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Detailing Prevention Recommendations From the RNAO Best Practice Guideline – Pressure Injury Management: Risk Assessment, Prevention, and Treatment, Fourth Edition

ABSTRACT

Background

Pressure injuries (PIs) constitute some of the costliest adverse events in hospitals, in long-term care facilities, and in homecare settings. PIs are painful and can impact quality of life. Depending on the stage of the injury and whether there are complications or comorbidities, healing may take weeks, months, or years and can contribute to premature mortality. The Registered Nurses' Association of Ontario (RNAO) released a best practice guideline (BPG) in November 2024 with evidence-based recommendations on the assessment, prevention, and treatment of PIs. This paper focuses on the prevention of PIs that are outlined in this guideline.

Methods

Best practice guidelines are based on systematic reviews and developed using the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) approach. A panel of PI experts was convened to guide the process. We conducted a systematic literature review focusing on three preventive areas as related to PIs: repositioning frequency, care bundles, and use of prophylactic dressings. We searched seven databases for relevant English-language studies published since January 2018. Two reviewers independently assessed the research for eligibility and for risk of bias and determined the validity of the evidence using the GRADE approach.

Results

We screened 1,295 articles for 3 priority research questions. Of these articles, 234 full-text publications were reviewed for relevance, and 14 were used to inform 3 recommendations on repositioning frequency, preventive care bundles, and the use of prophylactic dressings.

Conclusion

This paper provides nurses and other members of the interprofessional team, including persons and their families, with evidence-based recommendations for preventing PIs.

Key Words: Pressure injury, prevention, repositioning, care bundle, prophylactic dressings

Présentation détaillée des recommandations en matière de prévention issues de la ligne directrice sur les pratiques exemplaires de l'Association des infirmières et infirmiers autorisés de l'Ontario (AIIAO) – Gestion des lésions de pression : évaluation du risque, prévention et traitement, quatrième édition

Résumé

Contexte

Les lésions de pression (LP) constituent l'un des événements indésirables les plus coûteux dans les hôpitaux, les établissements de soins de longue durée et les milieux de soins à domicile. Les LP sont douloureuses et peuvent nuire à la qualité de

vie. Selon le stade de la lésion et la présence de complications ou de comorbidités, la guérison peut prendre des semaines, des mois ou des années et peut contribuer à une mortalité prématurée. L'AIIAO a publié en novembre 2024 une ligne directrice sur les pratiques exemplaires comprenant des recommandations fondées sur des données probantes concernant l'évaluation, la prévention et le traitement des LP. Le présent article porte sur la prévention des LP telle qu'énoncée dans cette ligne directrice.

Méthodes

Les lignes directrices sur les pratiques exemplaires reposent sur des revues systématiques et sont élaborées selon l'approche GRADE (Grading of Recommendations Assessment, Development, and Evaluation). Un groupe d'experts en lésions de pression a été réuni pour orienter le processus. Nous avons mené une revue systématique de la littérature portant sur trois domaines de prévention liés aux LP : la fréquence du repositionnement, les ensembles de soins et l'utilisation de pansements prophylactiques. Sept bases de données ont été interrogées afin de repérer des études pertinentes publiées en anglais depuis janvier 2018. Deux évaluateurs ont examiné indépendamment les études pour en déterminer l'admissibilité et le risque de biais, et ont évalué la validité des données probantes à l'aide de l'approche GRADE.

Résultats

Nous avons examiné 1 295 articles portant sur trois questions de recherche prioritaires. Parmi ceux-ci, 234 publications en texte intégral ont été évaluées pour leur pertinence, et 14 ont été utilisées pour éclairer trois recommandations concernant la fréquence du repositionnement, les ensembles de soins et l'utilisation de pansements prophylactiques.

Conclusion

Cet article fournit aux infirmières et infirmiers ainsi qu'aux autres membres de l'équipe interprofessionnelle, y compris les personnes recevant des soins et leurs familles, des recommandations fondées sur des données probantes pour la prévention des lésions de pression.

Mots-clés : lésion de pression, prévention, repositionnement, ensemble de soins, pansements prophylactiques

Conflicts of Interest:
The author(s) Brenda Stade, Amy Burt, Nafsin Nizum, Giulia Zucal, and Lyndsay Howitt declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Corey Heerschap is President of Nurses Specialized in Wound, Ostomy and Continence Canada and is the past inaugural Secretary for the Canadian Pressure Injury Advisory Panel.

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INTRODUCTION

A pressure injury (PI) is localized damage to the skin and/or underlying tissue caused by pressure, by pressure in combination with shear, or by friction. PIs, also called pressure ulcers or bedsores, usually occur over a bony prominence but may also result from contact with a medical device or other object.[1–4] Risk factors for PI development include low body mass index, older age, low physical activity or immobility, existing PIs, malnutrition, male sex, anemia, hypoalbuminemia, diabetes, hypotension, and loss of sensation.[2,3]

In Canada, estimates of PI prevalence across all healthcare institutions from 1990 to 2003 were 26 per cent (95% confidence interval [CI], 25.2% to 26.8%).[3,5] In Ontario, hospitalization rates were 60 persons per 100,000 people in 2014–2015.[3,6] However, both provincial and national statistics on PI rates are lacking, reflecting a need for improved monitoring and reporting. Globally, PIs account for a large share of wound care. According to the Global Burden of Disease Study 2017, PI incidence has remained relatively stable, underscoring the need for continued improvement.[3,7]

PIs are among the most expensive adverse events in health care.[3,8] In Ontario, Canada, the total net adjusted hospitalization cost of a hospital-acquired PI between 2002 and 2006 was C$44,000 to C$90,000 compared with C$11,000 to C$18,500 for a preadmission PI.[3,9] In the United States, annual hospital-acquired PIs are estimated to cost more than US$26.8 billion.[10] Approximately 59% of those costs are attributable to Stage 3 and 4 full-thickness wounds, which affect 13.3% of patients, and require significant hospital resources and clinician time.[3,10]

A stage 3 or 4 pressure injury resulting after hospital admission has been designated as a "Never Event" by the Canadian Patient Safety Institute (now Healthcare Excellence Canada).[3,11] These severe injuries can lead to serious complications, such as blood and bone infections.[3,11] PIs can be very painful and can impact the quality of life of patients and those providing care. Healing varies depending on the stage of the PI, complications, comorbidities, and other factors and can range from weeks to months to years.[3,12] Finally, a 2025 Canadian Institute for Health Information (CIHI) study found that the percentage of long-term care residents whose stage 2 to 4 pressure ulcers worsened was 2.6%, which shows improvement in the management of PIs.[13]

In November 2024, the Registered Nurses' Association of Ontario (RNAO) published a best practice guideline (BPG) to provide nurses (i.e. nurse practitioners, registered nurses, registered practical nurses, and nursing students) and other members of the interprofessional team with evidence-based recommendations and resources related to the assessment, prevention, and treatment of PIs in pediatric, adult, and older adult populations. The guideline is titled *Pressure Injury Management: Risk Assessment, Prevention and Treatment, Fourth Edition*.[3]

To inform the development of the guideline, the RNAO guideline team conducted an environmental scan of existing guidelines and held key informant interviews and discussion groups with experts in PIs. A panel was formed that included nurses, occupational therapists, physiotherapists, dietitians, persons with lived experience, researchers, and educators.

All expert panel members declared conflicts of interest prior to their participation and on an ongoing basis, using a standard form.

The new BPG is the Fourth Edition and replaces three previous RNAO BPGs: *Risk Assessment and Prevention of Pressure Ulcers* (2005), with a revision of the same name in 2011, and *Assessment and Management of Pressure Injuries for the Interprofessional Team* (2016 revision).[3] Given the enormous scope of the guideline and the importance of the topic, this paper focuses on the guideline's three recommendations pertaining to the prevention of PIs.

METHODS

The Grading of Recommendations, Assessment, Development, and Evaluation (GRADE) approach guided the development of the new BPG.[14] GRADE is a method for rating the quality of quantitative evidence in systematic reviews (SRs).[15] Recommendation questions were determined by the expert panel and the RNAO BPG team for prevention recommendations 2, 3, and 4 (Table 1). The expert panel discussed and shared their insights on caring for persons at risk of or living with PIs.[3]

Table 1: *Prevention Recommendations 2, 3, and 4 Out of the Total 6 Recommendations in the BPG*

Recommendation question #2: Should a specific repositioning frequency be recommended over another frequency for persons with pressure injuries or those at risk of developing them?
Recommendation question #3: Should preventative care bundles be recommended or not for the prevention of pressure injuries?
Recommendation question #4: Should the use of prophylactic dressings be recommended or not for the prevention of pressure injuries?

Recommendation numbers used are consistent with the full BPG

Systematic Retrieval of the Evidence

The SRs were registered in PROSPERO (CRD42023437862). RNAO's BPG guideline development and research team and a health sciences librarian developed search strategies for each research question. A search for relevant research studies published in English from January 2018 to March 2023 was conducted across the following databases: Cumulative Index to Nursing and Allied Health (CINAHL), MEDLINE, Cochrane Central Register of Controlled Trials, Cochrane Database of Systematic Reviews, Embase, Emcare, and APA PsycINFO. An updated search was conducted in June 2024. These searches can be found in the Methodology section of the full BPG and are titled "Pressure Injuries Systematic Review Search Strategies.pdf"; see https://rnao.ca/media/7995/download.

Eligibility Criteria

Two reviewers independently screened studies for eligibility by first exporting all search results into DistillerSR (Evidence Partners, Ottawa, Ontario, Canada). The initial screening was conducted using titles and abstracts. Full studies were included if they addressed the research question and outcomes, were published in English, and were accessible for retrieval.[3,16] Dissertations, commentaries, narratives, anecdotal articles, letters to the editor, editorials, consensus documents, discussion papers, case studies, case series, and conference presentations were excluded.[15] Any disagreements were resolved through consensus.[3,15,16]

Data Extraction and Quality Appraisal

Data extraction was completed on standardized Excel sheets (Microsoft Corp) by the two reviewers, independently and in duplicate. The study population, characteristics, and outcomes of interest were obtained. Any disagreements were resolved through consensus.[3,15,16]

The two reviewers independently quality-appraised all studies, using the ROBIS tool for SRs, the RoB 2.0 tool for RCTs, and the ROBINS-I tool for nonrandomized studies.[17–19] The body of evidence for each recommendation was assessed using GRADE, which considers risk of bias, inconsistency, imprecision, indirectness, and publication bias.[15,16]

For each recommendation, the overall certainty of evidence was determined to be high, moderate, low, or very low.

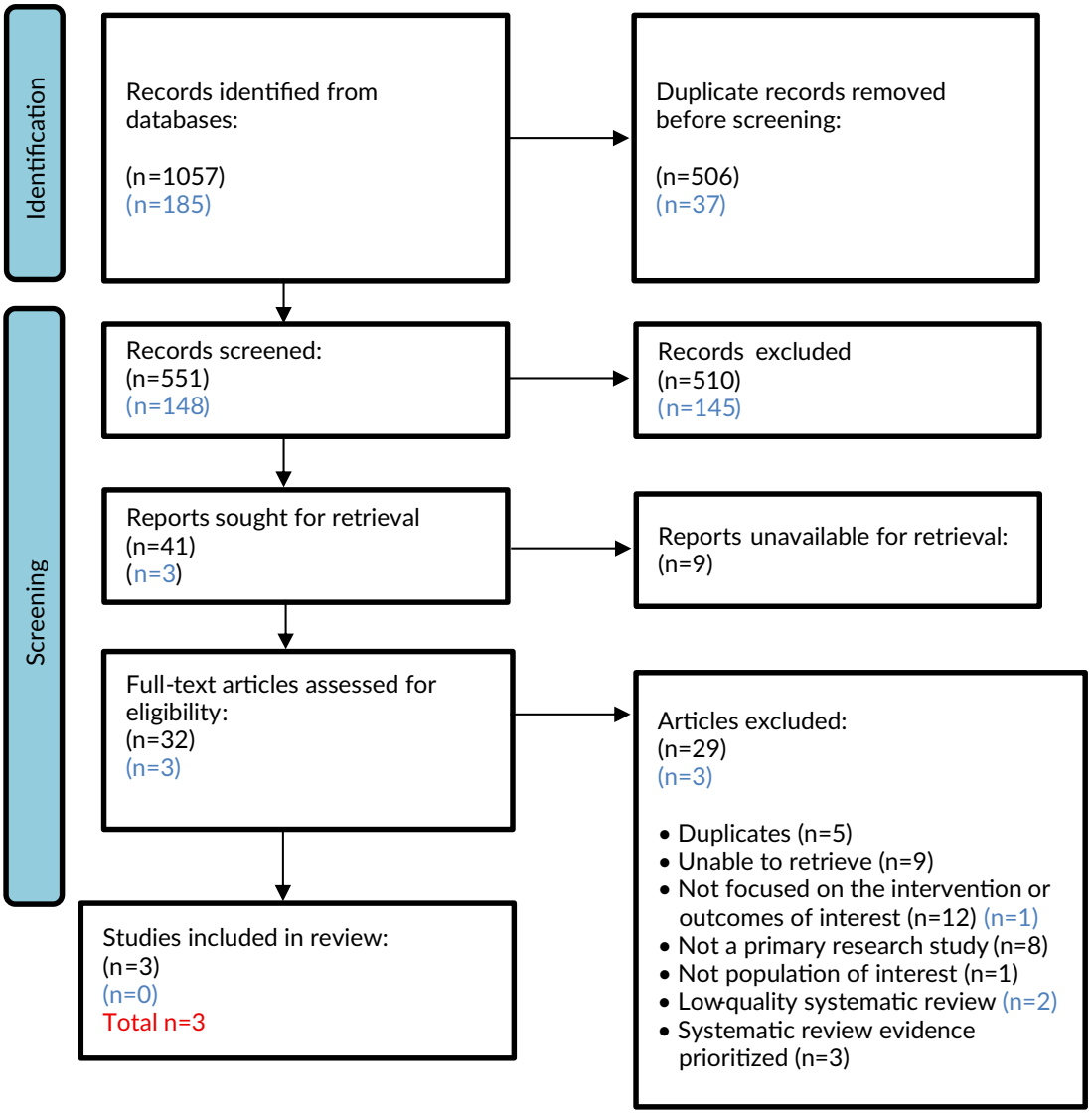
Recommendation Formulation

The two reviewers grouped the studies by theme and drafted recommendation statements. GRADE evidence profiles and Evidence-to-Decision (EtD) frameworks were also developed for each recommendation and provided to the expert panel to inform decision-making. Each recommendation included a direction, either for or against an intervention, and a strength, either strong or conditional, after considering benefits and harms; the certainty of the evidence; values and preferences; and health equity considerations.[3,15,16] Consensus among panel members was used to determine the final direction and strength of the recommendations. Article review process PRISMA diagrams for recommendation question #2, #3, and #4 are found in Figures 1, 2, and 3, respectively.

Figure 1: *Article Review Process PRISMA Diagram for Recommendation Question #2*

Recommendation question #2: Should a specific repositioning frequency be recommended over another frequency for persons with pressure injuries or those at risk of developing them?

n=original search
n=update search

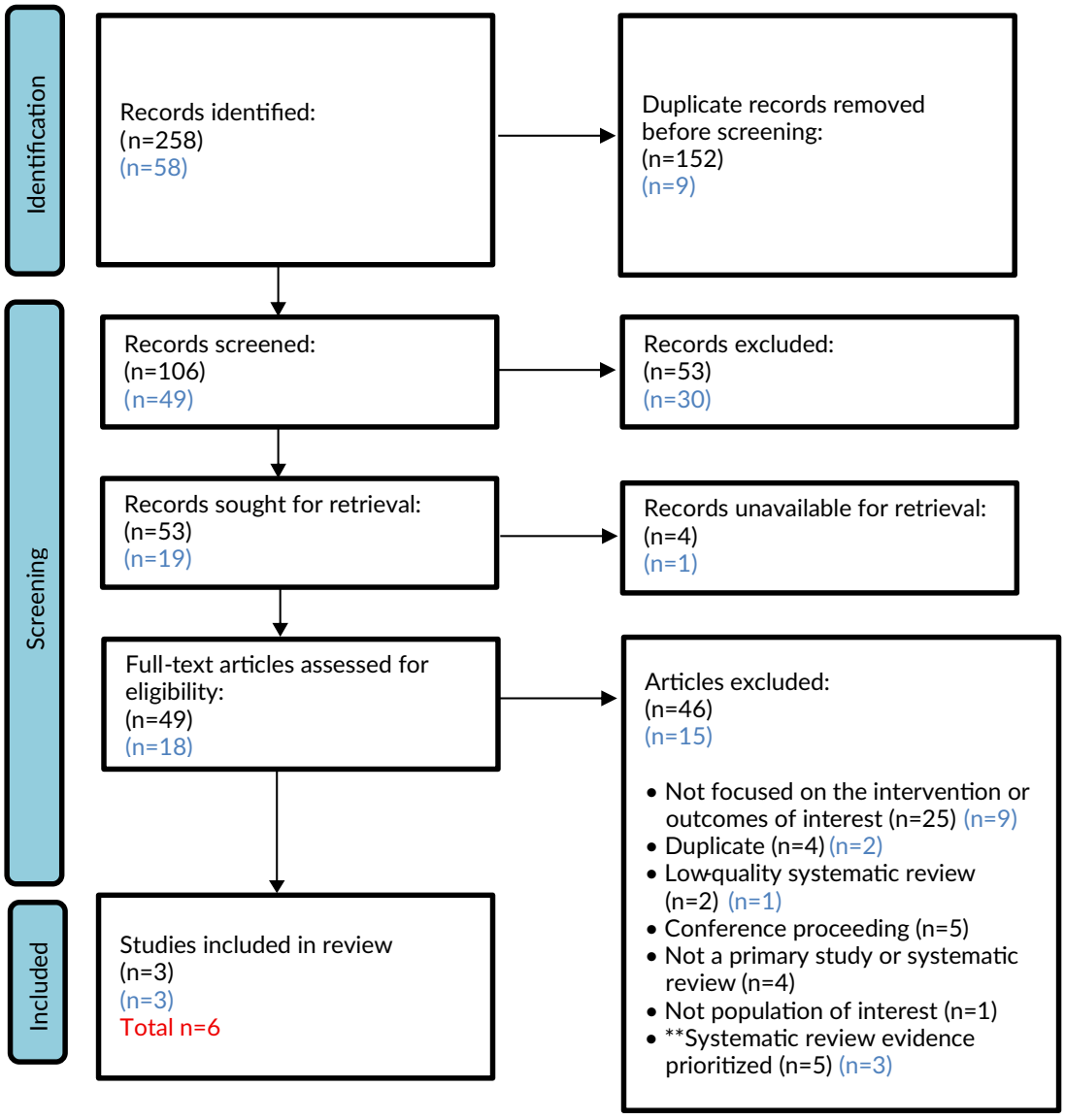


Source: Adapted from: Page M, McKenzie P, Bossuyt P, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. Syst Rev. 2021;10(89). Available from: https://doi.org/10.1186/s13643-021-01626-4

Figure 2: *Article Review Process PRISMA Diagram for Recommendation Question #3*

Recommendation question #3: Should preventative care bundles be recommended or not for the prevention of pressure injuries?

n=original search
n=update search

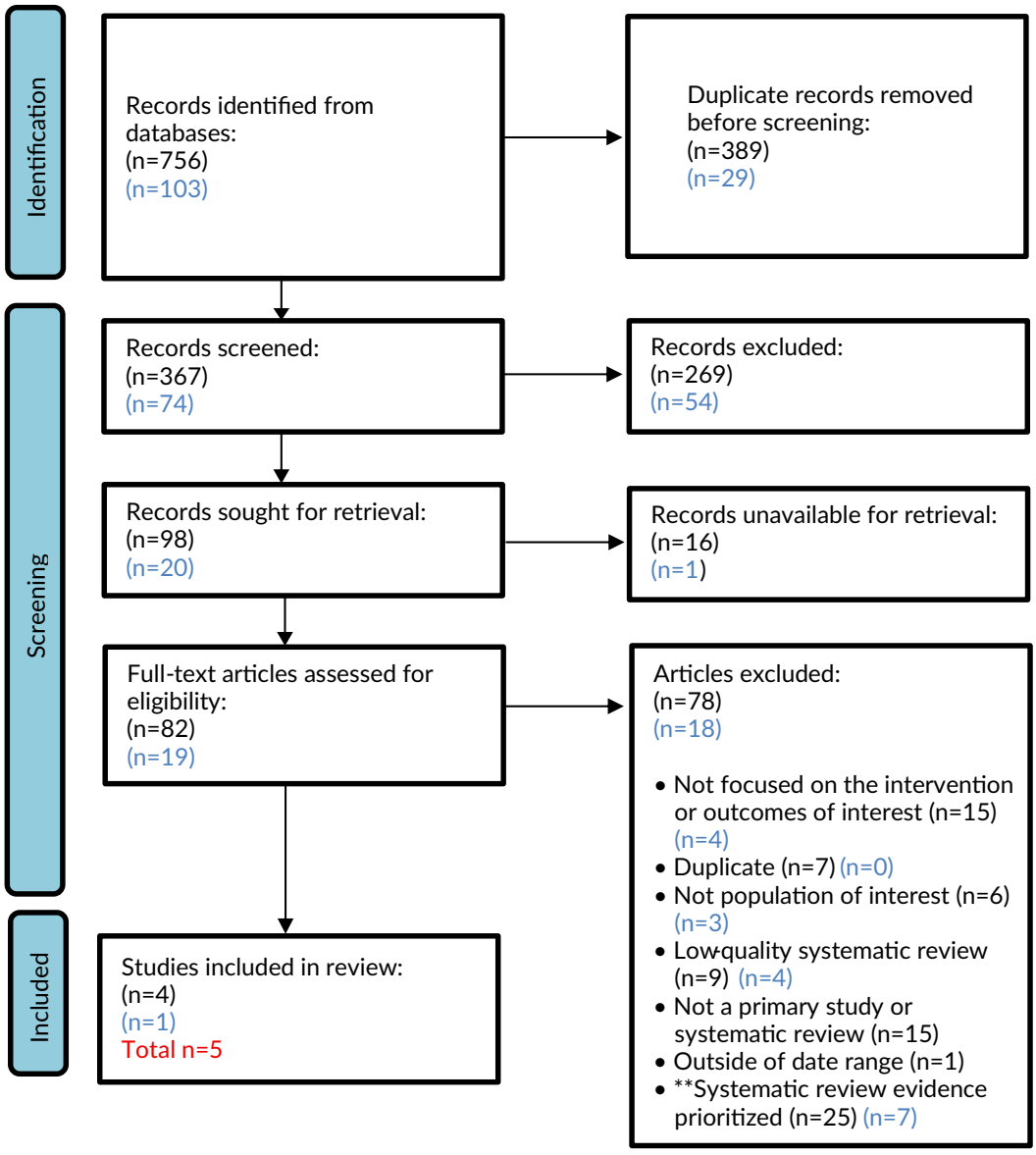


Source: Adapted from: Page MJ, McKenzie JE, Bossuyt P, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic review. Available from: http://www.prisma-statement.org/

Figure 3: *Article Review Process PRISMA Diagram for Recommendation Question #4*

Recommendation question #4: Should the use of prophylactic dressings be recommended or not for the prevention of pressure injuries?

n=original search
n=update search



Source: Adapted from: Page M, McKenzie P, Bossuyt P, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. Syst Rev. 2021;10(89). Available from: https://doi.org/10.1186/s13643-021-01626-4

RESULTS

Two reviewers screened 1,295 articles pertaining to the three research questions. Of these, 234 full texts were examined for relevance, and 14 articles were included to inform three recommendations, which are described below.

Recommendation 2.0: The expert panel suggested that nurses and health providers reposition persons at risk of pressure injuries every 2–4 hours. Repositioning refers to turning people to change their body position to relieve and/or redistribute pressure. Repositioning reduces the duration of pressure on the tissues, thereby decreasing tissue hypoxia.[1,3,20] To inform this recommendation, the panel included 1 SR with 5 randomized controlled trials (RCTs), 1 additional RCT, and 1 nonrandomized study (NRS).[3,20–22] The interventions and comparators assessed were: two-hourly versus three-hourly and four-hourly repositioning; three-hourly versus four-hourly repositioning; four-hourly versus six-hourly repositioning; three- or four-hourly versus two-hourly repositioning; and five-hourly versus three-hourly repositioning. These studies focused on two outcomes: PI incidence and precursor signs and symptoms of PI among adults at risk of a PI.[3,20–22]

Three RCTs found that the evidence is very uncertain regarding whether two-hourly compared with four-hourly repositioning decreases pressure injury incidence. The relative risk (RR) was 1.06 (95% CI, 0.80–1.41). This translates to no more or no fewer pressure injuries per 100 people who receive two-hourly repositioning versus those who receive four-hourly repositioning (ranging from three fewer to three more).[3,20]

Two RCTs compared two-hourly to three-hourly repositioning. The evidence suggests that these repositioning schedules offered no difference in PI incidence (RR 4.06; 95% CI 0.87–18.98 and RR 0.90; 95% CI 0.69–1.16).[3,20]

One RCT found that there may be a reduction in PI incidence with three-hourly repositioning compared with four-hourly repositioning (RR 0.20; 95% 0.04-0.92).[3,20]

One RCT compared four-hourly to six-hourly repositioning and found that four-hourly repositioning may improve PI incidence, but the evidence was very uncertain (RR 0.73; 95% 0.53–1.02).[3,20]

Another RCT examined an alert system based on repositioning every 2, 3, or 4 hours. No PIs were noted during the study period; however, prior to the intervention, the PI incidence was 5.24%.[3,21]

One nonrandomized study compared three-hourly to five-hourly repositioning and found that three-hourly repositioning may decrease PI incidence. However, the evidence is very uncertain (OR 0.51; 95% CI 0.27–0.97).[3,22] This suggests that for every 100 people who receive three-hourly repositioning rather than five-hourly repositioning, one less person will have a PI (ranging from 2 fewer to no more or less).

For three-hourly repositioning compared with five-hourly, three-hourly repositioning may decrease precursor signs and symptoms of PI; however, the evidence is very uncertain (RR 0.40; 95% CI 0.17–0.90).[3,22] This suggests that for every 100 people who receive three-hourly repositioning rather than five-hourly repositioning, one less person will have precursor signs of PI (ranging from 2 fewer to no more or less).[3,22]

The expert panel noted that person/caregiver satisfaction, PI healing rate, and PI worsening rate are critical outcomes to examine, but these were not measured in the research.[3] The expert panel also noted that while health provider staffing levels could be a barrier to repositioning frequency, a lack of health providers does not negate the need for repositioning.[3]

Considering the overall magnitude of benefits across all studies, there may be little to no difference between two-, three-, or four-hourly repositioning; however, repositioning at these intervals may decrease PI incidence compared to five- or six-hourly repositioning.[3] No harms were noted. It is important to note that the certainty in the evidence is low due to serious or very serious risk of bias and imprecision in the studies. Based on this, the expert panel determined the strength of the recommendation to be conditional.[3]

Recommendation 3.0: The expert panel suggested that nurses and health providers implement preventative care bundles for persons at risk of pressure injuries. Preventative care bundles are groups of evidence-based interventions delivered together to ensure standardized care. When performed together, they aim to result in a better outcome than if performed individually.[23]

This recommendation was informed by one SR of 1 RCT and 19 NRS, and 5 separate NRS.[24–29] The interventions within the bundles included PI risk assessment, skin assessment, nutrition, activity, participation in PI education, and other interventions. The populations studied were at risk of pressure injury. Most studies focused on adults,[24–28] while one study focused on children over one month old.[29]

In the SR, one RCT reported that the incidence of PIs (at any stage) was lower in the care bundle group than in the control group (RR 0.42; 95% CI 0.24–0.76).[3,24] This suggests that for every 100 people who receive the preventative care bundle, 31 fewer people will have a PI of any stage (ranges from 13 to 40 fewer). When Stage 2 pressure injuries in the RCT were examined, the incidence was also lower in the preventative care bundle group (RR 0.38; 95% CI 0.14–1.02), indicating that for every 100 people who receive the preventative care bundle, 12 fewer people will have a Stage 2 PI (ranging from 16 fewer to no more or less). Nineteen NRS[3,24] that examined bundled care interventions all reported decreased PI incidence. An effect estimate was not calculated due to variation in the reporting and missing details across studies.[3,24]

Three NRS reported on the health provider's compliance.[3,25,26,27] Care bundles may increase provider compliance, but the evidence is very uncertain. In one study, compliance was 85% in the intervention group compared with 50% in the control group.[3,25] Another study reported that compliance was 5% higher in the care bundle group than in the control group.[3,26] A third study reported high compliance with the bundle (78.9%).[3,27]

In a systematic review, one nonrandomized quality improvement study reported on the outcome of person satisfaction.[24] Ninety-seven per cent of 213 patients surveyed were satisfied with the intervention.[3,24]

Care bundles may reduce precursor signs and symptoms of PI, but the evidence is very uncertain. Three NRS reported on this outcome.[3,26,28,29] Stage 1 PI decreased following implementation of the preventative care bundle.

The expert panel noted the importance of examining the effect of preventative care bundles on adverse events. However, these outcomes were not measured in the literature.[3] The overall certainty of the evidence for these outcomes was very low because of serious and very serious risk of bias across the outcomes and imprecision for two outcomes. Given the very low certainty of the evidence, the expert panel determined the strength of the recommendation to be conditional.[3]

The panel also emphasized the importance of preventative care bundles for people with darker skin tones, particularly in areas of the world with higher populations of people with darker skin tones. This is due to the increased risk of missing early signs of pressure injury. An additional study concluded that people with darker skin tones are more likely to develop higher-stage pressure injuries across health settings.[3,30]

Recommendation 4.0: The expert panel recommended that nurses and health providers use multilayer foam silicone dressings (MFSDs) as a prophylactic measure for individuals at risk of pressure injuries, in addition to other preventative care strategies. These dressings should be applied to specific at-risk body locations, considering the potential for shearing, friction, and pressure. A prophylactic dressing helps prevent pressure and shearing forces and is an adjunct to repositioning and support surfaces. MFSDs have a soft silicone adhesive, are self-adherent, and contain multilayer foam. Dressings with a silicone interface can also protect newly healed tissue.[3,31]

One SR informed this recommendation of six RCTs and three additional RCTs (one of which included unpublished data).[32–35] The population included adults at risk of developing PIs.

One SR reported pressure injury incidence.[3,32] MFSDs may reduce pressure injury incidence compared to no MFSDs (RR 0.25; 95% CI 0.16–0.41). This suggests that for every 100 people who receive the intervention, 9 fewer people will have a PI (ranging from 10 to 7 fewer).

One SR of three RCTs reported on the outcome of precursor signs and symptoms when using MFSDs compared to no dressings.[3,32] MFSDs may decrease precursor signs and symptoms; however, the evidence is very uncertain (RR 0.27; 95% CI 0.08–0.90). This suggests that for every 100 people who receive the intervention, 7 fewer people will have a PI (ranging from 8 fewer to 1 fewer).

One RCT, based on unpublished data, reported on the quality of life for persons using MFSDs compared to no dressings.[3,35] MFSDs likely result in little to no difference in quality of life. Mean quality of life score on day 14 was 0.40 (SD 0.28) in the intervention group compared to 0.42 (SD 0.27) in the no dressings group.

Two RCTs reported on pain for persons using MFSDs compared to no dressings.[34,35] There was little to no difference in pain between the two groups. In two RCTs, two patients in the intervention groups reported sacral pain, and those in the control group reported no sacral pain.[3,33,34]

One RCT reported on person satisfaction for those using MFSDs compared to no dressings.[3,33] MFSDs may result in higher satisfaction scores than the no-dressing group.[3,33]

One RCT reported 33 adverse device events in 28 patients.[3,35] Most of the adverse events were mechanical skin injuries, including skin tears or skin stripping (n=11), PI occurrence (n=3), and blister formation at the edge or underneath the dressing (n=3).[3,35] Additionally, heel dressings caused two patients to fall without significant injury when the dressings were in direct contact with the floor surface.[3,35] One study within a SR reported that no dressing-related adverse events occurred during the trial.[3,32] The remaining trials in this SR did not provide adverse event data.[3,32]

The expert panel noted there may be benefits to using MFSDs for individuals at risk of pressure injuries. Adverse events were minimal and not reported across all studies. MFSDs are adjunct interventions to other prevention strategies, such as repositioning and support surfaces. However, the certainty of the evidence is very low because of serious to very serious risk of bias and imprecision across all outcomes. Therefore, the expert panel determined that the strength of the recommendation to be conditional.[3]

DISCUSSION

Implementation and Feasibility

Recommendation 2.0: A lack of availability of positioning devices may be a barrier to offloading patients at risk for PI

formation. One study[36] found that a lack of device availability for positioning may be a barrier to offloading patients at risk of pressure injury formation. The study also noted that repositioning a critically ill patient requires two people and can impact decisions made when caring for patients with a wound. Furthermore, it was found that ensuring clear options were available and ensuring understanding of how equipment functions or what specific methods to use may improve decisions related to wound management.[36]

When discussing the implementation of the turning and repositioning recommendation, the expert panel noted that healthcare teams, including occupational therapists, should collaborate with persons and/or essential caregivers when planning an individualized repositioning schedule/frequency within a two to four hour interval. This approach considers everyone's situation, while also recognizing the risk of tissue damage from prolonged immobility.

The expert panel also emphasized the importance of providing health education to persons and/or their essential caregivers on the benefits and techniques of repositioning. They noted the need to be mindful of caregiver burden and feasibility, as caregivers may require support to assist with repositioning in home and community settings. This is consistent with findings from a meta-synthesis focusing on formal caregivers' experiences in caring for individuals at risk for, or living with, a PI.[37] This meta-synthesis highlighted that caregiver education on risk factors, turning and positioning, and dressing changes was perceived to improve PI prevention. However, it also noted that nurses can be reluctant to engage family caregivers due to the risk of overburdening.[37]

Recommendation 3.0: The expert panel suggested that nurses and health providers implement preventative care bundles for persons at risk of PIs. The expert panel noted that preventative care bundles should be customized and contextualized to the person and practice setting while aligning with guiding principles of person-centred care and shared decision-making.[3] This approach ensures that patients receive optimal skincare, nutrition, management of moisture/incontinence, support surface management, and other components of the bundle in a person-centred manner.

When implementing a care bundle, it is important to educate patients and caregivers about its purpose and components. This not only supports a reduction in pressure injury incidence post-implementation but may also lower the care costs due to improved outcomes.[3]

The expert panel also suggested integrating feedback on the bundle's effectiveness into future revisions and planning, promoting continuous improvement in care delivery. One study[38] found that peer-reviewed papers reported the adaptation of preexisting care bundles, leading to improved care.

Recommendation 4.0: When selecting dressings for preventative use, it is crucial to consider the person's comfort and preferences, as some dressings may cause discomfort.[3] This discomfort may be due to contraindications in dressing use, such as sensitivity or allergy to dressing components. In addition, persons with darkened skin may have an unidentified PI, which can result in pain at the dressing site.[3]

An ideal dressing is designed to reduce friction between the back of the dressing and the support surface and/or clothing, has five layers, and is large enough to cover the pressure point or at-risk body locations. While these dressings can be costly,[3] the silicone self-adherent border on multilayer foam dressings allows for wound inspection and reapplication without needing complete replacement, which may help reduce costs. Health providers should follow the manufacturer's guidance on dressing use, including instructions for cutting or shaping the dressing. Dressings can typically remain in place for up to 7 days, as specified by the manufacturer, and should be changed when soiled or saturated. If there is difficulty identifying the manufacturer of the product, the nurse educator, nurse manager, or the setting's purchasers should be consulted.[3]

Finally, hands-on education for health providers should accompany the intervention, including training on skin assessment and reassessment, as well as on applying and reapplying the dressing to prevent injury. Whenever possible, patients and caregivers should be included in the education process. Nurses serve as educators, advocates, and leaders in promoting a culture of patient safety and quality improvement within health care settings. Consequently, investing in nursing education, training, and professional development is essential for optimizing pressure injury prevention.[39]

Implications for Future Research

Future research should focus on a broader range of important outcomes, such as person/caregiver satisfaction, injury-healing rate, and PI worsening rate, when comparing repositioning frequencies. For instance, higher-quality research is needed to evaluate the impact of different repositioning frequencies.

Bundles were included if they consisted of an integrated set of two or more interventions implemented together, rather than a set of preventative care options, a guideline, or an intervention focused solely on education. Future research that examines differences in bundles, including the number of interventions implemented together and similarities among them, would provide more insight. The panel identified adverse events as important outcomes but did not examine them in the research.[3]

Currently, there is a lack of research on the impact of prophylactic dressings in community, home care, and primary care settings. Qualitative studies examining provider and patient preferences, as well as the facilitators or barriers of

using prophylactic dressings, would add valuable insights. Measuring pain in persons using prophylactic dressings and accounting for differences in skin tone may also yield beneficial outcomes.

Limitations

Future editions of the guideline should prioritize studies conducted in additional settings, including home care and primary care. Increased research on PI in children would also strengthen the evidence base for recommendations. The research was also conducted using only studies published in English; additional studies in other languages that provide congruent or conflicting evidence may exist. Finally, higher-quality research throughout may increase confidence in the evidence and change the strength of the recommendations.

CONCLUSION

The purpose of this paper is to provide nurses and other members of the interprofessional team, including persons and their families and others, with evidence-based recommendations for preventing PIs. We recognize that people at risk of developing PI and their essential caregivers are experts in their own health and decision-making. Collaboration among the interprofessional team, persons with lived experience, and essential caregivers is critical to achieving better health outcomes. •

Low-Volume Supplements for Wound Healing

PUSH 20+

20g of protein + Vitamin E + Vitamin E + Zinc + Arginine + Hyaluronic Acid

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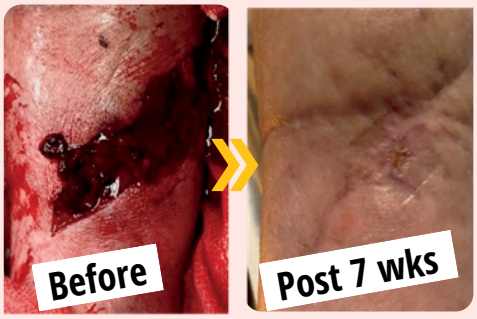

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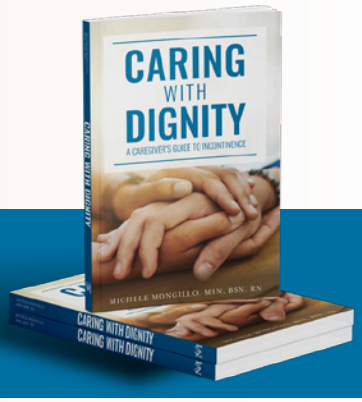

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REFERENCES

1. European Pressure Ulcer Advisory Panel, National Pressure Injury Advisory Panel and Pan Pacific Pressure Injury Alliance. *Prevention and Treatment of Pressure Ulcers/Injuries: Clinical Practice Guideline. The International Guideline*. Emily Haesler, ed. EPUAP/NPIA/PPPIA; 2019.
2. Chung ML, Widdel M, Kirchhoff J, et al. Risk factors for pressure injuries in adult patients: a narrative synthesis. *Int J Environ Res Public Health*. 2022;19(2):761.
3. Registered Nurses' Association of Ontario (RNAO). *Pressure Injury Management: Risk Assessment, Prevention and Treatment*. 4th Ed. RNAO; 2024.
4. National Pressure Injury Advisory Panel. NPIAP pressure injury stages, National Pressure Injury Advisory Panel. Accessed December 18, 2025. cdn.ymaws.com/npiap.com/resource/resmgr/online_store/npiap_pressure_injury_stages.pdf
5. Woodbury MG, Houghton PE. Prevalence of pressure ulcers in Canadian healthcare settings. *Ostomy Wound Manage*. 2004;50(10):22-24, 26, 28, 30, 32, 34, 36-38.
6. Health Quality Ontario (HQO). Pressure injuries: care for patients in all settings. Queen's Printer for Ontario, 2017. Accessed December 4, 2025. https://www.hqontario.ca/Portals/0/documents/evidence/quality-standards/qs-pressure-injuries-clinical-guide-en.pdf
7. Siotos C, Bonett AM, Damoulakis G, et al. Burden of pressure injuries: findings from the global burden of disease study. *Eplasty*. 2022;22:e19.
8. Padula WV, Pronovost PJ, Makic MBF, et al. Value of hospital resources for effective pressure injury prevention: a cost-effectiveness analysis. *BMJ Qual Saf*. 2019;28(2):132-141. doi:10.1136/bmjqs-2017-007505
9. Chan B, Ieraci L, Mitsakakis N, Pham B, Krahn M. Net costs of hospital-acquired and pre-admission PUs among older people hospitalised in Ontario. *J Wound Care*. 2013;22(7):341-2, 344-346. doi:10.12968/jowc.2013.22.7.341
10. Padula WV, Delarmente BA. The national cost of hospital-acquired pressure injuries in the United States. *Int Wound J*. 2019;16(3):634-640. doi:10.1111/iwj.13071
11. Health Quality Ontario (HQO), Canadian Patient Safety Institute (CPSI). Never events for hospital care in Canada: safer care for patients. CPSI, 2015. Accessed December 4, 2025. www.healthcareexcellence.ca/media/eceoshdc/never-events-for-hospital-care-in-canada.pdf
12. Healthcare Excellence Canada (HEC). Pressure ulcer: introduction. Accessed December 4, 2025. www.healthcareexcellence.ca/en/resources/hospital-harm-is-everyones-concern/hospital-harm-improvement-resource/pressure-ulcer-introduction/
13. Canadian Institute for Health Information. Worsened pressure ulcer in long-term care. Updated July 2025. Accessed December 4, 2025. https://www.cihi.ca/en/indicators/worsened-pressure-ulcer-in-long-term-care
14. Howitt L, Burt A, Nizum N, Buchanan C, Rey M, Grinspun D. Best practice guideline development methods: An integrated approach based on the Registered Nurses' Association of Ontario's methods. *Clin Pub Health Guidelines*. 2026;3(1):e70052. doi:10.1002/gin2.70052
15. Schunemann H, Brozek J, Guyatt G, Oxman, A, eds. *Handbook for Grading the Quality of Evidence and the Strength of Recommendations Using the GRADE Approach,* 2013. Accessed December 4, 2025. https://gdt.gradepro.org/app/handbook/handbook.html
16. Neumann I, Santesso N, Akl EA, et al. A guide for health professionals to interpret and use recommendations in guidelines developed with the GRADE approach. *J Clin Epidemiol*. 2016 Apr;72:45-55. doi:10.1016/j.jclinepi.2015.11.017
17. Whiting P, Savović J, Higgins JPT, et al. ROBIS: A new tool to assess risk of bias in systematic reviews was developed. *J Clin Epidemiol*. 2016 Jan;69:225-234. doi:10.1016/j.jclinepi.2015.06.005
18. Sterne AC, Savović J, Page MJ, et al. RoB 2: a revised tool for assessing risk of bias in randomised trials. *BMJ*. 2019 Aug 28;366:I4898. doi:10.1136/bmj.l4898
19. Sterne AC, Hernán MA, Reeves BC, et al. ROBINS-I: a tool for assessing risk of bias in non-randomised studies of interventions. *BMJ*. 2016 Oct 12;355: i4919. doi:10.1136/bmj.i4919
20. Gillespie BM, Walker RM, Latimer SL, et al. Repositioning for pressure injury prevention in adults. *Cochrane Database Syst Rev*. 2020 Jun 2;6(6):CD009958 doi:10.1002/14651858.CD009958.pub3
21. Yap TL, Horn SD, Sharkey PD, et al. Effect of varying repositioning frequency on pressure injury prevention in nursing home residents: TEAM-UP trial results. *Adv Skin Wound Care*. 2022 Jun 1;35(6):315-325. doi:10.1097/01.ASW.0000817840.68588.04
22. Darvall JN, Mesfin L, Gorelik A. Increasing frequency of critically ill patient turns is associated with a reduction in pressure injuries. *Crit Care Resusc*. 2018 Sept;20(3):217-222.
23. Horner DL, Bellamy MC. Care bundles in intensive care. *Contin Educ Anaesth Crit Care Pain*. 2012 Aug;12(4):199-202.
24. Lin F, Zijing W, Song B, Coyer, F, Chaboyer W. The effectiveness of multicomponent pressure injury prevention programs in adult intensive care patients: a systematic review. *Int J Nurs Stud*. 2020;102:103483. doi:10.1016/j.ijnurstu.2019.103483
25. Pena H, Millard A, Richardson A. Implementation and evaluation of a pressure injury prevention bundle in the cardiothoracic intensive care unit. *J Nurs Care Qual*. 2024;39(1):1-3. doi:10.1097/NCQ.0000000000000727
26. Yilmazer T, Tuzer H. Effectiveness of a pressure injury prevention care bundle; prospective interventional study in intensive care units. *J Wound Ostomy Continence Nurs*. 2022;49(3):226-232. doi:10.1097/WON.0000000000000875
27. Zhang X, Wu Z, Zhao B, Zhang Q, Li Z. Implementing a pressure injury care bundle in Chinese intensive care units. *Risk Manag Healthc Policy*. 2021;14:2435-2442. doi:10.2147/RMHP.S292579
28. Singh C, Shoqirat N, Thorpe L, Villaneuva S. Sustainable pressure injury prevention. *BMJ Open Qual*. 2023;12(2):e002248. doi:10.1136/bmjoq-2022-002248
29. Aprea V, Barón FJ, Meregalli C, Sabatini, M. Impact of a health care quality improvement intervention to prevent pressure ulcers in a pediatric intensive care unit. *Arch Argent Pediatr*. 2018 Aug;116(4):e529-e541. doi:10.5546/aap.2018.eng.e529
30. Oozageer Gunowa N, Hutchinson M, Brooke J, Jackson, D. Pressure injuries in people with darker skin tones: a literature review. *J Clin Nurs*. 2018;27(17-18):3266-3275. doi:10.1111/jocn.14062
31. Kalowes P, Messina V, Li M. Five-layered soft silicone foam dressing to prevent pressure ulcers in the intensive care unit. *Am J Crit Care*. 2016;25(6):e108-19. doi:10.4037/ajcc2016875
32. Moore ZE, Webster J. Dressings and topical agents for preventing pressure ulcers. *Cochrane Database Syst Rev*. 2018 Dec 6;12(12):CD009362. doi: 10.1002/14651858.CD009362.pub3
33. Liao N, Wang F, He X, Li L, Fei J. Predictive application of foam dressing on preventing of auricle pressure injury caused by ear dressing. *Heliyon*. 2023;9(4):e14883. doi:10.1016/j.heliyon.2023.e14883
34. Hahnel E, El Genedy M, Tomova-Simitchieva T, et al. The effectiveness of two silicone dressings for sacral and heel pressure ulcer prevention compared with no dressings in high-risk intensive care unit patients: a randomized controlled parallel-group trial. *Br J Dermatol*. 2020;183(2):256-264. doi:10.1111/bjd.18621
35. Beeckman D, Fourie A, Raepsaet C, et al. Silicone adhesive multilayer foam dressings as adjuvant prophylactic therapy to prevent hospital-acquired pressure ulcers: a pragmatic noncommercial multicentre randomized open-label parallel-group medical device trial. *Br J Dermatol*. 2021 Jul;185(1):52-61. doi:10.1111/bjd.19689
36. Heerschap C, Nicholas A, Whitehead M. Wound management: investigating the interprofessional decision-making process. *Int Wound J*. 2019;16(1), 233-242. doi:10.1111/iwj.13017
37. Heerschap C, Woo KY. Formal caregiver experiences of caring for individuals at risk for or with a pressure injury: a metasynthesis. *Adv Skin Wound Care*. 2022;35(12): 680-687. doi:10.1097/01.ASW.0000855044.92545.af
38. Gilhooly D, Green SA, McCann C, Black N, Moonesinghe SR. Barriers and facilitators to the successful development, implementation and evaluation of care bundles in acute care in hospital: a scoping review. *Implement Sci*. 2019;14(1):47. doi:10.1186/s13012-019-0894-2
39. Kandula U. Impact of multifaceted interventions on pressure injury prevention: a systematic review. *BMC Nurs*. 2025;24(1):11. doi:10.1186/s12912-024-02558-9