

Hidden under the covers: Pressure ulcers in primary care

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Introduction

Pressure ulcers traditionally are thought to affect only those who are bed-bound and older adults, however they can affect patients of all ages and in a number of different care environments including primary care. Pressure ulcers can be painful, severely affect quality of life, and add significantly to health care costs. In the UK as much as £2.1 billion is spent annually on treatment of pressure ulcers, a figure that equates to 4% of total National Health Service expenditure.¹

Pressure ulcers can develop on any part of the body where sustained pressure and compressive forces are maintained for a sufficient period of time. The majority of pressure ulcers occur over the lower body and in particular over the sacrum, heels, and greater trochanter, however any area of the body can develop pressure-induced ischemia. Inspection of these vulnerable areas is a key part of the clinical assessment of adults who are at risk of pressure ulcers.

Presentation

Pressure ulcers vary considerably in size and severity and include persist-

ent skin redness as well as blistered, broken or necrotic areas of skin.

The clinical presentation of a pressure ulcer may not reveal the full extent of the injury; generally the area of pressure-induced ischemia is smaller on the surface of the body than in the underlying tissues. This is in part due to the physical application of force when pressure is applied to body surfaces, and in part due to the greater vulnerability of muscle to ischaemia compared to the skin and dermis. Muscle necrosis may occur while overlying skin is still intact. Once skin begins to break-down, what can be observed is often the so-called 'tip of the iceberg' with a large underlying cavity and undermining of skin edges. The image in Figure 2 is typical of a deep necrotic pressure ulcer where the skin remains intact.

Pressure ulcers are classified according to depth of tissue damage. Although many different versions have been reported in the literature, a simple 4-stage system is utilised by European, North American and Australian pressure ulcer guidelines. Use of such a system is not meant to in-

fer that pressure induced tissue damage always follows a 1–4 progression/regression pathway.

The diagnosis of pressure ulcers is usually straightforward but other causes of ulceration, particularly on the lower limbs may appear similar. Both venous and arterial ulceration are related to ischaemia and can cause confusion if the ulceration occurs, for example, over the tip of the great toe or the malleoli of the ankle. Malignancy such as squamous cell carcinoma, basal cell carcinoma, or malignant melanoma, may also occur in areas of the lower leg and feet that are vulnerable to pressure damage. A rare condition, pyoderma gangrenosum may also cause chronic ulceration of the lower limbs.

Magnitude of the problem

The prevalence and incidence of pressure ulcers in New Zealand is unknown. Studies conducted in the UK and US demonstrate that prevalence rates vary dependent upon the care setting, with about 10% in general acute care and higher rates in specialities such as spinal units, palliative care, and nursing homes (the latter



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similar to rest homes and private residential care hospitals in New Zealand). With the trend of rapid hospital discharge, more acutely ill patients are now being cared for within the community² and as a result it is now more common to see severe pressure ulcers in this setting.³ Based on published incidence studies and population modelling, Bennett et al.¹ estimated that one in every 150 of the general population and one in 23 of the population over age 65 are likely to develop a pressure ulcer in the UK. As New Zealand also has an ageing population, it is highly likely that these trends will also be experienced here.

Risk factors for pressure ulcer development

Any population with immobility (defined as the inability to reposition without help) will be at high risk of pressure ulcer development.⁴ Sensory deficit is also a key factor and alters the ability to perceive discomfort from persistent local pressure reducing frequency of self-positioning. This may accompany chronic disease states such as stroke or paraplegia, as well as acute situations such as prolonged anaesthesia or in older adults who have had a fall followed by a long wait before being discovered.

Pressure ulcers are associated with increasing age. This is not only because older adults are predisposed, by age-related changes to their skin and body habitus, to develop pressure ulcers, but also because there is an increased prevalence of morbid health conditions that predispose to immobility or poor blood supply to vulnerable areas of the body. A survey⁶ of rest homes and private hospitals in the Waikato area highlighted how older adults living in long-term residential care had substantial levels of diseases that were highly likely to reduce both mobility and blood supply. In this survey the prevalence of stroke was 44%, rheumatologic disorders such as osteoarthritis 38%, and Parkinson's disease 9%. Cardio-

vascular disease was prevalent with congestive heart failure present in 45%, atrial fibrillation in 28%, and ischemic heart disease in 15%. The mean number of morbid conditions per resident was 4.5. Diabetes mellitus, a condition that predisposes to micro and macrovascular disease as well as impaired tissue healing, is present in at least 10% of adults aged over 65 years, and was present in 14% of residents.

The patient environment and standards of care also influence pressure ulcer incidence. Studies in the USA and UK have demonstrated that older people are frequently offered poorer care than younger patients⁷ and even when case mix and patient acuity levels are considered, differences exist in pressure ulcer rates in different institutions.⁸ A recent US study identified that the more time registered nurses spent with patients in a care home setting then the better the outcome was for the patient including a reduced incidence of pressure ulcers.⁹

Pressure injuries can develop in as little as two to six hours, thus the key to prevention is to identify at risk individuals so that preventative measures may be implemented.¹⁰ Recent UK evidence-based guidelines¹¹ highlight how patient assessment of pressure ulcer risk should take place by a suitably trained health professional within six hours of admission and the outcome documented within the patient's notes. Numerous risk assessment scales have been developed in an attempt to identify patients at risk of pressure ulcers. Theoretically, such scales should be easy to use, reliable and validated in several prospective studies.¹² However, the effectiveness of risk assessment scales is limited¹³ and current expert advice is that formal risk assessment must be supplemented by experience and clinical expertise.^{11,14} Once a patient is identified as being at risk of pressure ulcer development it is important that action is taken and then regularly evaluated as to its efficacy.

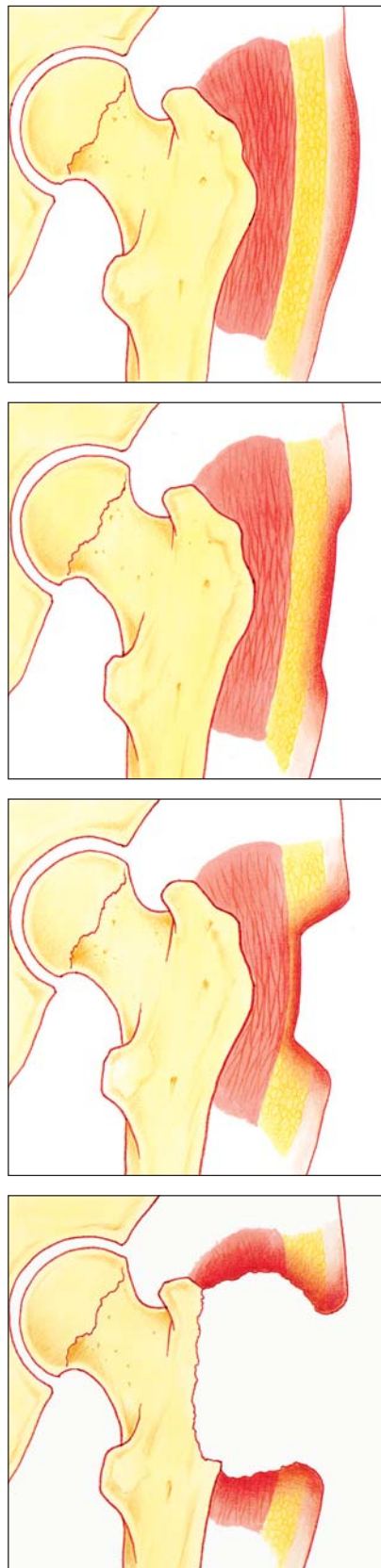
Figure 1. Examples of pressure ulcers stages 1–4 (Stages 1 & 4 are reproduced with permission from Huntleigh Healthcare, and Stages 2 & 3 from Wayne Naylor.)



Figure 2. Deep necrotic pressure ulcer with intact skin (Reproduced with permission from Wayne Naylor)



Figure 3. Stage 1–4 classification images
(Images courtesy of Australian Wound Management Association)



Management issues

Evaluation of typical sites of pressure ulcers is an important part of management. In addition, an important medical role is the evaluation of co-morbid conditions that affect the blood supply to affected areas. In particular this includes the peripheral arterial system and the systemic circulation, i.e. evaluation of cardiac function. Clinical evaluation of conditions that lead to immobility including nervous system diseases such as stroke and Parkinson's disease and diseases of the musculoskeletal system, such as osteoarthritis, may also be relevant.

Aspects of management that are relevant in primary care include ensuring the use of special support surfaces, antibiotic use, supplementation of micro and macronutrients, measures to improve blood supply to affected areas and the role of dressings.

Pressure redistribution

A significant aspect of pressure ulcer prevention and management is the removal or reduction of pressure from the body. This is best achieved by use of special support surfaces in the form of mattresses, overlays and cushions that are all available for purchase or long or short-term rental through a number of companies within New Zealand. Even if a special pressure-redistributing surface is used, patients should still be repositioned. The frequency of repositioning should be determined by individual need rather than a set regime, for example, two hourly turns. Some patients may require more frequent repositioning whilst others may suffice with less frequent turns. Use of water filled gloves, filled intra-venous bags, donut-type cushions and sheepskins are not recommended by evidence-based guidelines and may increase the risk of a pressure ulcer by a direct effect of the treatment (for example donut-type cushions) or by providing false reassurance of protection. Use of special surfaces should be instituted once a patient has been identified as at risk; waiting until tissue damage has oc-

curred is poor practice. Inexpensive mattresses such as specialist foam suffice for the majority of patients.

Sitting out of bed is a high-risk activity for patients with, or at risk of, pressure ulceration and all evidence-based guidelines recommend that sitting out be limited to less than two hours duration until patients are independently mobile. A study by Gebhardt and Bliss¹⁵ demonstrated that reducing chair nursing to less than two hours compared with unlimited chair nursing (median six hours) reduced the incidence of pressure ulceration from 63% to 7%. Placing the feet on footstools increases pressure on the heels and pelvic regions and is not a substitute for bed rest.

Wound management

Wound management is a major component in the care of a patient with a pressure ulcer and what product(s) to use should be determined based upon the following parameters:¹¹

- Assessment of the pressure ulcer and surrounding skin
- Treatment objectives
- Effect of previous dressing regimen
- Manufacturer's indications for use
- Patient preference.

Pressure ulcers that are necrotic or sloughy (representing tissue debris and exudates) should be debrided to remove barriers to the healing process. This can be achieved by a variety of methods, most commonly either sharp debridement or use of topical agents. Chronic wounds such as pressure ulcers are likely to re-

Box 1. Patient populations identified as high risk include:⁵

- Elderly medical
- Nursing home
- Cardiovascular and vascular surgical
- Acute orthopaedic
- Intensive care
- The young disabled
- Terminally ill

quire on-going maintenance debridement rather than a single intervention.¹⁶ The presence of necrotic tissue acts as a focus for bacterial infection, prolongs the inflammatory phase, and delays growth of granulation tissue. It may also mask underlying fluid collections or abscesses and make it difficult to evaluate wound depth.¹⁷ All pressure ulcers will be colonised with bacteria and systemic antibiotics should generally only be used when there is evidence of invasive infection, such as a convincing local tissue reaction or other clinical evidence such as fever. There is research to support that debridement of necrotic tissue is associated with transient bacteraemia and in this circumstance, if a patient is vulnerable to conditions such as endocarditis, antibiotic cover may be useful. If septicæmia does develop as a result of a pressure ulcer, it is typically polymicrobial, involving Gram negative, Gram positive and anaerobic bacteria. It is also worth considering that a chronic, indolent pressure ulcer may reflect development of osteomyelitis.¹⁸

Pressure ulcers should be dressed using 'modern' wound care product(s) rather than traditional gauze-based dressings.¹¹ Although modern dressings are more costly, they facilitate less frequent dressing changes, faster healing rates and superior patient comfort particularly with respect to reduced pain at dressing changes.¹⁹

In a study to identify costs of pressure ulcers in the UK, Bennett et al.¹ highlighted how the resource cost of pressure ulcers is dominated by the cost of nurse time spent in repositioning the patient and redressing the wound. The cost of dressings, antibiotics, and pressure redistributing surfaces such as mattresses and cushions was relatively low (3.3%).

Nutritional support

Although there is a paucity of randomised controlled trials, most practitioners regard poor nutrition as an important causal factor in the development of pressure ulcers and also

as a factor in delayed healing.²⁰ The European Pressure Ulcer Advisory Panel²⁰ recently published a guideline addressing this issue and highlighted how the primary goal of nutritional intervention is to correct protein energy malnutrition, ideally through oral feeding. If this is not possible, then protein rich oral supplements should be considered with tube feeding being a last resort option if all other oral supplementation approaches have not resolved the malnutrition. There is only limited evidence that supplementation of micro-nutrients, such as vitamin C and zinc, accelerates healing.²⁰

The multi-disciplinary team

Prevention and management of pressure ulcers has, traditionally, been the remit of nursing staff, however pressure ulcers are both complex and multifactorial and the most effective patient outcomes are achieved when the patients are managed by the multidisciplinary team including primary care physicians.^{1,21}

When medical management has been optimised, many stage I and stage II pressure ulcers will heal spontaneously. However, stage III and stage IV ulcers, in which there is a cavity or tunnelling together with presence of necrotic tissue, may require a surgical approach. Plastic surgeons perform most pressure ulcer reconstructions and consulting a plastic surgeon for any complex or chronic wound may be appropriate.²² Aggressive treatment is not the best approach for all patients, such as those who are terminally ill or those with multiple severe health care problems. In such circumstances, comfort and symptom management are priorities.

Referral criteria

When should a person with a pressure area be referred to secondary care? We suggest the following:

- When arterial vascular disease is present
- When the area of tissue loss is extensive such that surgical debri-

Box 2. Terminology associated with pressure ulcers

- Pressure areas
- Decubitus ulcers
- Pressure sores

dement and/or surgical reconstruction may be needed

- If there is diagnostic uncertainty
- If specialist advice is needed about other co-morbid conditions.

Conclusion

Pressure ulcers have been reported in many health care settings although they most commonly affect older adults and people with mobility limitations. They are associated with pain, reduced quality of life and increased mortality and are costly to both patients and health care providers. The population at risk of pressure ulcers is likely to increase in New Zealand as our population ages. Pressure ulcers are largely preventable and can result from negligent care.²³ The best way to prevent pressure damage is to promote and practice excellence in pressure ulcer preventative strategies using the increasing evidence base. Medical and nursing staff must take responsibility for this aspect of care. National guidelines are required in New Zealand to facilitate this process, building on those already developed and disseminated in other countries. Pressure ulcers are a neglected area of health care and we feel that the Ministry of Health urgently needs to provide leadership and funding to address this issue.

Competing interests

Carol Tweed has previously been employed by Huntleigh Healthcare Limited (UK), a manufacturer of medical devices and specialist support surfaces. Since 2003, she has provided educational consultancy services to Huntleigh Healthcare Limited (UK) and Molnlycke Health Care (UK), a wound dressing manufacturer.

Mark Weatherall: none declared.

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