4.06 EVIDENCE-BASED MEDICINE

Introduction

Evidence-based medicine (EBM) is the conscientious, explicit, and judicious use of current best evidence in making decisions about patient care. This scientific evidence includes data obtained from many study types that are found in varied published manuscripts, society guidelines, or other reputable sources. Sources of evidence must be interpreted and applied to clinical decision-making in a thorough and thoughtful manner in order to achieve best practice. Clinical decisions are therefore made considering a combination of the value systems of patients and the family/caregivers, specific clinical circumstances, and a thorough assessment of the EBM literature regarding the clinical condition. Pediatric hospitalists address multiple clinical questions daily and should utilize EBM to make clinical care decisions, teach trainees and engage patients and the family/caregivers in shared decision-making, perform quality improvement (QI) and research studies, and advance personal lifelong learning.

Knowledge

Pediatric hospitalists should be able to:

- Define EBM and list databases and other resources commonly used to search for this medical evidence.
- Discuss the benefits and limitations of commonly used scientific medical resources, considering issues such as publication bias, consensus statement methodology used, national versus international web indexed articles, and others.
- State how EBM is integrated into clinical decision-making for a patient or a population.
- Review how EBM supports QI and patient safety efforts.
- List examples of where EBM may be integrated into common educational efforts for trainees and clinical groups or divisions, attending to scheduled and spontaneous sessions.
- Explain common classification systems used to grade the strength of evidence in a given published work and discuss how this can help guide clinical decision-making.
- Explain how each of the components of a well composed, searchable clinical question using a method such as patient-intervention-control-outcomes (PICO) aids in obtaining a more accurate and comprehensive list of references.
- Distinguish among commonly used study designs, such as retrospective, prospective, case control, randomized controlled trial, and others, and list the benefits and limitations of each.
- Define commonly used terms such as relative and absolute risk reduction, number needed to treat (NNT), sensitivity, specificity, positive and negative predictive values (PPV, NPV), and likelihood ratios (LR).
- Review how EBM is integrated into lifelong learning, including ongoing certification by professional certifying boards.

Skills

Pediatric hospitalists should be able to:

- Identify information deficits and perform accurate EBM review to address the deficits in the context of clinical practice.
- Translate a clinical question into a searchable PICO question or search string.
- Identify the most appropriate study designs to answer a specific clinical question.
- Demonstrate proficient performance of a literature search using electronic resources such as PubMed.
- Appraise the quality of varied published manuscripts, society guidelines, or other reputable sources of medical literature using a consistent method.
- Interpret the level of evidence and risk/benefit ratio of study results and utilize EBM methods to select appropriate tests and treatments for patients.
- Apply relevant results from the available evidence to assist with creating and implementing clinical guidelines for populations, within local context.
- Integrate the consistent use of EBM into activities for personal lifelong learning.
- Develop, implement, and maintain a personal strategy to consistently incorporate evidence, balance of harm and benefits, and values of patients and the family/caregivers into shared clinical decision-making to deliver the highest quality care.

Attitudes

Pediatric hospitalists should be able to:

- Recognize the importance of seeking the best available evidence to support clinical decision-making.
- Realize that acquiring and maintaining EBM skills requires integration into daily practice and pursuit of ongoing continuing education.
- Recognize how personal practice patterns are influenced by the integration of EBM.
- Role model use of EBM at the bedside.

Systems Organization and Improvement

In order to improve efficiency and quality within their organizations, pediatric hospitalists should:

- Lead, coordinate, or participate in the development and implementation of evidence-based care pathways to standardize the evaluation and management of hospitalized children in the local system.
- Engage with hospital staff, trainees, colleagues, subspecialists, and others in a multidisciplinary team approach toward integrating EBM into clinical decision-making processes.
- Collaborate with hospital administrators to acquire and maintain effective, efficient electronic resources for the performance of EBM.

References

1. Sackett DL, Rosenberg W, Mc Gray JA, Haynes RB, Richardson WS. Evidence-based medicine: what it is and what it isn't. *BMJ*. 1996; 312:71-72. https://doi.org/10.1136/bmj.312.7023.71
2. The Centre for Evidence-Based Medicine. https://www.cebm.net/. Accessed August 28, 2019.
3. Horwitz RI, Hayes-Conroy A, Caricchio R, Singer BH. From Evidence Based Medicine to Medicine Based Evidence. *Am J Med*. 2017;130(11):1246-1250. https://doi.org/10.1016/j.amjmed.2017.06.012.