

# Guest Editorial

## Maintaining Your Momentum: Moving Evidence Into Practice

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**E**nsuring that we provide safe, evidence-based, cost-effective care to all patients is an assumption of today's health care system. All patients and health care providers should expect a health care system that is committed to preventing harm and improving patient care by having clinicians use evidence-based, safe practices.<sup>1</sup> The Institute of Medicine's report *To Err Is Human* clearly articulated the need for health care professionals to embrace evidence-based practice (EBP) to improve outcomes of patient care.<sup>2</sup> Since that hallmark publication, efforts have been made by multiple organizations to encourage EBP. Several organizations are leading the way by providing EBP resources and toolkits to inform and improve practice: the Institute for Healthcare Improvement,<sup>3</sup> The National Quality Forum,<sup>1</sup> the Agency for Healthcare Research and Quality,<sup>4</sup> the American Association of Critical-Care Nurses (AACN),<sup>5</sup> and the Society of Critical Care Medicine,<sup>6</sup> to name just a few. Yet practice outcomes and reviews suggest that barriers persist, preventing daily application of current best evidence in the care of patients.<sup>7-9</sup>

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Barriers range from qualities of hospital systems and organizations, to leadership support, to individual health care professionals not fully embracing EBP interventions as a practice standard.<sup>7-11</sup> In 2010, the Institute of Medicine provided a vision that all clinical decisions would be evidence based by 2020.<sup>12</sup> To meet this goal, we as critical care nurses have an opportunity to lead practice change by fully embracing EBP in our daily practice. Practice interventions wedded in tradition need to be retired, and evidence-based nursing interventions should be consistently implemented in the care of the critically ill patients and families we serve.

Practice knowledge is not stagnant. Evidence supporting practice interventions is dynamic and continually evolving. To ensure that practice is based on the current best evidence, critical care nurses need to have a good understanding of what EBP is. Although multiple definitions of EBP can be found in the literature and it is beyond the scope of this article to provide an in-depth discussion of EBP, several key tenets are present in each definition. Essential elements of EBP include the integration of best research and other forms of evidence to guide practice, viewing clinical expertise as a component in care effectiveness, and considering patients' preferences, values, and engagement in care decisions as essential to providing optimal evidence-based care to patients and their families.<sup>2,12-18</sup> Embracing EBP as a practice standard requires critical care nurses to be active consumers of current evidence, critically applying evidence-based interventions in practice and retiring traditional ways of providing care.

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One challenge lies in the fact that evidence is constantly evolving as we learn more about the effectiveness of various care interventions. As nurses, supporting a spirit of inquiry allows us to remain active learners, gaining new knowledge to guide practice. Research evidence provides the foundation of care interventions, and EBP could not exist without well-done research.<sup>10</sup> Unfortunately, conclusive research evidence may not always be available to guide practice interventions, so nonresearch evidence should be critically examined to support and inform practice.<sup>16</sup> EBP provides a synthesis of research and other forms of evidence to answer clinical questions and guide practice.<sup>4</sup> Nurses need to evaluate the strength of evidence as far as the risk or benefit of the evidence that is guiding practice interventions.<sup>17,18</sup>

Several tools exist to help clinicians critically evaluate and determine the strength of evidence (ie, the level of evidence). The levels of evidence defined by the AACN provide criteria for evaluating the strength of the evidence used to guide practice.<sup>17</sup> (Readers are referred to a recently published article in *Critical Care Nurse* that discusses the

application of AACN's levels of evidence to guide clinical practice for more infor-

mation.<sup>17</sup>) Frequently, research evidence guiding interventions is limited; thus, critical evaluations of all forms of evidence (eg, nonexperimental evidence, national practice alerts, consensus statements, expert opinion, manufacturers' guidelines) are necessary to guide practice.

The ultimate goal is to provide nursing care that is based in a synthesis of current best evidence to optimize patients' outcomes.

This article is based on a presentation at the AACN's 2015 National Teaching Institute that took place in San Diego, California. That presentation was the eighth in a series of presentations and articles that challenge critical care nurses to examine the evidence used to guide nursing practice interventions.<sup>19-24</sup> Almost a decade of practice traditions have been reviewed, and current evidence to support practice has been shared through this series of presentations and articles by experts to enhance practice knowledge and action. A total of 30 nursing practice intervention traditions and current evidence related to them have been presented.<sup>19-24</sup>

The real challenge now lies with you, the critical care nurse. Are you practicing by current best evidence in your daily practice? And if you are not, why not? What are the barriers that need to be removed to allow you to implement EBP interventions effectively in your daily practice? Practice interventions and traditions that are not based on current evidence need to be retired, or in the spirit of this decade-long effort, practice traditions (otherwise also known as "sacred cow" practices) need to be put out to pasture.

## Traditions in Practice Versus Evidence-Based Interventions

Practice traditions can be loosely defined as interventions or actions for which the body of evidence no longer supports the action(s), yet the intervention continues to be present in practice.<sup>11,25</sup> In the past decade, clinical experts were informally contacted and asked to list practice traditions that persisted in critical care environments. A review of the literature was completed, and when evidence could be found to refute the practice tradition, the challenge to improve practice through retiring the practice tradition and apply current best evidence was moved forward in an effort to improve knowledge, nursing care, and patients' outcomes. Although the evidence for some of the practice traditions presented was not always strong and research was limited, efforts were made to provide rigor in the review of evidence and practice recommendations to enhance critical care nursing practice.

A total of 30 practice traditions were critically reviewed. The interventions have been broadly grouped into 7 nursing practice intervention categories: respiratory, cardiovascular, psychosocial, hospital-acquired conditions, gastrointestinal, neurological, and pediatric. The Table provides a list of the practice traditions reviewed. We encouraged critical care nurses to evaluate their practice and ensure that their practice is based on best evidence and not on tradition.

Although all of the practice traditions reviewed in this series are important and all are within the power of nursing practice to affect patients' outcomes, a few of the interventions are briefly revisited to encourage EBP adoption. First, we address preventing hospital-acquired conditions. A large volume of evidence addresses bundled and individual interventions to prevent harm to patients as a result of being hospitalized.<sup>1,3-7</sup> The frequency

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**Table** Moving from traditions to evidence-based practice interventions<sup>a</sup>

Category	Tradition	Evidence-based intervention
Respiratory	Saline instillation for secretion removal	Normal saline should not be instilled as a routine step with endotracheal suctioning; instilling saline will not enhance removal of secretions
	Withholding oxygen administration with patients who have chronic obstructive pulmonary disease	Oxygen should not be withheld from patients with chronic obstructive pulmonary disease, who have increased oxygen needs
	Excessive sedation; avoiding sedation and daily awakening practice	Interrupt sedation daily to assess patients' neurological status and/or readiness for reduced ventilator support or extubation
Cardiovascular	Blood pressure measurement: arterial catheter and blood pressure cuff are interchangeable	An appropriately sized blood pressure cuff is required for accurate measurement; noninvasive methods and arterial catheter will yield different blood pressure measurements; the appropriate reference level for blood pressure measurement, noninvasive or invasive, is the heart
	Chest tube stripping to maintain patency	Stripping chest tubes may cause patient harm; only milk chest tubes if required to advance fluid into drainage chamber
	Use of Trendelenburg position to improve blood pressure	Avoid using Trendelenburg position; use passive leg raise to increase preload
	Avoid use of small-gauge intravenous catheters for blood administration	A 25-gauge catheter may be used to transfuse blood products and will not cause hemolysis
	Renal-dose dopamine to preserve renal function	Low-dose dopamine does not preserve renal function but may improve cardiac output
	Accuracy of temperature measurement	Accuracy of temperature measurement is very dependent on correct use of the measurement device
	Electrocardiography lead placement	Accurate electrocardiographic assessment and myocardial assessment require proper placement of leads
	Fluid resuscitation practices	Optimal fluid resuscitation may be achieved with crystalloid solutions; human blood products remain the best fluid for patients with blood loss or symptomatic anemia
	Daily weighing of patients for weight-based medication practices	For most medications, using the patient's admission weight for weight-based medication calculations is encouraged; consult with pharmacist, especially for older patients, patients with higher body mass index, and certain drug categories (eg, antibiotics, chemotherapeutic agents, anticoagulant agents)
Patient must be supine and flat for hemodynamic monitoring	Supine patients, with legs parallel to the floor, may have head of bed elevated up to 60° for hemodynamic measurements; the key to accurate measurements is the use of a position-specific reference level, by convention, the phlebostatic axis	
Psychosocial	Restricting intensive care unit visitation	Open visitation 24/7 enhances patient/family engagement and does not have adverse physiologic impact on patients' outcomes
	Limiting cell phone use in the intensive care unit	Policies are needed to address cell phone use to protect patients' privacy yet allow patients to connect with family
Hospital-acquired conditions	Early removal of urinary catheters to reduce catheter-associated urinary tract infections is not possible in the intensive care unit	Nurse-driven interventions to reduce catheter-associated infections focus on addressing the need for the catheter, sterile/aseptic catheter insertion, keeping drainage bag below the level of the bladder at all times, daily catheter care, and prompt removal of the catheter
	Addressing infection control practice	Ensuring hand hygiene, proper infection control practices, and antibiotic stewardship are essential roles of nurses
	Prevention of venothromboembolism	Patients must be consistently assessed for risk of venothromboembolism and nurses should ensure that proper mechanical and chemical prophylaxis is part of the daily plan of care review
	Turning every 2 hours is not necessary	Though evidence is limited, frequent turning and mobilizing of patients, at least every 2 hours, is important to prevent complications of immobility
	Is progressive mobility practice possible for intensive care patients?	Progressive mobilization of patients starting with bed mobility and progressing to out-of-bed movement is safe for intubated patients and can reduce patient complications of immobility

*Continued*

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Category	Tradition	Evidence-based intervention
Gastrointestinal	Assessment of gastric residual volume and aspiration risk every 4 hours	Routine gastric assessment may result in underfeeding patients; assessment of residual volume should be based on patient's condition rather than a routine
	Use of rectal tubes to manage fecal incontinence	Rectal tubes should not be the first intervention in the management of fecal incontinence; assess and address the cause of the fecal incontinence and try less invasive measures when possible
	Using auscultation as the primary way of verifying gastric tube position in adults	Auscultation should not be used to verify placement of gastric feeding tubes in adult patients
Neurological	Glasgow Coma Scale for primary neurological assessment	Best clinical practice for neurological assessment includes optimal and consistent use of the Glasgow Coma Scale plus inclusion of other neurological data such as assessment of brain stem reflexes; eye examination, including pupil reactivity and extraocular movement; vital signs; and respiratory rate, depth, and pattern
	Intracranial hypertension management strategies Sleep hygiene practices	Modulation of brain volume with osmotic therapy, cerebrospinal fluid with drainage, metabolic suppression, and controlled ventilation Efforts need to be made to provide patients with uninterrupted sleep while in intensive care unit, reduce environmental noise, and limit unnecessary interventions during the night
	Use of vital signs to assess pain in intubated patients	Physiological parameters are not accurate for pain assessment; behavioral pain assessment tools should be used to assess pain in nonverbal/intubated patients
Pediatric	Using auscultation as the primary way of verifying gastric tube position in children	Auscultation should not be used to verify placement of gastric feeding tubes in children
	Chest physiotherapy indications	Chest physiotherapy is effective in specific pediatric conditions but is not effective as a routine intervention in the treatment of pneumonia, bronchiolitis, or asthma
	Accuracy of blood pressure measurement in children	Blood pressure cuff should be appropriate size for patient's arm; initial measurement should be completed by using the auscultatory method and compared with measurements made with noninvasive methods with the patient's arm level with the patient's heart

<sup>a</sup> Based on information from Rauen et al.<sup>19,20</sup> and Makic et al.<sup>21-24</sup>

of hospital-acquired conditions remains unacceptably high, with an estimated 1 in 25 patients experiencing a hospital-acquired condition.<sup>26</sup> Preventing hospital-acquired conditions from occurring requires a collaborative effort of all health care professionals, each of whom must be personally accountable.<sup>1,27</sup>

The key to preventing most hospital-acquired conditions is good infection control practices, starting with hand hygiene. The World Health Organization<sup>28</sup> and the Centers for Disease Control and Prevention<sup>29</sup> continue to provide evidence that hand hygiene is essential to prevent patient harm. It's time to simply do it—every patient, every time. In the wake of the Ebola events, editors of the *American Journal of Critical Care* reminded nurses of the importance of consistent use of hand hygiene and pristine techniques as the foundation for preventing transmission of infections.<sup>30</sup> Sadly, evidence continues to suggest that hospital-acquired conditions, especially those related to infection prevention efforts, are often

tracked back to inconsistent implementation of proven measures for infection prevention.<sup>27,28,30</sup> Critical care nurses can improve practice environments and patient care by modeling infection prevention strategies and helping colleagues adhere to infection prevention protocols.

Vital signs are critical assessment data points used in clinical decision making. Ensuring accurate measurement of vital signs often falls within the purview of the critical care nurse. More research is not needed to guide practice concerning blood pressure cuff size, difference in arterial catheter and noninvasive blood pressure assessment, and positioning of patients for accurate hemodynamic assessment.<sup>19-22</sup> Similarly, correct placement of electrocardiography leads and proper assessment of gastric tube placement before gastric feeding are well supported by the evidence.<sup>19,21</sup> The goal is for nurses to use the evidence consistently so that accurate assessments and data are provided for health care decisions in the care of our patients.

Management of patients with chronic obstructive pulmonary disease and patients requiring mechanical ventilation, for a variety of reasons, is common within intensive care units. Ensuring that EBP interventions are used should be a cornerstone in the care of these patients. Evidence-based guidelines exist for the use of sedation and analgesia to prevent patient harm, namely, delirium.<sup>31</sup> Research has shown that instilling saline to loosen secretions during routine suctioning harms patients<sup>19</sup> and that withholding oxygen from a patient with chronic obstructive pulmonary disease is not supported and may actually harm the patient.<sup>22</sup>

Research has shown that numerous factors influence EBP, ranging from the individual's formal or informal leadership within the unit, unit/organizational culture supporting a culture of inquiry and questioning practice, and the availability of resources.<sup>11,32</sup> Effectively removing practice traditions from daily practice requires active dissemination and diffusion of new knowledge to guide practice interventions.<sup>11</sup> In this decade-long series of presentations and articles, we have tried to encourage a change in practice from tradition to evidence-based nursing interventions. We believe that critical care nurses are in an optimal position to lead the diffusion of knowledge through implementation and consistent application of EBP interventions. Fully embracing EBP in critical care nursing practice will benefit the highly vulnerable patients and families whom we serve.

### Evidence-Based Practice and High-Reliability Organizations: Safe Patient Care

One prominent premise of health care reform through EBP as a foundation for care is for all health care professionals to know and apply the current best evidence in daily care of patients to improve outcomes and reduce costs.<sup>2,12,33</sup> High-reliability organizations achieve high-quality care through creation of a culture in which persistent mindfulness of patient safety drives care interventions and processes.<sup>34</sup> Several essential elements of EBP align with principles of high-reliability organizations: (1) EBP provides a current body of knowledge that can be applied in the delivery of care to achieve consistent outcomes for patients; (2) nurses should critically evaluate and adapt evidence to meet the unique needs of the critically ill patient, individualizing care and allowing rapid adaptation by the nurse to prevent patient harm; and (3) effective translation of best evidence in practice can be

measured through patients' outcomes (eg, absence of errors).<sup>33</sup> As hospitals continue to face demands to improve the quality and cost-effectiveness of care, critical care nurses can function as leaders modeling EBP that enhances patients' outcomes.<sup>35</sup>

Transforming care at the bedside requires nurses to develop patient-centered goals and strive to meet those goals through individualized evidence-based interventions.<sup>36</sup> Success also requires nursing leaders who encourage a culture of inquiry and foster continual advancement of practice as the evidence evolves. Teamwork and collaborative practice must be a unit norm. When asking questions is encouraged, traditions in practice can be challenged, providing an opportunity to advance learning and practice through a culture that embraces EBP.<sup>19-24</sup> Ensuring that critical care nursing practice is based on the current best evidence supports a culture of safety, helping achieve the goal of excellent care for every patient, every time.

### Summary

Patients deserve and expect that the care they receive is current and evidence based. Critical care nurses are in an optimal position to lead practice, moving traditions "out to pasture" and embracing EBP interventions.<sup>1,2,12,19-24</sup> Through the multiple presentations and publications on these sacred cow practice traditions, clinical experts have challenged each of us to critically examine our practice and ensure that we are current, that our care is evidence based. This series is being retired because few new practice traditions or topics are arising. Rather, the lack of adoption of evidence supporting the 30 nursing practice interventions appears to be the persistent problem. It's time to change the culture in our critical care units to a culture that embraces the translation of evidence into daily practice.<sup>24</sup> Thomas Paine<sup>37</sup> said in 1776, "a long habit of not thinking a thing wrong gives it a superficial appearance of being right. . . ." As critical care nurses, we need to challenge practice traditions that are not supported by the current best evidence so that the superficial appearance of the habit is debunked and evidence-based interventions become the practice norm. **CCN**

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Care Nurse, effectively disseminating EBP knowledge would not have been possible. We sincerely thank you for your contribution to this collective series. But more importantly, we thank you for your engagement in spreading the evidence to support best practice and challenging critical care nurses to apply EBP in daily practice to benefit the patients and families whom we serve. A heartfelt thank you to Linda Bell, RN, MS, Nancy Munro, RN, MS, CCNS, ACNP, Marianne Chulay, RN, PhD, Rich Arbour, RN, MSN, CCNS, CNRN, Elizabeth Bridges, RN, PhD, CCNS, Sarah Martin, RN, MS, CPNP-PC/AC, Suzanne Burns, MSN, RRT, ACNP, Kathryn VonReuden, RN, MS, ACNS-BC, Ann Will Poteet, RN, MS, Robin Watson, RN, MS, CNS, Pam Shumate, RN, DNP, CCNS, Kimmith Jones, RN, DNP, CCNS, Kathleen Vollman, RN, MSN, CCNS, Anna Fisk, RN, BSN, Jessica Chadwick, RN, MSN, CCNS, Dinah Philbrick, RN, BSN, and JoAnn Grif Alspach, RN, EdD.

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## Corrections

In the December Ask the Experts article by Alexander and Zomp, "Best Practices: Full-Dose Delivery of Intravenous Medications via Infusion Pumps" (*Crit Care Nurse*. 2015;35(6):68-70), the authors would like to clarify that the Alaris pump referred to on page 70 is an older version and that the max rate is now the same for both primary and secondary settings on Alaris pumps (999 mL/h).

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