“Pressure Ulcers: Reviewing the Evidence on a Pressing Healthcare Concern”

ASSOCIATION OF REGISTERED NURSES OF NEWFOUNDLAND AND LABRADOR

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SHEILA TUCKER
LIAISON OFFICER FOR NEWFOUNDLAND AND LABRADOR
CANADIAN AGENCY FOR DRUGS & TECHNOLOGIES IN HEALTH (CADTH)
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I am a CADTH employee independently based in Newfoundland.
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Ann Tucker, R.N.(Ret.)
Learning Objectives

Through participation in this session, participants will:

• Increase awareness of new and emerging healthcare interventions for pressure ulcers.

• Review recent evidence on these interventions.

• Consider the implications of this information for policy and practice in Newfoundland and Labrador.
Questions for Consideration

What are the implications of the evidence for current practice in Newfoundland and Labrador?

Are there gaps in current resources used to guide clinical practice in the prevention and management of pressure ulcers?

Are there opportunities to strengthen practice?
What We Do

CADTH DELIVERS
Evidence
Analysis
Advice
Recommendations

Healthcare Devices
Drugs
Vaccines
Medical interventions
Surgical interventions
Laboratory tests
Therapies
Dental procedures
Background

• Prevalence of pressure ulcers in Canada ranges between 25.1% in acute care hospitals and 29.9% in long-term care facilities.
• Significant implications for health, quality of life for patients
• Treatment is costly and difficult.
• Increases the risk of other adverse events including infection, sepsis and death.
• Prevention of pressure ulcers is an accepted indicator of health system quality and patient safety.
Worsened Pressure Ulcer in Long-Term Care details for Newfoundland and Labrador

The Canada rate includes participation from approximately 60% of long-term care facilities across the country. Results are based on full coverage in Saskatchewan, British Columbia, Alberta, Ontario, Newfoundland and Labrador and Yukon, and partial coverage in Manitoba, New Brunswick and Nova Scotia. No data is available at this time for Quebec, Prince Edward Island, the Northwest Territories and Nunavut. Results for jurisdictions with partial coverage should be interpreted with caution.
Results for All Regions Within the Province/Territory: Worsened Pressure Ulcer in Long-Term Care (Percentage), 2015–2016

(Source: Canadian Institute for Health Information)
Interactive Map: Worsened Pressure Ulcer in Long-Term Care (Percentage), 2015–2016
Steps for preventing pressure ulcers:
1. Conduct a pressure ulcer admission assessment for all patients.
2. Reassess risk for all patients daily.
3. Inspect skin daily.
4. Manage moisture on skin.
5. Minimize pressure, friction and shear:
   a) Turn/reposition patients every two hours.
   b) Use pressure-redistribution surfaces.
6. Optimize nutrition and hydration.
Hospital Harm Improvement Resource: Pressure Ulcers
CPSI and CIHI (2016)

Additional Elements

1. Maximize activity and mobility, reducing or eliminating friction and shear.

2. Avoid skin massage.


4. Emerging therapies for prevention of pressure ulcers:
   - Microclimate control.
   - Prophylactic Dressings.
   - Fabrics and Textiles.
   - Electrical Stimulation of the Muscles for Prevention of Pressure Ulcers (National Pressure Ulcer Advisory Panel, et al., 2014)
New and Emerging Interventions


DATE: 12 September 2016

CONTEXT AND POLICY ISSUES

Pressure ulcers, commonly referred to as decubitus ulcers or informally as bed sores, are localized injuries to the skin and underlying tissue caused by sustained pressure or rubbing at the weight-bearing, bony parts of the body of immobilized individuals, such as the hips, elbows and heels. Pressure sores can develop as a result of pressure alone, or pressure combined with forces of friction and shear, and they can progress across different levels of severity based on depth of damage from mild tissue damage to necrosis.

Skin and tissue damage occurs most frequently among individuals who cannot reposition themselves, among the elderly, those who are acutely ill or malnourished, or among persons with neurological deficits, such as those with spinal cord injury. The elderly population is particularly at risk given that the risk of skin tears grows with increasing age as the skin becomes less dense and less vascular. The prevalence of pressure ulcers in Canada ranges between 25.1% in acute care hospitals and 20.9% in long-term care facilities. Pressure ulcers can have a negative impact on the quality of life of the affected individuals, and pose a significant financial burden on the healthcare system.

A number of interventions are currently being used to prevent the development of pressure ulcers in patients at risk of skin ulceration. Pressure ulcer prevention is achieved most commonly by reducing or redistributing pressure at anatomical sites most susceptible for skin and tissue damage. Preventive strategies may include the use of special support surfaces (including special beds, mattresses and overlays) designed to redistribute pressure, heel supports, patient repositioning techniques, wheelchair cushions, nutritional supplementation, among others. Despite these established preventive strategies, new and emerging interventions may also be available for efficient pressure ulcer prevention. The purpose of this report is to examine the clinical effectiveness, cost-effectiveness, and evidence-based guidelines regarding the preventive use of emerging technologies in adult patients at risk of developing pressure ulcers in acute care settings.
Established Interventions for PrU Prevention

- mattresses and beds
- patient repositioning
- nutrition
- heel supports and other support surfaces
- wheelchair cushions
- silicone foam dressings
- Australian sheepskin
- pads for incontinence
- general skin care and maintenance
New / Emerging Interventions

Emerging interventions for the PrU prevention (alone or in combination with established PrU preventive techniques), including:

- microclimate control techniques
- prophylactic dressings (e.g., polyurethane)
- silk or silk-like fabrics
- electrical muscle stimulation (for spinal cord injuries)
- decision support systems/tools included in EHRs, monitoring alarms and systems (e.g., Leaf patient monitoring system)

Key Findings:

• Prophylactic polyurethane film dressings may be effective in preventing PrUs in individuals without existing skin or tissue damage.

• One evidence-based guideline identified – recommended practices include:
  • Microclimate manipulation
  • Prophylactic dressings
  • Silk-like fabrics, and
  • Electrical stimulation (patients w. spinal cord injuries)
Evidence-based guidelines regarding the use of emerging technologies when used alone, or in combination with established interventions, for the prevention of pressure ulcers in acute care settings

Recommendations:

• Prophylactic practices include management of microclimate by selecting support services or support surface covers based on their ability to control moisture and temperature at the body/support surface interface.

• Apply a polyurethane foam dressing to an individual’s bony prominances, or by using silk-like fabrics instead of cotton or cotton-blends.

• Electrical stimulation recommended for patients with spinal cord injuries.
Horizon Scanning

Electrically Stimulated Underwear for Pressure Ulcers

Who Might Benefit?

Bedsores, also known as pressure ulcers, are wounds of the skin and underlying tissues. They can be caused by friction, incontinence, temperature, or unreleased prolonged pressure on the skin. Although bedsores can develop on any part of the body, they are often found on the hips, heels, ankles, buttocks, and tailbone. Bedsores are not only painful but can lead to serious, life-threatening infections. People most at risk for bedsores are those with a medical condition that limits their ability to change positions, requires them to use a wheelchair, or confines them to a bed for a long time.

Potential Advantages

Electrotherapeutic underwear is intended to prevent bedsores. In a recent experimental phase 3 study, none of the 10 people who used the electrically stimulated underwear developed bedsores. The majority of the time, people in the study did not find the device irritating, discomforting, or uncomfortable. Features continue to happen very often despite current attempts to prevent them. They are painful, especially to touch, and uncomfortable. Electrical stimulation can help prevent bedsores in many cases, however it has not been proven to work better than other methods of prevention.

Current Practice

Repositioning and turning people at risk are common ways to try to prevent bedsores. If people are able, they may change their position in bed or in a wheelchair on their own. Carer, such as nurses, may turn and reposition patients regularly while they are in a hospital or long-term care facility. Specialized cushions and mattresses are sometimes used to help prevent bedsores. Improved skin care and nutrition may aid in prevention.

New medication for heart failure may reduce the risk of dying, and improve quality of life

What's New?

A specialized type of underwear has been invented for people at risk of developing bedsores. This underwear delivers electrical pulses to areas of the body where bedsores can occur, such as the buttocks and hips. The electrical pulses are sent for 10 seconds, once every 10 minutes. They are meant to mimic the regular body movements that people normally do while sitting or lying down. It is these regular body movements that prevent constant pressure on a specific part of the body from occurring.

Summary

Pressure ulcers are a serious health problem for many patients, and treating these ulcers incurs substantial health care costs. For most pressure ulcers, intervention is important. Initial studies suggest that muscle stimulation delivered through electrodes in a specially designed underwear—Smart-e-Pants—may reduce the risk of developing pressure ulcers in the sacrum area at the base of the spine. This could improve care of individuals confined to bed or wheelchairs.

Initial studies of the device have been short, term, non-randomized ones carried out in a small number of patients. The studies mainly measured pressure relief and patient and caregiver acceptability of the technology.

The Smart-e-Pants device would be used in addition to standard care practices, such as pressure relief mattresses, wheelchair cushions, repositioning, and skin care.

The technology is still undergoing clinical trials and is not yet commercially available.

Background

Pressure ulcers are injuries to the skin or underlying tissues caused by pressure, shear, or friction. They are common in individuals with reduced mobility or sensation, such as those who are bedridden or confined to wheelchairs. The US National Pressure Ulcer Advisory Panel defines a pressure ulcer as "an area of unrelieved pressure over a defined area, usually over a bony prominence, resulting in ischemia, cell death, and tissue necrosis." Pressure ulcers, also known as bedsores or decubitus ulcers, may form externally, from the skin inward (due to pressure, shearing, poor nutrition or hydration, or excessive moisture or dryness of the skin), or internally, from the soft tissue outward (due to the accumulation of pressure between a bony, the adjoining tissue, and the supporting surface).

In Canada, the estimated incidence of pressure ulcers is approximately 1% in community care, 2% in long-term care, 5% in acute care, and 30% in non-acute care facilities. The prevalence of pressure ulcers in all Canadian health care settings is estimated to be 25%.
Patient Lifts and Transfer Equipment (Turning Devices) for Preventing Pressure Ulcers: A Review

Context
A pressure ulcer is an area of localized, persistent injury to the skin that may include blisters, open wounds, or even necrosis (tissue death), and is typically caused by sustained pressure on a particular body area. If the pressure is not relieved, the resulting oxygen deprivation reduces the ability of the wound to heal, and further tissue destruction can result. In Canada, it is estimated that the prevalence of pressure ulcers is as high as 25% in acute care settings and close to 30% in non-acute care settings. In addition to negatively impacting a patient’s quality of life, pressure ulcers may prolong hospital stays and are associated with an increased financial burden. As a result, there is a lot of interest in preventing pressure ulcers, particularly in acute settings like intensive care units, as well as in long-term care settings.

Technology
Patient lifts and transfer equipment, sometimes referred to as turning devices, are designed to allow patients with decreased mobility to be repositioned regularly. These devices could potentially be used to help prevent pressure ulcers in these patients.

Results
The literature search produced 100 citations of which 4 were deemed potentially relevant. No reports were...
Dressing Materials for the Treatment of Pressure Ulcers in Patients in Long-Term Care Facilities: A Review

Context
Pressure ulcers are regions of localized damage to the skin and underlying tissues caused when constant pressure reduces blood flow to the area. People with impaired mobility are most at risk of developing these. Pressure ulcers increase the risk of mortality among geriatric patients by as much as 400%. They also increase the frequency and duration of hospitalization, and decrease the quality of life of affected patients.

The US National Pressure Ulcer Advisory Panel (NPUAP) staging system — the most commonly used system for classifying pressure ulcers — includes four stages representing progressive severity, from intact skin with non-blanchable redness of the localized area in stage I to full thickness tissue loss with exposed bone in stage IV.

Technology
Dressings are an integral part of pressure ulcer wound care. They protect ulcers from trauma and contamination, and they promote healing. A wide variety of dressings are available, many with debridement (removal of dead tissue), antimicrobial, and/or moisture control properties.

Issue
A review of the comparative clinical effectiveness of commonly used dressing materials for stages III and IV

Methods
A limited literature search was conducted of key resources, and titles and abstracts of the retrieved publications were reviewed. Full-text publications were evaluated for final article selection according to predetermined selection criteria (population, intervention, comparator, outcomes, and study designs).

Key Messages
- For the treatment of stage III and stage IV pressure ulcers in seniors confined to beds in long-term care facilities, no evidence was found to recommend one type of commonly used wound dressing over another.
- In the general population, radiant heat dressings may result in faster healing rates of stage III and stage IV pressure ulcers compared with other dressings (based on limited evidence).

Results
The literature search identified 512 citations, with no additional articles identified from other sources. After screening the abstracts, 7 were deemed
Treatment

**TITLE:** Negative Pressure Wound Therapy for Patients with Diabetic Foot Ulcers and Pressure Ulcers: A Review of the Clinical Effectiveness

**DATE:** 21 June 2012

**CONTEXT AND POLICY ISSUES**

Diabetic foot ulcer (DFU) is a common diabetic complication. From 2006 to 2008, it was reported that the prevalence for DFU in Medicare beneficiaries was about 8% in the United States. DFU affects patients’ quality of life significantly and also has a significant financial impact on healthcare system. A delay in management of DFU will increase morbidity and mortality and results in a higher amputation rate. Management of DFU is still a major therapeutic challenge throughout the world.

Pressure ulcers (PU), also known as decubitus ulcers or bedsores, are caused by uninterrupted pressure on soft tissues overlying a bony prominence which obstructs the blood flow to the superficial tissues. The most commonly affected body parts are the sacrum or the hips, but other sites such as the elbows or knees can be affected. People with reduced mobility and poor skin condition in nursing homes or hospitals are more likely affected. Approximately 3 million adults in the United States suffer from pressure ulcers. The reported incidence of PU varies from 9.4% to 30.9%. The healing rate of the PU varies depending on the severity of the condition.
CADTH Project in Process

Polyurethane Foam Dressings For the Prevention of Pressure Ulcers: Clinical and Cost-Effectiveness and Guidelines

• Summary of the evidence with critical appraisal

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Other Wound Care Topics

Prevention and Treatment of Diabetic Foot Ulcers: A Synopsis of the Evidence

Diabetic foot ulcers are the most common complication of diabetes, affecting 4% to 10% of patients. Diabetic foot ulcers tend to be chronic and can develop into serious complications, including wound infection, osteomyelitis (infection in bone), and cellulitis (infection of the skin), and may lead to amputation (surgical removal of infected foot or toe). Early detection and treatment can improve the healing of diabetic foot ulcers and reduce the risk for amputation.

CADTH has reviewed the evidence and current practice guidelines regarding prevention and treatment approaches for diabetic foot ulcers.

In this report, you will find a summary of the evidence for:
- Screening and risk stratification for diabetic foot ulcers
- Taking pressure off the diabetic foot (off-loading devices)
- Wound care for diabetic foot ulcers (debridement procedures)
- Compression therapy
- Negative pressure wound therapy.
ON THE TOPIC OF

Wound Care

Here is a selection of products on wound care produced by CADTH. These and other CADTH products are available, free of charge, at www.cadth.ca/reports. For more information, please contact requests@cadth.ca.

DIABETIC FOOT ULCERS

- Treatments for Diabetic Foot Ulcers: A Summary of Evidence-Based Guidelines (Summary Tool, Oct. 2016)

PRESSURE ULCERS

- Smart-e-Pants: Using Intermittent Electrical Stimulation to Prevent Pressure Ulcers (Issues in Emerging Health Technologies, Mar. 2015)
- Kinetic Beds for Patients at Risk of Complications Due to Immobility: A Review of the Clinical Effectiveness and Cost-Effectiveness (Summary With Critical Appraisal, Dec. 2016)

OTHER

- Acetic Acid for Wound Care: Clinical Effectiveness and Guidelines (Summary of Abstracts, Dec. 2015)
- Home Care Discharge for Patients With Wounds: Guidelines (Summary of Abstracts, July 2015)
- Nutrition Assessment and Interventions for Wound Care: Guidelines (Reference List, Apr. 2016)

CADTH is an independent, not-for-profit organization responsible for providing Canada’s health care decision-makers with objective evidence to help make informed decisions about the optimal use of drugs and medical devices in our health care system.

March 2017
13 Considerations for Making an Evidence-Informed Decision

Thinking of purchasing or upgrading a medical technology? Are you changing service providers that will necessitate acquiring new equipment or resources? Will you be implementing a new quality improvement process that affects resources? You need more than manufacturer information and local expert opinion to be truly evidence-informed.

Consider these 13 questions before you say "yes."

1. Why is this technology or change being considered now?
   What are the drivers? Are these pressures direct or indirect, internal or external? What is the source and motivation for them? Is it the right time in the budget cycle for this purchase?

2. Is there enough quality evidence to support a proposal or business case?
   Does your team agree? Consider seeking assistance from available resources like the local library, CADTH, or other research-based organizations to critically appraise the data you’ve found. CADTH’s Gray Matters: A Practical Tool for Searching Health-Related Gray Literature (www.cadth.ca/grey-matters) may be ideal for conducting your own search. Also, the Institute of Health Economics (www.ihc.ca) publishes Health Technology Assessment on the Net, which has a wealth of information.

3. What are the policy implications?

4. Why might there be resistance?
   What is the anticipated opposition? Are key stakeholders informed? Have you identified potential barriers to adopting the change? What are the risks associated with change?

5. Will this change support patient- and family-centred care priorities?
   Have you consulted with quality improvement or measurement services within your region, as well as patient councils or committees, to determine the value and perceived benefit of the change?

6. What’s the current availability and approved accessibility?
   Have you checked that the technology is approved for sale in Canada? Refer to the Health Canada Medical Devices Active Licence Listing — MDALL — at www.hc-sc.gc.ca/dhp-mps/rdvm/lsac-m scl-v/approuved-devices-eng.php. CADTH can help you verify Health Canada authorization on short notice, if needed.

7. What have you learned from the previously published experiences of others?
   Do you have an up-to-date literature search and summary on the proposed process or technology? Do the studies support your local context or fit
CADTH Support Policy / Practice Change?

Knowledge Mobilization and Liaison Officer Program (KMLO)

• Work with healthcare decision makers at all levels to identify evidence needs.
• Facilitate evidence requests to CADTH.
• Provide support in using evidence to change and/or introduce new policy and practice.
• Evaluation and impact assessment.
• For further information visit the CADTH website at www.cadth.ca or contact Sheila Tucker at Sheilat@cadth.ca
References


Percentage of Residents Whose Stage 2 to 4 Pressure Ulcer Worsened: Details for Newfoundland and Labrador. Canadian Institute for Health Information (CIHI).


Additional Evidence Resources

Agency for Healthcare Research and Quality

National Institute for Clinical Excellence (NICE)
The NICE way to Stop the Pressure (Blog)  https://www.nice.org.uk/news/blog/the-nice-way-to-stop-the-pressure
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