



ISCR

Institute for Safety, Compensation
and Recovery Research

HORIZON SCANNING

Issue 6 / January 2018

NEWSLETTER

Technologies to Prioritise

The Institute for Safety, Compensation and Recovery Research (ISCR) Horizon Scanning program is designed to identify new and emerging health technologies, treatments, and services that may have the potential to improve the lives of people affected by transport accidents, or work-related illnesses and accidents. The technologies, treatments, and services are anticipated to have a significant impact on client care, safety, independence, function, mobility, and quality of life. The health-related innovations presented here are selected from technologies that are in the early stages of development, on the verge of diffusion, or not yet adopted into established health care systems. The technologies are estimated to emerge in the Australian market within one to three years.

The eight innovations presented in this newsletter have gone through a rigorous filtering and prioritisation process. Forty-six technologies, treatments, and services were originally identified through horizon scanning activities. Through consensus agreement amongst representatives from the Transport Accident Commission (TAC), WorkSafe Victoria (WorkSafe) and Monash University (ISCR), the innovations were prioritised and selected as those with the greatest potential to improve TAC and WorkSafe client outcomes.

The clinical evidence and regulatory status of the innovations featured in the newsletter will be monitored on an ongoing basis.

For more information on ISCR, The Horizon Scanning program or this newsletter, contact
ISCR.horizon.scanning@monash.edu

TECHNOLOGIES INCLUDED IN THIS NEWSLETTER

- Uro-Vaxom® for recurring urinary tract infection in individuals with spinal cord injury
- Comfier™ sleep system for people with limited mobility or complex care needs
- A new model of care to meet the lifetime needs of individuals following spinal cord injury
- DenerveX® system to treat back pain associated with spinal osteoarthritis
- A new generation prosthetic hand that allows the wearer to reach for objects automatically
- A new test to guide choice of antidepressant therapy
- Communication-specific coping intervention (CommCope-I) for traumatic brain injury
- Outpatient (same day) hip replacement for individuals with osteoarthritis

A joint initiative of



Uro-Vaxom® for recurring urinary tract infection in individuals with spinal cord injury

Spinal cord injury (SCI) can interrupt communication between the brain and the nerves in the spinal cord that control bladder function. This may result in a type of bladder dysfunction termed neurogenic bladder. Urinary tract infection (UTI) is a common, and costly, complication of neurogenic bladder, with significant reduction in quality of life for the individual with SCI, even death in some cases. Therefore, there is a need for preventive treatment to avoid recurrent UTIs in those with SCI.

Uro-Vaxom® (OM-89) is a new therapeutic treatment designed to prevent the development of UTIs. The Uro-Vaxom® capsule contains heat-inactivated bacterial Escherichia coli (E. coli) extract. E. coli is the most

common cause of UTIs. The bacterial extract in Uro-Vaxom® has been modified to prevent digestion in the stomach and allows it to be absorbed from the small intestine. The bacterial extract stimulates the immune system and activates the body's natural defence against urinary infections. With daily oral administration, it is proposed to be a cost-effective alternative to antibiotic therapy in UTI management. Uro-Vaxom® is sold widely for the treatment of recurrent UTIs in individuals with normal bladders; but the treatment of recurring UTIs in neurogenic bladder dysfunction will be a new indication.

A randomised, controlled phase 2 PReSUTINeB study (Prevention of Recurrent Symptomatic Urinary Tract

Infections in Participants with Chronic Neurogenic Bladder Dysfunction) to investigate the efficacy of Uro-Vaxom® compared with a placebo in the prevention of recurrent UTI (NCT02591901) was expected to be completed in September 2017. This 3 month study aimed to identify standard symptomatic measures of UTI in individuals with neurogenic bladder dysfunction; and conduct a small-scale, placebo-controlled trial with 48 participants. No results have been published as yet.

Developer:
OM Pharma, Meyrin, Switzerland
www.viforpharma.com



Australian approval status: Not approved

Stage of development: Experimental

Setting for use: Acute care/Primary care

Comfier™ sleep system for people with limited mobility or complex care needs

Individuals with reduced mobility, can face difficulties with sleep including sleep disturbances, loss of independence and the risk of pressure ulcers. Comfier™ is a user-controlled sleep system designed to enable user-controlled pressure relief and comfort.

The Comfier™ bed positioning design allows patients to control the bed's firmness and surface shape. Patients can adjust and support posture under

any part of the body, by individually inflating or deflating ten tubes using a hand-held remote control or retinal scanning (eye gaze) system (sold separately) for those with more limited mobility. The system can be fitted onto existing mattresses, including profiling beds, and can be used under any overlay surface of choice.

No information regarding clinical trials of the Comfier™ System could

be identified. Testimonials on the manufacturer's website describe improved sleep and independence and the reduced need for health care worker support.

Manufacturer:
Mobility with Dignity, United Kingdom
www.mobilitywithdignity.com

Courtesy of Mobility with Dignity



Australian approval status: Not approved

Stage of development: Established

**Setting for use: Acute care, Home care,
Accommodation**

A new model of care to meet the lifetime needs of individuals following spinal cord injury

The New South Wales State Spinal Cord Injury Service (SSCIS) comprises a series of statewide services responsible for the management of people who have sustained a spinal cord injury. The SSCIS is developing a new model of care for the management and support of children and adults with spinal cord injury in NSW.

The draft diagnostic report (April 2017) concluded that the health system needs greater focus on meeting the lifetime needs of people with spinal cord injury¹. The report recommended the following strategies:

- actively engaging with other sectors (e.g. disability, community services) to collectively improve the quality of life and wellbeing of people with spinal cord injury
- refocussing health services to facilitate peoples' longer-term participation in community life, rather than the current emphasis on the acute care phase
- adopting truly person-centred practice that addresses the full range of peoples' needs, including their emotional and psychological wellbeing, as well as their immediate medical needs.

The project steering committee agreed that the new model of care should be underpinned by a set of nine principles to guide further service development. A model of care document is expected to be finalised by the end of 2017; and further projects for implementation will be prioritised to commence in 2018.

More information:

www.aci.health.nsw.gov.au/resources/spinal-cord-injury/model-of-care/spinal-cord-injury-model-of-care

Developer:

NSW State Spinal Cord Injury Service and the NSW Agency for Clinical Innovation



1. ACI. Spinal cord injury model of care. Diagnostic report. Chatswood, NSW: NSW Agency for Clinical Innovation; 2017

Australian approval status: Not approved

Stage of development: In development

Setting for use: Acute care, Rehabilitation, Residential Accommodation, Home Care

DenerveX® System to treat back pain associated with spinal osteoarthritis

Facet joints are cartilage and synovial fluid joints located between the vertebrae in the spine. Nerves branch from the spinal cord and exit next to facet joints.

Spinal osteoarthritis affects the facet joints, and is associated with thinning cartilage, narrowed joints and bony overgrowth at the edge of joints. The cause is unknown, but the prevalence increases with age. It can be associated with trauma to the joint. It is postulated that some spinal pain is caused by osteoarthritis, although many people with these changes do not have pain. Sometimes bony growths can irritate the nerves nearby.

The DenerveX® System is a new minimally-invasive device that aims

to provide long-lasting pain relief from pain caused by spinal osteoarthritis. The DenerveX® System is a small hand-held device with a specially designed power generator. The device uses Rotacapsulation™, a system that combines the shaving of joint capsule tissue with high heat ablation. The rotational action removes joint material, and heat ablation deactivates nerves.

The procedure is completed with a local or general anaesthetic. A small incision of 10–15 mm is made at each treatment location through which a 1 cm diameter tube is inserted into the facet joint. The DenerveX® device is placed through the portal tube into the joint and activated. Patients may have treatment at one or several facet joints

in one session; and they are dismissed within a few hours after surgery. Some soreness may occur at the treatment site for 2–4 days and full recovery is expected within 1–2 weeks.

The company has reported that 14 patients with spinal osteoarthritis have been treated successfully with the DenerveX® System in England, Germany and Italy. A video of the procedure can be viewed at medovex.com/denervex-providers.

Regulatory approval was received from Australia's Therapeutic Goods Administration in August 2017.

Developer:
Medovex
medovex.com



Courtesy of Medovex

Australian approval status: Approved

Stage of development: No randomised controlled trials conducted to date

Setting for use: Day procedure units

A new generation prosthetic hand that allows the wearer to reach for objects automatically

Currently, most prosthetic limbs are controlled by myoelectric signals, recorded from existing muscles of the residual limb. Although the sensors that receive the electrical signals have become lighter and more durable over time, their lack of responsiveness remains a key limitation. For many amputees, the prosthesis feels slow and cumbersome. Myoelectric prosthetics require significant practice to learn how to control them.

This new prosthetic hand is fitted with a camera that takes a picture of the object in front of it, assesses its shape and size and triggers a series of movements in the hand instantaneously. This allows the wearer to reach for objects automatically, without thinking; thereby bypassing the usual

mechanisms. The system uses pathways to recognise objects and group them according to four different grasp types:

- palm wrist neutral (e.g. to pick up a cup)
- palm wrist pronated (e.g. to pick up a TV remote)
- tripod (thumb and two fingers)
- pinch (thumb and first finger)

In contrast to creating a large database and matching an image of every object, this approach allows the system to learn to recognise an object it has never seen before and to pick it up.

The developers claim this design is ten times faster than other prosthetic limbs currently on the market.

The developers hope to make the artificial hand available for National Health Service (UK) patients within two years. They claim the system is relatively inexpensive and can be implemented quickly. In addition, currently available prosthetics can be adapted for its use.

The hand has been approved by the NHS and is expected to be in Australia within the next two years

Developer:

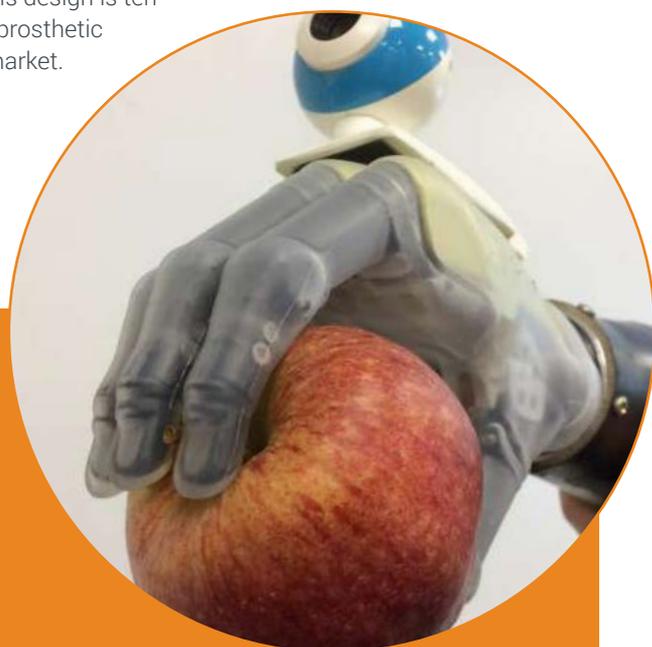
School of Electrical and Electronic Engineering, Newcastle University, UK.
www.ncl.ac.uk/eee/about/news/item/hand-that-sees.html

Courtesy of Newcastle University, UK

Australian approval status: Not approved

Stage of development: Experimental

Setting for use: Home care



New test to guide choice of antidepressant therapy

Depression is a major cause of disability worldwide. Treatments for depression include medications and psychological treatments such as cognitive behavioural therapy, which are effective in some but not all cases.

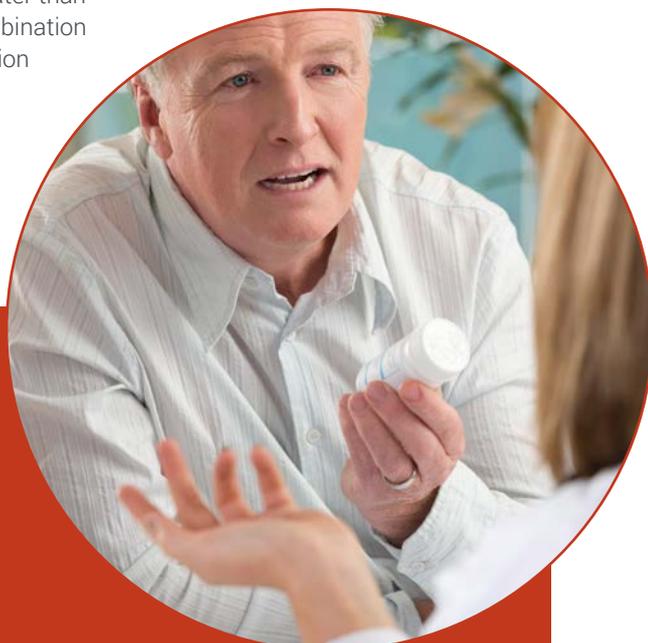
A new test is being developed to help guide the choice of antidepressant medication with the aim of improving the success rate of treatment. The new test measures C-reactive protein levels through a simple finger-prick blood test. C-reactive protein is a measure of inflammation but has also been shown to be a marker for depression. High levels of C-reactive protein in the blood are associated with a greater risk of clinical depression and a poor response to commonly used antidepressant medication.

A recent trial measured remission rates in 106 patients with chronic or recurrent depression. Patients were treated with the antidepressant escitalopram alone, or escitalopram plus bupropion, an antidepressant with a different mechanism of action (NCT00590863). Results showed a strong correlation between the base level of C-reactive protein in the blood before treatment and the effectiveness of the drug regimen. For patients with C-reactive protein levels of less than 1 milligram per litre, escitalopram alone was more effective than combined therapy. The remission rate was 57% compared to 33% in the combination therapy group. In contrast, for patients with C-reactive protein levels greater than 1 milligram per litre, the combination of escitalopram plus bupropion

was more effective, with remission rates of 51% compared to 30% on escitalopram alone.

Two ongoing trials have been identified that aim to assess the role of C-reactive protein levels as a biomarker to predict responses to pharmacological and non-pharmacological approaches to managing depression (NCT02752542, NCT02752178).

Developer:
University of Texas Southwestern Medical Centre



Australian approval status: Not approved

Stage of development: Experimental

Setting for use: Primary care, Secondary care

Communication-specific coping Intervention (CommCope-I) for traumatic brain injury

Most adults who sustain moderate or severe traumatic brain injury (TBI) experience communication difficulties. These communication problems are a source of ongoing stress and impact negatively on the wellbeing of injured individuals. The Communication-specific Coping Intervention (CommCope-I) was developed to increase the use of productive and reduce the use of

non-productive communication-specific coping strategies. CommCope-I is a new structured program led by a Speech Pathologist that incorporates the principles of cognitive behavioural therapy, self-coaching and context-sensitive social communication therapy.

There have been several positive case series reported. A proof-of-concept study, published in 2014, demonstrated that the CommCope-I intervention led to positive improvements in communication and functioning in two participants with TBI.

A subsequent study, first published online in December 2016, evaluated the effectiveness of CommCope-I in 13 participants with severe TBI and ongoing functional communication difficulties. CommCope-I was delivered by trained clinicians in a 6-week program involving two 1-hour sessions per week. The study reported statistically significant improvements in communication-specific coping, functional communication and stress; and improvement was maintained for 3 months.

Developer:
La Trobe University funded by the TAC, Victorian Neurotrauma Initiative.



Australian approval status: Not required

Stage of development: Experimental

Setting for use: Primary care

Outpatient (same day) hip replacement for individuals with osteoarthritis

Osteoarthritis of the hip is characterised by thinning of the cartilage, narrowing of the joint space and bony overgrowth. It can be a cause of pain and reduced function. Joint replacement, which involves replacing the damaged cartilage and bone with an artificial joint, is a widely used surgical procedure to reduce pain and disability associated with osteoarthritis. Currently, the average length of hospital stay is six days for hip replacement surgery.

Outpatient or same day total hip replacement surgery has the potential to improve quality of care and reduce health care costs. Same-day discharge involves a multidisciplinary approach using careful patient selection, patient education, improved anesthesia and analgesia, advanced

surgical techniques with minimal muscle damage and blood loss, early mobilization and intensive physical therapy, and the active involvement of caregivers at home. A recent Canadian report found that whilst discharge from hospital on the day of total hip replacement is not new (first published in 2003), recent publications have increased.

The report supports the effectiveness and safety of same day total hip replacement and found high levels of patient function and satisfaction as well as decreased health care costs. In addition, there are three ongoing studies for outpatient total hip replacement surgery which are anticipated to be completed between December 2017 and December 2018

(NCT02544620, NCT03028779, NCT03026764). It was acknowledged that studies to date have generally included patients who were younger, lighter, and healthier than the average patient receiving total hip replacement. Therefore, evidence in a more representative group of patients is required.

Source:

Canadian Agency for Drugs and Technologies in Health
www.cadth.ca/outpatient-same-day-total-hip-replacement

Australian approval status: Not approved

Stage of development: Investigational

Setting for use: Outpatient rehabilitation



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*Have you heard about a new health technology you think
will have an impact on people injured on the roads or at work?
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