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Review

Pressure injury prevention and management – hospital initiatives and interventions

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Concerns were raised regarding the quality of pressure injury prevention, assessment and management in hospital. Multi-component interventions involving development of care practices using a team approach was implemented. This involved standardising pressure injury risk assessment and documentation using the TIME approach. Educational initiatives were developed for hospital and community nursing staff through workshops, case conferences and wound interest groups. Pressure injury assessment and management from hospital to the community was integrated, with strengthening community nursing follow-up facilitated by tele-assessment, and caregiver training to emphasise prevention of pressure injuries.

Keywords: Hospitals, Pressure ulcers, Wound

Introduction

Pressure injuries are areas of localised damage to skin and underlying tissue, usually over bony prominences. They are associated with pain, prolonged hospitalisation, poor quality of life, increased morbidity and risk of mortality [1]. The physical, psychological, social and financial impact of pressure injuries are significant and cause substantial burden to patients [2].

There were several issues that highlighted the need for urgent intervention to reduce risk of pressure injuries and improve management of these complications in our hospital. A descriptive study of geriatrics inpatients in 2015 found that 67% had severe functional impairment, according to Katz Index of Independence; with almost half the patients bedbound or limited to bed transfers. The high burden of co-morbidities, dementia and poor functional status are associated with a significant risk of developing pressure injuries [3]. An audit of pressure injury risk assessment on medical wards confirmed an increased prevalence of pressure injuries among patients, from 1.6% in 2011 to 20.4% in 2015 [4 5]. A low rate of compliance (39%) with completing pressure injury risk assessment forms was also identified, which indicated a need to emphasise the importance of prevention.

In addition, there were concerns with the quality of pressure injury wound management. A study exploring nurses' knowledge and practices on wound assessment identified more than half of the participants had limited knowledge, which was confirmed in an audit of nursing documentation of wound healing progress [6]. When wound workshops were organised to improve management of pressure injuries, problems were identified restricting implementation of routine wound management, including availability of dressings, cleaning solutions and equipment for bedside debridement [7].

There was also a reported case of a patient developing hip osteomyelitis secondary to pressure injuries. Despite multiple modalities used to treat this complication, including antibiotics, debridement and adjunctive negative pressure wound therapy, the patient eventually passed away [8]. Due to these reasons, pressure injury prevention and management initiatives were started in the hospital. Interventions to reduce risk of pressure injuries in hospital

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and improve management of pressure injuries require a comprehensive and multidisciplinary approach. The necessary considerations for implementing pressure injury initiatives are outlined in this paper.

PREVENTION OF PRESSURE INJURIES

Several tools are available to facilitate a structured and systematic approach to assess risk of patients developing pressure injuries. However, a systematic review found no statistical difference in pressure injury incidence between those assessed with the Braden tool compared to those with unstructured risk assessment. Similarly, patients randomised to use of the Waterlow tool, Ramstadius tool or clinical judgement alone did not have differences in pressure injury incidence [9]. Therefore, introduction of these risk assessment tools alone is insufficient to achieve reduction in pressure injuries.

Multicomponent interventions involving development of care practices using a team approach in preventing pressure injuries have been shown to improve patient outcomes in both acute and long-term care settings. A review identified the key components for successful interventions: standardising pressure injury specific interventions and documentation, involving multidisciplinary teams and leadership among nursing staff, having skin champions to educate staff regarding skin care and pressure injury prevention, continuous staff education including team meetings and campaigns with ongoing audit and feedback. Successful interventions also incorporated evidence-based guidelines into their practices [10].

A useful guide was developed by the Agency for Healthcare Research and Quality (AHRQ) to assist hospital staff to implement effective pressure injury prevention practices through an interdisciplinary approach to care. It starts with basic considerations such as assessing readiness to change, including management support, identifying required resources and setting up an implementation team. Best practices in pressure injury prevention are outlined with examples of care bundles, covering how to conduct skin assessment and pressure injury risk assessment. Measures to sustain active efforts and monitoring key care processes and outcomes, such as pressure injury rates are detailed as well. This toolkit should be used as a framework to ensure all aspects of a comprehensive approach to reduce pressure injuries are covered in hospital wide initiatives [11].

ASSESSMENT OF PRESSURE INJURIES

An overriding theme in education literature is the lack of pressure injury assessment and management knowledge by health care professionals. In our hospital setting, nursing knowledge for wound management was found to be suboptimal [6]. In addition, the audit of pressure injury risk assessment forms identified patients who developed pressure injuries in hospital but were stratified by Braden Scale as no risk or low risk [5]. As risk assessment tools were developed to be sensitive and overestimate risk, there may be a need to review accuracy of nursing assessment of pressure injury risk as well.

A review identified specific system and organization level barriers and enablers that influence practice change, such as inter-professional communication and human resource investments. Education can be provided through information technology, such as e-learning with technology support and use of high-quality wound pictures [12]. In addition to promoting evidence-based practice, initiatives such as standard documentation, developing staff, patient and caregiver educational resources, initiation of hospital-wide inventory for support surfaces and equipment procurement are essential. An interprofessional working group led by a clinical nurse specialist implementing these best practices resulted in an 80% reduction in hospital acquired pressure injuries [13].

Based on this, wound assessment and management workshops were introduced to upskill nursing staff in hospital and home-based nurses, who follow-up wounds in the community. An online website was provided containing pre-reading materials prior to the training sessions, and serve as a repository of resources for future reference. In addition to geriatrics nurses providing support for prevention of pressure injuries on the wards, a wound interest group was also set-up with quarterly meetings to ensure multidisciplinary advice was available for complex wounds and staff received updates on wound assessment and management. For example, the Revised National Pressure Ulcer Advisory Panel (NPUAP) pressure injury staging system now defines each stage of pressure injury with the extent of tissue loss present and anatomical features that may or may not be present in the stage of injury [14]. This information should be disseminated to staff managing wounds to ensure their knowledge remains current with international practice.

MANAGEMENT OF PRESSURE INJURIES

The educational sessions covered essentials of wound management, with hands-on simulated practice. Principles of wound assessment include review of the wound bed, wound edge and peri-wound skin; with implications on management [15]. The TIME framework was also

Table I TIME Approach.

TIME	Wound bed preparation	Developments in wound care for clinical practice	Factors to consider	Expected clinical outcomes
Tissue	Debridement	Sharp debridement Autolytic (hydrogels) Chemical (antiseptic dressings/ solutions)	Knowledge Skills Competency Evidence of efficacy	Viable wound bed
Infection/inflammation	Wound cleansing Biofilm removal Manage infection and inflammation	Anti-microbial irrigation solutions Improved understanding and management of biofilms Improved understanding of the role of persistent inflammation in chronic wounds Role of antiseptics	Increasing bacterial tolerance to topical and systemic agents	Bacterial balance and reduced inflammation
Moisture	Moisture balance Exudate management	Moist wound healing Emphasis on moisture management	Dressing selection taking into account: absorption retention patient comfort bacterial pool sensitivity/allergy	Moisture balance
Edge of wound/ epidermal advancement	Optimal wound edge for healing Protection of peri-wound area	Epithelial edge advancement Improving state of surrounding skin	Revisit existing therapies	Advancing wound edges

introduced, which offers an approach for management, focusing on holistic patient assessment using a systematic approach to identify and eliminate barriers to healing. This includes tissue debridement and removal of slough and unviable tissue, infection control, moisture management and epidermal advancement [16]. The TIME approach considerations are shown in the Table I. For frail older people, a comprehensive geriatric assessment is recommended to cover a broad range of issues such as nutrition, continence, pressure relieving equipment as well as caregiver training and support. For example, syncope and falls lead to disability, immobility, risk of pressure injuries and poor outcomes [17]. Patients in acute card wards were also found to have deterioration in lean body mass and develop sarcopenia, which is associated with nutritional status and bed rest [18]. Management of these medical conditions through comprehensive geriatric assessment is crucial as they have significant bearings on pressure injury risk and wound healing. Chronic diseases and their complicating factors are also associated with immobility, tissue ischaemia and undernutrition, which causes pressure injuries in community settings, hospitals and nursing facilities [19].

Integration of care from hospital to the community is another important consideration. The community nurses participate in wound educational sessions provided in hospital and review patients prior to discharge to ensure continuity of wound management. As most patients with pressure injuries are immobile, community nurses perform home visits to follow-up wound healing. If uncertainties arise, a second opinion can be obtained virtually from clinicians, by electronically sharing digital images of the wounds taken using phone cameras. This approach has also been shown to reduce costs of travel, while maintaining standards of wound care, which is comparable with in-person assessment [20 21].

Finally, caregivers should also be educated regarding pressure injury prevention and management for those living at home. A study showed that teaching caregivers improves knowledge and compliance with pressure injury prevention and management measures [22]. This approach is currently being piloted for patients under local community nursing follow-up.

CONCLUSIONS

When concerns were raised regarding pressure injury assessment and management, multi-component interventions involving development of care practices using a team approach were warranted. This involved standardising pressure injury risk assessment and documentation using the TIME approach and educating hospital and community nursing staff through workshops, case conferences and wound interest groups.

Integrating pressure injury management from hospital to the community is also essential, with strengthening community nursing follow-up facilitated by tele-assessment, and caregiver training to emphasise prevention of pressure injuries.

Conflict of interest

The Authors declare to have no conflict of interest.

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