Implementing Evidence-Based Practice
A Mantra for Clinical Change

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Evidence-based practice (EBP) requires a commitment to adopting innovation to change clinical problems. In perinatal and neonatal care, this commitment involves utilization of current best evidence in decision making about patient care for the benefit of mothers, infants, and their families. Embracing EBP can lead to increased patient and professional outcomes, creating synergy that will be welcomed on all levels. Moving toward EBP in this arena is a challenging goal for perinatal nurses, who may encounter many barriers. This article describes the need for “buy in” from key stakeholders at the bedside and within the infrastructure of the organization. Provided herein are stepwise methods to engage nurses in EBP as well as ideas to promote use of research in a way that every patient receives the right care every time. This article provides an overview of how perinatal and neonatal clinicians can shift their focus to embrace EBP and translate research into practice at the bedside. Key words: barriers, change, evidence-based practice, implementation, sustaining

The evolution of evidence-based nursing followed evidence-based medicine and matches the goals for conscientious, explicit, and judicious use of current best evidence in decision making about the care of individual patients. Integration of the best research evidence with clinical expertise and patient values to aid clinical decision making is the hallmark of evidence-based practice (EBP). The need for quality, effectiveness, and safety in perinatal and neonatal healthcare delivery drives the promotion of EBP in this arena. For the sake of brevity, this review frequently refers to perinatal practice in the broader medical sense of prenatal and postnatal care provided during labor and delivery, maternity, neonatal intensive care, and newborn nursery. Utilizing current research will make a difference in perinatal patient care across these areas. A highlight of EBP is using research in a way that every patient receives the right care every time. EBP can be easier and quicker to promote using the following stepwise processes as building blocks: (1) ask a well-framed question; (2) search for the best evidence; (3) critically appraise and synthesize evidence; (4) disseminate, apply, and facilitate results into practice; and (5) evaluate the change.

Engaging in EBP projects in perinatal care can lead to increased patient and professional outcomes, creating a type of synergy that will be welcomed on all levels. However, embarking on this EBP journey to reach higher standards in clinical practice is a challenging goal that also requires recognition of potential roadblocks and detours that create barriers and may delay successful practice changes. Embracing the EBP mantra can infuse nursing staff with the enthusiasm to meet ongoing demands of this challenging journey. Implementing this approach requires utilization of current best evidence focused on diagnosis, treatment options, and preventative approaches for disease and health disorders and the buy in from key stakeholders on a multidimensional level throughout the institution. The purpose of this article is to provide an overview of how
perinatal/neonatal clinicians can shift their focus to embrace EBP and translate research into practice at the bedside.

WHERE DO QUESTIONS COME FROM?

As Einstein said, the formulation of a question is often more essential than the solution to a problem, which may be merely a matter of experimental skills. Raising questions to look at clinical problems from a different viewpoint engages the creative mind and promotes perinatal practice change. Not knowing the answer to a clinical problem often leads to the development of a question.

Ideas for perinatal/neonatal clinical questions can stem from several sources categorized as problem-focused triggers and knowledge-focused triggers. Clinical queries are frequently identified by staff interested in examining issues related to quality improvement, risk surveillance, benchmarking data, financial data, or recurrent clinical problems. One example of a problem-focused trigger is an increase in incidence of bloodstream infections in neonatal intensive care unit patients. The first step involves formulation of a well-developed, tightly focused, answerable question. A well-developed question gives more clear and rapid direction to finding answers, because it narrows and directs the search to the best sources of evidence.

Identifying and developing a searchable question based upon a trigger is not always a simple intuitive process. Ideas are generated when nurses read research, listen to scientific papers at research conferences, or encounter EBP guidelines published by federal agencies or specialty organizations. A searchable question should specify the relevant patient population and situation, the management strategy or exposure, and the patient-relevant consequences of a proposed intervention or exposure. Dissecting an initial query into individual sections to make it into a more searchable question is a rudimentary skill for clinicians seeking to obtain the best evidence.

In the long run, the well-framed question is the primary building block to the methodology used to implement and translate research into perinatal practice. Individuals must communicate and work collectively to achieve consensus and tightly focus the topic fitting it with the goals of the organization, unit, and department. It is best to examine the leadership attitudes and opinions and then garner the support for the necessary resources to bring a project of quality improvement, safety, or innovation to fruition. Then with that well-constructed question, one can embark on a strategic search for the evidence supporting a proposed practice change.

WHERE DOES ONE SEARCH FOR THE BEST EVIDENCE?

First consider the type of question being posed as well as the time and resources available for searching the literature. Matching the type of question to the strongest evidence source for accurate information will prevent time wasted later searching for stronger evidence.

There are a variety of hierarchies of evidence. Case studies and observational research studies are usually thought of as lower levels of evidence. Synopses, syntheses, and smaller studies are lower levels of evidence compared to critically appraised summaries and newer computerized systems. Synopses are succinct descriptions of EBP journal abstracts or systematic reviews. Syntheses include systematic reviews and meta-analyses. Smaller studies published as original journal articles may provide preliminary data on newer or infrequently studied topic areas, populations, or rare conditions. Summaries combine the best available evidence from the lower layers by drawing on systematic reviews and rigorous examination to provide an overview of evidence related to management options for a particular healthcare problem. The lower layers of evidence may underscore only a single facet of patient care or management, leaving the clinician to critically appraise whether this evidence is ready to be integrated into perinatal/neonatal practice. Viewed as a superior resource for evidence, summaries encapsulate findings from synopses, syntheses and/or studies and can be excellent resources for examining various aspects of perinatal/neonatal healthcare. Figure 1 offers an example of an evolving pyramid of evidence. Levels of evidence may look slightly different on other pyramids of evidence.

Beyond summaries, healthcare systems linked to currently available best evidence can compile and match patient characteristics and specific circumstances to obtain updates. This method offers idealized goals for healthcare management unique to each individual, but it is not universally available or functional. Checking that accuracy of evidence in pre-developed EBP guidelines and bundles is a good starting point. For busy clinicians, Internet searches for higher levels of evidence may be expedited using an ever-expanding number of EBP resources such as the following: Evidence-Based Nursing, Center for Health Evidence, Cochrane Library, Agency for Healthcare Research’s National
Implementing Evidence-Based Practice

Guideline Clearing House,13 and National Association of Neonatal Nurses Guidelines.14

Keep in mind, there are pros and cons regarding searching the highest levels for best evidence to rely on for clinical practice change. Although it is beneficial to look for the highest available levels of evidence, there may be drawbacks to excluding the findings from other options. Be aware that the highest levels of evidence are not always readily available for every clinical question. Extending the search of the literature from the next best levels of evidence is important to thoroughly review information to appropriately answer clinical questions.7 Recognize that randomized controlled trials with “negative” results and those with “positive” results that lack outcomes of clinical importance may make inaccurate conclusions.15 Nonrandomized trials of clinical practice issues may provide important groundbreaking evidence. Although expert opinion is listed at the bottom of the pyramid, it should be included and plays a vital role in EBP changes.

Figure 1. Evolving and shifting evidence-based practice pyramid.

HOW TO MOVE EVIDENCE FROM BENCH TO BEDSIDE?

Evidence appraisal and syntheses

Critical appraisal is the third step in the EBP process. The best evidence is derived from examination of methodologically sound, clinically relevant research focused on effective, safe interventions and measurable outcomes. The goal of critical appraisal is to judge the quality of reported findings to determine their credibility and whether findings should be translated into clinical practice.16 Critical appraisal involves careful structured examination of the validity, reliability, relevance, and trustworthiness of research evidence to clinical decision making.

Some experts hesitate to fully applaud the shift to EBP if it discredits intuition, unsystematic clinical experience, and pathophysiologic rationale and questions whether these provide sufficient grounds for clinical decision making.15 We suggest that while we embrace EBP, we should be careful to not throw out the baby with the bath water. Expert opinion has a respected place in determining what is best when synthesizing and disseminating the research findings into clinical practice. Along these lines, Sola and colleagues15 recommend that health service research needs to admit to and address some of the challenges posed by randomized controlled trials and systematic reviews to better correlate possible clinical applications and scientific findings to provide an “evident view of EBP” in perinatal medicine, reminding us that “absence of evidence is not evidence of absence.” Sola et al15 also suggest that clinical decisions need to include evidence that identifies the effects on perinatal and neonatal outcomes that are also relevant to infants and their parents.

Therefore, every level of evidence should be considered for its strength by examining the underlying design and soundness of the methodology.8 This includes close appraisal of the generation of evidence, retrieval methods, selection criteria, and data analysis.8 Systems based on guidelines should identify sources, systematic reviews, dates, pertinent evidence, and analyses of pooled data. Summaries should include details of the retrieval processes, rating of evidence, key references for recommendations, and date of recent updates. Services offering synopses should have defined procedures used in data retrieval and appraisal and report evidence quantitatively with event rates, relative risks reductions, and numbers needed to treat, with 95% confidence intervals, and P value of .05 or less.8 Recall that P values more than .05 suggest the findings are not statistically significant. This implies that the findings or differences are considered due to chance 5.1% to 95% of the time. It is important to also consider whether the magnitude of the difference described in the study is significant to perinatal and neonatal clinical practice.15

Synthesis of articles and summaries involves identifying what was discovered and what was not discovered about a particular topic. Questions to ask are listed in Table 1. Although it takes a little practice to develop the skill to thoroughly synthesize the current evidence, it
is worthwhile to be able to easily describe the applicability to nursing clinical practice.

**Application of evidence: Delays and barriers**

High standards in healthcare organizations support the maintenance of reliable performance despite constant exposure to the unexpected. The application of evidence to perinatal and neonatal nursing practice is a dynamic process requiring dedicated attention and ongoing appraisal to assure effective transfer and translation of research into practice. Dissemination and application of EBP must be embedded into the strategic imperative of quality perinatal and neonatal patient care for high-level clinical effectiveness. However, the diffusion of EBP through all levels of nursing practice is fraught with many challenges and obstacles. Addressing the underlying dissemination deterrents continues to be a priority for all nursing leaders and practitioners.

Existing literature describes the research to practice gap, the delay in translation of research to practice. Delays in innovation application expose patients to less than optimal care. This comes at a time when the need for the best care for every patient is a requisite on the national and international level in every healthcare organization and demanded by consumers of healthcare services. Nurses confront the noticeable research to practice gap along with the escalating mandates from consumers and regulators for high quality and safe care. Many perinatal and neonatal clinicians have not entirely embraced the value of EBP to their practice. Perceptions of the value of nursing research in everyday practice are often not positive. The necessary linkage of evidence to practice change is not an obvious association for many clinicians.

Numerous obstacles impact the EBP translational process. The rapid continuous expansion of technology and knowledge at a rate unseen in previous eras poses an enormous barrier. Time, which is such a valuable commodity, also presents a formidable barrier to EBP integration by bedside nurses. Accessibility and lack of time to read research findings along with limited resources to foster the EBP learning curve once started frequently ends in decreased levels of EBP innovation at the point of care. Furthermore, staff resistance to change can consign serious barriers to successful EBP implementation. Searching the literature to keep practice the same and validate avoiding change is a faulty goal that is likely to alter the accuracy of the evidence gleaned from the appraisal process. Limited awareness of the various levels of innovative knowledge can block accurate synthesis of best evidence. Limited organizational and peer support to use research hampers nurses who may be interested in searching information and promoting EBP in their clinical setting. Most nurses lack the requisite skills for clinical inquiry and integration of evidence into clinical decision making. Reviewing literature, deducing statistical information, and anticipating outcomes for research utilization by busy practitioners necessitates continuing education and support before many nurses can even begin the process of seeking out and interpreting evidence central to successful clinical care. Restrictions within the organization to change practice may be present. Differing goals held by power groups within healthcare organizations can cause additional conflicts surrounding implementation.

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**Table 1. Synthesizing the evidence**

<table>
<thead>
<tr>
<th>Study sections</th>
<th>Critiquing the literature section</th>
<th>Synthesizing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Topic</td>
<td>Does the topic fit your query?</td>
<td>Is there a tighter or better population that should have been studied? Who was included and who was not? Was there a control group?</td>
</tr>
<tr>
<td>Sample</td>
<td>Does the sample match your particular population?</td>
<td></td>
</tr>
<tr>
<td>Intervention</td>
<td>What was the intervention studied and was it clearly described?</td>
<td>Was it clearly defined? Is the intervention replicable?</td>
</tr>
<tr>
<td>Outcomes</td>
<td>What are the outcomes the researchers examined and were they clearly defined?</td>
<td>Do the outcomes measured answer the question asked? What else was measured and why?</td>
</tr>
<tr>
<td>Adverse events or side effects</td>
<td>What are the reported or potential adverse events identified?</td>
<td>Should you be concerned about these?</td>
</tr>
<tr>
<td>Study findings</td>
<td>Are the findings positive or negative?</td>
<td>Is being “positive” or “negative” truly important?</td>
</tr>
<tr>
<td>Significance to clinical practice</td>
<td>Did the authors report as important?</td>
<td>What is important to you, your patients, and their families?</td>
</tr>
</tbody>
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High standards in healthcare organizations support the maintenance of reliable performance despite constant exposure to the unexpected. The application of evidence to perinatal and neonatal nursing practice is a dynamic process requiring dedicated attention and ongoing appraisal to assure effective transfer and translation of research into practice. Dissemination and application of EBP must be embedded into the strategic imperative of quality perinatal and neonatal patient care for high-level clinical effectiveness. However, the diffusion of EBP through all levels of nursing practice is fraught with many challenges and obstacles. Addressing the underlying dissemination deterrents continues to be a priority for all nursing leaders and practitioners.
and dissemination of EBP and impedes the essential ever-shifting paradigm of clinical care delivery. Organizational or environmental barriers can pose the greatest barrier to utilization of evidence in the practice setting.

**Dissemination and facilitation of evidence**

How can perinatal and neonatal nurses remain up-to-date with the most recent evidence and translate evidence effectively to the patients’ care? What helps and what hinders the desire for EBP in today’s increasingly chaotic and complex healthcare delivery systems? Developing a culture to support EBP development is pivotal in future utilization of EBP at its most critical level, the patient. The clinical environment must support innovation, new ideas, and research to support the growth of EBP. The slippery slope of EBP utilization often involves busy practitioners with little time for research and the execution of newly available knowledge. Important factors in successful dissemination strategies are both actual and perceived organizational support, particularly in relation to providing time to use and conduct research. A multilevel culture of support for EBP in the clinical environment is imperative in addressing key barriers in translating research to practice.

Empowerment of staff to align with the EBP mantra to implement change in the practice environment is a mandate for all nursing leadership. Ongoing EBP education and support for practitioners is needed to learn skill development and dissemination. Skill development is sequential, cumulative, and requires ongoing support, on-site mentors, and hands-on education to maintain effective levels of translation into practice. Promotion of EBP skill development should be essential to the advancement of the role of all nurses, especially those in cutting edge areas of perinatal and neonatal practice.

The volume of research-evidence expansion, despite the scarcity of credible evidence, compounds the difficulty faced by nurses trying to decide which evidence they should use in their practice. Better alignment of care with professional knowledge continues to be an elusive yet worthy goal. Keeping up with new evidence is often daunting and may appear unmanageable. Perinatal and neonatal nurses caring for mothers, infants, and family at the bedside lack the time, resources, and direction to search the literature for frequently asked questions that arise in clinical practice. Organization and unit support for compensated time to participate in clinical journal clubs and EBP committees can help provide opportunities to explore, critique, and synthesize new evidence. Nurses who are EBP consultants, leaders, and/or educators can guide perinatal nurses at the bedside to consider ways to evaluate current guidelines and then implement interventions without reinventing the wheel. This can ignite enthusiasm in perinatal and neonatal nurses and empower them to open their minds to question practice.

Disseminating new knowledge into nonreceptive environments may lead to failed innovations, decreased motivation for future projects, and eventual practice stagnation that silences the EBP mantra. Clinicians are often hesitant to give up old practice methods even after the utility or the efficacy has been disproved by the current evidence. The translation of innovation and new knowledge to bedside care remains a tortuous path, challenging even the most enthusiastic staff. Acknowledgment of staff resistance and low confidence levels is important. Negotiation and promotion of effective communication strategies are critical to EBP dissemination within organizations. Ideas must be supported, along with effective data capture and diffusion systems.

Understanding the complexity of change, especially culture change and effective application of the theories and tenets of change management, is integral to successful EBP implementation and sustainability in perinatal healthcare. This necessitates strong leadership and managerial rewards for promoting a clear strategic vision in a risk-taking environment that is open to cutting-edge changes. It is exciting for nurses to seek out EBP learning opportunities and tap into the plethora of available resources as they strive to build change in clinical culture and practice. Nursing education and leadership must join forces in addressing organizational barriers and proactively support the nurses who choose to embark on the EBP journey. The EBP journey should begin with the most elementary tenets being reinforced throughout healthcare organizations and levels of care. A culture of clinical inquiry needs to be synergistic with EBP infusion to the patient.

**Sustaining innovations of EBP**

Embedding effective innovation, once acquired, requires development of a dissemination and implementation strategy along with a strong organizational commitment to resources dedicated to the proliferation and refinement of EBP. Unique organizational contexts and situations will require different strategies. Successful and sustainable changes in practice result from individual applications of evidence specific to each context. Staff who lead the charge are excellent change agents for transforming practice through flyers, in-services, unit meetings, and huddles. Change agents are motivated to find opportunities to teach, update, remind,
The Cochrane Review Group on Effective Practice and Organization of Care appraised varying strategies to effect practice changes.\(^{27}\) It was determined that passive dissemination of clinical research and EBP methods is ineffective.\(^{27}\) An initial diagnostic assessment of barriers and supportive factors is required to address barriers before instituting multivariable and multilevel sets of interventions to change practice.\(^{27}\)

Relationships between organizational structure, culture, and dissemination of EBP are inextricably linked. Recognizing receptivity to EBP across this linkage will aid and drive strategic planning to implement EBP in perinatal care. Sustaining EBP implementation into practice requires ongoing monitoring and evaluation and a culture that lives and breathes EBP in all phases of patient care and strategic planning.\(^{28}\) An EBP practice culture is one in which more good decisions are made than bad, and where research evidence, patient preferences, the available resources, and clinical expertise play an active part in decision-making processes.\(^{2,4}\) Institutionalization of innovation must be valued as a priority and a norm for EBP to be a reality in all avenues of perinatal care. The present era of cost cutting and limited funding threatens emergent EBP processes. On the other hand, as many hospitals strive to gain Magnet status, the institutional infrastructure that values and supports EBP may be more visible. Organizational support, both philosophical and financial, must be infused and assessed at all levels. Scanning for nursing innovation in maternity, newborn nursery, and the neonatal intensive care unit increases the capacity for innovation at various points of perinatal care.

Although a number of organizational infrastructural interventions have been described, none have been evaluated properly. Therefore, the next step in EBP must be to conduct well-planned evaluations of interventions.\(^{29}\) Organizations recognizing and rewarding innovation provide a culture of creativity and clinical inquiry essential for EBP execution and sustenance.\(^{30}\) Theoretical EBP models are available to describe pathways to clinical practice change and may be useful in establishing organizational strategies to aid in sustaining and evaluating change.\(^{31,32}\)

Newly discovered reliable evidence must be used to support interventions if perinatal practice is to progress. Failure to bridge the gap between research and practice adversely affects patients, staff, and quality of care. Embracing EBP to implement, grow, and sustain perinatal practice changes on an evolving continuum requires individual and organizational change agents to make promises to advance education and skill development. Financial resources are needed for perinatal staff to learn and apply the necessary principles to daily clinical situations at the bedside. Embracing EBP in perinatal care will lead to increased patient and professional outcomes, creating synergy that will be welcomed on all levels. This EBP mantra is analogous to championing milestones that begin and end in commitment to a targeted innovation that once adopted as a change will affect clinical problems. This is how perinatal clinicians can embrace EBP and translate meaningful research into practice at the bedside.

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