

13 October SYDNEY  
**CONNECTIONS 2014**  
from research to community

**Royal Randwick Racecourse**  
Sydney

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“

Seeing the results of research translate into better patient care makes every dollar and every effort invested worthwhile”

Hon Jillian Skinner MP



The new state of business



Health

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“I want to knock down the barriers to spinal cord injury research... **nothing is impossible**”

– Christopher Reeve  
Actor, Director, Author

# Welcome

It is a great pleasure to welcome you to *Connections 2014*. The theme "From research to community" brings together researchers, healthcare professionals, the community, policy makers and other key stakeholders in a unique forum to discuss spinal cord injury research in Australia, New Zealand and internationally. We extend a particular warm welcome to international Keynote Speakers Dr Kim Anderson-Erisman and Dr John Simeral. We thank all our wonderful speakers who have taken time out of their busy schedules to assist us in bringing together such a rich and diverse programme.

This year's meeting will put the spotlight on clinical trials and feature updates of studies on the treatment of acute spinal cord injury as well as sleep, bowel management, and controlling assistive devices with thoughts. Dr Kim Anderson-Erisman will present her findings on the research perspectives of people with spinal cord injury. The afternoon Community Forum provides an

opportunity for our community to learn more about a range of health issues. Healthy eating, resilience, avoiding pressure injuries and controlling pain will be covered in presentations by some of Australia's leading experts in the field. An "Ask the Expert" session will allow community members to ask the questions that are important to them.

In the true tradition of *Connections* meetings, once again this conference goes beyond the exchange of knowledge and ideas. It is about joining together and building on our efforts to develop strength and capacities that derive from synergy. Together we can make a difference.

Thank you for your support of *Connections 2014*. We are most grateful to our distinguished speakers, generous sponsors, exhibitors and delegates for making *Connections 2014* so special.

We hope you enjoy the meeting.

## Join the Spinal Cord Injury Network Community

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# Connections 2014 Programme

8.45am	Registration opens
9.15am	<b>Conference Opening and Welcome</b> Dr Stephanie Williams, CEO, The Spinal Cord Injury Network Don Ferguson, General Manager, Lifetime Care and Support Authority of NSW Dr Tony Penna, Office for Health and Medical Research, NSW Ministry of Health
9.30am	<b>Keynote Presentations</b>
9.35am	<b>Research priorities of people living with spinal cord injury</b> Dr Kim Anderson-Erisman, Miami Project to Cure Paralysis
10.10am	<b>BrainGate2 and the future of brain-computer interface technology</b> Dr John Simeral, Providence VA Medical Centre and Brown University
10.45am	Morning Tea
11.15am	<b>Strategic Workshop: Progress with Spinal Cord Injury Clinical Trials</b> Proudly supported by the Office for Health and Medical Research Co-Chairs: Professor Sarah Dunlop and Professor Brian Freeman
11.25am	<b>Can a sodium channel blocker save the spinal cord?</b> Dr Ralph Stanford, Prince of Wales Hospital, Sydney
11.45am	<b>Cethrin: Looking back and moving forward</b> Dr Kim Anderson-Erisman, Miami Project to Cure Paralysis
12.05pm	<b>The potential of colokinetics to assist in bowel management in people with spinal cord injury</b> Professor John Furness, The University of Melbourne
12.25pm	<b>Are we there yet? Progress of the five year, multi-national study, which aims to improve sleep and breathing in acute tetraplegia</b> Dr David Berlowitz, Institute for Breathing and Sleep, Melbourne
12.45pm	<b>Panel Discussion</b>
1.15pm	Lunch Proudly supported by Slater and Gordon
1.45pm	Registration for Community Forum
2.15pm	<b>Community Forum</b> Proudly supported by the Lifetime Care and Support Authority of NSW Chair: Em. Professor Phil Waite
2.20pm	<b>Community FAQ's Presentations</b>
2.20pm	<b>How do you prevent pressure ulcers and keep your skin happy and healthy?</b> Associate Professor Jillian Swaine, Institute for Health Research, The University of Notre Dame, Australia
2.45pm	<b>Is it possible to control or manage chronic pain in spinal cord injury?</b> Associate Professor James Middleton, NSW Spinal Cord Injury Service
3.10pm	<b>What does it mean to eat well after spinal cord injury?</b> Amy Nevin, Princess Alexandra Hospital, Brisbane
3.35pm	<b>The art of being resilient: How can I thrive following spinal cord injury?</b> Professor Ashley Craig, The University of Sydney
4.00pm	<b>"Ask the Expert" Session</b> Chair: Dr Tim Geraghty
4.50pm	Wrap Up
5.00pm	Mixer
6.00pm	Close

# Keynote Address

## Research priorities of people living with spinal cord injury

### Dr Kim Anderson-Erisman

Miami Project to Cure Paralysis and Miller School of Medicine, Florida

Individuals living with spinal cord injury can play an active role in many aspects of research. Importantly, they can voice their opinions about what research topics and areas of functional recovery are of highest priority to them. Examples will be discussed demonstrating how consumer input has been obtained on different research topics over the last ten years, including:

1. **Functional recovery priorities to guide basic science**
2. **Sexual function**
3. **Risk versus benefit to surgically improve arm and hand function**
4. **Barriers to exercise participation**
5. **Preferences regarding brain-computer interface technology**
6. **Facilitators and barriers to clinical trial participation.**

This can and has had a significant impact on the scientific community. Specifically, there has been an increase in animal studies using cervical injury models to investigate arm and hand function. Additionally, clinical trials are trending towards more cervical injury cohorts partially because of the greater ease in detecting motor change in the upper extremities. Interestingly, there has been an increase in scientific discussion of bladder, bowel, and sexual function, but not as much of an increase in animal models investigating repair of these functions. This is an area where consumer organisations could interact with funding agencies to leverage an increase in research activity. Consumers are the experts in describing how spinal cord injury impacts their participation in many things and it is very important to help researchers understand what factors are barriers and facilitators, and the complexity of their interactions. The newest results will discuss the perceived barriers and facilitators consumers experience with clinical trial participation. Results from the survey will highlight factors that could be altered during the design of clinical trials to enhance consumer participation. In summary, the research priorities of people living with spinal cord injury need to be identified and publicised, and researchers and funding agencies have a responsibility to address these priorities.

## BrainGate2 and the future of brain-computer interface technology

### Dr John Simeral

Providence VA Medical Center and Brown University, Rhode Island

Translational research is making steady progress toward the goal of preventing, curing, or repairing injuries to the central nervous system. In parallel, the complementary approach of translational neural engineering is developing devices to restore or replace lost functions of the nervous system following disease or injury. Dr Simeral will discuss several current neural prosthetic devices before focusing on development of the BrainGate2 neural interface system, a brain-computer interface designed to enhance independence and communication for people with paralysis or locked-in syndrome. Using a small sensor implanted in the brain, BrainGate2 relays neural activity from the cortex to signal processors outside the body that convert the user's natural movement intentions into commands for assistive devices. The BrainGate2 pilot clinical trial has enrolled nine people with longstanding tetraplegia resulting from spinal cord injury, Amyotrophic Lateral Sclerosis (ALS, or Lou Gehrig's Disease), or stroke. Participants in the trial have been able to directly control a range of devices such as computers and robotic or prosthetic arms. Dr Simeral will also review the latest research, which is progressing toward a BrainGate2 neural interface system that may one day be fully wireless, mobile, and operable without technical oversight.

# Progress with Spinal Cord Injury Clinical Trials

## Can a sodium channel blocker save the spinal cord?

### Dr Ralph Stanford

Prince of Wales Hospital, Sydney

To be paralysed by acute spinal cord injury is devastating to the individual, their family and friends, and costly to the community. In spite of decades of research at the cellular level, with animal models and large scale human data, there is still no way known to repair the spinal cord and restore function. Modern management of acute spinal cord injury mitigates secondary injury to the spinal cord and maximises the natural recovery process and in some cases improvement does occur, but for about half of the patient group, there is no prospect of any improvement at all.

Riluzole is an established pharmaceutical that works on nerve cell membranes to partially block the passage of sodium ions into the cell. Sodium ions are integral to the transmission of electrical signals by nerve cells and also play a role in internal cell control. Riluzole may improve the scope of neuronal healing after injury or inflammation. It has a good safety profile and prolongs life in treating motor neurone disease (amyotrophic lateral sclerosis). Fehlings et al have shown that there are potential benefits of using Riluzole in animal models of spinal cord injury and also in a small, non-randomised and non-blinded human trial. Professor Fehlings has established an international, multicentre, randomised, double-blinded trial of Riluzole in acute spinal cord injury.

The expected clinical effect of Riluzole is relatively small and so a large number of patients will be required in order to show benefit, in the order of 300 cases. Therefore multiple sites will be needed in order to provide sufficient numbers. High quality clinical research requires equal numbers of people to be treated with the real drug or the placebo in a randomised way. Blinding means that neither the patient nor the health care providers know who receives the drug or the placebo. Treatment will be for two weeks and follow up for 6 to 12 months to establish neurological benefit and the safety of Riluzole. Analysis will be done centrally, pooling data from all sites around the world.

Sydney will be part of the Riluzole trial and both the Prince of Wales and Royal North Shore Hospital spinal cord injury units have been set up to conduct the study. This is a complex process requiring the input of many dedicated people, but it is also a great opportunity for Australia to be part of world-class research.

## Cethrin: Looking back and moving forward

### Dr Kim Anderson-Erisman

Miami Project to Cure Paralysis and Miller School of Medicine, Florida

The Cethrin™ clinical trial was an open-label Phase I/IIa trial conducted from 2005-2008 to evaluate the safety, tolerability, and neurological status of people who suffered an acute spinal cord injury and were treated with escalating doses of Cethrin. Cethrin is a therapeutic protein drug that has been shown to be neuroprotective as well as being able to facilitate axon regeneration in preclinical models of spinal cord injury. People with cervical or thoracic injuries were enrolled and received Cethrin within one week after their injury. Cethrin was delivered to the surface of the spinal cord during standard decompression surgery. During this talk, the primary results of the trial will be reviewed (Fehlings et al., 2011), which include recruitment, motor scores, and data on adverse events. Overall, Cethrin was safe and well tolerated and, therefore, the trial was a success. In order to learn more about the trends of improvement to wisely plan the next trial, a secondary analysis of the data was conducted and recently published (McKerracher and Anderson, 2013). The majority of participants had either C4-C5 injury levels or T6-T11 injury levels. The majority of people were enrolled and received Cethrin within three days of their spinal injury. There was a trend toward improved sensory scores in participants with thoracic injury, but when compared to spontaneous sensory recovery in historical control databases there was a great deal of variability across all thoracic injuries. Participants with cervical injuries trended toward greater gains in upper extremity motor scores and conversions to motor incomplete status compared to historical control databases. These trends suggested that further study of Cethrin, particularly in the cervical injury population, should be pursued. BioAxone is currently planning a placebo-controlled, randomised Phase IIb trial to further examine Cethrin in acute cervical spinal cord injury. The primary endpoint in this trial will be upper extremity motor scores to monitor neurologic change. They will also measure several functional tests of arm and hand function as well as performance of several activities of daily living. In addition, BioAxone is developing a questionnaire to qualitatively assess the role of rehabilitation in the recovery of treated and placebo groups.

## The potential of colokinetics to assist in bowel management in people with spinal cord injury

### Professor John Furness

Departments of Anatomy & Neuroscience and Clinical Pharmacology, University of Melbourne  
John B Furness, Ruslan Pustovit, Leni R Rivera, Albert G Frauman, Andrew Ellis, Brid Callaghan

When the spinal cord is severed, there is loss of conscious control of the bowel. However, neural control centres below the lesion are intact. This means that the bowel cannot be emptied voluntarily at a convenient time, and that the over-full bowel leaks at times that cause considerable embarrassment. Bowel leakage is believed to contribute to urinary tract infections. Developing effective management methods for bowel complications is considered very important to those living with a spinal cord injury. In an Australasian survey presented at Connections 2012 (Nicholson Perry, unpublished), people living with the injury were asked the question, "if one problem could be solved, what would it be?" The most common answer was bladder and bowel problems, which was ranked as most important by 34% of persons with spinal cord injury. Amongst paraplegics, 39% nominated bladder and bowel as the most important. Widerström-Noga (1999) conducted a survey amongst 430 people with spinal cord injury to ascertain the frequencies of problems: 85.6% reported problems with bowel control.

Because the defecation centres at L5-S2 are intact after most injuries to the spinal cord (the greatest proportion being cervical or thoracic), we have investigated agents that stimulate the lumbosacral defecation centres. We discovered a class of compounds, centrally penetrant ghrelin receptor agonists, that stimulate the spinal defecation centres to cause a co-ordinated bowel emptying (Shimizu et al. 2006; Shafton et al. 2009). We then conducted proof of principle experiments that showed that a lead compound, capromorelin was effective in animals with spinal cord injury (Ferens et al. 2011).

Here we report on the first clinical trial of capromorelin in paraplegics and the properties of a second generation centrally acting colokinetic, ulimorelin. This first trial was a single ascending dose safety and pharmacokinetics trial. The pharmacokinetic profile was determined from minus 30 min to 12 h. Investigations included continuous blood pressure, heart rate and temperature monitoring, 12 lead ECG, and full blood and urine analysis. Follow up was at four weeks. Time and amount of defecation and nature of stool were monitored. Capromorelin reached similar peak plasma levels but was cleared more slowly in those with spinal cord injury,

compared to uninjured controls. There were no adverse effects. In particular, there were no dysreflexia events. Times to first bowel action averaged 110 min. On the basis of this trial, a blinded multiple ascending, placebo controlled trial of capromorelin is planned, with quadriplegics as the subjects.

Animal studies with the second generation compound, ulimorelin, showed that it is as potent, or slightly more potent, than other compounds in causing defecation, but that it desensitises to a much lesser extent than capromorelin and other first generation compounds (Pustovit et al. 2014). This may be an advantage where repeated dosing is required.

#### References:

1. Ferens DM, Habgood MD, Saunders NR, Tan YH, Brown DJ, Brock JA, Furness JB (2011) Stimulation of defecation in spinal cord-injured rats by a centrally acting ghrelin receptor agonist. *Spinal Cord* 49: 1036-1041
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## Are we there yet? Progress of a five year, multi-national study, which aims to improve sleep and breathing in acute tetraplegia

### Dr David Berlowitz

Institute for Breathing and Sleep, Melbourne

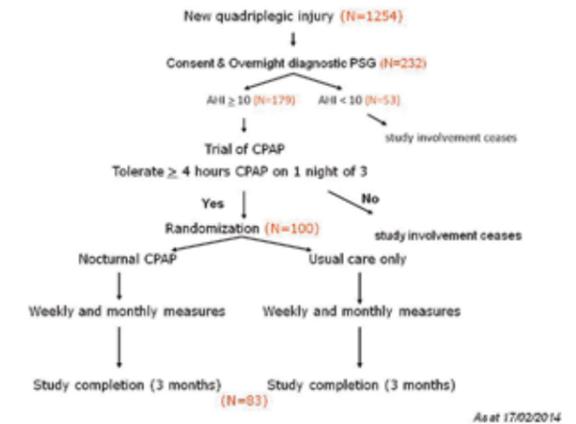
#### Background

Obstructive sleep apnoea (OSA) is known to be a direct consequence of quadriplegia and is associated with cognitive disturbances likely to impair rehabilitation and vocational outcomes. The aim of this trial is to compare usual care with a 3-month trial of nocturnal continuous positive airway pressure (CPAP) in those with OSA and acute quadriplegia. Although CPAP is the most effective treatment for OSA, its application in people with quadriplegia is challenging. If we are to encourage our patients to use CPAP, we have to demonstrate that the benefits outweigh the burden of use.

#### Methods/design

The primary hypothesis is that nocturnal CPAP will improve neuropsychological functioning more than usual care alone. The secondary hypothesis is that the magnitude of improvement in neuropsychological function will be predicted by the baseline severity of sleepiness, sleep fragmentation and OSA. Neuropsychological tests and full sleep studies are performed at baseline and 3 months with interim measures of sleepiness and autonomic function measured weekly. Spirometry is measured monthly.

The multicentre, prospective, randomised trial commenced in July 2009 across 11 centres in Australia, New Zealand, U.K. and Canada (ACTRN12605000799651). Individuals who have sustained a traumatic quadriplegia (complete or incomplete second cervical to first thoracic level lesions) are recruited once medically stable post injury. Participants are screened for OSA using full, portable sleep studies. Those with an apnoea hypopnoea index greater than 10 events per hour proceed to a short-term trial of therapy. Those who can tolerate CPAP for at least four hours on at least one night of a three-night trial are randomised to either usual care or a three-month trial of auto-titrating CPAP. The target sample size is 150 completed.



#### Results and Discussion

The Figure above illustrates study progress as at 17th February 2014. The study is proceeding well and no serious adverse events have been observed. 75% of those screened have been found to have OSA and almost 60% of these have tolerated initial CPAP treatment. The trial is expected to complete recruitment in late 2015.

While the full trial outcomes must wait until study completion, the baseline data demonstrate that untreated sleep apnoea is associated with concentration and memory difficulties and that the severity of these impairments rises with the severity of the sleep apnoea.

This project is proudly supported by the Transport Accident Commission.

# Community Forum

## How do you prevent pressure ulcers and keep your skin happy and healthy?

### Associate Professor Jillian Swaine

Institute for Health Research, University of Notre Dame, Australia

Pressure ulcers are prevalent in individuals who have a spinal cord injury and are one of the most significant complications of a spinal cord injury. Their incidence ranges from 23% to 33% or more per year and up to 85% over the course of a lifetime. Three common anatomical locations for a pressure ulcer are in the tissues underlying the ischial tuberosity bones ('sit bones') (Fig 1A), the underside of the femur of the thigh (Fig 1B) and the heels.



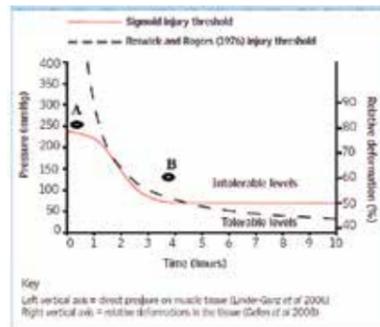
**Figure 1.** Two common PI locations on the pelvis. The left ischial tuberosity bone ('sit bone') (A) and the underside of the femur (B)

#### How to Keep Healthy Skin

There are several evidence-based pressure injury prevention guidelines and one is specific to spinal cord injury<sup>[5]</sup>. To prevent pressure-induced ischaemia and deformation from occurring, the following behaviours are recommended:

- Lean, push-up, tilt or recline frequently and as far as possible when sitting. Gently return to sitting upright to avoid high deformations.
- Perform transfers as gently as possible to avoid high deformations.
- Consider strength training to enhance transfers and weight shifting. A good resource for spinal cord injury and physical activity is: <http://sciactioncanada.ca/guidelines/>
- Regularly use a wheelchair cushion that distributes interface pressures optimally by maximising envelopment and immersion and reduces risk of pressure induced ischaemia and deformation. Air-cell based cushions have been found to 57% greater immersion and deformation levels up to 10,000 times lower in the buttocks as compared to foam<sup>[6]</sup>.
- Eat a healthy diet to maintain a healthy body mass index and healthy skin. Australia's Food Guide is a good resource and can be found online at: <http://www.healthycactive.gov.au/internet/healthyactive/Publishing.nsf/Content/healthyweight>

#### Pressure Injury is the New Pressure Ulcer



The name for 'pressure ulcers' was recently changed in Australia to 'pressure injury' because it was thought that there needed to be an 'injury' to the tissues before an 'ulcer' could develop. There are several different mechanisms of tissue injury that can lead to an ulcer. These include pressure-induced ischaemia and pressure-induced deformation

**Figure 2.** The Pressure-Time curves that indicate how long muscle can withstand loads before it becomes damaged. Using Gefen's sigmoid injury threshold (solid line), a pressure injury can occur with high pressure in a short duration (A) such as a hard transfer and lower pressure over several hours (B) such as sitting on a foam cushion for four hours without moving (immobilised).

<sup>[1]</sup> Ischaemia is a restriction in blood supply to tissues, causing a depletion of oxygen and glucose needed for cellular metabolism<sup>[2]</sup>. Deformation is a change in shape of the muscle tissue, which leads to cell death if an injury threshold is reached. Both these mechanisms involve pressure on the tissues. There are two factors associated with the risk of developing pressure injuries related to pressure on the tissues: (1) the amount and duration of pressure to the tissues; and (2) and the ability of the tissues to tolerate this pressure. Figure two is a graph that depicts the pressure injury threshold level in muscle is a function of the amount and duration of pressure. A pressure injury is a result of a high pressure for a short amount such as landing on a hard surface during a car transfer (Fig 2 A) or a relatively lower pressure for a longer amount of time such as sitting on a foam cushion for four hours not moving (immobilised) (Fig 2B)<sup>[3]</sup>. This immobilisation is a result of not redistributing pressure by altering body posture such as performing weight shifts, tilting or turning<sup>[4]</sup>.

#### Conclusion

In summary, pressure induced ischaemia and deformation lead to pressure injuries and they are dependent on the amount and duration of pressure. There are numerous behaviours that can be done to prevent this tissue damage. They need to be individualised for optimal prevention<sup>[7]</sup>.

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## Is it possible to control or manage chronic pain in spinal cord injury?

### Associate Professor James Middleton

Director, State Spinal Cord Injury Service, NSW Agency for Clinical Innovation

Chronic pain is a common and difficult problem to manage after spinal cord injury. Not only does it occur frequently, with around two-thirds of people after spinal cord injury developing persistent pain at some stage, but the pain is often severe and impacts on physical function, participation in social and occupational activities, wellbeing, mood and quality of life. There are certain defined types of pain that may arise following spinal cord injury, including musculoskeletal, visceral and neuropathic pains, each with different characteristics and an array of contributing mechanisms. For example, pain described as 'burning, pins and needles, freezing cold or electric shock-like' in an area of abnormal sensation extending well below the level of injury (termed below-level neuropathic pain) is thought to arise from a combination of mechanisms involving increased nerve excitability in peripheral nerves and/or spinal cord at the level of injury along with injury-induced secondary changes in the brain. This means that the best treatment relies on careful assessment that seeks to accurately classify the specific type/s of pain present and matches this to the most effective available evidence-based treatments.

Since pain is a complex phenomenon, management of chronic pain in spinal cord injury entails the use of a biopsychosocial model, taking into consideration biological, physical, psychological and environmental contributing factors, with an interdisciplinary team approach to properly inform a person-centric, goal-oriented, multi-faceted pain management plan. Depending on the type of pain and associated contributing factors, a range of possible treatment options/strategies may include the use of different medications, exercise, physical modalities, distraction, relaxation and meditation techniques, cognitive-behavioural therapy interventions to modify unhelpful beliefs, expectations and coping abilities, new technology and procedural interventions. Best practice involves enabling the person with spinal cord injury to develop self-management knowledge and skills in partnership with healthcare providers, supported by appropriate resources and tools.

After discharge from the specialist spinal cord injury unit, individuals are largely managed in a primary care environment, where barriers to the implementation of best practice spinal cord injury and pain management may include lack of time and resources, expertise or knowledge of clinical practice guidelines, as well as a general lack of high quality research evidence. A recent collaborative project between the Agency for Clinical Innovation Pain Network and State Spinal Cord Injury Service NSW, funded by the NSW Lifetime Care and Support Authority, has developed web-based consumer self-management resources, an interactive evidence-based decision support tool for clinicians to guide assessment, decision making and treatment planning and pilot specialist spinal cord injury pain service model (available at [www.aci.health.nsw.gov.au/chronic-pain](http://www.aci.health.nsw.gov.au/chronic-pain)).

Finally, there are some exciting new treatment approaches on the horizon for neuropathic pain, some of which involve novel drug development targeting pain receptors and transmitters. Other innovative strategies, based on recent insights into reorganisation of the somatosensory cortex of the brain after spinal cord injury and its correlation with pain, are seeking to reverse cortical "neuroplasticity" and remedy the mismatch between motor output and sensory feedback through techniques such as imagery and visual illusion.

#### Acknowledgements:

- NSW Lifetime Care & Support Authority who provided funding to the ACI Pain Network and State Spinal Cord Injury Service.
- Professor Philip Siddall, Director Pain Services, HammondCare Health & Hospitals and Pain Management Research Group, The University of Sydney.
- Lyndall Katte, SCI Pain Project Officer, Agency for Clinical Innovation.
- Associate Professor Kathryn Nicholson Perry, School of Psychological Sciences, Australian College of Applied Psychology.
- Jenni Johnson, Manager Pain Management Network, Agency for Clinical Innovation.

## What does it mean to eat well after spinal cord injury?

### Amy Nevin

Accredited Practising Dietitian, Princess Alexandra Hospital, Brisbane

Research examining nutrition needs following spinal cord injury has gained momentum in recent years. From the effectiveness of probiotic supplements to reduce antibiotic-associated diarrhoea<sup>[1]</sup> to the high prevalence of Vitamin D deficiency and the importance of routine screening,<sup>[2]</sup> research is beginning to reveal the many ways in which nutrition can optimise health outcomes and quality of life after spinal cord injury. Available evidence points to a number of key themes that may help to define what it means to eat well following spinal cord injury:

#### Eat the right amount to achieve a healthy weight

Spinal cord injury leads to a reduction in daily energy needs<sup>[3]</sup>. Resting metabolic rate can decrease by up to 25%<sup>3,4</sup> due to dramatic body composition changes including muscle loss below the level of injury and increased fat mass.<sup>[5-7]</sup> Reductions in incidental movement and physical activity further contribute<sup>[8]</sup>. Unless daily intake of energy from food is adjusted accordingly, unused energy is stored as fat and weight gain will follow. Being overweight has unique implications following spinal cord injury and may lead to reduced independence, outgrowing of equipment and increased risk of developing pressure injuries and chronic diseases. Downsizing portions by using smaller bowls and entrée sized plates is a simple way to reduce energy intake and can aid in achieving improved energy balance.

#### Eat a wide variety and have more of some foods compared to others

What are the best foods to eat to achieve a healthy weight and maintain good health? It doesn't have to mean going without the things that make eating enjoyable, like favourite foods. What it does mean is recognising foods to eat every day versus those to eat every now and again. A well balanced diet including foods from all the food groups is recommended for the general population – including those with spinal cord injury – and is the easiest way to get the right amount of nutrients for optimal health.<sup>[9]</sup> The Australian Dietary Guidelines encourage developing awareness of foods that are high energy, sugar and fat e.g. sweet treats, takeaways and alcohol.<sup>[9]</sup> Having these occasionally is okay, just remember to keep the portion size small, take the time to savour the flavours as doing so will help to reduce future cravings. Finally, aim to eat regular meals and plan ahead. Skipping meals seldom leads to any kind of benefit and often results in overeating foods that may not be the best choice.

#### Eat fibre rich foods and drink plenty of water

Fibre plays an important role in the management of neurogenic bowel. A fibre intake of 15-20g/day from a variety of sources such as fruits, vegetables and wholegrain or wholemeal breads and cereals can improve bowel function.<sup>[10]</sup> Note this is less than the recommended 30g/day for the general population. Drinking plenty of fluid is also important for both bowel and bladder function, with best practice recommendations suggesting a minimum intake of 1.5L/day.<sup>[10]</sup>

#### If you have a pressure injury, be sure to eat enough protein

Pressure injuries lead to an increased need for nutrients; specifically energy and protein.<sup>[11]</sup> While energy needs are often easily met, the recommended protein intake to optimise wound healing is almost double baseline needs.<sup>[11]</sup> Getting enough protein can be achieved by including lean sources at each meal such as meat, fish, eggs, reduced fat dairy and legumes as part of a healthy well balanced diet.

#### Future directions

There is still much to learn about the nutritional demands of spinal cord injury. Ongoing research in this area with increased consumer participation is vital so that in future we can strive to continue answering the question "what does it mean to eat well after spinal cord injury?"

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## The art of being resilient: How can I thrive following spinal cord injury?

### Professor Ashley Craig

The University of Sydney

Resilience is a dynamic process in which a person learns to adapt and adjust successfully despite experiencing very distressing and threatening circumstances. To be resilient means one will 'bounce back' after a difficult experience despite ongoing adversity. Being resilient also does not exempt a person from failing to cope from time to time. Regardless of failure, a resilient person will accept setbacks and failure as an experience to improve and adapt. There are a number of critical factors that will improve a person's

resilience and we will explore the relevance of these to living with and adjusting to severe injury. Spinal cord injury is a catastrophic injury that will severely challenge a person's resources, and many will become depressed and perhaps even suicidal. Based on recent research, we have completed in this area, we will explore factors that improve a person's ability to be resilient, and I will apply the process of being resilient to living and coping with spinal cord injury.

## Connections 2014 Awards

The Spinal Cord Injury Network is pleased to support the attendance of the following individuals at *Connections 2014*. Our congratulations and best wishes to all *Connections 2014 Award* winners for a successful and enjoyable meeting.



**Ms Louise Goodes**

Clinical Research Coordinator  
The University of Western Australia



**Peter Stewart**

Chief Executive Officer  
The Paraplegic and Quadriplegic  
Association of South Australia



**Dr Jennifer Dunn**

Post-Doctoral Fellow  
Department of Orthopaedic Surgery  
and Musculoskeletal Medicine,  
University of Otago, Christchurch  
Physiotherapist  
Burwood Spinal Unit, Christchurch



**Ms Maree Ellul**

BSc, MAppSc  
Austin Health and The University  
of Melbourne  
PhD Candidate  
The University of Melbourne

# Sponsorship

## Platinum Sponsorship



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The Office for Health and Medical Research (OHMR) works across the health and medical research communities, including the higher education sector and business in order to promote growth, innovation in health and medical research and to encourage national and international collaborations across the sector in order to achieve better health, environmental and economic outcomes for the people of New South Wales.



### Lifetime Care and Support Authority of NSW

[www.lifetimecare.nsw.gov.au](http://www.lifetimecare.nsw.gov.au)

The Lifetime Care and Support Scheme provides treatment, rehabilitation and attendant care services to people severely injured in motor accidents in NSW, regardless of who was at fault in the accident. People who are eligible for the Scheme have a spinal cord injury; moderate to severe brain injury; amputations; severe burns; or are blind as a result of the accident. The Lifetime Care and Support Authority is committed to supporting its participants to participate in the community to the extent they desire.

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