

# AAOS Clinical Practice Guideline and Systematic Review Methodology

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## Overview of Guideline and Systematic Review Process

The AAOS understands that only high-quality clinical practice CPG or SRs (CPG) and systematic reviews (SR) are credible, and we go to great lengths to ensure the integrity of our evidence analyses. The AAOS addresses bias beginning with the selection of CPG and SR work group members. Applicants with financial conflicts of interest (COI) related to the CPG or SR topic cannot participate if the conflict occurred within one year of the start date of the CPG or SR's development or if an immediate family member has, or has had, a relevant financial conflict. Additionally, all CPG or SR development group members sign an attestation form agreeing to remain free of relevant financial conflicts for one year following the publication of the CPG or SR.

CPGs and SRs are prepared by physician CPG or SR development groups (clinical experts) with the assistance of the AAOS Evidence-Based Medicine (EBM) Unit in the Department of Research and Scientific Affairs (methodologists) at the AAOS. To develop CPGs or SRs, the CPG or SR development group meets in-person at an introductory meeting held at the AAOS headquarters in Rosemont, IL to establish the scope of the CPG or SR. As the physician experts, the CPG or SR work group defined the scope of the CPG or SR by creating PICO Questions (i.e. population, intervention, comparison, and outcome) that directed the literature search (see [Formulating PICO Questions](#) for more information). When necessary, these clinical experts also provided content help, search terms and additional clarification for the AAOS Medical Librarian. The Medical Librarian creates and executes the search(es). The supporting group of methodologists (AAOS EBM Unit) review all abstracts, recall pertinent full-text articles for review and evaluate the quality of studies meeting the inclusion criteria. They also abstract, analyze, interpret, and summarize the relevant data for each PICO question and prepare the initial draft for the final work group meeting. Upon completion of the systematic reviews, physician CPG work groups participate in a three-day in-person recommendation meeting. Physician SR work groups do not participate in an in-person, they complete their charges via webinars and electronic communication. To complete their charges, the physician experts and methodologists evaluate and integrate all material to develop the final recommendations. The final recommendations and rationales are edited, written and voted on. Additional edits to the rationales are approved by the CPG or SR work group via webinars after the meeting. The draft CPG or SR recommendations and rationales receive final review by the methodologists to ensure that these recommendations and rationales were consistent with the data. The draft is then completed and submitted for peer review and/or submitted to a musculoskeletal journal for publication.

After peer review, the CPG or SR draft may be edited in response to the review submissions and is subsequently distributed for public commentary. Thereafter, the draft CPG or SR is sequentially approved by the AAOS Committee on Evidence-Based Quality and Value, AAOS Council on Research and Quality, and the AAOS Board of Directors. All AAOS CPGs or SRs are reviewed and updated or retired every five years in accordance with the criteria of the National Guideline Clearinghouse.

The process of AAOS CPG or SR development incorporates the benefits from clinical physician expertise as well as the statistical knowledge and interpretation of non-conflicted methodologists. The process also includes an extensive review process offering the opportunity for over 200 clinical physician experts to provide input into the draft prior to publication. This process provides a sound basis for minimizing bias, enhancing transparency and ensuring the highest level of accuracy for interpretation of the evidence.

## First Steps to Constructing a CPG or SR

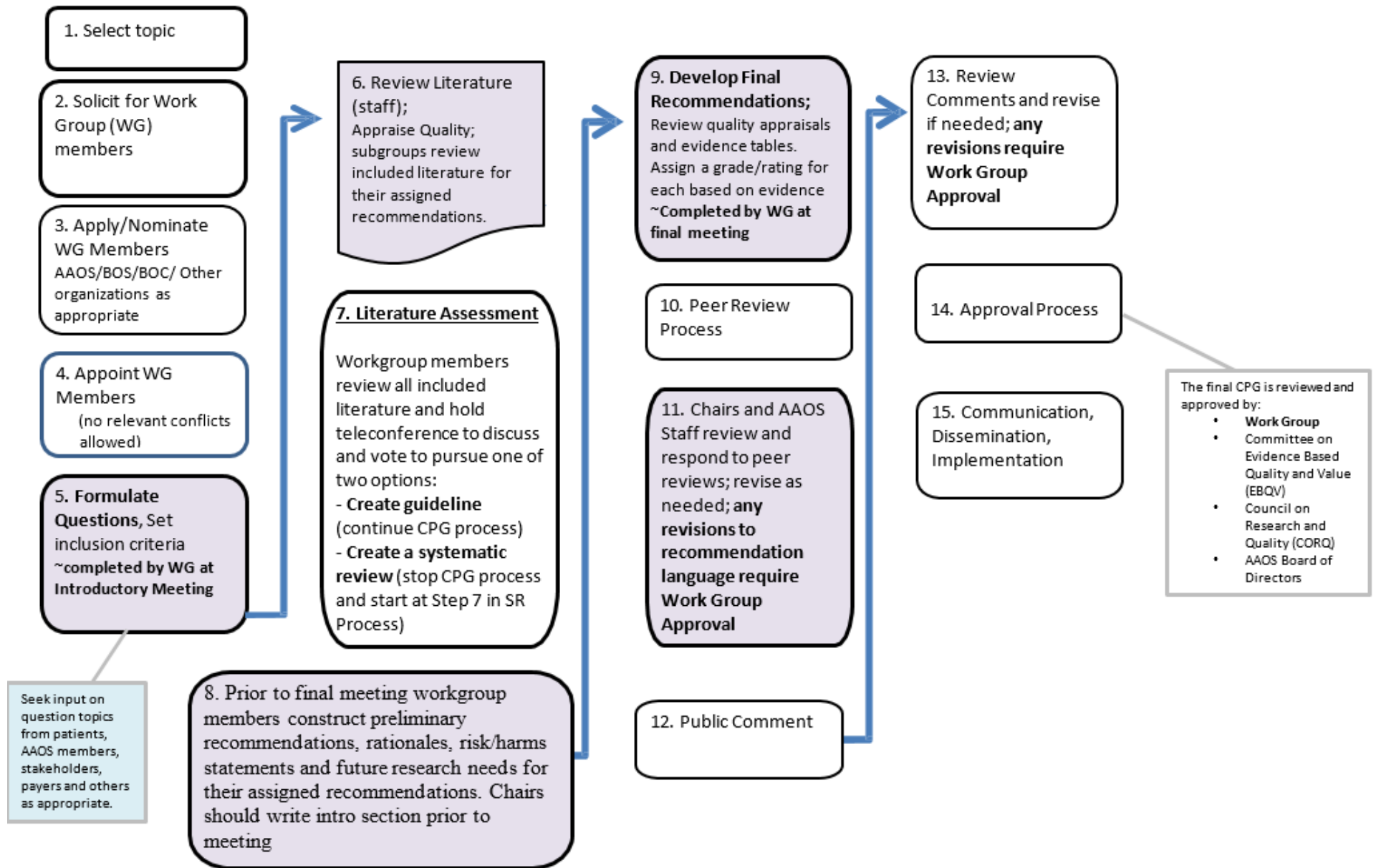
1a. Nominate Clinical Practice Guideline (CPG) or Systematic Review (SR) Topics – Open to all via [electronic survey](#)

1b. Select a topic – The AAOS Committee on Evidence-Based Quality and Value (EBQV) prioritizes the nominated topics via an electronic topic ranking form.

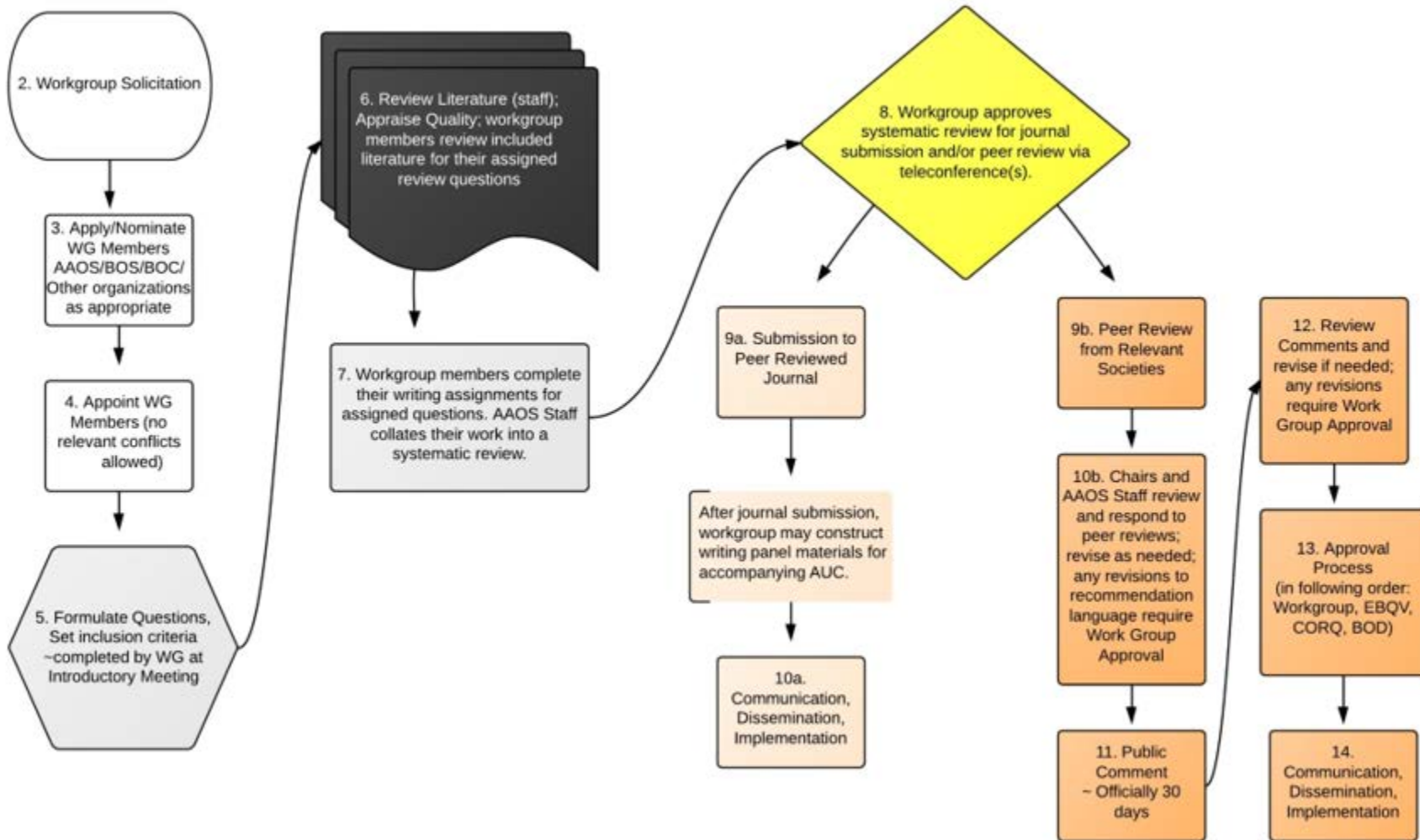
1c. The EBQV Committee decides which of the high priority topics should move forward as a guideline (follow CPG Process listed on page 4) or a systematic review (follow SR Process on page 5). The main difference between a CPG and a SR is the size of the project. CPGs can ask anywhere from 10-30 PICO questions, requiring 10-30 separate literature reviews, whereas a SR asks 4-7 questions. The smaller scope of the SR lends itself to a quicker turnaround (i.e. faster publication from literature search to finalizing recommendations) and less AAOS staff resources and clinician volunteer time commitments.

- During Step 7 of the CPG process, the workgroup may decide that the quality or quantity of the included evidence lends itself more to a SR rather than a CPG. At this time, the workgroup may decide to proceed with a SR starting on Step 7 of the Systematic Review Process Flowchart. The workgroup may not, however, choose to construct a systematic review for some recommendations and a clinical practice guideline for other recommendations.

## Clinical Practice Guideline Process Flowchart



## Systematic Review Process Flowchart



## Detailed Methodology

### Formulating PICO Questions

The clinician work group begins their work on CPGs or SRs by constructing a set of PICO questions. These questions specify the patient population of interest (P), the intervention of interest (I), the comparisons of interest (C), and the patient-oriented outcomes of interest (O). They function as questions for the systematic review, not as final recommendations or conclusions. Once established, these *a priori* PICO questions cannot be modified until the final guideline work group meeting.

### Study Selection Criteria

*A priori* article inclusion criteria is constructed for all CPGs and SRs. These criteria are our “rules of evidence” and articles that did not meet them are, for the purposes of this guideline, not evidence.

To be included in our CPGs or SRs an article had to meet the following criteria:

### Work Group Defined Criteria

1. Study must be of an *<enter disease topic of interest>* injury or prevention thereof.
2. Study must be published in or after *<work group selects date, not to precede 1966>* for surgical treatment, rehabilitation, bracing, prevention and MRI
3. Study must be published in or after *<work group selects date, not to precede 1966>* for x rays and nonoperative treatment
4. Study must be published in or after *<work group selects date, not to precede 1966>* for all others non specified
5. Study should have 30 *<work group may choose to increase the sample size if justified>* or more patients per group
6. For surgical treatment a minimum of *N* days/months/year (refer to PICO questions for detailed follow up duration)
7. For nonoperative treatment a minimum of *N* days/months/year (refer to PICO questions for detailed follow up duration)
8. For prevention studies a minimum of *N* days/months/year (refer to PICO questions for detailed follow up duration)

### Standard Criteria for all CPGs and SRs

- Article must be a full article report of a clinical study.
- Retrospective non-comparative case series, medical records review, meeting abstracts, meta-analyses, systematic reviews, historical articles, editorials, letters, and commentaries are **excluded**. Bibliographies of meta-analyses and systematic reviews will be examined to ensure inclusion of all relevant literature.
- Confounded studies (i.e. studies that give patients the treatment of interest AND another treatment) are **excluded**.



- Case series studies that have non-consecutive enrollment of patients are *excluded*.
- Controlled trials in which patients were not stochastically assigned to groups AND in which there was either a difference in patient characteristics or outcomes at baseline AND where the authors did not statistically adjust for these differences when analyzing the results are *excluded*.
- All studies evaluated as “very low quality” will be *excluded*.
- Composite measures or outcomes are *excluded* even if they are patient-oriented.
- Study must appear in a peer-reviewed publication
- For any included study that uses “paper-and-pencil” outcome measures (e.g., SF-36), only those outcome measures that have been validated will be included
- For any given follow-up time point in any included study, there must be  $\geq 50\%$  patient follow-up (if the follow-up is  $>50\%$  but  $<80\%$ , the study quality will be downgraded by one Level)
- Study must be of humans
- Study must be published in English
- Study results must be quantitatively presented
- Study must not be an in vitro study
- Study must not be a biomechanical study
- Study must not have been performed on cadavers
- We will only evaluate surrogate outcomes when no patient oriented outcomes are available.

### Best Evidence Synthesis

AAOS CPGs and SRs include only the best available evidence for any given patient-oriented outcome addressing a PICO question. Accordingly, we first include the highest quality evidence for any given outcome if it was available (see [Methods for Evaluating Evidence](#) for more information). In the absence of two or more occurrences of an outcome at this quality, we consider outcomes of the next lowest quality until at least two or more occurrences of an outcome has been acquired. For example, if there were two ‘moderate’ quality occurrences of an outcome that addressed a recommendation, we do not include ‘low’ quality occurrences of this outcome. A summary of the evidence that met the inclusion criteria, but was not best available evidence is created for each CPG or SR and can be viewed by recommendation within each document’s appendix.

### Recommending for or Against a Procedure

The guideline work group considers the procedure of interest and comparison procedure when recommending or not recommending a procedure for clinical use. If the procedure of interest results in outcomes that are similar to the comparison procedure, the work group may recommend both procedures due to no statistical difference in outcomes. If the procedure of interest results in outcomes that are not statistically different than a placebo or no procedure, the work group may recommend against the procedure of interest, because it adds no measurable benefit to a patient’s outcomes.



## Minimally Clinically Important Improvement

Wherever possible, we consider the effects of treatments in terms of the minimally clinically important difference (MCID) in addition to whether their effects are statistically significant. The MCID is the smallest clinical change that is important to patients, and recognizes the fact that there are some treatment-induced statistically significant improvements that are too small to matter to patients. However, there were no occurrences of validated MCID outcomes in the studies included in this clinical practice guideline.

When MCID values from the specific guideline patient population are not available, we use the following measures listed in order of priority:

MCID/MID

PASS or Impact

Another validated measure

Statistical Significance

## Literature Searches

We begin the systematic review with a comprehensive search of the literature. Articles we consider were published prior to the start date of the search in a minimum of three electronic databases; PubMed, EMBASE, and the Cochrane Central Register of Controlled Trials. The medical librarian conducts the search using key terms determined from the guideline development group's PICO questions.

AAOS CPGs and SRs review and include only primary literature. We supplement the electronic search with a manual search of the bibliographies of secondary literature sources, such as systematic reviews. Recalled articles are evaluated for possible inclusion based on the study selection criteria and are summarized for the guideline work group who assist with reconciling possible errors and omissions.

A study attrition diagram is provided in the appendix of each document that details the numbers of identified abstracts, recalled and selected studies, and excluded studies that were evaluated in the CPG or SR. The search strategies used to identify the abstracts is also included in the appendix of each CPG or SR document.

## Methods for Evaluating Evidence

### *Prognostic Study Quality Appraisal Questions*

The following questions are used to evaluate the study quality of prognostic study designs.

- Was the spectrum of patients studied for this prognostic variable representative of the patient spectrum seen in actual clinical practice?
- Was loss to follow up unrelated to key characteristics?
- Was the prognostic factor of interest adequately measured in the study to limit potential bias?
- Was the outcome of interest adequately measured in study participants to sufficiently limit bias?

- Were all important confounders adequately measured in study participants to sufficiently limit potential bias?
- Was the statistical analysis appropriate for the design of the study, limiting potential for presentation of invalid results?

**Prognostic Study Design Quality Key**

High Quality Study	<1 Flaw
Moderate Quality Study	≥1 and <2 Flaws
Low Quality Study	≥2 and <3 Flaws
Very Low Quality Study	≥3 Flaws

*Diagnostic Study Quality Appraisal Questions*

*Resources used to develop the Diagnostic Quality Appraisal System:*

- Quality Assessment of Studies of Diagnostic Accuracy Included in Systematic Reviews (QUADAS). Adapted from: Whiting, P; Rutjes, J.; Dinnes, J.; Restsma, JB; Bossuyt, PMM; Kleijnen, J. Development and validation of methods for assessing the quality of diagnostic accuracy studies. *Health Technology Assessment 2004; (8): No. 25*
- GRADE Working Group. Grading quality of evidence and strength of recommendations. *BMJ 2004; (328): 1490-1494.*

- Was the patient spectrum representative of the patients who will receive the test in practice?
- Were the selection criteria clearly described?
- Was the execution of the index and reference tests described in sufficient detail to permit its replication?
- Is the reference standard likely to correctly classify the target condition?
- Are the index test(s) results interpreted by an examiner without the knowledge of the reference tests results (*or vice versa*)?
- Other

High Quality Study	<1 Flaw
Moderate Quality Study	≥1 and <2 Flaws
Low Quality Study	≥2 and <3 Flaws
Very Low Quality Study	≥3 Flaws

### *Randomized Study Quality Appraisal Questions*

*Resources used to develop the Diagnostic Quality Appraisal System:*

- GRADE Working Group. Grading quality of evidence and strength of recommendations. *BMJ 2004; (328): 1490-1494.*

The following domains are evaluated to determine the study quality of randomized study designs.

- Random Sequence Generation
- Allocation Concealment
- Blinding of Participants and Personnel
- Incomplete Outcome Data
- Selective Reporting
- Other Bias

### Upgrading Randomized Study Quality Questions

- Is there a large magnitude of effect?
- Influence of All Plausible Residual Confounding
- Dose-Response Gradient

### **Randomized Study Design Quality Key**

High Quality Study	<2 Flaw
Moderate Quality Study	≥2 and <4 Flaws
Low Quality Study	≥4 and <6 Flaws
Very Low Quality Study	≥6 Flaws

### *Observational Study Design Quality Appraisal Questions*

*Resources used to develop the Diagnostic Quality Appraisal System:*

- GRADE Working Group. Grading quality of evidence and strength of recommendations. *BMJ 2004; (328): 1490-1494.*

The following questions are used to evaluate the study quality of observational study designs. Note that all observation studies begin the appraisal process at “low quality” due to design flaws inherent in observational studies.

- Is this observational study a prospective case series?
- Does the strategy for recruiting participants into the study differ across groups?
- Did the study fail to balance the allocation between the groups or match groups (e.g., through stratification, matching, propensity scores)?

- Were important confounding variables not taken into account in the design and/or analysis (e.g., through matching, stratification, interaction terms, multivariate analysis, or other statistical adjustment such as instrumental variables)?
- Was the length of follow-up different across study groups?
- Other Bias?

#### Upgrading Observational Study Quality Questions

- Is there a large magnitude of effect?
- Influence of All Plausible Residual Confounding
- Dose-Response Gradient

#### Observational Study Design Quality Key

High Quality Study	<2 Flaw
Moderate Quality Study	≥2 and <4 Flaws
Low Quality Study	≥4 and <6 Flaws
Very Low Quality Study	≥6 Flaws

#### Defining the Strength of the Recommendations

Judging the quality of evidence is only a stepping stone towards arriving at the strength of a CPG or SR recommendation. The strength of recommendation also takes into account the quality, quantity, and the trade-off between the benefits and harms of a treatment, the magnitude of a treatment’s effect, and whether data exists on critical outcomes.

Strength of recommendation expresses the degree of confidence one can have in a recommendation. As such, the strength expresses how possible it is that a recommendation will be overturned by future evidence. It is very difficult for future evidence to overturn a recommendation that is based on many high quality randomized controlled trials that show a large effect. It is much more likely that future evidence will overturn recommendations derived from a few small retrospective comparative studies. Consequently, recommendations based on the former kind of evidence are given a “strong” strength of recommendation and recommendations based on the latter kind of evidence are given a “limited” strength.

To develop the strength of a recommendation, AAOS staff first assigned a preliminary strength for each recommendation that took only the final quality and the quantity of evidence (see Table 1).

**Table 1. Strength of Recommendation Descriptions**

Strength	Overall Strength of Evidence	Description of Evidence Quality	Strength Visual
<b>Strong</b>	Strong	Evidence from two or more “High” quality studies with consistent findings for recommending for or against the intervention.	
<b>Moderate</b>	Moderate	Evidence from two or more “Moderate” quality studies with consistent findings, or evidence from a single “High” quality study for recommending for or against the intervention.	
<b>Limited</b>	Low Strength Evidence or Conflicting Evidence	Evidence from one or more “Low” quality studies with consistent findings <b>or</b> evidence from a single “Moderate” quality study recommending for against the intervention or diagnostic or the evidence is insufficient or conflicting and does not allow a recommendation for or against the intervention.	
<b>Consensus*</b>	No Evidence	There is no supporting evidence. In the absence of reliable evidence, the guideline work group is making a recommendation based on their clinical opinion. Consensus statements are published in a separate, complimentary document.	

**Wording of the Final Recommendations**

To prevent bias in the way recommendations are worded, the AAOS uses specific predetermined language stems that are governed by the evidence strengths. Each recommendation is written using language that accounts for the final strength of the recommendation. This language, and the corresponding strength, is shown in Table 2.

**Table 2. AAOS Guideline Language Stems**

Guideline Language	Strength of Recommendation
Strong evidence supports that the practitioner should/should not do X, because...	Strong
Moderate evidence supports that the practitioner could/could not do X, because...	Moderate
Limited evidence supports that the practitioner might/might not do X, because...	Limited
In the absence of reliable evidence, it is the <i>opinion</i> of this guideline work group that...*	Consensus*

\*Consensus based recommendations are made according to specific criteria. These criteria can be found in Appendix VII.

## Applying the Recommendations to Clinical Practice

To increase the practicality and applicability of the guideline recommendations in this document, the information listed in Table 3 provides assistance in interpreting the correlation between the strength of a recommendation and patient counseling time, use of decision aids, and the impact of future research

**Table 3. Clinical Applicability: Interpreting the Strength of a Recommendation**

Strength of Recommendation	Patient Counseling (Time)	Decision Aids	Impact of Future Research
Strong	Least	Least Important, unless the evidence supports no difference between two alternative interventions	Not likely to change
Moderate	Less	Less Important	Less likely to change
Limited	More	Important	Change possible/anticipated
Consensus	Most	Most Important	Impact unknown

## Voting on the Recommendations

The recommendations and their strength are voted on by the CPG or SR work group members during the final meeting. If disagreement between the guideline work group occurs, there was further discussion to see whether the disagreement(s) could be resolved. Recommendations were approved and adopted in instances where a majority (60%) of the guideline work group voted to approve.

## Statistical Methods

### *Analysis of Intervention/Prevention Data*

When possible, the AAOS EBM Unit recalculates the results reported in individual studies and compiles them to answer the recommendations. The results of all statistical analysis by the AAOS Clinical Practice Guidelines Unit are conducted using SAS 9.4. SAS is used to determine the magnitude, direction, and/or 95% confidence intervals of the treatment effect. For data reported as means (and associated measures of dispersion) the mean difference between groups and the 95% confidence interval is calculated and a two-tailed t-test of independent groups is used to determine statistical significance. When published studies report measures of dispersion other than the standard deviation the value is estimated to facilitate calculation of the treatment effect. In studies that report standard errors or confidence intervals, the standard deviation is back-calculated. In some circumstances statistical testing is conducted by the authors and measures of dispersion is not reported. In the absence of measures of dispersion, the results of the statistical

analyses conducted by the authors (i.e. the p-value) are considered as evidence. For proportions, we report both the proportion and percentage of patients that experienced an outcome. The variance of the arcsine difference is used to determine statistical significance. P-values < 0.05 are considered statistically significant.

When the data are available, meta-analyses using the random effects method of DerSimonian and Laird are performed. A minimum of three studies are required for an outcome to be considered for meta-analysis. Heterogeneity is assessed with the I-squared statistic. Meta-analyses with I-squared values less than 50% are considered as evidence. Those with I-squared larger than 50% are not considered as evidence for inclusion in guidelines and systematic reviews. All meta-analyses are performed using SAS 9.4. The arcsine difference is used in meta-analysis of proportions. In order to overcome the difficulty of interpreting the magnitude of the arcsine difference, a summary odds ratio is calculated based on random effects meta-analysis of proportions and the number needed to treat (or harm) is calculated. The standardized mean difference is used for meta-analysis of means, and magnitude is interpreted using Cohen's definitions of small, medium, and large effect.

### **Peer Review**

Following the final meeting, the CPG or SR draft undergoes peer review for additional input from external content experts. Written comments are provided on the structured review form (see [Structured Peer Review and Public Comment Electronic Form](#)). All peer reviewers are required to disclose their conflicts of interest.

To guide who participates, the CPG or SR work group identifies specialty societies at the introductory meeting. *Organizations*, not *individuals*, are specified.

The specialty societies are solicited for nominations of individual peer reviewers approximately six weeks before the final meeting. The peer review period is announced as it approaches and others interested are able to volunteer to review the draft. The chairs of the guideline work group and chair of the AAOS committee on Evidence Based Quality and Value reviews the draft of the guideline prior to dissemination.

Specialty societies can choose two peer review options (see [Specialty Society Peer Review Options](#)). Some specialty societies (both orthopaedic and non-orthopaedic) ask their evidence-based practice (EBP) committee to provide review of the guideline. The organization is responsible for coordinating the distribution of our materials and consolidating their comments onto one form. The chair of the external EBP committees provides disclosure of their conflicts of interest (COI) and manages the potential conflicts of their members.

Again, the AAOS asks for comments to be assembled into a single response form by the specialty society and for the individual submitting the review to provide disclosure of potentially conflicting interests. The peer review stage gives external stakeholders an opportunity to provide evidence-based direction for modifications that they believe have



been overlooked. Since the draft is subject to revisions until its approval by the AAOS Board of Directors as the final step in the guideline development process, confidentiality of all working drafts is essential.

## Specialty Society Peer Review Options

### **Peer Review Option 1: Peer Review Completed by Society Nominated Reviewer (One Month Deadline)**

- Nominate a single reviewer to submit the structured peer review electronic form **within the one month deadline**. Reviewer may work with other members on behalf of the society, but only one peer review form can be submitted per society.
- **Note: This option does not leave time for society leadership review. Peer review is completed wholly by nominated reviewer on behalf of the society.**

### **Peer Review Option 2: First Draft of Peer Review Completed by Society Nominated Reviewer (2 week deadline) and Revised/Approved by Specialty Society Leadership (2 week deadline)**

- Nominate a single reviewer to submit the structured peer review electronic form within the two week deadline. Reviewer may work with other members on behalf of the society, but only one peer review form can be submitted per society. If the reviewer successfully submits the peer review by the two week deadline, the review is forwarded to specialty society leadership for final review/revisions/submission within the additional two week deadline.
- **This option leaves time for society leadership review; however, deadlines are shorter, thus timely review is required by all reviewing participants.**

The chairs of the guideline work group and the manager of the AAOS EBM unit drafts the initial responses to comments that address methodology. These responses are then reviewed by the chair and co-chair, who respond to questions concerning clinical practice and techniques. The director of the Department of Research and Scientific Affairs may provide input as well. All comments received and the initial drafts of the responses are also reviewed by all members of the guideline development group. All proposed changes to recommendation language as a result of peer review are based on the evidence and undergoes majority vote by the guideline work group members. Final revisions are summarized in a detailed report that is made part of the guideline document throughout the remainder of the review and approval processes.

The AAOS believes in the importance of demonstrating responsiveness to input received during the peer review process and welcomes the critiques of external specialty societies. Following final approval of the guideline, all individual responses are posted on our website <http://www.aaos.org/guidelines> with a point-by-point reply to each non-editorial comment. Reviewers who wish to remain anonymous notify the AAOS to have their

names de-identified; their comments, our responses, and their COI disclosures are still posted.

### **Public Commentary**

After modifying the draft in response to peer review, the CPG or SR is subjected to a thirty day period of “Public Commentary.” Commentators consist of members of the AAOS Board of Directors (BOD), members of the Council on Research and Quality (CORQ), members of the Board of Councilors (BOC), and members of the Board of Specialty Societies (BOS). The CPG or SR is automatically forwarded to the AAOS BOD and CORQ so that they may review it and provide comment prior to being asked to approve the document. Members of the BOC and BOS are solicited for interest. If they request to see the document, it is forwarded to them for comment. Based on these bodies, over 200 commentators have the opportunity to provide input into each CPG or SR.

### **Structured Peer Review & Public Comment Electronic Form**

Peer reviewers are asked to read and review the draft of the CPG or SR with a particular focus on their area of expertise. Their responses to the answers below are used to assess the validity, clarity, and accuracy of the interpretation of the evidence.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. The overall objective(s) of the guideline is (are) specifically described.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. The health question(s) covered by the guideline is (are) specifically described.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. The guideline's target audience is clearly described.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. The guideline development group includes individuals from all the relevant professional groups.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. There is an explicit link between the recommendations and the supporting evidence.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Given the nature of the topic and the data, all clinically important outcomes are considered.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. The patients to whom this guideline is meant to apply are specifically described.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. The criteria used to select articles for inclusion are appropriate.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. The reasons why some studies were excluded are clearly described.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. All important studies that met the article inclusion criteria are included.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. The validity of the studies is appropriately appraised.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. The methods are described in such a way as to be reproducible.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. The statistical methods are appropriate to the material and the objectives of this guideline.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. Important parameters (e.g., setting, study population, study design) that could affect study results are systematically addressed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. Health benefits, side effects, and risks are adequately addressed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. The writing style is appropriate for health care professionals.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. The grades assigned to each recommendation are appropriate.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please provide a brief explanation of both your positive and negative answers in the preceding section. If applicable, please specify the draft page and line numbers in your comments. Please feel free to also comment on the overall structure and content of the Guideline.

Would you recommend these guidelines for use in clinical practice?\*

- Strongly Recommend
- Recommend
- Would Not Recommend
- Unsure

Additional Comments:

To view an example of the structured peer review form, please select the following link: [Structured Peer Review Form](#)

### The AAOS CPG or SR Approval Process

This final CPG or SR draft must be approved by the AAOS Committee on Evidence Based Quality and Value Committee, the AAOS Council on Research and Quality, and the AAOS Board of Directors. These decision-making bodies are described in the Appendix of each guideline or SR. Their charge is to approve or reject its publication by majority vote, not suggest modifications to the content of the documents.

### Revision Plans

CPGs and SRs represent a cross-sectional view of current treatment and may become outdated as new evidence becomes available. They will be revised in accordance with new evidence, changing practice, rapidly emerging treatment options, and new technology. Additionally, they will be updated or withdrawn in five years in accordance with the standards of the National Guideline Clearinghouse.

## CPG and SR Dissemination Plans

The primary purpose of CPGs and SRs is to provide interested readers with full documentation about not only our recommendations, but also about how we arrived at those recommendations.



To view all AAOS published CPG and/or SR recommendations in a user-friendly website, please visit [www.orthoguidelines.org](http://www.orthoguidelines.org)

**Or download the OrthoGuidelines app from Google Play or Apple Stores.**

Shorter versions of the CPGs and SRs are available in other venues. Publication of most CPGs or SRs is announced by an Academy press release, articles authored by the CPG or SR work group and published in the *Journal of the American Academy of Orthopaedic Surgeons*, and articles published in *AAOS Now*. Most CPGs and SRs are also distributed at the AAOS Annual Meeting in various venues such as on Academy Row and at Committee Scientific Exhibits.

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