



Pressure Injury Prevention and Management

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Abstract

Previous chapters have described how to implement and improve nutrition care with an emphasis on interdisciplinary approaches. The focus of this chapter is on the link between malnutrition and pressure injuries (PIs), focussing on nutritional screening, assessment and interdisciplinary interventions in preventing and managing PIs.

Keywords

Pressure injuries (PIs) · Pressure ulcers · Skin integrity · Screening · Malnutrition · Nutrition therapy

This chapter is a component of Part II: Specialist Versus Generalist Nutritional Care in Aging. For an explanation of the grouping of chapters in this book, please see Chap. 1: 'Overview of Nutrition Care in Geriatrics and Orthogeriatrics'.

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Learning Outcomes

By the end of this chapter, you will be able to:

- Outline the nutrition-related causes of PIs.
- Explain the importance of good nutrition in preventing and managing PIs.
- Explore nutrition care most likely to impact on the prevention and management of PIs as part of a holistic approach.

15.1 Pressure Injuries

Pressure injuries (PIs, also known as pressure ulcers) are localised areas of skin and underlying soft tissue damage [1] that are especially common in older people with impaired mobility and acute or chronic health problems and who are identified as frail [2]. PIs are mainly preventable, and, although there is abundant evidence-based guidance readily available, they remain common patient safety incidents attributed to missed care [3]. Multidisciplinary management of the extrinsic and intrinsic factors that contribute to the development of PIs is central to prevention and management.

PIs are classified by the severity and depth of tissue damage, ranging from intact skin with non-blanching erythema (stage I), partial skin loss with exposed dermis or blister (stage II) and full-thickness skin loss extending into the adipose layer (stage III) to full-thickness tissue loss with exposed underlying tissues (stage IV). Some PIs are unstageable because the base of the wound cannot be observed due to slough/eschar. Persistent non-blanchable, deep-red, maroon or purple discoloration with intact or non-intact skin indicates deep tissue injury [1]. It is essential to consider the significance of mucosal membrane pressure injuries: such damage to the mucosal lining of the respiratory, gastrointestinal and genitourinary tracts is usually caused by pressure from medical devices, such as ventilation or feeding tubes [4, 5]. Mucosal membrane PIs cannot be staged using the classification system described above.

15.2 The Aetiology of Pressure Injuries

PIs are caused by pressure exerted on the skin and soft tissue overlying a bony prominence or a combination of pressure and shear [1]. When these extrinsic forces are sustained, damage to the microcirculation of the skin leads to ischaemia, reduced nutrient supply to cells and accumulation of metabolites [6], resulting in tissue necrosis. Prolonged exposure of the skin surface to moisture (from urine, sweat, saliva, faeces and wound exudate) can also lead to inflammation and damage to the epidermis [7], increasing the risk of tissue injury. Medical devices (such as endotracheal and nasogastric tubes, oxygen tubing and masks, urinary catheters and casts) exert pressure at the interface of the skin and soft tissue [8].

A range of patient-specific intrinsic factors affect the tolerance of soft tissue to pressure and shear including nutrition, microclimate, perfusion and comorbidities (e.g. frailty, respiratory and cardiovascular disease and diabetes) [1]. Health conditions resulting in diminished blood, oxygen and nutrient supply decrease the tolerance of the tissues to damage from extrinsic factors. The initial focus in the prevention of PIs is the assessment of patient risk by identifying extrinsic and intrinsic factors which make a person vulnerable to skin damage.

15.3 The Link Between Malnutrition and Pressure Injuries

Malnutrition is an independent intrinsic risk factor for the development of a PI, increasing the risk by three to five times, with risk increasing as the severity of malnutrition increases [9–11]. Importantly, all patients with PIs, even in the absence of malnutrition, have increased nutritional requirements for both protein and energy. If a patient is malnourished or undernourished, deterioration of the wound and delayed wound healing may also result. Macro- and micronutrients are required by tissues and organs to support growth, development, maintenance and repair of body tissues [11].

While malnutrition is an established risk factor for PI [9] and skin tears [12], health professionals are not always aware of the significance of malnutrition in PI development, resulting in limited action at a local level. Both nutrition and hydration are central to maintaining skin and tissue integrity and facilitating tissue repair processes, so failure to manage these is a major factor in PI risk. Eating problems, weight loss, inadequate nutritional intake and malnutrition are frequently cited as key risk factors for the development of skin damage and delayed healing [9, 10]. While underweight and malnutrition are known risk factors for PI development, obesity (class I, BMI 30–34.99 kg/m²) has been found to be protective [5]. Morbid obesity (BMI ≥ 40 kg/m²), however, has a similar odds ratio (OR = 3.5) as malnutrition for the development of a PI when compared with those in the healthy weight range [5]. Morbidly obese patients with a concurrent diagnosis of malnutrition had an 11-fold odds of developing a PI when compared with those who were well nourished, albeit morbidly obese [5]. This is particularly significant for patients who are morbidly obese and have sarcopenia related to malnutrition which can be difficult to identify.

15.4 Prevention and Management of PIs with a Focus on Nutrition Care

Interdisciplinary action is needed to identify, prevent and treat malnutrition, particularly in older adults at risk of PI, to help reduce the incidence and subsequent harm. Unfortunately, most literature to date has only looked at risk or treatment, and not interventions that aim to minimise risk. The focus of this chapter is on nutritional interventions as part of an individualised and holistic approach to prevent and treat PIs. An overview of non-nutrition interventions to prevent PI can be found in the 2019 International Guideline [1]. International nutritional guidelines also provide

an updated, comprehensive review of the research literature and recommendations reflecting recent evidence to direct best practice [1, 13, 14] with the following main recommendations:

- In combination with PI risk assessment, nutrition screening should be conducted to identify older adults who are malnourished or at risk of malnutrition.
- Those identified as malnourished or at risk should have a more detailed assessment conducted by a nutritionist/dietitian.
- An interprofessional team approach to nutrition care, as discussed throughout this book, is essential.

The international guidelines [1] also provide advice regarding the management of PIs through nutritional interventions. These are summarised in Table 15.1.

Table 15.1 Guidance for the management of pressure injuries through nutritional interventions

Clinical guidance	Reference to other chapters/literature
Use a validated malnutrition screening tool to screen all patients at risk of or with a PI for potential malnutrition	[1, 14]
Patients with a PI should be referred to a dietitian for a comprehensive nutrition assessment and development of an individualised nutrition care plan	[1, 14]
Patients with a PI have increased protein and energy requirements; refer to local guidelines (where available) to guide practice	Chapters 2–5
Energy targets range from 125 to 145 kJ/kg (30–35 kcal/kg)	[1, 14]
Protein targets range from 1.2 to 1.5 g/kg	
<i>Maintain awareness of high-risk groups:</i>	
Malnourished patients	[1, 14]
Underweight patients	[1, 5, 9]
Morbidly obese patients	[1, 5]
Planning and implementation of measures to increase nutrient intake	Chapters 6 and 10–13
Patient education about PIs and their causes and the role of nutrition in PI prevention and wound healing	Chapter 12 [1, 13, 14]
Monitoring of nutritional intake	Chapters 5 and 6
Multivitamin/vitamin/mineral replacement should be considered only for patients with nutrient deficiencies (with attention to blood biochemistry monitoring): if concerns regarding nutritional adequacy or a patient's risk of deficiencies (e.g. high-risk group such as alcoholics)	Chapters 2–5 [1, 14]
Monitoring of nutrition status including weight monitoring, food charts and symptom management (e.g. constipation, poor appetite, post-operative nausea and vomiting)	Chapters 2–6
Consider nasogastric (NG) feeds for patients with poor appetite/intake at risk of PI, with consideration of the risks of PI where the NG tube is secured	Chapter 5
Maintain awareness of NGT securement as a risk factor for the development of mucosal PIs	[1]
Recognise hydration as key to ensuring nutrient delivery and oxygenation to support wound healing, encourage fluid intake, and consider at-risk groups (e.g. dysphagia)	Chapter 7

The evidence indicates that it is a combination of intensive nutrition interventions, with a multidisciplinary approach led by a nutritionist or dietitian, that are most likely to be successful in preventing and treating PIs [1, 14]. Nutrition care also facilitates healing of PIs and should form part of an MDT approach to management [1]. Where access to a dietitian is limited or unavailable, systematised, interdisciplinary approaches to nutrition care for older adults at risk of malnutrition, including those with a PI, should be considered to empower the wider team to ensure patients meet increased nutrition requirements [15–17]. Dietitian or medical nutrition specialists are best placed to ensure oversight of evidence-based nutrition care practice and deliver specialist nutrition care. The nursing team is often well placed to recognise and manage risk of PI because nurses have continuous care of the patient (Chap. 6) [17–19]. Nurses therefore play a key role in the implementation of nutrition management in collaboration with nutrition specialists and are also ideally positioned to ensure continuity of nutrition and other aspects of care for patients with at risk of PI on discharge or transfer.

PIs are considered patient safety events that may reflect poor-quality interdisciplinary care, and, in some countries, there are financial penalties for health-care providers when such events occur [20]. PI prevention strategies recognise the priority of evidence-based nutrition care and the need to embed this in practice through education and governance that involves nutritionists as experts.

15.5 Summary

Pressure injuries remain significant patient safety incidents for older people with mobility problems, frailty and concurrent medical conditions. They are, however, mostly preventable with evidence-based risk assessment and intervention. Evidence shows that malnutrition is an independent risk factor in the development of PIs and a contributor to delayed healing. Multidisciplinary evidence-based interventions have been shown to be successful in both managing malnutrition and preventing and managing pressure injuries, in keeping with international guidelines.

Take-Home Points

- Malnutrition is an independent, but modifiable, risk factor for PI development and delays wound healing.
- Appropriate nutrition is essential for PI prevention and management.
- Older adults with a PI have increased protein and energy requirements.
- PIs are preventable and require a multidisciplinary team approach.
- International guidelines summarise the most clinically effective multidisciplinary nutritional interventions that support the prevention and management and PIs.

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