

## + Pressure Injury Prevention Guideline Offers Sweeping Recommendations to Protect Patients

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Latest standards of care discuss the importance of repositioning patients on a regular schedule and confirming that patient turns are adequate to relieve tissue pressure.

For the first time, global guidelines endorse using technology to make hospital pressure injury-prevention programs more effective. +

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### Abstract

International clinical practice guidelines for the prevention of pressure injuries offer the most comprehensive recommendations issued to date to protect patients at risk for these painful, costly wounds.

The comprehensive 2019 update of the International Clinical Practice Guideline for the prevention and treatment of pressure injuries, were released by the U.S.-based National Pressure Injury Advisory Panel (NPIAP), the European Pressure Ulcer Advisory Panel (EPUAP), and the Pan Pacific Pressure Injury Alliance (PPPIA). They recommend important strategies to combat the growing problem. The strategies emphasize the importance of:

- Repositioning each at risk patient on a schedule that is tailored to their mobility and condition, including critically ill individuals and – where appropriate – during surgery.
- Confirming that repositioning optimally relieves pressure on vulnerable tissue.
- Taking care that methods to reposition patients minimize friction and shear, which can contribute to the development of hospital-acquired pressure injuries (HAPIs).
- Implementing repositioning reminder strategies to promote adherence to repositioning regimens.

The guidelines were issued as the number of hospital-acquired pressure injuries (HAPIs) continues to increase, despite aggressive efforts to reduce the problem. U.S. government data show that HAPIs are the most common hospital-acquired condition (HAC) and continue to increase. The data, released by the Agency for Healthcare Research and Quality (AHRQ), show the number of HAPIs has increased by 6 percent, to 683,000 in 2017 nationwide, an average of 123 HAPIs for each of the nation's 5,534 hospitals. Meanwhile, the annual deaths attributed to HAPIs exceeds 28,000 – more than the number associated with the next four most deadly HACs including falls, adverse drug effects, catheter associated urinary tract infections and ventilator associated pneumonia, combined.<sup>1</sup> In fact, pressure injuries are associated with nearly half of the nation's annual HAC-related deaths.

The cost of the problem is significant. The same federal research<sup>1</sup> suggests that HAPI treatment costs U.S. hospitals approximately \$9.9 billion, which poses a financial challenge since the federal government does not reimburse the cost of treating HACs.

The guidelines recognize what the data show: Traditional approaches to pressure injury prevention have not consistently protected patients.

The following is an analysis and opinion by Patrick Reinhard, DHA, MSN, RN, and Cathy Ohnstad, MSN, RN, followed by their in-practice observations. Smith & Nephew does not provide medical advice and is not responsible for the content or information provided in this document. It is the treating health care provider's responsibility to determine the best course of treatment for their patient based upon his or her professional medical judgment. Patrick Reinhard and Cathy Ohnstad are paid consultants of Smith+Nephew.

90% of Massachusetts nurses believed that they have too many patients to provide high-quality care consistently.

HAPIs represent more than a third of all HACs.

Pressure injury clinical practice guidelines recommend individualizing patient turn frequency schedules.

## Background

The standard of care for pressure injury prevention has long been periodic patient repositioning by nurses. Florence Nightingale authored the first known guidelines to prevent bedsores, now recognized as pressure injuries, in 1859<sup>2</sup>. She insisted that nurses reposition their patients every two hours to relieve pressure on body parts that are susceptible to the development of pressure wounds. Although guidelines today recommend individualizing turn frequency to each patient's clinical condition and tolerance, the standard of care continues to call for patient repositioning every two hours.

Unfortunately, the task of patient repositioning is complicated by two important issues:

- **Patient loads are growing.** Aggravated by an aging population, sicker patients and a growing nursing shortage,<sup>3</sup> nurse workloads have increased significantly and continue to grow. As a result, nurses are forced to prioritize patients with the most serious and immediate medical needs, which means patient turning often moves down the nurse's to-do list. A 2018 survey of Massachusetts nurses<sup>4</sup> found that 90 percent believe they have too many patients to provide high-quality care consistently.<sup>5</sup>
- **It has been impossible to accurately assess the quality of a patient turn.** Until recently, there was no way to assess the therapeutic value of a patient turn or repositioning. Nurses often try to avoid causing additional pain to uncomfortable patients, even though the repositioning may not sufficiently relieve pressure. For the first time, the guidelines recognize that technology may be useful in providing immediate and continual feedback about the quality of each repositioning, enabling nurses to readjust patients to properly relieve the pressure on bony prominences<sup>6,7</sup> without causing unnecessary discomfort.

The need to effectively and consistently reposition patients is becoming more important. Pressure injuries are the only hospital-acquired condition with rates that are still increasing (up 6% in 2017), while rates of all HACs collectively are declining. The problem of pressure injuries is not only common, but it is extremely costly, with US Hospitals paying more to treat HAPIs than surgical site infections, falls, Catheter-associated UTIs, DVTs, ventilator-acquired pneumonia, and central-line associated blood stream infections combined.<sup>1</sup>

The latest guidelines define standards of care to protect patients and dramatically reduce costs of treating avoidable medical conditions.

### More detailed recommendations

The guidelines are quite specific about repositioning and mobilizing patients and they go well beyond the last update, issued in 2014. The standards include:

- **Reposition all individuals with or at risk of pressure injuries on an individualized schedule, unless contraindicated.**<sup>8</sup> The guideline acknowledges two things: 1) all at risk patients must be protected from pressure injuries by making sure they follow a repositioning schedule and 2) each patient has unique requirements for turns and movement. Several studies<sup>9,10,11,12</sup> demonstrate that different repositioning frequencies are all at least somewhat effective and there is no clear evidence that any

single frequency is superior.

- **Implement repositioning reminder strategies to promote adherence to repositioning regimens.**<sup>13</sup> The guideline for the first time acknowledges the need to use some system or technology to remind busy nurses when they should reposition patients, including wearable patient sensors. Studies<sup>14,15</sup> show that a facility-based reminder system can help to improve compliance with repositioning protocols, resulting in fewer pressure injuries.
- **Reposition the individual in such a way that optimal offloading of all bony prominences and maximum redistribution of pressure is achieved.**<sup>16</sup> The guideline recognizes for the first time the importance of good quality, offloading turns. The sacrococcygeal area should be offloaded when patient is in the side-lying position. Heels should be offloaded and care should be taken with the use of medical devices to prevent device-related pressure injuries. Furthermore, patient should never be positioned on an existing pressure injury, to avoid worsening damage and severity of the pressure injury.
- **Keep the head of bed as flat as possible.**<sup>17</sup> The guideline recognizes that studies have found pressure and shear are reduced when the head-of-bed elevation is 30° or less. Studies showed that raising the head-of-bed to 30° or higher may increase trochanter, sacral and heel pressure. Studies have found that as the angle of the head of bed elevation increased so did the interface pressure at the sacrum<sup>18,19,20</sup> and heels<sup>19,21</sup>.
- **Promote seating out of bed in an appropriate chair or wheelchair for limited periods of time.**<sup>24</sup> Another departure from previous guidelines, the recommendation is based on research<sup>25,26</sup> that shows limiting the duration of sitting sessions to two hours can reduce the incidence of pressure injuries, compared to patients who sat for unlimited periods of time.
- **Teach and encourage individuals who spend prolong durations in a seated position to perform pressure relieving maneuvers.**<sup>28</sup> The recommendation is based on research<sup>29,30</sup> that suggests patients may help to improve blood flow in tissue surrounding the ischial area by shifting their weight through periodic leaning.
- **Implement an early mobilization program that increases activity and mobility as rapidly as tolerated.**<sup>31</sup> While earlier guidance acknowledged that immobility contributes to the development of pressure injuries, this recommendation specifically recognizes the therapeutic benefits of early mobility. Research<sup>32,33,34</sup> found that early mobility programs may reduce pressure injury rates significantly.
- **Initiate frequent small shifts in body position for unstable critically ill individuals who are too unstable to maintain a regular repositioning schedule, and to supplement regular repositioning.**<sup>35</sup> The guidance acknowledges the value of relieving tissue pressure, even through the use of frequent small repositioning. Studies<sup>36,37</sup> demonstrate that small weight shifts redistribute pressure.

Latest guidelines recommend implementing reminder strategies to promote adherence to repositioning regimens, including wearable patient sensors.

Patients should be repositioned in a way that achieves good quality, offloading turns.

Reminder systems can improve health professional compliance with repositioning, leading to a reduction in HAPI incidence.

Wireless patient monitoring system can help facilities implement HAPI prevention protocols that include individualized turn frequencies and a requirement for quality, offloading turns.

### One significant change: Use technology to protect patients

A significant departure from earlier guidelines is the recommendation that hospitals deploy technology to help prevent HAPIs by reminding nurses about the need to reposition patients.<sup>38</sup> The guidelines discuss three types of technology that hospitals should consider. The research cited in the guidelines varies by study sizes and quality and the discussion overlooks some significant deficiencies. Having said that, the discussion can be used to inform decisions about using technology:

- **Auditory cueing.** At its simplest, an auditory cueing system can be a kitchen timer set to ring at a given interval. Many hospitals have implemented slightly more sophisticated institution-wide signals, such as musical chimes played over the public address system, to remind staff to reposition their patients. Such auditory cueing systems tend to be fairly low-cost and relatively simple to deploy. However, research cited in the guidelines<sup>10, 11, 35, 39</sup> suggests that “adherence by health professionals to repositioning regimens can be less than optimal.”<sup>35</sup>

Much of the research on auditory cueing cited in the guidelines was conducted in long-term care facilities. One study found the auditory cueing systems “hold promise for reducing facility-acquired PUs in LTC settings,”<sup>14</sup> which tend to be significantly less hectic than acute care hospitals. The study, a trial of an intervention program, involved the in-person training of all staff at the participating facilities, supplemented by video and handouts and the distribution of informational materials to family members so they could help with resident repositioning. At the end of the 12-month trial, residents of intervention facilities were 45% less likely to develop a pressure injury than individuals at comparison facilities where no special intervention was undertaken. A drawback of the institution-wide chime system is that it is not customized to each individual’s mobility, condition, and needs, and compliance to it is not measurable.

- **Wireless patient monitoring.** Wireless patient monitoring systems, used in several studies<sup>7, 14, 41</sup> to monitor patient positioning and alert nurses when patient turns were required, have helped to significantly reduce pressure injuries in a variety of hospital settings. Wireless monitoring systems can be customized to the unique needs of individual patients, automatically track and credit any patient self turns that meet prescribed thresholds for turn angle in bed and chair, restrict a side to avoid placing patient on an existing pressure injury, and offer the additional benefit of being equally effective when patients are in bed, seated, or ambulatory. Unlike auditory cueing systems, wireless monitoring devices do not impose one institution-wide turning interval on patient care. These systems, which use wearable sensors, enable nurses to set individualized repositioning reminders tailored to the needs of individual patients – and send those turn cues to individual nurses’ workstations on wheels or other devices to remind appropriate staff about the need to reposition a patient.

Wireless monitoring devices also monitor patient turn angle, requiring a good quality, offloading turn for every repositioning

event. For critically ill, unstable patients, those turn parameters can further be customized to allow for smaller shifts in body position.

These wireless patient monitoring systems also offer the advantage of being compatible with other pressure-relieving products and do not impede the effectiveness of high-tech support surface technology that is increasingly being deployed by hospitals.

## Conclusion

The International Clinical Practice Guideline for the Prevention and Treatment of Pressure Ulcers/Injuries represents a comprehensive escalation in efforts to prevent HAPIs. While several changes simply refine previous guidelines, the total set of recommendations outline a comprehensive standard of care that promises to protect patients more effectively than previously possible.

Earlier guidelines, such as those that recommended standard repositioning frequencies, were based on a combination of research and conventional medical wisdom. The Clinical Practice Guideline relies on more and better research of pressure injuries, and bases recommendations on a more comprehensive set of medical data than previously available.

The guideline's unveiling is well timed to help address the persistent HAPI problem. The significant increase in the number of HAPIs in the U.S., despite the federal government's best efforts to prevent them, demonstrates the need for more comprehensive strategies.

The guideline's detailed recommendations and its endorsement of technology are important escalations in the effort to protect patients.

In fact, this endorsement of technology may be one of the most dramatic shifts in pressure injury prevention strategies. Medical devices, responsible for transforming virtually every other aspect of hospital care, have been largely ignored in pressure injury prevention efforts. This reflects both medicine's long-standing belief that the problem could only be solved through human intervention and the fact that medical technology had previously not been sufficiently refined to address the problem.

However, the guideline clearly shows that the most effective HAPI prevention efforts will combine the power of technology with the professionalism of nurse care.



A two-year hospital quality improvement program using the LEAF Patient Monitoring System reduced HAPI's by 68%.

### **Case Study: Early adopter of wireless patient monitoring system**

Cathy Ohnstad is a believer in the effectiveness of wireless patient monitoring and was an early adopter of a wearable monitoring system<sup>40</sup> shown to reduce incidence of pressure injuries<sup>14,41,42</sup> by increasing adherence to hospital turn protocols.<sup>43</sup>

The former chief nursing officer at a 145-bed general hospital in southern California struggled with nursing shortages and competing priorities for her staff. But hospital management wanted to reduce hospital-acquired pressure injuries.

“Pressure injuries weren’t an enormous problem, but we were under pressure to reduce treatment cost, lower patient days and improve patient outcomes,” she said.

Her hospital deployed the LEAF<sup>®</sup> Patient Monitoring System, which wirelessly monitors patient positioning using a wearable adhesive sensor that transmits visual cues to staff to reposition patients at the frequency and turn angle according to their individualized care plan. Position changes are documented by the system.

Upon implementation, staff were trained in proper turning techniques and system use. Bedside nurses were empowered to identify patients who were at risk for pressure injuries and begin monitoring their repositioning and mobility in and out of bed.

Within 24 months of deployment, Ohnstad said the hospital reduced sacrococcygeal HAPIs by 68%. More than 80% of the nursing staff using LEAF reported that the system increased teamwork and efficiency. Nearly 80% of nurses said the technology helped them to prioritize workflow.<sup>44</sup>

“I’ve never seen such an impressive impact on patient care,” she said. “Many medical devices create more work – and headaches – for nursing staff. This system actually made my nurses more efficient and they were very open about the fact that the technology improved collaboration and teamwork on the nursing units. Turn cueing increased the reach of our nursing team – without adding a single FTE.”

**For detailed product information, including indications for use, contraindications, precautions and warnings, please consult the product's applicable Instructions for Use (IFU) prior to use.**

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