

Evidence-Based Pediatric Practice: Producing Better Care and Higher Quality Standards

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Children are one of the most vulnerable age groups in health care. Therefore, medical care delivery should be highly weighted, considering several specific issues of these ages, e.g. normal growth and development, diseases prevalence and incidence variations, adjusted diagnostic tools to pediatric population, benefits and harms of interventions, or prognostic expectations throughout childhood and adulthood. To achieve and incorporate all of these complex domains, pediatricians should be aware of the most updated clinical methodologies and practices. In fact, medical physicians have some main responsibilities that need to be combined daily:

- Clinical assistance to their patients;
- Persecution for the latest medical knowledge and innovative tools to improve clinical practice and effectiveness;
- Creation and dissemination of knowledge to expand medical care;
- Passing on medical knowledge and skills to younger generations.

Evidence-based medicine is a comprehensive process that aims to standardize the production of valid research evidence, and then to integrate it into clinical practice.¹ Ultimately, this process will enhance clinical expertise and patient value, optimizing clinical outcomes - the main aim of any physician. Evidence-based medicine is organized in a five-step cycle process:

1. Ask: Formulate answerable questions that fulfill a specific clinical problem of daily practice. These questions should be feasible, interesting, novel, ethical, and relevant.
2. Acquire: Search for the best evidence related to the clinical question by a systematic and reproducible way in systematic reviews, evidence-based journal abstracts, textbooks, and computerized decision support systems.
3. Appraise: Assess the importance, quality, and validity (internal and external) of the studies.

4. Apply: Take the results of the appraisal into clinical practice and use the information for each patient seeking medical assistance, creating valuable health care outcomes.

5. Assess: Continuously evaluate these outcomes of applied interventions and reformulate questions that come along with new clinical problems.

In a global connected world, converting the previously described steps into published documents, accessible to any health professional, is of the upmost importance to improve quality of care to patients. Physicians, specifically pediatricians, can contribute to this cycle in many ways and by publishing several types of studies. Different types of clinical questions can produce specific knowledge on diagnosis, therapy, prognosis, etiology/harm, prevention, health quality, or economics. In addition, the Oxford Centre for Evidence-Based Medicine (OCEBM) had standardized levels of evidence in a reproducible way from level 1 to level 5, according to the type of clinical question.²

Manuscripts, such as case reports and clinical images in pediatrics, can be considered as level 5 evidence by OCEBM; these are important to formulate clinical/research questions, and to disseminate local experiences. To illustrate this, in this issue of the Portuguese Journal of Pediatrics, the clinical case of a teenage girl with an immunoglobulin E-mediated hypersensitivity reaction to oral ondansetron is reported.³ The authors raise questions about the off-label use of ondansetron and possible rare adverse effects like the one described. Therefore, by publishing this particular clinical experience, awareness was created on the need to not only study the benefits and harms of ondansetron in specific settings but also to assess the extent of its current use in our country. Different clinical and research questions are raised with this type of manuscripts.

In an upper degree of evidence (level 2-3 by OCEBM),

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an interesting prognostic cohort study showing that head circumference growth in healthy preterm infants was mainly due to an increase in extra-cerebral fluid rather than brain volume is also published in this issue.⁴ Furthermore, authors advised against the use of head circumference as a marker of adequate brain growth in very preterm infants, particularly when discussing outcomes with parents, and also hypothesized that cerebral ultrasound can be an easy, non-invasive and accurate technique to assess cerebral volume as a better marker for future neurodevelopmental outcomes. Overall, the authors published important findings in the prognostic field, but also raised questions on another prognostic and diagnostic grounds that came up.

For an easy dissemination and search of all this amount of research and clinical knowledge, guidelines were created. These are valuable documents that synthesize all of the different types of clinical questions about a specific disease or problem and put it all together in a single manuscript. Guidelines are not part of the evidence-based classification but are totally dependent on it. Authors must be engaged with a careful appraisal of the literature, followed by a classification of the level of evidence for each original study, and then make recommendations. These recommendations are also graded according to all of the existing evidence and should be reviewed from time to time to ensure updated information is available to clinicians. At the end, a physician who wants to find an answer to a specific question can quickly check the specific guidelines on

the field (if any exist) and find the answer to it in an evidence-based, objective, and graded way. In this issue, Portuguese Neonatal Society publishes an update on neonatal parental nutrition that is an excellent example of the importance of guidelines in daily practice.^{5,6}

As such, the key message of this issue editorial is that all types of studies are important and are part of the continuous clinical practice and clinical research chain. Different studies are crucial at different steps along the way. Evidence-based pediatric practice should be encouraged, first by supporting the publication of high-level of evidence studies, since early residency until higher pediatricians' careers, and then by ensuring that this body of evidence is adopted into daily practice. Every physician should pursue better care for their patients and higher quality standards. In addition, it must also be kept in mind that pushing medical knowledge, skills, and practice forward is the responsibility of each physician, which begins in the everyday clinic practice and is made with and for our patients.

Keywords: Child; Clinical Decision-Making; Evidence-Based Medicine

Conflicts of Interest

The authors declare that there were no conflicts of interest in conducting this work.

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