FOURTH EDITION

EVIDENCE-BASED PRACTICE IN NURSING AND HEALTHCARE

A GUIDE TO BEST PRACTICE

BERNADETTE MAZUREK MELNYK
ELLEN FINEOUT-OVERHOLT

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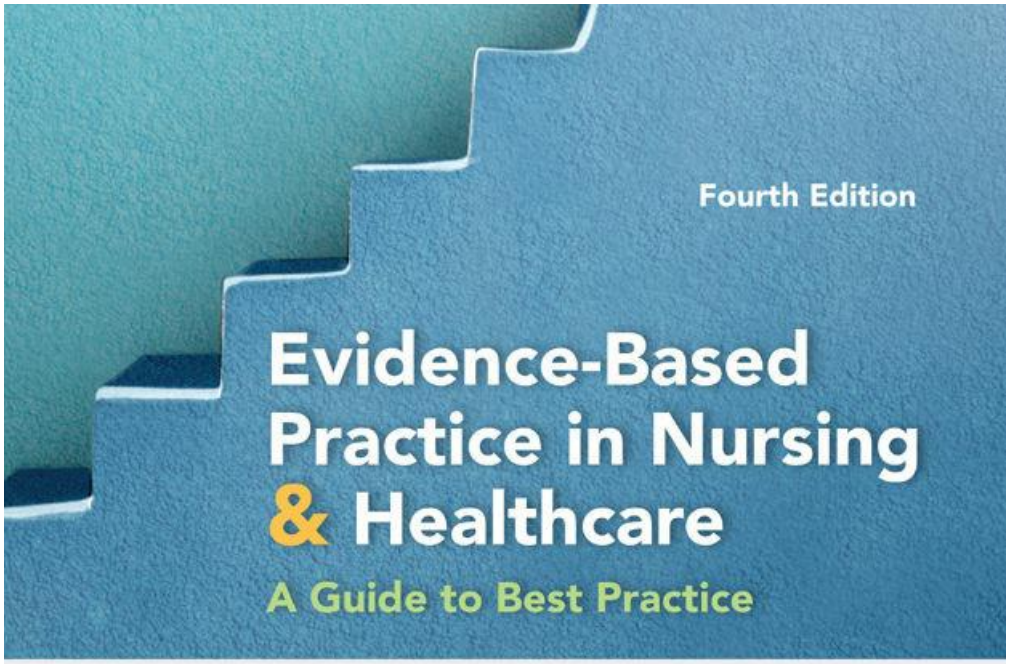

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I dedicate this book to my loving family, who has provided tremendous support to me in pursuing my dreams and passions: my husband, John; and my three daughters, Kaylin, Angela, and Megan; as well as to my father, who always taught me that anything can be accomplished with a spirit of enthusiasm and determination, and my sister Chris, who taught me to "just get out there and do it!" 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

For Rachael and Ruth, my precious daughters who are my daily inspiration. May you have the kind of healthcare you deserve—evidence-based with demonstrated reliable outcomes that is delivered by conscientious care providers who intentionally incorporate your preferences into your care. For my dear husband, Wayne, and my sweet Mom, Virginia Fineout, from whom I learn so much about how healthcare could/should be. Finally, this edition is dedicated to all care providers in primary care, community/public health, and at point of care in acute and long-term care who diligently seek to consistently deliver evidence-based care.

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Foreword

Like many of you, I have appreciated healthcare through a range of experiences and perspectives. As someone who has delivered healthcare 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 healthcare depends on clinicians being able to deliver on these and other best practices.

The Institute of Medicine (now the National Academy 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.

Richard H. Carmona, MD, MPH, FACS

17th Surgeon General of the United States

Preface

OVERVIEW OF THIS BOOK

The evidence is irrefutable: evidence-based practice (EBP) is key to meeting the quadruple aim in healthcare. It improves the patient experience through providing quality care, enhances patient outcomes, reduces costs, and empowers clinicians, leading to higher job satisfaction. 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. We wrote this book to address these issues and many others as well. We recommend that learners read this book, then read it again, engage in the online resources, the appendices, the glossary . . . then read it again. It is chock-full of information that can help learners of all disciplines, roles and educational levels discover how to be the best clinicians. We hope you find that EBP pearl that is just the right information you need to take the next step in your EBP journey to deliver the best care!

Purpose

The purpose of *Evidence-Based Practice in Nursing and Healthcare* has never changed. The purpose of this edition, as with the last three, is to incorporate what we have learned across the years to provide resources and information that can facilitate clinicians' ready translation of research findings into practice, as well as their use of practice data to improve care and document important outcomes, no matter the clinician's healthcare role. Each edition has provided additional features and resources for readers to use in their journey to become evidence-based clinicians. Since the first book was published, there has been some progress in the adoption of EBP as the standard of care; however, there is still much work to be done for EBP to *the* paradigm used in daily clinical decision making by point-of-care providers. Clinicians' commitment to excellence in healthcare through the intentional integration of research findings into practice while including patients in decisions remains a daunting endeavor that will take anywhere from years to decades. Therefore, increased efforts across the healthcare industry are required to provide a culture that fosters empowered point-of-care clinicians with the knowledge, skills, attitudes, and resources they need to deliver care that demonstrates improved healthcare system, clinician, 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 healthcare 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 care providers, 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 aims to assist all healthcare professionals in the delivery of the highest quality, evidence-based care.

The fourth edition of this book 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. The new material throughout the book, including new chapter material, a unit-by-unit EBP example, new chapters, EBP competencies, and tools to advance EBP, are included so that clinicians can use them to help with daily evidence-based decision making.

Worldview

A solid understanding of the EBP paradigm, or worldview, is the first mastery milestone for readers of this EBP book. The next milestone is using the paradigm as the foundation for making clinical decisions with patients. This worldview frames why rigorously following the steps of the EBP process is essential, clarifies misperceptions about implementing evidence-based care, and underpins practical action strategies that lead to sustainable evidence implementation at the point of care. It is our dream that the knowledge and understanding gained from thoughtfully and intentionally engaging the contents of this book will help clinicians across the country and globe accelerate adoption of the EBP paradigm until evidence-based care is the lived experience for clinicians, patients, and health professions students across various healthcare settings and educational institutions.

NEW FEATURES AND RESOURCES FOR THIS EDITION

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. Each unit now begins with "Making Connections: An EBP Exemplar." This unfolding case study serves as a model or example of EBP in real-life practice. We recommend that learners read each unit exemplar before they engage in that unit's content; the characters in the healthcare team in the exemplar use the information within the unit's chapters to carry out the steps of EBP, leading to a real evidence-based change to improve the quality and safety of care. These characters may be fictional, but the exemplar is based on an important quality indicator (i.e., hospital falls) and an actual synthesis of published research that offers the opportunity for readers to better understand how they can use EBP in their clinical practice or educational setting to improve outcomes. Readers may wish to refer back to the exemplar as they are reading through the chapters to see how the healthcare team used the information they are learning. Furthermore, it is recommended that readers follow the team as they make evidence-based decisions across the units within the book. There are online resources as well as resources within the appendices of the book that will be used in the exemplar, offering readers the opportunity to see how the team uses these resources in evidence-based decision making.

Our unit-ending feature, "Making EBP Real: A Success Story," has been updated and continues to provide real-life examples that help readers to see the principles of EBP applied. Readers can explore a variety of ways that the steps of the EBP process were used in real EBP implementations. Clinicians who desire to stimulate or lead change to a culture of EBP in their practice sites can discover in both of these unit-level features how functional models and practical strategies to introduce a change to EBP can occur, including overcoming barriers in implementing change, evaluating outcomes of change, and moving change to sustainability through making it standard of care.

To help recognize that knowledge and understanding of EBP terms and language is essential to adopting the EBP paradigm, in this edition, we added *EBP Terms to Learn* that features key terms at the beginning of

each unit and chapter. Readers can review terms in the glossary before reading the chapters so that they can readily assimilate content. Furthermore, we have provided learning objectives at the unit and chapter level to continue to reinforce important concepts and offer the opportunity for readers to quickly identify key chapter content. When readers come across bolded terms within the chapter, they are encouraged to go to the glossary at back of the book to further explore that concept. EBP Fast Facts is an important feature at the end of each chapter that we retained for this edition, offering readers some of the most important pearls of wisdom from the chapter. These elements in our fourth edition will help learners master the terminology of EBP and identify important content for developing EBP competence.

Finally, for faculty, there is new content in the chapter on teaching EBP in academic settings that can help educators to parse teaching EBP across academic learning degrees. Educators are encouraged to review the online resources that can facilitate teaching EBP in both academic and clinical settings.

Further resources for all readers of the book include appendices that help learners master the process of evidence-based change, such as rapid critical appraisal checklists (be sure to check online on thePoint for Word versions of RCA checklists for readers to use), sample instruments to evaluate EBP in both educational and clinical settings, a template for asking PICOT questions, and more. Some appendices appear online only on thePoint, including an appraisal guide for qualitative evidence, an ARCC model EBP mentor role description, and examples of a health policy brief, a press release, and an approved consent form for a study. More details about the great resources available online can be found below.

ORGANIZATION OF THE BOOK

As in prior editions, the Table of Contents is structured to follow the steps of EBP:

- Chapters 1 to 3 in **Unit 1** encompass steps 0, 1, and 2 of the EBP process. This unit gets learners started by building a strong foundation and has significant content updates in this new edition.
- Chapters 4 to 8 in **Unit 2** delve deeply into step 3 of the EBP process, the four-phased critical appraisal of evidence. In this edition, Chapters 7 and 8 were moved into Unit 2 to better align the steps of the EBP process with the chapters, including the important consideration of patient concerns, choices, clinical judgment, and clinical practice guidelines in the recommendation phase of critical appraisal.
- In **Unit 3**, Chapters 9 to 12 move the reader from recommendation to implementation of sustainable practice change. To facilitate understanding how to implement evidence-based change, Chapter 11 was added to describe the context, content, and outcome of implementing EBP competencies in clinical and academic settings.
- **Unit 4** promotes creating and sustaining a culture of EBP. In this unit, we included new content and resources in the chapters on teaching EBP in educational and healthcare settings (Chapters 16 and 17, respectively). Educators can be most successful as they make the EBP paradigm and process understandable for their learners.
- **Unit 5** features a new Chapter 19 on health policy. In today's political climate, nurses and healthcare professionals need to understand how to ensure sustainable change through influencing the formulation of policies governing healthcare, fully supported by the latest and best evidence. This new chapter joins Chapter 20 on disseminating evidence.
- In **Unit 6**, Chapter 21 now combines two previous chapters' content on generating evidence through qualitative and quantitative research, greatly streamlining the material for enhanced understanding of important concepts and making the information more accessible to learners. Chapter 23 provides updated information on ethics in EBP and research generation.
- The glossary is one of the best resources within this book. Readers are encouraged to use it liberally to understand and master EBP language, and thereby enhance their fluency.

Often, educators teach by following chapters in a textbook through their exact sequence; however, we recommend using chapters of this fourth edition that are appropriate for the level of the learner (e.g., associate degree, baccalaureate, master's, 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 to 4, with Unit 5 as a resource for understanding more about research terminology and methods as readers learn to critical appraise evidence. Master's and doctoral programs can incorporate all units into their curricula. Advanced practice clinicians and doctorally-prepared clinical experts will be able to lead in implementing evidence in practice, thoughtfully evaluate outcomes of practice, and move to sustainable change, whereas those learning to become researchers will understand how to best build on existing evidence to fill gaps in knowledge with valid, reliable research that is clinically meaningful.

An important resource for educators to use as a supplement to this 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 6. We recommend this series as a supplement because the series was written to expose readers to the EBP process in story form, but used alone it does not provide the level of learning to establish competence in evidence-based care. In the series, a team of healthcare providers encounters a challenging issue and uses the EBP process to find a sustainable solution that improves healthcare outcomes. If educators choose to use this series, we caution on using it as the sole source for learning about EBP. Rather, assigning the articles to be read before a course begins or in tandem with readings from this book that match the article being read provides a complete learning opportunity, including context and adequate content for competence—the goal of learning about EBP, regardless of the learner's level of education or clinical practice. For example, the first three chapters of the book could be assigned along with the first four articles, in an academic or clinical setting. The learners could use discussion boards or face-to-face group conference-type settings to discuss how the team used the content the learners studied within the chapter, allowing educators opportunity for evaluation of content mastery (see suggested curriculum strategy at this book's companion website on thePoint®, http://thepoint.lww.com/Melnyk4e). Multiple approaches are offered for educators and learners to engage EBP content, and, in doing so, we believe that this book continues to facilitate changes in how research concepts and critical appraisal are being taught in clinical and academic professional programs throughout the country.

UPDATED FEATURES

This edition of *Evidence-Based Practice in Nursing & Healthcare* includes many features that readers have come to expect. These features are designed to benefit both learners and educators:

- **Quotes:** 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 increasing their knowledge and skills in EBP to accomplish their desired learning goals.
- **Clinical Scenarios** describe a clinical case or a supervisory decision clinicians could encounter in clinical practice, prompting readers to seek out best evidence and determine a reasonable course of action.
- **Web Tips:** With the rapid delivery of information available to us, **web tips** direct readers to helpful Internet resources and sites that can be used to further develop EBP knowledge and skills.
- **EBP Fast Facts** act as a chapter-closing feature, highlighting important points from each chapter. Reviewing these pearls can help readers know if they retained the important concepts presented within the chapter.
- **Making EBP Real:** A successful real-world case story emphasizing applied content from each unit.
- **NEW: Learning Objectives:** Each unit and chapter now begins with learning objectives, to help learners focus on key concepts.
- **NEW: EBP Terms to Learn:** Each unit and chapter also now includes a list of the key terms discussed or defined in the chapter that are to help students build familiarity with the language and terminology of EBP.

- **NEW: Making Connections: An EBP Exemplar:** Opening each unit, this new feature walks the learner through the EBP process in an unfolding case study that is applicable to a real-time important practice issue.

ADDITIONAL RESOURCES ON thePoint

Evidence-Based Practice in Nursing and Healthcare, fourth edition, includes additional resources for both learners and educators that are available on the book's companion website at http://thepoint.lww.com/Melnyk4e.

Learner Resources Available on thePoint

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

- Appendices D, E, F, G, H from the book
- Learning Objectives for each chapter
- **Checklists and templates** in MS Word format include checklists for rapid critical appraisal, conducting an evidence review, or holding a journal club; sample templates for PICOT questions and for evaluation and synthesis tables; an ARCC model EBP mentor role description; and more.
- **A searching exercise** to help develop mastery of systematic searching.
- **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 as a supplement to learning within the EBP book.
- An example of a poster (to accompany Chapter 20).
- A **Spanish–English audio glossary** and **Nursing Professional Roles and Responsibilities**

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

Educator Resources Available on thePoint

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

- An **eBook** allows access to the book's full text and images online.
- **Test generator** with updated NCLEX-style questions. Test questions link to chapter learning objectives.
- Additional **application case studies and examples** for select chapters.
- **PowerPoint presentations,** including multiple choice questions for use with interactive clicker technology.
- 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 learner resources.

COMPREHENSIVE, INTEGRATED DIGITAL LEARNING SOLUTIONS

We are delighted to introduce digital solutions to support educators and learners using *Evidence-Based Practice in Nursing & Healthcare*, Fourth Edition. Now for the first time, our textbook is embedded into an integrated digital learning solution that builds on the features of the text with proven instructional design strategies. To learn more about this solution, visit http://nursingeducation.lww.com/, or contact your local Wolters Kluwer representative.

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Lippincott CoursePoint is a rich learning environment that drives academic course and curriculum success to prepare learners for practice. Lippincott CoursePoint is designed for the way students learn. The solution connects learning to real-life application by integrating content from *Evidence-Based Practice in Nursing & Healthcare* with video cases, interactive modules, and evidence-based journal articles. Ideal for active, case-based learning, this powerful solution helps students develop higher-level cognitive skills and asks them to make decisions related to simple-to-complex scenarios.

Lippincott CoursePoint for Evidence-Based Practice features:

- **Leading content in context:** Digital content from *Evidence-Based Practice in Nursing & Healthcare* is embedded in our Powerful Tools, engaging students and encouraging interaction and learning on a deeper level.
  - The complete interactive eBook features annual content updates with the latest evidence-based practices and provides students with anytime, anywhere access on multiple devices.
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- **Powerful tools to maximize class performance:** Additional course-specific tools provide case-based learning for every student:
  - **Video Cases** help students anticipate what to expect as a nurse, with detailed scenarios that capture their attention and integrate clinical knowledge with EBP concepts that are critical to real-world nursing practice. By watching the videos and completing related activities, students will flex their problem-solving, prioritizing, analyzing, and application skills to aid both in NCLEX preparation and in preparation for practice.
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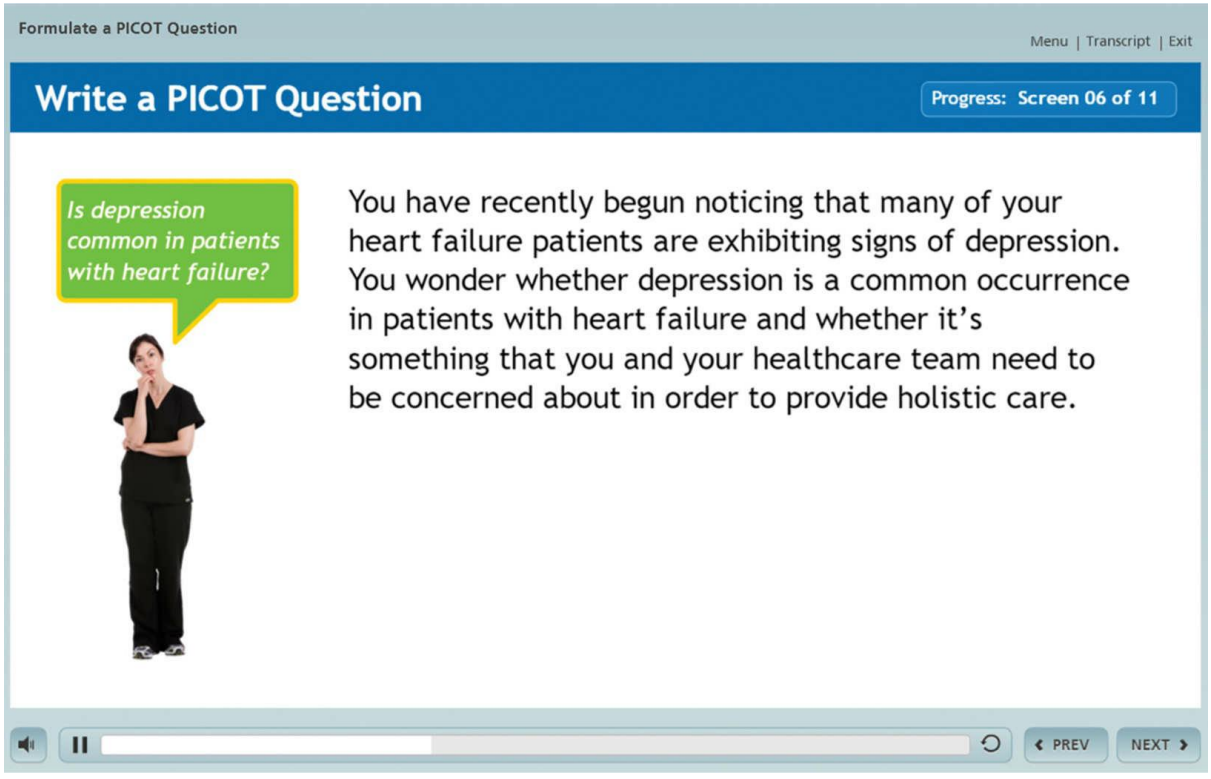

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quizzes, ensuring students are coming to the classroom ready and prepared to learn.

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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 fourth 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 in 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, sustainable evidence-based 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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Acknowledgments

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 coeditor 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 inspirational 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, especially Dr. Margaret Graham and Kathy York. 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

Now is the time to join together to ensure that EBP is *the* paradigm for clinical decision making. Healthcare providers and educators have made tremendous strides across the years to establish that EBP is an expectation of providers, educators, and systems. I am grateful to the American Nurses Credentialing Center (ANCC) for the impact of the Magnet movement as well as educational accrediting agencies (e.g., Commission on Collegiate Nursing Education [CCNE], National League for Nurses Accreditation Commission [NLNAC], Liaison Committee on Medical Education [LCME], Accreditation Council of Pharmacy Education [ACPE]) for putting forward standards that have had an impact on adoption of the EBP paradigm and process in education, practice, and policy. As a result, all of us across the wonderful diversity of providers who make up the healthcare team are supported as we choose the EBP paradigm as the foundation for daily clinical decisions. Thank you to the students, clinicians, healthcare leadership, clinical educators, faculty, and researchers for demonstrating the ownership of practice that is the key to placing EBP at the center of healthcare transformation. We are at a tipping point . . . let's see it through to fruition!

To those of you who have shared with me personally the difference this book has made in your practice, educational endeavors, and teaching, I heartily extend my deepest thanks. The value of our work is measured by the impact it has on advancing best practice in healthcare and how it helps point-of-care providers and educators make a difference in patients' and students' lives and health experiences. You help us know that we are making progress on achieving our dream of transforming healthcare—one client–clinician/learner–

educator relationship at a time. Bern, almost 30 years ago, we started our work together—not knowing where our path would take us. Thank you for seeing the potential and taking the chance—I have enjoyed the wonderful privilege to work alongside you to bring our dream to life. To my colleagues at University of Texas at Tyler, thank you for the privilege of joining the family—you are the best!!

With the writing of this fourth edition, my life experiences, and those of contributors to the book, have helped me recognize more completely how blessed I am to have the support of my precious family and friends and to have wonderful people in my life who are committed to this often-arduous journey toward best care for all patients. My sweet family has trekked with me across these four editions. With the first edition, our eldest daughter wasn't yet one year old; now, she is a senior in high school. Our youngest daughter was a dream who is now is in eighth grade. Every day, these sweet young ladies inspire me to continue to strive to achieve the goal of evidence-based care as the standard for healthcare. Their gift of love and laughter delivered in packages of hugs is invaluable—Thank You, Rachael and Ruth! Thank you to my steadfast husband, Wayne, who faithfully offers perspective and balance that are so important to me—your support for this work is invaluable! Thank you to my mother, Virginia (Grandginny), who continues to help me see the best and not best in healthcare as she experiences it as an older old adult (now 87). Her encounters remain a reminder that advocating for evidence-based consumers is an imperative. Thank you to my brother John, and his family, Angela, Ashton, and Aubrey—your music lifts my spirits; your healthcare experiences serve as fodder for this work. To those of you who have prayed for me during this writing adventure—thank you so very much! During my extenuating health issues that have flavored this fourth edition, my Savior and Friend's continual care for me has been profound. I am eternally grateful. Healthcare should serve all of us well. Let us all strive to ensure that every encounter is an experience in excellent care.

Finally, I am grateful to each of you who choose to read this book, take the knowledge contained in its pages, and make the EBP paradigm and process come alive in your work. You make our dream of healthcare transformation through EBP live! The Wolters Kluwer team with whom we have had the privilege to work has been so helpful to make this fourth edition the best yet!! Thank you so much! This book is not written by one person—or even two. It is written by many people who give of their expertise and wisdom so that readers can have such a wonderful resource. I am very grateful for each of the faithful contributors to this work and their decision to join us in advancing EBP as the solution for improving 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*

EBP Terms to Learn

Background questions

Bibliographic database

Body of evidence

Boolean connectors

Clinical inquiry

Critical appraisal

EBP competencies

Evidence-based practice (EBP)

Evidence-based quality improvement (EBPI)

External evidence

Foreground questions

Grey literature

Internal evidence

Keywords

Meta-analysis

Outcomes management

PICOT format

Point-of-care resources

Preappraised literature

Proximity searching

Randomized controlled trials (RCTs)

Reference managers

Search strategy

Subject headings

Yield

UNIT OBJECTIVES

***Upon completion of this unit, learners will be able to*:**

1. **Identify the seven steps of evidence-based practice (EBP).**
2. **Describe the differences among EBP, research, and quality improvement.**
3. **Explain the components of a PICOT question: population, issue or intervention of interest, comparison of interest, outcome, and time for intervention to achieve the outcome.**

4 Discuss basic and advanced strategies for conducting a systematic search based on the PICOT question.

5 Describe a body of evidence based on the evidence hierarchy for specific types of clinical questions.

MAKING CONNECTIONS: AN EBP EXEMPLAR

On the orthopedic unit of a tertiary hospital in the Eastern United States, a nurse manager, Danielle, and the unit EBP Council representative, Betsy, were discussing recent quality improvement (QI) reports in the staff lounge. Danielle noted that the unit's patient satisfaction rates had dropped as their fall rates had increased.

To help provide context, Betsy, who has a passion for fall prevention (*Step 0: Spirit of Inquiry*), shared the story of Sam, an elderly patient who sustained a fall with injury during the last quarter, despite the fact that he was not a high fall risk. As Sam's primary nurse, Betsy had initiated universal fall prevention precautions as recommended by the Agency for Healthcare Research & Quality in their Falls Prevention Toolkit (AHRQ; https://www.ahrq.gov/sites/default/files/publications/files/fallpxtoolkit.pdf). Betsy hoped that Sam's story would help illuminate some of the issues that surround falls that are more challenging to predict.

Sam had awakened from a deep sleep and needed to void. He was oriented when he went to bed, but upon waking he became confused and couldn't locate his call light because, although it was placed close to him, it had been covered by his pillow. In an interview after he fell, Sam told Betsy that he had to go so badly that he just didn't think about looking under the pillow. He also forgot that there was a urinal on the bedside table. He simply focused on getting to the bathroom, and when he tried to get out of bed with the rails up, he pinched his wrist, causing a hematoma and soft tissue injury.

Danielle had more information that shed light on the rising fall rates. All of the falls during the past quarter occurred during the night shift. Over a period of several weeks, a number of the night nurses had been ill, leading to per-diem and float staff covering those positions. Staff had documented rounding, but Betsy and Danielle wondered whether introducing regularly scheduled rounding could prevent future falls like Sam's.

Danielle and Betsy discussed some tools that they had heard could help structure regular rounding; both agreed that staff would need more than just their recommendation for the implementation of any tool to be successful. They gathered a group of interested staff who had reviewed the fall data to ask about their current regular rounding habits. The nurses indicated that they rounded on a regular basis, but sometimes up to three hours might pass between check-ins with more "stable" patients like Sam, particularly if there were other urgent needs on the unit. One of the newer nurses, Boqin, mentioned that in nursing school he had written a paper on hourly rounding and perhaps that may be a solution.

All of the unit nurses agreed that the outcome of a rising fall rate required evaluation and that hourly rounding may help, so Betsy guided the group in crafting a properly formatted PICOT question (P: population; I: intervention or issue of interest; C: comparison intervention or condition; O: outcome to see changed; T: time for the intervention to achieve the outcome or issue to be addressed). After reviewing the QI data, discussing the context of the clinical issue, and looking at case studies for clues about why the outcome was occurring, the question that the group posed was, *In elderly patients with low risk for falls with universal precautions in place, how does hourly rounding at night compared to no hourly rounding affect preventable fall rates within 3 months of initiation? (Step 1: Ask a Clinical Question in PICOT Format)*.

The nurses became excited about answering the question and asked Betsy about the next steps in the EBP process. Betsy already had a great relationship with their hospital librarian, Scott, who was well versed in EBP and had demonstrated his expertise at systematic searching when helping with previous EBP Council projects. Betsy e-mailed the group's PICOT question to Scott and asked him to conduct a systematic search *(Step 2: Systematic Searching)*. Scott knew that his initial search terms had to come from the PICOT question, so he carefully considered what the nurses had asked. He knew a great start would be finding a systematic review that contained multiple studies about the impact of hourly rounding on fall rates within elderly patients who were at low risk for falls, so he began his search with the O: fall rates. In addition, all studies Scott would consider including in his body of evidence would need to have the outcome of preventable fall rates; otherwise, the studies could not answer to the clinical question.

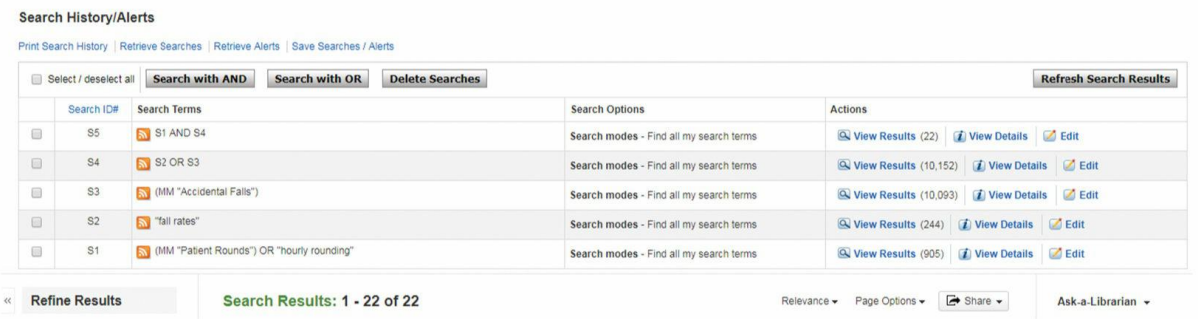

Figure 1: Systematic search of Comprehensive Index of Nursing and Allied Health Literature (CINAHL) database. (Source: EBSCO Information Services)

A systematic search using the advance search interface of the Cochrane Library to find systematic reviews that included the terms *hourly rounding* AND *falls* yielded no hits. The term *hourly rounding* yielded one hit, a systematic review focused on the impact of hourly rounding on patient satisfaction. Scott decided to keep that review, since Betsy had mentioned that their patient satisfaction had varied at the same time as their fall rates. Using the same approach, Scott continued the systematic search in the Comprehensive Index of Nursing and Allied Health Literature (CINAHL) database, beginning with the same terms, *hourly rounding* and *falls* and their associated subject headings. Scott used the focus feature in CINAHL for each subject heading to make sure the topic was the major point of the article. This search yielded 22 articles. A systematic search of PubMed with the same approach yielded 12 studies (see Figures 1 and 2 for details of these searches).

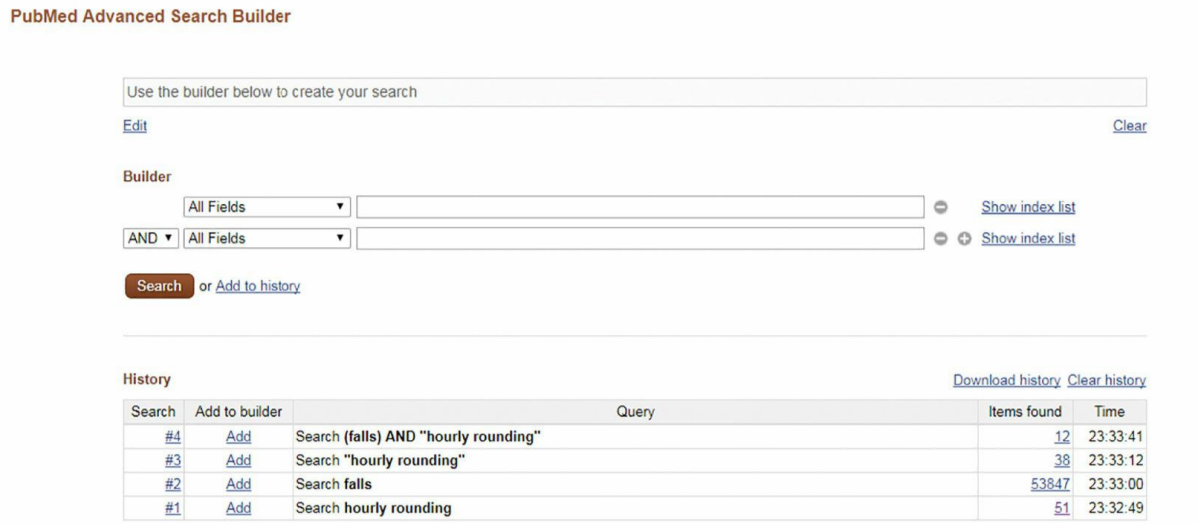

Figure 2: Systematic search of PubMed database. (From National Library of Medicine, www.pubmed.gov)

Now that all three databases had been searched, the total yield of 35 studies were available for Scott's review to see if they were keeper studies to answer the PICOT question. Eight hits were found to be redundant among databases and were removed from the yield ($N = 27$). When inclusion criteria of fall preventions as the outcome was applied, 14 more were removed ($N = 13$). One article was proprietary and could not be accessed through interlibrary loan or via the Internet ($N = 12$). Three articles were not owned by the library and were requested through interlibrary loan ($N = 15$). Finally, two relevant articles, one of which was a master's thesis, were found by hand searching, which resulted in 17 articles to enter into the critical appraisal process. After review of the study designs, the final cohort of studies that Scott currently had (i.e., the body of evidence) included one systematic review, no single randomized controlled trials, four quasi-experimental studies, eight evidence-based or quality improvement projects, and one expert opinion article (see Table 1). He knew he had three more articles to add to the body of evidence when they came in from interlibrary loan; however, Scott thought it was important to discuss the current body of evidence with Betsy and Danielle, who decided to take the current articles to the EBP Council.

Join the group at the beginning of Unit 2 as they continue their EBP journey.

TABLE

1 *Synthesis: Levels of Evidence*

Level of Evidence for Intervention Questions	1	2	3	4	5	6	7	8	9	10	11	12	13	14
I. Systematic review/ meta-analysis of randomized controlled trials									×					
II. Single randomized controlled trial														
III. Quasi-experimental studies/nonrandomized controlled trials	×					×				×		×		
IV. Cohort or case–control studies														
V. Systematic review/ meta-synthesis of qualitative studies														
VI. Single qualitative or descriptive studies/evidence implementation and quality improvement projects		×	×	×			×	×			×		×	×
VII. Expert opinion					×									

1, Brown; 2, Callahan; 3, Dyck; 4, Goldsack; 5, Hicks; 6, Krepper; 7, Leone; 8, Lowe; 9, Mitchell; 10, Olrich; 11, Stefancyk; 12, Tucker; 13, Waszynski; 14, Weisgram.

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*Waiting for interlibrary loan.

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

Bernadette Mazurek Melnyk and Ellen Fineout-Overholt

Believe you can and you're half-way there

—Theodore Roosevelt

EBP Terms to Learn

Critical appraisal
EBP competencies
Evidence-based practice (EBP)
Evidence-based quality improvement
Evidence-based quality improvement projects
Evidence-based theories
External evidence
Internal evidence
Meta-analyses
Outcome management
Predictive studies
Quadruple aim in healthcare
Quality improvement (QI)
Randomized controlled trials (RCTs)
Randomly assigned
Rapid critical appraisal
Research
Research utilization
"so-what" outcomes
Spirit of inquiry
Synthesis
Systematic reviews
Translational research

Learning Objectives

***After studying this chapter, learners will be able to*:**

1. **Discuss how evidence-based practice (EBP) assists hospitals and healthcare systems achieve the quadruple aim.**
2. **Describe the differences among EBP, research, and quality improvement.**

3 **Identify the seven steps of EBP.**

4 **Discuss barriers to EBP and key elements of cultures that support the implementation of EBP.**

The evidence is irrefutable. **Evidence-based practice (EBP)** enhances healthcare quality, improves patient outcomes, reduces costs, and empowers clinicians; this is known as the **quadruple aim in healthcare** (Bodenheimer & Sinsky, 2014; Melnyk & Fineout-Overholt, 2015; Tucker, 2014). Hospitals and healthcare systems across the United States are continually striving to reach the quadruple aim and improve the safety of care. However, problems with quality persist; for example, preventable medical errors are the third leading cause of death in the United States, and clinician burnout is a public health epidemic (Johnson et al., 2017; Makary & Daniel, 2016; Melnyk, 2016a; Shanafelt et al., 2015). Although EBP is a key strategy for reaching the quadruple aim, it is not the standard of care in many healthcare systems because practices steeped in tradition and organizations that foster a culture of "this is the way we do it here" continue to thrive across the United States and the world.

Recently, there has been an explosion of scientific evidence available to guide health professionals in their clinical decision making. Even though this evidence is readily available, the implementation of evidence-based care is still not the norm in many healthcare systems across the United States and the globe because clinicians across the United States lack competency in EBP and cultures are still steeped in tradition (Melnyk et al., 2017). The translation of research evidence into clinical practice remains painfully slow, often spanning from years to decades. However, when clinicians are asked whether they would personally like to receive evidence-based care themselves, the answer is a resounding "yes!" For example,

- If you were diagnosed with a brain tumor today, would you want your oncologist to share with you the best and latest evidence regarding the risks and benefits of each type of chemotherapy and radiation treatment available so that you could make the best collaborative decision about your care?
- 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 research-supported treatment established from **randomized controlled trials (RCTs)** to decrease his intracranial pressure and prevent him from dying?
- If your mother were diagnosed with Alzheimer's disease, would you want her healthcare provider 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 studies?

If your answer to the above three questions is yes, how can we as healthcare professionals deliver anything less than EBP?

DEFINITION AND EVOLUTION OF EVIDENCE-BASED PRACTICE

In 2000, Sackett et al. defined EBP as the conscientious use of current best evidence in making decisions about patient care. Since then, the definition of EBP has broadened in scope and is referred to as a lifelong

problem-solving approach to clinical practice that integrates the following:

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

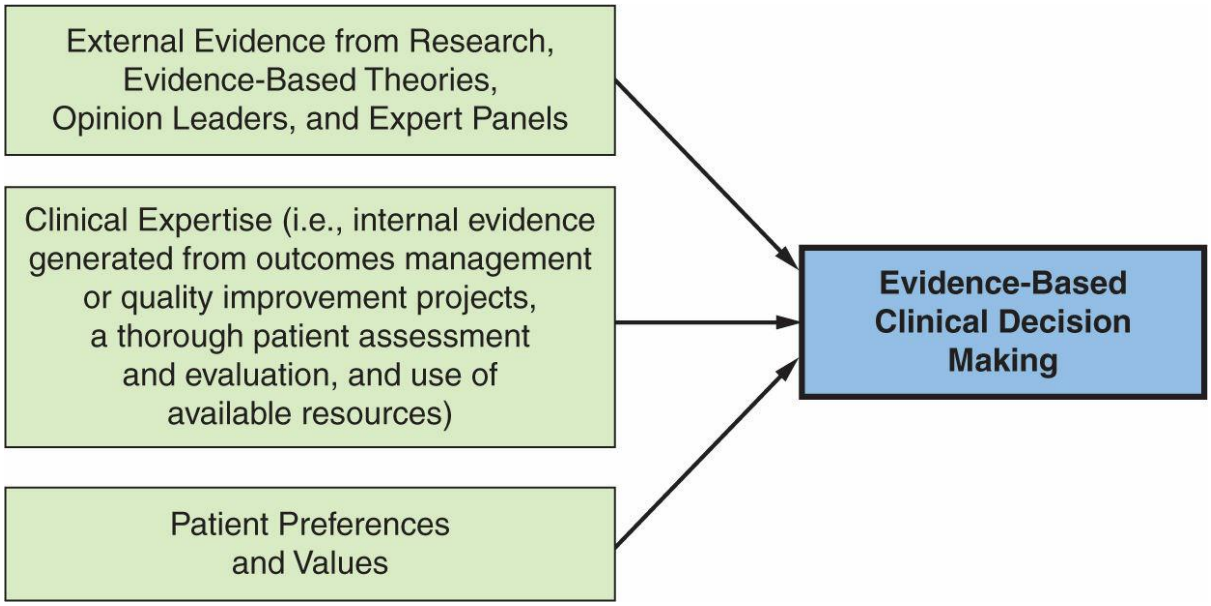

Figure 1.1: The components of evidence-based practice. (From Melnyk, B. M., & Fineout-Overholt, E. [2011]. *Evidence-based practice in nursing & healthcare. A guide to best practice*. Philadelphia, PA: Wolters Kluwer/Lippincott Williams & Wilkins.)

DIFFERENCES AMONG EBP, RESEARCH, AND QUALITY IMPROVEMENT

Unlike **research** that uses a scientific process to generate new knowledge/external evidence and **research utilization**, which has been frequently operationalized as the use of knowledge typically based on a single study, the EBP process involves rigorous critical appraisal, including **synthesis** and recommendations for practice, of a body of evidence comprised of multiple studies and combines it with the expertise of the clinician as well as patient/family preferences and values to make the best decisions about patient care (Melnyk & Fineout-Overholt, 2015). **Quality improvement (QI)**, a systematic process that often uses the plan, do, study, act (PDSA) model, is used by healthcare systems to improve their processes or outcomes for a specific population once a problem is identified and is often confused with EBP (Shirey et al., 2011). An example of a QI initiative would be triggered by a sudden increase in ventilator-associated pneumonia that, when practice data were evaluated, indicated that an oral care protocol was not being implemented on a regular basis. The PDSA cycle culminated in an educational booster for the staff about the oral care protocol and further monitoring of the process to reduce a high rate of ventilator-associated pneumonia in critically ill patients. The difference between QI and **evidence-based QI** is that the former relies primarily on internal evidence and often does not involve a systematic search for and critical appraisal of evidence, whereas the

latter must include both internal and external evidence in decision making about a practice change to be implemented to improve an important clinical outcome (Melnyk, Buck, & Gallagher-Ford, 2015). The goal is for all QI to become evidence-based.

Another process intended to improve healthcare is outcomes management, which is very similar to evidence-based QI. Outcomes management typically uses a four-step process to (1) define a clinical problem and outcome that need to be improved (e.g., falls, hospital readmissions); (2) establish how the outcome will be measured; (3) identify practices supported by evidence that need to be implemented to improve the outcome; and (4) measure the impact of implementing the best practice on the targeted outcome (Brewer & Alexandrov, 2015). **Translational research** is also often confused with EBP. However, translational research is rigorous research that studies how evidence-based interventions are translated to real-world clinical settings.

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 **predictive studies**) and is intended to be generalized and used in other settings. An important question when implementing external evidence is whether clinicians can achieve the same results with their patients that were obtained in the studies they reviewed (i.e., can the findings from research be translated to the real-world clinical setting with the same outcomes?). This question of transferability is why measurement of key outcomes is necessary when implementing practice changes based on evidence. In contrast, internal evidence is typically generated through practice initiatives, such as outcomes management or evidence-based QI projects. Researchers generate new knowledge through rigorous research (i.e., external evidence), and EBP provides clinicians the process and tools to translate the external evidence into clinical practice and integrate it with internal evidence to improve quality of healthcare, patient outcomes, and cost reductions.

Unfortunately, there are many interventions (i.e., treatments) with substantial 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 Creating Opportunities for Parent Empowerment (COPE) program for parents of critically ill/hospitalized and premature infants support that when parents receive COPE (i.e., an educational–behavioral skills-building intervention 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 (Gonya, Martin, McClead, Nelin, & Shepher, 2014; Melnyk & Feinstein, 2009; Melnyk et al., 2004, 2006). In addition, the premature infants and children of parents who receive COPE have better behavioral and developmental outcomes as well as shorter hospital stays and readmission rates versus those whose parents who receive an attention control program, which could result in billions of dollars of healthcare savings for the healthcare system if the program is routinely implemented by hospitals across the United States (Melnyk & Feinstein, 2009). Despite this strong body of evidence generated in multiple studies spanning two decades of research, including the important **"so-what" outcomes** of decreased length of stay

and reduced hospital costs, COPE is still not the standard of practice in many healthcare systems throughout the nation.

In contrast, many practices 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). Further more, some practices in which evidence has shown adverse outcomes have prevailed (e.g., 12-hour shifts for nurses). 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, evidence-based QI 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; Melnyk & Fineout-Overholt, 2015).

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 as part of the body of evidence. These lower level studies should be compared in their findings with higher level studies. When RCTs are not available, these lower level studies may be the best knowledge available for clinical decision making (Melnyk & Fineout-Overholt, 2015). **Evidence-based theories** (i.e., theories that are empirically supported through well-designed studies) also should be included as evidence. In addition, patient/family 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 and to assess a patient's condition through subjective history taking, thorough physical examination findings, and laboratory reports); (b) internal evidence generated from evidence-based QI 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).

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 needed to change clinical practice (Box 1.1).

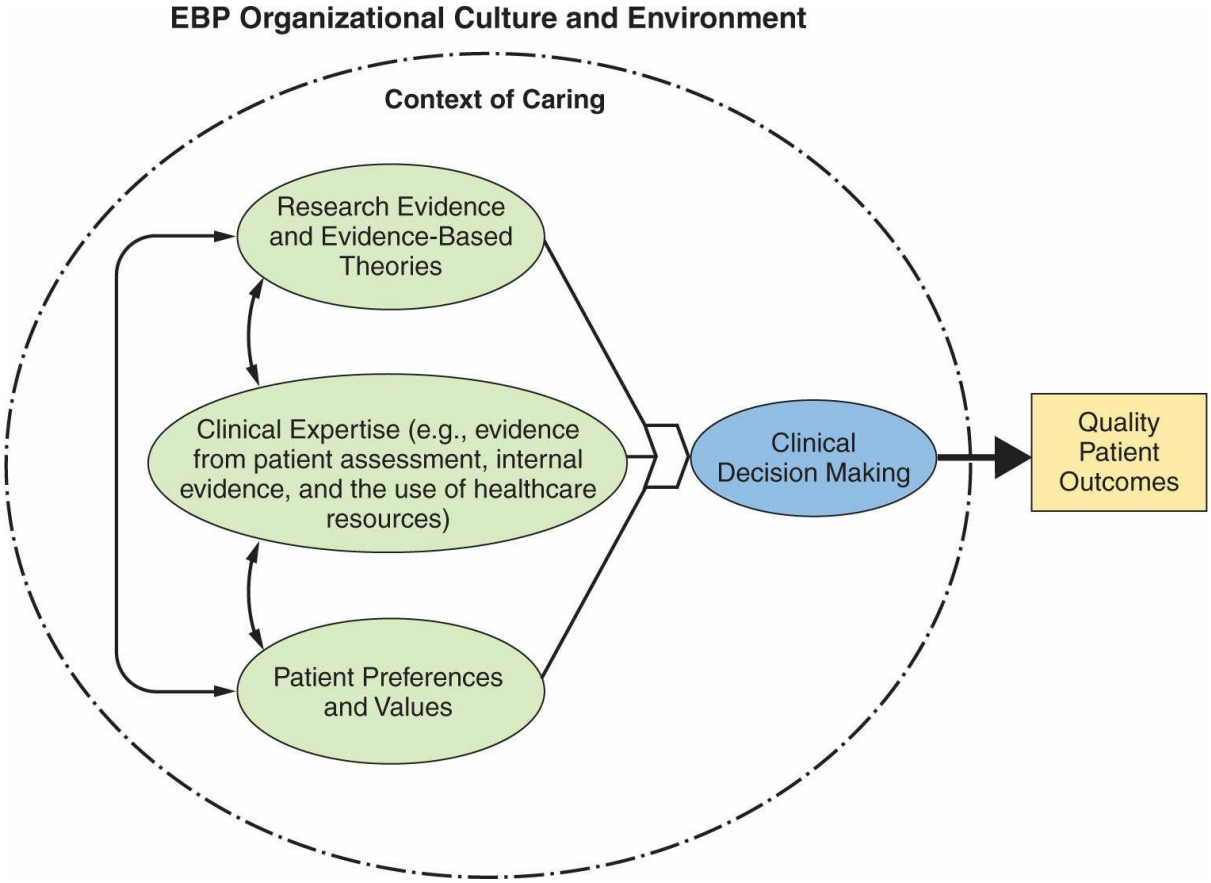

Figure 1.2: **The merging of science and art: Evidence-based practice (EBP) within a context of caring and an EBP culture and environment result in the highest quality of healthcare and patient outcomes. © Melnyk & Fineout-Overholt, 2017.**

ORIGINS OF THE EVIDENCE-BASED PRACTICE MOVEMENT

The EBP movement was founded by Dr. Archie Cochrane, a British epidemiologist, who struggled with the 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 criticizing 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).

BOX 1.1 ***Rule of Thumb to Determine 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!***

In an exemplar case, Cochrane noted that thousands of premature infants with low birth weight 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, owing to 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 37,000 dedicated people from over 130 countries, is to assist healthcare practitioners, policy makers, patients, and their advocates to make evidence-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. Examples of systematic reviews housed on the Cochrane website include vaccines to prevent influenza in healthy adults, steroids for the treatment of influenza, psychosocial interventions for supporting women to stop smoking in pregnancy, and gabapentin for chronic neuropathic pain and fibromyalgia in adults.

Further information about the Cochrane Collaboration, including a complete listing of systematic reviews, can be accessed at http://www.cochrane.org/

WHY EVIDENCE-BASED PRACTICE?

The most important reason for consistently implementing EBP is that it leads to the highest quality of care and the best patient outcomes (Melnyk, 2017). In addition, EBP reduces healthcare costs and geographic variation in the delivery of care (Dotson et al., 2014). Findings from studies also indicate that clinicians report feeling more empowered and have higher job satisfaction when they engage in EBP (Fridman & Frederickson, 2014; Kim et al., 2016, 2017). With recent reports of pervasive "burnout" and depression 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; Melnyk, Orsolini, Tan et al., 2017).

Despite the multitude of positive outcomes associated with EBP and the strong desire of healthcare providers to be the recipients of evidence-based care, an alarming number of healthcare systems and clinicians do not consistently implement EBP or follow evidence-based clinical practice guidelines (Dotson et al., 2014; Melnyk, Grossman et al., 2012; Vlada et al., 2013). Findings from a national survey of more than 1,000 randomly selected nurses from the American Nurses Association indicated that major barriers to EBP continue to persist in healthcare systems, including lack of EBP knowledge and skills, time, and organizational culture (Melnyk, Fineout-Overholt, Gallagher-Ford, & Kaplan, 2012). In addition, the nurses who responded to this national survey reported that, along with peer and physician resistance, a major barrier to their implementation of EBP was nurse leader/manager resistance. Therefore, a national survey with 276 chief nurse executives was conducted to learn more about this issue from nurse leaders as well as to describe their own implementation of EBP and the portion of their budgets they invested in equipping their clinicians

with the skills needed to deliver evidence-based care. Results of this survey indicated that, although the chief nurses believed in the value of EBP, their own implementation was low, with over 50% reporting that they were uncertain about how to measure the outcomes of care being delivered in their hospitals (Melnyk et al., 2016). Most chief nurses also reported that they did not have a critical mass of nurses in their hospital who were skilled in EBP and that they only invested 0% to 10% of their budgets in equipping their staff with EBP knowledge, skills, and resources. Although the chief nurses reported that their top two priorities were quality and safety of care being delivered in their hospitals, EBP was listed as their lowest priority, which indicated their lack of understanding that EBP was a direct pathway to achieving quality and safety. Therefore, it was not surprising that one third of hospitals from this survey were not meeting the National Database of Nursing Quality Indicators metrics, and almost one third of the hospitals were above national core performance measure benchmarks, including falls and pressure ulcers (Melnyk et al., 2016). Recent findings from the first U.S. study on the **EBP competencies** also revealed that practicing nurses reported not being qualified in any of the 24 EBP competencies (Melnyk et al., 2017). Knowledge, beliefs about the value of EBP, mentorship in EBP, and a culture that supports EBP were all associated with reports of EBP competency.

On a daily basis, nurse practitioners, physicians, pharmacists, nurses, occupational and physical therapists, and other healthcare professionals seek answers to numerous clinical questions. (Examples: In postoperative surgical patients, how does relaxation breathing compared with cognitive behavioral skills building affect anxiety during recovery? In adults with dementia, how does a warm bath during the 30 minutes prior to bedtime improve sleep compared with music therapy? In depressed adolescents, how does cognitive behavioral therapy combined with Prozac compared with Prozac alone reduce depressive symptoms within the first year of diagnosis?) 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 was 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 released a clinical practice guideline recommending a supine position for infant sleep that resulted in a decline in infant mortality caused by SIDS in the years following this recommendation (Task Force on Sudden Infant Death Syndrome, 2016). As a second example, despite strong evidence that the vaccination against human papilloma virus is safe and effective, vaccination rates by healthcare providers are low (Jin, Lipold, Sikon, & Rome, 2013). Yet another study indicated that 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 whether they can 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, now third-party payers often 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 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 refuse to learn EBP, the EBP movement continues to forge ahead full steam.

Another important reason for clinicians to include the latest evidence in their daily decision making is that evidence evolves on a continual basis. As a classic example, an RCT was funded by the National Institutes of Health to compare 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, which is a national effort to improve health outcomes for all medically underserved individuals (Talsma, Grady, Feetham, Heinrich, & Steinwachs, 2008). This rapid translation 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 (Melnyk & Fineout-Overholt, 2015) and continues to be a major concern for healthcare organizations as well as federal agencies. 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 to develop screening and manage 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 2020, 90% of clinical decisions will be supported by accurate, timely, and up-to-date information 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 United States (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;
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 evidence-based recommendations for clinical preventive services, including screening, counseling, and preventive medications. Which preventive services should be incorporated by healthcare providers in primary care and for which populations are emphasized. 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. Evidence-based centers, funded by AHRQ, conduct systematic reviews for the USPSTF and are the basis on 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 graded recommendation for clinical practice. If the preventive service receives an A or B grade, which indicates the net benefit is substantial or moderate, clinicians should provide this service. A C recommendation indicates the net benefit is small and clinicians should provide the service to selected people based on individual circumstances. A D recommendation indicates the service has no benefit or harm outweighs the benefit, and, therefore, clinicians are discouraged from implementing it. When the USPSTF issues an I statement, it means that the evidence is insufficient to assess the balance of benefits and harms. 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).

All of the USPSTF evidence-based recommendations are freely available and updated routinely at https://www.uspreventiveservicestaskforce.org/.

Examples of the USPSTF recommendations include breast cancer screening, visual screening, colorectal screening, and depression screening as well as preventive medication topics. Clinical considerations for each topic are also discussed with each recommendation. The USPSTF recommendations provide 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. In 2010, the Patient Protection and Affordable Care Act created a link between the USPSTF recommendations and various coverage requirements (Siu, Bibbins-Domingo, & Grossman, 2015). The Affordable Care Act mandates that commercial and individual plans must at minimum provide coverage and not impose cost sharing on any preventive services that receive an A or B grade from the USPSTF. Medicare and Medicaid are excluded from this provision.

An app, the Electronic Preventive Services Selector (ePSS), is also available for free to help healthcare providers implement the USPSTF recommendations at https://epss.ahrq.gov/PDA/index.jsp

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Similar to the USPSTF, a panel of national experts who comprise the Community Services Task Force uses a rigorous systematic review process to determine the best evidence-based programs and policies to promote health and prevent disease in communities. Systemic reviews by this panel answer the following

questions: (a) Which program and policy interventions have been shown to be effective? (b) Are there effective interventions that are right for my community? (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/)

Another 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.

Find the PCORI online at www.pcori.org.

The Magnet Recognition Program by the American Nurses Credentialing Center has facilitated the advancement of EBP in hospitals throughout the United States. The program was started to recognize healthcare institutions for quality patient care, nursing excellence, and innovations in professional 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 (2009) *Scope and Standards for Nurse Administrators (3rd edition)*. Conducting research and using EBP are critical for attaining Magnet status. 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 to the science of nursing; and (5) empirical quality results, which focus on measuring outcomes to demonstrate the benefits of high-quality care (American Nurses Credentialing Center [ANCC], 2017). ANCC (2017) requires that Magnet organizations produce data that their nurses incorporate as new evidence into practice. Findings from research indicate that nurses employed by Magnet facilities report fewer barriers to EBP than those in non-Magnet facilities (Wilson et al., 2015).

With a $6.5 million gift, the Helene Fuld Health Trust National Institute for Evidence-based Practice in Nursing and Healthcare was founded by Bernadette Melnyk and launched at The Ohio State University College of Nursing in 2017. The Fuld National Institute for EBP (a) works with nursing and transdisciplinary faculty across the nation to integrate EBP throughout their curricula to produce the highest caliber of evidence-based graduates; (b) educates nursing and transdisciplinary students at all levels on how to access the latest gold standards of care and implement as well as sustain EBP; (c) assists nurses and other health professionals to advance evidence-based care to improve the safety and quality of care; (d) conducts national webinars on the best and latest evidence to guide high-quality practice; (e) serves as a clearinghouse for best evidence on a variety of healthcare practices and health conditions for the public; and (f) conducts research to

advance the body of knowledge regarding EBP and how to accelerate the translation of research findings into practice at a more rapid rate to improve outcomes. A National EBP Expert Forum was held on October 18, 2017, that brought over 40 leaders from national professional organizations and federal agencies together to determine best strategies for advancing EBP. The top action tactics from this expert panel included the following: (1) enhanced reimbursement for EBP; (2) more interprofessional education and skills building in EBP; and (3) leaders to prioritize EBP and fuel it with resources (Melnyk et al., 2017). These entities have formed an action collaborative to advance EBP throughout the United States.

See https://fuld.nursing.osu.edu/

THE SEVEN STEPS OF EVIDENCE-BASED PRACTICE

The seven critical steps of EBP are summarized in Box 1.2 and are described in more detail in this section. These steps must be implemented in sequence and be rigorously engaged to accomplish the end goal of improved patient, provider, and system outcomes.

Step 0: Cultivate a Spirit of Inquiry Within an EBP Culture and Environment

Before embarking on the well-known steps of EBP, it is critical to cultivate a **spirit of inquiry** (i.e., a consistently questioning attitude toward practice) so that clinicians are comfortable with and excited about asking questions regarding their patients' care as well as challenging current institutional or unit-based practices. Without a culture and environment that is supportive of a spirit of inquiry and EBP, individual and organizational EBP change efforts are not likely to succeed and be sustained (Melnyk, 2016a). A culture that fosters EBP promotes this spirit of inquiry and makes it visible to clinicians by embedding it in its philosophy and mission of the institution.

BOX 1.2 *The Steps of the Evidence-Based Practice Process*

0. **Cultivate a spirit of inquiry within an evidence-based practice (EBP) culture and environment.**
1. **Ask the burning clinical question in PICOT format.**
2. **Search for and collect the most relevant best evidence.**
3. **Critically appraise the evidence (i.e., rapid critical appraisal, evaluation, and synthesis).**
4. **Integrate the best evidence with one's clinical expertise and patient/family preferences and values in making a practice decision or change.**
5. **Evaluate outcomes of the practice decision or change based on evidence.**
6. **Disseminate the outcomes of the EBP decision or change.**

Key elements of an EBP culture and environment include the following:

- A spirit of inquiry where all health professionals are encouraged to question their current practices;
- A philosophy, mission, clinical promotion system, and evaluation process that incorporate EBP and

the EBP competencies;

- A cadre of EBP mentors, who have in-depth knowledge and skills in EBP, mentor others, and overcome barriers to individual and organizational change;
- An infrastructure that provides tools to enhance EBP (e.g., computers for searching at the point of care, access to key databases and librarians, ongoing EBP educational and skills-building sessions, EBP rounds and journal clubs);
- Administrative support and leadership that values and models EBP as well as provides the needed resources to sustain it;
- Regular recognition of individuals and groups who consistently implement EBP.

Step 1: Formulate the Burning Clinical PICOT Question

In step 1 of EBP, clinical questions are asked in **PICOT** format (i.e., *p*atient population, *i*ntervention or *issue* of interest, *c*omparison intervention or group, *o*utcome, and *t*ime frame) to yield the most relevant and best evidence from a search of the existing literature. For example, a well-designed PICOT question would be as follows: In teenagers (the patient population), how does cognitive behavioral skills building (the experimental intervention) compared with yoga (the comparison intervention) affect anxiety (the outcome) after 6 weeks of treatment (the time taken for the interventions to achieve the outcome)? Questions asked in a PICOT format result in an effective search that yields the best, relevant information and saves an inordinate amount of time (Melnyk & Fineout-Overholt, 2015). In contrast, an inappropriately formed question (e.g., What is the best type of intervention to use with anxious teenagers?) would lead to an unfocused search and an outcome that would likely include hundreds of nonusable abstracts and irrelevant information.

For other clinical questions that are not focused on intervention, the meaning of the letter *I* can be "issue of interest" instead of "intervention." An example of a nonintervention PICOT question would be the following: How do new mothers (the patient population) who have breast-related complications (the issue of interest) perceive their ability to breastfeed (the outcome) past the first 3 months after their infants' birth (the timeframe in which their perception matters)? In this question, there is no appropriate comparison group, so the PIOT is appropriate; however, it is still referred to as a PICOT question.

When a clinical problem generates multiple clinical questions, priority should be given to those questions with the most important consequences or those that occur most frequently (i.e., those clinical problems that occur in high volume and/or those that carry high risk for negative outcomes to the patient). For example, nurses and physicians on a surgical unit routinely encounter the question, "In postoperative adult patients, how does morphine compared with hydromorphone affect pain relief within the first half hour after administration?" Another question might be "In postoperative mobile patients, how does daily walking compared with no daily walking prevent pressure sores during hospitalization?" The clinical priority would be answering the question of pain relief first because pain is a daily occurrence in this population, versus prioritizing seeking an answer to the second question because pressure ulcers rarely occur in postoperative adult patients. Chapter 2 provides more in-depth information about formulating PICOT questions.

Step 2: Search for the Best Evidence

The search for best evidence should first begin by considering the elements of the PICOT question. Each of the keywords from the PICOT question should be used to begin the systematic search. The type of study that would provide the best answer to an intervention or treatment question would be systematic reviews or meta-analyses, which are regarded as the strongest level of evidence on which to base treatment decisions (i.e., level 1) (Melnyk & Fineout-Overholt, 2015). There are different levels of evidence for each kind of PICOT question (see Chapter 2 for more in-depth discussion). Although there are many hierarchies of evidence available in the literature to answer intervention PICOT questions, we have chosen to present a hierarchy of evidence to address questions that encompass a broad range of evidence, including systematic reviews of qualitative evidence, also referred to as metasyntheses (Box 1.3). Chapter 3 has more in-depth information on conducting a systematic search of the literature based on the PICOT question.

BOX 1.3 *Rating System for the Hierarchy of Evidence for Intervention/Treatment Questions*

Level I: Evidence from a systematic review or meta-analysis of all relevant randomized controlled trials (RCTs)
Level II: Evidence obtained from well-designed RCTs
Level III: Evidence obtained from well-designed controlled trials without randomization
Level IV: Evidence from well-designed case-control and cohort studies
Level V: Evidence from systematic reviews of descriptive and qualitative studies
Level VI: Evidence from a single descriptive or qualitative study
Level VII: Evidence from the opinion of authorities and/or reports of expert committees

Modified from Guyatt, G., & Rennie, D. (2002). ***Users' guides to the medical literature*****. Chicago, IL: American Medical Association; Harris, R. P., Hefland, M., Woolf, S. H., Lohr, K. N., Mulrow, C. D., Teutsch, S. M., & Atkins, D. (2001). Current methods of the U.S. Preventive Services Task Force: A review of the process.** ***American Journal of Preventive Medicine, 20*****, 21–35.**

There are many study designs within a body of evidence; however, it is important to first look for the best quality and highest level of evidence. A systematic review is a synthesis of evidence on a particular topic, typically conducted by an expert or expert panel that uses a rigorous process for identifying, appraising, and synthesizing studies, to answer a specific clinical question. Conclusions are then drawn about the data gathered through this process. Examples of clinical questions that could be answered through a systematic review include the following: (1) In adult women with arthritis, how does massage compare with pharmacologic agents to reduce pain after 2 weeks of treatment? and (2) In women, how does an early lifestyle adoption of a healthy diet and exercise predict heart disease in older adulthood? Using a rigorous process of well-defined, preset criteria to select studies for inclusion in the review as well as stringent criteria to assess quality, bias is overcome and results are more credible. Population health can be improved by making the best evidence available in the form of policy briefs to influence the decisions of policy makers.

Many systematic reviews incorporate quantitative methods to compare the results from multiple studies. These reviews are called **meta-analyses**. A meta-analysis generates an overall summary statistic that represents the effect of the intervention across multiple studies. When a meta-analysis can combine the samples of each study included in the review to create one larger study, the summary statistic is more precise than the

individual findings from any one of the contributing studies alone (Melnyk & Fineout-Overholt, 2015). Thus, systematic reviews and meta-analyses yield the strongest level of evidence on which to base practice decisions. Caution must be used when searching for systematic reviews because some evidence reviews or narrative reviews may be labeled systematic reviews; however, they lack the rigorous process that is required of true systematic reviews. Although studies are compared and contrasted in narrative and integrative reviews, a rigorous methodology with explicit criteria for reviewing the studies is often not used, and a summary statistic is not generated. Therefore, conclusions and recommendations by authors of narrative and integrative reviews may be biased.

In addition to the Cochrane Database of Systematic Reviews, the journals *Worldviews on Evidence-Based Nursing* and *Nursing Research* frequently provide systematic reviews to guide nursing practice across many topic areas. More information on *Worldviews* and *Nursing Research* can be found at http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1741-6787 and http://www.nursingresearchonline.com/. Chapters 5 and 6 have more in-depth information on understanding types of research study designs and how they contribute to a body of evidence.

Evidence-based clinical practice guidelines are specific practice recommendations grouped together, which have been derived from a methodologically rigorous review of the best evidence on a specific topic. Guidelines usually do not answer a single specific clinical question, but rather a group of questions about care. As such, they have tremendous potential as tools for clinicians to improve the quality of care, the process of care, and patient outcomes as well as reduce variation in care and unnecessary healthcare expenditures (Institute of Medicine [US] Committee on Standards for Developing Trustworthy Clinical Practice Guidelines, 2011). It is imperative for clinicians to seek out evidence-based guidelines to inform decisions.

The following are examples of two evidence-based clinical practice guidelines:

1. ***Management of chronic pain in survivors of adult cancers: American Society of Clinical Oncology clinical practice guideline: available online at* http://ascopubs.org/doi/abs/10.1200/JOP.2016.014837.**
2. ***Prevention of dental caries in children from birth through age 5 years: USPSTF recommendation statement: available online at* http://pediatrics.aappublications.org/content/early/2014/04/29/peds.2014-0483.**

The Guidelines International Network (G-I-N) houses another comprehensive database of clinical practice guidelines. The mission of G-I-N is to lead, strengthen, and support collaboration in guideline, adaptation, and implementation. G-I-N facilitates networking, promotes excellence, and helps members create high-quality clinical practice guidelines that foster safe and effective patient care. It is comprised of 99 organizations representing 47 countries.

G-I-N is online at http://www.g-i-n.net/home.

It is important to note the latest publication date of clinical practice guidelines because many guidelines need updating so that the latest evidence is included in making practice recommendations. It also is important to note the process through which the guidelines were created, because there are many guidelines created by

professional organizations that have not followed rigorous processes for development (e.g., systematic reviews; Melnyk, Grossman et al., 2012). Although clinical practice guidelines have tremendous potential to improve the quality of care and outcomes for patients as well as reduce healthcare variation and costs, their success depends on a highly rigorous guideline development process and the incorporation of the latest best evidence. Guideline success also depends on implementation by healthcare providers because their dissemination does not equate to implementation.

A toolkit to enhance the use of clinical practice guidelines is available from the Registered Nurses' Association of Ontario and can be downloaded from its website at http://ltctoolkit.rnao.ca/clinical-topics. More information about guideline development and implementation can be found in Chapter 8.

If syntheses (e.g., systematic reviews, meta-analyses) are not available to answer a clinical practice treatment question, the next step should be a search for original RCTs found in databases such as MEDLINE or the Cumulative Index of Nursing and Allied Health Literature. If RCTs are not available, the search process should then include other types of studies that generate evidence to guide clinical decision making (e.g., nonrandomized, descriptive, or qualitative studies) to determine the best available body of evidence.

Other searchable databases helpful to clinicians in deciding what evidence-based interventions to implement in their practices are the Research Tested Intervention Programs (RTIPs) by the National Cancer Institute and the AHRQ's Health Care Innovations Exchange.

RTIPs is a database of over 175 evidence-based cancer control interventions and program materials designed to provide practitioners with easy and immediate access to research-tested materials (https://rtips.cancer.gov/rtips/index.do).

Programs listed have undergone rigorous reviews before their inclusion on this website. The Innovations Exchange was created to speed the implementation of new and better ways of delivering healthcare by sharing, learning about, and adopting evidence-based innovations and tools appropriate for a range of healthcare settings and populations.

The Innovations Exchange is online at https://innovations.ahrq.gov/about-us.

Step 3: Critical Appraisal of Evidence

Step 3 in the EBP process is vital in that it involves critical appraisal of the evidence obtained from the search process. Although healthcare professionals may view critical appraisal as an exhaustive, time-consuming process, the first steps of critical appraisal can be efficiently accomplished by answering three key questions as part of a **rapid critical appraisal** process in which studies are evaluated for their validity, reliability, and applicability to answer the posed clinical question (summarized in Box 1.4):

1. **Are the results of the study valid? (Validity)** Are the results as close to the truth as possible? Did the researchers conduct the study using the best research methods possible? For example, in intervention trials, it would be important to determine whether the subjects were **randomly assigned** to treatment or control groups and whether they were equal on key characteristics prior to the treatment.
2. **What are the results? (Reliability)** For example, in an intervention trial, this includes (a) whether the intervention worked; (b) how large a treatment effect was obtained; and (c) whether clinicians could expect similar results if they implemented the intervention in their own clinical practice setting (i.e., the preciseness of the intervention effect). In qualitative studies, this includes evaluating whether the research approach fits the purpose of the study, along with evaluating other aspects of the study.
3. **Will the results help me in caring for my patients? (Applicability)** This third rapid critical appraisal question includes asking whether (a) the subjects in the study are similar to the patients for whom care is being delivered; (b) the benefits are greater than the risks of treatment (i.e., potential for harm); (c) the treatment is feasible to implement in the practice setting; and (d) the patient desires the treatment.

The answers to these questions ensure relevance and transferability of the evidence to the specific population for whom the clinician provides care. For example, if a systematic review provided evidence to support the positive effects of using distraction to alleviate pain in postsurgical patients between the ages of 20 and 40 years, those same results may not be relevant for postsurgical patients who are 65 years or older. In addition, even if an RCT supported the effectiveness of a specific intervention with a patient population, the risks and benefits of that intervention must be carefully considered before its implementation. Critically appraising a body of evidence to guide practice decisions begins with rapid critical appraisal of the studies found in the search, and also includes evaluation of the studies in the form of an evidence synthesis to determine whether the findings from the studies are in agreement or not. A synthesis of the study findings is important to draw a conclusion about the body of evidence on a particular clinical issue and make subsequent recommendations for practice. Unit 2 in this book contains in-depth information on critical appraisal of all types of evidence, from expert opinion and qualitative studies to RCTs and systematic reviews.

BOX 1.4 *Key General Critical Appraisal Questions*

1. **Are the results of the study valid? (Validity)**
2. **What are the results? (Reliability)**
3. **Will the results help me in caring for my patients? (Applicability)**

Step 4: Integrate the Evidence With Clinical Expertise and Patient/Family Preferences to Make the Best Clinical Decision

The next key step in EBP is integrating the best evidence found from the literature with the healthcare provider's expertise and patient/family preferences and values to implement a decision (i.e., putting evidence into action). Clinical expertise includes how clinicians understand the given population for whom they care and known sequelae of clinical issues, the available healthcare resources, their personal experiences with healthcare decision making, and their competence in critical appraisal. In addition, consumers of healthcare

services want to participate in the clinical decisionmaking process, and it is the ethical responsibility of the healthcare provider to involve patients in treatment decisions. Even if the evidence from a rigorous search and critical appraisal strongly supports that a certain treatment is beneficial (e.g., hormone replacement therapy [HRT] to prevent osteoporosis in a very high-risk woman), a discussion with the patient may reveal her intense fear of developing breast cancer while taking HRT or other reasons that the treatment is not acceptable. Moreover, as part of the history-taking process or physical examination, a comorbidity or contraindication may be found that increases the risks of HRT (e.g., prior history of stroke). Therefore, despite compelling evidence to support the benefits of HRT in preventing osteoporosis in high-risk women, a decision against its use may be made after a thorough assessment of the individual patient and a discussion of the risks and benefits of treatment.

Similarly, a clinician's assessment of healthcare resources that are available to implement a treatment decision is a critical part of the EBP decisionmaking process. For example, on follow-up evaluation, a clinician notes that the first-line treatment of acute otitis media in a 3-year-old patient was not effective. The latest evidence indicates that antibiotic A has greater efficacy than antibiotic B as the second-line treatment for acute otitis media in young children. However, because antibiotic A is far more expensive than antibiotic B and the family of the child does not have prescription insurance coverage, the practitioner and parents together may decide to use the less expensive antibiotic to treat the child's unresolved ear infection. Organizational culture is another important consideration when implementing evidence into practice. Unit 4 has in-depth information on strategies to implement evidence into practice.

Step 5: Evaluate the Outcomes of the Practice Change Based on Evidence

Step 5 in EBP is evaluating the evidence-based initiative in terms of how the change affected patient outcomes or how effective the clinical decision was with a particular patient or practice setting. This type of evaluation is essential to determine whether the change based on evidence resulted in the expected outcomes when implemented in the real-world clinical practice setting. Measurement of outcomes, especially "so-what" outcomes that are important to today's healthcare system (e.g., length of stay, readmission rates, patient complications, turnover of staff, costs), is important to determine and document the impact of the EBP change on healthcare quality and/or patient outcomes (Melnyk & Morrison-Beedy, 2012). If a change in practice based on evidence did not produce the same findings as demonstrated in rigorous research, clinicians should ask themselves a variety of questions (Was the intervention administered in exactly the same way that it was delivered in the study? Were the patients in the clinical setting similar to those in the studies?). Chapter 10 contains information on how to evaluate outcomes of practice changes based on evidence. See Figure 1.3 for the key steps of EBP to improve quality healthcare.

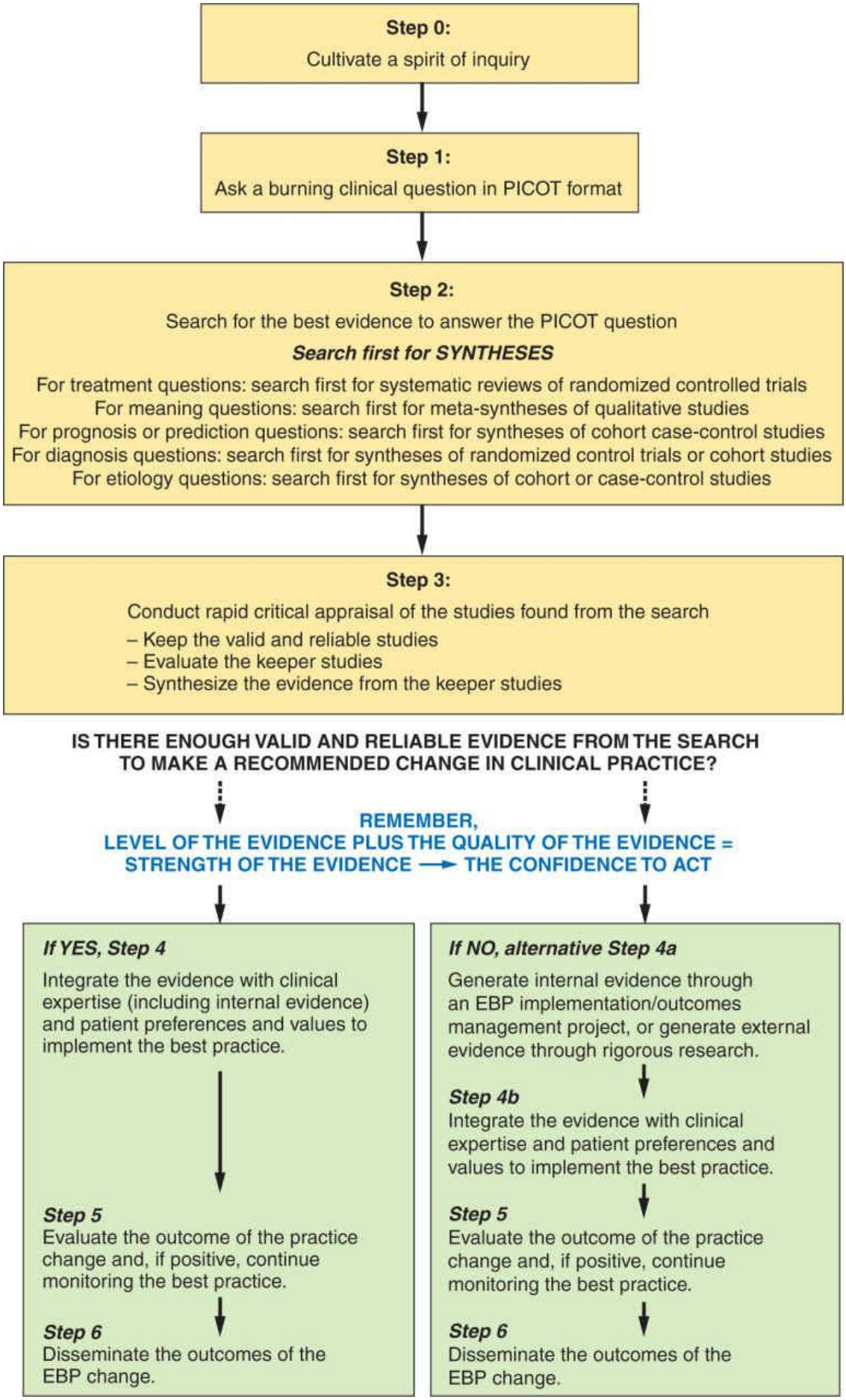
Step 0:
Cultivate a spirit of inquiry
Step 1:
Ask a burning clinical question in PICOT format
Step 2:
Search for the best evidence to answer the PICOT question
Search first for SYNTHESES
For treatment questions: search first for systematic reviews of randomized controlled trials
For meaning questions: search first for meta-syntheses of qualitative studies
For prognosis or prediction questions: search first for syntheses of cohort case-control studies
For diagnosis questions: search first for syntheses of randomized control trials or cohort studies
For etiology questions: search first for syntheses of cohort or case-control studies
Step 3:
Conduct rapid critical appraisal of the studies found from the search
– Keep the valid and reliable studies
– Evaluate the keeper studies
– Synthesize the evidence from the keeper studies
IS THERE ENOUGH VALID AND RELIABLE EVIDENCE FROM THE SEARCH TO MAKE A RECOMMENDED CHANGE IN CLINICAL PRACTICE?
REMEMBER,
LEVEL OF THE EVIDENCE PLUS THE QUALITY OF THE EVIDENCE = STRENGTH OF THE EVIDENCE → THE CONFIDENCE TO ACT
If YES, Step 4
Integrate the evidence with clinical expertise (including internal evidence) and patient preferences and values to implement the best practice.
Step 5
Evaluate the outcome of the practice change and, if positive, continue monitoring the best practice.
Step 6
Disseminate the outcomes of the EBP change.
If NO, alternative Step 4a
Generate internal evidence through an EBP implementation/outcomes management project, or generate external evidence through rigorous research.
Step 4b
Integrate the evidence with clinical expertise and patient preferences and values to implement the best practice.
Step 5
Evaluate the outcome of the practice change and, if positive, continue monitoring the best practice.
Step 6
Disseminate the outcomes of the EBP change.

Figure 1.3: **Steps of the evidence-based practice (EBP) process leading to high-quality healthcare and best patient outcomes. © Melnyk & Fineout-Overholt, 2017.**

Step 6: Disseminate the Outcomes of the Evidence-Based Practice Change

The last step in EBP is disseminating the outcomes of the EBP change. All too often, clinicians achieve many positive outcomes through making changes in their care based on evidence, but those outcomes are not shared with others, even colleagues within their same institution. As a result, others do not learn about the outcomes nor the process that led to them, and clinicians as well as patients in other settings do not benefit from that knowledge. It is important for clinicians to disseminate outcomes of their practice changes based on evidence through such venues as oral and poster presentations at local, regional, and national conferences; EBP rounds within their own institutions; journal and newsletter publications; and lay publications. Specific strategies for disseminating evidence are covered in Chapter 20.

EVIDENCE-BASED PRACTICE COMPETENCIES

Competency is often defined as the capability of doing something well. Without EBP competencies, expectations for the implementation of evidence-based care are unclear. Until 2014, there was no set of EBP competencies for practicing nurses and advanced practice nurses. Therefore, EBP competencies (13 for point of care nurses and an additional 11 for advanced practice nurses) were developed through a national panel of EBP experts and two rounds of a Delphi survey with EBP mentors to validate them (Melnyk, Gallagher-Ford, Long, & Fineout-Overholt, 2014). For EBP to thrive and sustain, it is important for educators to prepare students to meet these competencies by the time they graduate from their academic programs. Healthcare systems also should require their clinicians to demonstrate these competencies and provide education and skills building for those who do not yet meet them. Chapter 11 covers specific details about these competencies, and how to integrate them into clinical practice settings to improve healthcare quality, safety, and outcomes.

OBSTACLES AND OPPORTUNITIES

Healthcare providers are struggling to deliver evidence-based care while managing demanding patient loads and attempting to keep pace with the volume of journal articles related to their clinical practices.

Barriers to Evidence-Based Practice

Nurses, physicians, and other health professionals cite a number of barriers to EBP including the following:

- Lack of EBP knowledge and skills;
- Cultures steeped in tradition (e.g., that is the way it is done here);
- Misperceptions or negative attitudes about research and evidence-based care;
- Lack of belief that EBP will result in more positive outcomes than traditional care;
- Voluminous amounts of information in professional journals;

- Lack of time and resources to search for and critically appraise evidence;
- Overwhelming patient loads;
- Organizational constraints, such as lack of administrative support or incentives;
- Lack of EBP mentors;
- Demands from patients for a certain type of treatment (e.g., patients who demand antibiotics for their viral upper respiratory infections when they are not indicated);
- Peer pressure to continue with practices steeped in tradition;
- Resistance to change;
- Lack of consequences for not implementing EBP;
- Peer and leader/manager resistance;
- Lack of autonomy and power to change practice;
- Inadequate EBP content and behavioral skills building in educational programs along with the continued teaching of how to conduct rigorous research in baccalaureate and master's programs instead of teaching an evidence-based approach to care.

(Melnyk, Fineout-Overholt et al., 2012; Melnyk, 2016a; Squires, Estabrooks, Gustavsson, & Wallen, 2011; Wilson et al., 2015)

Facilitators of Evidence-Based Practice

To overcome the barriers in implementing EBP, there must be champions at all levels of practice (i.e., clinicians who believe so strongly in the EBP paradigm that they will do what it takes to facilitate it in their daily practice and their organizational culture) and an EBP culture and environment with mechanisms to support the cause (Melnyk, 2016a). For healthcare professionals to advance the use of EBP, misconceptions about how to implement practice based on the best available evidence need to be corrected, and knowledge and skills in this area must be enhanced. It must also be realized that changing behavior is complex and influenced by multiple factors, including beliefs, attitudes, resources, and the availability of evidence to change practice.

The following facilitating conditions have been found to enhance EBP:

- Support and encouragement from leadership/administration that foster an EBP culture with expectations for EBP;
- Alignment of stakeholders;
- Time to critically appraise studies and implement their findings;
- Clearly written research reports;
- EBP mentors with excellent EBP skills as well as knowledge and proficiency in individual and organizational change strategies;
- Proper tools to assist with EBP at the point of care (e.g., computers dedicated to EBP; computer-based educational programs);
- Integrating EBP into health professions curricula;
- Clinical promotion systems and performance evaluations that incorporate the EBP competencies;