour. Reviews of interventions to increase adherence suggest that two key factors to promoting adherence are:

- (a) good health-care provider-patient communication; and
- (b) that the intervention must focus on the reasons for non-adherence.

Hence, having communication skills that allow open exploration of the patient's concerns, allowing the health professional to address those issues is crucial in achieving a good working relationship between professional and patient.

Research in oncology settings has shown that good communication between doctor and patient facilitate a number of positive outcomes including:

- (a) adherence;
- (b) shared decision-making; and
- (c) increased satisfaction.

Far less research has been conducted in the pain literature. However, randomized controlled trials of relatively brief communication skills training workshops have shown improvements in primary care settings, resulting in improved outcomes for patients with fibromyalgia and acute pain. Further, good communication of the health professionals on pain management programs has been shown to improve outcome. Although there are inherent barriers in the treatment of chronic pain, good communication between health provider and patient can promote adherence to lifestyle changes and appropriate medical interventions that appear to result in important, clinically significant benefits for a range of pain conditions.

11.30am - 12.00 noon

Pain and prejudice: Pain management in the emergency room

Dr Meredith Craigie

Flinders Medical Centre, Flinders University, SA, Australia

Pain is the main complaint in 78% to 86% of presentations to emergency departments around Australia each year.¹ However, management of pain in this setting is often poor. The NH&MRC National Emergency Care Pain Management Initiative was established to implement evidence-based care and optimise pain management in the emergency department. The Emergency Care Acute Pain Management Manual, published in 2011, is the resultant clinical tool provided to assist clinicians in accessing and using evidence-based recommendations for acute pain management at the bedside.²

This Initiative acknowledges some of the issues that have arisen over previous decades concerning pain assessment and treatment in the emergency department setting. The manual has some good features including regular pain assessment using appropriate, validated pain scales, and non-pharmacological as well as pharmacological pain management strategies. However, there are some significant limitations including a somewhat "recipe-book" approach to only acute pain management in specific settings. It does not address the complex patients, especially those presenting with a flare-up of chronic non-malignant pain, acute on chronic pain or cancer pain.

Patients with chronic non-malignant pain conditions are often viewed negatively by ED staff.³ Yet they are frequent users of ED services.⁴ Concerns about drug-seeking behavior, demanding or aggressive behaviour, patient refusal to try simple analgesia or specific requests for opioids influence these attitudes. Doctors often find consultations with these patients unsatisfying.³ The patients are less likely to be seen within recommended waiting times and are at increased risk of having organic pathology missed.^{5,6} Opioid prescribing for these patients is quite variable and is influenced by a number of factors including inaccurate pain assessment, age and the presence of prescription monitoring programs.^{7,8,9}

There are many competing priorities to applying best-practice pain management guidelines in the challenging environment of the ED.¹⁰ Many of the barriers are perceived as much as real. The mere presence of pain management guidelines has not resulted in improved practice.¹¹ Triage assessment is inconsistent and influenced by multiple factors.¹¹ However, there are a few enablers that could lead to improved patient outcomes.^{10,11} Having a bedside manual such as the Emergency Care Acute Pain Management Manual is a step in the right direction but major cultural change led by senior clinicians is required to really put the evidence into practice.

References

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Tuesday 19 March 2013

Plenary Session 4 | 11.00am - 12.25pm | Royal Theatre | Chair: *Dr Tiina Jaaniste*

12.00 noon - 12.25pm

Pain induced synaptic plasticity in the amygdala

Dr Elena E Bagley

Discipline of Pharmacology, University of Sydney, NSW Australia

The persistence of pain beyond the nociceptive stimulus suggests that, there are plastic changes in pain pathways that remain after the nociceptive stimulus has stopped and drive the expression of persistent pain states. A better understanding of the cellular physiology of pain-induced plastic changes in pain pathways will result in better therapeutic approaches to persistent pain. One synaptic pathway that is critical for persistent pain is the spino parabrachial amygdala pathway. This pathway delivers nociceptive information to the central nucleus of the amygdala (CeA) and is critical for the development of persistent pain states. Other forms of activity dependent synaptic plasticity, such as long-term potentiation, progress in multiple phases with sequential changes in synaptic properties with later changes relying on earlier plastic changes.

Therefore, understanding how a brief nociceptive stimulus produces plastic changes in synaptic properties is important as these changes may be analogous to early changes during the development of persistent pain and underlie the changes that occur later during development of a persistent pain state. We have found that a brief nociceptive stimulus (2 minutes) produces potentiation of the parabrachial-CeA synapses that persists for several days after the stimulus. Using behavioural measures we have also shown increased sensitivity to nociceptive stimuli over the same time course. Changes in the strength of the synapse that delivers nociceptive information to the amygdala could alter pain processing, including endogenous analgesia, and could drive the emotional and sensory responses to persistent pain. Pharmacological modulation of the pain-induced synaptic plasticity may provide a target for new drugs aimed at reducing persistent pain.

Rapid Communication Session 2

12.25pm - 12.35pm | Royal Theatre

Chair *Dr Tim Austin*

(See Poster Abstracts pages 91 - 117)

Tuesday 19 March 2013

Free Paper Concurrent Session 1 | 1:30pm - 3:00pm | Sutherland Theatre

Session 1 | Brain processes in pain and pain control | CHAIR *Mr Mark Catley***1.1 | 1.30pm Ongoing brain activity during acute, tonic & chronic orofacial musculoskeletal pain****AM Youssef,¹ JM Reeves,¹ R Akhter,^{1,2} SM Gustin,¹ CC Peck,²**GM Murray,² LA Henderson¹*¹ *Department of Anatomy and Histology, University of Sydney, NSW, Australia*² *Faculty of Dentistry, University of Sydney, NSW, Australia*³ *School of Dentistry and Health Sciences, Charles Sturt University, NSW, Australia***Background and Aims**

Temporomandibular disorders (TMDs) are debilitating orofacial chronic pain conditions characterised frequently by pain in and around the jaw muscles and temporomandibular joints. TMD pain is thought to reflect constant nociceptive activation rather than damage to the nervous system, although this has not been demonstrated. As a consequence of this limited information on underlying mechanisms, current management is limited and the development of new treatments is difficult. Over the past decade, many investigators have used brain imaging techniques to define brain activation patterns in humans during acute noxious stimuli.

Despite these numerous investigations, it remains unclear whether similar brain activation patterns also occur during longer lasting tonic pain and in chronic pain conditions such as TMDs. Defining those brain regions activated during longer lasting pain is important if we are to develop more effective treatment regimens. As such, this study aims to investigate brain activation patterns in subjects with TMD and compare these with experimentally induced acute momentary and acute tonic jaw muscle pain in healthy controls.

Methods

Thirteen TMD subjects and 47 healthy controls were recruited for the study. A subunit (n=21) of the control group participated in the transient (n=10) and tonic (n=11) orofacial pain conditions induced by hypertonic (5%) saline infusion into the right masseter muscle.

Ongoing brain activity was measured during brief acute muscle pain (0-12 minutes following start of hypertonic saline infusion), tonic acute muscle pain (12-24 minutes following start of hypertonic saline infusion) and in subjects with chronic musculoskeletal pain (TMD), using quantitative arterial spin labelling (qASL). This technique allows for the absolute quantification of cerebral blood flow (Petersen et al, 2006). Cerebral blood flow (CBF) maps were calculated, normalized to a standard template and smoothed (6mm Gaussian filter) using SPM8 software. In control subjects, individual brief and tonic acute pain CBF maps were subtracted from "pain-free" baseline CBF maps. In TMD subjects, CBF maps were compared to age and gender matched controls (n=26). Significant differences were determined using a random effects procedure ($p < 0.05$).

Results

Significant ($p < 0.05$) regional CBF increases during acute pain occurred in the hippocampus, caudate nucleus, cingulate cortex, dorsolateral prefrontal cortex, premotor and primary motor cortex, and primary somatosensory cortex while decreases were found in the cerebellum. In contrast, tonic acute pain was associated with CBF changes in a similar set of brain structures, however strikingly, CBF significantly ($p < 0.05$) decreased in these brain regions. Furthermore, in TMD subjects, significant rCBF increases were restricted to the dorsolateral prefrontal cortex and the thalamus.

Conclusions

These findings reveal differential brain activities which are indicative of the transition during acute (transient and tonic) and chronic pain processing. The data suggests that brief and tonic acute pains are associated with markedly different activity changes in a similar set of brain regions, which are distinctive from chronic pain processing. These differences may reflect the greater psychosocial impact of pain of chronic pain conditions.

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Free Paper Concurrent Session 1 | 1:30pm - 3:00pm | Sutherland Theatrette

1.2 | 1.45pm Thalamocortical connectivity during acute pain and temperature: Evidence of a VMpo-insula connection

*JM Reeves,¹ AM Youssef,¹ R Akhter,¹ SM Gustin,¹ CC Peck,² GM Murray,² LA Henderson¹

¹ Department of Anatomy and Histology,

² Faculty of Dentistry,

University of Sydney, NSW, Australia

Background and Aims

For the past 50 years, it has been accepted that the ventroposterior nucleus (VP) is the thalamic relay for nociceptive information. However, after observing that lamina I neurons of the spinal cord dorsal horn synapse in a discrete thalamic area, a new thalamic nucleus responsible for the transmission of nociceptive and thermoreceptive information has been proposed. This pain and temperature specific nucleus, termed the posterior portion of the ventromedial nucleus (VMpo), is thought to relay information to the dorsal posterior insula (dplns) and the primary somatosensory cortex (S1) where pain processing occurs. The suggested role of VMpo and its cortical outputs in pain perception remains highly controversial, some suggesting that evidence supporting this theory is not conclusive. By using functional connectivity procedures, this study aims to determine if a VMpo to dplns and S1 connection exists during acute pain and warming stimuli.

Methods

In 15 healthy subjects (5 males, 10 females, mean age \pm SEM: 33.3 \pm 3.6 yrs), 2 series of 180 whole brain functional magnetic resonance imaging (fMRI) volumes (TR=2s) were collected during sustained painful and warm stimuli. Pain was induced by a constant infusion of hypertonic (5%) saline into the right masseter muscle whereas a continuous warm stimulus (38°C) was applied via a thermode on the right lip. Functional connectivity maps of the VP and VMpo were generated by extracting the time course from a 3mm 'seeding' sphere over functionally defined VP and anatomically defined VMpo and comparing it to signal fluctuations over the whole brain.

Results

During pain and warming, signal intensity within the VMpo covaried significantly with signal intensity in the dplnsula as well as the region of S1 representing the face. In addition, VMpo signal intensity covaried significantly with that of the perigenual anterior cingulate

cortex and the nucleus accumbens. In contrast, although VP thalamus signal during acute pain covaried significantly with S1, it did not covary with the dplnsula or the perigenual anterior cingulate cortex. It did however covary with signal intensity changes in the secondary somatosensory, mid-cingulate and dorsolateral prefrontal cortices.

Conclusions

These data provide strong evidence of a connection between the VMpo and dplnsula and S1 that is activated by noxious and temperature stimuli, consistent with Craig's hypothesis. Although the precise role of VMpo in pain perception remains controversial, our data clearly demonstrates that this thalamic region is involved in the processing of acute noxious stimuli in healthy individuals. These findings provide insight into the neural pathways involved in pain perception and contribute to a theory that has the potential to revolutionise the way we think pain is perceived in the brain.

1.3 | 2.00pm Determining the brain mechanisms that underpin the analgesia induced by pain coping skills training

*Leonie J Cole,^{1,2} Kim L Bennell,³ Francis Keefe,⁴

Christina Bryant,^{2,5} Gwendolyn Jull,⁶ Lorimer Moseley,⁷

Michael J. Farrell¹

¹ Florey Institute of Neuroscience and Mental Health, Parkville, VIC, Australia

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⁴ Department of Psychiatry and Behavioural Sciences, Duke

⁵ Centre for Women's Mental Health, Royal Women's Hospital, Parkville, VIC, Australia

⁶ School of Health and Rehabilitation Sciences, The University of Queensland, Australia

⁷ School of Health Sciences, University of South Australia, Australia

Background and Aims

Cognitive behavioural strategies such as pain Coping Skills Training (CST) have demonstrated benefits in reducing pain and improving mood and function in people with chronic pain conditions.¹

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However, the specific neural mechanisms involved in CST-induced pain modulation remain unclear. This study sought to determine the effects of pain CST on central nervous system processes underlying the experience of clinical pain. It was expected that utilization of practiced coping strategies would enlist endogenous analgesic mechanisms that function to decrease the level of nociceptive inputs to the brain, evidenced by (a) reduced pain report, (b) decreased activation in brain regions which process noxious input and (c) increased activation of brain regions implicated in pain modulation. Further, participants who had undergone pain CST were expected to show a larger benefit of coping than participants who had not undergone such training.

Methods

Psychophysical and fMRI data were collected from 28 adults with radiologically-confirmed osteoarthritis of the right knee who had previously completed a 12-week intervention involving pain CST (M/F: 7/7; mean age = 58 ± 8 years) or exercise training (M/F: 7/7; mean age = 61 ± 7 years). Pressure stimuli were applied to the right knee in a random staircase procedure to determine pain thresholds. Four 6.5min fMRI scans were acquired (3T Siemens Trio MR scanner, 32-channel head coil) while participants received innocuous or painful knee pressure presented in 20 sec blocks with 40 sec inter-stimulus intervals under two conditions - 'coping' and 'not coping'. During the coping condition participants were instructed to use their thoughts to decrease the sensation associated with pressure stimuli, whereas during the not coping condition they were instructed to focus their attention on the pressure. Participants provided pain ratings 12sec after stimulus offset. Data were analysed to identify within & between -group differences in pain report & blood-oxygen-level-dependent (BOLD) activity associated with the utilization of pain coping skills.

Results

Participants reported significantly less pain during the coping condition compared with the not coping condition [$F(1,26) = 38.3$, $p < 0.001$]. However, contrary to expectations, there was no significant group x condition interaction [$F(1,26) = 0.5$, n.s.]. fMRI data showed the expected pattern of pain-related activation during the experience of noxious knee pressure compared with rest. As predicted, compared to when participants were focusing on their pain, the utilization of pain coping skills was associated with decreased activation across key components of the pain matrix, including the insula, posterior thalamus, midcingulate cortex and somatosensory areas. In addition, there was greater activation in the anterior cingulate and prefrontal cortices during the coping condition compared with the not coping.

Conclusions

Findings of decreased pain report and altered patterns of pain-related brain activity during the coping condition provide further evidence that people with chronic pain can effectively utilize cognitive coping strategies to modulate their experience of pain. These study results contribute to current understanding of how the analgesia associated with the use of pain coping strategies is represented in the brain.

Reference

1. DIXON KE, KEEFE FJ, SCIPIO CD, PERRI LM, ABERNETHY AP (2007) *Psychological interventions for arthritis pain management in adults: a meta-analysis. Health Psychol* 26(3):241-250.

1.4 | 2.15pm Brain activation associated with evoked and postural pain in people with osteoarthritis of the knee

*Michael J. Farrell,¹ Leonie J Cole,^{1,2} Kim L Bennell,³ Francis Keefe,⁴ Gwendolyn Jull,⁵ Lorimer Moseley⁶

- ¹ Florey Institute of Neuroscience and Mental Health, Parkville, VIC, Australia
- ² Melbourne School of Psychological Sciences, The University of Melbourne, Parkville, VIC Australia
- ³ Centre for Health, Exercise and Sports Medicine, The University of Melbourne, Parkville, VIC Australia
- ⁴ Department of Psychiatry and Behavioural Sciences, Duke
- ⁵ School of Health and Rehabilitation Sciences, The University of Queensland, Australia
- ⁶ School of Health Sciences, University of South Australia, Australia

Introduction

Recent reports have suggested that the brain representation of ongoing clinical pain is different to patterns of regional activation associated with short duration extrinsic noxious stimulation. The objective of this study was to measure brain activity during two clinically relevant pain experiences in people with osteoarthritis of the knee; pain during noxious pressure applied to a tender point on the joint, and ongoing pain associated with prolonged full knee extension.

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Methods

Participants included 28 people with osteoarthritis of the right knee. Quantified pressure stimuli were applied to the knee joint line using a random staircase approach to measure the thresholds for faint, weak and moderate pain. Functional brain images were acquired under three conditions; knee flexed and supported, knee in full extension with wedge under heel, periodic pressure stimulation of the tender region of the knee joint at innocuous, weakly painful and moderately painful levels. Participants rated knee pain intensity after visual cues during scanning. Arterial Spin Labelling (ASL) images were acquired during flexion and extension postures of the knees to provide estimates of regional cerebral blood flow (rCBF). Blood oxygen level-dependent (BOLD) contrast images were acquired during periods of knee pressure stimulation. Estimates of rCBF were contrasted between periods on ongoing pain with periods that were pain free. Regional BOLD signals were tested for significant increases during painful pressure compared to innocuous pressure.

Results

A logical map incorporating voxels activated during pressure pain, voxels activated during postural pain and voxels activated under both conditions showed common responses in bilateral anterior insulae, contralateral posterior insula, posterior mid cingulate cortex, contralateral somatosensory cortex and bilateral cerebellum. Noxious pressure was also associated with activation in the prefrontal cortex and anterior mid cingulate cortex. Postural pain alone showed activation in the contralateral amygdala, bilateral hippocampi, posterior cingulate cortex and rostral medulla.

Conclusions

Painful pressure applied for brief periods at a clinically relevant site is associated with activation in brain regions that also activate during similarly brief noxious stimuli in experiments involving healthy volunteers - the "pain neuromatrix". In distinction to pain elicited by brief noxious stimuli, enduring pain related to posture is associated with activation in hippocampi and amygdala, which are sites receiving nociceptive inputs from spinobulbar pathways, as opposed to the spinothalamic pathways that are the principle inputs to the pain neuromatrix. It is possible that phylogenetically older spinobulbar relays and their cortical targets are involved in the altered mood states that commonly accompany persistent clinical pain.

1.5 | 2.30pm Brainstem anatomical changes in temporomandibular disorder

**Sophie L Wilcox,¹ Sylvia M Gustin,¹ Chris C Peck,² Greg M Murray,² Luke A Henderson¹*

¹ Department of Anatomy and Histology, University of Sydney, NSW, Australia

² Jaw Function and Orofacial Pain Research Unit, Faculty of Dentistry, Westmead Hospital, University of Sydney, Australia

Background and Aims

Chronic pain exists in a number of different forms and the etiologies of many are not well understood. Temporomandibular disorder (TMD) is a musculoskeletal / nociceptive pain condition characterised by continuous dull pain in the muscles of mastication and / or temporomandibular joint. We have previously reported that TMD is not associated with any brain changes¹ however this study only addressed supratentorial brain structures. The brainstem, and in particular the trigeminal sensory nuclear complex, is an important site for craniofacial nociceptive transmission and may be a key region of neuroplasticity in orofacial pain. The aim of this study is to use structural magnetic resonance imaging (MRI) to determine grey matter changes in TMD patients.

Methods

Twenty patients with painful TMD (4 males, mean [\pm SEM] age: 45.7 \pm 2.9), and 26 healthy controls without facial pain (5 males, mean [\pm SEM] age: 52.3 \pm 2.9, age range: 31-87 years) underwent MRI scanning. In each subject, three high-resolution 3D T1-weighted anatomical image sets were collected and averaged. Images were segmented and spatially normalized with a dedicated brainstem template, the spatially unbiased infratentorial template (SUIT). Significant differences in gray matter between pain subjects and controls were determined using a voxel-by-voxel analysis (analysis of covariance, non-corrected $p < 0.005$, cluster size > 10).

Results

In comparison to controls TMD subjects displayed significant decrease in regional gray matter volume in the spinal trigeminal nucleus [mean \pm SEM prob * vol; Controls: 0.156 \pm 0.0025, TMD: 0.117 \pm 0.0015, $t=2.91$, $df=43$ $p < 0.005$]. No significant increases were observed.

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Conclusions

Whilst TMD may not necessarily be associated with higher cortical changes our results suggest the condition may have underlying brainstem changes, specifically in the spinal trigeminal nucleus. These findings highlight the presence of brainstem changes even in conditions thought to be peripherally maintained and may present a new target area for therapeutic treatments.

Reference

1. GUSTIN *et al.*
J Neurosci. 2011 Apr 20;31(16):5956-64

1.6 | 2.45pm Is pain downregulated when you expect a painful stimulus close by?

*Tasha R Stanton,¹ Helen Gilpin,² Charles Spence,³
G Lorimer Moseley¹

- ¹ The University of South Australia, Adelaide, SA and Neuroscience Research Australia, Randwick, NSW, Australia
- ² The University of Nottingham, Nottinghamshire, UK
- ³ University of Oxford, Oxford, UK

Background and Aims

We know that spatial attention modulates pain, but emerging evidence suggests that descending mechanisms might modulate noxious input in a more precise somatotopically-determined manner. In the present study, we investigated whether pain is downregulated when there is a high probability of noxious stimulation on one or the other side of the stimulation site.

Methods

Noxious stimuli were delivered to the non-glabrous skin of the right forearm of 16 healthy, right-handed volunteers (25 +/- 4 years, 5 female) using an Nd-YAP 1034 µm laser. The participants' view of their right arm was occluded. A mirror was situated so that the reflected left arm appeared to participants to be their right arm. Stimuli were delivered to three zones (2 cm wide, 2 cm between zones) on the hidden right forearm. The participants were informed that the stimuli would only be delivered to the two outside zones. Participants rated pain (0 – 100 rating scale) after each stimulus. There were two conditions: Localisation (L), in which the participants judged which of the two zones had been stimulated, and

No-localisation (NL), in which they did not. Skin temperature was measured pre- and post-condition using infrared thermography. We hypothesised that, during L but not NL, pain evoked by stimuli to the middle zone would be lower than pain evoked by stimuli to the other zones (ie a condition x zone interaction). A 2 (condition) x 3 (zone) repeated measures ANOVA was used to evaluate if there was a difference in pain scores between conditions. Post-hoc t-tests were used to evaluate any zone specific differences in pain scores.

Results

The mean (SD) pain ratings during NL were 23.7 (12.2) for the proximal zone, 20.0 (14.0) for the middle zone and 16.8 (13.8) for the distal zone. For L, mean pain ratings were 23.2 (11.9) for the proximal zone, 17.1 (13.9) for the middle zone, and 15.6 (13.5) for the distal zone. There was no effect of experimental condition ($p=0.12$), but there was a significant main effect of zone ($p<0.01$). Specifically, stimuli to the proximal zone were more painful than those to the middle ($p<0.01$) or distal zones ($p<0.001$) and stimuli to the middle zone were more painful than those to the distal zone ($p<0.001$). Furthermore, there was a significant condition x zone interaction ($p=0.04$). Post-hoc tests revealed lower pain scores for the middle zone in L than in NL ($p=0.03$). Pain from stimuli delivered to the distal and the proximal zones did not differ significantly between conditions ($p=0.21, 0.64$).

Conclusions

Our hypothesis was supported, suggesting spatially-specific modulation of the nociceptive system during localisation. That is, pain was reduced during localisation, but only in the middle zone. Possible mechanisms include descending modulation and attention-related cortical mechanisms.

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Free Paper Concurrent Session 2 | 1.30pm - 3.00pm | Nicholls Theatre

Session 2 | Processes and management of musculoskeletal conditions | CHAIR *Dr Julia Hush***2.1 | 1.30pm 6 month results of a randomised controlled trial comparing specific physiotherapy versus advice for people with subacute low back disorders****Hahne AJ,¹ Ford JJ,¹ Surkitt LD,¹ Chan AY,¹ Thompson SL,¹ Hinman R,² Taylor N¹*¹ *Low Back Research Team, Department of Physiotherapy, La Trobe University, Bundoora, Australia.*² *Department of Physiotherapy, School of Health Sciences, The University of Melbourne, Australia.***Background and Aims**

Few treatments have demonstrated clinically meaningful benefits for low back disorders (LBD). Clinical heterogeneity in randomized controlled trials may reduce the likelihood of demonstrating treatment effects. Advice has been recommended for acute-subacute LBD in multiple guidelines.

The aim of the Specific Treatment of Problems of the Spine (STOPS) trials was to evaluate the effectiveness of specific physiotherapy treatment compared to physiotherapy advice for subacute LBD classified into one of five subgroups.

Methods

Participants with subacute (6 weeks-6 months) low back pain and / or referred leg pain were classified into one of five subgroups. They were then randomly allocated to receive either physiotherapy advice or specific physiotherapy treatment over 10 weeks. Primary outcomes were the Oswestry Disability Index as well as leg and back pain intensity (0-10 Numerical Rating Scales). Data were analysed using linear mixed models for continuous outcomes.

Results

Six-month follow up data for all 300 participants will be presented. Analysis of 300 participants (153 men, 147 women) showed a mean(SD) age of 44(12) years and a duration of back and leg symptoms of 15(10) and 11(10) weeks respectively. Linear mixed model analyses of primary outcomes showed significant ($p = .001$)

between-group differences favouring specific physiotherapy treatment over advice: Oswestry 5.39 (95% CI: 2.62 to 8.16), 4.7, back pain 0.87 (95% CI: 0.38 to 1.37) and leg pain 1.02 (95% CI: 0.42 to 1.62). This corresponded to an effect size of 0.4.

Conclusions

Our physiotherapy classification and treatment protocol targeting pathoanatomical and psychosocial factors has the potential to reduce the impact of sample and treatment heterogeneity in clinical trials.

In this trial a classification approach to physiotherapy assessment & treatment was more effective than guideline recommended advice.

2.2 | 1.45pm Multimodal physiotherapy functional restoration versus advice for lumbar disc herniation with associated radiculopathy: A pilot randomised controlled trial**Hahne AJ,^{1,2} Ford JJ,^{1,2} Surkitt LD,^{1,2} Richards MC,^{1,2} Chan AY,^{1,2} Thompson SL,^{1,2} Hinman R,² Taylor N¹*¹ *Department of Physiotherapy, School of Health Sciences, The University of Melbourne, Australia*² *Spinal Management Clinics of Victoria, LifeCare Health, VIC Australia*³ *Department of Physiotherapy, The University of Melbourne, Parkville, VIC Australia***Background and Aims**

Conservative management is commonly attempted for people with lumbar disc herniation with associated radiculopathy (DHR). It is not known which conservative treatments are the most effective for the management of this condition.¹ The aim of this pilot randomised controlled trial was to establish the feasibility and preliminary effects of multimodal physiotherapy functional restoration compared to evidence-based advice for people with subacute DHR.

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Methods

Fifty-four participants with subacute (6 weeks to 6 months duration) DHR verified via imaging and physical examination, were eligible and enrolled after responding to newspaper advertising, public flyers and referrals from healthcare practitioners. They comprised 29 males and 25 females, with a mean age of 46 (SD=12) years, and a mean duration of leg symptoms of 14.1 (SD=6.3) weeks. Random and concealed allocation was used to assign participants to either ten sessions of multimodal physiotherapy functional restoration² or two sessions of evidence-based advice.³ Primary outcomes were back pain and leg pain intensity measured via 0-10 numerical rating scales and activity limitation measured via a modified Oswestry Disability Scale. Between-group differences were measured at five weeks and ten weeks post-randomisation via linear mixed models with adjustment for baseline scores.

Results

All participants were treated in their assigned groups, with baseline and follow-up data available for 100% of the participants. No between-group differences were evident in primary outcomes at five-week followup. At ten-week followup, statistically significant ($p < .05$) between group effects were found in favour of multimodal physiotherapy functional restoration relative to advice for the primary outcomes of back pain (1.44, 95% CI: 0.21 to 2.67) and activity limitation (7.71, 95% CI: 0.42 to 15.00) but leg pain did not reach the level of statistical significance (1.05, 95% CI: -0.34 to 2.45).

Conclusions

This pilot RCT provides preliminary evidence that multimodal physiotherapy functional restoration is more effective than evidence-based advice for people with subacute DHR at ten-week followup for the primary outcomes of back pain and activity limitation, but not for leg pain. Earlier effects (five-week follow up) were not apparent. Fully powered RCTs that compare multimodal physiotherapy functional restoration to placebo, other conservative interventions, or surgery, would be helpful to further evaluate the utility of this treatment for the management of DHR.

References

1. HAHNE AJ, et al. 2010. *Spine* 35: E488-E504
2. FORD JJ, et al. 2012. *Phys Ther Rev* 17: 55-75
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2.3 | 2.00pm Altered response to the Thermal Grill illusion in patients with unilateral sciatica

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Background and Aims

Sensory illusions reveal fundamental features of the nervous system. One interesting illusion for the use of pain research is the thermal grill illusion (TGI); where interlaced innocuous warm and cool temperature bars (thermal grill, TG) produce a paradoxical burning sensation. Previously, we demonstrated that patients with heterogeneous chronic pain had reduced responses to the TGI compared to pain-free controls.

The primary objectives of this study were to investigate:

- (1) Whether response to the thermal grill differs between patients with unilateral sciatica and pain-free controls
- (2) Whether the response to the thermal grill differs between affected and unaffected body regions in patients with unilateral sciatica
- (3) Whether any difference in response for either objective 1 or 2 is also detected by conventional thermal pain thresholds.

Methods

The TGI was investigated in 6 patients with chronic unilateral sciatica and 4 age- and gender-matched pain-free controls, using a custom-built thermal grill, which consisted of 6 interlaced warm and cool aluminium bars. Three temperature combinations (22/38°C, 20/40°C and 18/42°C) were investigated in a randomised order on patients/controls affected/dominant and contralateral unaffected/non-dominant side cheek, palm and calf for 30 s respectively. Participants rated the intensity of pain, heat, unpleasantness and tolerability to the TGI on separate 100 mm visual analogues scales. Additionally, participants rated the intensity of heat on a novel 100 mm thermal colour bar. Conventional heat (HPT) and cold (CPT) pain thresholds were also investigated in a randomised order on participants affected and unaffected side cheek, palm and calf using a Contact Heat-Evoked Potential Stimulator via the Method of Limits. The Beck Depression Inventory-II was administered prior to thermal grill and conventional HPT/CPT testing. Additionally, awakening and 30 mins post awakening salivary cortisol were collected on the morning

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of the study day. Thermal grill responses were analysed with two-way RM-ANOVA. Thermal pain thresholds were analysed with one-way RM-ANOVA and paired t-tests. Results are presented as mean difference and 95% CI for difference.

Results

Preliminary analysis revealed that patients tended to report reduced responses to the TGI on both their painfully affected and contralateral unaffected side compared to pain-free controls. This finding of reduced sensitivity was not consistent when comparing patients and pain-free controls conventional CPTs and HPTs. Both patients and pain-free controls generally reported reduced responses to the TGI on their calf compared to their cheek and palm. A pattern of reduced CPT ($p = 0.088$) (-6.6°C, -14.7°C to 1.4°C) and significantly increased HPT ($p = 0.0025$) (2.4°C, 1.3°C to 3.4°C) was observed in patients affected calf compared to their unaffected calf. This was also similar for patients non-affected body regions, such as the palm.

Conclusions

This preliminary data supports our previous study that the presence of pain blunts the detection of the TGI. Additional patients with unilateral sciatica and age- and gender-matched pain-free controls are currently being recruited.

2.4 | 2.15pm Posttraumatic stress and sensory hypersensitivity can be used to identify sub groups of patients with chronic whiplash

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Background and Aims

The mechanisms underlying persistent pain and disability in patients with chronic WAD are poorly understood and there is a lack of evidence for the efficacy of any single treatment approach in this patient group. This may be due to the heterogeneity of the clinical presentation of patients with chronic WAD which may include psychological sequelae and signs of central hyperexcitability. Symptoms of post-traumatic stress disorder (PTSD) and sensory hypersensitivity have been shown to be related to poor outcome in patients with WAD and evidence exists that the presence of sensory

hypersensitivity may reduce the efficacy of physical management approaches in patients with chronic WAD. The aim of this study was to investigate if it was possible to identify homogeneous sub-groups of patients with chronic WAD based on the presence of sensory hypersensitivity and symptoms of PTSD.

Methods

Data for 331 (221 female) patients with chronic (>3 months) WAD were included in a cluster analysis. Clustering variables were; pressure pain thresholds (PPT) over the tibialis anterior (TA) and cervical spine (Cx), cold pain thresholds (CPT) over the cervical spine and symptoms of PTSD. A hierarchical cluster analysis using Ward's linkage method was performed to identify the optimal number of clusters. Examination of the change in agglomeration coefficient with increasing number of clusters indicated that an optimum solution lay between 2 and 4 clusters. Successive k-means clusters for 2, 3 and 4 cluster solutions were performed and solution validity assessed through calculation of the C-index and comparison of cluster characteristics (PPT, CPT, PTSD, current pain intensity, cervical ROM, SF-36 mental health status).

Results

C-index values for 2, 3 and 4 cluster indicated acceptable clustering for all solutions. Following comparison of cluster characteristics amongst all solutions, the 4 cluster solution was accepted as the best solution. The clusters in the 4 cluster solution were identified as no to mild PTSD and no sensory hypersensitivity (nPnH) no to mild PTSD and sensory hypersensitivity (nPH), moderate to severe PTSD and no sensory hypersensitivity (PnH) and moderate to severe PTSD and sensory hypersensitivity (PH). The clusters with greater levels of PTSD (PH, PnH) were characterised by significantly higher pain and disability and significantly lower self-report mental health status in comparison to the nPH and nPnH clusters ($p \leq 0.002$).

Conclusions

Homogeneous sub-groups of patients with chronic WAD have been identified on the basis of the severity of symptoms of PTSD and sensory hypersensitivity using a 4 cluster solution. This provides further evidence of the heterogeneity of the clinical presentation of patients with chronic WAD and indicates multiple biopsychosocial factors underlying persistent pain and disability. This heterogeneity has implications for both the clinical management of chronic WAD as well as the conduct of future clinical trials for this condition.

2.5 | 2.30pm Low back pain-related beliefs and self-reported practice behaviours among final-year cross-discipline health students

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Background and Aims

Clinicians' beliefs related to low back pain (LBP) influence patient outcomes. Evidence points to clinicians' beliefs and practice behaviours related to LBP which are discordant with contemporary evidence. While aligning beliefs and behaviours with evidence has demonstrated effectiveness amongst practicing clinicians,¹ a more sustainable and cost-effective approach to positively developing cross-discipline workforce capacity and initiating a culture shift in the management of LBP may be to target upskilling towards the emerging health workforce. The aim of this study was to investigate the alignment with evidence of university allied health and medical students' beliefs and clinical recommendations for LBP. The study aligned with the recommendations in the WA Spinal Pain Model of Care.²

Methods

The WA Musculoskeletal Health Network led a survey of final year students in chiropractic, medicine, occupational therapy, pharmacy, and physiotherapy disciplines in four Western Australian universities. Disciplines were selected on the basis of their scope of practice related to LBP in primary care settings. Demographic data, LBP-related beliefs data (Health Care Providers Pain and Impairment Relationship Scale (HC-PAIRS) and the Back Beliefs Questionnaire (BBQ)) and activity, work and bed-rest clinical recommendations

for an acute LBP clinical vignette, were collected between 0-3 months prior to completion of the students' full university training.

Results

602 students completed the survey (response rate 74.6%). Cross-discipline differences in beliefs were observed ($p > 0.001$). Physiotherapy and chiropractic students reported significantly more positive beliefs related to LBP compared to the other disciplines, while pharmacy students reported the poorest beliefs. A significantly greater proportion of chiropractic and physiotherapy students reported guideline-consistent recommendations compared to other disciplines. A one point increase in HC-PAIRs (ie more negative beliefs), was associated with a decrease in the odds of guideline-consistent responses (OR: 0.93-0.96). A one point increase in BBQ (ie more positive beliefs) was associated with an increase in the odds of guideline-consistent responses (OR: 1.05-1.12).

Conclusion

Physiotherapy and chiropractic students demonstrated more positive beliefs about LBP and a greater proportion of these students made guideline-consistent recommendations in response to a patient vignette regarding acute LBP, compared to medicine, pharmacy or occupational therapy students. While domain-specific knowledge and skills necessarily vary between disciplines, more consistent alignment of LBP-related beliefs, attitudes and clinical behaviours across these disciplines may have bilateral benefits for the emerging health workforce and for people with LBP.

References

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2.6 | 2.45pm The impact of posttraumatic stress disorder on physiological arousal, disability and sensory pain threshold in patients with chronic whiplash

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Background and Aims

Whiplash associated disorders (WAD) are a complex condition involving both physical and psychological impairments. Research has demonstrated that persistent posttraumatic stress reactions are often associated with poorer functional recovery, however the specific mechanism through which trauma symptoms may influence pain and disability has not yet been established. The current study investigates the impact of Posttraumatic Stress Disorder (PTSD) on physical and mental health outcomes in individuals with chronic WAD and is the first to experimentally activate PTSD symptoms in order to examine the direct effect of trauma-cue exposure on affect, arousal and sensory pain measures.

Methods

Seventy-two participants with chronic whiplash pain (3 months - 5 years) were recruited through advertising and word of mouth. A mixed experimental design was used to examine differences between individuals with ($n=33$) and without ($n=39$) PTSD at baseline and following exposure to individually relevant trauma-cues. PTSD was diagnosed using the Structured Clinical Interview for DSM-IV (SCID) and symptoms severity was measured using the Posttraumatic Stress Diagnostic Scale (PDS). The primary measure for pain and disability was the Neck Disability Index (NDI) and the SF-36 Health Survey was included as a measure of physical and mental health. Measures compared pre- and post-trauma cue exposure included: numerical ratings scales (0-10) for current pain and negative affect, physiological arousal (heart rate and blood pressure) and sensory pain thresholds for pressure (measured at the cervical spine, tibialis anterior and medial nerve) and thermal pain (cold and heat at the cervical spine). Separate repeated measures ANOVAs were conducted using Group (PTSD/No PTSD) as the between groups variable and Time (pre- and post-trauma cue) as the within groups variable for each dependent variable.

Results

At baseline, individuals with PTSD were more likely to report greater disability, negative affect, pain and physiological arousal and lower sensory pain thresholds than those without PTSD. As expected, activation of PTSD symptoms resulted in greater increases in arousal and negative affect for those with PTSD. Changes in sensory pain thresholds revealed mixed findings with significant hyperalgesic changes in cold and cervical pressure pain thresholds for the PTSD group compared to the No PTSD group following trauma-cue exposure while heat and remote sensory measures revealed minimal changes between or across groups.

Conclusions

Findings from the current study highlight the negative impact of PTSD on both physical and psychological outcomes in WAD. From a clinical perspective, data suggest that patients exposed to trauma-cues may experience anxiety that lowers their threshold to certain pain stimuli, particularly at the site of the injury. Further investigation of effective interventions for this comorbidity is essential and in particular, the treatment of PTSD in the context of chronic WAD appears to be an important area of further investigation.

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Session 3 | Pain measurement and pain management programs | CHAIR Ms Joy Burdack

3.1 | 1.30pm Personalised outcome measurement in persistent pain: Time to let the CAT (computerised adaptive test) out of the bag?

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- ² Division of Occupational Therapy, School of Health and Rehabilitation Sciences, The University of Queensland, Brisbane, QLD Australia

Background and Aims

Pain outcome measures, whether generic or condition-specific, typically consist of long static collections of self-report items. Patients need to consider every item, irrespective of how well matched the items are to their individual function. Computerised Adaptive Testing (CAT) is an innovative psychometric technique that can dynamically select items, from the entire measure, based on responses to earlier items; thereby creating personalised short forms of the original measure that are uniquely tailored to an individual's ability. The aim of this study was to compare the 10-item Pain Self-Efficacy Questionnaire (PSEQ), a common instrument used in pain practice and research, to 4- and 6-item CAT versions of the measure (PSEQ_{CAT4} and PSEQ_{CAT6}).

Methods

Post-hoc CAT simulations were performed with pre-post data from 244 adults (119 male; average 11-point NRS pain intensity: 5.9 (SD=1.69)) attending a tertiary-referral pain management programme. Rasch item parameters (theta: $\mu=0, SD=1$) were applied for the PSEQ_{CAT4} and PSEQ_{CAT6} using the 488 responses. Measure concordance was examined using Pearson's *r*, Intraclass Correlation Coefficient (ICC) and Bland-Altman limits of agreement (95%LoA). The means, effect sizes and proportion of individuals achieving a minimally important improvement (MII >30% increase in self-efficacy) were compared for each version of the measure.

Results

The correlations between the PSEQ and the PSEQ_{CAT4} and PSEQ_{CAT6} were 0.96 (CI:0.95 - 0.96) and 0.98 (CI:0.98 - 0.99) respectively. Similarly, the ICCs were 0.97 (CI:0.96 - 0.97) and 0.99 (CI:0.99 - 0.99). The LoA were -0.69 - 0.60 (PSEQ_{CAT4}) and -0.44 - 0.34 (PSEQ_{CAT6}). The mean difference between the PSEQ and both CATs was less than 0.1SD. The pre- and post-treatment means were -0.20, -0.21 and -0.27 and, 0.23, 0.25 and 0.21 for the PSEQ_{CAT4}, PSEQ_{CAT6} and PSEQ respectively. ESs were similarly 0.62, 0.57 and 0.54. 26.2%, 27.9% and 25.8% of patients attained MII according to the PSEQ_{CAT4}, PSEQ_{CAT6} and PSEQ respectively.

Conclusions

Overall, this study demonstrates, for the first time, that personalised CATs are comparable to the original PSEQ scale, even at around half the length. CATs offer the opportunity for brief, dynamic and personalised pain outcome measures. CATs are likely to have even greater and more practically appreciable utility for longer measures; such applications will be discussed.

3.2 | 1.45pm Concordance between referred conditions and pain charts

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Background and Aims

A staggering 80% of the population will at some point of their lives experience low back pain. Irrespective of this, mainstream medical practices in general have a limited understanding of low back pain and referred pain from the pelvis, sacrum, buttocks etc. For example, force imposed on the low back from a pelvic imbalance or the sacrum initiating torque force on the lower back. In this study we investigated the accuracy of low back pain (LBP) referrals to an interventional pain specialist facility.

Methods

We retrospectively compared the low back pain diagnoses proposed in referral letters from General practitioners (n=104), Neurologist / Neurosurgeon / Orthopedic Surgeons (n=34), Osteopaths (n=6), Physiotherapists (n=9) and Sports Physicians (n=30), with the outcome of pain charts used by the specialist pain unit following evidence based algorithms. Kendall's coefficient for concordance was used with $p \leq 0.05$ considered statistically significant.

Results

Results showed that health professional diagnoses of LBP in referral letters were often subsequently identified by pain specialists as pain arising from the hip, sacrum, pelvis and buttock. In particular, sports physicians and neurologists / neurosurgeon / orthopedic surgeons were the most likely to correctly refer patients for low back pain approximately 50% of the time ($W=0.533$, $p=0.000$, $W=0.541$, $p=0.000$, respectively). General practitioners demonstrated a unanimity with the pain specialist 47% of the time ($W=0.587$, $p=0.000$). Small sample numbers for Osteopath and Physiotherapist referrals prevented conclusive results, however the trend suggested that Osteopaths were the least concordant of all the referral groups ($W=0.00$, $p=0.063$), whilst physiotherapists demonstrated strong agreement and were correct to identify LBP in more than 50% of the time ($W=0.444$, $p=0.046$)

Table 1: Concordance between referred conditions and pain charts

Specialty	No. of low back pain (LBP) referrals identified as LBP by pain charts	Kendall's coefficient for concordance (W value)	Significance (p value)
Sports Physician	14/30	0.533	0.000
Neurologists/Neurosurgeon/Orthopedic	17/34	0.541	0.000
General Practitioners	49/104	0.587	0.000
Physiotherapists	5/9	0.444	0.046
Osteopath	1/6	0.000	0.063

Conclusions

Low back pain is often misdiagnosed, resulting in increased costs to both the patient and society with limited therapeutic benefits. Improvements in low back pain education are imperative for enhanced patient care.

3.3 | 2.00pm Does pain self efficacy predict those who maintain their functional status post a multidisciplinary pain management group

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Background and Aims

Pain can limit an individual's engagement in their functional roles, leading to disability, physical deconditioning, conflict, loss of confidence and disengagement from prior roles. Pain management programmes seek to encourage patients to re-engage with activity despite pain. Pain self efficacy is thought to predict an individual's levels of pain and disability.¹ Typically higher pain self efficacy is associated with a greater belief in ones ability to control pain, perform activities and maintain engagement in tasks over time.²

This study had two aims:

- To investigate whether pain self efficacy and function improved through a pain management programme and were these changes maintained over time.
- To investigate whether high pain self efficacy was associated with a higher level of functional performance.

Methods

83 patients attending an eight week treatment group at the Caulfield Pain Management and Research Centre, an interdisciplinary outpatient chronic pain clinic, were asked to complete measures at admission, completion and six months after treatment completion. Measures included: the Pain Self Efficacy Questionnaire (PSEQ), the Oswestry questionnaire (OCQ), the Canadian Occupational Performance Measure (COPM-Performance and COPM-Satisfaction) and a modified lifting test (Lift). Patients were re-assessed 6 months after completing the programme. A repeated measures ANOVA was conducted to determine if individuals were more self efficacious and functionally engaged by the end of the group input and if these changes were maintained by the 6 month review. A Pearson correlation was conducted to determine if those with a higher level of self efficacy were more likely to score higher in the functional measures.

Results

A repeated measures ANOVA revealed significant improvement from initial to discharge [SEQ, $F(1,51)=21.9$, $p<0.001$, COPMP, $F(1,45)=30.9$, $p<0.001$, COPMS $F(1,45)=41.13$, $p<0.001$, Lift $F(1,45)=11.04$, $p<0.002$, ODQ $F(1,41)=6.26$, $p<0.02$] and this improvement was maintained at review [SEQ, $F(1,51)=2.29$, $p=0.136$, COPMS $F(1,45)=4.76$, $p=0.034$, Lift $F(1,45)=0.002$, $p=0.97$, ODQ $F(1,41)=1.85$, $p=0.18$, COPMP, $F(1,45)=11.52$, $p<0.001$].

Pearson correlations were performed between follow up self efficacy scores and COPMP ($r = .662$, $p < 0.001$), COPMS ($r = .634$, $p < 0.001$) and lifting ($r = .404$, $p = < 0.01$), indicating that those higher in self efficacy were more likely to have higher outcome scores on their functional measures.

Conclusion

The pain management programme demonstrated improvements in function and pain self efficacy and these improvements were maintained over time. The findings also suggested that a higher level of self efficacy was associated with a higher performance in both the subjective and objective functional measures.

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3.4 | 2.15pm Improving outcomes from pain management programs: The contribution of adherence

*M Nicholas, A Asghari, L Sharpe, A Brnabic, B Wood, S Overton, L Tonkin, L Beeston, M de Souza, D Finniss, A Sutherland, C Brooker

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Background and Aims

While pain management programs are accepted as an important component of a chronic pain service, outcomes are variable. Eccleston et al (2009) review of randomized controlled trials, of these primarily CBT-based programs, also found that mostly, effect sizes were small, ranging between 0.2-0.5. The disappointing outcomes have been attributed to interventions being too generic, too brief, and of variable quality (Morley, 2011). Attempts to improve upon these outcomes have included trying different versions of

CBT, such as Acceptance-based methods (McCracken et al., 2007), but they have not been any more effective (Veehof et al., 2011). Recently, our group reported that within an intensive CBT-based program, the best post-treatment results were achieved by those who adhered more consistently to the self-management strategies taught on the program (Nicholas et al, 2012). Since then we have completed a large RCT that evaluated the relative merits of exposure to pain versus distraction from pain within our program. This study included an examination of the contribution of adherence to the self-management strategies during the program to outcomes 1-year later. This is the focus of this paper.

Method

140 patients with mixed chronic pain conditions admitted to a CBT-based pain management program were randomly assigned to also undergo either interoceptive exposure (to pain) or distraction /relaxation. The programs were conducted by experienced multi-disciplinary staff over 3 weeks (115 hours) and follow-ups were at 1-, 6-, and 12-months. Outcome measures included usual pain, disability, depression severity, and medication use. Change in the threat value of pain was assessed by measures of pain catastrophising, fear-avoidance beliefs, pain self-efficacy, and pain acceptance. Results were analysed by MMRM Intention-to-Treat methods.

Results

Significant improvements for time were found on all outcome and threat measures ($P<0.001$). The mean treatment effect size for the outcome measures was in the medium range (0.64; range: 0.42 - 1.00). No significant differences were found between treatment conditions, but those who adhered consistently to their attention strategy had mean treatment effect sizes (on outcome measures) in the large range (0.85; range: 0.55 - 1.05).

Conclusion

The type of attention strategy used by patients made no difference to the outcomes achieved, but consistent adherence to either (with other self-management strategies) was associated with improvements in mean effect sizes from medium to large. These results suggest that improving adherence to self-management strategies could yield better outcomes than focusing on specific techniques.

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3.5 | 2.30pm Seeking empowerment to provide comfort: Strategies used by nurses when caring for patients in severe pain

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Background and Aims

Hospitalised patients continue to experience significant levels of pain.^{1,2} In the hospital, it is the nurse who provides the interface between the patient and multidisciplinary team. Evidence suggests that nurses, who are central to providing effective pain relief, can experience helplessness and anxiety when patients' severe pain persists with implications for their practice.^{3,4,5} The aim of this study was to develop a substantive theory to explain the effects of patients' pain on nurses who work in medical and surgical hospital wards.

Methods

Data were collected from a sample of 33 hospital-based nurses using 30 semi-structured interviews and 93 hours of participant observation. Eleven patients who were experiencing severe pain participated in structured observations. Data were analysed using constant comparison method and three levels of coding to develop substantive theory.

Results

The substantive theory of seeking empowerment to provide comfort explained that nurses experienced a sense of powerlessness when they felt unable to protect patients from the distress of severe pain and promote recovery. In response, they sought to empower themselves by:

1. Building connections with patients and colleagues
2. Finding alternative ways to comfort when pain relief was ineffective
3. Quelling their own emotional turmoil to conserve physical and cognitive resources. Nurses were found to use these strategies progressively as their feelings of powerlessness escalated

Conclusion

This study revealed how hospital nurses' emotional responses to patients in severe pain influence their interactions at the bedside. The identification of strategies used by nurses to empower themselves to provide comfort can inform interventions to support them and their practice. These may include the development of protocols to expedite timely contact with senior personnel; initiatives to promote nurse-patient communication, and ward specific educational programs.

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3.6 | 2.45pm Sex life and the Oswestry Disability Index

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Background and Aims

The Oswestry Disability Index (ODI) is widely used to assess functional disability in patients with chronic low back pain (CLBP). Despite the clause "if applicable", it is anecdotally believed that section 8 (ODI-8 / sex life) is often answered incorrectly: indeed, some versions of the ODI omit ODI-8 altogether. Notwithstanding, one recent study reported ODI-8 response rates of 97%. We aimed to measure response rates to sex life questions, and to validate ODI-8 as a measure of pain-mediated sexual-inactivity.

Methods

N=65 (M 29, F 36) CLBP patients were prospectively offered a battery of 8 appropriate pain related questionnaires in identical order. Questions pertaining to sex life - ODI-8 (pain-dependent) and Sexual Quality of Life (SQOL: pain-independent) - were encountered 1st and 5th in every sequence.

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Results

Despite expected response-attrition with battery progression (response rates for 1st and 8th questionnaires were 100% and 64.61% respectively), response rates for ODI-8 (52.3%) and SQOL (52.3%) were significantly lower than other questionnaires (88.41%, $P < 0.001$). Non-responders to ODI-8 (60.57 ± 13.3 yrs) and SQOL (59.68 ± 13.34 yrs) were significantly older than responders to ODI-8 (47.82 ± 12.17 yrs) and SQOL (48.27 ± 12.76 yrs) ($P < 0.001$ and $P < 0.001$ respectively). Amongst responders, no significant correlation was found between ODI-8 and SQOL ($r[\text{pearson}] = -0.340$, $P > 0.05$). Whilst ODI-8 correlated with pain-related questionnaires, ODI-8 did not correlate with non-pain-related questionnaires.

Conclusions

Contrary to prior reports, half of CLBP patients specifically avoid all sex life questions. Amongst responders, ODI-8 was validated as measuring pain-mediated sexual-inactivity. ODI-8 was therefore treated appropriately: it was either answered accurately (ie in relation to pain [younger patients]) or ignored (respecting the clause "if applicable" [older patients]). No ODI modification is thus required for CLBP patients.

Session 4 | Pharmacological & surgical approaches to pain management | CHAIR *Dr Malcolm Hogg*

4.1 | 1.30pm How an acute pain service helped improve management and cost of the fractured hip journey

**Jane Trinca,^{1,2} Megan Yeomans,¹ Frances Pontonio,¹*

Gayle Claxton¹

¹ *Austin Health, Heidelberg, VIC Australia*

² *Barbara Walker Centre for Pain Management, Melbourne VIC Australia.*

Background and Aims

Fracture to the proximal femur (commonly known as #NOF) commonly results in considerable pain, morbidity and mortality and is a significant cost to the health system as the population ages. Measures to reduce length of stay and complications from this injury are important.

In 2010 data kept by the Victorian Department of Health revealed the length of stay for #NOF at Austin Health (mean 14 days) was significantly longer than many other hospitals.

A quality improvement project was initiated which included collaboration with the Acute Pain Service (APS) who had previously not been involved in the care of this patient group. Many factors were identified requiring improvement including waiting time to surgery, recognition of delirium and prolonged fasting. Poor analgesia was cited by patients and their families as a significant factor in causing distress. This abstract describes the analgesic aspect of this project.

Methods

- Best-practice international guidelines and other published works were examined for utility in respect to analgesia.
- A systematic review of the journey of a patient with #NOF was undertaken from the patient's and clinician's perspective in order to understand deficiencies in analgesia efficacy and safety.

An analgesic pathway was then developed and implemented based on current evidence, practicality, safe and timely prescribing and vigilant monitoring and frequent documentation of pain and sedation. The new pathway included use of routine regional blocks in the emergency department, perioperative use of intravenous fentanyl via a method relevant to the patient's cognitive level, and with ability for nurses to administer boluses of fentanyl for times of planned movement. Step down analgesia was protocol driven.

A Post-implementation analysis was performed and is still underway to determine efficacy of analgesia and incidence of adverse effects from the new regime by analysis of charts, acute pain service daily report and nurse feedback.

Results

Pre-implementation phase analysis revealed that:

1. Published guidelines were only partly useful to aid improvement.
2. Documentation & pain measurement & monitoring was poor.
3. Inadequate analgesia regimes did not address the immediate and changing needs of this patient group.

After Implementation:

1. The emergency department increased their use of regional analgesia from 10% to 90%
2. Documentation during the first 48 hours increased from sporadic to routine 2-4 hourly pain and sedation observations in all patients
3. Intravenous Fentanyl was used as analgesic of choice in over 90% of cases with ability for nurses to administer boluses for lifting and movements with minimal incidence of over-sedation
4. Length of stay was reduced by 5 days

Conclusions

A team approach and commitment was pivotal in the success of this project. Pain services have a significant role in advising and effecting improved hospital practice and enable collection of outcome data. Further analysis will be presented.

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Free Paper Concurrent Session 4 | 1:30pm - 3:00pm | Bradman Theatre

4.2 | 1.45pm A randomized, double-blind, placebo-controlled study to assess the efficacy and toxicity of subcutaneous ketamine in the management of cancer pain

**Janet Hardy, Stephen Quinn, Belinda Fazekas, John Plummer, Simon Eckermann, Meera Agar, Odette Spruyt, Rowett Debra, David C Currow*

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Background and Aims

The dissociative anaesthetic ketamine is widely used for cancer related pain. A Cochrane review concluded that insufficient evidence was available to support its use in this setting.

Methods

This phase III, multisite, double-blind, dose escalation, placebo, randomised controlled study aimed to determine whether ketamine, delivered subcutaneously over three to five days is more effective than placebo, when used in conjunction with adjuvant therapy in the management of chronic uncontrolled cancer pain. Ketamine would be considered to be of net benefit if it provided a reduction in average pain scores by $\geq 2/10$ points from baseline, with limited breakthrough analgesia and acceptable toxicity.

Results

For the 185 participants, there was no significant difference between the proportion of positive outcomes (0.04 (-0.10, 0.18) $p=0.55$) in the placebo and intervention arms (response rates 27% (25/92) and 31% (29/93)). Pain type (nociceptive versus neuropathic) was not a predictor of response. There was almost twice the incidence of adverse events worse than baseline in the ketamine group after day 1 (IRR = 1.95 (1.46, 2.61), $p<0.001$) and throughout the study. Those receiving ketamine were more likely to experience a more severe grade of adverse event/day (OR=1.09 (1.00, 1.18), $p=0.039$). The number needed to treat for one additional patient to get a positive outcome from ketamine was 25 (6, ∞). The number needed to harm, because of toxicity-related withdrawal was 6 (4, 13).

Conclusion

Ketamine does not have net clinical benefit when used as an adjunct to opioids and standard co-analgesics in cancer pain.

4.3 | 2.00pm Positive post-surgical pain experiences for most with distraction providing some effective relief

**Nicola Swain, Jonathon Keast*

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Background and Aims

Following on from work establishing that psychological pain therapies were effective when presented on DVD a clinical trial was undertaken using mindfulness presented on DVD. It was also hypothesized that those people who report higher post-surgical pain might also score highly in measures of anxiety and pain vigilance. Previous research had suggested that preoperative anxiety predicts post-operative pain.¹ Positive Psychology would predict that high happiness and life satisfaction leads to greater health so it was hypothesized that those who scored highly on these measures might also report less pain. Some general measurement of post-surgical pain was also thought to be useful.

Methods

Sixty-one patients who had had surgery in the previous 24 hours and were still in hospital were recruited. Patients were asked about their pain experience and several other related measures (pain anxiety, trait anxiety, pain vigilance, pain interference, happiness, life satisfaction, extraversion). They were then shown a brief DVD that was either a mindfulness script with accompanying photos, or simple music with the same photos. Pain was rated again after the DVD and 24-hours later using a visual analogue scale.

Results

Data on post-surgical pain experiences was gathered showing that patients were suffering from significant levels of pain. After the brief DVD was shown both groups reported a decrease in pain. Both groups also showed a similar decrease in pain 24-hours after the intervention. Correlations were performed on pain experienced and the related pain measures and the only significant correlation was pain interference. On average the worst pain reported in the first 24 hours after surgery was around 6/10 but the percentage of time patients rated they were in severe pain was just 3%. Patients reported they were very satisfied with the pain treatment they were offered in the hospital.

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Conclusions

The hypothesis that a brief mindfulness intervention would outperform an active control was not supported here. Both the intervention and control seemed to lower pain. This supports the role of distraction rather than a specific psychological intervention. Interestingly, the measures used that often correlate with chronic pain showed no correlation with acute pain. More general results show pain was well managed in the post-operative in-patient setting. A previous report suggested 88% of patients suffered from severe pain at some time in the 24-hours after surgery,² this compares to just 3% in the present study.

References

1. VAUGHN F, et al 2007 AORN 85:589-604
2. SVENSSON, I et al 2000
J Pain and symptom management 20: 193-201

4.4 | 2.15pm Pain management: What happens after hospital discharge?

*Ee-Yuee Chan,^{1,2} Fiona Blyth,² Seow-Lee Cheow,¹

Marlene Franssen²

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² University of Sydney, NSW, Australia

Background and Aims

Total knee arthroplasty (TKA) is an extremely painful surgery. Increasingly, hospital stay after the surgery is becoming shorter, shifting the management of acute pain to patients themselves. Inadequate pain relief increases the risk of developing persistent pain. This study aims to determine patients' pain experience, effectiveness of their postoperative pain management and potential barriers to effective pain relief, after hospital discharge.

Methods

This was a prospective survey using a structured questionnaire, administered at week 2 after hospital discharge. The questionnaire was designed using focus group discussions and feedback from clinical experts. The study's inclusion criteria were patients who had undergone TKA for osteoarthritis and discharged home within a week after surgery. Pain severity was determined using the Western Ontario and McMaster University (WOMAC) Osteoarthritis Index pain subscale.¹ The WOMAC measure consists of five items,

with aggregated scores from 0 to 20 (higher scores reflects worse pain). We classified the WOMAC aggregated scores $\leq 6/20$ as moderate to severe pain. The survey also consisted of items on:

- pain medications consumed while at home;
- their effectiveness and associated side-effects;
- non-pharmacological methods for pain relief;
- adequacy of pain management information provided on discharge

Data were analyzed using descriptive statistics with SPSS v.19.

Results

The response rate was 94% (105 participants). During the first two weeks at home, 58% of participants had moderate to severe pain, while almost 40% experienced severe to extreme pain more than half the time. 20% of the participants found their knee pain to be more severe in the first two weeks at home than during the hospital admission period. One-third of the participants took an opioid while at home. Of those with moderate to severe pain, only 36% consumed an opioid. Alarming, 5% of those with moderate to severe pain did not consume any pain medication. Overall, while pain medication provided pain relief for the majority of the patients, a quarter reported only mild pain relief. About 40% experienced pain medication associated side-effects, with almost half of these participants having two or more side-effects. Approximately 91% used non-pharmacological methods such as cold/warm pack for pain relief. Almost half reported moderate to complete pain relief using non-pharmacological methods. While 70% reported that the information on pain medication was adequate, only 22% found the information on non-pharmacological methods for pain relief to be adequate.

Conclusions

Our study highlights that pain management after hospital discharge needs greater attention. For patients undergoing TKA, there was high prevalence of moderate to severe pain and pain medication associated side-effects, under-treatment with potent pain medication after hospital discharge, and inadequate information on non-pharmacological methods for pain relief. These findings have important clinical implications.

Reference

1. BELLAMY et al. *J Rheumatology*. 1988;15(12):1833-1840.

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4.5 | 2.30pm Analysis of the contribution of placebo to the outcome of percutaneous zygapophysial and sacroiliac joint neurotomy

*Geoff Speldewinde, Benjamin Meares

Fellowship of the Australasian Faculty of Rehabilitation
Medicine (Royal Australasian College of Physicians)

Objective

To evaluate whether the placebo response components of patient-reported levels of expectation, hope and desire contribute to a successful outcome for percutaneous radiofrequency thermal neurotomy.

Design

A prospective evaluation of 189 patients who underwent percutaneous radiofrequency thermal neurotomy.

Setting

A provincial community environment in Australia.

Subjects

Patients who tested positive for two consecutive diagnostic blocks and diagnosed with zygapophysial joint pain as set out by the International Spine Intervention Society, who underwent percutaneous radiofrequency thermal neurotomies.

Intervention

Patients underwent percutaneous radiofrequency thermal neurotomies following guidelines of the International Spine Intervention Society.

Outcome measures

Success was determined by a 50% pain reduction scored using the Numerical Rating Scale.

Results

The expectation component had an odds ratio of 0.953 (CI: 0.822-1.104) with a p-value of 0.519. The hope component had an odds ratio of 0.929 (CI: 0.767-1.125) with a p-value of 0.450. The desire component had an odds ratio of 0.819 (CI: 0.642-1.044) with a p-value of 0.107. When all were combined they were less statistically significant except for desire which had an odds ratio of 0.778 (CI: 0.574-1.053) with a p-value of 0.104.

Conclusions

The placebo response comprising patient-reported scores of expectation, hope and desire did not significantly predict success of percutaneous radiofrequency neurotomy for painful zygapophysial joint arthropathy.

4.6 | 2.45pm Pain versus comfort scores after caesarean section: A randomised trial

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³ Women's and Children's Hospital, Adelaide, SA, Australia

Background and Aims

The use of negative words such as, 'sting' and 'pain', can increase patient pain and anxiety. We aimed to determine, how pain scores compare with comfort scores and, how the way pain is assessed affects patient perceptions and experiences post-operatively.

Methods

Following caesarean section, 300 women were randomized prior to post- anaesthesia review. Women were excluded if they were not English speaking, less than 18 years old, were deaf, had an intellectual disability or had a history of chronic pain or opiate abuse. Group P women were asked to rate their pain on a 0-10 point Verbal Numerical Rating Scale (VNRS), where '0' was 'no pain' and '10' was 'worst pain imaginable'. Group C women were asked to rate comfort on a 0-10 point VNRS, where '0' was 'no comfort' and '10' was 'most comfortable'. All women were asked whether the caesarean wound was, bothersome, unpleasant, associated with tissue damage and whether additional analgesia was desired.

Results

Median (IQR) VNRS Pain scores were higher than inverted Comfort scores at rest, 2 (1, 4) versus 2 (0.5, 3) P=0.001, and movement, 6 (4, 7) versus 4 (3, 5) P<0.001. Group P women, were more likely to be bothered by their caesarean section, had greater VNRS 'Bother' scores, 4 (2, 6) versus 1 (0, 3) P<0.001, perceived postoperative sensations as 'unpleasant' (RR 3.05, 95% CI 2.20, 4.23) P<0.001 and, related to tissue damage rather than healing and recovery (RR 2.03, 95% CI 1.30, 3.18), P=0.001. Group P women were also more likely to request additional analgesia (RR 4.33, 95% CI 1.84, 10.22) P<0.001.

Conclusion

Asking about pain and pain scores after caesarean section adversely affects patient reports of their post-operative experiences.

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Session 5 | Pain in children and older people | CHAIR *Dr Susie Lord***5.1 | 1.30pm Parental impact on children with chronic pain: How are parental beliefs reflected by parental behaviours within a cognitive behavioural framework?**

**Tamara Lang,¹ Nancy Jia,² Tiina Janiste,¹ David Anderson,¹ Cindy Chapman,¹ Doanna Png,² David Champion,^{1,2}*

¹ *Sydney Children's Hospital, Randwick, NSW, Australia,*

² *University of New South Wales, NSW, Australia*

Background and Aims

Parents naturally have a high impact on their children, given their role in their child's life. This is particularly the case with chronic pain patients.¹ It is essential to further explore this relationship to improve management for paediatric chronic pain patients. Parental beliefs and behaviours have been linked to disability and poorer functioning in the child.² The aim of this paper is to explore within a cognitive behavioural framework, the relationship between parental beliefs and behaviours and their impact on functioning for children with chronic pain. Specifically, the focus is on parental beliefs, including catastrophising and perception of their child's self-efficacy in managing their own pain and behaviours including protective and minimising behaviours.

Methods

The design of this study was cross-sectional and observational. Seventy-five families from Sydney Children's Hospital paediatric chronic pain clinic completed questionnaires concerning parental behaviours, beliefs, and child outcomes, prior to their initial clinical appointment. Parents completed measures of their perception of their child's self-efficacy, catastrophising about their child's pain, and protective and minimising behaviours. Children completed measures of functional disability and school functioning. Regression analyses were performed to assess the independent and cumulative impact of parental beliefs and behaviours on children's functional outcomes. Finally, correlational analyses were conducted to further elucidate the nature of the relationships.

Results

A significant proportion of the variance in parental protective behaviour was predicted by both low parental confidence in their child's self-efficacy ($\beta = .325, p = .005$) and high parental catastrophising ($\beta = .347, p = .003$). A significant proportion of the variance in child functional disability ($\beta = .276, p = .048$) and school functioning ($\beta = -.405, p = .004$) was then predicted by parental protective behaviour independent of the effects of the aforementioned beliefs (perceived self efficacy and catastrophising). Correlations depicted a model where higher child functional disability was associated with lower parental confidence in their child's self-efficacy ($r = .232, p < .05$), higher parental catastrophising ($r = .275, p < .05$) and parental protective behaviours ($r = .361, p < .001$). Parental protective behaviour was also associated with poorer school functioning ($r = -.390, p < .001$).

Conclusions

These results suggest parental beliefs and behaviour, specifically low confidence in their child's self-efficacy, high catastrophising and protective behaviours potentially impact negatively on child functional outcomes. Furthermore, parental beliefs and behaviours associated with poorer child functioning were closely related to each other. The impact of parent's perceived self efficacy of the child presents a novel contributor to poor outcomes in paediatric chronic pain and presents a novel target for treatment. Interestingly, parental protective behaviours significantly impacted child outcomes independent of beliefs suggesting an important role of behaviour management strategies. Further implications of the results will be discussed.

References

1. PALERMO T, et al. 2009 *Pain* 146: 15-7
2. LANGER, S et al. 2009 *Child Health Care* 38: 169-184

5.2 | 1.45pm Pain and motor restlessness: Prevalence of restless legs syndrome symptoms in chronic pain

*Melita J. Giummarra,^{1,2} Stephen J. Gibson^{2,3}

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Background and Aims

Chronic pain is often experienced as worse in the evening, and associated with increased feelings of restlessness. Indeed, features of chronic pain frequently mimic restless legs syndrome (RLS), a sensory-motor sleep disorder.

RLS has four key diagnostic criteria:

1. An urge to move the legs
2. Reduced discomfort upon movement
3. Symptom onset or worsening at rest
4. More severe symptoms in the evening

This study aimed to characterise RLS-like symptoms in people with chronic pain. We examined whether these symptoms are related to pain severity, interference, and coping.

Methods

One hundred and seventeen people with persistent pain, 18-91 years of age ($M=48$ years, $SD=15$ years; 65 (56%) women), completed questionnaires about their pain, including the Graded Chronic Pain Scale, Brief Pain Inventory, and Pain Catastrophising Scale. They also completed a modified version of the "Restless Legs Syndrome Rating Scale", which asked about RLS-like symptoms in relation to pain. All items were rated on 5-point semantic scales, and included items like "Have you experienced an increase in pain when you are resting"; "Have you felt restless when in pain?"; "How strong would you rate your urge to move the body part in pain?"; "How much relief of your pain/discomfort do you get from moving around"; and "How often do you experience a nocturnal worsening of your pain?".

Results

A principle components analysis with varimax rotation was run on 11 items from the modified-RLS rating scale, which explained 67% of the variance.

The PCA generated four factors:

1. Restlessness and sleep disruption
2. Mental and physical distraction
3. Urge to move
4. Pain relief from movement

F1 scores were positively correlated with greater interference of pain ($r_2=-.56$, $p<.001$), particularly with sleep ($r_2=.87$, $p<.001$) and enjoyment of life ($r_2=-.63$, $p<.001$), pain catastrophising ($r_2=.47$, $p<.001$), age ($r_2=.21$, $p<.05$), average pain intensity ($r_2=.49$, $p<.001$) and pain unpleasantness ($r_2=.58$, $p<.001$). F3 scores were also positively correlated with greater interference of pain ($r_2=.37$, $p<.001$), pain catastrophising ($r_2=.30$, $p<.01$), average pain intensity ($r_2=.37$, $p<.001$) and pain unpleasantness ($r_2=.31$, $p<.001$). F4 scores were negatively correlated with pain interference with mood ($r_2=-.19$, $p<.05$), normal work ($r_2=-.20$, $p<.05$) and enjoyment of life ($r_2=-.23$, $p<.05$), and pain catastrophising ($r_2=-.26$, $p<.01$). Individuals with pain for more than 12 months had significantly higher scores on F1 [$t(107)=4.48$, $p<.001$] and F2 [$t(107)=2.7$, $p<.01$] compared with those with pain for less than 12-months.

Conclusions

A characteristic profile of RLS-like symptoms is observed in people with chronic pain. These symptoms reflect the diagnostic criteria of RLS, with increased restlessness and sleep disturbance associated with advancing age, and with greater duration of pain. RLS-like restlessness symptoms are associated with greater pain interference and maladaptive coping strategies, whereas obtaining relief from movement appears to be protective. While RLS symptoms in chronic pain are usually dismissed as merely a "mimic" of true RLS, it may be that persistent pain nonetheless shares some of the same underlying pathology (eg dopaminergic dysfunction or iron deficiency) warranting targeted treatment.

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5.3 | 2.00pm Paediatric recurrent abdominal pain: Twin family case-control study of heritability and associations

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⁴ University of Melbourne School of Population Health, Parkville, VIC, Australia.

Background and Aims

Paediatric recurrent abdominal pain (RAP) is characterised by the presence of recurrent abdominal pain with no apparent pathology or organic cause. It is known to be associated with other pain syndromes and with anxiety and depression. The aim of this twin family case-control study was two-fold. Firstly, we sought to determine the genetic susceptibility to paediatric RAP. We hypothesised that it is genetically influenced. The second aim was to examine the associations of RAP with other common paediatric pain syndromes, and with anxious depression and sensory sensitivity.

Methods

Standard questionnaires, validated for zygosity, growing pains (GP), migraine, headache and restless legs syndrome (RLS) and screening questions for RAP, Attention Deficit Hyperactivity Disorder (ADHD), iron deficiency, lower back pain (LBP) and chronic pain (including fibromyalgia) were randomly distributed by the Australian Twin Registry to twins aged 3-18 years, their biological siblings and parents. The questionnaires were distributed to 3,909 twin families yielding 1,017 evaluable responses by time of analysis. The assumptions of the classical twin design were applied. To determine heritability, chi-square (χ^2) analyses were used to determine the significance of the difference in the casewise concordance rate between monozygous (MZ) and dizygous (DZ) twin pairs. The case control design, analysed by t-test, χ^2 analyses and correlations, was applied to test the associations between case and control twin individuals and families.

Results

Two hundred and eleven twin families had at least one twin identifying as having RAP. Thirty-three out of 107 MZ twin pairs

were concordant for RAP compared with 17 out of 104 DZ twin pairs. The casewise concordance was 0.47 for MZ pairs and 0.28 for DZ ($\chi^2=6.13$, $P=0.021$). The lifetime prevalence of RAP in mothers, fathers and siblings of case twins was statistically significantly higher than control families ($P<0.001$). Twin individuals with RAP had significant associations with GP, RLS, migraine, headache, chronic pain (including fibromyalgia), iron deficiency, LBP and high anxious depression scores. Significant associations were found between case mothers and maternal migraine, chronic pain (including fibromyalgia) and iron deficiency. Significant associations were also found between case father and paternal headache, and case siblings and sibling headache and ADHD.

Conclusions

Paediatric RAP (recurrent abdominal pain inclusive of subsets) was for the first time shown to be heritable. Collectively RAP has characteristics of a functional pain syndrome, as currently defined, with genetic susceptibility, associations with other common paediatric pain syndromes and with anxious depression.

5.4 | 2.15pm A twin family case-control study on paediatric non-specific low back pain: Investigating heritability and comorbidities

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Background and Aims

Low back pain (LBP) is a common public health concern in childhood. It is highly prevalent and is predictive of LBP in adulthood, highlighting the significant burden that it places on individuals and the healthcare system. There has been little research in the paediatric context on the genetic susceptibility of non-specific LBP. Familial aggregation of LBP in families has been reported, but the

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heritability of LBP in adolescents remains unclear. Therefore, the aims of this twin family case-control study were to test the hypothesis that three-month life prevalence of LBP in adolescents is substantially heritable, and to explore the potential associations between LBP and other functional pain syndromes (FPS), anxious depression and sensory sensitivity at the individual and familial level.

Methods

Data were collected through random sampling of twin families (N=478) from the Australian Twin Registry (ATR) with twins aged 11-18 years (mean age 14.25 years, 49.2% male). Twin families were included if they had completed three validated questionnaires to assess LBP prevalence, associations with other FPS, restless legs syndrome (RLS), anxious depression and sensory sensitivity. Families with at least one twin experiencing LBP for at least 3 months during their lifetime were considered 'case families'. 'Control families' were defined as such if neither twin had ever experienced LBP that lasted for at least 3 months. Chi-square analyses and concordance rates were used to determine heritability, prevalence rates and associations with other disorders of interest. Independent t-test analyses were conducted to explore the potential associations with anxious depression and sensory sensitivity.

Results

Of the 1377 twin families approached, there were 478 (34.7%) evaluable responses by the time of analysis. The LBP prevalence rate in twin individuals was 13.2%. Casewise MZ/DZ concordance rates and odds ratios demonstrated significant genetic influence on the liability to develop LBP ($\chi^2=5.36$, $p=0.038$, $OR=3.24$, 95% CI 1.16-9.05). Familial aggregation of LBP was observed, with significantly higher prevalence in the mothers, fathers and siblings of case families, compared to control families. Strong associations in twin individuals were found between LBP and RLS, headache, chronic pain (including fibromyalgia but not back pain), recurrent abdominal pain, and anxious depression. No significant association was found between LBP and sensory sensitivity in twin individuals.

Conclusions

This study has shown genetic susceptibility to LBP in adolescents including a strong familial aggregation. Previous studies had not shown definite evidence for heritability in paediatric LBP. Further insights into the comorbidities of LBP were found, with several FPS, RLS and anxious depression, consistent with its classification as a FPS according to current concepts.

5.5 | 2.30pm Predictors of sleep quality in adults with chronic pain: A momentary, within-persons perspective

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Background and Aims

Sleep disturbance is commonly reported by people with chronic pain. However, aetiology of poor sleep in this population is not clear.¹

As investigations of factors influencing sleep are likely to improve current interventions, the objective of the study was to find the strongest predictors of sleep quality in adults with chronic pain.

Methods

A convenient sample of fifty participants with chronic pain participated in the study. Participants had been experiencing pain for an average of 13 years with an age range of 33-73 years. Slightly more females participated (61%). Participation involved completing a demographic questionnaire followed by five days of data collection.

Over this period participants wore a tri-axial accelerometer to monitor their daytime activity and sleep at night. Participants also carried a palm hand held computer, with the Experience Sampling Method program installed which administered a questionnaire measuring daytime pain levels, mood, catastrophizing and stress multiple times throughout each day. In order to examine significant predictors of sleep variables including sleep duration, number of awakenings and average awake time a series of two-level hierarchical linear regression analyses were conducted. Average daytime measures of physical activity, fluctuations in physical activity, catastrophizing, mood and stress as well as sleep duration the previous night were entered as level one variables. Patient demographics including age, gender, pain duration and number of pain sites were introduced in the second level.

Results

Results demonstrated higher fluctuations in daytime activity significantly predicted shorter sleep duration ($\beta = -.0002$, $t(81.32)$

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=-2.05, $p = .04$). Furthermore, higher daytime activity levels ($\beta = .027$, $t(88.01) = 1.97$, $p = 0.05$) and a greater number of pain sites ($\beta = .048$, $t(30.41) = 2.48$, $p = 0.01$) significantly contributed to the prediction of higher levels of average awake time. Findings also demonstrated that, females tended to wake up more throughout the night compared to males ($\beta = -.537$, $t(27.15) = -2.95$, $p = 0.007$). Pain, mood, catastrophizing and stress did not significantly predict sleep quality in this sample.

Conclusions

This study is the first to indicate an association between overactivity (activity that significantly exacerbates pain) and poor sleep with both high levels of activity and high fluctuations in activity predictive of sleep quality. Both pacing education and activity scheduling are common treatments to address patterns of overactivity in individuals with chronic pain. It may be beneficial to emphasise these treatment strategies in sleep hygiene programs for adults with chronic pain given associations observed in this study.

Reference

1. MENEFFEE LA et al. 2000 *Pain Medicine* 1: 156-172

5.6 | 2.45pm Clinical register of older patients attending a specialist geriatric pain service

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- 2 *Monash Ageing Research Centre (MONARC), Monash University, Melbourne, VIC Australia*

Background and Aims

Patient Reported Outcomes (PROs) are direct patient reports of their health condition, usually via standardized instruments. The uses of PROs in routine clinical practice include: screening and monitoring tools; facilitation of communication amongst multidisciplinary teams; and monitoring the quality of patient care. PROs are particularly valuable in the context of complex illness such as pain syndromes or chronic disease. We aimed to establish a longitudinal register that integrates PROs with clinical data for patients attending a specialist pain consultation service for older people experiencing chronic, non-malignant pain. This will allow evaluation of services and quality of care, and provide information about complex elderly patients in the community setting. To our knowledge, no such resource exists in Australia.

Methods

Medical and allied health specialties collaborated to determine outcomes. From July 2011 data have been collected at admission and discharge using valid and reliable measures for pain severity (Brief Pain Inventory (BPI) Severity Scale and Visual Analog Scales (VAS)) and its impact on function (BPI Interference Scale), depression (Geriatric Depression Scale), anxiety (State Anxiety Inventory), and quality of life (SF-36). Demographic and clinical data including comorbidities & medication were extracted from the medical record.

Results

Admission data from $n=114$ patients have been collected to date. Patients had an average age of 73 (SD=12) years, 76% were female, 64% spoke English as their first language. Average pain duration was 9.9 (SD=12.3) years (median=5.0 years). The most common pain locations were: back (78.1%), lower limb (77.2%), & upper limb (53.5%).

Pain severity: VAS -now: average 5.1 (SD=3.2); -at worst: average = 8.8 (SD=1.4); -at best: average = 4.2 (SD=2.6) (where 0=none, 5=moderate, and 10=pain as severe as it could be). BPI Severity Scale: average = 6.5 (SD=1.6) (where 0=none, 1-4=mild, 5-6=moderate, and 7-10=severe pain).

Impact on function: BPI Interference Scale: average = 6.9 (SD=1.8) (where 0=does not interfere, and 10=completely interferes).

Geriatric Depression Scale: average = 6.7 (SD=4.1) out of 15. Scores ≥ 5 suggest depression, 64% of patients reported scores ≥ 5 .

State Anxiety Inventory: average = 42.5 (SD=13.9) out of 20-80. Scores ≤ 55 suggest anxiety in older people, 15% of patients reported scores ≤ 55 .

Quality of Life: SF36 -physical health: average = 29.4 (SD=17.7); -mental health: average = 46.2 (SD=23.6) (normative scores for Australians aged 65-74 years [average (SE)]: physical health: 42.8 (0.4), and mental health: 51.3 (0.4)).

The most common comorbidities were: cardiovascular (74.3%), osteoarthritis (61.1%), gastrointestinal (49.6%), neuropathy (40.7%), and depression (40.7%).

The most common pain medications were: opioids (62.7%), paracetamol (61.8%), anti-neuropathic (33.6%), and benzodiazepines (30.0%).

Conclusions

With multidisciplinary collaboration the foundations of a clinical register have been established and data collection has commenced. The register will be used by multiple disciplines for clinical purposes, research projects, and quality assurance activities.

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Free Paper Concurrent Session 6 | 1:30pm - 3:00pm | Swan & Torrens Room

Session 6 | Animals and clinical models of pain processes | CHAIR *Dr Paul Austin***6.1 | 1:30pm Varicella zoster virus (vzv) induced neuropathic pain: Establishment and characterization of a rat model****Vaskar Das,^{1,2} Ai-Leen Lam,¹ Maree T Smith^{1,2}**The University of Queensland, Brisbane, QLD Australia*¹ *Centre for Integrated Preclinical Drug Development (CIPDD)*² *School of Pharmacy,***Background and Aims**

The varicella zoster virus (VZV) remains in the dorsal root ganglia after chicken pox infection. During periods of immunosuppression, it may re-activate to cause shingles. Post-herpetic neuralgia (PHN) is pain that persists for greater than 3 months after the shingles rash has disappeared. It is notoriously difficult to treat and so there is a large unmet need for new treatments to alleviate PHN. The objective of this study was to pharmacologically characterize a rat model of VZV-induced neuropathic pain that was recently established in our laboratory.

Methods

The Ellen strain of VZV was propagated *in vitro* in cultured MRC-5 cells to ~80% confluence. VZV infection of MRC-5 cells was confirmed by RT-PCR, immunohistochemistry (IE-62) and Western blot using an antibody against the VZVgE protein. Adult male Wistar rats were randomized to one of three groups (n=4 for group (i) and (ii), and n=12 for group (iii)). These groups received unilateral intraplantar injections (50 µL) of:

- (i) Phosphate buffered saline (pH7.4, 1mM, control group),
- (ii) MRC-5 cells (7x10⁶ cells/ml; sham group) or
- (iii) VZV-infected MRC-5 cells containing 10⁴ plaque forming units, respectively.

Von Frey filaments were used to define the time course for the development of mechanical allodynia in the hindpaws and to assess the analgesic effects of single bolus subcutaneous doses of gabapentin at 10, 30 and 60mg/kg, morphine at 0.1, 0.5 and 3mg/kg, as well as single intraperitoneal bolus doses of meloxicam at 5, 10 and 20mg/kg and amitriptyline at 5, 10 and 30mg/kg

relative to vehicle. Analgesic testing was performed in VZV-injected rats according to a 'washout protocol' such that each rat received up to five single bolus doses of one agent with a two to three day washout period between doses. The areas under the increase in von Frey paw withdrawal responses (Δ PWT values) versus time curves were estimated using trapezoidal integration for individual rats. Dose-response curves were constructed by plotted mean (\pm SEM) Δ PWT AUC values versus log dose. The ED₅₀ doses were estimated using nonlinear regression (GraphPad Prism™ v5.03).

Results

VZV infection of MRC-5-cells was confirmed by RT-PCR, immunohistochemistry and Western blot analysis. Bilateral mechanical allodynia was fully developed in the hindpaws of VZV-injected animals (paw withdrawal thresholds \leq 6g) by day 7 and this was maintained until at least day 35. Single bolus doses of meloxicam and amitriptyline were inactive in the doses tested but gabapentin and morphine produced dose-dependent relief of hindpaw hypersensitivity. The mean ED₅₀s were 25.0mg/kg for gabapentin and 1mg/kg for morphine respectively.

Conclusion

A VZV-induced rat model of neuropathic pain has been established and characterized pharmacologically. This model is suitable for efficacy profiling of novel agents targeted to improved relief of PHN.

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Free Paper Concurrent Session 6 | 1:30pm - 3:00pm | Swan & Torrens Room

6.2 | 1.45pm Establishment and optimization of a mouse model of multiple sclerosis induced neuropathic pain

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The University of Queensland, Brisbane, QLD, Australia

¹ Centre for Integrated Preclinical Drug Development

² School of Pharmacy, St Lucia Campus

Background and Aims

Multiple sclerosis (MS) is an inflammatory demyelinating disease of the central nervous system (CNS) that causes debilitating pain in many patients^{1,2} in addition to motor and other symptoms. As persistent neuropathic pain particularly in the lower limbs, is often difficult to manage with commonly available analgesics, there is a need for discovery of better drug treatments. However, this requires improved knowledge on the pathophysiology of MS-induced neuropathic pain. Hence, the aim of this study was to establish an optimised mouse model of remitting-relapsing Experimental Autoimmune Encephalomyelitis (EAE) for investigation of the pathobiology of MS-induced neuropathic pain.

Methods

EAE was induced in 4-6 weeks old C57BL/6 female mice by subcutaneous injection of MOG₃₅₋₅₅ (200µg) emulsified in saponin adjuvant (Quil-A) and an intraperitoneal injection of pertussis toxin (200-250ng) as adjuvant and to temporarily open the blood brain barrier. A second, identical injection of pertussis toxin was administered after 48 h. Three different Quil A concentrations were investigated (15, 30 and 45µg). Mice were monitored once-daily over the 60-day experimental period. Daily EAE scores for each mouse were assigned in a 'blinded' manner using a clinical signs scoring paradigm as follows: 0, Normal behaviour; 0.5, limpness of the distal tail region and hunched appearance; 1, completely limp tail or developing weakness in the hindlimbs; 1.5, limp tail and distinct hindlimb weakness recognised by poor grip and unsteady gait; 2, Limp tail with unilateral partial hindlimb paralysis; 2.5, Limp tail and partial paralysis of bilateral hindlimbs; 3, complete paralysis of bilateral hindlimbs; 3.5, complete bilateral hindlimb paralysis and unilateral forelimb paralysis; 4, Quadriplegia; 4.5, Moribund; 5, Death. Animals were euthanized if EAE scores exceeded 2.5. Von Frey filaments were used to assess paw withdrawal thresholds (PWTs) in the hindpaws at weekly intervals over the 60-day disease course. Control mice received

Quil-A and pertussis toxin only. At study completion, animals were euthanized to assess the extent of demyelination in the brain.

Results

In this EAE-mouse model of remitting-relapsing MS, disease symptoms were first observed at 8-14 days post-immunization followed by remission and further relapses. The maximum clinical score for individual EAE-mice was 2 (unilateral partial hindlimb paralysis). The mean clinical score peaked at 1.4-1.8 with disease severity highest in mice administered Quil-A at 45µg. The mean (\pm SEM) hindpaw PWTs for this group decreased from 1.5 (\pm 0.02)g prior to disease induction to 1.06 (\pm 0.03)g by day 28 and 0.89 (\pm 0.03)g by day 53. By contrast, mean (\pm SEM) hindpaw PWT values did not change significantly in the control (non-disease) group. Preliminary immunohistochemical analysis shows demyelination in white matter tracts of brain sections from EAE-mice but not control mice.

Conclusions

An optimized EAE-mouse model of remitting-relapsing MS has been established for investigation of the pathobiology of MS-induced neuropathic pain.

6.3 | 2.00pm Establishment & pharmacological characterization of a cisplatin-induced rat model of peripheral neuropathic pain

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Background and Aims

Chemotherapy-induced peripheral neuropathy (CIPN) is the major dose-limiting side effect of many front-line anticancer drugs.¹ Typically, CIPN is characterized by a glove-and-stocking distribution in the hands and feet with symptoms of paraesthesia, dysaesthesia, allodynia, hyperalgesia, hypoalgesia or pain that is burning, shooting or electric-shock-like.² Knowledge of the pathophysiological mechanisms underlying CIPN is incomplete. Hence, the aim of this study was to establish and pharmacologically characterize a rat model of cisplatin-induced CIPN for future efficacy profiling of novel compounds.³

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Methods

Two groups of adult male Sprague-Dawley rats (200-220g) were administered single bolus intraperitoneal (i.p.) doses of cisplatin at 3 mg/kg once a week for either four or five weeks with cumulative doses of 12 and 15 mg/kg, respectively. Before each injection, 2 ml of sterile saline solution was injected subcutaneously preventing kidney damage via hyperhydration. General animal health including measurement of body weight was assessed daily. Body temperature, haematocrit and urinalysis were assessed once a week. The time courses for development of mechanical allodynia and thermal hyperalgesia were defined by measuring paw withdrawal thresholds (PWTs) and paw thermal thresholds (PTTs) in the hindpaws using von Frey filaments and the Hargreaves apparatus, respectively. Rats with fully developed mechanical allodynia in the hindpaws were administered single bolus doses of gabapentin (3, 6 and 10 mg/kg by oral gavage), morphine (0.3, 0.6 and 1 mg/kg subcutaneous (s.c.)), meloxicam (5, 10 and 20 mg/kg i.p.), amitriptyline (30, 70 and 100 mg/kg i.p.) or vehicle in a 'blinded manner' with a '3-day washout' between successive doses. Dose-response curves were constructed and ED₅₀ doses were estimated using nonlinear regression in GraphPad™ Prism (v5.03).

Results

For rats administered four doses of cisplatin, general health was superior to that of rats administered five cisplatin doses. There was significant mechanical allodynia in the hindpaws ($P < 0.001$ from day 32 to Day 44) as well as thermal hypoalgesia ($P < 0.001$ on day 35) for both cisplatin treatment groups compared with the corresponding groups administered saline injections. In rats with fully developed bilateral mechanical allodynia in the hindpaws (PWTs ≤ 6 g), the mean ED₅₀ values for gabapentin, morphine for the relief of mechanical allodynia were 46.0 (95% CI: 37.4 to 56.5) and 0.82 (95% CI: 0.61 to 1.10) mg/kg, respectively. Meloxicam and amitriptyline lacked efficacy in this model.

Conclusions

In conclusion, an optimized rat model of cisplatin-induced peripheral neuropathy has been established and characterized pharmacologically. This model is suitable for efficacy assessment of novel compounds for improved relief of this pain condition.

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6.4 | 2.15pm Altered thyroid hormone regulation and behavioural change in an animal model of neuropathic pain

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¹ Medical Radiation Sciences

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Background and Aims

Patients experiencing chronic pain also report debilitating symptoms including disturbances in familial and social relationships, altered sleep patterns and fatigue as well as mood and cognitive changes. The co-morbidity of mood disturbance, in a proportion of patients, is now described across a wide range of chronic disease states.¹ Similarly, a 'Low Thyroid Syndrome' is also reported in a proportion of individuals with chronic diseases: peripheral thyroid hormones are low with thyroid stimulating hormone (TSH) in the normal range and evidence of altered central regulation of the hypothalamo-pituitary-thyroid (HPT) axis.¹

A rat model for neuropathic pain has been developed in which both sensory dysfunction and social disability are exhibited.² Following chronic constriction injury (CCI) of the sciatic nerve, behavioural testing has shown altered social behaviours, representing social disability, in a sub-population of animals persisting for at least 16 days. This sub-set of rats have also significantly decreased peripheral thyroid hormones, with no increase in TSH, following CCI.³ These studies aimed to determine whether there were differences in central expression of HPT factors in rats with disordered behaviour following injury.

Methods

Resident-Intruder testing was used pre and post-CCI in male Sprague-Dawley rats: animals were classified as No Disability (ND), Transient Disability (TD) or Persistent Disability (PD) according to previously defined criteria. CCI was performed by loosely tying chromic gut ligatures around the right sciatic nerve. Relative gene expression in total hypothalamic extracts, and immunohistochemical detection of HPT factors in histological sections of the paraventricular nucleus (PVN) were evaluated.

Results

Only rats identified by behavioural change showed changes in hypothalamic gene expression relative to control rats. Relative

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expression of mRNA for TRH was significantly down regulated in the PD rats compared to control rats ($p=0.009$, Mann-Whitney U test). Deiodinase type II was down regulated ($p=0.023$) and deiodinase type III up regulated ($p=0.003$) compared to controls. Specifically in the PVN, numbers of immunoreactive profiles for deiodinase type III-like and thyroid hormone receptor beta-like proteins were decreased in the sub-group with disability compared to the control group ($p=0.031$ and $p=0.011$ respectively, one-way Anova, Dunnett T3 post hoc).

Conclusions

In rats with behavioural change post-injury, down regulation of TRH provides an explanation for the failure of the HPT axis to respond to the post-injury decrease in thyroxine. Decreased local expression of deiodinase type III, resulting in a local increase in T_3 , offers an explanation for down regulation of TRH in the hypothalamic TRH neurons. It is possible that, in a sub-group of animals identified behaviourally, a mechanism resulting in hypothalamic down-regulation of the HPT axis persists following inflammatory injury.

References

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6.5 | 2.30pm Rat models of post-surgical pain

*Sumaiya Shaikh, Matthew Barton, Saad S. Nagi,

Antonio Lauto, David A. Mahns

University of Western Sydney, Sydney, Australia

Background and Aims

Following surgery, the pain that is experienced need not be limited to the site of incision, but can extend to adjacent structures or even more remote sites. In this study, our aim was to develop a model of post-surgical pain that did not include nerve injury.

Methods

All surgery was conducted under anaesthesia (isoflurane 2-5% in 100% O₂) in Long Evan rats. In nerve transection experiments ($n = 18$), the left median nerve was transected, repaired (using a photochemical bonding procedure) and allowed to recover. In sham experiments ($n = 21$), identical surgery was performed,

however the median nerve was left intact (sham). In both cases, identical procedures were used to close the wound. Assessments of motor function (grip force) and sensory function (tactile, cool, warm and noxious heat) were made for up to 90 days following surgery.

Results

One week following nerve transection, animals were unable to grasp with the left paw, and grip strength was significantly reduced in the right paw ($56.4 \pm 20.0\%$, $P < 0.001$). A similar abolition of grip force in the left arm and reduced grip force in the right arm ($78 \pm 26\%$) was observed in the sham animals wherein the median nerve remained intact. Recovery occurred at near constant rate (monotonic manner) reaching full recovery by 90 days in the sham group, whereas recovery in the transection group recovery reached a plateau ~40 days post-surgery (~20-30% of control values) with little additional recovery by day 90. Sensory testing in the distal aspect of paw revealed significant reductions in withdrawal latencies for mechanical (pre: $2.1 \pm 0.5s$, sham: $0.5 \pm 0.2s$, transection: $0.7 \pm 0.3s$; $P < 0.001$) and noxious heating (pre: $5.9 \pm 1.1s$, sham: $2.3 \pm 1.1s$, transection: $1.8 \pm 0.5s$, $P < 0.001$). Notably, these impairments were observed in both the nerve transection and sham groups. A pronounced intolerance to cooling (4-14°C) emerged in both groups that was not observed prior to the surgery. The bilateral tactile and thermal allodynia observed following surgery took 70 days to recover in the sham group, but was delayed by 20 days in the transection group.

Conclusions

Surgery in the upper arm resulted in perturbed sensory function that was expressed bilaterally and extended into the distal forepaws. The surgery-induced changes, even in absence of nerve damage, were sufficient to produce central sensitisation that resulted in generalised hypersensitivity - a phenomenon that manifests in a range of pain pathologies and is often therapeutically intractable.

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6.6 | 2.45pm Investigations into the mechanisms underlying mechanical and cold allodynia with emphasis on the c-tactile fibres

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Background and Aims

We recently demonstrated that low-threshold unmyelinated mechanoreceptors, termed C-tactile (CT) fibres, mediate mechanical allodynia during background nociceptive input (perceptual or otherwise). Conversely, others have argued that, in absence of background pain, CT-fibre activation correlates with a pleasant-touch sensation.

In this study, we pursued the following questions:

- Is tactile modulation of pain, in particular the perceptual effect of CT-fibre activation, influenced by affective attributes and frequency parameters of cutaneous stimuli?
- Can the peripheral neurocircuitry subserving mechanical allodynia be extrapolated to cold allodynia?

Methods

Psychophysical observations were made in 21 healthy subjects. High-precision overtly affective stimuli (sandpaper and velvet fabric) were applied to the skin of anterolateral leg prior to and following infusion of hypertonic saline (5%) into tibialis anterior muscle. Furthermore, an overtly tactile stimulus, ie vibration, was applied at high (200 Hz) and low (20 Hz) frequencies in order to test for frequency-dependent effects on pain modulation. The affective attributes were recorded on a Positive Affect and Negative Affect Scale (+5: most unpleasant; 0: neutral; -5: most pleasant). The overall intensity of pain was reported on a visual analogue scale ranging from 0 (no pain) to 10 (worst pain). These observations were repeated following conduction block of myelinated fibres by compression of sciatic nerve. The peripheral substrate of cold allodynia was examined by applying otherwise innocuous cold stimuli to the skin (with absent myelinated fibres) during underlying muscle pain. The perceptual responses were recorded before and after treating the stimulation site with capsaicin in order to desensitise the TRPV1-expressing (peptidergic) C fibres.

Results

In absence of muscle pain, the mean data (\pm SEM) of triplicate responses demonstrate that all subjects reliably linked sandpaper-stroking to unpleasantness (1.1 ± 0.2 ; $P<0.001$) and velvet to pleasantness (-1.9 ± 0.2 ; $P<0.001$). During muscle pain, this correlation predicted enhancement (baseline: 100%; sandpaper: $128.2\pm 8.2\%$; $P<0.001$) and attenuation (baseline: 100%; velvet: $83.1\pm 6.4\%$; $P<0.05$) of pain, ie allodynia and hypoalgesia, respectively. Furthermore, high-frequency vibration evoked allodynia ($122.7\pm 5.9\%$; $P<0.001$), whereas low-frequency vibration produced hypoalgesia ($77.4\pm 5.1\%$; $P<0.001$). These effects were significant, reproducible and persisted during blockade of myelinated fibres. Preliminary observations on the cold-pain interactions revealed a cognate expression of allodynia - irrespective of the blockade of myelinated fibres - that persisted within the region of desensitised TRPV1-expressing C fibres.

Conclusions

These observations indicate that temporal coding need not be limited to discriminative aspects of tactile processing, but may contribute to the affective attributes of a tactile stimulus, which in turn predispose individual responses towards excitatory or inhibitory modulation of pain. As regards the cold-induced effect, it appears to be mediated by an afferent class, within C-fibre range, that responds to cooling, can contribute to pain processing, but is not dependent upon a functional TRPV1 receptor - all features consistent with the conduct of CT fibres.

Session Abstracts

Wednesday 20 March 2013



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Plenary Session 5 | 9.00am - 10.30am | Royal Theatre | Chair: *Mr Jac Cousin*

9.00am - 9.30am

Pain, language and conceptual change

Dr David Butler

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Conceptual change science, both process and outcome, is not often considered in pain treatment, yet there is no doubt that clinicians need all the help we can get.

The science of learning exists largely in the silo of education, a place where the health silo only tenuously ventures. The research held in education is rich and translatable - the science of convincing a 9 year old that the world is not flat is not much different to convincing a clinician or a patient that all back pain is not made in the back.

Two clear pain science related conceptual change backlogs exist; one between science and clinicians' concepts and behaviours and another between clinicians' and patients' concepts and behaviours. Both feed off each other.

Some of the key features of effective conceptual change appropriate to both backlogs are presented. In particular, the application to the clinician-patient change pathway in the area of therapeutic neuroscience education is discussed. Features include attention to change variables in learner, teacher, context and message domains, pathways to deep and superficial learning, importance of prior knowledge, motivation, contextualisation and the language of change.

The language of change forming the basis of therapeutic neuroscience education is metaphorical (eg motion is lotion) and can be and has been developed to enhance effective conceptual change. It also forms the bulk of patients' expression of symptoms and perhaps can be classified from simple equalising metaphor ("it's like a rusty hinge") to catechretic metaphor as patients seek to objectify what is often not objectifiable and give it voice ("the back is a bit fragile"). Prognostic metaphor ("it's totally stuffed

mate"), invasive ("like a knife in there"), disembodiment ("the arm doesn't feel like mine") and orientational ("the pain goes up and around") are other kinds of metaphor. Analysis of metaphor, encouraging and enhancing emerging appropriate metaphor, dealing with blocked metaphor ("I've told you it's bone on bone in there") and enhancing freedom of expression may be as important as analysis and management aimed at enhancing freedom of expression of movement and sensitivity.

9.30am - 10.00am

Attention to pain and its disabling consequences

Professor Geert Crombez

Ghent University, Gent, Belgium

The experience of pain is the result of a complex dynamic system that codes, transports and processes nociceptive signals. The relationship between nociceptive information and pain is profoundly affected by affective and cognitive factors. A key role is played by attention, a mechanism by which sensory events are selected and enter awareness. Research reveals that pain, as a biological hard-wired signal of bodily threat, demands attention and interferes with cognitive functioning.

I will first review the experimental and clinical literature on the effects of pain on attention and memory. Using a neurocognitive model of attention to pain,¹ I will address how and when attention to pain is paid. In that model two modes of attentional selection are distinguished: bottom-up and top-down selection. Bottom-up selection corresponds to an unintentional stimulus-driven capture of attention by pain. Important features for bottom-up selection are novelty, intensity, saliency and probably also threat. Top-down selection is a goal-directed process that prioritizes information relevant for current actions. This is achieved by modifying the sensitivity of stimulus-specific neural responses, ie, by amplifying the activity of neurons that respond to relevant stimuli, and by inhibiting activity of those that respond to irrelevant stimuli.

We will illustrate the working of top-down processes in the situation when individuals adopt a goal that is related to pain (eg to avoid and control pain), and in the situation when individuals adopt a goal that is not related to pain (eg to accomplish a rewarding task despite pain).²

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10.00am - 10.30am

New insights into central pain processing and neuroplasticity

Professor Jürgen Sandkühler

Medical University of Vienna, Center for Brain Research, Austria

Neurons in spinal dorsal horn lamina I play a pivotal role for nociception that critically depends on a proper balance between excitatory and inhibitory inputs from primary afferent nerve fibres, spinal interneurons and from supraspinal descending pathways. About 30-40% of all neurons in spinal dorsal horn are in fact inhibitory. In the nociceptive system inhibition serves five essential functions as outlined in Table I (Sandkühler, 2009). Neuropathy, chronic inflammation and trauma change the properties of inhibitory systems and may impair the functions of endogenous antinociception. Impaired inhibition may become the primary cause for chronic pain.

In addition to impaired inhibition, enhanced excitation in the spinal cord also contributes to pain amplification. We found that synaptic transmission can be amplified for prolonged periods of time at the first synapse in nociceptive pathways between C-fibre

afferents and spinal dorsal horn lamina I neurons. We discovered three distinct forms of synaptic long-term potentiation (LTP) at C-fibre synapses: Induced by a) high frequency discharges in C-fibres (Ikeda et al., 2003), b) low frequency discharges in C-fibres (Ikeda et al., 2006) and c) independent of C-fibre activity after abrupt withdrawal from opioids (Drdla-Schutting et al., 2012). These forms of LTP likely underlie activity induced hyperalgesia and opioid withdrawal-induced hyperalgesia respectively.

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Table I (modified from Sandkühler (2009))

Role of inhibition	Mechanism of action	Delayed effect	Pain type upon failure
Muting	Inhibition of nociceptive dorsal horn neurons and interneurons driving those	Silencing Principal Pain Neurons in the absence of noxious stimuli	Spontaneous pain
Attenuation	Pre- and postsynaptic inhibition of nociceptive spinal dorsal horn neurons	Proper response level of Principal Pain Neurons to noxious stimulation	Hyperalgesia
Limiting	Inhibition of excitatory interneurons which cross somatotopic borders	Limiting spread of excitation to somatotopically appropriate areas	Radiating pain Referred pain Mirror-image pain
Separating	Inhibition of excitatory interneurons linking Aδ-fibre input to nociceptive specific neurons	Inhibition of excitatory crosstalk between sensory modalities	Allodynia
Preventing	Reduced Ca ²⁺ influx into nociceptive spinal dorsal horn neurons	Blocking Ca ²⁺ -dependent signalling pathways engraving memory traces of pain	Chronic pain

11.00am - 11.30am

Managing pain in wounded warriors: Battlefield to bedside and back home

Dr Rollin M. Gallagher

Deputy National Program Director for Pain Management, VA Central Office

Co-Chair, Pain Management Working Group,

Health Executive Council of the Departments of Defense and Veteran Affairs

Director for Pain Policy Research and Primary Care, Penn Pain Medicine

Clinical Professor of Psychiatry and Anesthesiology, University of Pennsylvania,

Pain Medicine Service, Philadelphia VA Medical Center

Pain following traumatic battlefield injury has been studied in wars dating back at least to the 19th century; but until the recent Middle East conflicts, little has been learned about pain's longitudinal course and outcome and its optimal management.

Today military and veteran health systems must manage the life consequences of severe traumatic bodily injuries, formerly fatal in earlier conflicts, and the common musculoskeletal injuries incurred by repeatedly carrying heavy loads over multiple deployments. Care must also manage common co-morbidities such as brain injury, post-traumatic stress, and social disruption associated with persistently dangerous environments and multiple exposures.

In a series of studies of injured soldiers and marines we are learning about the experience of pain and new models of pain measurement and management as warriors transition from battlefield to bedside and back home:

- 1) Impact of an acute pain service delivering care to injured soldiers (N=71) in a British combat support hospital in Afghanistan;
- 2) Soldier-reported (N=110) pain and emotional experiences during air evacuation from the battlefield to Germany prior to transport to Walter Reed National Medical Center (WRNMC) for definitive care;
- 3) Longitudinal outcomes of pain, quality of life, PTSD and depression, from severe battlefield limb injuries (N>300) and the impact of early advanced regional analgesia (RA);
- 4) Impact of these injured warriors on models of pain management in the largest health system in the United States, the combined 150 plus military and veteran hospital and outpatients treatment facilities.

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Plenary Session 6 | 11.00am - 12.35pm | Royal Theatre | Chair: *Prof Maree Smith*

BONICA LECTURE

11.30am - 12.00 noon

Losing your inhibitions: Pain is all about the gain

Associate Professor Philip Siddall

*Department of Pain Management, HammondCare,
Greenwich Hospital, Greenwich, NSW, Australia and
Sydney Medical School - Northern, University of Sydney,
NSW, Australia*

*“ It is now generally agreed that impulses
in nociceptive afferents arriving at the first central synapse
are not reliably automatically transmitted
with a fixed gain to excite central cells. ”*

So said Patrick Wall, possibly one of the greatest contributors to the field of pain, nearly thirty years ago.¹

It is usually hard to go much beyond what Patrick Wall has said, even 30 years ago. During this lecture, I will review the evidence for a concept that he articulated and now lies at the heart of our understanding of pain mechanisms; a concept that has profound implications for how we see and treat pain.

We almost universally recognise that pain is not an experience that is dependent simply on the unregulated transmission of afferent nociceptive impulses along defined pathways. What is fascinating is the accumulating evidence that suggests that afferent excitation and transmission is possibly the least important contributor to the experience of pain. Rather, levels of inhibition at many levels of the neuraxis appear to be the chief determinant of pain intensity. This means that pain is more about the status of inhibitory tone or in more electronic terms, the level of gain, than it is about the strength of afferent signals.

This means that understanding the levels of inhibitory function within the nervous system is a crucial component of understanding and treating pain conditions. A pure focus on understanding and

blocking signals arising from nociceptive or neuropathic generators has little chance of success.

This lecture will first focus on evidence derived from one of the best examples of pain in which there is a mismatch between peripheral inputs and pain perception - neuropathic pain following spinal cord injury. Evidence will be presented from the work of our own group as well as others that demonstrate that neuropathic pain following spinal cord injury is associated with loss of inhibition at both spinal and supraspinal levels. This loss of inhibition may be caused by both direct trauma to the cord and subsequent neuroplastic changes and is a major factor in the development of pain.

However, spinal cord injury could be regarded as a specific and possibly extreme example. Further evidence will be presented that indicates that inhibitory dysfunction is a feature across a wide range of persistent pain conditions. This suggests that inhibitory dysfunction should not be regarded as a distinct entity that is either present or not present and confined to one group of conditions or some people. Instead, the level of inhibitory tone or gain operates along a continuum in all people with pain and influences the processing of afferent input and ultimately the experience of pain.

These findings have clear implications for treatment. Agents that directly influence inhibition are amongst the most effective agents that we have available. Unfortunately at present their side effect profile due to their widespread inhibitory effects limits their usefulness. Many stimulation techniques also act on inhibitory pathways and can be an effective option but again currently have limited usefulness for the bulk of people with pain. Psychological interventions that directly or indirectly manipulate cortical function and thus directly influence inhibitory pathways have huge potential for changing the gain within the nociceptive system and thereby reducing the intensity of pain. Does our current understanding of pain mechanisms suggest that this is the way of the future?

Reference

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Wednesday 20 March 2013

Plenary Session 6 | 11.00am - 12.35pm | Royal Theatre | Chair: *Prof Maree Smith*

PHD SCHOLARSHIP PRESENTATION

12.00 noon - 12.10pm

Pain induced synaptic plasticity in the amygdala

**Ms Sarah Kissiwaa, Elena Bagley*

Department of Pharmacology, Sydney University, NSW Australia.

Background and Aims

Acute pain provides important warnings about dangers in our environment. However some clinical conditions produce persistent pain that outlasts the nociceptive stimuli and its useful role. The persistence of pain beyond the nociceptive stimulus suggests that, there are plastic changes in pain pathways that remain after the nociceptive stimulus has stopped and drive the expression of persistent pain states. A better understanding of the cellular physiology of pain-induced plastic changes in pain pathways will result in better therapeutic approaches to persistent pain. One synaptic pathway that is critical for persistent pain is the spino parabrachial amygdala pathway. This pathway delivers nociceptive information to the central nucleus of the amygdala (CeA) and is critical for the development of persistent pain states. Ablation of this pathway prevents the development of two hallmarks of persistent pain states, mechanical allodynia and thermal hyperalgesia. The CeA is also critical for pain processing, morphine and endogenous analgesia and also receives information related to emotional affect. Thus, the CeA is well placed to integrate the sensory and affective components experienced by sufferers of persistent pain.

This project aims to define how a brief or persistent nociceptive stimulus changes the synaptic properties of the parabrachial inputs to the amygdala. We will determine the synaptic changes produced by a brief nociceptive stimulus as these changes are likely to be representative of the initial synaptic changes that occur in development of persistent pain. We will also examine whether a persistent nociceptive stimulus changes the synaptic properties of the parabrachial-CeA synapse.

Methods

We will use whole cell patch clamping to define the synaptic responses of the parabrachial-CeA pathway in acute brain slices taken from male Sprague-Dawley rats (3-6 weeks) that have undergone brief (using noxious heat) or persistent (using Complete Freund's Adjuvant) stimuli.

Results and Conclusion

This work will define how a nociceptive stimulus changes the synaptic properties of a synapse critical for the development of persistent pain. It will also define the differences in plasticity produced by a brief versus a persistent nociceptive stimulus. This data will allow us to define the synaptic changes that initiate or underlie the transition from acute pain to a persistent pain state. A better understanding of this transition may provide the necessary information to prevent people from developing persistent pain.

12.20 noon - 12.30pm

Progress with the National Pain Strategy

Ms Lesley Brydon

Chief Executive Officer, Painaustralia

The National Pain Summit held in Canberra three years ago was the exciting beginning of what has become a global movement to improve the quality of life of millions of people living with pain, including 3.2 million Australians.

In the current fiscal climate, the Federal government has been reluctant to embrace the recommendations of the strategy, however there have been some very positive developments. These include the announcement of state-wide pain plans in Queensland and New South Wales and initiatives in Western Australia and Victoria to integrate pain services into existing healthcare programs. This represents a total investment by state governments of over \$75 million.

Now, Medicare Locals throughout the country have begun to develop primary care pain services and community networks, as they identify the priority health needs of their constituents. There have also been significant initiatives to provide education and training for GPs, trainees and under-graduates.

With this has come increasing interest from the media in the issue of chronic pain and a gathering momentum for change.

Painaustralia Chief Executive Officer, Lesley Brydon, will report on these developments and her outlook for the future.

Wednesday 20 March 2013

Topical Concurrent Sessions 3 | 1.30pm - 3.00pm

3A Pain education

Bradman Theatre

CHAIR | *Mr Lester Jones*

La Trobe University, VIC

PRESENTERS

*Dr David Butler, Neuro Orthopaedic Institute and
University of South Australia, SA*

*Mr Lester Jones, Physiotherapy Department, La Trobe
University, VIC*

*Assoc Professor Philip Siddall, University of Sydney and
HammondCare, NSW*

There has been intense research interest in pain mechanisms in recent decades. Consequently, knowledge about pain has grown substantially. However, contemporary views of pain in the research community have not necessarily been transmitted to people managing patients with pain, nor are patients being exposed to ideas that could influence their experience of pain. Clinicians and patients get information through varied sources, but education is possibly the most powerful method to convey new knowledge about pain. This session will include three presenters who will discuss the state of the art of pain education in varied contexts. David Butler will expand on themes presented in his earlier plenary lecture to address issues of relevance for the education of patients. Lester Jones will provide insights into the development and delivery of pain education within the curricula of undergraduate programs for future clinicians. Phil Siddall will discuss postgraduate education for clinicians with a special interest in pain and reflect on the role of the International Association for the Study of Pain in the provision of education.

3B Pay attention! Why we focus on what we do and why it hurts

Ballroom

CHAIR | *Dr Tiina Jaaniste*

*Department of Pain and Anaesthesia, Sydney Children's
Hospital, NSW*

PRESENTERS

*Professor Geert Crombez, Department of Experimental-Clinical
and Health Psychology, Ghent University, East Flanders, Belgium*

*Dr Tiina Jaaniste, Department of Pain and Anaesthesia, Sydney
Children's Hospital, NSW*

*Ms Carolyn Berryman, Neuro Orthopaedic Institute, Body in
Mind Research Group, University of South Australia, SA*

Attention is the primary mechanism by which we experience hurt. It is attention that enables nociception to reach awareness and interrupt activity. Why then, can't we manage our attention better so that we hurt less? Why do some people benefit from focussing on the painful experience rather than focussing away? Is it too late to manage attention once the pain becomes chronic? How does attentional capacity change in chronic pain? Is it simply a reflection of working memory deficit or cognitive impairment? How cognitively impaired are chronic pain patients anyway? Can attentional changes, working memory and cognitive impairment be shifted? Should we approach this differently for adults and children? Why are pain patients treated in "Pain Management Centres" and not "Attention Management Centres"?

This session draws from the latest theories and research relevant to attention, working memory, cognitive impairment and pain to shed light on the above questions and to provide a provocative, clinically relevant overview of how attentional factors impact on pain experience, assessment and treatment. The presenters have demonstrated clinical experience and expertise in attentional mechanisms in pain; attention, coping and pain during development, and; working memory and cognitive impairment in chronic pain.

3C Work as a therapeutic intervention and not just an outcome

Nicholls Theatre

CHAIR | *Ms Fiona Thomas*

Caulfield Pain Management and Research Centre, VIC

PRESENTERS

Ms Suzanne Abrahams, *Epworth Hospital, VIC*

Ms Beth Vella, *Caulfield Pain Management and Research Centre and Caulfield General Medical Centre, VIC*

Ms Fiona Thomas, *Caulfield Pain Management and Research Centre, VIC*

There is a growing understanding that individuals engaged in productive work roles (paid or voluntary) tend to have better health outcomes. However there is a tendency by clinicians and patients to see work as a key outcome of success rather than a component of the overall therapeutic process.

Encouraging individuals in pain to see the engagement in productive roles as part of healthy well-being has many challenges both within a compensatory system, a public health and welfare system and from a mental health perspective.

The topical session will examine the concept of work and its many dimensions including paid, volunteer, community and family. The inherent barriers to re-engaging in work including physical, social, psychological, environmental and community issues will be discussed. The potential therapeutic advantages of encouraging participation in "work roles" within the constraints of system pressure will be explored.

Finally the session will attempt to provide practical strategies to developing work readiness and engagement within the persistent pain population and the environments they interact within.

3D Pain-centred approaches to cancer pain

Swan & Torrens Room

CHAIR | *Dr Melanie Lovell*

Greenwich Hospital, HammondCare and Sydney Medical School, NSW

PRESENTERS

Dr Melanie Lovell, *Greenwich Hospital, HammondCare and Sydney Medical School, NSW*

Professor Jane Phillips, *The Cunningham Centre for Palliative Care and The University of Notre Dame, NSW*

Mr John Stubbs, *Cancer Voices Australia, NSW*

Pain is one of the most feared consequences of a cancer diagnosis and impacts adversely on the patient, their family and community. The management of cancer pain is complex and multifaceted and frequently poorly addressed. An interdisciplinary approach to cancer pain management involving the patient and their family is recommended. Incorporating evidence-based recommendations within the context of individual clinical circumstances and individual's knowledge attitudes and beliefs is challenging. This session seeks to report on a national project to develop and implement a person-centred clinical pathway for cancer pain. This session summarises the barriers and facilitators to cancer pain management and presents a solution focussed clinical pathway to improve pain management in individuals with cancer.

Wednesday 20 March 2013

Topical Concurrent Sessions 3 | 1.30pm - 3.00pm

3E Pain and human performance

Sutherland Theatre

CHAIR | *Professor Lorimer Moseley*

University of South Australia, SA

PRESENTERS

Mr Peter Blanch, *Cricket Australia, QLD*

Assoc Professor Craig Purdam, *Australian Institute of Sport, ACT*

Dr Bronwen Ackermann, *Discipline of Biomedical Science,
Sydney Medical School, The University of Sydney, NSW*

Pain is a fundamentally bodily experience - we feel it somewhere - and it is a potent protector of body tissue. In this sense, pain is a phenomenon that serves to promote our well-being. But what if our well-being seemed to depend on over-riding pain, on pushing ourselves to superhuman physical limits?

This session will focus on pain within the context of elite physical performance, from the serious recreational to the professional.

The three speakers each bring a different angle to the problem:

Peter Blanch is Manager of Sports Science and Medicine at the Cricket Australia Centre of Excellence. He will discuss the relevance of modern theories of pain and pain rehabilitation within the elite sporting context.

Craig Purdam is Deputy Director (Athlete services) at the Australian Institute of Sport. He will discuss the enigmatic problem of tendon pain and its relationship to pathology and performance, and current treatment approaches.

Bronwen Ackerman is president of the Australian Society for Performing Arts Healthcare and on the Board of Directors of the Performing Arts Medicine Association (PAMA), North America, the leading international organisation in the field of music medicine, and will discuss 'The show must go on' - contributions to the high prevalence of playing-related chronic pain in professional musicians and current approaches to best management.

3F Vulvodynia and chronic pelvic pain

Menzies Theatre

CHAIR | *Dr Susan Evans*

*Gynaecologist, pain medicine physician (private practice),
Adelaide, SA, Australia*

PRESENTERS

Dr Catherine Drummond, *Vulval Dermatology,
Canberra Hospital, ACT*

Dr Ross Pagano, *Private Practice Gynaecologist and
Obstetrician, VIC*

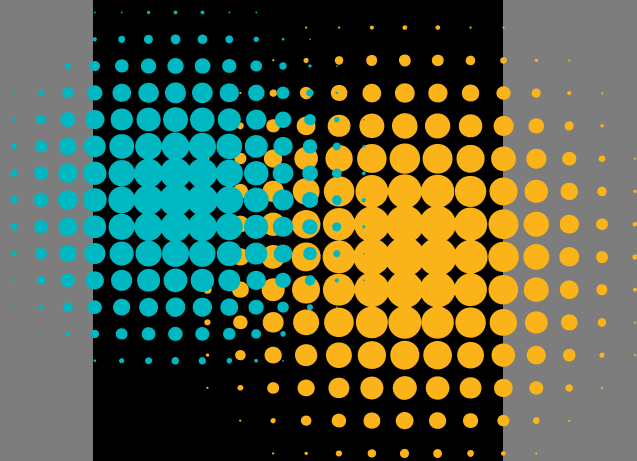
Ms Michelle Martin, *Pain Unit, Royal Adelaide Hospital, SA*

Dr Patricia Neumann, *The Pelvic Floor Clinic, SA*

In the Global Year Against Pain focussing on Pelvic Pain this session will allow participants to explore the often complex issues surrounding female chronic pelvic pain through the often under-recognised issue of vulvodynia. Whilst the session will focus on the dermatological and gynaecological aspects of vulvodynia there will be a broadening of assessment and management through the psychological and physical domains of these chronic pain conditions.

Poster Presentations

2013
AUSTRALIAN
PAIN SOCIETY
33RD ANNUAL
SCIENTIFIC
MEETING
PERSISTENT
PAIN:
A NATIONAL
CHALLENGE



Poster Presentations

1. Paramedic management of patients with persistent pain: A new perspective on a current concept

Janelle White

*University of Tasmania, Sydney Campus, NSW, Australia and
University of the Sunshine Coast, Sippy Downs, QLD, Australia*

Background and Aims

Paramedic practice has undergone a major paradigm shift in recent years from 'Ambulance Officers' with a blood pressure cuff driving people to hospital to 'Paramedics' awaiting professional registration with a broad and diverse skills set. While vocational entrance programs remain available, tertiary education is now the expectation for entrance into paramedic practice, evidenced by new entry pathways into state ambulance services.

Paramedics are well educated in the assessment and treatment of acute nociceptive pain utilising a range of pharmacological options (ASNSW, 2012). Pain education generally focuses on the physiology of acute pain and its pharmacological relief. In a review of current state ambulance service protocols there is a lack of education, understanding and treatment options involving persistent pain (QAS, AV, AT, ASNSW, 2011/2012). Best practice when managing patients with persistent pain utilises a biopsychosocial approach and a multidisciplinary team (National Pain Strategy, 2010). A new model for paramedic education concerning persistent pain is based on this biopsychosocial approach with an innovative twist.

Methods

The biopsychosocial approach to treatment of persistent pain involves the incorporation of multifaceted yet shared connections between the biological, psychological and social contexts (Mitchell & O'Donnell, 2011). This approach has a dual purpose when deciding how best to care for the patient with persistent pain and to understand their journey.

An innovative educational program for paramedics was developed based on the biopsychosocial approach to treatment of persistent pain. This program, focuses on persistent pain, incorporates traditional (biological) learning linked with deep self-reflective learning (psychological and social) leading to the exploration of personal / contextual attributes that may contribute to a paramedics' treatment methodology.

Results

The biopsychosocial framework for Paramedic Education for Persistent Pain (PEPP model) includes important components to enable a paramedic to effectively care for patients with persistent pain:

- **Biological** | Educate paramedics regarding the pathophysiology of persistent pain as a disease and develop a physiological and clinical understanding / knowledge of it.
- **Psychological** | Paramedics explore what pain means to them, their beliefs and attitudes about persistent pain, examine negative stereotypes, and their subsequent response to patients with persistent pain.
- **Social** | The social context of the paramedic's workplace is examined to equip paramedics with the tools required to advocate effectively for the patient with persistent pain.

Conclusions

An integrated biopsychosocial approach using the 'PEPP' model to educate paramedics regarding persistent pain can positively influence the experience for both the paramedic and the patient offering successful management strategies in the out-of-hospital setting.

References

1. ASNSW (2012) *Ambulance Service NSW, Protocols and Pharmacology, 2012.*
2. AT (2011) *Ambulance Tasmania, Protocols & Pharmacology, 2012.*
3. AV (2011) *Ambulance Victoria, Protocols & Pharmacology, 2012.*
4. MITCHELL, D & O'DONNELLI, M (2011) *Psychological Interventions for Chronic Pain: A Rapid Review.*
5. *National Pain Strategy (2010) National Pain Summit Initiative.*
6. QAS (2011) *Queensland Ambulance Service, Protocols and Pharmacology, 2012.*

2. Patient-directed shared decision-making pain management in a private community setting

Geoff Speldewinde

Capital Rehabilitation and Pain Management Centre, Deakin, ACT, Australia

There is growing awareness internationally of the importance of promoting and improving the way that patients self-manage their chronic diseases as a way of reducing a steadily burgeoning financial and social costs of chronic diseases.

Self-management has been defined as "the tasks that individuals must undertake to live with 1 or more chronic conditions. These tasks include having the confidence to deal with medical management, role management, and emotional management of their conditions."

At Capital Rehabilitation in Canberra we recognised that our patients, besides having the common 3 month wait to see the Pain Physician, were having difficulty developing 'ownership' of their pain-related problems and were doing nothing additional about it

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during this waiting period. We were impressed with the outcomes of vastly reduced patient waiting times and high patient satisfaction with the Fremantle neurobehaviourally-based Rehabilitation Model of pain management developed so innovatively at the Fremantle Hospital Pain Clinic.

As a result of numerous familiarisation visits by the range of health professionals at Capital Rehabilitation to be involved, and after several iterations, we have developed our customised and novel version of the Fremantle STEPS program adapted to our private practice non-hospital environment.

In outlining the content and process of our "Functioning With Pain" triaging and educational program we will present the statistically significant improvements in work-participation, depression, physical function, fear of movement, pain levels (worst and least pain), and catastrophising that have occurred in the 3 month pre-specialist 'waiting period' simply attributable to the Functioning with Pain program.

3. Opioid risk assessment: Screening of patients at first presentation to a pain clinic

**Nicole Muscat, John Monagle, Mark Heynes, Jodie Worrell
Southern Health, Clayton, VIC, Australia*

Background and Aims

General practitioners frequently initiate and manage opioids in patients with persistent pain. Their effective use involves a balance between benefits and risks.

Methods

New patients admitted to a multidisciplinary pain clinic, approximately half referred by general practitioners, were assessed on a voluntary basis for risk factors of opioid misuse using the Opioid Risk Tool, and the relationship with their opioid regime was characterised.

Results

Almost a third of patients were identified as moderate to high risk for opioid misuse. There was no relation between risk category and likelihood of being prescribed a regular opioid.

Conclusion

All patients taking opioids should be assessed for the risk of misuse. In managing patients with persistent pain, general practitioners are ideally placed to perform this assessment, which will assist with appropriate opioid management.

4. Prevalence of low back pain and factors affecting low back pain in general population

Abdulbari Bener

*Department of Medical Statistics and Epidemiology,
Hamad Medical Corporation and Department of Public Health,
Weill Cornell Medical College, Doha, Qatar and
Department of Evidence for Population Health Unit,
School of Epidemiology and Health Sciences,
The University of Manchester, Manchester, UK*

Background and Aims

Low back pain is an important clinical, social, economic and public health problem affecting the population indiscriminately. The aim of the study was to determine the prevalence of low back pain (LBP) and factors affecting the low back pain

Subjects and Methods

This is a prospective cross-sectional study. A representative sample of 2742 patients was approached and 2180 subjects agreed to participate in this study (79.5%). The survey was conducted among primary health care visitors during the period from March to October 2012. The questionnaire collected the socio-demographic details and low back pain characteristics.

Results

Of the studied subjects, 52.9% were males and 47.1% were females. The prevalence of low back pain in the study sample was 59.2%. The low back pain was more prevalent among women (53.9%) compared to men (46.1%). The proportion of LBP was more higher in the age group 45-55 years old in both the genders (37.6% & 36.4%). Nearly half of the studied men (45.7%) and women (45.2%) with LBP were overweight with a significant difference ($p < 0.001$). Nearly half of the female patients with LBP were housewives (50.4%), while most of the male patients were in clerical jobs. There were statistically significant differences observed between men and women in terms of LBP and BMI ($p < 0.001$), nationality ($p < 0.001$), marital status ($p = 0.005$) and occupation ($p < 0.001$). Prolonged standing (46.9% vs 38.7%; $p = 0.003$) & pain worsening in the evening (53.4% vs 44.2%; $p = 0.003$) were more frequent among LBP female patients, whereas lifting heavy weights (37% vs 25.3%; $p < 0.001$) and trauma (33.4% vs 24.9%; $p = 0.001$) were more common among men.

Conclusion

The study findings revealed that the prevalence of low back pain was higher among women than men. Low back pain was observed more frequent among older people with overweight. Prolonged standing had a significant effect on LBP in women and lifting heavy weights in men.

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5. Anxiety, depression and somatisation symptoms in low back pain patients

Abdulbari Bener

*Department of Medical Statistics and Epidemiology,
Hamad Medical Corporation and Department of Public Health,
Weill Cornell Medical College, Doha, Qatar and
Department of Evidence for Population Health Unit,
School of Epidemiology and Health Sciences,
The University of Manchester, Manchester, UK*

Aim

The aim of the study was to determine the prevalence of low back pain (LBP), investigate the socio-demographic characteristics of the patients with LBP and examine its association with psychological distress such as anxiety, depression and somatisation.

Subjects and Methods

This is a prospective cross-sectional study. A representative sample of 2742 patients were approached, of whom 2180 patients agreed to participate and responded to the questionnaire (79.5%). The survey was conducted among primary health care visitors during the period from March to October 2012. The first session of the questionnaire collected the socio-demographic details and low back pain characteristics. Then, the General Health Questionnaire (GHQ-12) was used to identify the probable cases. Anxiety was assessed with Generalized Anxiety Disorder Scale (GAD-7). Depression was assessed with depression module (PHQ-8). Somatisation was measured with somatic symptom module of the PHQ-15.

Results

Of the studied subjects, 52.9% were males and 47.1% were females. The prevalence of low back pain in the study sample was 59.1% with 46.1% among men and 53.9% among women. There were statistically significant differences between the subjects with LBP and without LBP in terms of nationality ($p < 0.001$), gender ($p < 0.001$), occupation ($P < 0.001$) BMI ($p < 0.001$), monthly income ($p = 0.002$), smoking habits ($p = 0.003$) and type of bed mattress ($p = 0.02$). Somatisation (14.9%) was observed more in low back pain patients, followed by depression (13.7%) and anxiety (9.5%) disorders. The most frequent symptom reported was "headaches" (41.1%) and "pain in your arms, legs or joint" (38.5%) in somatic low back patients. For LBP patients with depression, the most frequent symptoms were "thinking of suicide or wanting to hurt yourself" (51.4%) and "feeling down, depressed or hopeless" (49.2%), while "not being able to stop or control worrying" (40.2%), "worrying too much about different things" (40.2%) and "feeling afraid as if something awful might happen" (40.2%) were the most common

anxiety symptoms in low back pain patients. Mental health severity was significantly higher in low back pain patients compared to patients without low back pain : anxiety (9.5% vs 6.2%; $p = 0.007$), depression (13.7% vs 8.5%; $p = 0.002$) and somatisation (14.9% vs 8.3%; $p < 0.001$). Also, the mean score of anxiety (8.1 ± 2.9 vs 6.4 ± 3.3 ; $p < 0.001$), depression (10.1 ± 3.3 vs 9.0 ± 3.5 ; $p = 0.001$), and somatisation (16.1 ± 4.3 vs 14.2 ± 5.6 ; $p < 0.001$), was significantly higher in low back patients.

Conclusion

The study findings revealed that the prevalence of low back pain in the community was comparable to other studies. Furthermore, psychological distress like anxiety, depression and somatisation were more prevalent among low back pain patients compared to patients without low back pain.

6. Prolotherapy for sacroiliac joint pain

***Bruce Mitchell, Adele Barnard, Anton Kolosov**

Metro Spinal Clinic, Melbourne, VIC, Australia

Background and Aims

Prolotherapy is a non-surgical treatment for chronic musculoskeletal pain in damaged ligaments or tendons. Prolotherapy involves injecting a soluble solution such as dextrose into the ligament and tendon sites, inducing a localized inflammatory response, stimulating the growth of collagen fibres and connective tissue. This process is thought to thicken, tighten and strengthen weakened tissue. A previous study of 25 sacroiliac joint (SIJ) pain patients reported a functional improvement of 76% following prolotherapy.¹ This study set out to investigate the efficacy of Prolotherapy in treating SIJ instability.

Methods

Over a 2.5 year period, we assessed 102 patients who underwent prolotherapy treatment around the SIJ. This process involved outlining the deep interosseous ligament with contrast material under direct fluoroscopy, which was then injected with 1.5ml Narapin 0.75% and 10ml 50% glucose over multiple sites. This procedure was repeated on average three times, at 6-week intervals. Outcome measures included pain relief, back/hip/pelvic strength, Oswestry disability index (ODI), patient satisfaction and analgesic use.

Results

Half the patients reported improved stability of $69.7 \pm 23.0\%$. Similarly, more than half of patients described pain relief of $74.8 \pm 19.2\%$. Pain relief is dependent on improved stability $r = 0.617$; ($p \leq 0.0001$). Whilst no patients reported pain relief without improved stability, 13/102 patients reported improved stability

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without pain relief. Where patients reported an improvement in both pain relief and strength, percentage of improvements directly correlated with one another $r = 0.875$; ($p \leq 0.0001$). In turn, improvement in pain relief directly correlated with a number of prolotherapy injections in a series $r = 0.422$; ($p \leq 0.01$), as well as the number of injected sites during each treatment (eg unilateral, bilateral etc.) $r = 0.289$; ($p \leq 0.05$). A trend depicting a reduction in ODI was observed with patients reporting pain relief also scoring lower on their post-prolotherapy ODI questionnaire.

Conclusions

These findings suggest that prolotherapy can be an effective treatment for increasing stability and strength and decreasing pain in patients with SIJ pain.

Reference

1. MITCHELL *et al*,
Australian Conference of Science and Medicine in Sport,
March 2011

7. Double blind randomised control trial of active and inactive transcutaneous pulsed radiofrequency treatment for shoulder pain booked for surgery

Murray Taverner

Frankston Pain Management, Frankston, VIC, Australia

Background and Aims

Shoulder pain is the third most common musculoskeletal problem and accounts for 5% of general practitioner consultations. Up to 40% of patients are still in pain despite 12 months of existing conservative and surgical treatments. Our study was designed to determine if Transcutaneous Pulsed Radiofrequency Treatment (TCPRFT) can reduce shoulder pain.

Methods

264 patients on the waiting list for shoulder surgery were invited over a 15 month period to participate in this doubled blinded, randomised control study of Active or Inactive (sham) TCPRFT delivered using a standard protocol. Change of pain at night, at rest, with activity and Brief Pain Inventory function and Oxford shoulder scores of the treated shoulder after a single TCPRFT were assessed at four weeks and twelve weeks. Data was analysed using intention to treat and no change from baseline was assumed for missing data.

Results

51 patients participated in the study and complete 1 month and 3 month data sets were available on 47/51 subjects. The 25 who received active treatment showed a statistically significant 24/100 (sd28) reduction in pain at night and 20/100 (sd25) reduction of pain with activity at four weeks and 18/100 (sd29) and 19/100 (sd25) reductions at twelve weeks compared to baseline. The NNT (number needed to treat) to reduce pain at night by $>20/100$ at 4 weeks was 3.5 and at 12 weeks was 7.8. The NNT to reduce pain with activity by $>20/100$ at 4 weeks was 4.8 and at 12 weeks was 5.9. Average Brief Pain Inventory function scores were significantly 1.2/10 and 1.3/10 lower at 4 and twelve weeks respectively in the active treatment group from baseline of 4.9/10. The Oxford shoulder score was unchanged at 4 weeks but was significantly 7.7/48 higher at twelve weeks increasing from 22.1 to 29.8. Pain at rest was not improved by active treatment. The 26 who received sham treatment showed no significant improvement in pain at night, with rest or with activity, brief pain inventory and oxford shoulder scores at either assessment.

Table 1. Sham versus Active treatment Baseline, 4 and 12 week pain scores: At Night, At Rest and With Activity

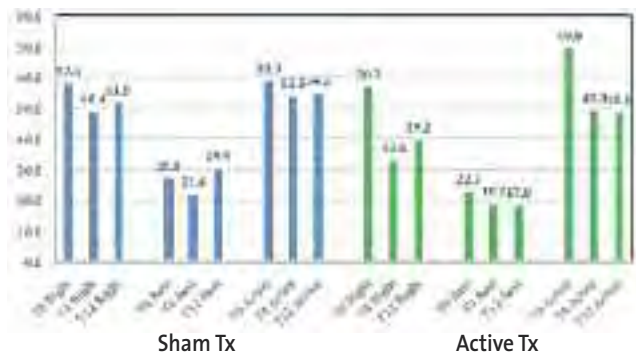


Table 2. Sham versus Active treatment Baseline, 4 week and Twelve week Brief Pain Inventory- Function (BPI-F) and Oxford Shoulder Score (OSS) results.

	Sham BPI-F	Sham OSS	Active BPI-F	Active OSS
T0	3.9	27.3	4.9	22.1
T4weeks	3.4	25.9	3.7**	22.2
T12weeks	3.4	26.6	3.6**	29.8**

Conclusions

We note a sustained significant reduction in pain at night, pain with activity and functional improvement at twelve weeks with active but not sham treatment. This study confirms the benefit seen in our original study of knee pain and justifies future research to examine the mechanisms and optimal treatment parameters for transcutaneous pulsed radiofrequency treatment.

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8. Radiofrequency neurotomy for sacroiliac joint pain: A prospective study

*Bruce Mitchell, Tomas MacPhail, Bronwyn Neill, Paul Verrills,
David Vivian, Adele Barnard

Metro Spinal Clinic, Melbourne, VIC Australia

Background and Aims

The sacroiliac joint is one of major sources of chronic low back pain, implicated in 15-30% of all cases. While radiofrequency neurotomy (RFN) is the interventional treatment of choice for spinal pain originating from the facet joints, its efficacy in the treatment of sacroiliac joint pain has not been fully investigated, and its long term efficacy is unknown. This study set out to assess the pain relief in patients following sacroiliac joint RFN. It also set out to investigate the impact of sacroiliac joint RFN on patient analgesic use, and to measure patient overall satisfaction with the treatment.

Methods

A cohort of 179 patients underwent fluoroscopically guided sacroiliac joint RFN of the dorsal and lateral branches of S1-S3, the medial branch of L4 and the descending branch of L5 nerves. All patients had previously had their diagnosis of sacroiliac joint pain confirmed by controlled comparative analgesic blocks of relevant nerves. Their pain levels were assessed before and after the procedure using the 11-point numerical rating scale. After receiving RFN, patients were divided into four different groups: 1) patients followed up at <6 months (n = 31); 2) 6-12 months (n = 77); 3) 1-2 years (n = 39); and 4) >2 years (N = 32). Pain measurements taken at follow up time points were compared with the pain measurements prior to RFN procedure. A Likert scale was also administered to measure alterations in analgesic use, changes in paid employment status and patient satisfaction.

Results

The results of the study with data collected over five years revealed the following: 1) 58.1% of patients followed up at <6 months; 2) 66.7% of patients followed up at 6-12 months; 3) 81.6% of patients followed up at 1-2 years; and 4) 71.9% of patients followed up at >2 years reported pain relief following RFN procedure. A decrease in analgesic use following the procedure was reported by 43% of patients. Overall, 66% of patients were satisfied with their outcome post RFN and no complications occurred.

Conclusions

Whilst not a permanent means of treating chronic low back pain, sacroiliac joint RFN is a temporary treatment for chronic pain that can facilitate patient mobilization and thus rehabilitation.

Considering the improved pain relief reported by patients that underwent sacroiliac joint RFN in the present study and the reported low risk of complications, sacroiliac joint RFN may be considered a good pain management option for patients suffering low back pain originating from the sacroiliac joint, particularly in cases where conservative treatment has failed.

9. Which factors predict treatment pathway destination in a multi-disciplinary pain management centre?

*Firth J,^{1,2} Johnson A,¹ Robinson P,² Giummarra MJ¹

¹ Caulfield Pain Management and Research Centre;
Caulfield Hospital, Alfred Health, Melbourne, VIC, Australia;

² Faculty of Health Sciences, La Trobe University, Melbourne,
VIC, Australia

Background and Aims

Clients with chronic pain (CP) are facing long waiting times to access services at CPM&RC. The judicious allocation of staff and service resources is important to improve this situation. This presentation aims to investigate factors that predict treatment pathways (TP) for clients referred to Caulfield Pain Management and Research Centre (CPM&RC).

Methods

Retrospective cohort design including 395 clients (55% females) of mean age 51(s.d.15) years with chronic pain (CP) who had completed treatment at CPM&RC. Baseline factors (*age, gender, funding source, pain location, pain severity, pain interference, depression, income source, cultural background, Schedule 8 (S8) medications (opiates), pain duration and years in education*), obtained from screening information at the time of referral were considered for their influence upon participation in one of three possible TP groups: M group (individual medical treatments only); I group (individual treatments only including medical and allied health); and G group (group pain management programs). Groups were initially examined using Chi square (χ^2) tests of independence to determine which individual factors were significant for membership in TP groups. Multinomial logistic regression, with treatment category group as the dependent variable and the factors which were significant from the χ^2 analysis (*age, gender, funding source, income source, S8 medications, duration of pain and years in education*) as predictor variables, was then used to determine the extent to which a model including these factors could be used to accurately predict membership of the treatment category groups.

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Results

Significant effects on TP destination were demonstrated with age ($\chi^2(6, N = 374) = 20.63, p < .05$), gender ($\chi^2(2, N = 374) = 9.00, p < .05$), funding source ($\chi^2(2, N = 374) = 9.70, p < .05$), income source ($\chi^2(10, N = 362) = 15.390, p = .000$), S8 medications ($\chi^2(2, N = 339) = 15.09, p = .001$), pain duration ($\chi^2(6, N = 374) = 13.7, p < .05$), and years in education ($\chi^2(2, N = 268) = 7.388, p < .05$). Pain location, pain severity, pain interference, depression and cultural background did not have significant effects. A model containing the significant factors was able to predict membership to G group correctly 78% of the time. The variables of gender ($\chi^2(2) = 10.71, p = .005$); age ($\chi^2(6) = 17.4, p = .008$); and S8 medications ($\chi^2(2) = 6.45, p = .04$) contributed significantly to the final model.

Conclusions

Baseline factors can be utilised to predict clients likely to participate in group pain management programs. Clients who are on S8 medications (opiates) at the time of referral to CPM&RC are less likely to participate in multidisciplinary group pain management programs. The findings suggest that there is scope to reduce the waiting time to access group pain management programs if clients on S8 medications are identified at the time of triage and provided with an alternative treatment pathway for their initial management.

10. Enteses: Are they the source of CLBP/Failed Back Surgery Syndrome (relieved by periosteal LA & steroid or 5% dextrose injections and dorsal ramus injections) and where TRPV1 receptors may exert effects?

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Background and Aims

Chronic Low Back Pain (CLBP) is a complex and difficult problem in Primary Care. Many of the underlying pathophysiology of musculoskeletal pain are still unclear. Recent studies have started to identify the Enteses as a separate organ with interesting possibilities for future management options. Bogduk observed damaged, free end peripheral receptors appearing like 'microneuromas', (in electron microscopy), 25 years ago and postulated that all musculoskeletal pain may be neuropathic causing the dorsal ramus syndrome. Recent work has identified that TRPV1 Receptors are very important in the burning sensation in chronic neuropathic pain and Dr J Lyftogt (NZ) has shown that simple Dextrose 5% injections (neural prolotherapy) can stop that immediately.

Methods

Since 2002, the author has now treated over 3000 patients presenting with CLBP Syndrome by 'peppering' injections to the periosteum at the identified tender enteses and injecting the associated dorsal rami with local anaesthetic and methylpredisone injections with surprising immediate pain relief and restoration of back function. In 2004 a group of 33 single blinded patients were in 3 groups (needle + LA + Steroid, Needle +LA or Needle only), who have been followed-up over 9 years, and the results compiled and analysed. Since 2012 the author has added the Neural Prolotherapy and 'Sweet Caudal' 5% dextrose epidural protocols these and other Chronic Low Back Pain Patients and found extra immediate benefits.

Results

The 9 year follow up of 33 patients are detailed with 80% demonstrating 85% or better improvement in their identified Quality of Life measurements tabulated, with overall benefits in excess of 85% found in over 3000 patients, treated since 2002. Some patients have been pain free for periods of 1 to 7 years before representing for further injections. The added benefits of Neural Prolotherapy and/or Sweet Caudal Epidurals in Chronic Low Back Pain patients since October 2012 are similarly detailed.

Conclusions

CLBP is still the main 'bugbear' for Primary Care Physicians with Failed Back Surgery Syndrome complicating it, but with few simple management options readily available. Enteses have the highest concentration of A delta and C fibre receptors and when damaged they may become neuropathic. The combined results of Enteses (periosteal) injections, use of 5% dextrose injections via neural prolotherapy and simple 5% dextrose caudal epidurals; creates more treatment options in the hand of Primary Care doctor. Most importantly, the skills needed can be quickly taught to any doctor, making them all readily available to those who work in isolated or rural areas or where cost and/or delays in access to specialists, is complicating their treatment.

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11. Neuropathic features of low back pain are more common in primary care than recognised: A systematic review

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Background and Aims

There is a clinical and societal imperative to accurately identify and treat neuropathic pain because compared with other forms of chronic pain, neuropathic pain has a more adverse impact on quality of life, sleep, psychological distress and healthcare costs. While studies on the prevalence of neuropathic pain in the general population have recently been published, data on clinical cohorts of patients with back pain have not yet been reviewed. The aim was to conduct a review of the prevalence of neuropathic features of back pain in clinical populations.

Methods

We searched the following databases from their inception to 30 July 2011: EMBASE, CINAHL, Medline, and all EBM REVIEW databases. Studies were included if they reported any aspect of neuropathic pain from a clinical cohort of low back pain of non-serious pathology. There was no restriction of study design. Prevalence estimates with 95% confidence intervals were calculated for each study. Pooled estimates of the point prevalence of neuropathic features of back pain were calculated for three clinical sub-groups using inverse variance and random effects analysis (RevMan 5.1).

Results

The search located 54 papers of which ten were included. Each study used one of three screening instruments for neuropathic pain: painDETECT, the LANSS or the DN4. In primary care the prevalence estimate is 17% (95%CI: 14 to 21%); in mixed clinical settings the estimate is twice as high at 34% (95%CI: 31 to 37%), and in tertiary care higher still, at 53% (95%CI: 49 to 58%).

Conclusions

Neuropathic mechanisms may be involved in back pain more commonly than currently considered, particularly in primary care even in the absence of radicular signs and symptoms. Timely identification of neuropathic pain involvement may enable greater opportunity to select appropriate therapeutic targets. Interpretation of these results in the context of current literature challenges the clinical validity of the diagnostic triage paradigm for back pain.

12. The development of a follow up 'refresher day' service to enable continuing support post discharge from a pain management program

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Background and Aims

The Refresher Day program (RDP) was developed in response to the need to ensure optimal clinical outcomes for patients following discharge from the 2 week 'Recharge for Life' (RFL) persistent pain program at St Vincent's Hospital, Brisbane. As Phillips (1993) notes, the implementation of a follow up (FU) program post pain program participation can improve clinical outcomes for self management, and a patient's overall satisfaction with the level of service delivered.

Methods

The RDP was developed in mid 2012. Initially, information was collected from numerous pain services around the Greater Brisbane Region via phone and email concerning whether each individual service offered a FU program and program particulars if pertinent. Potential barriers towards the implementation of an effective service were discussed and problem-solved. Patients completed a questionnaire following the RFL program regarding whether they considered a FU day to be beneficial. Past patients were contacted via phone at 3 and 6 months post discharge to ascertain information regarding their management since discharge. From this information and following numerous consultations, the Pain Program Staff were able to design and implement the RDP. Participants who attended the RFL program were asked to voluntarily return for the RDP.

Results

The Multidisciplinary Team developed a 1 day, 7 hour program entitled 'Refresher Day'. RDP inclusions were as follows:

- 30 minute informal participant interaction time;
- 30 minutes of Tai Chi;
- 1 hour interactive introductory session;
- 2 by 45 minute education sessions (Psychology and Occupational Therapy);
- 2 hours for individual contact time with the pain team;
- 30 minutes of dedicated relaxation;
- Final 30 minute interactive session.

Education was delivered via power-point presentation and semi-structured discussions. Topics covered included a revision of self-management strategies, as well as the identification of general and personal barriers to their implementation. Others included strategies for increasing motivation, how to prevent

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relapses through the construction of a personal plan and providing new ideas to supplement the patients' self management repertoire. The final session was intended to reflect on the information provided through the day and to identify future goals in the self management of the patient's pain. A resource bag was assembled for patient distribution.

Conclusions

Since its implementation, 6 RDP's have been completed. Currently no clinical outcome measures have been instituted, which potentially poses barriers toward evaluating clinical outcomes resulting from RDP attendance. The inclusion of these measures would therefore be useful in determining the exact efficacy of the RDP. There is further scope to expand the RDP to include family education and address other topics at various learning levels, as well as the development of a FU service specifically targeted at the adolescent demographic.

Reference

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Post discharge follow-up care: Effect on patient outcomes. Journal of Nursing Care Quality, 7 (4), 64-72. Retrieved from http://journals.lww.com/jncqjournal/Citation/1993/07000/Postdischarge_follow_up_care__Effect_on_patient.11.aspx

13. Comfort First: A program to reduce pain and distress associated with medical procedures for children with cancer and their families

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Background and Aims

The Comfort First Programme (CFP) is an initiative of the Children's Cancer Centre at The Royal Children's Hospital, Melbourne. This interdisciplinary team provides children and their caregivers with early procedural pain management intervention to reduce procedural pain and distress. The aim of this study was to evaluate whether the CFP was meeting its goals and effectively implementing the Royal Australasian College of Physicians paediatric (RACP) pain management guidelines.

Methods

This study was conducted as a single-site cross-sectional audit of one hundred and thirty five patients receiving treatment in the Day Oncology Unit. Procedural aspects related to the treatment room, career and staff behaviour, child distress and use of pharmacological and non-pharmacological interventions were recorded.

Results

The procedure room was mostly quiet and prepared before the child entered. Carers were typically present during procedures and comfort promoting behaviour was exhibited by Comfort First (CF) clinicians, careers and nurses. Topical anaesthesia use was standard practice and nonpharmacological interventions were utilised in the majority of procedures. Although the majority of children did not display significant distress, those children who did were more likely to be of younger, have a longer procedure time and have a CF clinician present.

Conclusions

The CFP is effectively implementing RACP procedural pain guidelines and meeting the program goals to minimise pain and distress in children undergoing cancer treatment through positive support during procedures and the utilisation of pharmacological and non pharmacological interventions.

14. Inflammatory impact on the pathogenesis of morphine tolerance: Relationship between cytokine/chemokine, microglial & cytoskeleton

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Background and Aims

Neuroinflammation plays a critical role in intrathecal analgesia. Combination of opioid agonist and antagonist administration was demonstrated to inhibit opioid tolerance, however, the mechanisms remain unclear. Chronic morphine treatment induces both proinflammatory and anti-inflammatory cytokines expression, which plays a role in tolerance development. The aim of our study was to examine the effect of low dose kappa agonist (U50488) on morphine tolerance, the possible role of anti-inflammatory cytokine IL10 and gap junction.

Methods

Male Wistar rats implanted with intrathecal catheter were used. Morphine tolerance was induced by chronic intrathecal infusion of morphine (15 ug/hr), and the effect of low dose U50488 (0.5 ug/hr)

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on morphine tolerance was examined by co-infusion with morphine. Western blotting was used for gap junction expression. The effect of IL-10 was examined by additional intrathecal IL-10 antibody (10 mg once daily) administration. Behavioral tail-flick test, immunohistochemistry staining and real time PCR for cytokine IL10 expression were examined.

Results

Low dose U50488 co-infusion with morphine attenuated morphine tolerance and IL-10 antibody injection reversed this effect. Tail flick latency decreased under IL10 antibody administered in an apparent accumulated manner. Immunohistochemistry staining revealed an increasing of IL-10 expression in the rat spinal cord by the low dose U50488 co-infusion. Gap junction protein, connexin 43, expression also restored by low dose U50488 co-infusion. Moreover, astrocytes and microglials were activated by IL-10 antibody administration in rats which prior co-infused with morphine and low dose U50488.

Conclusions

The expression of anti-inflammatory cytokine IL-10 is contributed to the restoration of morphine's antinociceptive effect by low dose U50488 treatment in morphine-tolerant rats and involves immunologically specific cellular alterations. Intercellular gap junction also revealed the same trend toward morphine's analgesia by low dose U50488 co-treatment.

15. Implementation of sustainable evidence-based practice for the assessment and management of pain in residential aged care facilities

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Background and Aims

Though prevalence may vary substantially, pain is common in residential aged care facilities (RACFs). To address the additional complexity of pain management in the elderly, the Australian Pain Society (APS) developed 27 standards for comprehensive good practice in the identification, assessment and management of pain in RACFs. This study audited pre-existing pain management practices at a number of RACFs, identified gaps in training and organisational changes needed to implement the 27 standards, conducted education and training programs to improve existing pain management practices and developed new organisation procedures to facilitate improved pain management. A post-implementation audit evaluated the success of the project.

Methods

Five residential aged care facilities from Victoria, Queensland and Western Australia participated in the implementation of an evidence based pain management program that involved 1:1 on-the-job training, revising in-house pain-management procedures, intensive education sessions for staff, use of pain assessment instruments, and the appointment of 'pain champions' to coordinate activities. Audits occurred pre- and post-implementation of the program to evaluate its effectiveness. The RACFs were evaluated on their performance on the 27 key standards outlined by the guidelines. Aged care staff was assessed on self-efficacy of appropriate pain management. 365 residents were also assessed for pain status, cognitive and mood function, quality of life, functional disability, and pain medication regime.

Results

At the start of the project, the 27 standards were compiled and evaluated in each participating RACF. Prior to the implementation program, the RACFs demonstrated full compliance on relatively few standards (range 6-12 of the 27 standards). All RACFs demonstrated major improvements in compliance (improved on 8-19 of the standards), resulting in 21-24 of the standards being met by the facilities by the project's conclusion. After implementation of the program, staff reported better understanding of the pain management guidelines ($p < 0.001$), increased confidence in pain management skills ($p < 0.001$) and increased confidence in their ability to recognise pain in residents ($p < 0.001$). Finally there were significant changes in pain medication prescribing after the implementation of the program, with a decrease in the prevalence of residents receiving no analgesics (from 15% to 6%) and an increase in residents receiving Around-The-Clock plus Pro Re Nata (ATC+PRN) pain medications (from 24% to 43%).

Conclusions

The results demonstrate that best evidence based practice in RACFs can be achieved with appropriate training and education. Investing resources in the aged care workforce via this implementation program has shown improvements in staff self-efficacy, improved compliance with the 27 standards for good pain practice, and improved pain medication utilisation. Further attention to the continued training of aged care staff is likely to yield improved care for residents and a more engaged and committed workforce.

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16. Development of an exercise/activity handover tool for use in a pain management setting

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Background and Aims

Current National Safety and Quality Health Service Standards¹ highlight the importance of effective, timely, relevant and structured handover processes between health care professionals as a way of minimising communication deficits that may compromise patient safety and recovery outcomes. Given this, our aim was to improve the clinical handover process between physiotherapists and exercise physiologists working in a multidisciplinary pain management service in Melbourne. One recognised, and common, method of improving the quality of handover between health professionals is the use of a standardised form for communicating relevant patient information. A review of current literature suggests that, to date, no standardised handover tool exists for use between physiotherapists and exercise physiologists within a pain management setting. We aimed to design, implement and evaluate such a tool.

Methods

During the development phase a review of existing assessment information was undertaken to identify key content to be included in the handover form with consultation from physiotherapists and exercise physiologists. Subsequently a draft was developed & tested in one site of the pain management service. A number of revisions were made to improve the usefulness and efficiency of the tool.

The handover tool was distributed, for comment to four multi-disciplinary pain management programs, that provide both physiotherapy and exercise physiology input, across Victoria. Further revisions were made taking into consideration feedback. Following this period of design and revision, the exercise handover form was implemented across both sites of the pain service, and feedback sought from clinicians regarding its effectiveness and their satisfaction with the form.

Results

The exercise handover tool provides clear information regarding:

- Pain experience and how it affects patients physical functioning, including exercise/functional capacity
- The pain and movement reasoning model²
- Mechanical and non mechanical features
- Exercise history
- Barriers and enablers to exercise and overall progress
- Key messages/analogies

- Goals
- Review plan

Results from clinician satisfaction survey suggest that the exercise handover tool covers all necessary information for exercise physiologists and physiotherapists in a pain management setting and should result in effective, timely and relevant communication and planning for persistent pain patients.

Conclusions

The exercise handover tool is a standardised and structured form that shows promise in improving handover communication between physiotherapists and exercise physiologists in chronic pain services. This tool fills an identified gap, and has been well received by clinicians to date. Further investigation is required to assess the longer term effects of using the tool.

References

- Australian Commission on Safety & Quality Care (ACSQHC) (2011), *National Safety and Quality Health Service Standards*, ACSQHC, Sydney
- O'SHAUGHNESSY, D.F., & JONES L.E. (2008). *Educating physiotherapists about pain mechanisms: the development of a model to support clinical reasoning.*

Poster presented at the 12th World Congress on Pain - International Association for the Study of Pain, Glasgow

17. Classical conditioning and chronic pain: A systematic review

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Background and Aims

Classical conditioning is a form of associative learning whereby a previously neutral stimulus becomes a response-eliciting 'conditioned stimulus' through contingent pairing with a biologically significant 'unconditioned stimulus'. It has been proposed that deficits in associative learning such as enhanced conditionability, resistance to extinction and failure to associate only meaningfully related stimuli may contribute to the maintenance of a pain state via persistent/over activation of protective response systems. If this hypothesis holds truth, then chronic pain/healthy control differences in learning should be apparent in a laboratory setting. The aim of this study was to systematically review the empirical research investigating chronic pain/healthy control differences in associative learning in studies using a pain-related classical conditioning paradigm.

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Methods

A systematic review of the literature was undertaken in October 2012. Eight major databases were searched using key works and MeSH headings synonymous with “classical conditioning” AND “pain”. Digital search was supplemented by a manual search of reference lists of key articles. The final pool was screened for inclusion by two reviewers. Methodological and experimental data were extracted relating to five broad categories:

- (1) Participant characteristics including clinical condition
- (2) Methodological data relating to design, stimulus characteristics etc
- (3) Conditioned responses measured
- (4) Learning outcomes of interest (acquisition, extinction etc)
- (5) Results

Results

From an initial bank of studies, three satisfied our criteria and were included. A total of 75 chronic pain patients were compared to 43 healthy controls. Conditions represented were spinal pain (n=29), tension headache (n=18), fibromyalgia syndrome (n=14) and rheumatoid arthritis (n=14). All three studies employed a differential delay conditioning design using noxious electrical stimuli (two studies) or thermal stimuli (one study) as unconditioned stimuli and pictures (two studies) or tones (one study) as conditioned stimuli. The learning outcomes of interest were:

- (1) Acquisition and extinction of differential conditioning of muscular responses at sites relevant to the patients' symptoms and at the site of unconditioned stimulus delivery (2 studies)
- (2) Contingency awareness (one study)
- (3) Self-reported anxiety (one study)
- (4) Cardiac response (one study)
- (5) EEG cortical responses (one study)

No significant evidence was found for patient/control differences in differential conditioning of muscular responses. There is preliminary evidence that people with fibromyalgia syndrome and to a lesser extent people with rheumatoid arthritis may exhibit contingency learning deficits.

Conclusions

There is a paucity of research into the assumed role of classical conditioning in chronic pain. Current evidence questions the assumed role of conditioned muscular responses in chronic pain and suggests the poor utility of muscular responding as a psychophysiological correlate of pain-related learning. One study supported the hypothesis, finding significant deficits in contingency learning in people with fibromyalgia syndrome. Given that people

with rheumatoid arthritis also showed contingency learning deficits but to a lesser extent, future research should consider the possibility that associative learning deficits may both contribute to chronic pain and be caused by chronic pain.

18. Pilot study to determine effectiveness of low level laser therapy and digital infrared thermal imaging treating chronic low back pain

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Your Healthy GP, Adelaide, SA, Australia

Background and Aims

The present paper describes an unconventional approach for treating chronic lower back pain (LBP), using Digital Infrared Thermal Imaging (DITI) and Low Level Laser Therapy (LLLT). Low level lasers (LLL), since their invention forty years back, have been used for reducing inflammation, oedema, pain, and promoting healing of deeper tissues, nerves, wounds and for preventing further tissue damage. Despite the numerous positive findings from various studies conducted in vitro on animal models and in randomized clinical trials, the efficiency of LLLT still remains controversial. This is due to lack of studies on human subjects. This clinical study is aimed at establishing the effectiveness of LLLT on chronic LBP patients. For achieving this objective we combine LLLT with DITI. DITI was used, for diagnosing the “spot of injury” and creating a body map of thermal changes during the course of the treatment.

Methods

6 patients, aged between 30 – 75 years of age, were randomly selected for this study. The selection criterion of patients included in the study was as follows:

- Experiencing LBP for more than 3 months
- No medical history of epilepsy, heart condition, blood pressure and vascular diseases
- No history of psychiatric illness
- Non-pregnant patients
- Patients available for the duration of the study
- Patients not presently on anti-inflammatory or analgesic drugs

PROCEDURE

Diagnosis

- Full medical history,
- GP examination and LLL counselling followed by
- First, Digital Infrared Thermal Imaging (DITI).

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Treatment

- Laser probes of wavelength 808nm and 830nm used
- Therapy duration (4 months)
- Initially, 50 minutes therapy sessions for first 3 weeks, twice per week followed by
- 25 min therapy sessions until the conclusion of the treatment.

At conclusion of the treatment a final thermal image is performed. In order to achieve unadulterated results, patients involved in the study were prohibited from undertaking any other mechanical form of treatments such as physiotherapy, massage, chiropractic treatment etc. They were also asked to avoid any form of exercise such as running, gym, yoga etc. The results were measured by using numerical pain scale and comparing the pre and post treatment images. The results achieved are plotted as a graph as follows:

Results

At the 4 month conclusion of the treatment, the numerical pain scale recordings show that 4 out of 6 patients achieved > 80 % reduction in pain, while the remaining 2 patients achieved 50% reduction in pain. Pre and post treated DITI images of patients compliment the numerical scale recordings suggesting an overall reduction in the surface area of inflammation.

Conclusions

This study indicates positive result, in favour of LLLT as a treatment option for treating chronic LBP. This non-invasive, safe treatment method can be very useful for treating the vast Australian population who suffer from chronic LBP on a daily basis. However, further large group study is necessary.

19. The Fibromyalgia Australia website: A new paradigm in community management of persistent musculoskeletal pain

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Background and Aims

The highly prevalent fibromyalgia syndrome (FMS) is the prototypical central sensitisation disorder of somatic tissues (ICD-10, M79.7). It has complex multidimensional features which frequently result in major personal and societal burden, and often delayed diagnosis. A strong evidence base now exists for the management of FMS, comprising multimodal pharmacological and non-pharmacological techniques, but with overall modest effect sizes. The efficacy of

tertiary-level multidisciplinary care over primary level management of FMS has been shown not to be superior.¹ Web-based information and tools for FMS have been assessed as being of inadequate quality.² A North American randomised controlled trial has demonstrated that community management of FMS can be enhanced by use of an internet-based self-management program.³ The aim of this presentation is to introduce a consumer-initiated, optimised and integrating, web-based resource which complements generic group self-management programs and promotes and supports evidence-based, patient-centred management of FMS at the primary care level in Australia.

Methods

Data was gathered using the social sciences' empirical methodology of (participatory) action research (written questionnaires; focus groups' outcome evaluations), analysing the feedback of over 7000 patients over 10 years. The Worldwide Web was informally searched for current patient information and management resources for FMS. The information was collated consistent with internationally validated, generic, patient-centred, chronic disease, structured approaches to primary care management, adapted to FMS management.

Results

Information on the internet was deemed to be fragmented and largely out of date; also internet management resources had limited applicability to the Australian primary care setting. A website was developed (www.fibromyalgiaaustralia.org.au), which assists Australian general practitioners to co-operatively, with FMS patients, develop optimised evidence-based care via a tailored step-wise approach, and FMS patients to access education and self-efficacy promoting self-management skills. Responsible medical specialist referrals are emphasised; utilisation of Medicare Chronic Disease Management programs is promoted; links to regional resources and networks are provided; patient self-monitoring tools are highlighted; multimedia educational formats are introduced.

Conclusions

The Fibromyalgia Australia website provides a unique integrating portal, for efficiently accessing relevant information and tools for both GP and consumer, to enable successful primary care management of potentially the majority of FMS in Australia. Evaluation by validated questionnaires is in progress.

References

1. *Arthritis Research & Therapy* 2008, 10:R81
2. *BMJ Open* 2011;1:e000152
3. *Pain* 2010;151:694-702

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20. Redesigning a public ambulatory pain service to optimise wait times and care quality

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Background and Aims

A recent national survey of 57 specialist pain services highlighted the significant and growing problem of burgeoning wait times for chronic pain sufferers, with some services reporting wait times of up to 2 years.¹

In 2012 a formal service review project was undertaken in Eastern Health's Ambulatory Pain Management Service (APMS). The main objectives of the review were to identify:

- Root causes of escalating wait times within the APMS
- Existing gaps in pain services provided
- Evidence based service modifications for improving wait times and wider care quality.

Methods

The review process included:

- Benchmarking service structure and referrals management systems against literature and selected Australian specialist pain service
- Environmental scanning
- Consultation with local service stakeholders from the fields of pain, addictions, general rehabilitation & health promotion

Changes to service structure and referral management systems were then actioned.

Results

Root causes for increased waitlists identified were:

- Referrals growth & no other specialist public pain clinics in the region
- Ageing, growing population with increasing incidence of chronic illness
- Non-maximisation of chronic pain prevention due to lack of comprehensive services in the health promotion, acute & sub acute care settings
- Increased community incidence of prescription pain medication abuse
- Difficulty recruiting & maintaining medical session staffing

Key service gaps were identified included:

- No combined addiction/ pain service
- Minimal access for clients on the waiting list to early intervention or education
- No service for people with sub acute pain or those at a risk of developing chronic pain.

In response to the above findings a number of service modifications were recommended and implemented:

- Development of two new sub-clinics of the Ambulatory Pain Service:
 - Opiate Dependence Pain Assessment Clinic
 - Subacute Ambulatory Pain Clinic (open to recent inpatients only)
- Revised referrals management systems, &
- Introduction of a waitlist client education program.

Additionally, areas of need for non-ambulatory specialist pain service expansion for future address were identified and discussed at a network level.

At the time of poster submission, only preliminary data was available, however it suggests that the restructuring has had a positive effect on wait times. The poster will provide more comprehensive data regarding these wait-times, and profile referrals attrition through identification of clients not yet engaging with the service.

Conclusions

This poster summarises a service review completed within a public Victorian Ambulatory Pain Management Service, aimed at improving quality of care. A number of root causes for increasing service waitlists and also gaps in existing services were identified. With the consultation of key interest groups, a number of service modifications were recommended and implemented. These changes appear to have had a positive effect on wait-times and quality of care, and have the potential to be introduced more widely.

Reference

1. HOGG et al. 2012, *Med J Aust*, 196(6), 386-90.

21. Utility of general outcome measures and tracking for tertiary pain management outpatient service

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Background and Aims

To pilot the use of a minimum dataset of outcome measures for patients entering a tertiary level pain clinic, as per the Initiative on Methods, Measurement, and Pain Assessment in Clinical Trials (IMMPACT) recommendations. Baseline levels of chronic pain and its associated disability were measured, and later compared with follow-up data returned by a subset of patients.

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Methods

All patients referred to the clinic are provided with a set of questionnaires to capture information related to various pain domains. Measures include demographic information, Brief Pain Inventory (BPI), Depression Anxiety Stress Scale (DASS) and Kessler Psychological Distress Scale (K10). Data are collected for each patient following referral, and again at 6 months following first clinic consultation. All data was collected using postal return method from 1/9/2009 to 31/8/2012, and analysed through descriptive statistics, correlation, and repeated measures analyses of variance.

Results

The sample comprised of 1183 patients (59% female), with a mean age of 50.7 years (SD = 15.6), and a mean pain duration of 9.7 years (SD = 10.5). 1069 (90.4%) of the patients that returned the demographic questionnaire completed the initial BPI, K10, and DASS measures. Means (SDs) for each measure are: BPI Pain Severity = 6.53/10 (1.69), BPI Interference = 7.01/10 (2.00), K10 = 29.10 (9.69) range = 10-50, DASS Depression = 18.90/42 (12.94), DASS Anxiety = 12.85/42 (10.47), DASS Stress = 19.25/42 (11.40). All measures were significantly and positively correlated with each other, with correlations ranging in size from $r = .297$ (BPI Severity and DASS Depression) to $.804$ (K10 and DASS Depression). Follow-up data was received for 35% of patients sent 6 month review questionnaires and 32% of patients sent 12 month reviews. Significant decreases were observed from the initial measure to 6 month review for Pain Severity (M_{initial} = 6.74, M_{6 month} = 5.93) and Interference (M_{initial} = 6.65, M_{6 month} = 5.83). No significant changes were observed on any of the DASS measures.

Conclusions

Initial results demonstrate significant but small average change in pain-related disability measures. Follow-up data availability has been limited by collection methods, to improve completion of measures; active follow-up of patients for data collection is required. Further analysis of specific patient characteristics and interventions will hopefully provide more insight into use of these tools.

Reference

1. IMMPACT <http://www.immpact.org/index.html>

22. An adolescent pain management program: More family oriented

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Background and Aims

The lack of adolescent focussed services has led to families having to manage their child's pain problem with minimal support. Some seek adult health services in an attempt to access relevant care. Unfortunately, adult healthcare settings are ill-equipped to cater for the unique transitional needs of emerging young adults and their caregivers who play a pivotal role in the self management process. This study aims to evaluate family involvement in an adult pain management program (Re-CHARGE for life) which has had some adolescent participation versus a newly established pain management program (LEAP into life) designed for adolescents and emerging young adults.

Methods

Groups which had participants aged 14-17 years were retrospectively studied. To date, 3 adolescents have completed a pain management course via Re-CHARGE and 5 adolescents through LEAP. Entry to both programs required a comprehensive multidisciplinary assessment at a Pre-Assessment Clinic. All programs were delivered in ten days (7 hours/day) across a two week period. Level of involvement with caregivers throughout the Re-CHARGE and LEAP service provision was compared.

Results

In Re-CHARGE, caregivers received an hour of general education at Pre-Assessment. On Day 10, caregivers could attend an optional family education session (1 hour) and a Family Team Meeting if needed. Caregivers were not interviewed separately by the psychologist at Pre-Assessment; they received no individual psychology sessions during the program; and were not required to complete outcome measures.

In LEAP, Pre-Assessment involved an hour of general education and an interview with the psychologist (45 minutes). Caregivers were required to attend the last day of each week for joint education with their young person; joint practicals such as Tai Chi, gentle walk and dedicated relaxation; and a family-specific education. This family education was delivered earlier than the adult program (Day 5). Caregivers received 1:1 appointments with the psychologist and a Family Team Meeting was compulsory. Caregivers also completed the Parent Pain Catastrophising Scale and the Bath Adolescent Pain - Parent Impact Questionnaire (BAP-PIQ) for pre and post measures. A BBQ was held on completion which provided

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families with an opportunity to share experiences, stories and meet a consumer support organisation.

Conclusions

LEAP into life presents a more specific pain management intervention for adolescents than Re-CHARGE for life. The comparably intensive caregiver interactions of the former, serve as the fundamental point of difference. This experience suggests that while accessing adult services can be invaluable to struggling families, a tailored multidisciplinary pain service is better equipped to deal with the unique transitional needs of the emerging young adult. Study limitations included a lack of consistent parent outcome measure tools across programs and no standardised scoring to evaluate caregiver involvement. Further studies may require consideration given to improving cohort size, standardisation of outcome measures across programs and identification of clinical outcomes suitable for benchmarking with which to evaluate family involvement and caregiver experiences.

23. What is the data we collect from our psychometric screening tests telling us?

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Background and Aims

Assessing a patient's mood, coping mechanisms and impact of their pain on their total health and well being is an essential element of good pain management. At Frankston Pain Management, in common with many pain practices we use a collection of previously validated questionnaires to gather this information. The questionnaires in use have all been validated in their own setting. We wished to examine whether using questions in several formats in the clinical setting added useful information or duplicated similar information.

Table 1.

	BPI-M	BPI-A	DASS21- D	DASS21- A	DASS21- S	K10	SF36-MH
BPI-M			0.40	0.30	0.44	0.43	0.46
BPI-A			0.45	0.34	0.49	0.46	0.50
DASS21- D	0.40	0.45				0.81	0.58
DASS21- A	0.30	0.34				0.67	0.43
DASS21- S	0.44	0.49				0.74	0.65
K10	0.43	0.46	0.81	0.67	0.74		0.62
SF36- MH	0.46	0.50	0.65	0.43	0.58	0.62	

Methods

Data for the previous 2 years was collated anonymously from 473 new patients. Any patients with missing data points were excluded. All data sets that included an assessment of mood or emotional state were compared looking for correlation.

The data sets we compared were: Brief pain inventory mood (BPI-M); Brief Pain Inventory Affect(BPI-A); DASS 21 Depression (DASS21-D); DASS21 Anxiety (DASS21-A); DASS21 Stress (DASS21-S); K10; SF36 Mental health (SF36-MH). Data were compared using Microsoft Excel (Microsoft Excel for Mac 2011, Version 14.2.4), and assessed by Pearson Correlation Coefficient in that program

Results

The comparison and the relevant correlation coefficients are shown in *Table 1 - see below*. The K10 scale showed a strong correlation with the DASS21 and the Mental health segment of the SF36, suggesting it collects the same information as the other 2 instruments. All other correlations tested showed a mild correlation, but not strong enough to suggest the same information was being collected.

Conclusions

By assessing the various tools available for data collection, we can focus on getting a broad picture of the patient. Where the tools overlap in the information provided, there are administrative burdens to the collection and management of the data that does not provide any additional benefit to the patient or treating team. By assessing the consistency of the data collected we can streamline the amount of paper work for the patients and the administrative burden to the clinic. Future work includes a review of the relationships over time within the same patients to ensure the correlations are consistent. Additionally more detailed analysis of individual questions may provide abridged versions of the questionnaires that provide adequate information for pain management clinics.

24. Paediatric restless legs syndrome is associated with multiple functional pain syndromes in childhood: A twin family case control study

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Background and Aims

We have shown that paediatric RLS has a genetic relationship with growing pains (GP). RLS has also been reported to be associated with migraine in children. The aims of this study were to confirm heritability of lifetime prevalence of paediatric RLS and to determine further associations between RLS and currently defined functional pain disorders in childhood (FPS), also with other potential co-morbidities.

Methods

Phase 1 involved a cross-sectional random survey by questionnaires of 3200 twin families (twins aged 3-18 years, including parents and siblings) which was distributed through the Australian Twin Registry. The questionnaires used had been validated for RLS, GP, migraine, headache, and contained screening questions for other conditions. A twin family case-control design was employed, comparing families with at least one twin having RLS to families where neither twin had RLS. Chi-square analyses with concordance rates were conducted to determine heritability. Prevalence rates and associations with GP, RLS and other FPS were analysed by χ^2 with odds ratios and 95% CIs. In Phase 2 of the study, families were sent questionnaires regarding anxious depression (ASEBA Behavioural Checklist) and sensory sensitivity. Independent samples t-test analyses were employed to explore potential associations with anxious depression and sensory sensitivity.

Results

There were 1017 (31.7%) twin family responses to Phase 1 (case families 159, control families 858). Thirty-three of 81 MZ twin pairs and 14 of 78 DZ twin pairs were concordant for RLS (casewise concordance 0.58 and 0.30 respectively, $\chi^2 = 9.91$, $P=0.003$). The parents and siblings in case families had a significantly higher prevalence of RLS than the parents and siblings of control families (mother: RLS=31.19%, $\chi^2=76.20$, OR=4.4 (3.12-6.30), $P<0.001$; father: RLS= 25.78%, $\chi^2 = 11.43$, OR=2.1 (1.36-3.26), $P=0.001$; siblings: RLS= 41.23%, $\chi^2=61.71$, OR=5, $P<0.001$). Twin individuals with RLS had

significant associations with GP ($\chi^2=158.18$, OR=5.9 (4.37-7.99), $P<0.001$), recurrent abdominal pain ($\chi^2=23.92$, OR=2.4 (1.66-3.34), $P<0.001$), migraine ($\chi^2=21.93$, OR=2.7 (1.76-4.19), $P<0.001$), low back pain ($\chi^2=8.67$, OR=2.0 (1.26-3.30), $P=0.005$), chronic pain ($\chi^2=21.36$, OR=2.8 (1.77-4.32, $P<0.001$), and iron deficiency ($\chi^2=56.54$, OR=4.3 (2.86-6.51), $P<0.001$). No twin individual significant associations were found between RLS and ADHD or headache. No associations were found between RLS and anxious depression or sensory sensitivity at the individual or familial level.

Conclusions

Paediatric RLS was associated with FPS which we have found to be heritable, but not non-migraine headache which has not been heritable in our twin family sample. An association between RLS and iron deficiency was confirmed. The association data lead to an hypothesis that the common FPS of childhood and RLS might share genetically influenced neurobiological mechanisms.

25. Provider approaches to chronic and recurrent pain in paediatric outpatients

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Background and Aims

Chronic and recurrent pain, defined as pain persisting or recurring over at least three months, is a common condition in children. Prevalence studies have demonstrated rates ranging as widely as 4-88% with a median around 20-25%.¹ The impact of chronic and recurrent pain in children includes direct suffering by the child and distress to families, as well as significant functional losses.² Identification of chronic and recurrent pain and appropriate management or referral to specialty pain services is essential to minimise these negative impacts. This study aims to characterize current attitudes and practice around chronic and recurrent pain among paediatric outpatient providers at our hospital with the hypothesis that we will identify several areas for clinical education and improvement.

Methods

107 paediatric outpatient providers, including doctors and allied health professionals completed a one-page survey exploring perceptions of chronic pain prevalence as well as pain assessment and referral practices. Data was tabulated and analysed according to role (doctor or allied health) and specialty (medical or surgical) and compared using one way analyses of variance.

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Results

Overall perceived prevalence of chronic pain was estimated at 12.59% (16.95) with no significant difference between allied health and medical professionals $F(1,103) = 2.00, p = .16$. There was a significant difference between medical and surgical specialties $F(1,65) = 4.025, p = .049$, with surgical reporting mean prevalence of 3.73(3.53) compared to medical of 13.19(16.81). The perceived functional impairment was also significantly different between medical and surgical $F(1,57) = 8.5, p = .005$ with medical perceiving a greater associated functional impairment than surgical, ($M = 50.39\%$ (33.89) vs. $M = 17.5\%$ (23.8), respectively). The mean percentage of patients asked about pain was 67.99(33.39), with allied health asking significantly more often than medical staff, $F(1,92) = 10.26, p = .002$. The mean number of chronic pain referrals made in the past six months was 2.21(2.20), with no significant difference between medical and surgical specialties.

Conclusions

Our study showed that paediatric outpatient providers at our hospital perceive the prevalence of chronic pain to be close to that demonstrated in population-based studies. Despite this, referrals to our specialist chronic pain service remain low, perhaps due to relatively low perceived rates of functional impairment. Inconsistent assessment of pain may also be a contributor. Education around functional impairment in chronic pain and best practices for identification and management of chronic pain are needed to improve referral rates. Significant differences between physicians and surgeons and between medical and allied health staff also need to be explored, as educational needs may differ between these groups. Finally, more research is needed into the actual prevalence of chronic pain in our paediatric outpatient population.

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26. Long term effectiveness of subanesthetic inpatient intravenous ketamine infusion therapy in the management of chronic non-cancer pain

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Background and Aims

Ketamine is a non-competitive antagonist of N-Methyl-D-Aspartate (NMDA) receptors. It reduces NMDA-mediated nociceptive responses in dorsal horn neurons by binding to the phencyclidine (PCP) site of the NMDA receptor-gated ion channel. Chronic noxious input to the dorsal horn cells (mediated mainly by C-fibres) results in the removal of magnesium from the NMDA receptors and their activation by glutamate. This causes prolonged depolarization spinal neurons, which leads to central desensitization that may result in hyperalgesia (an excessive response to a painful stimulus and allodynia (a painful response to a normally non-painful stimulus)).

Ketamine helps to minimise excessively painful responses. Studies have also proven that antagonizing these receptors improves opioid receptors sensitivity, reduces opioid tolerance and suppresses opioid induced hyperalgesia. Currently, there is no evidence on the longterm effectiveness of ketamine infusions in the setting of chronic pain.

Methods

We performed a prospective study on 100 patients in the RPAH Pain Management Centre, to evaluate the long-term effect of a 3-7 day ketamine infusion with refractory chronic, non-cancer between 2007 and 2012. The assessment was based on the evaluation of a standardized questionnaire performed over a telephone conversation. We sought to determine whether ketamine provides long-term benefit to:

- Reduce pain levels
- Reduce opioid requirements

Results

Our previous study showed that there was a significant reduction in pain intensity measured by VAS reducing from a mean of 6.38 before ketamine to 4.60 after ketamine ($p < 0.005$). There was also a significant reduction in opioid use from a mean morphine equivalent dose of 216mg/day before ketamine to 89mg/day after ketamine ($p < 0.005$). Current preliminary data suggests that around 35% of patients are able to maintain these opioid dose reductions with similar or reduced VAS scores. Final results of this study will be presented.

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Conclusions

The preliminary results of this prospective study suggest that a subanesthetic inpatient infusion of ketamine may offer a promising therapeutic option for long-term relief of chronic refractory non-cancer pain. The study also establishes the safety and efficacy of this novel approach and whether the use of ketamine lozenges used after the infusion provides further benefit.

27. The effect of brief mindfulness meditation on sensory and affective pain experience

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Background and Aims

Mindfulness has been described as "a state in which one is highly aware and focused on the reality of the present moment, accepting and acknowledging it, without getting caught up in thoughts that are about the situation or in emotional reaction to the situation."¹ Mindfulness meditation with persistent pain involves observing the sensation of pain, distinguishing it from any accompanying thoughts or emotions. Previous research has found regular mindfulness practice to be of benefit for people with persistent pain;² however few studies have examined the immediate effects of mindfulness practice on pain perception. The current study attempted to examine the immediate effects of mindfulness meditation on both the sensory and affective components of the pain experience.

Methods

This experiment used a repeated measures design consisting of patients undergoing a two-week multidisciplinary pain management program (N = 14, mean age = 51). Patients were asked to complete the Short-Form McGill Pain Questionnaire (SF-MPQ) immediately prior and immediately after practising mindfulness meditation. The SF-MPQ asks that patients rate a list of 11 sensory (eg throbbing) and 4 affective (eg punishing-cruel) words on a scale of 0 (none) to 3 (severe) to describe their experience of pain. The mindfulness meditation involved a brief rationale and a 30-minute body-scan meditation prompting patients to notice their physical sensations without judgment or evaluation.

Results

A total score was derived for each descriptive subscale (sensory and affective) pre and post mindfulness session and the differences in the means between pre and post for each subscale was examined using a paired samples t-tests. The results indicated that there was a significant difference in pain description ratings between pre (M = 9.21; SD = 5.45) and post (M = 5.85; SD = 4.45) scores on the sensory

subscale; $t(13) = 3.06, p < .01$. There was also a significant difference in pain ratings between pre (M = 3.07; SD = 2.89) and post (M = 1.50; SD = 1.70) scores on the affective subscale $t(13) = 2.71, p < .05$.

Conclusions

The results demonstrated that mindfulness meditation had an immediate effect of reducing the sensory and affective components of the pain experience. The current research highlights the potential of mindfulness to be used as an alternative self-management strategy, one focused on observation and acceptance of pain sensations rather than pain reduction. The authors acknowledge the limitations of the experimental design in relation to small sample size and lack of an adequate control. Nevertheless, mindfulness represents a valuable area for future research to determine its efficacy as a strategy in the self-management of persistent pain.

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28. Assessing tactile acuity in musculoskeletal medicine: How good are two point discrimination tests at the neck, hand, back and foot?

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Background and Aims

Chronic pain from rheumatic and musculoskeletal conditions is associated with cortical changes and altered tactile acuity. For this reason, tactile acuity is considered a clinical signature of primary somatosensory representation and is increasingly being assessed in both clinical practice and research. Clinicians from a range of professions, use two-point discrimination (TPD) to evaluate the extent of cortical reorganisation in chronic pain and monitor change as patients recover. In research, TPD is an important outcome measure and given the growing emphasis on retraining the brain for chronic pain conditions, the clinimetric properties of this measure are especially important. Despite the widespread use of the measure, the utility, reliability and precision of the measure at commonly assessed sites, has not been interrogated. The aim of this study therefore was to determine, in a large cohort of clinicians

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with variable experience and minimal training and in a clinically pragmatic fashion, the utility, intra- and inter-rater reliability, bias and variability of TPD threshold assessment at the neck, back, hand and foot, using inexpensive mechanical callipers.

Methods

Intra- and inter-rater reliability of TPD was assessed in the back, neck, hand and foot of 28 healthy young adults, using measures obtained by 28 clinicians. Each clinician received 30 minutes training in the assessment of TPD using mechanical callipers and followed a standardised protocol. Intra-correlation coefficients (ICC) and Bland-Altman plots were used to assess repeatability, bias and variance. The effect of clinician experience on test-retest reliability was investigated using two-way analysis of variance (ANOVA).

Results

Intra-rater assessments in all four regions and inter-rater assessments in the neck and foot were reliable (ICC range: 0.79 - 0.86) but large variability was seen in all assessments. Inter-rater assessment in the back (ICC = 0.66) and hand (ICC = 0.62) was deemed unreliable. No bias was evident and the experience of the clinician had no effect on TPD measures ($p > 0.14$).

Conclusions

Clinicians with variable experience and minimal training are able to quickly and reliably assess TPD threshold in the neck, back, hand and foot using inexpensive mechanical callipers. Measures obtained by different clinicians were only reliable for the neck and the foot. Large variability was observed in all assessments, which suggests clinicians should be cautious when interpreting changes in tactile acuity in individual patients and researchers must account for this variability when calculating suitable sample sizes.

29. Epigenetic changes in the gene for brain derived neurotrophic factor (BDNF) in the dorsal hippocampus correlate with the degree of disability triggered by nerve injury in the rat

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Background and Aims

Chronic pain in people presents not only with sensory dysfunction, but often, considerable disability, including altered affect, cognition and memory. Chronic constriction injury (CCI) of the sciatic nerve evokes 'pain' (allodynia and hyperalgesia) in all injured rats, and

triggers disabilities in a subpopulation (~30%) akin to those seen in people, ('Pain & Disability'). We have previously demonstrated that Pain & Disability rats show hippocampal shrinkage thus, we sought to determine likely mechanism/s for this change. We hypothesized reductions in the levels of the neurotrophic factor, BDNF in the hippocampus, which would result in reduced neuronal volume.

Methods

The dorsal and ventral hippocampus were isolated by microdissection from the brains of rats with Pain & Disability (N=5) and Pain alone (N=5) following CCI, as defined by reductions in dominance in a resident-intruder, social interaction test. RT-PCR was used to determine BDNF mRNA expression levels; and pyrosequencing, was used to determine methylation levels at three sites of the promoter region of exon IV of the BDNF for dorsal and ventral hippocampal samples from each rat. In addition because the promoter region of the BDNF gene is regulated by the activity of the glucocorticoid receptor (GR), we also determined GR mRNA expression levels in the same samples using RT-PCR.

Results

The dorsal hippocampus of all nerve-injured rat showed up-regulation of BDNF mRNA (PD-2.06 fold vs., Pa-1.77 fold $p < 0.01$) in the hemisphere contralateral to the injury, the remainder of the hippocampus did not differ to uninjured controls. The degree of methylation of sites 2 and 3 of the promoter region at exon IV of the BDNF gene in this region correlated with the degree of disability shown (site 2- R2 0.52 $p < 0.01$; site 3- R2 0.28 $p < 0.05$). Further, the contralateral dorsal hippocampus showed a massive down-regulation in GR mRNA in all injured animals ($p < 0.001$). A smaller down-regulation was seen in the ipsilateral dorsal hippocampus; and GR mRNA expression levels in the ventral hippocampus did not change compared to uninjured controls.

Conclusions

These data reveal changes in dorsal hippocampus for the genes coding the neurotrophic factor BDNF, triggered by nerve injury. They provide evidence that epigenetic modifications alter the regulation levels of this gene in rats that develop disabilities compared to those that don't. The next important step is to determine how translation into BDNF protein is affected by these changes. We predict a reduction in BDNF protein in disabled rats, leading to a loss of cell survival mechanisms and a reduction in neuronal volume. Such changes may also underlie the recent discovery of reductions in hippocampal volume in human neuropathic pain patients.

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30. Neuromodulation for chronic pain conditions

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Background and Aims

In cases of severe localised intractable pain, neuromodulation offers a promising alternative. In peripheral nerve field stimulation (PNFS), a subset of neuromodulation, leads are subcutaneously placed to stimulate the region of affected nerves, cutaneous afferents, or the dermatomal distribution of the nerves, which converge back to the spinal cord. PNFS has the advantage of being able to provide paresthesia to regions not previously reached with spinal cord stimulation. This study set out to investigate PNFS for the treatment of chronic pain.

Methods

We prospectively assessed 174 patients implanted with percutaneous leads within the major area of pain in their craniofacial, thoracic, lumbar / sacral or abdominal / pelvic regions. Outcome measures included pain, analgesic use, employment status, disability and depression. Follow up ranged from 4-23 months. Statistical analysis was performed, significance set at $p \leq 0.05$. IRB approval obtained.

Results

An average pain reduction of 4.3 ± 2.5 , on an 11-point scale was reported ($p \leq 0.00$). Notably, 73% of patients reported good (>50%) to excellent (>75%) pain relief. Pain relief achieved shortly after implantation was sustained for greater than 12 months. Overall, 74% of patients reduced their analgesic use, with reduced analgesic use correlating with improved pain relief $r=0.704$ ($p=0.00$). Disability was significantly reduced following PNFS. Where applicable, 48% of patients below the age of 60 years increased their capacity for paid employment. Of the 174 cases, 24 patients reported complications ranging from hardware erosion and migration to infections and implant rejections, of which 6 were rectified by explant. No long-term complications were reported. Overall, 85% of patients were satisfied with their outcome.

Conclusions

PNFS is a safe and effective treatment option for, otherwise, intractable chronic pain conditions and has the potential to fundamentally change the way we think about pain management.

31. Diagnostic sacroiliac joint injections: Is a control block necessary?

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Background and Aims

Sacroiliac joint (SIJ) pain presents as a deep, somatic pain, with pain patterns presenting predominantly in the buttock but also referring down the leg sometimes as far as the foot. Given that the features of SIJ pain are non-specific and that this referred pain is similar to lumbar facet joint and lumbar disc pain, diagnostic SIJ and deep interosseus ligament (DIL) local anaesthetic injections, called diagnostic blocks, are used to identify the source of pain. Despite its wide use, little is known about the false positive rate of a single diagnostic sacroiliac (SI) block and the requirement for a control block. The study set out to determine whether a control SI block is necessary and to monitor the false positive and negative rate for a single injection.

Methods

Under fluoroscopic guidance, 1408 patients presenting with prominent deep somatic pain over the SIJ region were sterilely injected with a contrast fluid to clearly outline and to ensure accurate non-vascular needle placement in the SIJ and DIL. Anaesthetic was then injected into the SIJ and/or into the deep interosseus ligament. Pain was measured on the 11 point visual analogue scale (VAS) pre-injection and incrementally over the following 1-2 weeks. Decreases in pain scores (>80%) following the injections were indicative of SIJ pain and recorded as a positive SIJ block.

Results

A prospective observational study with data collected over 3.5 years revealed that a single diagnostic SIJ injection has diagnostic accuracy of 87%, with high sensitivity (98.3%) when compared to a second control diagnostic block.

Conclusions

The findings of this study suggest that an initial SIJ/DIL injection performed under fluoroscopic guidance with the use of contrast has a sensitivity of 98.3% and a low false positive rate (12.5%), therefore indicating a reliable method of SIJ pain diagnosis. Furthermore, a second control block may be unnecessary in the diagnosis of SIJ pain in chronic pain sufferers.

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32. Persistent pain and perceptual rivalry interactions: An exploratory study

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Background and Aims

Perceptual rivalry is a striking phenomenon characterised by alternations between two different images, despite the constant visual input. Common examples include binocular rivalry (BR; with dichoptic viewing) and ambiguous-figure rivalry (AFR; with dioptic viewing, eg Necker cube). Previous studies reported that AFR increases pain intensity in Complex Regional Pain Syndrome (CRPS) subjects to a degree requiring cessation of viewing (Cohen et al., 2012; Hall et al., 2011). The present study aims to assess the effect of rivalry on pain in a broader persistent pain (PP) population and conversely, the influence of PP on rivalry (switch rate, predominance of one percept over the other, mixed percept duration).

Methods

Seven PP subjects and seven healthy controls viewed BR with dynamic-high and static-low strength (counterbalanced) vertical / horizontal gratings, through linearly polarized orthogonal filters; this was followed by Necker cube rivalry. Rivalry perceptions were recorded via key presses for four 100s trials, preceded by a practice block of high-strength stimulus BR. A 2 (group; PP, control) × 3 (stimulus type; high, low, Necker) mixed ANOVA assessed variance in rivalry rate, predominance and mixed percept duration, for both groups, across the three stimulus types. Pain intensity was quantified via self-report on a 10-point scale at pre-/post-stimulus viewing and during stimulus viewing if the participant experienced changes in pain. A paired samples t-test was used to measure differences in pain ratings between baseline and during rivalry viewing.

Results

The paired-samples t-test revealed a significant difference in pain rating between baseline ($M=3.36$, $SD=1.35$) and during rivalry viewing ($M=5.21$, $SD=2.38$); $t(6) = -3.07$, $p = 0.022$. All but one PP participant experienced an increase in pain during rivalry; with onset largely during the first block. Pain returned to baseline after both BR and AFR in four PP participants and during AFR in two. Participants were also able to view each stimulus for the whole task duration. Rivalry rate, predominance and mixed percept

duration for each stimulus type did not differ between or within PP and control groups ($p > 0.05$).

Conclusions

Perceptual rivalry temporarily increases PP in conditions other than CRPS and this effect may be stronger when viewing BR than AFR. Unlike previous studies, increases in pain intensity in our study were not sufficient to warrant cessation of viewing. Preliminary data indicate that rivalry parameters are normal in PP; although a larger sample may be needed to confirm this. These study findings will be discussed in the context of both rivalry and pain neurophysiology.

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33. Do pain management programs keep working for compensable patients? A three year follow up

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Background and Aims

In 2012, the Victorian Workcover Authority and Transport Accident Commission Health Services Group presented an evaluation of its "Network Pain" initiative at the Australian Pain Society 32nd Annual Scientific Meeting. This demonstrated improved clinical outcomes, return to work (RTW) outcomes and high client satisfaction following participation in a Network Pain Management Program (NPMP). The aims of this poster are to:

- Provide updated data on the clinical outcomes
- Track occupational data following engagement with both Network and nonNetwork PMP
- Flag the extension and expansion of this initiative and the increasing emphasis on timely referral for pain management

Methods

Clinical and occupational outcomes were analysed for 311 Victorian injured workers who attended NPMPs from 10/2008 until 06/2012. Where possible, comparisons were made with the 417 injured workers who attended 'nonNetwork' PMPs. Statistical and financial analyses were conducted, taking into account factors that may distort these analyses, such as the 134 week test and common law proceedings.

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Results

CLINICAL OUTCOMES: In the three years following attendance at a NPMP, pharmaceutical usage was reduced from 60% of injured workers to 35%, for non Network PMPs usage was relatively unchanged. For those who were prescribed medication, average costs for medication rose at the time of the PMP and remained higher over the next three years for both groups. Following PMPs, the average medical costs for injured workers who had participated in a NPMP was 33% lower than those who participated in a non-Network PMP. Statistically significant ($p < .001$) improvements were noted on the Fear Avoidance Beliefs Questionnaire (FABQ) work scale (mean 3.2, SD 7.7), physical activity scale (mean 5.2, SD 6.4) and the Brief Pain Inventory (BPI) pain interference scale (mean 1.7, SD 2.5), however only the differences noted on the FABQ physical activity scale and the BPI were considered to exceed the Minimum Detectable Change.

OCCUPATIONAL OUTCOMES: NPMPs resulted in improved RTW outcomes for workers who were already working part time and for those who were certified as having no capacity at the start of the PMP when compared with nonNetwork PMPs. The cost savings from these outcomes outweighed the cost of the NPMP. In addition, several workers gained new employment following a NPMP after a substantial number of years out of the workforce and this employment was sustained throughout the follow up period. There were no examples of this occurring following a nonNetwork PMP.

Conclusions

NPMPs provide important and sustained benefits for Victorian injured workers. These benefits were superior to nonNetwork PMPs at negligible extra cost. The Network Pain initiative has been extended for a further 2 years and a larger pool of providers has been recruited. Analysis has been refined and earlier positive results confirmed. Further comprehensive analysis will occur towards the end of the extension to inform future strategies for the management of persistent pain in the Victorian compensable setting.

34. Threat alters the perceptual construction of our world

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Background and Aims

The construct of the world around us is dependent on the meaning that we attribute to it. It has been demonstrated that we observe our environment based on our needs (Bhalla and Proffitt, 1999), leading to a perception that stimuli that are required are seen as closer than they really are (Balci and Dunning, 2011). What has yet to be explored is the perception of a threatening stimulus in relation to a stimulus that satisfies a need. Using the context of acute pain, we investigated the perceptual experience of viewing a stimulus that causes you pain in contrast with a stimulus that alleviates your pain.

We hypothesised that one would see the pain-relieving (needed) stimulus as closer than it really was; on the other hand one would see the pain-giving (threatening, not needed) stimulus as further away than it really was.

Methods

Twenty (11F) healthy volunteers participated. Participants were excluded if they had: current pain; a history of pain lasting > 3 months; a diagnosed neurological or psychological disorder; impaired sensation. Participants estimated the distance to alternate pain-giving and pain-relieving switches that were placed at varying distances on a table in front of them. A thermode that was attached to the back of the participant's non-dominant hand, was activated to a painful threshold by clicking the pain-giving switch, and cooled to a neutral skin temperature by clicking the pain relieving switch. Participants estimated the distance to the switch before reaching to click it.

Results

When participants were in pain and had to estimate the distance to a pain-relieving switch, there was no significant difference between the actual distance and the estimated distance ($p = 0.801$). Critically however, our results show a significant effect associated with the pain-giving stimulus. When the participant was not in pain and estimated the distance to a switch that would deliver a painful stimulus, they significantly underestimated the distance to the switch ($p = 0.003$).

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Conclusions

The results do not support our hypothesis. They provide an unexpected yet interesting finding: a threatening stimulus is perceived as closer than it really is when viewed relative to a stimulus that provides relief. This is in contrast to much of the literature that surrounds perception, which has reported that objects that are needed appear closer whereas unwanted objects seem further away than they really are.

This intriguing finding could be particularly relevant when applied to pain conditions, in which threat perception is crucial. In this case a threatening stimulus viewed relative to a stimulus that is needed may be distorted due to the comparison itself and thus a hierarchical construct is produced. This idea draws on Bayesian Theory, in that perceptions are never neutral but rather dependent on the integration of the prior and concurrent information that one holds.

35. "Behave yourselves": Children and adult behaviour during routine procedures

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Background and Aims

During a study undertaken by Dr Jane Munro at the Royal Children's Hospital during 2005-2008, 95% of inpatients or outpatients reported having an invasive procedure. There is strong evidence to support the integration of non-pharmacological techniques to minimise children's procedural distress, pain and anxiety (Gursky, Kestler & Lewis, 2010). Additionally the adults' behaviour and language may influence the child's level of distress exhibited throughout the procedure (McMurtry, Chambers, McGrath & Asp, 2010). The study's objective was to observe the behaviour and language of adults and children during routine procedures in a paediatric centre.

Methods

During a period of 3½ months patients and families from the wards, ambulatory, and anaesthetic areas were approached by a nurse researcher to be observed during the procedure(s). Children and adults behaviour was observed before, during and after the procedure using the Child Adult Medical Procedure Interaction Scale-Revised (CAMPIS-R) (Blount, Cohen & Frank, 1997).

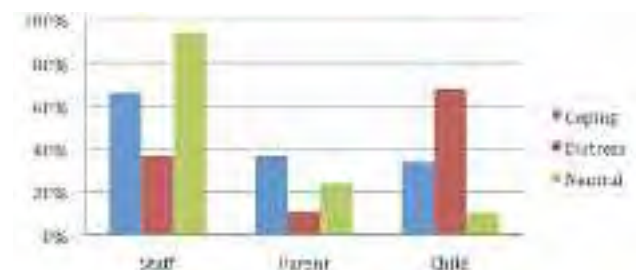
Results

A total of 178 children were observed having 205 procedures. Nurses, Doctors and Radiographers were the most frequent observed clinicians during the study. The adults (clinician's and parents) and children's behaviour interaction changed between neutral, coping or distress promoting at various phases of the procedure.

Overall the study found that clinician's behaviour during the procedures was observed as: coping promoting 66%, distress promoting 37% and neutral 94%.

Parents were present in 77% of procedures, their behaviours were observed as: coping promoting 37%, distress promoting 11%, neutral 24% and 27% of were classified as having a non-active role. Whereas the children were observed as coping promoting 34%, distress 68% and neutral 10%. Parent's distress or coping promoting behaviour had a weak correlation with the child's distress or coping behaviour.

Table 1. Behaviour During Procedures



Conclusions

Clinicians primarily used neutral or coping promoting, in contrast to parents who were mostly coping promoting or classified as not having an active role. Not surprisingly, children exhibited mostly distress during their procedure and this was followed by coping behaviour then neutral behaviour.

Understanding behaviour and how it impacts upon the child and those providing care for the child is a complex process. To understand how we can improve our support for children during procedures is to begin to pull apart what adult behaviours are used to promote coping and minimise distress. This observational study provides a snapshot of the behaviours that adults and children exhibited during routine procedures at the Royal Children's Hospital. Since the data reflects clinical practice norms it can be utilised to tailor education activities to address pain cultural and practice at a local and hospital wide level.

References

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36. A standardised minimum data set of measures for assessment of patients attending multidisciplinary pain management services

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Background and Aims

Over recent years there have been a number of calls for a standardised set of psychometric measures for use in the assessment of patients attending multidisciplinary pain management services. An expert panel was convened under the auspicious of the Faculty of Pain Medicine, ANZCA, with APS collaboration, to establish a recommended minimum data set of measures. The aim of this pilot study was to trial the recommended set of measures within an active multidisciplinary outpatient pain service.

Methods

All patients attending the Caulfield Pain Management & Research Centre (CPM&RC) and the Hunter Integrated Pain Service (NSW) were asked to complete the minimum data set of measures prior to admission. The measures comprised the Brief Pain Inventory (BPI), K-10 mood scale, self-efficacy questionnaire (PSEQ), health service utilization, medication use and demographic variables (age, sex, compensation status). Only the data from CPM&RC is presented here and included all new admissions between April 2010 and December 2011. The BPI and demographic measures were posted to each referred patient and needed to be completed prior to an appointment being made. All other measures were collected either by post, or on arrival at the clinic just prior to the first appointment.

Results

A total of 570 patients were seen, but 42 patients (7.3%) refused consent to use their information for research, leaving a sample of 528. Approximately 7.8% of patients required an interpreter. Completion rates for the measures were: BPI and demographics (99.4%), K10 (64.1%), PSEQ (48.8%), medication use and health utilization (37.8%). The average time between referral and initial appointment was 156+68 days. A cluster analysis was undertaken using BPI average pain scores, BPI interference with activity, and K10 mood scores, and identified six common clinical profiles in patients attending the multidisciplinary pain service. Cluster groups differed significantly in the levels of PSEQ ($p=.0001$), medication use ($p=.006$), gender ($p=0.18$) and compensation status ($p=.047$), but not in other attributes (age, health utilization, pain duration).

Conclusions

A minimum data set could be collected in the majority of patients, although a 2 step collection process may be less than ideal and lead to higher rates of missing data. Information collected can be used to generate common profiles of clinical symptoms and these groups were shown to differ on a number of key attributes. In the future, it will be interesting to examine treatment outcomes in the different patient groups as follow-up data is collected and to review the most effect treatment strategies for each of the sub-groups.

37. Anatomically specific patterns of tyrosine hydroxylase phosphorylation in the nucleus accumbens of rats with 'pain alone' or 'pain and disability'

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Background and Aims

Chronic constriction injury (CCI) of the sciatic nerve evokes pain (allodynia and hyperalgesia) in all injured rats, yet triggers changes in social behaviour in only a subpopulation (~30%), termed 'Pain and Disability'. We have previously demonstrated that Pain and Disability rats have a decrease in the expression of tyrosine hydroxylase immunoreactivity (TH-IR) in the nucleus accumbens (NAcc) (Austin et al., 2010). To determine whether this reflects decreased dopamine availability in the NAcc, we sought to quantify the degree of TH phosphorylation in the NAcc of rats with Pain alone or Pain and Disability.

Methods

Immunoreactivity for TH phosphorylated at serine-19 (Ser19-TH-IR) and TH-IR were evaluated using standard immunohistochemical techniques in adjacent pairs of serial coronal sections of the NAcc. Brains of rats with Pain and Disability (N=4) and Pain alone (N=4) following CCI, defined by reductions in dominance in a resident-intruder, social interaction test, were compared. Staining intensities in the core and shell regions of NAcc were quantified, using image analysis software from digital images. Additionally, protein expression of Ser19-TH and TH phosphorylated at a second site, serine-31 (Ser31-TH) were quantified by western blotting from both contra- and ipsilateral NAcc tissue blocks of rats with Pain and Disability (N=7) and Pain alone (N=7).

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Results

At each of the rostrocaudal levels of the NAcc analysed, bilaterally, and within both core and shell regions, there was a significant correlation ($p < 0.05$), between the intensity of TH-IR and disability, measured by the expression of dominance behaviour. Only, at the most rostral region of the NAcc was there a significant correlation between the intensity of Ser19-TH-IR and disability, which was again on each side of the brain, and in core and shell regions ($p < 0.05$). Pain and Disability rats had the highest ratios of Ser19-TH-IR:TH-IR. There were no significant differences in global accumbal expression of Ser19-TH and Ser31-TH between rats with Pain and Disability, Pain alone and sham rats.

Conclusions

These data indicate the presence of anatomically specific patterns of TH phosphorylation at Ser19, which correlate with expression of disability following nerve injury. Given phosphorylation of TH at Ser19 is calcium-dependent, it may be reflective of the activity state of the terminals on which it resides (Dunkley et al., 2004). Therefore, these findings suggest anatomically specific inputs to the rostral NAcc may be selectively altered, a fact supported by a lack of detectable changes in Ser19-TH expression globally. Reduced Ser19-TH-IR in rats with Pain and Disability also raises the possibility they have lower availability of dopamine in the NAcc, which may contribute to the disrupted social behaviours observed in this subset of nerve-injured animals.

References

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38. Using cage-aid instrument to measure substance abuse risk in patients attending a private pain clinic

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Background and Aims

Opioids have established a strong place in the treatment of non-cancer pain. Chronic non-cancer pain has many complex contributors, including the psychological status of the patient. One of the risks associated with this therapy is the misuse of prescribed drugs. Studies suggest physicians may miss a diagnosis of alcoholism or substance addiction in many patients under their care. Many tools have been put forward to help identify those at risk for prescription opioid misuse. We have adopted the CAGE Adapted to Include Drugs (CAGE-AID) in our practice as a screening tool for alcohol and drug abuse.

The CAGE-AID is a simple 4 item self-report instrument administered to assess the risk of alcohol and drug abuse. A score of zero has a less than 2% risk of addiction, scores of 1, 2, 3, and 4 have substance abuse risks of 80%, 89%, 99% and 100% respectively. Two or more affirmative answers is considered a positive CAGE test.

We wished to examine whether this needed to be applied routinely, or whether other information we already gather could predict a positive CAGE-AID Score.

Table 1

Parameters	CAGE \leq 1	CAGE \geq 2	pValue
AGE			<0.01*
Average	57.8	49.7	
Minimum	20	28	
Maximum	92	75	
Median	56	49.5	
SEX			0.62**
Male	57	12	
Female	71	12	
COUNTRY OF BIRTH			0.64**
Australia	90	18	
Overseas	38	6	
MARITAL STATUS			0.91***
De facto	11	3	
Divorced	14	2	
Married	65	11	
Separated	3	1	
Single	21	6	
Widowed	14	1	
SCHOOLING			0.17**
School	60	6	
TAFE	26	6	
UNI	19	7	
Other	23	5	
DOMESTIC LIVING ARRANGEMENTS			0.57**
Alone	28	5	
Partner/Spouse	44	4	
Partner/Spouse/Children	33	10	
Children	12	4	
Friends	3	1	
Parents	8	0	

*t-test; **Chi squared; ***Chi squared (Yates correction) <http://www.quantpsy.org/>

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Methods

De-identified data of all patients with a CAGE-AID score was reviewed. Basic demographic data was reviewed to see if the CAGE-AID identified any groups of patients as being at higher risk.

Results

The patients were divided into 2 groups (*see Table 1 at left*)

CAGE-AID ≤ 1 , n = 137

CAGE-AID ≥ 2 , n = 24

The following demographic factors were reviewed: age, sex, country of birth, marital status, highest schooling, and current living arrangements. Age was compared using Student's t-test, while all other parameters were assessed using Chi squared analysis.

Those with a positive CAGE score tended to be younger, on average, however the age range on both groups largely overlapped. There were no other significant differences between the groups.

Conclusions

Assessing the risk of alcohol and drug abuse is an important part of safely prescribing drugs of dependence. Basic demographics of the patients provides little information with which to assess the risk. CAGE-AID scoring (or similar opioid risk tool) should be considered for all patients being commenced on opioids and for those receiving large doses.

39. Which baseline characteristics influence the response to milnacipran (Joncia®) in patients with fibromyalgia?

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Background and Aims

Milnacipran (MLN) has demonstrated its benefit in treating patients with fibromyalgia and obtained in November 2011 a market authorization in Australia for this indication. Fibromyalgia is a persistent pain condition that aggregates numerous symptoms (pain, fatigue, sleep disturbance, quality of life impairment...). The aim of this study is to find patient baseline characteristics in fibromyalgia clinical trials that influence MLN treatment effect.

Methods

Two methods were used to address this problem: the first is knowledge-oriented and consisted of post-hoc analyses describing the relationships between the clinical outcome and baseline factors. The second is a data mining analysis which takes into consideration relationships between the outcome and the candidate influencing

factors. Analysis was performed using KEM (Knowledge Management and Extraction) algorithm. Data were analyzed from phase 3 placebo-controlled clinical trials. In total, 75 variables including total scores, sub-scores and items of baseline scales and demography were selected as candidate influencing factors. Continuous variables were categorized into 3 categories defined according to the 33.3% and 66.6% percentage limits of values in the whole sample. Outcomes were the response on the composite criterion, improvement in both pain, and PGIC and on the two components separately. Treatment effect was measured using odds-ratio.

Results

More than 2500 patients were investigated from three clinical phase III clinical trials (FMS-031, MD-02 and GE-302). Different variables corresponding to potential patient profiles led to a significant increase in odds-ratio measuring the treatment effect versus placebo. For the 100mg/d dosage, 8 variables were identified which increase the odds-ratio beyond 2. The most three relevant variables are "unable to work due to FMS" OR=2.63 [2.15,3.19], "MFI-General Fatigue" OR=2.22 [1.81,2.72], and "FIQ-Physical functioning" OR=2.21 [1.80,2.70]. For the 200mg/d dosage, 18 such variables were identified. The most three relevant are "FIQ-Stiffness" OR=3.45 [2.78,4.30], "VAS-Pain(CRF)" OR=3.12 [2.50,3.90], and "FMS Duration" OR=2.99 [2.39,3.74].

For all the identified variables, the odds-ratio increase is coherent across the composite responder criterion and the two components Pain and PGIC. The identification of "fibromyalgia duration" as influencing factor in the exploratory KEM analysis was confirmed in a post-hoc analysis that compared the response rates in three subgroups: short, medium and long fibromyalgia duration. This analysis evidenced higher response rates and a higher odds-ratio in the "medium fibromyalgia duration" group. Furthermore, the "high fibromyalgia duration" group seemed to benefit more from the 200mg/d dosage.

Conclusions

KEM analysis allowed the identification of baseline characteristics associated with higher odd-ratios suggesting a greater treatment effect. Thus patient profiling can be very useful for clinicians to individualize drug therapy and advice. These require confirmation in additional analyses incorporating more recent milnacipran fibromyalgia studies and observational surveys in the Australian population when milnacipran (Joncia®) is commercially available. The coherence across the primary endpoint and its 2 components confirmed the robustness of the primary endpoint in the milnacipran fibromyalgia development program.