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- Other exciting benefits

For more information about this partnership please visit us at www.Cryo-Cell.com/childbirth-educators

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Use Evidence to Help Guide Your Practice

by Debra Rose Wilson, PhD MSN RN IBCLC AHN-BC CHT

You don’t have to read through tables of statistics and primary research to understand what is within evidence-based practice, and what is not. To protect our practice and perhaps license, we ensure what we teach and do is evidence based and does no harm. Each state, province, and country has practice guidelines for licensed professionals. We all aim to practice within our scope of practice.

As you learn new information, think about the source. Who is presenting this information? Social media is overrun with deliberately incorrect information in an attempt to manipulate consumer choices about a market or product. Clients will come to you asking about a newly proclaimed frightening danger or an unbelievable miracle option in the fake news. With the age of the internet we can sit down and research the issue, often immediately.

When using a search engine (Google or Yahoo for example) include the letters .org in the search to help narrow the pages down to a website that is from an organization which is officially recognized. Wander through websites like the World Health Organization, country, state, and county health websites to verify and learn more about the topic. Examples of reliable sources include National Health Services, in Britain, The Center for Disease Control and the National Institute of Health in the US, or HealthCanada.org. If you are at a .com site, they are trying to sell you something. Their viewpoint and information is likely biased.

If you have a client with a specific health issue look at websites for organizations for that issue to get up to date information, treatment, and resources. Learn your county, state, and national websites for reliable health information.

The mainstream media doesn’t necessarily get it right either. Information may be biased, even if it seems like research. For example, one newspaper proclaimed Beer is Healthy. Well when you actually read the study, alas, more than one beer a day reversed the anti-oxidant effect. And as you look even further, the study was funded by a beer company. There is probably bias in that research. Just to be clear, I am not disrespecting beer in any way; beer has been known to have magical healing powers. Newsletters and blogs from professional organizations keep you up to date with trends, changes, and discussions. Journals, like this one, are peer reviewed, checked to be sure the information is accurate. The evidence is being shared, so we can all serve the childbearing family with their best experience in mind.

If something is new to your practice, see if it is recommended by more than one source. Have organizations and journals from medical, nursing, midwifery, and doula groups translated this to practice? You will find the organization’s standing and viewpoints in documents called Whitepapers, task force reports, or initiative reports. It is a challenge doing our part steering families to reliable sources. Offer reading options or links on your website to help educate parents.

In this information age, what we KNOW to be true will change. New research will come out no longer supporting effectiveness or safety of a common practice. New ideas for practice will emerge and we have a need to know about its safety, its effectiveness, and its reliability. Welcome to this issue. ICEA presents many different thoughts about evidence based practice.

Peace,
Debra
editor@icea.org
Why is an “Evidence-Based” Practice Valued?

by Debra Tolson, RN BSN ICCE IBCLC CPST, ICEA President

When you see the words “evidence-based” what does that mean to you? “Evidence-based” is defined as an interdisciplinary approach to clinical practice. It started in medicine as evidence-based (EBM, 2017) and spread to other fields. Evidence-based practice involves three basic principles: (1) the best available research evidence bearing on whether or why a treatment works, (2) clinical expertise (clinical judgment and experience) to rapidly identify each patient’s unique health state and diagnosis, their individual risks and benefits of potential interventions, and (3) client preferences and values (Sackett DL, 2000).

Is “evidence-based” important? We all have those practices that don’t come from a book but rather clinical judgment and experience. Being an OB nurse for thirty-three years, I do have practices that I have found that work. You might call these “tricks of the trade.” With that said, when I am having a discussion with a colleague and I want to defend my stance, it is important that I cite the best available research evidence alongside my clinical judgment and experience. It gives what I say or do credibility. As health care professionals, credibility is important. Credibility shows that you are trusted and believed. It provides a foundation of respect even in the midst of disagreement.

Another component of “evidence-based” is the research side. When looking at the research, it is important to look at the peer review and the method used for the research. This will help determine the validity of the statistics. The type of research also needs to be assessed. Did the researcher use a good sample? Are there enough subjects (the N value is very important)?

The last component of “evidence-based” is client preferences and values. The mission statement of ICEA strongly supports client preferences and values: “freedom to make decisions based on knowledge and alternatives.” The final decision rests on the client. This decision will either agree or disagree with the research and the clinical judgment. Sometimes we will not agree with the client’s decision but professionally respect the decision.

So to answer the question - is “evidence-based” important – yes it is! The three certifications that ICEA offers, Childbirth Education, Birth Doula and Postpartum Doula, are all founded on current (within 5 years) evidence based materials. All the positions papers are written using current evidence based information. These are just a few of the many areas that ICEA ensures the materials are “evidence – based.”

On a side note, as I worked on this article there was a posting on Facebook that stated, “I really love your comprehensive and evidence-based perspective promoting healthy and positive birthing practices.” What a confirmation that ICEA is indeed achieving what we have set out to do! As ICEA moves forward we assure you, the membership, that we will continue to look at all the information, research, and practices to help you to make decisions for teaching and supporting families.

Warmly,
Debra Tolson, RN BSN ICCE IBCLC CPST
ICEA President

References

Mentoring is an Obligation

by Mary Alice Sawaya, PhD RN CNE

As we hear more and more about the aging nurse population and the nurse shortage I feel compelled to speak out on the topic of mentoring. Mentoring is more than an activity to complete on a PRN basis. Mentoring is more than the distribution of knowledge from the old and experienced to the young and naïve. Mentoring is about relationship building, trust and communication. As I perused the literature I found the following words used to describe characteristics of mentors and mentoring: wise, loyal, adviser, caring, compassionate, empathetic, stress alleviation, helping behaviors, nurturance, accessible, approachable, nonjudgmental, intuitive, and professional.

I believe all of us are duty bound to share knowledge gained through education and experience with those who are in the profession. Whenever you share professional information with others you are acting as a mentor. Like it or not, care of the childbearing family is a team effort and we can all learn something. We can all absorb knowledge from each other and grow through the mentoring process. Mentors grow and learn new perspectives from the mentees, and the mentees learn new knowledge, technical skills and critical thinking from the mentors. There is a lot at stake in care of the childbearing family. If we consider their care in a team approach, we need to know that all team members are reliable, that their knowledge is accurate, and that their care is based on evidence for practice.

If we learn to mentor one another, we can learn from each other’s strengths as well as our mistakes. In 30 years of teaching, I have discovered that students often learn more from storytelling and case studies when there has been a mistake made, than when all the correct procedures were followed. Understanding evidence based practice is placed within the context of a story. This tells me we must share our war stories, our successes, and failures. We are obligated to discuss the situations that we wish we could have changed.

When we share our experiences with others we begin to develop relationships, and positive relationships lend themselves to creation of a trusting and safe environment. We all want caregivers who are encouraged, nurtured and valued in their work environments. Share and mentor junior nurses, doulas, and others who are part of the childbearing family’s birth. Experiences shared in a safe environment creates a culture of caring. Isn’t that what families expect from us?

Mary Alice Sawaya, PhD RN CNE is a Tenured Professor at Metropolitan State University of Denver in Denver, Colorado. She has been a Registered Nurse for 36 years and has 30 years of experience in higher education.

Call for Nominations 2017-2018

Do you have a few hours a month to volunteer for your profession? Would you like to help others all over the world support family-centered maternity and newborn care? Do you enjoy the camaraderie of working together with a great team, developing new skills, while promoting freedom of decision making based on knowledge of alternatives?

ICEA is currently seeking volunteers for the following positions on the ICEA Board of Directors: Secretary, Director of Education, Director of International Relations, and Director of Conferences.

ICEA is also seeking individuals interested in serving as the Advertising Editor of the International Journal of Childbirth Education. Training for this position is included; no previous experience necessary.

Abstract: Evidence-based practice, based upon the principles of knowledge translation, practitioner expertise, and client autonomy, may seem like a relatively new philosophy; however, despite the relatively recent arrival of the term, evidence-based practice has been in use for hundreds of years. By looking to the history of evidence-based practice, the intent of the philosophy becomes clear: Advances in knowledge can lead to informed treatment, prevention, intervention, and education applications, guiding practitioner recommendations, while also incorporating practitioner expertise and respecting client beliefs.

Key words: evidence-based practice, knowledge translation

Although evidence-based practice is a relatively new term, having first emerged in the literature in a short 1991 editorial by Guyatt, the principles of informing clinical practice based upon scientific research, clinical expertise, and patient needs have guided medicine for centuries. From ancient Egypt to ancient Greece and Rome, the Bible, Ibn Sina (Avicenna), James Lind, and many in between, history abounds with examples of early practitioners articulating the means for building a strong but dynamic evidence-base using quality research methods. In more recent times, evidence-based practice has become synonymous with systematic reviews and randomized control trials, and while they share important relationships, evidence-based practice can be viewed as an overarching philosophy to applied science, with systematic reviews and randomized control trials providing methodological approaches for achieving that philosophy. By identifying important early contributions to evidence-based practice and exploring how the philosophy has evolved over time, practitioners, whether clinicians, healthcare professionals, or educators, can build an informed and sensitive evidence-based practice that meets the needs of diverse clients.

Early Examples of Evidence-Based Practice

Evidence-based practice originally was known as evidence-based medicine (Evidence-Based Medicine Working Group, 1993; Guyatt, 1991). This distinction is important as it provides a clue into what evidence is considered as useful and how modern evidence is evaluated. Many of the historical examples that are identified as key in the development of evidence-based practice are rooted in medical knowledge and clinical treatment. Early treatises of medical practice are not always easily accessible, and this limits the comprehensiveness of this historical review to those instances where translations, documents, or interpretations are available. Recognizing this helps explain why most documented historical accounts of evidence come from medical advances and research in Western cultures and emphasizes the development of systematic approaches to research, including the randomized control trial.

Ancient Egypt

Early Egyptians had a sophisticated medical practice that was intertwined heavily with religion and politics, of which surviving documentation in the form of medical papyri provide insight into practice guidelines (Schwabe, 1986). These guidelines do not, however, provide evidence in the form of documented research to support their use, as is dictated by contemporary evidence-based practice (Schwabe, 1986). However, Schwabe (1986) purported that early Egyptians did record evidence of early experimentation, documentation of observation, and translation of observation into practice.

The Book of Daniel

One of the earliest recorded instances of a potentially randomized control trial comes from the book of Daniel in the Bible. Daniel, having been sent to live with the royal court in Babylon, was to be fed as other royal members of the palace, which included food and wine. Daniel did not
wish to partake in the royal faire as it did not align with his beliefs; however, the palace master did not want to risk the anger of his king if Daniel would grow weak by subsisting on what was believed to be an inferior diet of water and vegetables (Daniel 1: 8-11). Daniel, pressing the issue, requested that the guard overseeing the palace master, “Please test your servants for ten days. Let us be given vegetables to eat and water to drink. You can then compare our appearance with the appearance of the young men who eat the royal rations, and deal with your servants according to what you observe” (Daniel 1: 12-13 New Standard Revised Version).

At the end of the ten days, the guard observed that those who ate vegetables and drank water appeared healthier than those who had received the food of the royalty (Daniel 1:14-15). The guard’s observations led to the conclusion that the diet of vegetables and water was appropriate for Daniel and his noble Israelite companions and were so allowed to continue with this diet (Daniel 1: 14-16).

Hippocrates, Aristotle, and Galen

The contributions of the ancient Greeks to Western medicine are well-known, and a review of the many contributions are beyond the scope of this article; however, certain key contributions to the more specific development of evidence-based practice merit attention. Hippocrates, a physician in charge of a temple to Asclepius in Cos who lived from approximately 460 BCE to 370 BCE, is often referred to as the father of Western medicine (Sallam, 2010). Sallam (2010) argued that Hippocratic medicine emphasized observation and conclusion but omitted logic in its therapeutic approaches.

During the 4th century BCE, Aristotle (384 BCE – 322 BCE), the son of a Macedonian physician, is credited with developing a scientific method based on systematic observations, an idea which he built from earlier informal Greek work (Sallam, 2010; Schwabe, 1986). Logic dictated the conclusions reached when making comparisons between observations as a foundation for explaining events (Sallam, 2010; Schwabe, 1986). At the school of Alexandria, students studied to become philosophers, and explained events with logic rather than superstition (Sallam, 2010). Many physicians of ancient Greece were invited to attend the school of Alexandria, during which time they reviewed many of the ancient practices to identify which were based upon logic and which were based upon superstition, giving rise to first critical appraisal of medical knowledge (Sallam, 2010).

Although many notable contributions arose from this time, one of interest to evidence-based practice is Galen (130 CE – 200 CE), a student of the old school of Alexandria (Corcoran, 2007; Sallam, 2010). Galen’s work centered on making active observations during animal dissections and clinical treatment of gladiators injuries, which served as a substitution for human dissection and autopsy as prohibited by Roman law (Corcoran, 2007). From these observations, Galen developed a system of evidence-based medicine whereby treatment recommendations followed observation, and if treatments were found to be ineffective, they were discontinued (Corcoran, 2007). In this way, earlier practices of vomiting, defecation, and urination were discredited treatments, and bloodletting remained a best practice (Corcoran, 2007).

These early great thinkers profoundly altered the landscape of knowledge; however, this era would come to an end. The sacking of Alexandria in 391 CE and murder of the last of the famous Alexandrian philosophers Hypatia, a female mathematician, in 415 CE marked the beginning of the dark ages of Western knowledge; a time where much accumulated knowledge was lost and study of philosophy was branded heretical (Sallam, 2010).

Al-Razi (Rhazes) and Ibn Sina (Avicenna)

Aristotle’s works, or at least his ideas, were discovered by the Arab Empire following expansion starting in 640 CE, which included the conquering of Egypt (Sallam, 2010). Aristotle’s surviving works were translated into Arabic and created substantial change, particularly in the field of medicine where practitioners came to be known as philosopher-physicians (Sallam, 2010). Abu Bakr Muhammad ibn Zakariyya al-Razi (Al-Razi, also Rhazes; 865 CE – 925 CE), a musician and money-changer turned physician working in Baghdad, was an important source of recovered lost works (Tibi, 2006). In al-Razi’s medical work, Kitab al-Hawi fi al-tibb, al-Razi collected his own notes, case studies, and observations and synthesized everything he had read. In Kitab al-Hawi, al-Razi contemplated how best to treat his patients and so outlined the first controlled experiment in which he created a control group and a treatment group of patients presenting with early symptoms of meningitis and looked at the outcome of who developed meningitis following bloodletting (the treatment group) or no bloodletting (the control group) (Sajadi, Mansouri, & Sajadi, 2009; Tibi, 2006).

Another important philosopher-physician of this time is Abu-‘Ali al-Husayn ibn Abdallah ibn-Sina who lived from 980 CE to 1037 CE (Sajadi et al., 2009; Sallam, 2010). Ibn Sina authored a treatise entitled “The recognition of the strengths of the characteristics of medicines through experimentation” (Sajadi et al., 2009). Ibn Sina listed seven conditions to be met in evaluating the effectiveness of a medicine, thereby developing the standards for pharmacological clinical trials (Sajadi et al., 2009).
The History of Evidence-Based Practice
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Despite these important and early emphases on the role of logic and observation in building a systematic and evidence-based approach to medicine, many advances failed to take hold. Tradition was often favored over evidence (Sallam, 2010). Additionally, with the complicated intersections of politics, religion, and knowledge, influential works were often lost, destroyed, or outlawed. These challenges to knowledge exchange created substantial barriers to the implementation of evidence-based practice.

Scurvy

A great example of one of the biggest barriers to evidence-based practice - the failure to disseminate and translate evidence into practice - can be seen with what is often heralded as the first randomized control trial of evidence-based practice: curing scurvy. Scurvy, a clinical syndrome characterized by bleeding and swollen gums, spotting of the skin, muscle pain and weakness, and fatigue, occurs as a result of vitamin C deficiency (National Health Service, 2015). Scurvy plagued sailors on long voyages, even though as early as 1591 CE chroniclers of James Lancaster noted that his sailors recovered from scurvy following eating oranges and lemons and did not fall ill on subsequent voyages when forced to ingest a spoonful of lemon juice each morning (Doherty, 2005). In 1747 CE, 154 years after Lancaster’s discovery, James Lind conducted what many consider to be the first randomized control experiment when he took 12 sailors and divided them into six groups who were provided different treatments. Lind intended to observe each group for 14 days, with the exception of the citrus treatment group who would be treated for six days due to the limited availability of fruit (Doherty, 2005). Lind observed dramatic treatment effects in the citrus group, minor effects in the group treated with cider, and no effect in any of the other treatment groups (Doherty, 2005). Although the results of the research were dramatic, Lind’s results were not published for another seven years; it took another 40 years before practice was amended with ships carrying lemon juice for sailors (Doherty, 2005).

Infection (Holmes, Semmelweis, Pasteur [Doherty])

A final historical example to consider is the contributions of Oliver Wendell Holmes, Ignatz Semmelweis, and Louis Pasteur in the translation of knowledge of infection to evidence-based practice. Semmelweis demonstrated that hand-washing reduced postnatal mortality from 18% to 1.2% in the doctors’ clinic, where more deaths occurred (Doherty, 2005). Semmelweis’ work is recognized as a randomized control trial because mothers entering the Vienna maternity hospital were assigned either to the doctors’ clinic or the midwives’ clinic on an alternating basis without bias. Despite the dramatic drop in mortality rates, Semmelweis’ findings were rejected (Doherty, 2005). The results were rejected again after publication in 1861 (Doherty, 2005). The translation of knowledge to practice – and overcoming the temptations of tradition – can be significant barriers to implementing evidence-based practice.

Translating Knowledge to Practice: Clinical Epidemiology

The early examples of developing evidence and barriers to translating that evidence into practice help provide insight into similar barriers faced in the contemporary implementation of evidence-based practice. Prior to the advent of evidence-based practice, clinical epidemiology arose as a discipline by which practitioners could bring methodologically sound research to a patient’s bedside (Sackett, 2002). In 1938, John Paul designated clinical epidemiology as preventive medical science in which individual patients would be examined and inferences made from those observations could be applied to populations (Sackett, 2002). David Sackett (2002) credited the rebirth and evolution of clinical epidemiology to Nikita Krushchev and Alvan Feinstein, although the credit to Krushchev refers to the historical context under which Sackett himself was brought to the discipline. Feinstein, a former mathematician, wanted to eliminate uncertainty in bedside practice by incorporating statistical reasoning and clinical research into diagnostics and treatment (Sur & Dahm, 2011). One of Feinstein’s criticisms was the paucity of rigorous clinical studies in public health, which he believed could be of use in medical practice (Sur & Dahm, 2011). This led to the creation of clinical epidemiology course of study at McMaster University of which Sackett was department head and Feinstein served a visiting professorship (Sackett, 2002; Sur & Dahm, 2011). From this basic premise of bringing research to bedside, Sackett, along with his colleagues R. Brian Haynes, Peter Tugwell, and Victor Neufeld, devised the technique of critical appraisal (Sur & Dahm, 2011), which is the process of systematically evaluating the research and applying it to specific patient contexts (Mhaskar et al., 2009).

Inherent in the idea of critical appraisal is identification of methodologically sound research. In this regard, Archie Cochrane merits mention, as he was a strong advocate for eliminating bias in research by promoting the use of evidence developed in randomized control trials (Sur & Dahm, 2011). Tom Chalmers, building on Cochrane’s assertions, advocated for a system of evaluating the results of multiple studies.
randomized control trials, thus being credited as the creator of the meta-analysis (Sur & Dahm, 2011). Sur and Dahm (2011) also noted that Chalmers not only understood issues of publication bias in analyzing research but advocated for taking this bias into account when appraising studies. Ian Chalmers, along with Murray Enkin, created a database of trials and meta-analyses that included published, unpublished, and ongoing research, which created the basis for treatment recommendations in an evidence-based book on care in childbirth and pregnancy (Sur & Dahm, 2011). From these early enterprises, the Cochrane Collaboration arose in 1993 and “...committed to 10 principles: collaboration, building on enthusiasm of individuals, avoiding duplication, minimizing bias, keeping up-to-date, striving for relevance, promoting access, ensuring quality, continuity, and worldwide participation” (Sur & Dahm, 2011, para. 12).

Contemporary Evidence-Based Practice

Clinical epidemiology was a crucial step in the birth of evidence-based practice by providing key techniques, such as critical appraisal, and building accessible knowledge repositories, such as the Cochrane Collaboration; however, the emphasis appeared to focus on critical appraisal of evidence and clinical expertise. According to Mellis (2015), a key advancement in evidence-based practice was reasserting the role of patient autonomy. With this, Mellis outlined a six-step process of traditional evidence-based practice: Assess, ask, acquire, appraise, applicability, and act. The process begins with clinically assessing the patient while also being open to any knowledge gaps the provider possesses (Mellis, 2015). Knowledge gaps are addressed in the ask stage, where practitioners will develop a research question (Mellis, 2015). A common format used for developing the research question is the PICOT format: population, intervention, comparison, outcome, and time (Riva, Malik, Burnie, Endicott, & Busse, 2012).

informed client care based on evidence, clinical expertise, and patient autonomy. This fits well within the philosophy of the International Childbirth Educators Association.

The philosophy underlying evidence-based practice is straightforward – informed client care based on evidence, clinical expertise, and patient autonomy. Despite the simple principles underlying evidence-based practice, barriers often arise in its implementation, and these barriers are a recurring theme in its long history. From the intertwining of politics, religion, and medicine in ancient Egypt, Greece, and Rome to the sacking of Alexandria and the dark ages in which knowledge was destroyed, from the declaration of logic as heresy to the rejection of scientific findings by scientific communities, history provides practitioners with the ability to identify themes that may provide insight in overcoming these barriers.

References


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Reviewing the Abstract

by Brian Paramore, MSN NP-C, Gail E. Humes, MSN ACNP-BC, and Brandon S. Paramore, PharmD

Abstract: This paper examines how to review an abstract for the purpose of efficient article selection. The abstract is evaluated within the context of four potential sections: background, methods, results, and conclusions. General principles of each section are provided, with further elaboration of major concepts within each section. Providing this information facilitates both timely and cost-effective article selection.

Keywords: abstract, review, publication

In 1942, Tulane professor of Sociology Logan Wilson bemoaned in his book The Academic Man about the climate of quantity over quality in publication. The “publish or perish” system of academia and research still exists today. This push for publication combined with technological advancement is rapidly increasing the access to information published every year.

Ware and Mabe (2012) estimate that in 2012, 1.8 to 1.9 million articles were published in over 28,000 English-language peer-reviewed journals. This number grew to approximately 2.5 million articles by 2014 (Ware & Mabe, 2015). With an ever-increasing volume of information, the individual interested in reviewing topical content is often left with the unenviable task of trying to find the needle in a haystack. Whether the researcher is a novice or seasoned obstetrics clinician, searching peer-reviewed journals is an excellent starting point.

Searching peer-reviewed journals quickly narrows the number of articles while increasing the quality of the sources. Fortunately, most scholarly search engines have a filter setting for searching exclusively peer-reviewed journals. Nonetheless, the value of the peer review is not merely to narrow a search, but what the peer review process accomplishes.

The goal of peer review is to increase the overall quality of the article by having other field experts examine the content (Carroll-Johnson, 2001). Many journals have multiple reviewers examine an article to offer feedback for the editor before acceptance and publication (Carroll-Johnson, 2001). Having multiple expert reviewers examine the material helps to ensure the information printed is accurate, current, and relevant. After completing the review process, the article may be accepted for publication which provides access to professionals and the public.

When performing a scholarly search, most databases provide a list of relevant articles with access to reference information and the abstract. Fortunately, most journals have some form of access available online, which provides instant content. Unfortunately, this access is not always free which means the astute and cost effective researcher must understand how to evaluate the content of an abstract. In addition to the potential cost of acquiring a journal article, a standard keyword search in a scholarly search engine can easily yield hundreds, if not thousands of results. With issues now encompassing both time and money, understanding how to review an abstract is a valuable tool for the student, researcher, and/or clinician.

Having multiple expert peer-reviewers examine the material helps to ensure the information printed is accurate, current, and relevant.

Components of an Abstract

An abstract is a summary of an article. While the journal decides the content format and length of the abstract, most abstracts share similar components: background, methods, results, and conclusions. These components may or may not be labeled within the abstract, and depending on the type of article, portions of the abstract may have more emphasis than others. A research article about an original study on breastfeeding will most likely emphasize all four of the aforementioned areas. Opinion pieces or literature reviews may only have background and conclusions. Understanding how to examine the content within the abstract allows the seeker to quickly decide whether the information is relevant to the question asked.

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Reviewing the Abstract
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Background
The background, sometimes called the introduction section, is the first area of content that supports the title. This section provides a considerable amount of information to capture the reader’s attention and provide significant knowledge about the topic. The focus and scope of the work is disclosed through identifying and defining the problem’s significance in a brief but detailed manner (Koopman, 1997).

The abstract’s background should provide a brief but wide-ranging details of the subject matter, make mention of what is not known about the subject, and finally provide the question, problem or gap in the literature to be answered (Purugganan & Hewitt, 2004). The specific question requiring further research or data gathering should be readily apparent, clearly written, and contained within the introduction (Oermann, 2014). In addition, a description of prior research conducted detailing information leading to the topic of interest may be included.

A strong background section allows the reader to achieve a good understanding of the problem, current related information, explanation about the lack of knowledge on the subject, important questions, and/or rationale for the research. After reading the background portion of the abstract, the reader has a reasonable understanding of why the article is relevant to their area of interest.

Methods
The methods describe the approach used in attempting to prove the hypothesis or research the area of interest. The processes described in this portion should be adequate to investigate and/or answer the problem introduced in the background of the abstract. Aspects relevant to the area of interest such as sample size along with demographics about participants such as age, gender, study setting, and experimental design are outlined within the methods section (Weinert, 2010).

In addition, the research methodology is described in detail to determine whether the study adequately matches the design. The description of study designs gives the reader an idea of the level of evidence provided by the research. While randomized control trials are considered high level evidence, methods such as uncontrolled trials can be unreliable due to the lack of comparison group (Barrington, 2015). Since no control group exists, the improvement cannot definitively be attributed to the treatment.

Regardless of study design, the methods portion must provide enough data for the reader to ascertain whether the approach taken and the instruments used are adequate to determine reliability and validity of the study. Readers should look for reliable data sources demonstrating confirmation of the research question, article inclusion/exclusion criteria, and any evidence of missing relevant studies (Barrington, 2015).

Results
As the name suggests, the results section contains the outcomes of the scientific process. While supporting information such as dates of the study or total number of participants may be included in this section, the focus is typically on efficacy data. Efficacy is commonly reported as both number and percentage of subjects in each study arm who achieve a given endpoint. The observed difference in study arms is often evaluated in terms of statistical significance, a statistical basis of establishing the likelihood that the outcomes are due to the participants’ inclusion in each respective study arm. Common statistical measures include p-values and confidence intervals.

The p-value is a probability measure based on a defined significance level (alpha, or $\alpha$). Significance levels may vary based on study design, and while $\alpha=0.05$ is common, its selection may be based on custom rather than science (Dorey, 2010). For a difference in data to be considered statistically significant between study groups, the p-value must be less than or equal to the $\alpha$ of the study. For $\alpha=0.05$, $p \leq 0.05$ indicates a statistically significant difference while $p > 0.05$ does not. Be mindful, while significance levels may vary by study, greater or lesser $\alpha$ values correlate with greater or lesser likelihood of a false positive (Type I error) study result.

Confidence Interval (CI) is a defined range of expected values of a parameter within a study population. If a study sample parameter falls outside of this range, the difference is considered statistically significant. A 95% CI is commonly used in literature, although other values may be selected. Higher percentage confidence intervals yield less likelihood of false positive study results.

The reader should consider statistical significance when analyzing data but also consider other variables, as authors have warned of the pitfalls of commonly used statistical analysis tools (Kim, 2016; Morey, 2016). Consideration of statistical and clinical significance, trial design, and bias as parts of a whole in interpreting results and their respective practice utility is preferred (Jakobsen, 2014).

A review of the study outcomes may yield a deeper understanding of what the authors hoped to accomplish with this study or subsequent studies. Therefore, a strong grasp of all primary and secondary outcomes which were realized may prove to be an invaluable tool in evaluating the utility of a journal article in both scholastics and clinical practice.

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Reviewing the Abstract

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Efficacy outcomes are customarily followed by a brief review of safety data which may include common adverse events, serious adverse events, deaths, or adverse events of concern in special populations. Safety data is often proportionally limited in the abstract; therefore, the reader may consider a deeper review of the article and supplementary appendix for a more complete understanding of reported safety information.

Conclusions

Generally, the shortest component of the abstract, the conclusion is fundamentally the authors’ interpretation of the study data. While the authors maintain the statements made within the conclusion are supported by the study results, the language is markedly vague in contrast to the data-driven components of the publication. The reader is encouraged to recognize if ulterior motives affect the authors’ objectivity. With documented cases of reporting bias yielding varying efficacy results, the reader must pursue with caution in accepting the author’s conclusion at face value (Hart, 2012). Of note, one possible form of author bias, funding, is commonly disclosed in the conclusions.

In addition to interpretation of the study results, authors may suggest an alternative patient population or comparator of interest for future investigation based on their study results. This information may serve as a forecast of research to come or simply a reflection of the inadequacies of the available information. In response, the reader is encouraged to review similar research both published and ongoing to gain further knowledge of the scientific community’s understanding of the topic as well as future applications of the data.

Conclusion

Concepts like “publish or perish” combined with the internet allow the quantity of information to continually increase. The astute researcher recognizes the importance of finding information efficiently is essential not only to build knowledge, but for implementing best practices in the clinical setting. Understanding the how to look at the components of the abstract facilitates the process of obtaining adequate information.

Clinicians, students, and researchers need relevant, accurate information in a short amount of time. When they effectively review abstracts, questions are answered faster. Answers help students learn content, clinicians learn treatments options, and researchers ask better questions. Ultimately, answers stimulate growth and when health care providers grow, patients have better outcomes.

References


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Origins of Evidence-Based Practice and What it Means for Nurses

by Emily J. Brower, MSN RN CEN, and Rebecca Nemec, MSN RN

Abstract: Evidence-based practice is a term used throughout multiple disciplines in healthcare to describe the use of research in clinical decision making. However, despite its frequent usage in healthcare vernacular, there remains a gap between the understanding and application of evidence-based practice. In an effort to assist in transforming evidence-based care from a buzz word into a guiding framework for clinical practice, the origins, evolution, rationale and use of evidence-based practice are explored and a case study is provided.

The History of Evidence-Based Practice

In order to more fully understand EBP, a brief review of its origins is helpful. The initiation of EBP has been traced to the mid-1800s. In the field of nursing, Florence Nightingale has been credited with first evaluating and making decisions based on observed outcomes (Mackey & Bassendowski, 2016). One example of Nightingale’s work was the use of hot water and soap as the most effective way to cleanse skin, in comparison with cold water with soap or cold water without soap. Another Nightingale example was the consideration of age and sex into the treatment plan for patients. She was surprised when physicians suggested a similar outcome for patients, regardless of their demographics (Mackey & Bassendowski, 2016). Nightingale managed, despite limitations to the body of knowledge at the time, to make changes in an effort to improve patient outcomes. Claude Bernard, a physiologist in the 1800’s, was another early proponent of using scientific evidence to support medical knowledge (Keller, 2012; Morabia, 2006). Bernard aimed to advance medicine past its existing status as an art that was primarily directed by intuition (Morabia, 2006). Continuing into the 20th century, the majority of medical decisions were based upon physician assessments and choices. The realization that many physicians were practicing quite differently, despite similar patient scenarios, led to the next step in the development of EBP (Mackey & Bassendowski, 2016). Archibald Cochrane, a Scottish physician, was able to recognize the errors and lack of efficiency existing in medicine at the time. The widespread use of controlled randomized trials and the effort to provide a more uniform approach to medical decision-making began in the 1970s. Evidence-based medicine was formally introduced in a series of articles published by Cochrane in 1992 (Keller, 2012). These publications sparked an ongoing trend of defining, implementing, and improving what is now called Evidence-Based Practice.

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The Evolution to a Current Definition of EBP

With the basic constructs of EBP in place, Dr. David Sackett addressed skepticism surrounding the new ideas of research grounded healthcare and formalized the widely accepted definition of EBP (Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996; Keller, 2012; Stevens, 2013). Sackett et al., (1996) stated that health professionals should apply “the conscientious, explicit and judicious use of current best evidence in making decisions about the care of the individual patient. It means integrating individual clinical expertise with the best available external clinical evidence from systematic research” (p. 1). While this definition and concept may seem routine today, at the time it was a revolutionary. Sackett identified that experience from clinical expertise was of value if used concurrently with the best research. This definition has since been expanded to include the addition of a third concept: patient preference. In 2000, Sackett and colleagues published an article defining a third concept acknowledging personal preference, unique concerns, expectations and values in a patient’s care (Sackett et al., 2000). Thus, EBP can be identified as a combination of three concepts: clinical expertise, best research and patient preferences (Spruce, 2015; Sackett et al., 2000).

The Expansion of EBP to Other Disciplines

While EBP originated from the nursing and medical disciplines, it has since expanded to many other professions including some outside of healthcare (Rahman & Applebaum, 2010). In fact, the field of education adopted the construct of EBP as early as 1998 (Biesta, 2007). The specifics of EBP implementation differ for various disciplines, yet the focus still revolves around practice guided by solidly grounded research. Other disciplines that have sought research-based quality improvement, and thus EBP, include physical therapy, audiology, speech-language pathology, dentistry, social work, and information science (Hempenstall, 2014). The use of EBP amongst multiple disciplines helps confirm its validity as well as expanding the potential for increased interdisciplinary collaboration.

Why is EBP Important?

There are many objectives motivating efforts to increase the implementation of EBP. The Institute of Medicine (IOM) focuses on improving health care quality in order to increase positive outcomes through consistent use of research based knowledge. The IOM has issued a challenge to change the way nursing is practiced by bridging the chasm between research knowledge and practice (Stevens, 2013). It has been established that if EBP can be implemented, it will improve patient outcomes while decreasing patient care costs (Spruce, 2014; Melnyk, 2012; Emparanza, Cabella, & Burls, 2015). EBP also allows for the standardization of care (Spruce, 2014; Stevens, 2013), which ensures best practice protocols. More specifically, EBP has shown to improve patient outcomes by decreasing patient mortality (Emparanza et al., 2015) morbidity, medical errors and healthcare delivery based primarily on geographical demographics (Spruce, 2014). Doctors, nurses, healthcare providers, and even hospitals, can be held financially and legally accountable as policies are established based on EBP (Stevens, 2013). The spotlight on EBP is certain to increase as evidence continues to be produced, healthcare legislation changes, and consumer demands for quality healthcare and accountability increase; ultimately, this results in positive change.

A Review of Levels of Evidence

The implementation of EBP begins with understanding the various types of evidence along with their strengths and limitations. Deciding when and how to implement evidence can be difficult for a healthcare professional. In addition to patient preferences and considerations, the strength of evidence supporting a particular intervention must be evaluated. A typical model to describe the strength of evidence is an “evidence hierarchy.” While there are various hierarchies adopted within healthcare professions, most include the same sources of evidence, including: expert opinion, non-experimental studies such as qualitative and cohort studies, and experimental investigations including quasi-experimental studies, randomized controlled trials (RCT) and systematic reviews of RCTs (Borgerson, 2009; Dearholt & Dang, 2012; LoBiondo-Wood & Haber, 2010; Roecker, 2012). As the level of evidence advances up the hierarchy, there is an increasing likelihood of it guiding a healthcare professional’s practice decisions.

Low Levels of Evidence

Low levels of evidence that may influence healthcare practices include expert opinions formed through the observations of the healthcare provider (Guyatt, et al. 2008). While useful in guiding patient care in circumstances with limited research, the risk of using personal observation lies in assuming a causal relationship that might not exist, as well as instances of conflicting expert opinions (Rice, 2008). As more expert opinion and case study narratives are published,
a consensus might become apparent and higher levels of evidence, such as single studies, may be launched.

**Moderate Levels of Evidence**

Evidence that is regarded as more robust than expert opinion includes non-experimental studies. These studies are typically more observational in nature and lack manipulation of variables (Dearholt & Dang, 2012). Non-experimental studies can be longitudinal or cohort studies; these are study designs that examine specific populations over a period of time (Roecker, 2012). An example might be a study design surveying prenatal habits of new mothers of infants who are having difficulty breast feeding, in an attempt to identify a common cause. In such a study, there is limited control and yet some useful conclusions might be drawn based upon the statistical data obtained.

**High Levels of Evidence**

The two types of evidence that are most highly esteemed, and therefore considered to be the most valid, are systematic reviews and randomized control trials (Roecker, 2012). Randomized control trials (RCT) involve the random placement of the study population into two groups; one group is exposed to the research intervention, and the other group that does not undergo the intervention (the “control group”) (Dearholt & Dang, 2012). A systematic review (SR) of RCTs analyzes the merits of individual studies and presents them as a collective whole to guide healthcare practice (Berkman et al., 2013). As a result, the conclusions of the SR can be utilized by organizations to develop healthcare practice guidelines (Berkman et al., 2013). An example of SRs determining practice decisions include the commonly used guidelines for cervical cancer screening published by the United States Preventive Services Task Force (2012).

**Accessing Evidence**

Commonly cited barriers to utilizing evidence in healthcare practice include the time and resources required to access information (Maaskant, Knops, Ubbink, & Vermeulen, 2013; Skurlock-Evans, Upton, & Upton, 2014). Joining professional organizations can help in overcoming both of these constraints. Many organizations include access to research articles in peer-reviewed journals as a perk of membership. In addition, the organization may offer discounts or information on conferences that present and disseminate new evidence-based knowledge.

Another source of evidence may be through employer-paid journal subscriptions and libraries. While some large, inpatient healthcare facilities have their own on-site library, many smaller organizations offer employee access to online articles through facility subscriptions to healthcare journal databases such as the Cochrane Library or the Cumulative Index of Nursing and Allied Health Literature (CINAHL). Conducting query searches through these databases can provide a wealth of evidence for any provider who is questioning the rationale for particular healthcare practices.

**Implementing the Evidence**

Incorporating EBP into healthcare decisions can be completed at both an individual and organizational level. Ideally, both the provider and organization would support and work to incorporate evidence into healthcare; when organizations embrace EBP, there is an associated increase in an individual’s motivation to utilize research-proven practices (Aarons, Sommerfeld, & Walrath-Greene, 2009). Institutional interventions to increase the use of EBP are wide ranging in scope and feasibility. Much of the research analyzing organizations that successfully utilize EBP report a culture that embraces innovation and collaboration (Kueny, Shever, Mackin & Titler, 2015). A facility or organizational EBP culture may be embodied by shared governance, such as the nursing Magnet Recognition program, or access to research via libraries or online databases (Gifford, Lefebre & Davies, 2014; Kueny et al.). Other institutional interventions commonly employed to support EBP include providing information technology workshops or awards and recognition for individual initiatives (Gifford, et al). A common method to overcome the barrier of time constraints is providing an EBP facilitator. This might be a staff educator, manager or an interdisciplinary team member (Gifford, et al; Kueny, et al.) The facilitator can present evidence at staff meetings, or assist and complete an evidence review for the busy provider. Additionally, organizational support can be offered via reimbursement for EBP activities, such as attending conferences.

On an individual basis, the implementation of EBP begins with the healthcare provider’s attitude. A provider who questions current practice, wonders if there are better solutions and looks for alternatives is more likely to investigate and conduct research. Those who are interested in providing the best, evidence-proven care for their patients will be more likely to implement EBP (Stokke, Olsen, Espehaug & Nortvedt, 2014). In addition to a positive outlook on EBP, an individual might choose to pool their limited resources with coworkers. This could be accomplished through formal...
methods such as journal clubs and poster presentations, or by informally sharing ideas and knowledge with colleagues and the interdisciplinary team.

**EBP Example**

BT is a 42-year-old female working in a labor and delivery unit in a rural hospital. Lately, more patients are arriving with a birth plan that includes a doula’s presence. BT respects the wishes of her patients, but hears talk of resistance from several of her colleagues including other nurses and physicians. Ultimately, BT wants to do the best for her patients. BT wants to know, does the use of a doula during delivery increase the mother’s satisfaction during labor? What about patient outcomes? These questions prompt BT to access CINAHL via her institution subscription to look for applicable evidence. BT sifts through her search results to find randomized control studies or systematic reviews, since they will offer higher reliability. BT knows that if she cannot find higher levels of evidence, she might have to rely on her own expert opinion or consider conducting a study at her institution. However, BT finds a systematic review from the Cochrane database that supports the use of doulas in improving the overall patient outcome. She then considers ways to disseminate this evidence in her hospital to sway her resisting colleagues. With the support of her manager, BT presents the information at a staff meeting. The staff seems to still have reservations, but they are interested in learning more. Hospital administration hears about BT’s presentation and staff interest. They provide a one day course on EBP to the staff. After this course, more nurses decide they would like to learn more about the use of doulas in labor and delivery, as well as how they can advocate for better patient outcomes via an EBP approach. Soon after, a group of nurses present their gathered evidence during physician grand rounds. With collaboration from physicians and other providers, the hospital is able to develop a policy that supports the use of doulas, outlines their role in the childbirth process and provides education to all of the staff on the benefits of using a doula. It started with an individual’s desire to improve patient outcomes and a question about current practice. It evolved into research, collaboration and policy change. It ended with better patient outcomes.

**Conclusion**

The evidence is in. Over a century ago, the desire for evidence to support practice emerged. It has thus evolved into a dynamic practice that is rooted in bettering patient outcomes. The implementation, when broken down, is quite simple and reproducible. With a basic understanding of EBP and the motivation to do better, every professional has the opportunity to ground their clinical decision making in evidence-based practice.

**References**


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Rebecca Nemec is an Assistant Professor at Metropolitan State University of Denver. As a nursing instructor, she incorporates evidence-based practice into her teaching and hopes to foster a love for learning in her students.
Water Birth in the Hospital Setting

by Jessica Bartlett, DNP RN CNM IBCLC

Abstract: In recent years, water birth has become more and more prevalent in U.S. hospitals with many patients requesting to utilize the tub for their births. Obstetrical nurses are tasked with the safety of mothers and babies on labor and delivery units but many nurses have never had experience providing this nursing care. This leaves a potential for a nursing and patient safety issues. This article seeks to help narrow this knowledge gap through a brief discussion of the history and background of hospital water birth in addition to a sample nursing protocol that highlights the important aspects of nursing care and patient safety in water birth.

Keywords: Birth, waterbirth, intrapartum, labor, delivery

Background

The use of water for labor and birth has been documented as far back as 1805 (Weaver, 2014). Since then it has come in and out of favor as a global tool for labor management and in many countries is utilized daily in the birthing room. In the United States there is no formal tracking system for the number of water births per year, but it is clear that this number is rising rapidly. In the last five years, more hospitals have started offering water birth than in the previous ten years (Harper, 2014).

The primary concern surrounding water birth is the lack of large randomized control trials (RCT) verifying its safety. Although no large RCTs are available to support water birth, small RCTs, qualitative reports, and historical evidence support its use. In a recent review of available literature, several maternal benefits were identified and neonatal outcomes were similar, if not improved, when compared to land births (Nutter et. al., 2014). This data, in addition to the increased use of water birth in U.S. hospitals, have led organizations such as the American College of Obstetrics and Gynecology (ACOG) and the American Academy of Pediatrics (AAP) to release a policy statement on water birth.

In 2014, AAP in conjunction with ACOG released a joint committee opinion on water immersion for labor and birth. While their opinion stated that water birth should be considered experimental, they recommended facilities offering or planning to offer water immersion have “rigorous protocols for candidate selection, maintenance and cleaning of tubs and immersion pools, infection control procedures, monitoring of mothers and fetuses at appropriate intervals while immersed, and protocols for moving women from tubs if urgent maternal or fetal concerns develop” (2014).

This statement should, in theory, provide protection for moms and babies by encouraging an established standard of care; however, these recommendations are not universally accepted. The American College of Nurse Midwifery (ACNM) states, “ACNM believes this document does not accurately reflect the large and growing body of research that supports water birth as a reasonable choice for healthy women experiencing normal labor as well as birth”. In addition the ACNM (2014) states “women should have access to qualified maternity care providers who provide safe immersion hydrotherapy during labor and birth using evidence-based, clinical guidelines, regardless of the women’s geographic location, socioeconomic or insurance status, or birth setting”. The ACNM opinion is important to consider, as midwives are currently attending the majority of water births. These differing opinions have created challenges for facilities, patients, and nurses who are attempting to provide safe, evidence-based care.

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With patients requesting this option more than ever, facilities and nurses are at a disadvantage in deciding how to safely implement water birth in a hospital setting. As a result, many nurses are hesitant to enact this change in practice in their institution. This is a disservice to women because they are not receiving all available options for labor and birth. It is also a detriment to nurses and patients alike because they may not have the information needed to provide and receive safe care. The following outline seeks to help fill this gap and provide a sample guideline for safe water birth. This is meant as a guide for nurses in general water birth safety, but it is important to remember to check and follow individual institutional protocols.

**Learning Objectives**

1. The advanced beginning learner will be able to recall and describe nursing roles in water birth.
2. The reader will be able to define water birth and hydrotherapy for pain management.
3. The reader will be able to describe and compare water birth in the hospital to their own existing knowledge of land birth.

**Sample Nursing Guideline**

1. **Definitions:**
   - **Hydrotherapy for pain relief:** The use of water in the form of shower or tub to relieve pain during the first stage of labor.
   - **Water Birth:** The use of water immersion, in a tub or pool, for the delivery of the neonate. This can be with or without the use of water for pain relief during the first stage of labor.

2. **Important safety information on water birth compared to traditional land birth**
   - **Maternal benefits**
     - Increased patient satisfaction
     - Reduction in the use of pharmacologic pain methods
     - Potentially shortened labor
     - Reduced risk of operative birth
     - Fewer episiotomies
     - Lower incidence of severe perineal trauma
     - No increased risk of infection
     - No increase in mortality or morbidity
   - **Maternal risks**
     - Possible increase in perineal laceration

3. **Eligibility for water birth**
   - **Candidates**
     - Low risk pregnancies
     - Vaginal birth after cesarean with 1 previous surgical birth
     - Singletons
     - Full term (>37 weeks)
     - Cephalic or head down presentation
     - Clear amniotic fluid
     - Cat. 1 fetal heart tracing or Normal intermittent monitoring
     - Nursing staff present during second stage at all times
   - **Contraindications**
     - High risk pregnancy
     - < 37 weeks
     - Multiple gestation
     - Blood borne or contagious disease present such as Hepatitis B or C, and/or herpes with active lesions. HIV and GBS show no increased risks and should be treated per facility protocols. In the case of HIV candidacy and setting should be determined in a case by case basis.
     - Signs of maternal infection including fever (temp higher than 38.0 Celsius)
     - More than normal vaginal bleeding during labor or after delivery
     - Indeterminate, category 2, or category 3 fetal heart tracing
     - History of shoulder dystocia
     - 2 or more previous surgical births
     - Use of sedating or narcotic medications
     - Known fetal malpresentation
     - Inability to exit the water quickly if needed.

4. **Nursing role in water birth**
   - **Labor triage assessment prior to water immersion.**
     This includes electronic fetal monitoring, contraction frequency and duration, maternal vital signs, physical assessment, and history collection (including presenting complaint). Determine stage of labor and need for admittance to hospital care.
   - **Provider will assess candidacy for water birth**

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Water Birth in the Hospital Setting
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- Set up/fill pool with appropriate temperature water. Water depth should be adequate to completely cover maternal abdomen, ideally to the maternal breast. This prevents air exposure to infant prior to completed delivery.
- Collect and remove organic materials. This can be done with a strainer or net. Materials should be placed in a biohazard disposal unit.
- Monitor fetal heart tones and maternal vital signs per unit protocols. See below for sample monitoring schedule.
- Be prepared and have a plan for assisting or moving the woman out of the tub quickly if needed due to maternal or fetal change in condition, maternal desire, obstetrical emergency, or if the water becomes too soiled.
- Have delivery equipment and infant warmer prepared prior to delivery.
- Perform infant assessments with infant on maternal chest unless additional resuscitation is required.
- Assist maternal and infant transfer to bed after delivery.
- Continue standard maternal monitoring including vital signs and fundal assessments.
- Document all normal components in addition to water temperatures and depth.

5. Recommended equipment and nursing safety requirements
- A tub or pool with adequate depth to meet requirements
- Adequate amounts of hot water to maintain safe temperatures
- Floor space that allows for nursing and provider access to all aspects of the tub/pool
- Personal protective equipment that protects from water exposure. This includes shoulder length gloves, water proof gowns, shoe covers, etc.
- Water proof/resistant fetal monitoring equipment including fetal Doppler, wireless electronic fetal monitors, or telemetry units.
- Comfort and/or body mechanics aids such as kneeling pads and stools for nursing and staff uses.
- Proper body mechanics such as kneeling on pads rather than bending over into the tub or pool should be used at all times. Comfort aids such as kneeling pads, chairs, stools, or knee pads should be used to minimize risks of nursing injury.

6. Recommended timing for water immersion
- Water immersion can be utilized at any point throughout the first or second stage of labor but is best initiated during active labor.

7. Monitoring during labor
- Maternal supervision
  - Monitor and encourage oral intake to prevent dehydration.
  - Collect and assess vital signs per normal institutional protocols with the addition of hourly maternal temperature. If needed, have the woman exit the pool for assessment and return if within normal limits.
  - Initiate and maintain IV access per provider orders if needed.
  - Monitor for more than normal vaginal bleeding, have patient exit the water if present.
  - Conduct cervical exams as needed per patient consent and provider request. This can be done with proper PPE while the woman is immersed or she can be raised out of the water as needed. If still unable to assess adequately, she can move to bed for exam and return to water as desired if exam is within normal limits.
  - Notify provider with any abnormal findings.
- Fetal surveillance
  - Use intermittent fetal monitoring or intermittent auscultation with water resistant equipment per institutional guidelines. This is most often every 15-30 minutes during first stages of labor and every 5 minutes during second stage. If concerns arise with fetal heart rate, continuous monitoring can be initiated with water proof monitor or patient can be assisted out of the water for continuous monitoring.

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Water Birth in the Hospital Setting
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- Monitor for meconium staining of amniotic fluid, have patient exit water if present.
- Notify provider of any abnormal findings.

• Water temperature
  - Water temperature should be 33-38 degrees Celsius. Check this temperature at time of filling and periodically (approx. every hour) thereafter. Record water temperature in nursing charting.

8. Labor support during 1st stage of labor in water
• Provide traditional labor support as needed. This may include knee presses, hip squeezes, counter pressure, cold compresses, massage, music, etc. Consult the laboring woman for her specific requests and needs.

9. 2nd stage monitoring and support
• Maternal
  - Continue standard intrapartum monitoring
• Fetal
  - Auscultation or monitor fetal heart rate every 5 minutes during second stage. If concerns arise with fetal heart rate, continuous monitoring can be initiated with water proof monitor or the woman can be assisted out of the water for continuous monitoring.
  - Water temperature and depth
    - Water temperature should be 33-38 degrees Celsius. Check this temperature at time of filling and periodically (approx. every hour) thereafter. Record water temperature in nursing charting.
    - Depth needs to remain at least to the top of the maternal abdomen and ideally to the maternal breast. The fetal head and body needs to remain completely submerged until after completed delivery to prevent neonatal aspiration.

• Fetal emergence and delivery
  - The mother may be in a position of her choosing as long as during the emergence and birth, the entirety of the fetus will remain submerged completely.
  - Emergence and delivery can be difficult to see clearly if the lighting is low. Waterproof lighting in the tub or pool can aid in visualizing the birth. This can be done by using water proof flashlights if built in lighting is not available.
  - After the fetal head emerges from the vaginal vault, the shoulders and body should follow in 1-2 contractions in a normal birth.
  - The infant should be immediately brought up to the maternal abdomen in a slow and steady fashion, being mindful of umbilical cord tension.
  - The infant is typically brought out of the water within 3-5 seconds.

3rd stage of labor procedures
• Newborn assessment
  - After delivery assess infant per institution protocol. Typically assess Apgar and neonatal transition at 1 minute and periodically thereafter. Nurse or provider may assign Apgar scores at 1 and 5 minutes.
  - If neonatal resuscitation is needed beyond what can be done on the maternal abdomen. With provider assistance the cord can be clamped and cut so neonate can be transferred to the warmer.
  - Ensure that the baby’s mouth and nose remain above water at all times once having been exposed to air. This reduces the risk of neonatal aspiration.
  - Maintain infant temperature by keeping infant skin to skin with mother and partially submerged while patient and infant remain in the tub. Warm towels and blankets can be used to cover mother and infant.
  - After mother and infant exit the pool, all wet items should be removed and replaced with warm and dry blankets and towels. Monitor infant temperature as needed or with suspicion of hypothermia.
  - Notify provider of any abnormal findings.

• Maternal assessment
  - After delivery monitor for signs of excess blood loss. If present, immediately notify provider and assist the woman from the water.
  - Continue postpartum vital signs and assessments per institutional guidelines for vaginal delivery.
  - Notify provider with any abnormal findings.

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• Placental delivery
  - Placenta may be delivered by the mother and provider in or out of the water. If placental separation is delayed (typically >20-30 minutes after birth), she may be assisted out of the water for assessment and intervention as needed.

• EBL assessment
  - Estimated blood loss should be monitored by nurses and providers per protocol. In water immersion, blood loss can be more difficult to assess but not impossible. Blood loss estimation cards can be used to assess color and clarity of the water. In addition a general rule is that water should remain transparent enough to visualize maternal legs in the water at all times. If the water becomes too saturated to visualize maternal legs, then she should be assisted out of the water for more accurate estimations, monitoring, and interventions as needed.

10. Complication management

• Prolonged 2nd stage
  - This should be handled per institutional protocols. In most cases if maternal and fetal conditions are within normal limits and if there is maternal desire remains, changes in maternal position and continues expulsion efforts may continue per provider.
  - The woman should be assisted to exit the water in the event of maternal or fetal distress, maternal desire, provider desire, or in the need of further assessment. Once out of the water, standard institutional procedures can be used to resolve prolonged 2nd stage causes on a case by cases basis.

• Non-reassuring FHT
  - If using intermittent monitoring, continuous monitoring should be initiated. If truly non-reassuring or indeterminate, patient should be assisted out of the tub and intrauterine resuscitation should be used and provider should be notified immediately.
  - Treatment will be based on cause and duration of non-reassuring FHT.
  - OB emergency team or additional staff should be called in the event they are needed to assist in managing the cause of the non-reassuring heart tones.
  - The woman may re-enter water per provider judgment if FHT is determined to be category 1.

• Shoulder dystocia
  - OB emergency team should be notified or additional team members should be called immediately as available per facility as soon as shoulder dystocia is identified.
  - As soon as a shoulder dystocia is identified, the woman should be assisted to change positions and exit the water immediately. Then she may be transferred to any suitable surface including a covered floor, bed, or gurney based on facility. Once out of the water standard maneuvers should be used including McRoberts and suprapubic pressure as needed per provider.
  - In the situation of shoulder dystocia, often the maternal position changes used to exit the tub may resolve the dystocia without the need for additional maneuvers.
  - Monitoring and assessment of mother and infant should be conducted as protocol dictates after resolution of a shoulder dystocia. Anticipate the need for neonatal resuscitation and be prepared.

• Tight nucal cord
  - Provider may attempt to reduce nucal cord while patient is still immersed in water. If easily reduced, no additional intervention may be needed.
  - If not easily reducible, provider may choose to delivery through the cord or somersault infant through the cord.
  - If the above maneuvers are not possible per provider judgment, the woman may need to quickly be assisted out of the water to a safe surface. At this time the decision to cut and clamp the cord can be made as determined by the provider.
  - Monitor infant heart tones as able throughout this time and be prepared for neonatal resuscitation if needed. This may include calling additional team members.

• PPH
  - If more than normal blood loss is suspected, the woman should be immediately assisted from the water. Once out of the water, postpartum hemorrhage treatment should be initiated per provider and protocol based on out of water assessment of blood loss and patient symptoms.
  - OB emergency team and or additional team members should be called as needed for assistance.
• **Umbilical cord avulsion**
  - Umbilical cord avulsion is a rare complication of any birth. If at all possible it should be avoided by slowly bringing baby out of the water after birth and placed no higher than the maternal chest prior to clamping and cutting of the umbilical cord.
  - If umbilical cord avulsion does happen, the infant side of the umbilical cord should be clamped immediately using forceps, a standard umbilical clamp, or even pinched by hand until a better method can be available.
  - Infant should immediately be brought to the warmer for standard and fluid volume assessments. If fluid/blood volume depletion is suspected neonatal resuscitation should be initiated including fluid volume replacement per provider and protocol.
  - Additional team member should be called as available.

• **Maternal loss of ability to ambulate**
  - Prior to allowing a woman to opt for a water birth, strategies for removing an unconscious patient from the water should be in place.
  - In the event of the woman's inability to ambulate or in the event of a loss of consciousness, she should be team lifted to the nearest safe surface, ideally the bed or gurney.

• **Newborn resuscitation**
  - Basic newborn resuscitation should be conducted on the maternal abdomen. These procedures could include drying, stimulating, vital signs assessments, O2 saturation monitoring, oral/nasal bulb suction, and blow by O2.
  - If additional or more extensive resuscitation is required, umbilical cord should be clamped and cut and infant can be transported to a warmer.
  - Additional team member should be called if extensive resuscitation is needed.

11. **Filling and draining the tub**

• **Filling the tub**
  - In order to fill the birth tub, lukewarm or body temperature warm water should be brought to the tub directly. If this is a built in tub, the faucet should be utilized. Water temperature should be monitored periodically during filling and prior to patient entering. The tub should not be filled and left filled prior to labor due to the risk of contamination in standing water.
  - In a portable or moveable tub, fitted sink or shower bibs are available to attach a clean and unused hose to the sink or shower. The other end should be placed in the tub or pool and should be watched that it stays in place after the water is turned on. Temperature and depth should be monitored in the same fashion as a built in tub.
  - Irrigation or untreated water should NOT be used due to the risks of contamination and potential infection sources.
  - Any water that has been left standing should be drained and refilled prior to use by a patient.

• **Draining the water**
  - In a built in tub, all floating or large particulates should be removed with a strainer or net prior to draining. These should be placed in a biohazard receptacle.
  - After particulate is removed the standard drain should be activated.
  - Environmental services should be notified of a water immersion birth so established disinfecting procedures can be conducted prior to any subsequent uses.
  - In a portable unit, particulate should be removed by strainer or net and disposed of in a biohazard receptacle.
  - After particulate is removed, a hose and pump or draining unit can be used to pump water into a dirty or soiled drain. This could possibly be a separate built in feature but most likely will be a tub or shower drain if available. If that is not an option, a toilet may be used as a drain but either continuous flushing or a drain setting on the toilet needs to be employed.
  - Environmental services should be notified and either they will process the tub prior to take down or the procedure for take down and cleaning should be established and followed per facility guidelines.
  - For additional questions or concerns local health departments or infectious disease can be consulted as to best practice for draining and maintenance.

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Water Birth in the Hospital Setting
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References


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Appendix A

Web Resources on Water Birth

• ACNM’s position on water birth can be found at: http://www.midwife.org/Water-Birth-Resources
• Water Birth International: http://www.waterbirth.org
• Texas Midwifery Board’s Water Birth Protocols: https://www.dshs.state.tx.us/midwife/waterbirth/
• American College of Obstetrics and Gynecology joint statement: http://www.acog.org/Resources-And-Publications/Committee-Opinions/Committee-on-Obstetric-Practice/Immersion-in-Water-During-Labor-and-Delivery
• University of Utah College of Nursing Waterbirth presentation: http://nursing.utah.edu/clinical-services/Waterbirth.pdf

Receive Healthy Mom&Baby Magazine for Prenatal Classes

ICEA members can obtain AWHONN’s *Healthy Mom&Baby* magazines for distribution at prenatal classes by creating an account and requesting these magazines at www.bit.ly/hmbmags.

*Healthy Mom&Baby* media is AWHONN’s free, evidence-based, baby-friendly, and expert-authored patient education program in the form of a quarterly magazine, iPad app, flip-book, website, and social media. Find *Healthy Mom&Baby* online at www.Health4Mom.org

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**Baby Steps to Evidence Based Practice**

by Debra Henline Sullivan, PhD MSN RN CNE, Deborah Weatherspoon, PhD MSN RN CRNA COI, and Andrea Lynn Tennison, RNC-OB

**Abstract:** Childbirth educators strive to utilize current research and supported evidence as a basis for clinical decision making and client education. A directive, known as evidence-based practice (EBP), promotes positive patient outcomes and reduces morbidities, mortality, and medical errors. However, childbirth educators may encounter barriers to utilizing EBP, such as lack of support from their organization, resistance of colleagues, lack of knowledge about research, or research terminology. A seven-step process for EBP can simplify this process.

**Keywords:** childbirth education, evidence based practice, nursing education

Have you ever felt energized for change following a childbirth education conference or an informative article presenting new evidence pertinent to your practice? Perhaps you returned to the workplace only to find that your colleagues are not excited about making changes in policies or practice (Sullivan, 2013)? The use of research supported data, known as evidence-based practice (EBP), promotes positive patient outcomes and reduces morbidities, mortality, and medical errors. Even though most childbirth educators accept that it is their responsibility to utilize current research supported evidence as a basis for clinical decision making and client education, many encounter barriers to utilizing EBP. These barriers may include a lack of support from their organization, resistance of colleagues, lack of knowledge about research, or research terminology. This article examines those barriers and defines a process to improve the utilization and application of EBP for childbirth educators.

**Background**

Even when there is evidence of new safer practices based on EBP, implementation may seem challenging to childbirth educators who are reluctant to change common practices found within existing standard care (Morton, 2009). We are not the only healthcare professions who struggle with evidence based practice implementation. Melnyk, Fineout-Overholt, Gallagher-Ford, and Kaplan (2012) found that even though nurses believe in EBP, they still find barriers to EBP including resistance of colleagues, as well as nursing leadership. This is standard across all health care professions. The following discussion, a 7-step process for EBP will guide childbirth educators to the practice of utilizing evidence to reduce morbidities, mortality, and medical errors (Melynky et al., 2012).

To understand what is meant by EBP and to define it in relation to childbirth educators’ practice, a clear conceptual definition is needed. Sackett, Rosenberg, Gray, Haynes, and Richardson (1996) are credited with the first definition of evidence-based practice as “the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of the individual patient” (para 2). “A problem-solving approach that incorporates the best available scientific evidence, clinicians’ expertise, and patient’s preferences and values” (Fineout-Overholt, Melnyk, Stillwell, & Williamson, 2010, p. 41). These definitions provide a clear understanding of what is meant by EBP. In addition, there are models designed to guide implementation.

Several models and theories of EBP offer a framework for conducting EBP efforts (Polit & Beck, 2017). Per Polit and Beck (2017) three of the more famous models that have been updated to include EBP are the Diffusion of Innovation Theory by Rogers (1995), the Stetler Model of Research Utilization by Stetler (2001) and the Iowa Model by Titler et al. (2001). Melnyk and Fineout-Overholt (2005) synthesized many of the processes from previous theories and models to develop a very popular model titled the Advancing Research and Clinical Practice through Close Collaboration (ARCC) model. Melnyk, Fineout-Overholt, Stillwell, and Williams (2010) continued on next page
published an article that outlined seven sequential steps to follow EBP that are appropriate to utilize in childbirth education. These will be presented along with supplementary information in the following discussion. Throughout the discussion, we will use the topic of delayed cord clamping (DCC), as an example for application. This topic is chosen as it is a common one that may be asked by your clients during childbirth education activities.

Step 0
Within the organization, it is important to support a “spirit of inquiry - an ongoing curiosity about the best evidence to guide clinical decision-making.” (Melnyk, et al., 2009, p. 1). This spirit of inquiry, or culture, which promotes childbirth educators asking questions and entering discussions of practice issues, may lead to increased interest and application of EBP. A consideration at this point includes that it is important to know if your organization’s policies and practices reflect the most recent evidence. If they do not and changes are needed additional information is helpful. In the example, other questions might include whether there is an EBP committee, how to update policies and practices, and who to ask for guidance on EBP (Melnyk et al., 2009).

Considering the example of DCC, the current practice of immediate cord clamping at the time of delivery versus the practice of delayed cord clamping provides the basis for an EBP search and recommendation. This is an important topic, yet little has been done to investigate and incorporate change based on recent research in many organizations. The process begins by identifying some related questions:
1. What, if any, are the benefits of DCC for the newborn?
2. What, if any are the maternal benefits of DCC?
3. Is there a current best practice guideline for cord clamping at delivery?
4. Does DCC contribute to an increased rate of complications in the newborn?
5. What are the primary reasons for the resistance to this change in practice from the providers’ perspective?
6. What is the effect of DCC compared to immediately clamping the cord at birth on IVH?

Step 1 – The PICOT
In order to develop a clinical question into searchable terms, Melnyk et al. (2010) suggests a five-component acronym called PICOT which represents; population, intervention, comparison, outcome, and time. There are many PICOT question templates to help with formulating a PICOT question depending on the type of question (Polit & Beck, 2017).

The example of DCC will use a clinical intervention type question, the population (P) selected is the newborn patient who delivers in the hospital setting. The intervention (I) is delaying the initial umbilical cord clamping for at least two minutes after delivery. Comparison (C), is the current standard of practice being used which is the immediate clamping of the umbilical cord at delivery. The outcome (O) investigated is the rate of intraventricular hemorrhage in the population for both interventions. The time (T) is not considered. A template used for a treatment or intervention would work for this issue
• In _______(population[P]) what is the effect of _________(Intervention[I]) compared to __________ (Comparison[C]) on _________(Outcome[O]) (Polit & Beck, 2017, p.41)

Using these parameters, the PICOT question is as follows:
• In the newborn patient population (P), what is the effect of delaying cord clamping for at least two minutes after delivery (I) compared to immediate clamping at birth (C) on the rates of intraventricular hemorrhage (O)?

Step 2
Searching for the best evidence is step 2. With the use of the PICOT question the search terms or keywords are streamlined (Melynk et al., 2010). For the example, search terms related to population would be “newborn;” intervention would be “delayed cord clamping;” comparison would be “early cord clamping” and “immediate cord clamping;” and the outcome would be “intraventricular hemorrhage.”

When searching for articles relevant to your PICOT question, you are conducting a literature review. A literature review is an essential component of the research process. In order to address a clinical question, a researcher must be aware of the current state of knowledge on the topic (Polit & Beck, 2017). There is an extensive amount of health care literature, published in numerous forms on a daily basis, available to clinicians (Majid et al., 2011). A comprehensive literature review can help determine how to contribute to existing evidence, identify gaps in the current body of research, or facilitate interpretations of research findings after data analysis (Polit & Beck, 2017).

There are several approaches to a literature review, but with the plethora of information available today, it would be best to consider using specific databases to conduct your keyword search.

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Another resource being used is called point-of-care or “evidence summaries.” This new classification arose to address some problems associated with systematic reviews. They are time intensive to complete, often taking 6 months to 2 years to compose, and the high level of detail may create a barrier for healthcare providers at the point-of-care who needs a more concise report. In response, this new framework, evidence summaries, has been developed (Munn, Lockwood, and Moola, 2015). This framework is a type of rapid review (4-5 weeks) that is useful for improving practice (Munn et al., 2015). Evidence summaries are defined as “synopses that summarize existing international evidence on healthcare interventions or activities, and as with systematic reviews, standardization of methods is a significant marker of quality and reliability” (Munn et al., 2015, p. 132). Campbell, Umapathysivum, Xue, and Lockwood (2015) identified 22 resources where EBP point-of-care evidence summaries are found. The top EBP point-of-care providers were UpToDate, Nursing Reference Centre, Mosby’s Nursing Consult, BMJ Best Practice, and JBI COnNECT+ (Campbell et al., 2015). Childbirth educators may find these types of point-of-care evidence summaries very useful for finding recent evidence; however, some may require a paid subscription.

Step 3

After finding the literature that you will review, complete a rapid appraisal to determine which articles are most reliable, valid, relevant, and applicable to the PICOT question (Melynk et al., 2010). You should ask the following questions about each article:

- Are the study results valid?
- Are the results important?
- Will the results help me better care for my families? (Melynk et al., 2010).

After reviewing all of the articles that meet this criterion, the next step is to synthesize the studies to see if there are similar conclusions or contradictions related to PICOT topic (Melynk et al., 2010).

Here is an example of a paragraph in a literature review on DCC synthesizing information from a variety of resources: DCC was associated with improved hemodynamic status, decreased need for blood transfusions, and reduced incidence of IVH in the premature newborn (Bolstridge et al., 2016; Chiruvolu et al., 2015; Ghavam et al., 2014; Mercer et al., 2016; ACOG, 2017). Following a systematic review of several research studies conducted on the effectiveness of DCC, a determination was made that DCC decreased the incidence of IVH, necrotizing enterocolitis (NEC), and sepsis (Rabe, Diaz-Rosello, Duley, & Dowswell, 2012). Despite delaying resuscitation briefly, there was no difference in Apgar scores, resuscitation efforts, and newborn admission temperatures while implementing DCC (Bolstridge et al., 2016; Chiruvolu et al., 2015).

Step 4

After completing your literature review, it is time to decide if there is need for a practice change. There is no formula for this decision because many factors must be considered such as the researcher’s expertise, patient population needs, institutional, and clinical variables (Melynk et al., 2010).

An example of a recommendation statement for a practice change decision using the DCC example follows: The literature strongly supports a change in practice, offering substantial evidence to adopt the practice of DCC at delivery. The patient population at this organization would potentially benefit from this practice change and no significant adverse risk factors are reported. The organization’s research committee will make recommendations for policy changes.
Baby Steps to Evidence Based Practice

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Step 5

The fifth step will evaluate the outcomes resulting from the practice change. After implementation of any practice change it is recommended that the positive and negative outcomes be monitored (Melynk et al., 2010).

The DCC example will illustrate this step as follows for monitoring outcomes of the practice change. Better patient outcomes are associated with DCC including decreased need for transfusion due to anemia, better circulatory stability, less IVH (all grades) and a lower risk for NEC (Rabe et al., 2012). The current practice of immediate cord clamping is not supported by research evidence. Initially thought to improve maternal outcomes and reduce severe postpartum hemorrhage, immediate cord clamping became common practice without supportive evidence (Oddie & Rhodes, 2014). Although there is no current evidence available that suggest that immediate cord clamping is contraindicated, there is ample evidence to indicate that DCC improves patient outcomes and implementation in current practice is recommended.

Step 6

Dissemination of the EBP results is the last step. Sharing your findings with colleagues and other health care organizations will save needless duplication of effort (Melynk et al, 2010). Ideas for ways to disseminate information are through presentations at local, regional, and national conferences, and publications in organizational newsletters and peer reviewed journals. Think about presenting at the ICEA conference, perhaps a poster presentation?

Conclusion

Healthcare is a dynamic environment that requires childbirth educators to stay abreast of new research and incorporate the best evidence into their current practice, ultimately improving the quality of patient care and outcomes. It is important that all healthcare workers and educators keep practice guidelines up to date by seeking recent EBP recommendations and bringing them to the point of care. While the process may seem complicated and time consuming to the childbirth educator, using the provided seven steps outlined in this article can simplify the process of implementation. Even if you are a novice in leading EBP acquisition and implementation, this tool will provide sound guidance and support. And remember, when you begin something new, just take baby steps!

References


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In Practice Articles – These shorter articles (minimum 500 words) express an opinion, share a teaching technique, describe personal learning of readers, or describe a birth experience. Keep the content relevant to practitioners and make suggestions for best practice. Current references support evidence-based thinking or practice.

Feature Articles – Authors are asked to focus on the application of research findings to practice. Both original data-driven research and literature reviews (disseminating published research and providing suggestions for application) will be considered. Articles should be double spaced, four to twelve pages in length (not including title page, abstract, or references).

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Aquatic Exercise in Pregnancy

by Helen M. Binkley, PhD ATC CSCS NSCA-CPT FNSCA ATRIC, Jean L. Binkley, MSN FNP MED BSN-RN, and Stephanie L. Wise, MS ATC CSCS

Abstract: Women tend to experience a wide range of pregnancy-related symptoms; some of those symptoms may prevent or limit a woman's exercise. Exercise has been deemed safe for the mother and fetus. Aquatic exercise has been gaining traction as a go-to for physical activity for the many beneficial effects the aquatic environment has. Multiple options are available for aquatic exercise that can give the woman similar cardiovascular and strength effects as on land but without stress on the joints. Aquatics are a safe and effective way to continue to exercise while pregnant.

Keywords: Pregnancy, exercise, strength training, heart rate, hydrostatic pressure

The latest guidelines published by the American College of Obstetricians and Gynecologists (2015) emphasize the importance of exercise in uncomplicated pregnancy. Exercise during pregnancy is important not only for the mother but for the fetus as well. Many women frequently report feelings of low back pain secondary to the increased weight they are carrying, edema, and muscle spasms of the lower extremities. Aquatic exercise is gaining popularity due to the many advantages it has over traditional land-based exercise while decreasing the discomforts of pregnancy. In this article, we aim to describe the reasons why the aquatic environment is so beneficial as well as introduce different methods of exercise while in the water.

Exercise Benefits

It has long been known that exercise is beneficial. Research conducted on the effects of exercise during pregnancy in the past two decades has supported this knowledge. Many women experience some type of exercise-associated symptom (abdominal pain, breathlessness, leg cramping), but it is usually women who experience multiple symptoms who feel their physical activity is hindered (Andringa, Bardsley, Herring, & Yeo, 2013). With the woman's body going through a variety of changes including physiological, cardiovascular, and respiratory changes, continuing or starting a land-based exercise routine can be a difficult adaptation. This is why aquatic exercise has gained popularity over the years for the beneficial effects it provides both for the mother and fetus. Some may wonder if chemicals in pools can be harmful to the mother or fetus, but no study has yet to provide data that reports such effects on fetal growth, preterm birth, or congenital malformations (Juhl, Kogevinas, Anderson, Anderson, & Olsen, 2010).

The Properties of Water

For individuals who are seasoned exercisers, those just starting out, or those who have to alter their routine due to potential complications, the aquatic environment offers adaptability. Many properties of water exist that make it such an advantageous environment. These include hydrostatic pressure, buoyancy, and thermodynamics.

Hydrostatic pressure is defined as “…the pressure applied to immersed body” (Hersh, 2016). This pressure is proportional to the depth of immersion (Figure 1). The deeper the body or an extremity is submerged in water, the greater the pressure acting upon it. The pressure is exerted uniformly on all sides helping to drive the extravascular fluid into the intervascular space. In addition, hydrostatic pressure helps to enhance the diuresis effect. This property is beneficial to those women who are experiencing edema during their pregnancy. A single session of immersion in water significantly continued on next page
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Figure 1. Hydrostatic Pressure and Loading in the Aquatic Environment

Table 1. Aquatic Health and Safety Considerations

<table>
<thead>
<tr>
<th>Indications</th>
<th>Contraindications</th>
<th>Precautions</th>
<th>General Safety Tips</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Swelling and peripheral edema</td>
<td>General Aquatic Contraindications</td>
<td>General Aquatic Precautions</td>
<td>• May use aquatic shoes to help prevent slipping on the pool deck and prevent irritation of the feet</td>
</tr>
<tr>
<td>• Difficulty or pain with movement</td>
<td>• Fever</td>
<td>• Afraid of the water</td>
<td></td>
</tr>
<tr>
<td>• Decreased range of motion or mobility</td>
<td>• Infections</td>
<td>• Limited lung capacity</td>
<td></td>
</tr>
<tr>
<td>• Decreased strength or power</td>
<td>• Open wounds/incisions</td>
<td>• Diabetes</td>
<td></td>
</tr>
<tr>
<td>• Decreased balance or proprioception</td>
<td>• Contagious skin conditions</td>
<td>• Vestibular disorders</td>
<td></td>
</tr>
<tr>
<td>• Weight bearing restrictions on land</td>
<td>• Incontinence</td>
<td>• Impaired peripheral sensation</td>
<td></td>
</tr>
<tr>
<td>• Decreased conditioning levels due to inability to train on land</td>
<td>• Uncontrolled seizure or cardiac disorders</td>
<td>• Surgical incisions and open wounds with protective bandages</td>
<td></td>
</tr>
<tr>
<td>• Difficulty with heat dissipation on land</td>
<td>Pregnancy Contraindications</td>
<td>Pregnancy Precautions</td>
<td></td>
</tr>
<tr>
<td>• Lack of progress on traditional land programs or increase in symptoms</td>
<td>• Incompetent cervix</td>
<td>• Severe anemia</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Persistent vaginal bleeding</td>
<td>• Extreme morbid obesity</td>
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<tr>
<td></td>
<td>• Premature labor</td>
<td>• Intrauterine growth restrictions</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Pre-eclampsia</td>
<td>• Orthopedic limitations</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Placenta Previa</td>
<td>• Uncontrolled hypertension, seizure disorders</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Uncontrolled diabetes</td>
<td>• Maternal cardiac arrhythmia</td>
<td></td>
</tr>
</tbody>
</table>

reduced the edema in both legs (Hartmann & Huch, 2005), while static immersion alone also contributed to a decrease in leg volume (Kent, Gregor, Deardorff, & Katz, 1999).

Reduction in edema is a benefit of immersion in water

There is an increase of looseness in the joints during pregnancy because of the release of the hormone relaxin. Aquatic exercise has proved to be extremely beneficial in part to another property it has, buoyancy. Because buoyancy and gravity are antagonists, this floating is helpful to women who may need to adapt their exercise routine due to extra stress being placed on their joints during land-based exercise or who need a lower impact routine from the added anterior weight. Buoyancy helps to make exercises easier to perform compared to being on land.

Water surrounds the body during an aquatic workout and has a cooling effect. When performing land-based exercise, air does not produce a cooling effect as fast as water does. Water is an efficient conductor and transfers heat 25 times faster than air (Becker, 2009). This helps to protect the fetus from overheating. Mean body temperature, skin temperature, and rectal temperature all are affected by aquatic exercise. In a short-term exercise, mean temper...
ture decreased significantly compared to land exercise and decreased over time, rather than increased (McMurray, Katz, Meyer-Goodmin, & Cefalo, 1993).

Effects of the Aquatic Environment on Pregnancy

The biggest concern most women have about exercising while pregnant is the physical discomforts they may experience. The aquatic environment has been favorable for those women who experience these symptoms on a regular basis or those nearing the end of their pregnancy. Maternal discomforts were significantly reduced with those participating in the aquatic environment compared to those who had an increase in discomforts with no exercise during a 6 week program (Smith, 2002; Smith & Michel, 2005). Additionally, improvement in balance is an outcome of aquatic exercise. A woman’s sense of balance can be altered as early as 20 weeks and can continue until after delivery with rates of falls during pregnancy ranging between 13% (Jang, Hsiao, & Hsiao-Wechsler, 2008) to 25% (Butler, Colon, Druzin, & Rose, 2006). Pregnant women tend to have an increased stance width and anterior-posterior postural sway (Jang et al., 2008). An aquatic environment can help women work on their balance without the risk of falling and getting injured.

Cardiovascular Response

Cardiovascular and respiratory changes during pregnancy increase the heart rate, maximum oxygen consumption, stroke volume, and cardiac output. A decrease in lung capacity may require the mother to vary her routine and supplement with other aerobic activities. Complaints of breathlessness felt during exercise may explain why many women decreases or discontinue their exercise by 20 weeks’ gestation. The aquatic environment has allowed women to continue exercise in situations where land-based exercises would be ceased. Outcome characteristics of aquatic exercise include a decrease in heart rate, decrease in blood pressure, and improved cardiac output (Baciuk, Pereira, Cecatti, Braga, & Cavalcante, 2008; Katz, 2003).

Starting an Aquatic Exercise Program

It is important for the pregnant woman to consult her physician and determine if any contraindications exist (Table 1). Surprisingly, high-risk women on bed-rest who participated in an aquatic program showed an increase in the amniotic fluid as well as a longer length of gestation when compared to the control group (Sechrist, Tiongco, Whisner, & Geddie, 2015). It is recommended, as with any exercise, to cease activity if any maternal symptoms such as pain present. The mother should be instructed on the importance of proper hydration during aquatic exercise. A water temperature of 83-86°F (28-30°C) is usually recommended (Aquatic Exercise Association, 2017; Hartmann & Bung, 1999).

Monitoring Heart Rate

Although most providers (64%) still tell expecting women to limit their heart rate to no more than 140 beats per minute, this guideline may no longer be needed (Evenson & Bradley, 2010). A formula known as the Karvonen method (220-age) was a general guide that included calculating the resting heart rate and multiplying the target heart rate percentage to achieve a range. The aquatic environment does not affect an individual as much as land-based exercise, and because a person’s heart rate lowers while in the water, a new formula had to be created to adapt to this environment. This formula is similar to the Karvonen method but with the addition of calculating the Aquatic heart rate deduction. To do so, a one-minute heart rate is taken after standing out of the water for three minutes and then another one-minute heart rate taken after standing in the water for three minutes at armpit depth (Chewning, Krist, & Poli de Figueiredo, 2009). These are then subtracted to get the aquatic deduction (Chewning et al., 2009). The aquatic deduction is then included in the Karvonen formula as seen below:

\[
\frac{(220 - \text{Age} - \text{Resting Heart Rate} - \text{Aquatic Deduction}) \times \text{Desired Intensity Percentage}}{+ \text{Resting Heart Rate}} \text{ (Chewning et al., 2009)}
\]

Exercise Options

Multiple options exist for the woman opting to start with aquatic exercise. Just like a land-based program, an aquatic program has multiple components and depends on the type of activity chosen (Table 2). The first is aerobic exercise (Figure 2), either individually or in a group-type class; this continuous exercise will be of moderate intensity. Emphasis may be placed more on the postural and core muscles and include slower transition times. The addition continued on next page
of aquatic equipment can enhance the resistance felt while in the water as well as make it more fun for the participant (Figure 3). Many exercises can utilize various pieces of equipment.

Another option for women is the use of an underwater cycle. Just like with land-based cycling, underwater cycling is a non-weight bearing exercise but with better benefits. In comparison to land-based cycling at the same intensity, underwater cycling produced a lower maternal heart rate, lower systolic blood pressure, lower core temperature, and higher urine volumes (Katz, McMurray, Goodwin, & Cefalo, 1990).

Probably the most obvious choice of exercise in the water is swimming. Regular lap swimming is a great aerobic workout. Maximal oxygen uptake is lower than with land-based exercise (McMurray, Hackney, Katz, Gall, & Watson, 1991; Watson, Katz, Hackney, Gall, & McMurray, 1991) and also can produce a significant training effect (Lynch et al., 2007).

Resistance training can also be performed in the aquatic environment. Many factors can help change the amount of

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**Table 2. Components of a Workout**

<table>
<thead>
<tr>
<th>WARM-UP</th>
<th>CONDITIONING PHASE TRAINING</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 5-10 minutes, to transition from rest to exercise</td>
<td>• 10-50 minutes, depends on level and goal of training</td>
</tr>
<tr>
<td>• Increases blood flow and metabolic rate</td>
<td>• May include one or all three types of training listed below</td>
</tr>
<tr>
<td>• Increases connective tissue temperature and extensibility</td>
<td>• Taught in continuous, interval or circuit formats</td>
</tr>
<tr>
<td>• Prepares body for muscular performance</td>
<td></td>
</tr>
</tbody>
</table>

**Cardiorespiratory Endurance**

<table>
<thead>
<tr>
<th>Training Types/Formats</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Dance aerobics</td>
</tr>
<tr>
<td>• Water striding or jogging</td>
</tr>
<tr>
<td>• Kickboxing</td>
</tr>
<tr>
<td>• Deep-water training</td>
</tr>
<tr>
<td>• Boot Camp</td>
</tr>
<tr>
<td>• Aquatic Step</td>
</tr>
<tr>
<td>• Aquatic Cycle</td>
</tr>
<tr>
<td>• Aquatic Treadmill</td>
</tr>
</tbody>
</table>

**Muscular Fitness**

<table>
<thead>
<tr>
<th>Training Types/Formats</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Muscle isolation activities</td>
</tr>
<tr>
<td>• Targeting specific goals of muscular endurance, strength or power</td>
</tr>
<tr>
<td>• Targeting core musculature and posture</td>
</tr>
<tr>
<td>• Incorporate muscle toning into multiple formats</td>
</tr>
</tbody>
</table>

**Muscular Flexibility/Range of Motion**

<table>
<thead>
<tr>
<th>Training Types/Formats</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Ai Chi programs and/or adapted Tai Chi programs</td>
</tr>
<tr>
<td>• Adapted Yoga programs</td>
</tr>
<tr>
<td>• Adapted Pilates programs</td>
</tr>
<tr>
<td>• Equipment assisted and resisted flexibility</td>
</tr>
<tr>
<td>• Arthritis/Fibromyalgia programs</td>
</tr>
</tbody>
</table>

**COOL-DOWN**

<p>| |</p>
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• 5-10 minutes, to transition from exercise to rest</td>
</tr>
<tr>
<td>• Allows for respiratory and circulatory adjustments, reducing negative effects of suddenly stopping activity</td>
</tr>
<tr>
<td>• Allows for dissipation of body heat</td>
</tr>
</tbody>
</table>
resistance one experiences while in the water including the pace or cadence of the movement, length of extremity used, the surface area, and amount of water turbulence, to name a few. With the addition of equipment, such as weights (Figures 4A and 4B), flotation belts, tubing (Figure 5), and drag equipment (Figures 6A and 6B), even more resistance can be added. The goals for resistance training in the aquatic environment are comparable to those on land (Table 3). With progressive resistance exercise, strength gains can be seen in the water with the addition of lean muscle mass and some hypertrophic adaptations (Pöyhönen et al., 2002).

Lastly, aqua yoga is gaining popularity as well for the expecting mother. Yoga can help with balance and stability, core strength, flexibility, pregnancy-related symptoms, stress reduction, and mental preparation for labor and delivery. Fluid movements are used usually within the shallow waters of the pool. Just as the block is used to achieve proper form continues on next page

### Table 3. Aquatic Strength Training vs. Traditional Strength Training

<table>
<thead>
<tr>
<th>Aquatic Strength Training</th>
<th>Traditional Strength Training</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Aquatic Resistance</strong></td>
<td><strong>Endurance</strong></td>
</tr>
<tr>
<td>Intensity</td>
<td></td>
</tr>
<tr>
<td>Pace or cadence of movement</td>
<td>↑ speed of movement =</td>
</tr>
<tr>
<td></td>
<td>↑ resistance</td>
</tr>
<tr>
<td>Length of extremity used</td>
<td>↑ length of lever arm =</td>
</tr>
<tr>
<td></td>
<td>↑ resistance</td>
</tr>
<tr>
<td>Surface Area; Size of resistance device</td>
<td>↑ Surface area = ↑ resistance</td>
</tr>
<tr>
<td>Water Turbulence</td>
<td>↑ turbulence = ↑ resistance</td>
</tr>
<tr>
<td>Directional Movements</td>
<td>↑ amount of directional changes =</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Repetitions</strong></td>
<td>Varies on goal; similar to land-based strength training</td>
</tr>
<tr>
<td><strong>Sets</strong></td>
<td>2 - 6 depending on goal</td>
</tr>
<tr>
<td><strong>Recovery</strong></td>
<td>≤ 30 sec to 5 min depending on goal</td>
</tr>
</tbody>
</table>

RM = repetition maximum
Aquatic Exercise in Pregnancy continued from previous page

with land-based yoga, noodles and such equipment can be utilized to support the body in various positions while in the water. While numerous studies have shown the effects of yoga on various characteristics including pregnancy, no research can be found specifically on aqua yoga and the effects on pregnancy. Although unknown if aqua yoga confers similar benefits as land-based yoga, Babbar, Parks-Savage, and Chauhan (2012) indicated reduction in pregnancy discomforts, decreased stress, improved quality of life, and reduction in preterm labor in women who participated in prenatal land-based yoga.

Conclusion

As there are a great number of benefits to exercising during pregnancy, the aquatic environment provides even more benefits due to the characteristics of that environment. For those individuals looking to start a gentler exercise regimen, continue with their current routine, or modify due to the demands of pregnancy, the aquatic environment is a safe and effective way to incorporate physical activity.

References


Helen Binkley has been an athletic trainer, strength and conditioning specialist, personal trainer, aquatic specialist, and educator for over 30 years. She has published many articles relating to exercise, training, and rehabilitation of injuries. Helen has held local, regional and national positions within the various professional organizations related to her credentials.

Jean Binkley has 28 years of nursing and nurse practitioner experience in a variety of settings including, but not limited to, military, medical-surgical, psychiatric, and family practice.

Stephanie Wise has 8 years of experience as an Athletic Trainer working with middle and high school athletes. She has also developed sports training programs with multiple sports at the high school level, and was an experienced exerciser during her pregnancy.
Abstract: With the continual demand for improvement in health outcomes while reducing costs, Evidence based practice (EBP) has taken priority for health care facilities. EBP is the direct application of empirical research and dissemination into real world clinical settings. Around the globe, healthcare professionals, facilities, and administrators support and promote use of EBP to improve clinical practice and patient outcomes. While there are policy and administrative initiatives to support use of EBP, gaps in utilization and barriers to implementing EBP exist. The purpose of this article is to provide the reader with essential elements of EBP through definition, to compare and contrast EBP and EBN, review historical development, barriers and gaps, and explore steps in how to translate evidence into practice.

Keywords: evidence based practice, evidence based medicine, health care, nursing

Introduction

Evidence Based Practice (EBP) is the implementation of the best research evidence, combined with patient values, and integration of clinical expertise to address a clinical problem and one of the primary core competencies by the Institute of Medicine (IOM) (Greiner & Knebel, 2003). Research studies are conducted to answer clinical questions, facilitate solving problems pertinent to patient care, and ultimately improve outcomes (Polit & Beck, 2014). Measuring the impact of patient care is the primary concern among current researchers, policy makers, and patient care specialists (Oliver, Innovar, Lorenz, Woodman, & Thomas, 2014). With the increase in research evidence over the past 30 years, the expectation is for clinicians and administrators to make well-informed decisions about healthcare through preparation and distribution of systematic reviews on health interventions (Grove, Gray, & Burns, 2015).

The World Health Organization (WHO) provides evidence based clinical guidelines to improve health around the world (WHO, 2012). Research studies support EBP improves quality, safety, and outcomes and reduces costs (Melnyk & Fineout-Overholt, 2015). The IOM roundtable on evidence-based medicine established goals to ensure that the best evidence available will support 90 percent of clinical decisions by 2020, whereby EBP will transform and improve healthcare outcomes through clinical effectiveness, quality, safety, and innovations (Olsen, Goolsby, & McGinnis, 2009). EBP dovetails with the Institute for Healthcare Improvement’s (IHI, 2017) initiative, titled Triple Aim, to improve and optimize the healthcare system by implementing quality measures (Melnyk & Fineout-Overholt, 2015). The Triple Aim’s objective is to improve patient health, increase quality of care, and reduce overall health care costs through implementation of EBP (IHI, 2017). Additionally, Triple Aim has been expanded to include a fourth goal to improve clinician satisfaction, thereby decreasing burnout (Bodenheimer & Sinsky, 2014).

Definitions

Melnyk and Fineout-Overholt (2015) identified EBP as an appraisal and critique of recent and significant research to address a clinical question. Evidence consists of synthesizing results from research studies, applying clinical expertise, and incorporating consideration for individual patient preferences (Melnyk & Fineout-Overholt, 2015). Despite EBP being the cornerstone of modern healthcare practice, continued on next page
Evidence based medicine (EBM) and evidence based nursing (EBN) are also delineated in the literature as separate roles and functions for their discipline. EBN has been differentiated from EBP regarding unique roles of nursing, specifically around patient care. Scott and McSherry (2008) conducted a review of EBP, EBM, and EBN in order to determine if there were operational definitions in the literature, and summarized that EBN can be defined as an ongoing process of providing patient care that incorporates evidence, nursing theory, and clinical expertise. Key elements were drawn out from scholarly articles that defined EBP and EBN such as identifying, evaluating, and applying of the best research evidence (Scott & McSherry, 2008). Additional elements include evaluation of care, clinical expertise, patient involvement, and relation to theory.

Background and history of EBP. In the 1970s initiatives to improve patient care and focus on research findings were implemented, resulting in a significant body of research utilization (Burns et al., 2015; Polit & Beck, 2014). Over the next decade, national development and visibility increased funding for training, research, and connection to patient outcomes. At Oxford University, Dr. Cochrane took a clinical issue and started a systematic review in the 1990s, establishing the Cochrane movement, now the Cochrane collaborative, in 1993 (Scott & McSherry, 2008). The overarching goal was to help providers make better decisions in health care by increasing a wide range of evidence and disseminating clinical systematic reviews (Polit & Beck, 2014). The early models of EBM relied on research evidence, clinical expertise, and patient preferences; however, they did not incorporate traditional elements of clinical decision-making. Haynes, Devereaux, and Guyatt (2002) proposed a newer model that takes into account the above mentioned, while also considering the clinical state and circumstances of the patient, thus creating a more patient centric model.

Barriers to EBP. Implementation of evidence and practice guidelines is influenced by knowledge, behaviors, and attitudes of administrators and clinicians (Lang, Wyer, & Haynes, 2007; Sherriff, Wallis, & Chaboyer, 2007). Some of the current issues around use of EBP include lack of high quality studies, lack of study replication, limited time to implement EBP guidelines, lack of skilled researchers, and limitations with communication and disseminating findings (Brown, Wickline, Ecoff, & Glaser, 2008; Burns et al., 2015; Johnston, et al., 2016; Melnyk & Fineout-Overholt, 2015). Majid, et al. (2011) conducted a study in Singapore to determine nurses’ perceptions, knowledge, and barriers to implementing EBP. Results from a survey tool revealed that 64 percent of nurses expressed positive attitudes toward EBP and moderate levels of skills regarding self-efficacy of EBP.

Table 1

<table>
<thead>
<tr>
<th>Melynk &amp; Fineout-Overholt (2015)</th>
<th>Iowa Model (Titler, 2008)</th>
<th>CFIR (Damshroder et al., 2009)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foster a culture and environment of inquiry toward EBP</td>
<td>Identify a problem-focused or a knowledge-focused area that in need of a change.</td>
<td>Intervention characteristics that include perception of key stakeholders whether the intervention can be implemented, adaptability, complexity, and cost.</td>
</tr>
<tr>
<td>Ask clinical questions in PICOT format</td>
<td>Search, review, and critique relevant literature.</td>
<td>Outer setting, referring to patient needs and policies.</td>
</tr>
<tr>
<td>Search for the most current, relevant, and best evidence</td>
<td>Determine if sufficient evidence is identified and warrants a change in practice</td>
<td>Inner settings that includes goals, priorities, culture, and climate of a facility.</td>
</tr>
<tr>
<td>Critically appraise evidence via rapid appraisal and synthesis</td>
<td>Implement a change in practice and monitor the outcomes.</td>
<td>Individual characteristics related to knowledge, skills, self-efficacy, and ability to implement research.</td>
</tr>
<tr>
<td>Evaluate and assess outcomes.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disseminate the outcomes of EBP implementation</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
knowledge; however, Majid et al. highlighted three primary barriers to implementing EBP as increased workload, lack of skill to interpret statistical research, and limited ability to understand terms in journal articles.

Systematic reviews help to facilitate collection and assessment of research evidence; however, studies reveal delays in research reports and length of time to complete a review limits access to the current evidence. Palese, Coletti, and Dante (2013) conducted a retrospective study to describe publication efficiency between data collection and dissemination of results. Palese et al. revealed it took an average of 981 days (2.5–3 years) from data collection to manuscript publication, with systematic reviews and meta analyses being the fastest (between 1.3 and 1.9 years). Palese et al. (2013) concluded the delay in publication is related to multiple factors such as the time occurring between each step of publication, from data collection to article submission, and between acceptance and publication. Although approximately 60 to 70 rapid reviews are published each month, point-of-care providers expect expedited access, increased transparency, and rigor; therefore, Munn, Lockwood, and Moola (2015) recommended rapid reviews methods. In order to meet the needs of clinicians to implement the most current research, rapid reviews are a more streamlined version of systematic reviews and have become increasingly popular.

Although EBP is hailed as the foundation of modern health system, multiple gaps exist between researchers, clinicians, administrators, and policy makers. Knowledge transition of evidence, from researcher to clinical practice, is facilitated through developed roles (Kitson & Harvey, 2016). Using the Promoting Action on Research Implementation in Health Services (PARTHS) framework, Kitson and Harvey (2016) recommended facilitators consist of beginner, experienced, and expert levels. Kim et al. (2013) concluded in a quasi-experimental study, facilities where EBP mentors and champions are available to staff experience effective gains in knowledge, skills, and abilities associated with EBP.

Implementing EBP. Successful application of EBP is determined by participation from policy makers, administrators, practitioners, and researchers (Burns et al., 2015). The results of many research studies do not end up being converted into meaningful outcomes for patient care and lack dissemination (Damshroder, et al., 2009; Harvey & Kitson, 2015). Translating research evidence into policy and practice is a complex and challenging process that requires a culture of quality improvement and skills to implement from beginning to end (Harvey & Kitson, 2015). Oliver et al. (2014) stated that the highest facilitator of evidence implementation existed when policymakers and researchers collaborate together. Brownson and Jones (2009) highlighted the need to develop partnerships with practice agencies, policy makers, and educational organizations to support development of EBP.
Implementation of research evidence into practice can be facilitated through use of the effective models (Table 1) such as Melynk and Fineout-Overholt’s (2015) seven step process, the Iowa Model of EBP (Titler, 2008), and the Consolidated Framework for Implementation Research (CFIR) (Damshroder et al., 2009).

These models provide a systematic approach to implementation of EBP; however, they have slight differences among them. The Iowa model is built on the perspective of clinicians and clinical aspects of delivery (Titler, 2008), whereas Melynk and Fineout-Overholt (2015) and CFIR (Damshroder et al., 2009) incorporate culture and climate of key stakeholders in a facility. The following sections in this paper will lay out specific steps necessary to lay the groundwork for applying evidence into practice (Figure 1).

Culture of support. Through the use of research studies, clinical guidelines, clinical expertise, patient preferences, existing knowledge, and local circumstances, integration of EBP into a facility is enhanced. Koehn and Lehman (2008) denoted the need to assess the culture of an organization and provide education support prior to implementing new interventions. Brownson and Jones (2009) iterated that decisions to make changes in organizations do not occur rapidly but often through collaboration between clinicians, community needs, leadership, and available resources. Houser (2018) stated the importance in creating an environment that supports an inquisitive approach to clinical care through education and training. Those involved in patient care should be directly involved in selecting priority areas for patient outcome improvements by asking specific clinical questions (Titler, 2008).

Asking the question. An effective research question will direct focus the research process to answer a specific question (Houser, 2018). While research questions can take the form of descriptive inquiry (applied to qualitative studies) or analytic inquiry (applied to quantitative studies), EBP primarily focuses on interventions that will solve a clinical issue and improve outcomes (Grove et al., 2015). EBP research questions are stated as a clinical query, using the following format: Patient population, Intervention, Comparison, Outcome, and Time frame (optional) (PICOT) (Melynk & Fineout-Overholt, 2015). An effective PICOT question will focus on a clinical issue to be studied and guide the search for evidence.

Finding the evidence. Research evidence includes findings from original studies, systematic review summaries and conclusions, and evidence based practice guidelines (Brown, 2012). In order to save time and sift through the plethora of research studies, experts and clinicians will use EBP guidelines (Brown, 2012; Holly, Salmond, & Saimbert, 2012); however, guidelines often do not consist of the most current research, and having good search skills is critical to implementation of EBP (Polit & Beck, 2014). Searching for research articles requires use of bibliographic databases that consist of interdisciplinary and peer reviewed research (Table 2), such as Cumulative Index to Nursing Allied Health Literature (CINAHL), Pubmed, Medical Literature Online (MEDLINE), and PsycINFO.

Peer review. The gold standard of ensuring quality is the application of peer review process for article publication, a necessary step in dissemination of material (Price, 2014). Peer reviewed journals, also called refereed journals, characteristically publish higher quality articles (Burns et al., 2015). Prior to being published, the author of an article will submit it to the journal editor, who will forward it onto experts in the field, where it will be subjected to a peer review process. Peer reviewers consist of expert peers and colleagues, who formally review author material to guarantee quality, accuracy, and clarity of scholarly writing.

Communicating scientific material is essential in establishing evidence based practice; however, increasing pressure to publish and expanding open access sources and web blogs has led to changes from traditional journal refereed system, with increased demand to evolve and become transparent (Fresco-Santalla & Hernández-Pérez, 2014). To determine if articles follow peer review protocols, look for the following information: listed authors with education credentials, a detailed abstract about the article, affiliation with an organization or university, and reference list. Evidence based knowledge begins with summaries of original research studies, which are synthesized into systematic reviews, and finally used to develop practice guidelines (Polit & Beck, 2014).

Critical appraisal. As mentioned previously, application of peer review ensures quality; therefore, searching for evidence and rigorous studies includes knowing the difference between scholarly and popular periodicals during the search process. Once articles have been located, the process of critiquing them for relevance and rigor begin. Often there is a paucity of evidence on a clinical problem, identifying a gap in the literature. The best evidence is identified as methodologically appropriate, rigorous, and clinically relevant (Polit & Beck, 2014). With appropriate methodology, researchers employ the best method to answer a specific question, whether it is quantitative or qualitative. When looking at a research report, identify the purpose of the study, sample size, reliability and validity of measures, data

continued on next page
# Table 2: Resources for Evidence Based Databases and National Guideline Clearinghouse

<table>
<thead>
<tr>
<th>Resource</th>
<th>Web Link</th>
<th>Summary</th>
</tr>
</thead>
</table>
analysis techniques, ethical considerations, and practical applications (Melynk & Fineout-Overholt, 2015). When reviewing studies, critically appraise the hierarchy or level of rigor. Systematic reviews are considered the most rigorous, then experimental studies, also called Random Control Trials (RCT), followed by quasi experimental, cohort, cross sectional, qualitative, and case studies (Polit & Beck, 2014).

Applying evidence to practice. The final step in EBP is implementing into clinical practice. As previously mentioned, this requires collaboration from policy makers, administrators, researchers, and clinicians. The process of applying research and implementing EBP begins by recognizing a clinical concern that can be solved through application of evidence (Houser, 2018). Melynk and Fineout-Overholt (2015) described strategies to implement EBP into the clinical environment through the following: establishing formal teams, disseminating evidence, developing clinical tools, completing pilot tests, establishing a timeline for implementation, and celebrating success. While there is no one specific strategy or model that will work in all cases, Houser (2018), Melynk and Fineout-Overholt (2015), and Titler (2008) recommended focusing on an organized process from beginning to end.

Discussion

With continual focus on improving health outcomes, management of chronic illness, and controlling budgetary responsibilities, EBP is an influential force that guides healthcare delivery (Titler, 2008). The primary focus of EBP is to improve health outcomes and quality of life (Kane & Radosevich, 2011). Quality improvement is the foundation of EBP, focusing on accountability, financial decisions, and an increased knowledge base of medicine. As discussed in this article, it is necessary for institutions to collaborate with policy makers, researchers, and clinicians to establish a culture supportive of EBP. EBP is supported through confirmation of results through replication in different clients and settings and demonstration of similar patterns of results, ultimately leading to stronger evidence base for practice (Polit & Beck, 2014). With a greater emphasis on systematic reviews and integrative reviews, stakeholders need to understand the steps to establish EBP starting by identification of a clinical issue and writing a PICOT style question to focus research. To ensure quality, research studies and systematic reviews should be critiqued to determine the scope the evidence. Finally, new interventions should be implemented, with dissemination of outcomes (Brownson & Jones, 2009; Melynk & Fineholt-Overholt, 2015).

Implications

Application of evidence into practice provides the basis for safer, more effective, and more efficient patient care practice areas. In this era of accountability, the link between EBP and outcomes is a priority for policymakers and healthcare facilities. The ultimate goal is to instill a culture of continual quality improvement in patient outcomes, reducing overall health care costs. With government agencies and policy makers promoting EBP, facilities are motivated to improve outcomes, increase patient and staff satisfaction, and seek status recognition. It takes a multifaceted process of knowledge formation and dissemination, involving multiple systems and stakeholders, to effectively implement EBP.

Childbirth Educators (CBE) are in a unique role to provide education, support, clinical expertise as they advocate for childbearing families during the prenatal and perinatal period. Gaining an understanding of the essentials of EBP will assist and give CBE the tools to present the most current and relevant evidence with a focus on improving family wellness and health outcomes. This will prepare CBE to develop a link between traditional practice and current evidence. While dissemination of best practice includes combining use of evidence with practice, the first place to begin is by evaluating decision-making and keeping an open mind to changes. Asking questions about acceptable levels of quality education, screening tools, and resources for CBE professionals’. Incorporating EBP includes a process of search strategies, synthesizing quality studies, and integrating studies with clinical expertise and specific patient needs. The benefits of EBP are essential to highlight effective education and treatments, build evidence to support the CBE role in advocating family centered care, and demonstrate value of CBE as a member of the health care team.

References


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**Poster Presentations:**
A Great Way to Share Your Evidence-Based Knowledge

by Mary Alice Sawaya, PhD RN CNE

**Abstract:** To promote the translation of research into evidence based practice, health care professionals need to communicate findings from all types of research to enhance clinical decision making. However, many may be intimidated by the prospect of a podium presentation. A poster presentation can be a great way to communicate findings without the anxiety of speaking to a large group. Despite many resources available on creating a poster, there remains a lack of confidence among nurses and doulas on how to create a powerful poster. In an effort to assist in translating evidence to practice, this article provides the beginner with a guide on how to create a compelling poster for presentation at a conference.

Keywords: poster presentation, guide to poster presentation, research findings

A Guide to Poster Presentations

Evidence based practice (EBP) has been defined by Houser (2018) as “the use of the best scientific evidence, integrated with clinical experience and incorporating patient values and preferences in the process of professional nursing care” (p. 481). Implicit in this definition is a relationship between scientific evidence, clinical experience, and patient preferences in order for EBP to be achieved. Research has demonstrated that if EBP can be implemented patient outcomes increase while patient care costs decrease (Emparanza, Cabella, & Burl, 2015; Melnyk, Fineout-Overholt, Gallagher-Ford, & Kaplan, 2012; Spruce, 2015)

This raises the question of how EBP can be implemented at all levels to promote quality patient outcomes. A partial answer is to communicate the findings. Without communication of research findings, it is unlikely that any of us will ever learn about the best scientific evidence to support practice. There are several ways to communicate research findings: peer reviewed journal articles and podium or poster presentations at conferences. This article will focus on the least intimidating of the communication methods: poster presentations.

Where to Start

The first step is to find a conference that is seeking abstracts for poster presentations. Many conferences will post a “Call for Abstracts” with their conference marketing materials. Typically, this section will contain information about the topics requested, date and time of the poster presentation during the conference, and whether the poster is a table top or a wall hanging presentation. Table top posters are generally printed on trifold and are capable of standing alone on a table top, while hanging posters will vary in size but are commonly printed 48 by 60 inches. It is important to determine which type of poster display will be available before planning a poster presentation.

The Basic Components of a Poster

Poster content typically includes the following: a title, institutional affiliation, author information, abstract, background/literature review, research questions, methods, results, discussion, limitations, implications, acknowledgements, and contact information.

Title

Poster titles should be short, but they should also convey exactly what the poster is about. The title should catch
the eye of the reader in a way that will make them want to stop and talk about the poster.

Institutional Affiliation/Author Information
  Identification of the associated institutions is often important to present. This can be accomplished by a line under the title or through a graphic logo displayed on both sides of the title. All authors should be listed with any academic credentials. The primary investigator is generally listed first with other investigators in alphabetical order.

Abstract
  Abstracts are considered optional in poster presentations because the poster is really an outline of the work. It is helpful to prepare an abstract, as many refereed conferences use the abstract to publish in the conference materials. Abstracts are short overviews of what is being presented.

Background/Literature Review
  This section of the poster should clearly identify why the poster was needed or why a study was conducted, what was done, what is new, and who may benefit from the study. Hypotheses for a study should be presented here along with specific research questions, if applicable.

Research Questions
  Research questions can be a stand-alone section or included in the introduction section. This is the question of what knowledge gap inspired the literature review or study.

Methods
  The methodology section of the poster should summarize the characteristics of the research such as sample size, gender, age range, and ethnic or racial characteristics. If the poster is about a technique or new idea or theory, include here where and how the literature review was done. The procedure on how any data was collected should also be described along with the definition of the variables and data collection tools. It is preferred to identify reliability of collection tools if available. If this poster represents an actual study, Institutional Review Board (Human Subjects Protection) is required and needs to be stated.

Results
  Data analysis is discussed in the results section. This should include the statistical tests used and the rationale for those tests. The actual data or findings can be presented in tables or bullet style. If this is a new technique or idea, this area represents potential outcomes and expected outcomes.
ineffective design. Search terms such as “poster presentation tips,” “poster designs,” and “effective posters” will all yield hundreds of hits.

Conclusion
Poster presentations are important to evidence based practice because although there are many ways to communicate findings of research, a poster presentation can be an effective and less intimidating manner for the novice practitioner or researcher to share work with colleagues (Houser, 2018). The Institute of Medicine (IOM) has challenged nursing to base practice on evidence from research (Stevens, 2013), and the poster presentation is one opportunity for communicating current evidence based practices for any professional providing care for the childbearing family. All of us caring for the childbearing family can conduct research, share ideas, and communicate findings in a variety of ways before the information can be practiced at the bedside.

References

Mary Alice Sawaya PhD, RN, CNE is a Professor at Metropolitan State University of Denver in Denver, Colorado. She has been a Registered Nurse for 36 years and has 30 years of experience in higher education.

Coming Soon from ICEA – New Educational Tools

The ICEA Board of Directors is extremely pleased to announce two new evidence-based Position Papers that will soon be available on the ICEA website.

Readers will soon be able to examine the facts about “Safe Infant Sleep” and “Education of Pregnant Families on Harmful Environmental Substances”. Written by content experts Linda J. Smith MPH, IBCLC and Diane Wiersinger, MS, IBCLC, and Donna Walls BSN, RN, ICCE, IBCLC, ANLC respectively, these two position papers will enhance any birth professional’s practice.

ICEA recognizes your need for tools and are committed to provide the highest quality tools.

Safe Infant Sleep: ICEA recognizes that most breastfeeding mothers share sleep with their babies at least some of the time. All expectant parents should be given evidence-based information on normal maternal and infant physiology, behaviors surrounding feeding and sleep, and on naptime and nighttime safety in order to make informed decisions about where their babies will sleep.

Education of Pregnant Families on Harmful Environmental Substances: The International Childbirth Education Association recognizes the need to provide evidence-based education to expectant and new parents on strategies to minimize the harmful effects of harmful environmental chemicals and toxins to the developing fetus, the pregnant woman and the family.

For more information, please visit our website at www.icea.org.

International Childbirth Education Association
The Politics of Maternity
by Mander, R. & Murphy-Lawless, J.
reviewed by Rebecca Lane Bone, MSN RN CNE

This book examines the political realm of maternity services, in particular those offered within the United Kingdom, and sheds light on how woman-centered care has been marginalized internationally. The central themes are the significant role that medicalization has played in controlling the professionalization of midwifery, and autonomy of the midwife in assisting the woman with natural birthing. The authors explain how critical factors such as minimized internal support for midwifery services and the external paternalistic dominance paramount within health care systems have eroded the power of the midwife, along with the right of self-determination among women of childbearing age.

The book begins with a brief historical overview of maternity care within the United Kingdom focusing on the statutory changes that have led to the demise of midwifery services. Among the changes mentioned succinctly are the new interoccupational groups that have replaced the professional nature of the midwife. Maternal morbidity and mortality is examined as the push for centralization of birthing within hospital maternity wards, and the persuasion by medical professionals for the election of caesarean deliveries continues to rise, furthering governmental regulatory interference with midwifery practice. The authors conclude by discussing how midwives and women seeking maternal health services must collaboratively develop relational autonomy that can coexist with continued paternalistic hegemony.

This book is a “must read” for all health care professionals, in particularly individuals seeking professional careers in midwifery because of the succinct insight into the political nature dominating this practice discipline. As all marginalized populations suffer from the inequalities of health services, the authors pinpoint specifically how women are affected which richly illustrates the reality that women’s health continues to remain at the bottom of the political agenda.

Examining maternal care services from a globalized perspective provides a comparative view on assumptions regarding health care in general. For example, hegemony within health care is not confined to maternal services. Rather, oppression in accessing and receiving quality services is a commonality frequently experienced within all marginalized populations experiencing a variety of physical and mental conditions. While this book serves as an excellent “eye opener” to the realities surrounding maternal care, it’s content is written in the English style using terminology and spelling uncommon to other languages and cultures. This weakness, although slight, makes for extended reading requiring supplemental resources to decipher specific meanings of terms used. In addition, available in varying formats, the new hardcover cost is rather pricey.

Rebecca Lane Bone is an Assistant Professor within the School of Nursing at Tennessee State University where she specializes in medical-surgical nursing. She is currently a doctoral student at Capella University in the Doctor of Education Program and has developed an interest in gaining greater understanding of the consequences of globalization and its impact on education and health care.

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Creating and Marketing Your Birth-related Business

by Livingston, C. and Livingston, H.

reviewed by Delphine Asonfac Burdick, RN MSN CEO at Home Care Preference

Based on information from Livingston and Livingston’s Creating and Marketing Your Birth-related Business, there is a great similarity between birthing babies and birthing entrepreneurs. The authors provide a step-by-step process for turning an entrepreneurial idea into a business. The book touches on important start-up business aspects such as mentoring, developing a business plan, branding, marketing, legal entity, patterning, and running the business. The authors not only emphasize the importance of developing a business plan and its financial benefits, but they also advise on the danger of running a business without one. The book offers good guidance on all aspects of developing and marketing a new business in general.

The authors stressed the importance of self-care when running a business. Marketing the business in multiple forms of media such as websites, blogs, Facebook, and Twitter is a great marketing strategy that targets all generations. A business could have the best services, but fail because it lacks appropriate marketing strategies. Although the authors offered very helpful general new business development ideas to young entrepreneurs, such as professionalism, network marketing tactics, and ways to separate business from life, the book lacks more birth-related or healthcare directed content.

Preparing for a new baby can be both exciting and stressful for the childbirth clients, their families, and their love ones. Creating marketing materials that are tailored towards educating clients on the benefits of holistic care broadens your market by appealing to clients from all cultural and spiritual backgrounds. Pictures should be used in conjunction with brief explanations on your childbirth marketing material. The use of pictures to reinforce important ideas such as educating childbirth clients on the benefit of embracing a holistic lifestyle during pregnancy and postpartum is not only inviting to clients from all cultural and spiritual backgrounds, but it’s also attractive to all clients with different learning styles. Childbirth marketing material should include illustrations of pregnant women from around the globe to capture clients from diverse cultural backgrounds. Childbirth marketing material should be created with passion that transmits your commitment to caring for every client at a personal level.

In a birth-related business that requires hiring employees, it is good to be conscious of the fact that employees represent the face of the business. The most qualified employees should be hired, and further investment in them with mandatory current top-notch industry training should be made. Healthcare related businesses are highly competitive. A new birth-related business must be prepared to demonstrate a level of professionalism that exceeds that of its competitors. The business owner and anyone affiliated must always be well prepared to meet and exceed clients’ specific needs and expectations.

Delphine Asonfac Burdick is an Assistant Professor at Tennessee State University school of nursing where she specializes in Fundamental of Nursing and Leadership and management in Nursing Education. She is currently pursuing a PhD in nursing education at Capella University. She owns and manages a home care business.

The Connie Livingston Memorial Scholarship Program

Connie Livingston, friend, mentor, and inspiration to so many, passed away unexpectedly on December 29, 2016. The ICEA board and membership are deeply grieved at the loss of our dear friend.

As a strong leader, Connie played an integral role in the continued development of ICEA. She served in various roles on the Board of Directors and, most recently, as the 2015-2016 President. The association’s success and current status are results of her tireless dedication to ICEA and our mission.

Though we cannot sufficiently express the impact Connie had on ICEA, we have decided to honor this incredible woman by renaming our scholarship program The Connie Livingston Memorial Scholarship Program. It is our hope that future generations of Childbirth Educators and Doulas will continue to be impacted by Connie’s passion, care, and dedication.

If you would like to make a donation in Connie’s memory, then please visit the Scholarships page on our website. Your generous gift will ensure students around the world who are passionate about supporting Family-centered Maternity and Newborn Care will be able to continue the work to which Connie dedicated her life.

ICEA has been honored by the outpouring of love for our Past President.
Seven Sisters for Seven Days: The Mothers’ Manual for Community Based Postpartum Care

by Peterson, M.

reviewed by Kathryn A. Bradley, IBCLC ICCE CD

Seven Sisters for Seven Days is a thorough guide for mothers that highlights the importance of postpartum care. Its core program is aptly named Seven Sisters, as it introduces the concept of six weeks of postpartum support for the new mother and her family through the reliance upon seven women. Each woman calls upon the mother or assists her one day during the week, thereby giving the family a total of six weeks of support with only six visits per person. Peterson is careful to emphasize that each sister should only volunteer to do things that they love to do, so it is a fulfilling experience for those serving, as well as the mother being served.

The concept of community-based postpartum support is as old as birth, but somewhere along the way Western civilization has become accustomed to being isolated. As evidence, Peterson points out that we are the only developed nation with no national policy on paid maternity leave. The Seven Sisters model is a fresh strategy on how to approach postpartum care in the modern era. It details exactly how to implement this model, and provides templates to help the reader work through these processes herself. To many women, the postpartum period is a taboo subject. Healing your body after birth is an intensely vulnerable time, and Peterson describes this by illustrating three maternal archetypes: The Superwoman, Women Who Feel Unworthy, and The Newbies. Regardless of which category you may fall into, she empowers these women to say “Yes” - “Yes” to receiving help, ”Yes” to connecting to others, and “Yes” to being nourished, physically and spiritually.

Peterson discusses in depth how Ayurvedic medicine helped her heal, without fully explaining what it is. Approaches from India are the world’s oldest holistic healing system, dating back over 3,000 years. She discusses how herbal teas, herbal spritzers, yoni washes, and salves are helpful, though you should seek a qualified herbalist to build your herbal protocol. Unfortunately, depending on your income level, not everyone has a qualified herbalist on-call. In addition, the list of suggested items for your postpartum tool kit is extensive: small refrigerator for bedroom milk storage, cooler for outside your door, and dry erase board to leave notes outside for team members. The message becomes muddled – is the Seven Sisters protocol for all postpartum women, or is it just those who can afford to implement it? It is a community-based model of care, but for whose community?

Similarly, the supportive message of the Seven Sisters protocol is lost when reading the ‘Feeding your Baby’ chapter. Planted squarely in the middle of the book, it details the benefits of breast milk in detail. Bottle feeding breast milk, milk-banking, and milk-sharing are all discussed. Missing from this section is how the Seven Sisters are supposed to support you in your seemingly inevitably difficult breastfeeding journey. Conversely, Peterson brings the Seven Sisters protocol home with ‘Building Your Postpartum Team’ and subsequent chapters. She reaffirms the importance of having a clear vision for what a nurturing, supportive and healthy postpartum period looks like. If you fall into The Newbie maternal archetype, don’t worry … Peterson lays out clear instructions on how to implement the Seven Sisters protocol.

At its core, Seven Sisters for Seven Days is an inventive, refreshing take on the ages-old community-based model of postpartum care. When recommending this book to others, know your audience- on the surface, it speaks to the crunchy-granola, peace, love and happiness crowd. However, once you read deeper into the message, the Seven Sisters protocol is clearly meant to empower, support and uplift mothers in all communities.

Kathy Bradley has been involved with perinatal education and health care since 1989. Her focus over the years has been providing education and support to women of all income levels. Kathy is an Executive Board Member of the International Childbirth Education Association, sits on the Council of Licensed Midwifery Florida Department of Health, is the CEO of Childbirth Concierge, and the Director of Prenatal Education at the Common-sense Childbirth School of Midwifery.