Evidence-Based Practice in Nursing & Healthcare

A Guide to Best Practice ◆ Third Edition

Bernadette Mazurek Melnyk
Ellen Fineout-Overholt

Make evidence-based practice an integral part of your everyday nursing practice.

Written in a friendly, conversational style, the Third Edition of ***Evidence-Based Practice in Nursing and Healthcare*** covers everything you need to use evidence-based practice to improve patient outcomes. Real-world examples and meaningful strategies in every chapter demonstrate how to take a clinical issue from initial inquiry to a sustainable solution that drives a preferred standard of care. Authors Bernadette Mazurek Melnyk and Ellen Fineout-Overholt continue to help all clinicians, no matter their healthcare role, to accelerate the translation of research findings into practice and the use of practice data to ultimately improve care and outcomes.

Key Features of This Edition

- **Making EBP Real features** at the end of each unit present successful case stories in real-world settings that emphasize salient content.
- **EBP Fast Facts** highlight important points from each chapter.
- **Critical appraisal checklists, evaluation tables, and synthesis tables** help students master key concepts.
- **New chapters** provide insights on leadership and sparking innovation in EBP.
- **Web alerts** direct students to helpful online resources to further develop evidence-based practice knowledge and skills.
- **Inspirational quotes** encourage students to actively engage in evidence-based practice and accomplish personal goals.

A free package of instructor and student ancillaries including the *American Journal of Nursing* EBP Step-by-Step series and a revised Test Generator is available at **http://thepoint.lww.com/Melnyk3e.**

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I dedicate this book to my loving and understanding family, who has provided tremendous support to me in pursuing my dreams and passions: my husband, John; and my three daughters, Kaylin, Angela, and Megan; as well as to my father, who always taught me that anything can be accomplished with a spirit of enthusiasm and determination. It is also dedicated to all of the committed healthcare providers and clinicians who strive every day to deliver the highest quality of evidence-based care.

Bernadette Mazurek Melnyk

The third edition of this book is thoughtfully dedicated to all healthcare consumers. Particularly, I dedicate this edition to my precious family, Wayne, Rachael, and Ruth, and my Mom, Virginia Fineout, who are the primary consumers who inspire me to persist in partnering to transform health care and healthcare education to achieve best outcomes. Also, I dedicate this edition to the loving memory of my Dad, Art Fineout, my brothers Mark and Paul Fineout, and our baby, Wayne P. Overholt. The experiences with these losses continue to shape my commitment to best care.

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Foreword

Like many of you, I have appreciated health care through a range of experiences and perspectives. As someone who has delivered health care as a combat medic, paramedic, nurse, and trauma surgeon, the value of evidence-based practice is clear to me. Knowing what questions to ask, how to carefully evaluate the responses, maximize the knowledge and use of empirical evidence, and provide the most effective clinical assessments and interventions are important assets for every healthcare professional. The quality of U.S. and global health care depends on clinicians being able to deliver on these and other best practices.

The Institute of Medicine calls for all healthcare professionals to be educated to deliver patient-centered care as members of an interdisciplinary team, emphasizing evidence-based practice, quality improvement approaches, and informatics. Although many practitioners support the use of evidence-based practice, and there are indications that our patients are better served when we apply evidence-based practice, there are challenges to successful implementation. One barrier is knowledge. Do we share a standard understanding of evidence-based practice and how such evidence can best be used? We need more textbooks and other references that clearly define and provide a standard approach to evidence-based practice.

Another significant challenge is the time between the publication of research findings and the translation of such information into practice. This challenge exists throughout public health. Determining the means of more rapidly moving from the brilliance that is our national medical research to applications that blend new science and compassionate care in our clinical systems is of interest to us all.

As healthcare professionals who currently use evidence-based practice, you recognize these challenges and others. Our patients benefit because we adopt, investigate, teach, and evaluate evidence-based practice. I encourage you to continue the excellent work to bring about greater understanding and a more generalizable approach to evidence-based practice.

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17th Surgeon General of the United States

Preface

The evidence is irrefutable: evidence-based practice (EBP) improves the quality of care and patient outcomes as well as reduces the costs of care across healthcare settings and the life span. Furthermore, although there are many published interventions/treatments that have resulted in positive outcomes for patients and healthcare systems, they are not being implemented in clinical practice. In addition, qualitative evidence is not readily incorporated into care.

The purpose of this third edition of *Evidence-Based Practice in Nursing and Healthcare* is to continue our efforts to help all clinicians, no matter their healthcare role, to accelerate the translation of research findings into practice and the use of practice data to ultimately improve care and outcomes. Although there has been some progress in the adoption of EBP as the standard of care in recent years, there is still much work to be done for this paradigm to be used daily in practice by point of care providers. The daunting statistic that it takes an average of 17 years or longer to move research findings into practice is still a reality in many healthcare institutions across the globe. Therefore, increased efforts are required to provide the tools that point of care clinicians need in order to use the best evidence from research and their practices to improve their healthcare system, practitioner, and patient outcomes.

We will always believe that anything is possible when you have a big dream and believe in your ability to accomplish that dream. It was the vision of transforming health care with EBP, in any setting, with one client–clinician encounter at a time and the belief that this can be the daily experience of both patients and practitioners, along with our sheer persistence through many "character-building experiences" during the writing and editing of the book, that culminated in this user-friendly guide that assists all healthcare professionals in the delivery of the highest quality, evidence-based care in order to produce the best outcomes for their patients.

The third edition of this text has been revised to assist healthcare providers with implementing and sustaining EBP in their daily practices and to foster a deeper understanding of the principles of the EBP paradigm and process. In working with healthcare systems and clinicians throughout the nation and globe and conducting research on EBP, we have learned more about successful strategies to advance and sustain evidence-based care. Therefore, you will find new material throughout the book, including new chapters, competencies, and tools to advance EBP.

As with the first and second editions, the third edition provides the knowledge for a solid understanding of the EBP paradigm or worldview, which is the foundation for all clinical decisions. This worldview frames the understanding of the steps of the EBP process, the clarification of misperceptions about the implementation of EBP, and the practical action strategies for the implementation of evidence-based care that can enhance widespread acceleration of EBP at the point of care. It is our dream that this knowledge and understanding will continue across the country and globe until the lived experience of practicing from the EBP paradigm becomes a reality across healthcare providers, settings, and educational institutions.

The book contains vital, usable, and relatable content for all levels of practitioners and learners, with key exemplars that bring to life the concepts within the chapters. At the end of each chapter, we now provide EBP Fast Facts, which are golden nuggets of information to reinforce important concepts and offer the opportunity for readers to double-check themselves or quickly identify key chapter content. Another new feature at the end of each unit, "Making EBP Real," provides real-life examples that help readers to see the principles of EBP applied. Furthermore, clinicians who desire to stimulate or lead change to a culture of EBP in their practice sites can discover functional models and practical strategies to introduce a change to EBP, overcome barriers in implementing change, and evaluate outcomes of change.

For clinical and academic educators, we have included specific chapters on teaching EBP in educational and health care settings (Chapters 15 and 16, respectively). Educators can be most successful as they make the EBP paradigm and process understandable for their learners. Often, educators teach by following chapters in a textbook through their exact sequence; however, we recommend using chapters of this third edition that are appropriate for the level of the learner (e.g., associate degree, baccalaureate, master's, or doctoral). For example, we would recommend that associate degree students benefit from Units 1, 3, and 4. Curriculum for baccalaureate learners can integrate all units; however, we recommend primarily using Units 1–4, with Unit 5 as a resource for understanding more about research generation and methods. Master's and doctoral programs can incorporate all units into their curricula. Advanced practice clinicians will be able to lead in implementing evidence in practice and thoughtfully evaluate outcomes of practice, while those learning to become researchers will understand how to best build on existing evidence to fill gaps in knowledge with valid reliable research. Another important resource for educators to use in tandem with the EBP book is the ***American Journal of Nursing*** EBP Step-by-Step series, which provides a real-world example of the EBP process from step 0 through step 6. A team of healthcare providers encounters a challenging issue and uses the EBP process to find a sustainable solution that improves healthcare outcomes. Educators can assign the articles before or in tandem with readings from this book. For example, the first three chapters of the book could be assigned along with the first four articles, which could offer an opportunity for great discussion within the classroom (see suggested curriculum strategy at this book's companion website, http://thepoint.lww.com/Melnyk3e). With these approaches in mind, we believe that this book will continue to facilitate changes in how research concepts and critical appraisal are being taught in clinical and academic professional programs throughout the country. Finally, researchers, clinicians in advanced roles, and educators may benefit from the chapters on generating quantitative and qualitative evidence (Chapters 19 and 20) as well as how to write a successful grant proposal (Chapter 21).

FEATURES

As proponents of cognitive-behavioral theory, which contends that how people think directly influences how they feel and behave, we firmly believe that how an individual thinks is the first step toward or away from success. Therefore, **inspirational quotes** are intertwined throughout our book to encourage readers to build their beliefs and abilities as they actively engage in EBP and accomplish their desired goals.

With the rapid delivery of information available to us, **web alerts** direct readers to helpful Internet resources and sites that can be used to further develop EBP knowledge and skills.

Content new to this edition includes:

- **EBP Fast Facts:** Important points highlighed at the end of each chapter.
- **Making EBP Real:** A successful real-world case story emphasizing applied content from each unit.
- **Updated** information on **evidence hierarchies for different clinical questions** because one hierarchy does not fit all questions.
- **Successful strategies for finding evidence,** including updates on sources of evidence.
- **Updated rapid critical appraisal checklists, evaluation tables, and synthesis tables** that provide efficient critical appraisal methods for both quantitative and qualitative evidence for use in clinical decisions.
- A **new chapter (7) on the role of a clinician's expertise and patient preferences/values in making decisions about patient care**.
- **EBP models updated by their original creators** (Chapter 13) to assist learners as they build a sustainable culture of EBP.
- **Updated approaches to evaluating outcomes** throughout the book, along with a **chapter (10)** on the role of evaluating practice outcomes.
- A **new chapter (11) on leadership strategies** for creating and sustaining EBP organizations.
- A **new chapter (12) on sparking innovation in EBP.**

- **Updated information on the role of the EBP mentor,** a key factor in the sustainability of an EBP culture, including evaluation of the role and its impact on care delivery.
- **Samples of established measures** of EBP beliefs, EBP implementation and organizational culture, and readiness for EBP within the service and educational setting.
- Updated chapter (14) that details how to **create a vision to motivate a change** to best practice.
- **A new framework for teaching EBP** to improve learner assimilation of the EBP paradigm as the basis for clinical decisions-the **ARCC-E model (Chapter 15)**.
- Updated chapters (19 and 20) that provide step-by-step principles for **generating quantitative and qualitative evidence** when little evidence exists to guide clinical practice.
- Updated chapter (21) on how to **write a successful grant proposal** to fund an EBP implementation project or research study.
- Updated information on how to **disseminate evidence** to other professionals, the media, and policy makers.
- Updated chapter (22) that addresses the **ethics of evidence use and generation**.
- Many updated **usable tools that will help healthcare providers implement EBP,** in the appendix and online at this book's companion website, http://thepoint.lww.com/Melnyk3e.

ADDITIONAL RESOURCES

Evidence-Based Practice in Nursing and Healthcare, third edition, includes additional resources for both instructors and students that are available on the book's companion website at http://thepoint.lww.com/Melnyk3e.

Instructors

Approved adopting instructors will be given access to the following additional resources:

- An **E-Book** allows access to the book's full text and images online.
- **Brownstone test generator.**
- Additional **test and reflective questions, application case studies, and examples** for select chapters.
- **PowerPoint presentations**, including multiple choice questions for use with interactive clicker technology.
- **Guided lecture notes** present brief talking points for instructors, provide suggestions on how to structure lectures, and give ideas on organizing material.
- We can include the PhD and DNP in this list as well.
- **Sample syllabi** for all levels: RN to BSN, Traditional BSN, MSN, PhD, and DNP.
- The ***American Journal of Nursing*** **EBP Step-by-Step Series,** which provides a real-world example of the EBP process, plus a suggested curriculum strategy. (The series is an ancillary accessible to students; the curriculum strategy is an instructor asset.) See also information earlier in this preface about how this resource might be used.
- An **image bank,** containing figures and tables from the text in formats suitable for printing, projecting, and incorporating into websites.
- **Strategies for Effective Teaching** offer creative approaches.
- **Learning management system cartridges.**
- Access to all student resources.

Students

Students who have purchased *Evidence-Based Practice in Nursing and Healthcare*, third edition, have access to the following additional online resources:

- **Learning Objectives** for each chapter
- **Checklists and templates** including checklists for conducting an evidence review and a journal club, and a template for PICOT questions.

- **Journal articles** corresponding to book chapters to offer access to current research available in Wolters Kluwer journals
- The ***American Journal of Nursing*** **EBP Step-by-Step Series,** which provides a real-world example of the EBP process
- An example of a poster (to accompany Chapter 18)
- A **Spanish–English audio glossary** and **Nursing Professional Roles and Responsibilities**

See the inside front cover of this text for more details, including the passcode you will need to gain access to the website.

A FINAL WORD FROM THE AUTHORS

As we have the privilege of meeting and working with clinicians, educators, and researchers across the globe to advance and sustain EBP, we realize how important our unified effort is to world health. We want to thank each reader for your investment of time and energy to learn and use the information contained within this book to foster your best practice. Furthermore, we so appreciate the information that you have shared with us regarding the benefits and challenges you have had in learning about and applying knowledge of EBP. That feedback has been instrumental to improving the third edition of our book. We value constructive feedback and welcome any ideas that you have about content, tools, and resources that would help us to improve a future edition. The spirit of inquiry and life-long learning are foundational principles of the EBP paradigm and underpin the EBP process so that this problem-solving approach to practice can cultivate an excitement for implementing the highest quality of care. As you engage your EBP journey, remember that it takes time and that it becomes easier when the principles of this book are placed into action with enthusiasm on a consistent daily basis.

As you make a positive impact at the point of care, whether you are first learning about the EBP paradigm, the steps of the EBP process, leading a successful EBP change effort, or generating evidence to fill a knowledge gap or implement translational methods, we want to encourage you to keep the dream alive and, in the words of Les Brown, "Shoot for the moon. Even if you miss, you land among the stars." We hope you are inspired by and enjoy the following EBP RAP.

Evidence-based practice is a wonderful thing,
Done with consistency, it makes you sing.
PICOT questions and learning search skills;
Appraising evidence can give you thrills.
Medline, CINAHL, PsycInfo are fine,
But for Level I evidence, Cochrane's divine!
Though you may want to practice the same old way
"Oh no, that's not how I will do it," you say.
When you launch EBP in your practice site,
Remember to eat the chocolate elephant, bite by bite.
So dream big and persist in order to achieve and
Know that EBP can be done when you believe!

Bernadette Mazurek Melnyk and Ellen Fineout-Overholt

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This book could not have been accomplished without the support, understanding, and assistance of many wonderful colleagues, staff, family, and friends. I would first like to acknowledge the outstanding work of my co-editor and cherished friend, Ellen—thank you for all of your efforts, our wonderful friendship, attention to detail, and ongoing support throughout this process—I could not have accomplished this revised edition without you. Since the first edition of this book, I have grown personally and professionally through the many opportunities that I have had to teach and mentor others in evidence-based practice across the globe—the lessons I have learned from all of you have been incorporated into this book. I thank all of my mentees for their valuable feedback and all of the authors who contributed their time and valuable expertise to this book. Along with my wonderful husband John and my three daughters, Kaylin, Angela, and Megan, I am appreciative for the ongoing love and support that I receive from my mother, Anna May Mazurek, my brother and sister-in-law, Fred and Sue Mazurek, and my sister, Christine Warmuth, whose famous words to me "Just get out there and do it" have been a key to many of my successful endeavors. I would also like to thank my wonderful colleagues and staff at The Ohio State University for their support, understanding, and ongoing commitment to our projects and their roles throughout this process. Finally, I would like to acknowledge the team at Wolters Kluwer for their assistance with and dedication to keeping this project on track.

Bernadette Mazurek Melnyk

Over the past 15 years, I have met so many wonderful healthcare providers who are kindred spirits and have the same goal that I do—to do whatever it takes to achieve best outcomes for patients who need our care. I feel so very blessed. As all of us—students, clinicians, clinical educators, faculty, and researchers—choose to adopt the evidence-based practice paradigm as our foundation for healthcare decisions, we will meet that goal! Thank you for demonstrating that ownership of practice is the key to healthcare transformation. In addition, I want to express my heartfelt thanks to each of you who personally have shared encouraging words with me about the value of our work to advance best practice in health care and how it has helped you make a difference in patients' lives and health experiences. Thank you for actualizing the dream of transforming health care, one client–clinician relationship at a time. As I reflect on this dream, I thank you, Bern, for the wonderful privilege I have had to work with you for over 25 years. Thank you for helping me grow and achieve goals that I may have not pursued without your push—I very much appreciate your mentoring and partnership!

Further reflection has led me to consider that with every edition of this book, I am amazed at how blessed I am to have the support of my precious family and friends. Every day, when I see my sweet, growing-up girls, I am inspired again to strive to achieve the goals of evidence-based care as a standard. Thank you Rachael and Ruth for your gift of love and laughter that you give Mom every day! Similarly, my mother, Virginia (Grandginny), has had experiences in health care as an older old adult (now 83) that have compelled me to consider the importance of advocating for evidence-based consumers. Thank you, Mom, for the many long talks and words of encouragement and being an example! Also, my brother, John, and his family, Angela, Ashton, and Aubrey, have enriched my life with their talents, particularly in music—thank you!—and have also spurred on my work toward best practice through their healthcare experiences. It is likely that all of us could speak to some good or some not-so-good healthcare encounters that serve as inspiration for our commitment to excellence in care. I am grateful to each of you reading this book who will take the knowledge contained in its pages and make it come alive in your work.

To those of you who have prayed for me during this writing adventure—thank you so very much! To my wonderful husband, Wayne, who consistently offers perspective and balance that are so important

to me—I can find no language that conveys how much I value your presence in my life! Finally, as I reflect on my lifework and the importance of improving healthcare outcomes through sustainable evidence-based practice, I am mindful of how important my gracious Savior and Friend's work has been in me, for which I am eternally grateful.

Publishing a book takes a team of dedicated professionals, much like a healthcare team, each with a unique role that is critical to the book's success. I am grateful to the Wolters Kluwer team with whom we have had the privilege to work. They have helped us live our dream. Finally, I cannot say enough "thank yous" to the many wonderful contributors to this work and the common goal that binds us together—improving health care. I am very grateful for their investment throughout the writing of the third edition of *Evidence-Based Practice in Nursing and Healthcare!*

Ellen Fineout-Overholt

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UNIT 1

Steps Zero, One, Two: Getting Started

To accomplish great things, we must not only act but also dream; not only plan, but also believe.

—Anatole France

Chapter 1

Making the Case for Evidence-Based Practice and Cultivating a Spirit of Inquiry

Bernadette Mazurek Melnyk and Ellen Fineout-Overholt

It is now widely recognized throughout the globe that **evidence-based practice (EBP)** is key to delivering the highest quality of healthcare and ensuring the best patient outcomes at the lowest costs. Findings from numerous studies have indicated that an evidence-based approach to practice versus the implementation of clinical care that is steeped in tradition or based upon outdated policies results in a multitude of improved health, safety, and cost outcomes, including a decrease in patient morbidity and mortality (McGinty & Anderson, 2008; Williams, 2004). The goal of improving healthcare through enhancing the experience of care, improving the health of populations, and reducing per capita costs of healthcare has become known as the *Triple Aim*, which is the major focus of current efforts by healthcare systems across the United States (U.S.) (Berwick, Nolan, & Whittington, 2008). When clinicians know how to use the EBP process to implement the best care and when patients are confident that their healthcare providers are using evidence-based care, optimal outcomes are achieved for all.

Although there is an explosion of scientific evidence available to guide clinical practice, the implementation of evidence-based care by health professionals is typically not the norm in many healthcare systems across the U.S. and globe. However, when healthcare providers are asked whether they would personally like to receive evidence-based care if they found themselves in a patient role, the answer is resoundingly "yes!" For example:

- If your child was in a motor vehicle accident and sustained a severe head injury, would you want his neurologist to know and use the most effective, empirically supported treatment established from **randomized controlled trials (RCTs)** to decrease his intracranial pressure and prevent death?
- If your mother was diagnosed with Alzheimer's disease, would you want her nurse practitioner to give you information about how other family caregivers of patients with this disease have coped with the illness, based on evidence from well-designed qualitative and/or descriptive studies?
- If you were diagnosed with colon cancer today and were faced with the decision about what combination of chemotherapy agents to choose, would you want your oncologist to share with you the best and latest evidence regarding the risks and benefits of each therapeutic agent as generated from prior clinical trials with other similar cancer patients?

DEFINITION AND EVOLUTION OF EVIDENCE-BASED PRACTICE

In 2000, Sackett, Straus, Richardson, Rosenberg, and Haynes defined EBP as the conscientious use of current best evidence in making decisions about patient care. Since then, the definition of EBP has been broadened in scope and referred to as a lifelong problem-solving approach to clinical practice that integrates

- A systematic search for as well as critical appraisal and synthesis of the most relevant and best research (i.e., **external evidence**) to answer a burning clinical question
- One's own **clinical expertise**, which includes **internal evidence** generated from outcomes management or quality improvement projects, a thorough patient assessment, and evaluation and use of available resources necessary to achieve desired patient outcomes
- Patient preferences and values (Figure 1.1)

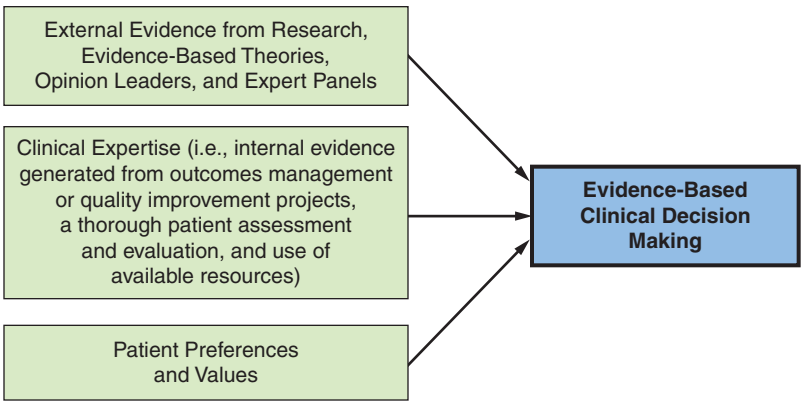

Figure 1.1: The components of EBP.

Unlike **research utilization,** which has been frequently operationalized as the use of knowledge typically based on a single study, EBP takes into consideration a synthesis of evidence from multiple studies and combines it with the expertise of the practitioner as well as patient preferences and values (Melnyk & Fineout-Overholt, 2011).

WHAT IS EVIDENCE?

Evidence is a collection of facts that are believed to be true. **External evidence** is generated through rigorous research (e.g., **RCTs** or **cohort studies**) and is intended to be generalized to and used in other settings. An important question when implementing external evidence from research is whether clinicians can achieve results in their own clinical practices that are similar to those derived from a body of evidence (i.e., Can the findings from research be translated to the real-world clinical setting?). This question of transferability is why measurement of key outcomes is still necessary when implementing practice changes based on evidence. In contrast, **internal evidence** is typically generated through practice initiatives, such as **outcomes management** or **quality improvement projects** that use internal evidence from patient data in an organization to improve clinical care. Researchers generate new knowledge through rigorous research (i.e., external evidence), and EBP provides clinicians the process and tools to translate the evidence into clinical practice and integrate it with internal evidence to improve the quality of healthcare and patient outcomes.

Unfortunately, there are many interventions (i.e., treatments) with substantial empirical evidence to support their use in clinical practice to improve patient outcomes that are not routinely used. For example, findings from a series of RCTs testing the efficacy of the COPE (Creating Opportunities for Parent Empowerment) Program for parents of critically ill/hospitalized and premature infants support that when parents receive COPE (i.e., an educational–behavioral skills-building intervention that is delivered by clinicians to parents at the point of care through a series of brief CDs, written information, and activity workbooks) versus an attention control program, COPE parents: (a) report less stress, anxiety, and depressive symptoms during hospitalization; (b) participate more in their children's care; (c) interact in more developmentally sensitive ways; and (d) report less depression and posttraumatic stress disorder symptoms up to a year following their children's discharge from the hospital (Melnyk, 1994; Melnyk et al., 2004, 2006; Melnyk & Feinstein, 2009). In addition, the premature infants and children of parents who receive COPE versus those whose parents who receive an attention control program have better behavioral and developmental outcomes as well as shorter hospital stays, which could result in billions of dollars of healthcare savings for the U.S. healthcare system if the program is routinely implemented by hospitals (Melnyk et al., 2006; Melnyk & Feinstein, 2009). Despite this strong body of evidence, COPE is not standard of practice in many hospitals throughout the nation.

In contrast, there are many practices that are being implemented in healthcare that have no or little evidence to support their use (e.g., double-checking pediatric medications, routine assessment of vital signs every 2 or 4 hours in hospitalized patients, use of a plastic tongue patch for weight loss). Unless we know what interventions are most effective for a variety of populations through the generation of evidence from research and practice data (e.g., outcomes management, quality improvement projects) and how to rapidly translate this evidence into clinical practice through EBP, substantial sustainable improvement in the quality and safety of care received by U.S. residents is not likely (Melnyk, 2012; Shortell, Rundall, & Hsu, 2007).

COMPONENTS OF EVIDENCE-BASED PRACTICE

Although evidence from **systematic reviews** of RCTs has been regarded as the strongest level of evidence (i.e., Level 1 evidence) on which to base practice decisions about treatments to achieve a desired outcome, evidence from descriptive and qualitative studies as well as from opinion leaders should be factored into clinical decisions when RCTs are not available. **Evidence-based theories** (i.e., theories that are empirically supported through well-designed studies) also should be included as evidence. In addition, patient preferences, values, and concerns should be incorporated into the evidence-based approach to decision making along with a clinician's expertise, which includes (a) clinical judgment (i.e., the ability to think about, understand, and use research evidence; the ability to assess a patient's condition through subjective history taking, thorough physical examination findings, and laboratory reports), (b) internal evidence generated from quality improvement or outcomes management projects, (c) clinical reasoning (i.e., the ability to apply the above information to a clinical issue), and (d) evaluation and use of available healthcare resources needed to implement the chosen treatment(s) and achieve the expected outcome (Figure 1.2).

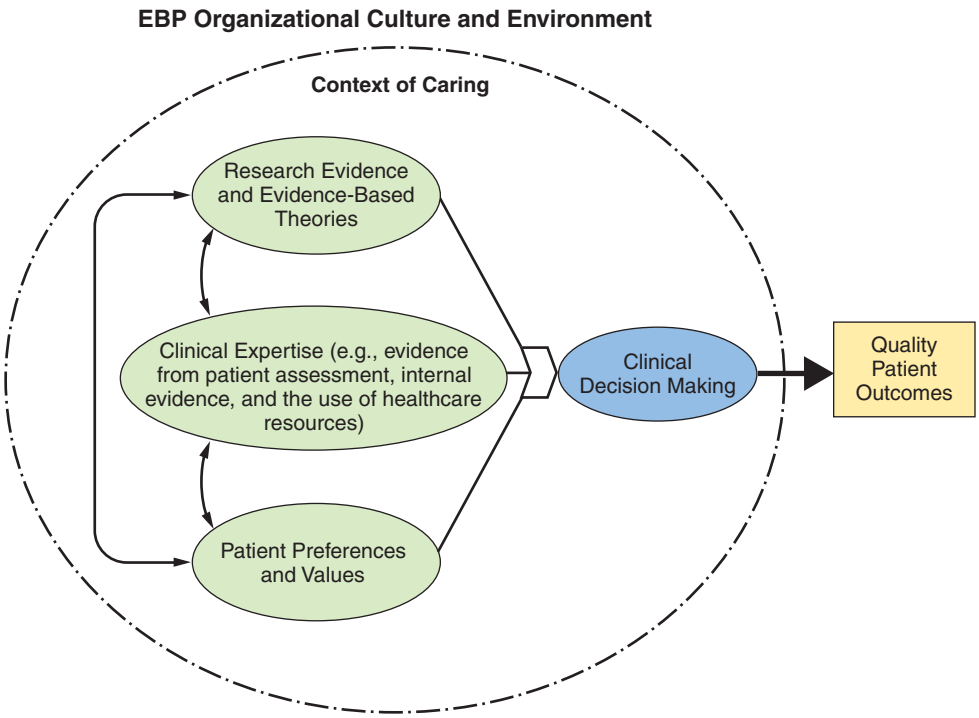

Figure 1.2: The merging of science and art: EBP within a context of caring and an EBP culture and environment results in the highest quality of healthcare and patient outcomes. © Melnyk & Fineout-Overholt, 2003.

Rule of Thumb for Determining Whether a Practice Change Should be Made

The level of the evidence + quality of the evidence = strength of the evidence → *Confidence to act upon the evidence and change practice!*

Clinicians often ask how much and what type of evidence is needed to change practice. A good rule of thumb to answer this question is that there needs to be strong enough evidence to make a practice change. Specifically, the level of evidence plus the quality of evidence equals the strength of the evidence, which provides clinicians the confidence that is needed to change clinical practice (Box 1.1).

ORIGINS OF THE EVIDENCE-BASED PRACTICE MOVEMENT

The EBP movement was founded by Dr. Archie Cochrane, a British epidemiologist, who struggled with the efficacy (effectiveness) of healthcare and challenged the public to pay only for care that had been empirically supported as effective (Enkin, 1992). In 1972, Cochrane published a landmark book that criticized the medical profession for not providing rigorous reviews of evidence so that policy-makers and organizations could make the best decisions about healthcare. Cochrane was a strong proponent of using evidence from RCTs because he believed that this was the strongest evidence on which to base clinical practice treatment decisions. He asserted that reviews of research evidence across all specialty areas need to be prepared systematically through a rigorous process and that they should be maintained to consider the generation of new evidence (The Cochrane Collaboration, 2001).

In an exemplar case, Cochrane noted that thousands of low-birth-weight premature infants died needlessly. He emphasized that the results of several RCTs supporting the effectiveness of corticosteroid therapy to halt premature labor in high-risk women had never been analyzed and compiled in the form of a systematic review. The data from that systematic review showed that corticosteroid therapy reduced the odds of premature infant death from 50% to 30% (The Cochrane Collaboration, 2001).

Dr. Cochrane died in 1988. However, as a result of his influence and call for updates of systematic reviews of RCTs, the Cochrane Center was launched in Oxford, England, in 1992, and The Cochrane Collaboration was founded a year later. The major purpose of the Collaboration, an international network of more than 31,000 dedicated people from over 120 countries, is to assist healthcare practitioners, policy-makers, patients, and their advocates in making well-informed decisions about healthcare by developing, maintaining, and updating systematic reviews of healthcare interventions (i.e., Cochrane Reviews) and ensuring that these reviews are accessible to the public (The Cochrane Collaboration, 2001).

Further information about the Cochrane Collaboration can be accessed at **http://www.cochrane.org/**

WHY EVIDENCE-BASED PRACTICE?

The most important reasons for consistently implementing EBP are that it leads to the highest quality of care and the best patient outcomes (Reigle et al., 2008; Talsma, Grady, Feetham, Heinrich, & Steinwachs, 2008). In addition, EBP reduces healthcare costs and geographic variation in the delivery of care (McGinty & Anderson, 2008; Williams, 2004). Findings from studies also indicate that clinicians report feeling more empowered and satisfied in their roles when they engage in EBP (Maljanian, Caramanica, Taylor, MacRae, & Beland, 2002; Strout, 2005). With recent reports of pervasive "burnout"

among healthcare professionals and the pressure that many influential healthcare organizations exert on clinicians to deliver high-quality, safe care under increasingly heavy patient loads, the use and teaching of EBP may be key not only to providing outstanding care to patients and saving healthcare dollars, but also to reducing the escalating turnover rate in certain healthcare professions (Melnyk, Fineout-Overholt, Giggleman, & Cruz, 2010).

Despite the multitude of positive outcomes associated with EBP and the strong desire of clinicians to be the recipient of evidence-based care, an alarming number of healthcare providers do not consistently implement EBP or follow evidence-based clinical practice guidelines (Melnyk, Grossman, et al., 2012; Vlada et al., 2013). Findings from a survey to assess nurses' readiness to engage in EBP conducted by the Nursing Informatics Expert Panel of the American Academy of Nursing with a nationwide sample of 1,097 randomly selected registered nurses indicated that (a) almost half were not familiar with the term *evidence-based practice*, (b) more than half reported that they did not believe their colleagues use research findings in practice, (c) only 27% of the respondents had been taught how to use electronic databases, (d) most did not search information databases (e.g., Medline and CINAHL) to gather practice information, and (e) those who did search these resources did not believe they had adequate searching skills (Pravikoff, Pierce, & Tanner, 2005). Although a more recent national survey of more than 1,000 randomly selected nurses from the American Nurses Association showed improvement in the valuing of EBP, major barriers that were identified in the earlier survey continue to be reported by nurses, including time, organizational culture, and lack of EBP knowledge and skills (Melnyk, Fineout-Overholt, Gallagher-Ford, & Kaplan, 2012). In addition, nurses in this latest survey reported that, in addition to peer and physician resistance, a major barrier for implementation of EBP is nurse leader/manager resistance (Melnyk, Fineout-overholt, Gallagher-Ford et al., 2012).

On a daily basis, nurse practitioners, nurses, physicians, pharmacists, and other healthcare professionals seek answers to numerous clinical questions (e.g., In postoperative surgical patients, how does relaxation breathing compared to cognitive-behavioral skills building affect anxiety? In adults with dementia, how does a warm bath compared to music therapy improve sleep? In depressed adolescents, how does cognitive-behavioral therapy combined with Prozac compared to Prozac alone reduce depressive symptoms?). An evidence-based approach to care allows healthcare providers to access the best evidence to answer these pressing clinical questions in a timely fashion and to translate that evidence into clinical practice to improve patient care and outcomes.

Without current best evidence, practice is rapidly outdated, often to the detriment of patients. As a classic example, for years, pediatric primary care providers advised parents to place their infants in a prone position while sleeping, with the underlying reasoning that this is the best position to prevent aspiration in the event of vomiting. With evidence indicating that prone positioning increases the risk of sudden infant death syndrome (SIDS), the American Academy of Pediatrics (AAP) released a clinical practice guideline recommending a supine position for infant sleep that resulted in a decline in infant mortality caused by SIDS (AAP, 2000). As a second example, despite strong evidence that the use of beta-blockers following an acute myocardial infarction reduces morbidity and mortality, these medications are considerably underused in older adults in lieu of administering calcium channel blockers (Slutsky, 2003). Further, another recent study indicated adherence to evidence-based guidelines in the treatment of severe acute pancreatitis is poor (Vlada et al., 2013). Therefore, the critical question that all healthcare providers need to ask themselves is: Can we continue to implement practices that are not based on sound evidence and, if so, at what cost (e.g., physical, emotional, and financial) to our patients and their family members?

Even if healthcare professionals answer this question negatively and remain resistant to implementing EBP, the time has come when third-party payers will provide reimbursement only for healthcare practices whose effectiveness is supported by scientific evidence (i.e., pay for performance). Furthermore, hospitals are now being denied payment for patient complications that develop when evidence-based guidelines are not being followed. In addition to pressure from third-party payers, a growing number of patients and family members are seeking the latest evidence posted on websites about the most effective treatments for their health conditions. This is likely to exert even greater pressure on healthcare

providers to provide the most up-to-date practices and health-related information. Therefore, despite continued resistance from some clinicians who are skeptical of or who refuse to learn EBP, the EBP movement continues to forge ahead with full steam.

Another important reason that clinicians must include the latest evidence in their daily decision making is that evidence evolves on a continual basis. As a classic example, because of the release of findings from the Prempro arm of the Women's Health Initiative Study that was sponsored by the National Institutes of Health, the clinical trial on hormone replacement therapy (HRT) with Prempro was ceased early—after only 2.5 years—because the overall health risks (e.g., myocardial infarction, venous thromboembolism, and invasive breast cancer) of taking this combined estrogen/progestin HRT were found to be far greater than the benefits (e.g., prevention of osteoporosis and endometrial cancer). Compared with women taking a placebo, women who received Prempro had a 29% greater risk of coronary heart disease, a 41% higher rate of stroke, and a 26% increase in invasive breast cancer (Hendrix, 2002a). For years, practitioners prescribed long-term hormone therapy in the belief that it protected menopausal women from cardiovascular disease because many earlier studies supported this practice. However, there were studies that left some degree of uncertainty and prompted further investigation (i.e., the Prempro study) of what was the best practice for these women. As a result of the Women's Health Initiative Study, practice recommendations changed. The evolution of evidence in this case is a good example of the importance of basing practice on the latest, best evidence available and of engaging in a lifelong learning approach (i.e., EBP) about how to gather, generate, and apply evidence.

Another example is an RCT that was funded by the National Institutes of Health, which compared the use of the medication Metformin, standard care, and lifestyle changes (e.g., activity, diet, and weight loss) to prevent type 2 diabetes in high-risk individuals. The trial was stopped early because the evidence was so strong for the benefits of the lifestyle intervention. The intervention from this trial was translated into practice within a year by the Federally Qualified Health Centers participating in the Health Disparities Collaborative, a national effort to improve health outcomes for all medically underserved individuals (Talsma et al., 2008). This rapid transition of research findings into practice is what needs to become the norm instead of the rarity.

KEY INITIATIVES UNDERWAY TO ADVANCE EVIDENCE-BASED PRACTICE

The gap between the publishing of research evidence and its translation into practice to improve patient care often takes decades (Balas & Boren, 2000; Melnyk & Fineout-Overholt, 2011) and continues to be a major concern for healthcare organizations as well as federal agencies. In order to address this research–practice time gap, major initiatives such as the federal funding of EBP centers and the creation of formal task forces that critically appraise evidence in order to develop screening and management clinical practice guidelines have been established.

The Institute of Medicine's Roundtable on Evidence-Based Medicine helped to transform the manner in which evidence on clinical effectiveness is generated and used to improve healthcare and the health of Americans. The goal set by this Roundtable is that, by the year 2020, 90% of clinical decisions will be supported by accurate, timely, and up-to-date information that is based on the best available evidence (McClellan, McGinnis, Nabel, & Olsen, 2007). The Roundtable convened senior leadership from multiple sectors (e.g., patients, healthcare professionals, third-party payers, policy-makers, and researchers) to determine how evidence can be better generated and applied to improve the effectiveness and efficiency of healthcare in the U.S. (Institute of Medicine of the National Academies, n.d.). It stressed the need for better and timelier evidence concerning which interventions work best, for whom, and under what types of circumstances so that sound clinical decisions can be made. The Roundtable placed its emphasis on three areas:

1. accelerating the progress toward a learning healthcare system, in which evidence is applied and developed as a product of patient care;

2. generating evidence to support which healthcare strategies are most effective and produce the greatest value; and
3. improving public awareness and understanding about the nature of evidence, and its importance for their healthcare (Institute of Medicine of the National Academies, n.d.).

Among other key initiatives to advance EBP is the U.S. Preventive Services Task Force (USPSTF), which is an independent panel of 16 experts in primary care and prevention who systematically review the evidence of effectiveness and develop recommendations for clinical preventive services, including screening, counseling, and preventive medications. Emphasis is placed upon which preventive services should be incorporated by healthcare providers in primary care and for which populations. The USPSTF is sponsored by the Agency for Healthcare Research and Quality (AHRQ), and its recommendations are considered the **gold standard** for clinical preventive services (AHRQ, 2008). EBP centers, funded by AHRQ, conduct systematic reviews for the USPSTF and are the basis upon which it makes its recommendations. The USPSTF reviews the evidence presented by the EBP centers and estimates the magnitude of benefits and harms for each preventive service. Consensus about the net benefit for each preventive service is garnered, and the USPSTF then issues a recommendation for clinical practice. If there is insufficient evidence on a particular topic, the USPSTF recommends a research agenda for primary care for the generation of evidence needed to guide practice (Melnyk, Grossman et al., 2012). The USPSTF (2008) produces an annual *Guide to Clinical Preventive Services* that includes its recommendations on screening (e.g., breast cancer screening, visual screening, colon screening, depression screening), counseling, and preventive medication topics along with clinical considerations for each topic. This guide provides general practitioners, internists, pediatricians, nurse practitioners, nurses, and family practitioners with an authoritative source for evidence to make decisions about the delivery of preventive services in primary care.

An app, the Electronic Preventive Services Selector (ePSS), also is available for free to help healthcare providers implement the USPSTF recommendations at https://itunes.apple.com/us/app/ahrq-epss/id311852560?mt=8

The current *Guide to Clinical Preventive Services* can be downloaded free of charge from **http://www.ahrq.gov/clinic/pocketgd.htm**

Similar to the USPSTF, a similar panel of national experts uses a rigorous systematic review process to determine the best programs and policies to prevent disease in communities. Systemic reviews by this panel answer the following questions: (a) Which program and policy interventions have been proven effective? (b) Are there effective interventions that are right for my community? and (c) What might effective interventions cost and what is the likely return on investment? These evidence-based recommendations for communities are available in a free evidence-based resource entitled *The Guide to Community Preventive Services* (http://www.thecommunityguide.org/index.html).

Another recently funded federal initiative is The Patient-Centered Outcomes Research Institute (PCORI), which is authorized by Congress to conduct research to provide information about the best available evidence to help patients and their healthcare providers make more informed decisions. PCORI's studies are intended to provide patients with a better understanding of the prevention, treatment and care options available, and the science that supports those options. See http://pcori.org/

The Magnet Recognition Program by the American Nurses Credentialing Center is also facilitating the advancement of EBP in hospitals throughout the U.S. The program was started in order to recognize healthcare institutions that promote excellence in nursing practice. Magnet-designated hospitals reflect a high quality of care. The program evaluates quality indicators and standards of nursing practice as defined in the American Nurses Association's (2004) *Scope and Standards for Nurse Administrators*. Conducting research and using EBP are critical for attaining Magnet status (Reigle et al., 2008). Hospitals are appraised on evidence-based quality indicators, which are referred to as Forces of Magnetism. The Magnet program is based on a model with five key components: (1) transformational leadership; (2) structural empowerment; (3) exemplary professional practice; (4) new knowledge, innovation, and improvements, which emphasize new models of care, application of existing evidence, new evidence, and visible contributions