Orthopaedic Healthcare Worldwide

Orthopaedic Healthcare Worldwide: Using Clinical Practice Guidelines in Clinical Decision Making

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Evidence-based medicine is the integration of the best-available research with a physician's clinical experience, considered in light of each patient's individual and unique values and circumstances [4, 6]. As a research tool,

evidence-based medicine arose from our profession's need for valid and reliable information. More-traditional approaches to medical education such as textbooks and classic didactic conferences/seminars may be out of date or incomplete, while excessive reliance on expert opinion may result in decisions that are made on basis of factors other than sound scientific findings.

Practicing evidence-based medicine generally includes the following steps: (1) Turning a clinical-information need into an answerable question, (2) systematically searching for the best-available research that addresses that clinical question, (3) critically appraising the evidence for its validity, reported effect size, and the applicability of the evidence to the person or

population being treated, and (4) applying the evidence, along with one's clinical expertise and a patient's values and circumstances to develop a plan of care.

In practice, it is time-consuming and difficult to apply this approach to every patient and clinical condition we encounter. The volume of literature continues to grow rapidly, and critical appraisal, when done well, requires a great deal of time. Clinical practice guidelines (CPG) are a systematic approach to exploring, evaluating, appraising, and synthesizing the literature so that the individual reader need not perform each of these time-consuming activities [3, 5].

The Institute of Medicine defines a clinical practice guideline as a "systematically developed statement to assist practitioner and patient decisions about appropriate healthcare for specific clinical circumstances" [3]. Developed to provide a ready evidence-based medicine reference tool to aid in an evidence-based approach to clinical practice, CPGs are not meant to be prescriptive in terms of the approaches they suggest. Rather, CPGs reflect the current best-available research evidence related to a specific

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Orthopaedic Healthcare Worldwide

set of clinical circumstances. Inherent within a CPG, higher and stronger quality evidence (greater validity) trump lower quality evidence and expert opinion. Importantly, though, physician experience and expertise along with patient values necessarily influence the application of the evidence from a CPG in clinical decision-making.

A critical, but occasionally overlooked aspect of CPGs is determining which patient population recommendations are most appropriate. Most CPGs explicitly define the specific patient and disease parameters for which the recommendations can be appropriately implemented. For example, the American Academy of Orthopaedic Surgeons (AAOS) CPG, *Management of Hip Fractures in the Elderly* [2], is based on a systematic review of published studies with regard to the management of hip fractures in patients older than 65 years of age. By convention, the recommendations in this CPG can apply only to that group, and even within that patient population, this CPG's answers to related questions—such as the diagnosis and treatment of osteoporosis after hip-fracture surgery—are limited by the availability of evidence on those specific questions. While strong evidence supports treatment for osteoporosis in the elderly population at large, only moderate evidence supports that patients be evaluated and treated for

osteoporosis after sustaining a hip fracture, since only a relatively small number of studies address osteoporosis care in the hip fracture population.

These practice guidelines can be misinterpreted as well. Clinicians should not generalize a CPG's recommendations to clinical questions or patient populations apart from those specifically identified in the CPG, nor should they infer more than what is stated in each recommendation. *The Management of Hip Fractures in the Elderly* CPG includes a recommendation regarding surgical approach that states, “Moderate evidence supports higher dislocation rates with a posterior approach in the treatment of displaced femoral neck fractures with hip arthroplasty” [2]. This recommendation does not imply that a posterior approach is inappropriate, or that a surgeon who is more comfortable with and experienced with a posterior approach should use a lateral or anterior approach. Recommendations based on CPGs only reflect the published research evidence that currently exists on a given topic to answer that specific clinical question. This recommendation made no global comment about the overall superiority of a particular approach; rather, it simply indicated which one was associated with a higher rate of dislocation.

By nature of the volume of research and analysis required, CPGs can be

large and unwieldy documents, often exceeding 1000 pages. It is not uncommon, therefore, for clinicians to read only the summary portions of these documents. Care should be taken in using only the recommendations or summaries without also reading at least the supporting rationales. These rationales provide an analysis of the evidence used to make the recommendation, any concerns regarding the evidence, possible risks and harms, and also future research recommendations. For example, the AAOS recently approved a CPG on ACL injury management [1]. In a recommendation regarding the choice of graft tissue, the CPG states “strong evidence supports that in patients undergoing ACL reconstructions, the practitioner should use either autograft or appropriately processed allograft tissue, because the measured outcomes are similar, although these results may not be generalizable to all allografts or all patients, such as young patients or highly active patients” [1]. This recommendation is specific in stating that graft choices are not equivalent in all patient subgroups. The supporting rationale clearly defines this further with “these results may not be generalizable to specific subsets of patients with ACL rupture, such as athletes and young patients. In fact, a longitudinal cohort study indicated a higher failure rate of allograft tissue in younger

Orthopaedic Healthcare Worldwide

patients” [1]. This is an extremely important distinction that could be lost unless the reader specifically reviews the information included in the supporting rationale.

Lastly, it is important to consider the strength of a recommendation within a CPG. The AAOS uses four levels of strength in CPGs: Strong, moderate, limited, and consensus [1, 2]. Generally, a strong recommendation means that the quality and validity of the underlying supportive evidence is high, and that future research is unlikely to change this recommendation. Moderate strength of recommendation reveals a solid research evidence base for the conclusion. For many orthopaedic conditions that do not lend themselves to randomized controlled trials, moderate strength of recommendation is often the highest strength of evidence available to answer that clinical question. Limited strength recommendations have less rigorous supporting evidence, and could change with further prospective research. When communicating with patients, these levels of strength are important because they can define the degree to which the clinical decision is preference based. Strong recommendations related to specific diagnostic or therapeutic modalities should generally be followed in most clinical circumstances, whereas a patient’s preferences and values should be considered when assessing the

appropriateness of interventions supported by limited recommendation. Limited recommendations are sometimes misinterpreted as suggesting that an intervention is not supported. Limited-strength recommendations, rather, refer to the strength of the literature support, and these recommendations indicate that the intervention is supported and acceptable. Limited-strength recommendations have the highest likelihood of changing with future research, and should be used cautiously and conservatively. Consensus-based recommendations are limited to those clinical scenarios for which no evidence exists, but failure to address the question could result in catastrophic life- or limb-threatening loss. Consensus cannot be used to overrule published research evidence, if it exists.

A CPG is not a cookbook or set of rules that should be followed blindly. Instead, CPGs should be considered reference tools to aid in the care of patients. Evidence-based medicine approaches and CPGs continue to evolve as our understanding of research designs, patient populations and demographics, and outcomes improve. Unique patient and provider characteristics will always play a role in the care we offer. Thus, it is essential to consider patient values and preferences along with physician experience and expertise when

applying the evidence-based recommendations within a CPG.

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