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Development and Implementation of a Simple Wound Care Guideline for Minor Skin Lesions

A Quality Improvement Project

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ABSTRACT

PURPOSE: The purpose of this quality improvement project was to use the best available evidence and expert opinion to develop and implement a simple inpatient nursing care guideline ("The Guideline") for patients with minor skin lesions, including candidiasis, skin tears, incontinence-associated dermatitis, and stage 1 and stage 2 pressure injuries that would not require a WOC nurse consultation.

PARTICIPANTS AND SETTING: The Guideline was developed for nurses working on inpatient adult acute care units in a large community hospital in southwest Minnesota.

APPROACH: The Guideline was validated for its clarity and appropriateness by internal and external hospital-based wound care nurses and implemented through in-person rounding on the nursing units and distribution of badge cards and required completing an online education module. Surveys and wound documentation audits were conducted to measure changes in knowledge and skin care pre- and postimplementation of The Guideline.

OUTCOMES: We conducted wound documentation audits of approximately 491 records that assessed whether patients received appropriate treatment and found an improvement from 45% (104 of 231) to 80% (209 of 260). Nurses' self-rating of their knowledge about which dressings and topical treatment to use improved from 18% (16 of 89) agreement to 57% (55 of 96). Nurses' self-rating of their knowledge about when to change dressings and reapply topical treatments improved from 27% (24 of 89) agreement to 65% (62 of 96).

IMPLICATIONS FOR PRACTICE: Although there is evidence for a variety of dressings or products to treat wounds, this quality improvement project demonstrated increased adherence with providing appropriate care when fewer treatment options were recommended to nursing staff through our structured guideline. The Guideline continues to be used at the project site and is now being implemented at affiliate hospitals.

KEY WORDS: Guideline, Incontinence-associated dermatitis, Intertriginous dermatitis, Intertrigo, Pressure injury, Protocol, Skin tear, Wound, Wound care consult.

INTRODUCTION

There is no formal guideline that delineates the types of wounds or risk factors that can be managed by the inpatient staff nurse from those wounds or skin lesions/conditions that require the expertise of a certified wound care nurse.[1] This lack of a guideline can lead to mismanagement of patients' wounds. Consults may be inappropriately ordered for patients with minor skin lesions that the inpatient staff nurses could manage using a wound care guideline or protocol. Minor skin lesions are defined as wounds that are not required to be reported to the Centers for Medicare & Medicaid Services and the State of Minnesota (where the project was conducted) and include conditions such as candidiasis, skin tears, incontinence-associated dermatitis, and stage 1 and stage 2 pressure injuries.[2] Likewise, there may also be missed opportunities for referrals to the wound care nurse for the treatment of complex wounds.

Developing a consultation process that allows wound care nurses to focus on more complex wounds is important because it can lead to better patient care and reduce wasted time and expenses. An initial assessment and development of a plan of care by the wound care nurse takes approximately 60 minutes.[3] Consultation requests for minor skin lesions, which do not require expert workup, translate into higher costs of care. An efficient consultation process, which includes a guideline for the care of minor skin lesions that can be managed by nursing staff, also promotes fewer delays in patient care. Once the wound care consult is placed, the inpatient staff nurse has a false sense of assurance that what is best for the patient has been done. The staff nurse may or may not treat the wound while awaiting a plan of care from the wound care nurse. At some facilities, there is no evening or weekend coverage for the wound care service, and this can mean delays in treatment for several hours to a few days. This delay could be addressed by training staff nurses on how to effectively manage minor skin lesions and complex wounds until the wound care nurse can develop a formal plan of care.

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A scoping review of the literature revealed a plethora of case studies about inpatient nurses using care bundles or protocols to prevent pressure injuries.[4-8] These studies typically consist of the nurse completing a risk assessment, such as the Braden Scale, to identify patients at risk for developing pressure injuries and then implementing needs-specific preventative measures for these patients. These bundles and protocols were largely successful at reducing hospital-acquired pressure injuries. Similarly, it may be reasonable to consider using an evidence-based guideline or protocol to direct nurses' management of minor skin lesions. We found one randomized controlled trial that explicitly supports the use of a protocol to direct care for stage 1 pressure injuries.[9] The purpose of that study was to determine whether using the appearance of nonblanching erythema (a stage 1 pressure injury) as the indication to implement pressure injury prevention compared to the Braden Scale risk assessment would lead to increased incidence of stages 2, 3, and 4 pressure injuries. The results showed no difference ($P > .99$) between the control group (6.7%) and the experimental group (6.8%) on the development of pressure injuries. An implication for practice is that just as the inpatient nurse is generally considered qualified to complete the Braden Scale risk assessment on patients and initiate a pressure injury prevention protocol, the bedside nurse should also be able to care for minor skin lesions, such as stage 1 pressure injuries, with the direction of a protocol or guideline. A certified wound care nurse does not need to get involved unless the wound deteriorates.

Finally, the implementation of a wound care guideline for minor skin lesions can ensure that best practice is being used. When researchers used the Pieper Pressure Ulcer Knowledge Tool, a validated exam, to assess the knowledge of certified wound care nurses, staff nurses, and physicians, the wound care nurses performed the best, while the physicians performed the worst.[10-12] The implication of these findings, we believe, is that the wound care nurse is the expert on pressure injury prevention and care, and an evidence-based wound care guideline developed by this specialist and implemented by staff nurses may be more reliable than wound care orders placed by physicians. Furthermore, while these studies also suggest that additional education is needed for staff nurses, knowledge does not always translate into practice. A study was carried out to determine whether relationships exist between the nurses' knowledge about pressure injuries and the preventive care they provided; findings suggested a large discrepancy between what nurses knew and what interventions they implemented.[13] A wound care guideline would reduce the amount of decision making (and potential for errors) involved in wound management and could lead to more consistent care. Thus, the purpose of this quality improvement (QI) project was to use the best available evidence and expert opinion to develop and implement an inpatient nursing care guideline for minor skin lesions.

DEVELOPMENT AND IMPLEMENTATION

The Inpatient Nursing Care Guideline for Minor Skin Lesions (henceforth "The Guideline") (Table 1) was developed by author A.B. to simplify and standardize nursing care for minor skin lesions defined as skin tears, incontinence-associated dermatitis, intertriginous dermatitis, stage 1 pressure injuries, and stage 2 pressure injuries. Nurses involved with this project worked on the adult inpatient units, including the intensive care unit, progressive care unit, and medical-surgical units of a community hospital with 166 licensed beds in southwest Minnesota. This hospital is an affiliate of a larger, nationally ranked academic hospital, and it shares that institution's policies, clinical practice guidelines, and electronic medical record.

It was believed that the care of these wounds was inconsistent because the hospital's current clinical practice guidelines offered too many treatment options including a multitude of dressings. For instance, the guideline for skin tears listed 14 different dressings. In response, The Guideline was drafted to align with the hospital's policies and procedures and also to limit treatments to just 1 or 2 options per type of wound. This new guideline also made it clear how often to change dressings or reapply topical treatments.

To decide which dressings or treatment would be included, the recommendations of international wound advisory panels were reviewed.[14,15] We also considered what wound care products were readily available throughout the hospital. Brand names were included in The Guideline because they were more recognizable for the nursing staff.

Before being implemented, we had The Guideline validated by external and internal expert panels for clarity and appropriateness. An analysis in the literature sets the standard of 78%

TABLE 1.
The Guideline

Inpatient Nursing Care Guideline for Minor Skin Lesions	
Wound Type	**Topical Treatment**
Skin tear	• Border (foam) dressing Q 3 d
Incontinence-associated dermatitis (IAD)	• Paste 2× daily and with each incontinence episode • If candidiasis ("satellite" lesions) present, also request topical antifungal Rx from provider and apply to skin under paste
Intertriginous dermatitis (ITD)	• Cleanse skinfolds daily with No-Rinse Foam • Place moisture-wicking fabric between skinfolds ○ Allow 2" of fabric to be exposed to air ○ Change Q 5 d or if soiled • If candidiasis ("satellite" lesions) present, request topical antifungal Rx from provider for areas *not* being treated by moisture-wicking fabric (eg, axillary area)
Stage 1 pressure injury	• Border (foam) dressing Q 3 d • Alternatively, with urinary or fecal incontinence, use paste 2× daily and with each incontinence episode
Stage 2 pressure injury	• Border (foam) dressing Q 3 d • Alternatively, with urinary or fecal incontinence, use paste 2× daily and with each incontinence episode

(0.78) affirmative responses for individual items for them to be considered relevant.[16] This ensures a level of agreement that is greater than chance. Items with greater than 78% agreement were considered validated by the expert panel, while those with less than 78% agreement were revised until the 78% standard was achieved.

External experts, or those not affiliated with the organization where this project took place, were selected based on recognition by their peers or publications as wound care experts. All external experts were nurses or nurse practitioners certified in wound care by the Wound, Ostomy and Continence Nursing Certification Board. Ultimately, 6 external experts responded to the invitation to be part of the panel. The results of the external expert panel can be seen in Table 2.

Internal experts, or those affiliated with the project site, were selected based on recognition by their peers as wound care experts and were currently employed as wound care nurses or nurse practitioners within the agency. Five internal experts agreed to be part of the panel. The final results of the internal expert panel can be seen in Table 3.

Ethical Acknowledgment

Methodology for this QI project was reviewed and approved by the Yale School of Nursing faculty, and given that it was not human subjects research, it was deemed that individual informed consent was not needed (Fall 2017). The project was also reviewed by the hospital's department of nursing and inpatient wound care nurses. Since there was no investigational treatment and The Guideline aligned with their current clinical guidelines, they also deemed this project exempt from institutional review board approval.

Lean Six Sigma methodology focuses on eliminating waste, defined as "anything other than the minimum amount of equipment, materials, parts, space, and workers' time, which are absolutely essential to add value to the product."[17(p1)] This methodology was the overarching philosophy for this project, with the focus being on eliminating "waste" to improve patient care. It was identified that the current wound care clinical practice guidelines were possibly overly comprehensive and could be a source of waste. For instance, the practice guidelines included 14 different dressings for managing skin tears, some of which were not even available at the clinical site.

The Define, Measure, Analyze, Improve, and Control (DMAIC) framework[18] used for implementation of The Guideline was also derived from Lean Six Sigma. *Define* refers to identifying the gap in the quality of a process. *Measure* includes using data to describe how the process is performing. *Analyze* involves identifying important factors causing the gap in quality. *Improve* refers to eliminating the causes of the quality gap. Finally, *control* includes a description of the lessons learned from the project and a plan to sustain any gains.

Implementation

The project implementation of the expert panel–validated The Guideline was conducted through a plethora of dissemination activities to nursing staff including an email containing The Guideline sent to the nurses and completing a required online education module within 3 months of assignment. The education module discussed both the clinical practice of caring for minor skin lesions and documentation requirements. Finally, it was distributed as a badge card along with in-person rounding conducted by author A.B. to allow an opportunity to verbally discuss The Guideline and to address any questions or concerns about it. The badge card could be conveniently attached to the staff name badge and served as a quick reference of The Guideline. Sixty percent (n = 156/260) of the nurses were

TABLE 2.
External Expert Panel Results

	Ratings			
	***Clarity*: Is This Order Clear and Easy to Understand?**		***Appropriateness*: Is This an Appropriate Treatment for This Type of Wound?**	
Wound Type and Treatment Order	**Clear**	**Unclear**	**Appropriate**	**Inappropriate**
Skin tear • Border (foam) dressing Q 3 d	6/6	0/6	5/6	1/6
Incontinence-associated dermatitis • Paste 2× daily and with each incontinence episode • If candidiasis ("satellite" lesions) present, also request topical antifungal Rx from provider and apply to skin under paste	5/6	1/6	5/6	1/6
Intertriginous dermatitis • Cleanse skinfolds daily with no-Rinse Foam • Place moisture-wicking fabric between skinfolds ○ Allow 2" of fabric to be exposed to air ○ Change Q 5 d or if soiled • If candidiasis ("satellite" lesions) present, request topical antifungal Rx from provider for areas *not* being treated by moisture-wicking fabric (eg, axillary area)	6/6	0/6	6/6	0/6
Stage 1 pressure injury • Border (foam) dressing Q 3 d • Alternatively, with urinary or fecal incontinence, use paste 2× daily and with each incontinence episode	5/6	1/6	6/6	0/6
Stage 2 pressure injury • Border (foam) dressing Q 3 d • Alternatively, with urinary or fecal incontinence, use paste 2× daily and with each incontinence episode	5/6	1/6	6/6	0/6

TABLE 3.
Internal Expert Panel Results

	Ratings			
	Clarity: Is This Order Clear and Easy to Understand?		*Appropriateness*: Is This an Appropriate Treatment for This Type of Wound?	
Wound Type and Treatment Order	Clear	Unclear	Appropriate	Inappropriate
Skin tear • Border (foam) dressing Q 3 d	5/5	0/5	3/5	2/5
Incontinence-associated dermatitis • Paste 2× daily and with each incontinence episode • If candidiasis ("satellite" lesions) present, also request topical antifungal Rx from provider and apply to skin under paste	3/5	2/5	4/5	1/5
Intertriginous dermatitis • Cleanse skinfolds daily with no-Rinse Foam • Place moisture-wicking fabric between skinfolds ○ Allow 2" of fabric to be exposed to air ○ Change Q 5 d or if soiled • If candidiasis ("satellite" lesions) present, request topical antifungal Rx from provider for areas *not* being treated by moisture-wicking fabric (eg, axillary area)	4/5	1/5	4/5	1/5
Stage 1 pressure injury • Border (foam) dressing Q 3 d • Alternatively, with urinary or fecal incontinence, use paste 2× daily and with each incontinence episode	5/5	0/5	5/5	0/5
Stage 2 pressure injury • Border (foam) dressing Q 3 d • Alternatively, with urinary or fecal incontinence, use paste 2× daily and with each incontinence episode	4/5	1/5	4/5	1/5

rounded on and received a badge card. The badge cards were not freely distributed (eg, left in stacks at the nurses' stations) to ensure that staff who received the badge cards reviewed and understood what was written on them. During the last week of the implementation phase, an email was sent out to all of the nurses sharing those frequently asked questions (and their answers) from the in-person rounding. Staff were also made aware that they could contact the authors of this project to get a badge card if they did not get one during in-person rounding. The badge card continues to be distributed and explained in the skin care class that is required for all new nurses employed in the intensive care unit, progressive care unit, and medical-surgical units. This ongoing intervention is the sustainment portion of the DMAIC process. Implementation of The Guideline took place over a 3-month period.

Outcomes were collected via a preimplementation survey emailed to the nurses on the participating units that included 5 knowledge questions about content covered in our clinical practice guidelines and 2 Likert-type scale questions asking the nurses to self-evaluate their knowledge (Figure 1). These data were collected for 1 month before rollout of The Guideline, and comparative outcomes data were collected for 1 month after the implementation phase.

Preimplementation wound documentation audits for age, sex, wound type, topical treatment recommended by The Guideline, appropriateness of dressing per the hospital's current clinical practice guidelines derived from Lippincott Procedures, or wound orders were also performed to determine whether the nurses were providing appropriate care for patients with minor skin lesions.

On 11 different days in the month prior to implementation, the auditor A.B. reviewed the wound documentation for every patient on the inpatient units included in the project. If a documented wound was one of the 5 types included in The Guideline, that wound was included in the audit. If any nurse documented the same treatment recommended by The Guideline within the past 24 hours prior to the audit, credit was given for the patient having the appropriate treatment. Credit was also given if the patient had a treatment documented that was recommended by the hospital's current clinical practice guidelines or that was prescribed by a provider. For instance, if a patient had intertriginous dermatitis, and the nurse documented the use of the appropriate brand name product, credit was given. If, instead, the provider ordered a different topical treatment and the nurse documented administering it, credit was given. If no treatment was documented at all for 24 hours, then no credit was given. In addition, wound documentation audits were performed again for 11 different days during the month after implementation of The Guideline. Recall that there were numerous options given for each condition per the original clinical practice guidelines.

OUTCOMES ANALYSIS

Frequencies and percentages were calculated and descriptive data were used to characterize changes in self-assessment of knowledge and in treatment of minor skin lesions before and after implementation of The Guideline.

Outcomes

Thirty-four percent (n = 89 of 260) of nurses completed the preimplementation survey and 37% (n = 96 of 260) completed the postintervention survey. The 2 self-evaluation postintervention questions appear in Figure 2. Comparing the preimplementation survey results with the postimplementation survey results showed an approximately 40% improvement

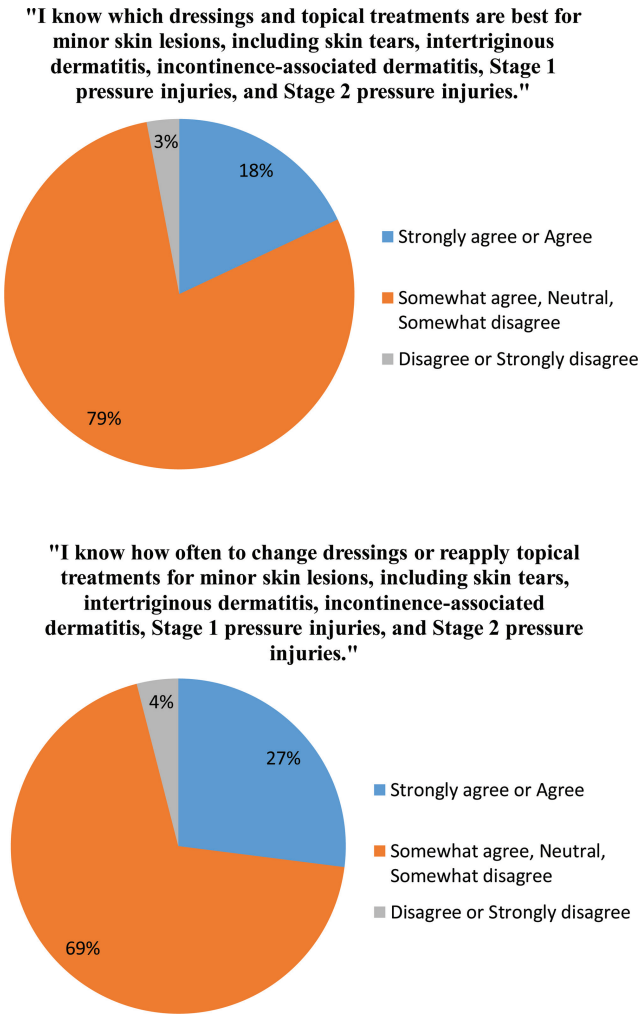

Figure 1. Results of knowledge self-assessment before implementation of The Guideline.

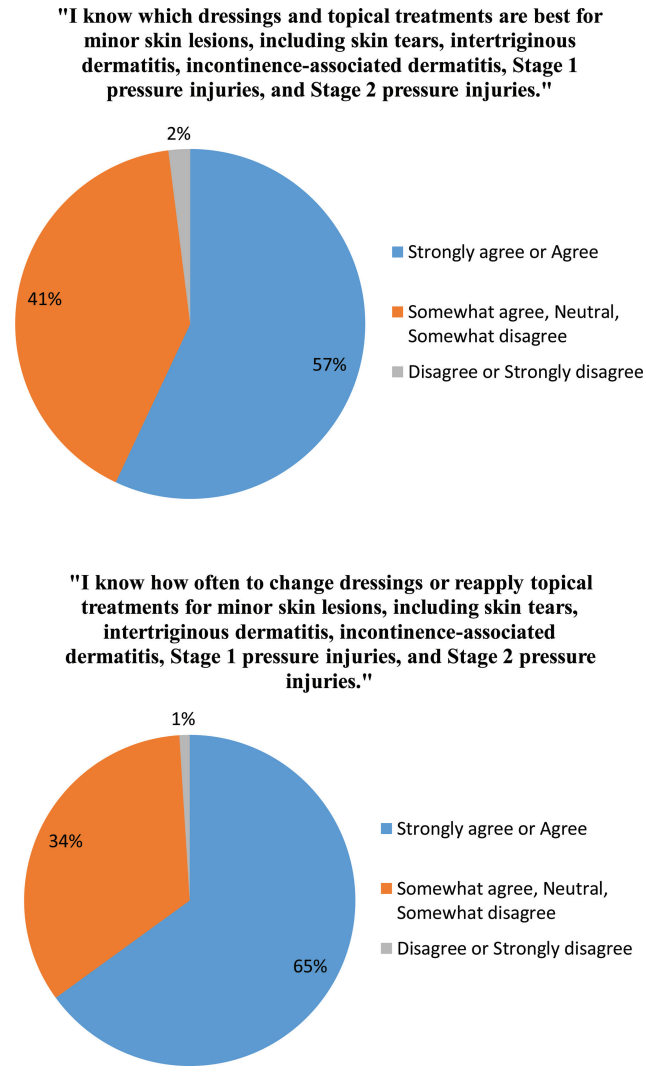

Figure 2. Results of knowledge self-assessment after implementation of The Guideline.

in nurses' knowledge about the organization's clinical practice guidelines. For instance, from the preimplementation survey, only 55% (n = 49 of 89) of nurses correctly identified that an indwelling urinary catheter is not recommended for the management of incontinence-associated dermatitis. After rollout, 77% (n = 74 of 96) of nurses answered this question correctly.

The nurses' self-rating of their knowledge increased (Table 4). From the preimplementation survey, 18% (n = 16 of 89) of nurses said that they "strongly agree" or "agree" that they know which dressings and topical treatments are best for minor skin lesions. For the postimplementation survey, 57% (n = 55 of 96) said that they "strongly agree" or "agree." Similarly, from the preimplementation survey, 27% (n = 24 of 89) of nurses said that they "strongly agree" or "agree" that they know how often to change dressings or reapply topical treatments for minor skin lesions. For the postimplementation survey, 65% (n = 62 of 96) said that they "strongly agree" or "agree."

The wound documentation audits also showed an improvement (Table 5). From the preimplementation audit, 45% (n = 104 of 231) of wounds had an appropriate treatment. Postimplementation, 80% (n = 209 of 260) of wounds had an appropriate treatment.

DISCUSSION

To our knowledge, this is the first QI project to simplify and standardize the treatment options for minor skin lesions to improve adherence to providing appropriate care through implementation of a new guideline based on evidence and validated through experts. Through this project, we found that The Guideline, which offers just 1 or 2 treatment options for each type of wound, increased adherence to providing the appropriate treatment.

A limitation of the collected data is that the knowledge questions used in the electronic surveys were not validated and may not accurately represent nurses' knowledge. This was evident during in-person rounding. When nurses asked questions, it became clear that the knowledge questions may have been too difficult, especially with the select-all-that-apply option. However, the questions could not be changed for the postimplementation survey so that results could still be compared with the preimplementation survey. Another limitation is that some of the improvements noted from the wound documentation audits may have been related to better documentation and not necessarily better patient care. For instance, the electronic medical record has no drop-down option to document the

TABLE 4.
Comparison of the Survey Results Before and After Implementation of The Guideline

	Preimplementation		Postimplementation	
	n = 89 nurses	Percentage	n = 96 nurses	Percentage
Strongly agree or agree	16	18	55	57
Somewhat agree, neither agree nor disagree, somewhat disagree	70	79	39	41
Strongly disagree or disagree	3	3	2	2

moisture-wicking fabric InterDry (Coloplast, Minneapolis, Minnesota). The required online education module reminded nurses to select "Other" and type in the product name in the comment box. It is possible that in the preimplementation time frame, nurses were using moisture-wicking fabric without documenting its use.

Clinical Implications

The preimplementation survey results revealed that nurses self-identified a gap in their knowledge about how to care for minor skin lesions. Because some clinical sites expect nurses to care for these wounds without a consult to a certified wound care nurse, ideally most nurses should "strongly agree" or "agree" that they know how to care for these wounds. In the hospital where this QI project took place, this was not the case until after implementation of The Guideline. We found overall that The Guideline helped increase nurses' self-assessment of their knowledge about how to care for these wounds.

The improvement in wound documentation suggests that this guideline supported translating this increased knowledge into better clinical practice. We believe that this success can be attributed to both the simplicity of The Guideline and to having it be easily accessible as a badge card for the nurses. Finally, the low scores on the preimplementation survey and wound documentation audit suggested that inpatient staff nurses were inadequately prepared to care for minor skin lesions. However, not all facilities, especially rural hospitals, have regular access to a certified wound care nurse to initiate a plan of care for these wounds. The improvements noted from this QI project suggest that The Guideline may be a cost-effective, easily accessible option for ensuring nurses provide the best care for patients with wounds.

Lessons Learned

A key lesson learned is that while expert clinicians will generally base their practice on evidence, they may also use their own experiences to form their opinions. For instance, one external expert did not agree with the use of a Mepilex Border (foam) dressing (Molnlycke, Peachtree Corners, Georgia) for skin tears, noting "adhesive can be too aggressive when removed." This is based on her personal experiences with the product. Other experts deemed the treatment "appropriate." This presented some challenges during The Guideline validation process. The initial expert panel survey provided 3 options for assessing appropriateness of the wound treatment orders: "very appropriate," "somewhat appropriate," or "not at all appropriate." While the majority selected "very appropriate," there were a few who selected "somewhat appropriate," and they shared concerns about costs or preferred alternative products. However, the question was not, "What is the best product on the market for this wound?" Rather, it was, "Can we use this product to safely and effectively treat this wound without a consultation to the wound care specialist?" The Guideline was edited based on suggestions from the wound care expert panels and then submitted again for approval; however, it was revised to provide only 2 options: "appropriate" or "inappropriate." Given just the 2 options, The Guideline was validated by the expert panels for use.

Another lesson was that knowledge questions need to be validated to be meaningful in a QI study. For instance, single-answer questions are preferred to select-all-that-apply questions, as participants still seemed to select only 1 answer, suggesting that they may not have read the question carefully. The 5 knowledge questions that were initially part of this project were discarded, as it was determined that they may not reflect how much nurses really know about wound care. The 2 self-evaluation questions that were included, which asked whether the staff know which dressings to use and if they know when to change the dressings, were selected by author A.B. with the intent of evaluating the nurses' confidence about their wound care practice. Since those questions reflect the nurses' perception/opinion, they were still included in this project.

CONCLUSIONS

Although there are many evidence-based dressings and products available to treat wounds, this project demonstrated increased adherence with providing appropriate care when just a few treatment options were recommended to nursing staff through our new structured, evidence-based guideline. Data collected before and after this project also suggest that The

TABLE 5.
Comparison of Wound Documentation Pre- and Postimplementation of The Guideline

	Preimplementation		Postimplementation	
	n = 231 Wounds	Percentage	n = 260 Wounds	Percentage
Documented dressing or topical treatment is recommended per *The Guideline*, facility's wound care guidelines, or provider orders	104	45	209	80
Documented dressing or topical treatment is not recommended per *The Guideline*, facility's wound care guidelines, or provider orders	127	55	51	20

Guideline improved nurses' knowledge and confidence in their ability to care for these wounds. The Guideline continues to be used at the project site and is now being implemented at affiliate hospitals.

KEY POINTS

- Implementing a guideline for bedside nurses to manage minor skin lesions can potentially reduce consults for these wounds, allowing certified wound care nurses to focus on complex wounds and to get involved in other aspects of their role.
- Our comprehensive clinical practice guidelines for wound care offered too many alternatives for bedside nurses, leading to variable clinical practice; thus, we determined a need to revise them.
- There may be increased adherence with providing appropriate wound care when fewer treatment options are recommended through a simple, structured, evidence-based guideline.

REFERENCES

1. Wound, Ostomy, and Continence Nurses Society. *Professional Practice Manual*. 4th ed. Mount Laurel, NJ: WOCN Society; 2013.
2. Bryant RA, Nix DP. *Acute & Chronic Wounds: Current Management Concepts*. 4th ed. Maryland Heights, MO: Elsevier Mosby; 2012.
3. Saunders K. View from here: building and justifying a comprehensive WOC nurse team. *J Wound Ostomy Continence Nurs*. 2016;43(4):341-345.
4. Hiser B, Rochette J, Philbin S, Lowerhouse N, Terburgh C, Pietsch C. Implementing a pressure ulcer prevention program and enhancing the role of the CWOCN: impact on outcomes. *Ostomy Wound Manage*. 2006;52(2):48-59.
5. Capasso V, Collins J, Griffith C, et al. Outcomes of a clinical nurse specialist-initiated wound care education program: using the promoting action on research implementation in health services framework. *Clin Nurse Spec*. 2009;23(5):252-257.
6. Ahroni JH. Developing a wound and skin care program. *J Wound Ostomy Continence Nurs*. 2014;41(6):549-555.
7. Beinlich N, Meehan A. Resource nurse program: a nurse-initiated, evidence-based program to eliminate hospital-acquired pressure ulcers. *J Wound Ostomy Continence Nurs*. 2014;41(2):136-141.
8. Anderson M, Finch Guthrie P, Kraft W, Reicks P, Skay C, Beal AL. Universal pressure ulcer prevention bundle with WOC nurse support. *J Wound Ostomy Continence Nurs*. 2015;42(3):217-225.
9. Vanderwee KV, Grypdonck M, Defloor T. Non-blanchable erythema as an indicator for the need for pressure ulcer prevention: a randomized-controlled trial. *J Clin Nurs*. 2007;16(2):325-335.
10. Zulkowski K, Ayello EA, Wexler S. Certification and education: do they affect pressure ulcer knowledge in nursing? *J Nurs Adm.* 2010;40(10 suppl):S28-S32.
11. Levine JM, Ayello EA, Zulkowski KM, Fogel J. Pressure ulcer knowledge in medical residents: an opportunity for improvement. *Adv Skin Wound Care*. 2012;25(3):115-117.
12. Cox J, Roche S, Gandhi N. Critical care physicians: attitudes, beliefs, and knowledge about pressure ulcers. *Adv Skin Wound Care*. 2013;26(4):168-176.
13. Gallant C, Morin D, St-Germain D, Dallaire D. Prevention and treatment of pressure in a university hospital centre: a correlational study examining nurses' knowledge and best practice. *Int J Nurs Pract*. 2010;16(2):183-187.
14. LeBlanc K, Baranoski S, Christensen D, et al. The art of dressing selection: a consensus statement on skin tears and best practice. *Adv Skin Wound Care*. 2016;29(1):32-46.
15. National Pressure Ulcer Advisory Panel, European Pressure Ulcer Advisory Panel and Pan Pacific Pressure Injury Alliance. Prevention and treatment of pressure ulcers: quick reference guide. https://www.epuap.org/wp-content/uploads/2016/10/quick-reference-guide-digital-npuap-epuap-pppia-jan2016.pdf. Published 2014. Accessed January 1, 2017.
16. Polit DF, Beck CT, Owen SV. Is the CVI an acceptable indicator of content validity? Appraisal and recommendation. *Res Nurs Health*. 2007;30(4):459-467.
17. Ruttimann BG. *Lean Compendium: Introduction to Modern Manufacturing Theory*. Cham, Switzerland: Springer International Publishing AG; 2018.
18. Mayo Clinic Quality Academy Silver Quality Essentials Study Guide. http://intranet.mayo.edu/charlie/quality-academy/files/2020/09/silver-study-guide-061520.pdf. Accessed February 1, 2021.

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