Summary of Best Evidence for Prevention and Management of Pressure

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Abstract

Objective To evaluate and synthesize evidence on the prevention of pressure injuries in critically ill patients from both domestic and international sources. Methods Databases including UpToDate, BMJ Best Practice, the JBI Evidence-Based Healthcare Center database, the International Guideline Collaboration Network, the National Guideline Clearinghouse (NGC), the Scottish Intercollegiate Guidelines Network (SIGN), the Cochrane Library, and CNKI were searched, and relevant official websites were also consulted. Results A total of 9 documents were included, comprising 5 guidelines, 3 systematic reviews, and 1 best practice document, from which 36 items of best evidence were ultimately summarized. Conclusion In light of the latest research progress and synthesized evidence, clinical nursing staff should, based on professional judgment, patients' needs, and clinical feasibility, selectively apply the best evidence for pressure ulcer prevention to reduce the incidence of pressure injuries among critically ill patients.

Full Text

Summary of Best Evidence for Pressure Injury Prevention and Management in Critically Ill Patients

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Abstract

Objective: To evaluate and synthesize evidence on pressure injury prevention in critically ill patients from both domestic and international sources.

Methods: We systematically searched databases including UpToDate, BMJ Best Practice, JBI Evidence-Based Healthcare Center Database, International

Guideline Collaboration Network, National Guideline Database, Scottish Hospital Guideline Network, Cochrane Library, and CNKI, along with relevant official websites.

Results: A total of 9 articles were selected, comprising 5 guidelines, 3 systematic reviews, and 1 best practice document, from which 36 evidence-based recommendations were synthesized.

Conclusion: Based on the latest research advances and evidence synthesis, clinical nursing staff should combine professional judgment, patient needs, and clinical feasibility to selectively apply the best evidence for pressure injury prevention, thereby reducing the incidence of pressure injuries in critically ill patients.

Keywords: Critical care; pressure injury; evidence summary

Pressure injury (PI) refers to localized damage to the skin or underlying soft tissue, typically over bony prominences, that may be related to medical devices or other equipment [**?**]. The development of pressure injuries increases patient suffering and infection risk, adds to nursing workload, and imposes substantial economic burdens on families and society [**?**]. Among adult inpatients in Chinese tertiary hospitals, the incidence of pressure injuries is highest in ICUs, reaching 10.58%, predominantly stage 1-2 injuries [**?**]. Therefore, early identification and prevention of pressure injury development is particularly crucial, and the principle that prevention is more important than treatment has become a global consensus [**?**]. While numerous studies have addressed assessment and intervention for critically ill ICU patients, direct evidence specifically targeting pressure injury prevention in this population remains limited. This article aims to provide clinicians with a comprehensive summary of preventive measures to reduce pressure injury incidence in critically ill patients.

1. Methods

1.1 Literature Search

Chinese search terms included: (压力性损伤 OR 压疮 OR 褥疮 OR 压力性溃疡) AND (重症监护室 OR 重症监护病房 OR 呼吸监护病房 OR ICU OR CCU OR RICU) AND (预防 OR 评估 OR 护理) AND (指南 OR 证据总结 OR 系统评价 OR 系统综述 OR meta 分析 OR meta 整合). English search terms included: (pressure ulcer* OR pressure injur* OR pressure sore* OR pressure damage OR decubitus ulcer* OR decubitus sore* OR bedsore* OR bed sore* OR ulcer* pressure OR sore* bed) AND (ICU OR intensive care unit* OR critical care unit* OR coronary care unit* OR respiratory care unit* OR CCU OR RICU) AND (assessment OR prevention OR nursing OR care) AND (guideline OR evidence summaries OR systematic review OR Meta analysis OR Meta synthesis).

Following the "6S" evidence resource pyramid model, we conducted a top-down search of the following databases: UpToDate, BMJ Best Practice, JBI

Evidence-Based Healthcare International Collaboration Center Library, Registered Nurses' Association of Ontario, National Guideline Clearinghouse, Scottish Intercollegiate Guidelines Network, International Guideline Collaboration Network, European Pressure Ulcer Advisory Panel, National Pressure Injury Advisory Panel, Wound Ostomy Continence Nurses Society, World Union of Wound Healing Societies, Canadian Association of Wound Care, Medlive, Database of Abstracts of Reviews of Effects, The Cochrane Library, PubMed, Embase, Medline, DynaMed, CINAHL, EBSCO, Web of Science, CNKI, Chinese Biomedical Literature Database, Wanfang, and VIP. The search period was from July 2013 to July 2023. This study was registered at the Fudan University Evidence-Based Nursing Center (Registration number: ES2023071).

1.2 Inclusion and Exclusion Criteria

Inclusion criteria: (1) Study subjects: ICU inpatients aged >18 years; (2) Studies addressing assessment, prevention, and nursing care of pressure injuries in ICU patients; (3) Study types: guidelines, systematic reviews, expert consensus, evidence summaries, and best practice information sheets; (4) Studies published in Chinese or English.

Exclusion criteria: (1) Incomplete information, inaccessible full text, or poor methodological quality; (2) Duplicate publications or updated versions of included studies.

1.3 Quality Assessment Standards

Guidelines were evaluated using the Appraisal of Guidelines for Research and Evaluation II (AGREE II) instrument. For best practice recommendations, quality assessment required tracing back to original sources and selecting appropriate evaluation tools; those from internationally authoritative evidence bodies were directly included. Systematic reviews were assessed using the corresponding JBI Evidence-Based Healthcare Center quality assessment tools.

1.4 Quality Evaluation, Evidence Extraction, and Synthesis

Four graduate students and wound care specialists who had completed systematic evidence-based training courses independently conducted quality assessments. Two researchers independently extracted evidence from included documents, noting the source and level of evidence, and categorized the extracted evidence. Disagreements were resolved through discussion with a third researcher.

Figure 1

Figure 1: Figure 1

2. Results

2.1 Literature Search Results and General Characteristics of Included Studies

The initial search yielded 2,259 articles. After deduplication and multiple rounds of screening, 9 articles were ultimately included [**?**], comprising 5 guidelines, 1 best practice recommendation, and 3 systematic reviews. The literature screening process is shown in

, and general characteristics of included studies are presented in .

2.2 Quality Assessment Results of Included Studies

One guideline received an A-level rating, while four received B-level ratings. All three systematic reviews demonstrated good methodological quality. The best practice recommendation from the World Union of Wound Healing Societies (WUWHS) was directly included. Detailed results are shown in and .

2.3 Evidence Description and Synthesis

Extracted evidence was graded using the JBI Evidence-Based Healthcare Center' s evidence pre-grading and recommendation level system (2014). Evidence was categorized into five levels (Level 1-5) based on study design. After synthesizing evidence from the 9 included articles, 36 recommendations were formulated across six domains: risk assessment, quality management, skin protection measures, pressure-redistribution tool use, nutritional management, and dressing application. These are summarized in .

3. Discussion

3.1 Risk Assessment

Evidence items 1-4 address pressure injury risk assessment, covering aspects such as healthcare team communication, structured risk assessment, regular monitoring and analysis, and identification of high-risk factors. Although evidence items 1-3 are relatively low-grade, this likely reflects that most content originated from expert opinion and clinical experience. Risk assessment constitutes a critical component of pressure injury clinical practice, with identifying susceptible populations being the essential first step. Validated and reliable scales such as the Waterlow Scale and Braden Scale are recommended for risk assessment, though their specificity for ICU patients requires further investigation of feasibility and psychometric properties in clinical settings.

3.2 Quality Management

Evidence items 5-11 address staff training and quality management for pressure injury prevention in healthcare institutions. At the organizational level, implementing best practice requires innovative workplace culture and sustained engagement. Professional education is a key component of multi-faceted quality improvement initiatives, and enhancing healthcare professionals' knowledge and skills in pressure injury prevention is crucial. Research indicates that guidelines for qualification and training requirements should be reviewed before advanced clinical skills training, and appropriate education should be provided before using wound care products and specialized equipment [**?**].

3.3 Skin Protection Measures

Evidence items 12-17 address preventive skin care for pressure injury prevention. Special attention should be paid to skin care for incontinent patients. Based on assessment of skin condition (erythema, eczema), cleansers with appropriate pH values should be selected for preventive skin care, including foam cleansers and barrier products, which can effectively reduce pressure injury incidence.

3.4 Pressure-Redistribution Tool Use

Evidence items 18-20 address the use of pressure-redistribution tools for pressure injury prevention. These tools prevent tissue deformation and provide an environment conducive to perfusion in high-risk tissues. Pressure-redistribution tools are typically constructed from various materials or composites, including but not limited to air, foam, gel, and fluid [**?**]. Clinical nurses can make appropriate selections based on this evidence combined with their department-specific circumstances.

3.5 Positioning Management

Evidence items 21-27 address positioning management for pressure injury prevention. Currently, reliable assessment of optimal repositioning timing and angles for pressure injury prevention is lacking in clinical practice. Healthcare professionals should develop individualized positioning and turning strategies based on comprehensive assessment of patients' skin tissue tolerance, activity, and mobility capabilities.

3.6 Nutritional Management

Evidence items 28-33 address nutritional management for pressure injury prevention. Inadequate nutritional intake and malnutrition are associated with pressure injury progression, severity, and delayed healing [**?**]. Therefore, appropriate nutritional screening tools should be used for patients at risk of pressure injuries. Current nutritional screening tools for critically ill patients include Nutritional Risk Screening and Critical Care Nutrition Risk Score, among which

can be selected based on clinical needs and patient conditions.

3.7 Dressing Application

Evidence items 33-36 address the use of prophylactic dressings for pressure injury prevention. For high-risk anatomical sites in patients at risk of pressure injuries, dressings such as silicone and foam should be used to protect the skin. The skin beneath dressings should be assessed at least daily to evaluate the effectiveness of preventive care protocols.

This study summarized the best available evidence regarding pressure injury prevention in critically ill patients, providing an evidence-based foundation for healthcare professionals. Clinicians should integrate professional judgment with patient needs and preferences to selectively apply this evidence, thereby reducing pressure injury incidence and improving care quality in critically ill patients.

References

[1] Chen LJ, Sun LL, Liu LH, et al. Interpretation of the 2019 "Pressure Ulcer/Pressure Injury Prevention and Treatment: Clinical Practice Guidelines" . Journal of Nursing Science, 2020, 35(13): 41-43.

[2] Jiang Q, Li X, Qu X, et al. The incidence, risk factors and characteristics of pressure ulcers in hospitalized patients in China[J]. Journal of Clinical and Experimental Pathology, 2014, 7(5): 2587-2594.

[3] Jiang QX, Zhou JH, Chen KS, et al. Epidemiological characteristics of pressure injuries and predictive value of Braden Scale in adult inpatients from 46 tertiary hospitals in China[J]. Chinese General Practice, 2023, 26(18): 2195-2202.

[4] Yuan CL, Jiao YX, Wei YT, et al. Network meta-analysis of the accuracy of pressure injury risk assessment tools for ICU patients[J]. Journal of Nursing Science, 2023, 38(01): 59-63+68.

[5] Gould L, Stuntz M, Giovannelli M, et al. Wound healing society 2015 update on pressure ulcers[J]. Wound Repair and Regeneration, 2016, 24(24): 145-162. https://doi.org/10.1111/wrr.12396.

[6] Posthauer, Mary Ellen RDN, LD, et al. The Role of Nutrition for Pressure Ulcer Management: National Pressure Ulcer Advisory Panel, European Pressure Ulcer Advisory Panel, and Pan Pacific Pressure Injury Alliance White Paper[J]. Advances in Skin & Wound Care, 2015, 28(4): 175-188.

[7] Fujiwara H, Isogai Z, Irisawa R, et al. Wound, pressure ulcer and burn guidelines-2: Guidelines for the diagnosis and treatment of pressure ulcers, second edition[J]. Journal of Dermatology, 2020, 47(9): 929-978.

[8] Norton L, Parslow N, Johnston D, et al. Best practice recommendations for the prevention and management of pressure wounds[J]. A supplement of Wound

Care Canada, 2017.

[9] World Union of Wound Healing Societies (WUWHS) Consensus Document. Role of dressings in pressure ulcer prevention[J]. Wounds International, 2016.

[10] Shi C, Dumville JC, Cullum N, et al. Beds, overlays and mattresses for preventing and treating pressure ulcers: an overview of Cochrane Reviews and network meta-analysis[J]. Cochrane Database of Systematic Reviews, 2021; 8(8): CD013761.

[11] Moore ZE, Webster J. Dressings and topical agents for preventing pressure ulcers[J]. Cochrane Database of Systematic Reviews, 2018; 12(12): CD009362.

[12] Gillespie BM, Walker RM, Latimer SL, et al. Repositioning for pressure injury prevention in adults[J]. Cochrane Database of Systematic Reviews, 2020; 6(6): CD009958.

[13] Ayello EA, Zulkowski K, Capezuti E. Educating nurses in the United States about pressure injuries[J]. Advances in Skin & Wound Care, 2017; 30(2): 83-94.