Clinical Practice Guidelines: Their Use, Misuse, and Future Directions

Abstract

Evidence-based clinical practice guidelines (CPGs) have the potential to bring the best-quality evidence to orthopaedic surgeons and their patients. CPGs can improve quality by decreasing the variability in orthopaedic care, but they can also be misused through inappropriate development or application. The quality of a CPG is dependent on the strength of its evidence base, which is often deficient in orthopaedic publications. In addition, many surgeons express concern about legal liability associated with CPGs. Specific processes in CPG development and implementation can counter these potential problems. Other evidence tools, such as appropriate use criteria, also can help in the application of the proper treatment of patients by identifying those who are appropriate for specific procedures. Because payers, patients, and surgeons need access to the best evidence, CPGs will continue to be developed, and orthopaedic surgeons have the opportunity to ensure their proper development and implementation by understanding and participating in the process.

A brief history of clinical practice guidelines (CPGs) was devised by expert consensus. This approach proved to be successful in bringing the best-quality evidence to orthopaedic surgeons and their patients. CPGs can improve quality by decreasing the variability in orthopaedic care, but they can also be misused through inappropriate development or application. The quality of a CPG is dependent on the strength of its evidence base, which is often deficient in orthopaedic publications. In addition, many surgeons express concern about legal liability associated with CPGs. Specific processes in CPG development and implementation can counter these potential problems. Other evidence tools, such as appropriate use criteria, also can help in the application of the proper treatment of patients by identifying those who are appropriate for specific procedures. Because payers, patients, and surgeons need access to the best evidence, CPGs will continue to be developed, and orthopaedic surgeons have the opportunity to ensure their proper development and implementation by understanding and participating in the process.

An important tenet of modern medicine and healthcare reform is that high-quality evidence should drive clinical, policy, and payment decisions. At the same time, medical literature and the lay press have delineated substantial variability in the quality and cost of health care throughout the United States. Physicians are taught to approach diagnosis and management by means of formal or informal treatment algorithms developed through training and experience and subsequently ingrained into their practice. However, differences between providers make quality improvement and cost-control efforts problematic. Because the volume of medical literature on specific topics is great and continues to increase, it is difficult for individual physicians to identify, assess, and incorporate the best available evidence into their clinical practices. Payers face similar dilemmas and need clear guidance to identify appropriate diagnostic and therapeutic approaches for the benefit of their enrollees. Physicians, payers, and others increasingly challenge the status quo.

The American Academy of Orthopaedic Surgeons (AAOS) and many subspecialty societies believe that the dissemination of clinical guidance based on high-quality evidence is an important part of the solution. Here, we outline the role of clinical practice guidelines (CPGs) and other evidence-based tools that may potentially affect quality of care and healthcare policy. In particular, we consider the use, misuse, and future application of CPGs and the development and implementation of appropriate use criteria (AUC).
be problematic because experts often disagreed among themselves, had conflicts of interest that influenced results, and were prone to personal biases. The results of these opinion-based expert guidelines depended nearly entirely on which experts were invited to participate. A better method was required of assimilating the best available knowledge in a transparent and useful fashion.

Evidence-based medicine (EBM) as a concept was developed in the late 1980s and early 1990s to help distinguish the medical evidence based on the quality of the underlying studies. Sackett et al. describe EBM as “the integration of the best evidence with our clinical expertise and our patients’ unique values and circumstances.” Guided by EBM, the clinician has the responsibility to (1) identify the best available research evidence, (2) supply the clinical expertise to properly diagnose and treat the patient, (3) identify the issues most important to the patient, and (4) deal with any special circumstances of both the patient and the environment.

CPGs have the ability to deal effectively with the first of these requirements by identifying the best available research evidence. Simply put, better-designed studies are less prone to confounding and bias and therefore provide better answers to clinical questions than do studies not as well designed. Different categories of information, such as diagnosis, treatment, and prognosis, require different study types, and hierarchies have been developed for each. By applying the principals of EBM, it became feasible to identify the highest-quality published evidence as the basis for CPGs. Quality evidence-based CPGs combine evidence and expert opinion in a clear, specific fashion. They can improve the quality and consistency of care; in most studies, CPGs significantly improve the processes of care.

When sufficiently methodologically strong, CPGs package the best available evidence in a way that is useful for clinicians. In interpreting CPGs, clinicians need to recognize that a CPG may not be generalizable to all patients because these guidelines are intended for the average patient; this must be considered when applying them in individual cases. CPGs deal with only the first of the four elements of EBM described above, and they are meant to be used in conjunction with the treating physician’s own expertise, experience, and environment, as well as the patient’s preferences and values, in guiding clinical decision making. The AAOS has published several practice CPGs and maintains a rigorous process requiring updating every 5 years, as recommended by the National Guideline Clearinghouse. The authors of CPGs that address the same topic—for example, joint infection—may seek different outcomes as their ultimate goals, with one group evaluating data regarding disease prognosis and another, the cost-effectiveness of treatment modalities for joint infection. Although the CPG should state its intended goals clearly and prominently, most rarely do. In addition, some goals may conflict with others. A guideline for femoral fractures, for example, could focus on patient-based outcomes such as anatomic restoration; functional restoration; the least number of days off from work; financial outcomes, such as hospital length of stay or cost; or a combined metric, such as quality-adjusted life years. The AAOS CPGs specifically use patient-based outcomes as the ultimate goal. When clinically important differences using the minimally clinically important difference or minimally clinically important improvement have been identified, they become the standard for a positive treatment effect. Because hidden goals can negatively affect the resulting CPG, conflict of interest in the CPG development process must be well managed. A CPG produced by the Infectious Diseases Society of America on Lyme disease treatment had conflicted members on the development group, resulting in an antitrust settlement with the Attorney General of Connecticut. To avoid this problem and to maintain transparency in the goals of CPGs, the AAOS has a strong conflict of interest policy for CPG work groups.

To properly develop an evidence-based CPG, a diverse work group with expertise in the clinical problem and the relevant research methods is assembled to plan a systematic review based on the pertinent clinical questions. The full
process for developing the work group and the members’ and staff’s various tasks are described on the AAOS website. Following an exhaustive literature search, the identified publications are carefully assessed for study design, confounding, and bias and are graded for the strength of the evidence. In general, studies with higher levels of evidence are better than those with lower levels and take precedence in developing the CPG. The final recommendations are then assigned strength grades that reflect the quality and consistency of the available evidence and the benefits and harms of the intervention, as well as the work group’s conclusion about the importance of the results.

Following this specific and transparent process, the resulting CPG should reflect the attributes of validity, reliability, reproducibility, clinical applicability, flexibility, and clarity. Many CPGs still do not use a formal method of evidence synthesis. The Institute of Medicine (IOM) has recently recommended development of evidence-based CPGs to reduce practice variation, improve quality of care, and decrease inefficiencies. Sensible CPGs need balance and input from experts who will ask the right questions and interpret the answers.

Difficulties With Orthopaedic Clinical Practice Guidelines

CPGs and other evidence-based strategies have been employed very successfully in optimizing the treatment of certain types of heart disease and cancer. However, the quality and usefulness of CPGs is determined primarily by the strength and clarity of the underlying evidence. The reality is that, for a broad range of orthopaedic practice, the literature does not consist of numerous high-quality studies, especially in narrowly focused subspecialty topics. Consequently, rigorously performed evidence-based reviews reflecting the existing orthopaedic literature often provided only weak support for well-accepted procedures. This can create frustration given the time, effort, and cost involved in preparation of the evidence analysis and systematic review. Some resistance to the process is, in part, also due to a lack of understanding regarding CPG nomenclature. Findings of weak or limited evidence supporting the use of a particular procedure do not imply that the procedure is not beneficial; rather, such findings identify the lack of quality supporting evidence. It is not surprising that payers are reluctant to pay for recent products or procedures not supported by evidence, whereas those with longer clinical use and acceptance are typically covered despite a lack of quality evidence. Regardless of the ultimate level of evidence or strength of recommendations within a guideline for a specific clinical entity, the results serve as a guide to the gaps in clinical knowledge and a roadmap for future research directions.

An illustrative case is that of the AAOS CPG on the Diagnosis and Treatment of Osteochondritis Dissecans. This AAOS guideline, approved in December 2010, had 16 recommendations. The strength of recommendation was Limited in 2, Inconclusive in 10, and Consensus in 4. There were clear gaps in knowledge about the etiology, classification, diagnosis, and treatment of this condition. However, the guideline provided a clear direction for future research, and members of the CPG work group developed a multicenter Research for Osteochondritis Dissecans of the Knee (ROCK) group to begin answering the clinical questions. The effort involves 14 clinical sites, with funding obtained from the AAOS, the Orthopaedic Research and Education Foundation, the American Orthopaedic Society of Sports Medicine, and institutional grants. Data are being accrued related to validation of imaging and arthroscopic classification of lesions, a prospective clinical registry of cases, the most appropriate nonsurgical and surgical treatments, and the most effective postoperative rehabilitation protocols. When this CPG is updated in the future, the quality of available evidence will likely be stronger and more relevant to clinical practice. Many of the AAOS and other orthopaedic CPGs have inconclusive recommendations, and the ROCK initiative can serve as a template to close the loop on the evidence cycle.

Payers and Clinical Practice Guidelines

CPGs serve several purposes for health plans. Health plans have contractual relationships with their members and participating providers. These agreements specify, in general terms, that medically necessary services are covered, whereas investigational or non-medically necessary services are not. Health plans generally develop their own guidelines to assist these determinations and to meet obligations to cover effective medical services but not cover ineffective or harmful services. Each health plan develops its own criteria and often uses a committee with external members to develop these guidelines. Health plans also use guidelines to support quality programs, innovative payment initiatives, and other approaches to encourage appropriate use of medical services.

According to the insurers, when evidence-based CPGs are developed and endorsed by relevant specialty societies, these documents often drive the coverage criteria developed. For evidence-based CPGs that are not endorsed by a specialty society, health plans will use published peer-reviewed literature and the clinical expertise of their committee membership; they
also may engage relevant specialists to aid in arriving at coverage criteria. When the published literature lacks meaningful comparisons, reveals statistical but not clinically meaningful benefits, or is simply nonexistent, it is likely that health plan coverage criteria will not be met.

Some health plans have in place processes by which to actively engage with specialty societies, and they have public policy positions that endorse the need for adequate funding and coordination of research efforts to close knowledge gaps and ensure that appropriate coverage decisions are made based on existing evidence and expert opinion. From both the insurers’ and providers’ viewpoints, when specialty societies actively engage in the development of health plan coverage guidelines, the outcomes are invariably improved. Several companies have developed CPGs that are marketed to payers, but the development process for these proprietary CPGs is unclear, and their evidence basis not readily available to physicians or the public.

Confidence in the value of properly developed evidence-based guidelines has been eroded by the inappropriate application of the term “evidence-based” to commercially developed proprietary guidelines and to guidelines issued by specialty medical and surgical societies, as well as to other documents not adhering to the accepted standards of guideline development recommended by the IOM. Conflicts have been raised on both sides regarding the validity of the others’ CPGs. From the insurers’ perspective, some society CPGs are designed to endorse current practice rather than best practice. To have the support of payers, CPGs produced by specialty societies must not be inappropriately slanted toward the pecuniary interests of the providers. As noted previously, the AAOS takes a strong stance against any financial conflicts of interest for those participating in CPG development, but any orthopaedist performing a procedure can be conflicted, which makes proper assessment of the evidence critical. Physicians are also concerned that payers may want CPGs developed with cost or utilization as the ultimate goal rather than patient outcomes. Payers frequently rely on third-party proprietary CPGs that typically lack transparency (eg, InterQual, Milliman), especially where other evidence-based CPGs are lacking. The Centers for Medicare and Medicaid Services (CMS) has provided its contractors with access to proprietary guidelines.

The best way to avoid these problems is to develop high-quality, transparent guidelines that assess the best available evidence. The IOM recommends the following elements to determine whether a guideline is trustworthy:

1. The process for how the guideline is developed and funded is transparent.
2. Work group members’ conflicts of interest should be declared and none, or at most a small minority, should have conflicts, including services from which a clinician derives a substantial proportion of income; further, the chair and co-chair should have no conflicts of interest.
3. The guideline development group should be composed of methods experts, clinicians, representatives of stakeholders, and affected populations.
4. The systematic reviews must meet the IOM’s methodologic standards.
5. In describing the evidence quality and recommendation strength, the CPG should explain the reasoning behind each recommendation, summarize evidence for benefits and harms, and characterize the quality and quantity of relevant evidence and the role of subjective judgments. The guideline should also rate the level of evidence and the strength of each recommendation and describe differences of opinion about recommendations.
6. When articulating the recommendations, the CPG should describe the action recommended by the guideline and when it should be used; wording should facilitate measurement of adherence.
7. External review should include a full spectrum of stakeholders; reviewers should not be identified by name; and there should be an explanation for all changes done in response to reviewers posted for public comment.
8. The guideline should be updated and include documentation of the dates of the guideline, systematic review, and any planned update. Those involved in developing the CPG should continue to monitor the literature and update the guideline when new evidence suggests the need for change.

A comparison of the IOM standard to the AAOS CPG process is shown in Table 1.

Ultimately, patients are best served when insurers and physicians work together to make decisions using well-developed CPGs appropriately. In 2011, the New York State Medicaid Redesign Team Basic Benefit Review Work Group proposed eliminating coverage for arthroscopic knee surgery when the primary diagnosis is osteoarthritis of the knee without mechanical destruction, stating, “this [the AAOS CPG] evidence-based guideline recommends against performing arthroscopy with a primary diagnosis of OA of the knee.” The AAOS responded that the CPG recommendation actually stated that “arthroscopic partial meniscectomy or loose body removal is an option in patients with symptomatic OA of the knee who also have primary signs
and symptoms of a torn meniscus or loose body." The State changed its recommendation to mirror the AAOS CPG, thereby providing patients with an appropriately recommended guide to prevent surgery of minimal benefit (arthroscopic washout for osteoarthritis) while retaining a potentially beneficial procedure (partial meniscectomy or loose body removal).^{23}

When confronted with coverage determinations not consistent with available evidence, the orthopaedist should challenge that determination by asking for the source of that coverage determination, as well as by asking for access to the methodology of that guideline. Although doing so may be time-consuming for the orthopaedic surgeon and his or her staff, doing so ultimately helps in the development of better evidence-based coverage determinations. Payers may ask the same of orthopaedists, and quality CPGs and their related tools have the potential to provide this information.

Interestingly, CPG recommendations that could decrease utilization have not been implemented by the major payers. The 2010 AAOS guideline Treatment of Symptomatic Osteoporotic Spinal Compression Fractures recommends “against vertebroplasty for patients who present with an osteoporotic spinal compression fracture on imaging with correlating clinical signs and symptoms and who are neurologically intact.”^{24} To date, we are not aware of any payer adopting this recommendation for coverage decisions. In this context, the North American Spine Society (NASS) commented on the AAOS CPG by stating,

AAOS’ recently released guideline on osteoporotic compression fractures appears to have been developed in an appropriate and transparent manner. The recommendations offered may be applied to the populations that were the basis of the studies reviewed at the time. However, it is the policy of NASS to restrict comment to the validity of the process by which other organizations develop evidence-based guidelines.^{25}

NASS, unlike the AAOS, does not use a formal metadata synthesis process in developing its CPGs.^{26} Thus, with various associations and organizations not approaching the CPG process uniformly, it is not surprising that insurer decisions are not uniform, either.

Ultimately, payers need some mechanism to evaluate and monitor resource utilization across a wide array of orthopaedic procedures. Neither surgeons’ individual expert opinions nor questionably developed guidelines are likely to improve the value of medicine. The promise of evidence-based CPGs is that they provide an unbiased support structure for future practice. Defending access to appropriate care is vital, and long-term success requires a proactive approach. Orthopaedic surgeons must provide a better alternative if we expect payers to disregard non-evidence-based clinical guidelines. The American Board of Internal Medicine Foundation developed a national campaign titled Choosing Wisely^{27} that has been endorsed by subspecialty medical and surgical societies, patient-focused groups such as Consumer Reports and AARP, and the AAOS. The premise is that medical societies and physicians can participate in the improvement of US health care by identifying, in an evidence-based fashion, procedures and tests that are not necessary or that can be used less frequently. CPGs will be used to identify tests or procedures that should be done rarely or not at all.

### Table 1

| Comparison of the Institute of Medicine Standards for Developing Trustworthy Clinical Practice Guidelines^{18} and the AAOS Clinical Practice Guideline Process^{13} |
|-----------------------------------|--------------------------------------------------|
| **Institute of Medicine Standard** | **AAOS Clinical Practice Guidelines**              |
| Establishing transparency         | Yes                                               |
| Management of conflict of interest| No financial conflicts are permitted               |
| Guideline development group       | Starting to involve patient representation for future guidelines |
| composition                        |                                                   |
| Clinical practice guideline–systematic review intersection | Yes | |
| Establishing evidence foundations for and rating strength of recommendations | Yes |
| Articulation of recommendations   | Yes                                               |
| External review                   | Yes                                               |
| Updating                          | Yes                                               |

### Appropriate Use Criteria

Evidence-based guidelines tell us if a procedure or service works successfully. However, they are not as helpful in outlining when or for whom it is appropriate to perform that procedure or service. CPGs serve as the evidence base for multiple orthopaedic diseases, diagnoses, and conditions. Derivative products based on the CPGs include AUCs, patient safety checklists, clinical pathways, and physician-patient guides, which provide much more practical information related to patient care.
AUCs specify when it is appropriate to perform a procedure. When high-level evidence or sufficiently detailed data are not available, physicians nevertheless must decide how to care for the patient. The methodology developed by RAND/UCLA28 combines the best evidence with the collective judgment of experts to develop a statement about the appropriateness of performing a procedure. The process involves the combined efforts of a writing group, a review group, and a technical rating or voting panel, with members who perform the procedure as well as those who do not, such as payers, family practitioners, and physical therapists. At the completion of the process, indication scores are ranked as Appropriate, Uncertain, or Inappropriate. 

The American College of Cardiology (ACC) has the longest experience of any medical society with AUCs and has modified the RAND method to better fit with clinical questions.29,31 The ACC experience suggests that Inappropriate indications make up a small percentage of the total; however, this process allows clinicians to use the available evidence in practical, user-friendly ways. Ideally, AUCs will facilitate reimbursement for both appropriate and uncertain procedure indications, with less required authorization paperwork. They will also support denial of payment for inappropriate procedures unless extensive preauthorization paperwork is completed. A concern expressed from insurers is that AUCs will inhibit future comparative studies to identify the best treatments. It behooves orthopaedists to not let this occur and to pursue high-quality, comparative clinical research. 

There are several reasons why development of AUCs makes sense in the orthopaedic profession. Currently there is an unprecedented focus on assessment and improving quality. We have seen an explosive growth of some orthopaedic procedures, such as total knee arthroplasty. Based on the Dartmouth Atlas, there is substantial regional variation in the likelihood of having a particular orthopaedic procedure, although the true nature of utilization is unknown.32 It may reflect overuse, underuse (especially in minority populations), or appropriate use. Surgeons, patients, and payers are all seeking guidance as to what is reasonable.

The AAOS has outlined a plan to develop AUCs for a variety of orthopaedic procedures from total knee arthroplasty to surgical treatment of low back pain. These will be based on existing CPGs or other rigorous systematic reviews of the literature for a particular topic. Recently the AAOS approved its first AUC on the appropriate treatment of distal radius fractures.33 The AUC covers 10 treatments and is based on 216 patient scenarios. More than two thousand different combinations of patients and treatments were used and resulted in scores of 36% Appropriate, 44% May Be Appropriate (correlated to Uncertain in the ACC methodology), and 20% Rarely Appropriate (correlated to Inappropriate in the ACC methodology).

In order for orthopaedic surgeons to find CPGs and AUCs clinically relevant, they need to be accessible at the bedside. Mobile applications are now being developed to aid in decision making. For the AUC on distal radius fractures, the mobile app (available at http://www.aaos.org/aucapp) allows the surgeon to select patient and fracture characteristics and then provides specific recommendations. A listing of the known musculoskeletal CPGs and AUCs in shown in Tables 2 and 3.

**Legal Concerns: Clinical Practice Guidelines and Standard of Care**

CPGs can play a dual role in the medical malpractice environment: they can be used in defense of an accused practitioner or in alleging a breach in the standard of care.34 Because negligence claims necessitate establishing a breach in the standard of care, CPGs have had an impact on the outcomes of these cases since their inception,35 but their use is largely dependent on state evidentiary practices and rulings. Various rules and decisions36-38 have allowed the use of CPGs as admissible evidence as a “learned treatise” and as “reliable authority” for expert testimony.39 In the 1990s, Maine’s Medical Liability Demonstration Project adopted 20 practice guidelines in four specialties9 to improve the value of care and reduce the practice of defensive medicine.40 Physicians following the specified CPGs received affirmative defense against litigation, and the CPGs could not be used as inculpatory evidence. Ultimately, the law’s provisions had low utilization and did not show significant reductions in claims. Under most circumstances, adhering to prevailing professional standards is adequate defense. This creates a dilemma in the use of CPGs as evidence. In newly developed evidence-based CPGs, the treatment and diagnostic approaches may differ, sometimes significantly, from prevailing “customary practice,” and evidence-based CPGs might not reflect current professional practice. For now, evidence-based CPGs are of limited utility as long as “customary practice” is the legal standard. Conflicting CPGs also cloud the picture of standard of care and reduce litigation again to a battle of experts to determine which CPG is most applicable and whether it was followed.

Tort reforms incorporating CPGs have been proposed, including (1) contracts binding physicians and patients to CPGs as standard of care or as a requirement for malpractice insurance or participation in managed care programs; (2) judicial notice, in which the court provides an impartial, court-appointed medical expert to
establish the appropriate set of guidelines as the standard of care in a case; and (3) using compliance with CPGs as an affirmative defense or safe harbor.37 The 2009 Healthy Americans Act proposed that CPGs act as “rebuttable presumptions that care was not negligent.”41 Unless CPGs truly become a safe harbor by stronger legislative language, plaintiffs can continue to contend that CPGs are wrong—with juries deciding.

Overall, CPGs continue to gain slow traction within our medicolegal system because expert testimony rather than EBM remains the standard.

Conclusions

Because payers and physicians need proper tools to provide the highest quality clinical care at a reasonable cost, the question ultimately will not be, Should the AAOS develop evidence-based CPGs? but rather, If

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**Table 2**

| Known Clinical Practice Guidelines and Appropriate Use Criteria From Orthopaedic or Closely Related Specialty Societies |
| Society | Date of Publication |
| **AAOS Clinical Practice Guidelines** | |
| Treatment of Osteoarthritis of the Knee, 2nd Edition (Update of the 2008 guideline, Treatment of Osteoarthritis of the Knee [Non-Arthroplasty]) | 2013 |
| Prevention of Orthopaedic Implant Infection in Patients Undergoing Dental Procedures | 2012 |
| Preventing Venous Thromboembolic Disease in Patients Undergoing Elective Hip and Knee Arthroplasty | 2011 |
| The Treatment of Pediatric Supracondylar Humerus Fractures | 2011 |
| The Diagnosis and Treatment of Osteochondritis Dissecans | 2010 |
| Optimizing the Management of Rotator Cuff Problems | 2010 |
| The Treatment of Symptomatic Osteoporotic Spinal Compression Fractures | 2010 |
| The Diagnosis of Periprosthetic Joint Infections of the Hip and Knee | 2010 |
| The Diagnosis And Treatment of Acute Achilles Tendon Rupture | 2009 |
| The Treatment of Distal Radius Fractures | 2009 |
| The Treatment of Glenohumeral Joint Osteoarthritis | 2009 |
| Treatment of Pediatric Diaphyseal Femur Fractures | 2009 |
| Clinical Practice Guideline on the Treatment of Carpal Tunnel Syndrome | 2008 |
| Clinical Practice Guideline on the Diagnosis of Carpal Tunnel Syndrome | 2007 |
| The Treatment of Anterior Cruciate Ligament (ACL) Injuries | In development |
| The Treatment of Hip Fractures in the Elderly | In development |
| Pediatric Developmental Dysplasia of the Hip (DDH): Early Detection and Management | In development |
| The Surgical Management of Osteoarthritis of the Knee | In development |
| The Diagnosis and Treatment of Carpal Tunnel Syndrome (guideline update) | In development |
| **North American Spine Society Clinical Practice Guidelines** | |
| Antibiotic Prophylaxis in Spine Surgery (revised) | 2013 |
| Diagnosis and Treatment of Lumbar Disc Herniation with Radiculopathy | 2012 |
| Diagnosis and Treatment of Degenerative Lumbar Spinal Stenosis (revised) | 2011 |
| Diagnosis and Treatment of Cervical Radiculopathy from Degenerative Disorders | 2010 |
| Antithrombotic Therapies in Spine Surgery | 2009 |
| Diagnosis and Treatment of Degenerative Lumbar Spondylolisthesis | 2008 |
| **AAOS Appropriate Use Criteria** | |
| Non-Arthroplasty Treatment of Osteoarthritis of the Knee | 2013 |
| Optimizing the Management of Full-Thickness Rotator Cuff Tears | 2013 |
| Treatment of Distal Radius Fractures | 2013 |
| The Treatment of Pediatric Supracondylar Humerus Fractures | In development |
| **Scoliosis Research Society Appropriate Use Criteria** | |
| Adult Lumbar Degenerative Scoliosis | In development |
the AAOS does not develop CPGs, who will, and what processes will they use? Adherence to evidence-based CPGs could become part of contractual and malpractice insurance requirements by various payers. If this promise is to be fulfilled in the best interest of our patients, then medical professional society-driven, high-quality, evidence-based CPGs, such as those of the AAOS, offer the best opportunity for transparency, reliability, integrity, and reduction of bias. These non-agenda driven CPGs foster the spirit that will require payers to rely on them to increase the value of orthopaedic healthcare delivery.

Table 3

| Non-orthopaedic Society Musculoskeletal-related Clinical Practice Guidelines and Appropriate Use Criteria* |
|----------------------------------------------------------------------------------------------------------|
| **Institute for Clinical Systems Improvement**                                                           |
| Adult Acute and Subacute Low Back Pain                                                               |
| Diagnosis and Treatment of Osteoporosis                                                               |
| Venous Thromboembolism Diagnosis and Treatment                                                          |
| Venous Thromboembolism Prophylaxis                                                                     |
| **The Orthopaedic Section of the American Physical Therapy Association**                             |
| Achilles Pain, Stiffness, and Muscle Power Deficits: Achilles Tendinitis                              |
| Heel Pain—Plantar Fasciitis: Clinical Practice Guidelines Linked to the International Classification of Functioning, Disability, and Health |
| Hip Pain and Mobility Deficits—Hip Osteoarthritis: Clinical Practice Guidelines Linked to the International Classification of Functioning, Disability, and Health |
| Knee Pain and Mobility Impairments: Meniscal and Articular Cartilage Lesions                           |
| Knee Stability and Movement Coordination Impairments: Knee Ligament Sprain                             |
| Low Back Pain: Clinical Practice Guidelines Linked to the International Classification of Functioning, Disability, and Health |
| **American College of Radiology**                                                                     |
| ACR Appropriateness Criteria: Acute Hand and Wrist Trauma                                             |
| ACR Appropriateness Criteria: Imaging After Total Knee Arthroplasty                                    |
| ACR Appropriateness Criteria: Non-Spine Bone Metastases                                                |
| ACR Appropriateness Criteria: Developmental Dysplasia of the Hip—Child                                |
| ACR Appropriateness Criteria: Follow-up of Malignant or Aggressive Musculoskeletal Tumors            |
| ACR Appropriateness Criteria: Low Back Pain                                                          |
| ACR Appropriateness Criteria: Metastatic Bone Disease                                                  |
| ACR Appropriateness Criteria: Nontraumatic Knee Pain                                                  |
| ACR Appropriateness Criteria: Osteoporosis and Bone Mineral Density                                   |
| ACR Appropriateness Criteria: Stress (Fatigue/Insufficiency) Fracture, Including Sacrum, Excluding Other Vertebrae |
| **American College of Chest Physicians**                                                              |
| Prevention of VTE in Orthopaedic Surgery Patients: Antithrombotic Therapy and Prevention of Thrombosis, 9th ed:  |
| American College of Chest Physicians Evidence-Based Clinical Practice Guidelines                     |
| **Endocrine Society**                                                                                  |
| Osteoporosis in Men: An Endocrine Society Clinical Practice Guideline                                 |
| **American College of Obstetricians and Gynecologists**                                               |
| Osteoporosis                                                                                           |
| **American Medical Directors Association**                                                            |
| Osteoporosis and Fracture Prevention in the Long Term Care Setting                                    |
| **Kaiser Permanente Care Management Institute**                                                        |
| Osteoporosis/Fracture Prevention Clinical Practice Guidelines                                          |
| **US Preventive Services Task Force**                                                                 |
| Screening for Osteoporosis: Recommendation Statement                                                  |

* The National Guideline Clearinghouse lists all those registered with their database (http://www.guideline.gov)
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