Early Screening for Psychosocial Risk and and Protective Factors

Appropriate Use Criteria

Adopted by:
The American Academy of Orthopaedic Surgeons Board of Directors
June 6, 2020

Endorsed by:

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Disclaimer
Volunteer physicians from multiple medical specialties created and categorized these Appropriate Use Criteria. These Appropriate Use Criteria are not intended to be comprehensive or a fixed protocol, as some patients may require more or less treatment or different means of diagnosis. These Appropriate Use Criteria represent patients and situations that clinicians treating or diagnosing musculoskeletal conditions are most likely to encounter. The clinician's independent medical judgment, given the individual patient's clinical circumstances, should always determine patient care and treatment.

Disclosure Requirement
In accordance with American Academy of Orthopaedic Surgeons (AAOS) policy, all individuals whose names appear as authors or contributors to this document filed a disclosure statement as part of the submission process. All authors provided full disclosure of potential conflicts of interest prior to participation in the development of these Appropriate Use Criteria. Disclosure information for all panel members can be found in Appendix B.

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FDA Clearance
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For a more user-friendly version of this AUC, or to view additional AUCs, please visit the AAOS AUC web-based app at:

www.OrthoGuidelines.org/auc

To view the clinical practice guideline for this topic, please visit www.aaos.org/prfcpg

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I. INTRODUCTION

OVERVIEW

The AAOS has developed this Appropriate Use Criteria (AUC) to determine appropriateness of Early Screening for Psychosocial Risk and Protective Factors in patients with adult orthopaedic trauma.

An "appropriate" healthcare service is one for which the expected health benefits exceed the expected negative consequences by a sufficiently wide margin.[1] Evidence-based information, in conjunction with the clinical expertise of physicians from multiple medical specialties, was used to develop the criteria in order to improve patient care and obtain the best outcomes while considering the subtleties and distinctions necessary in making clinical decisions. To provide the evidence foundation for this AUC, the AAOS Department of Clinical Quality and Value provided the writing panel and voting panel with the AAOS/METRC Clinical Practice Guideline on the Evaluation of Psychosocial Factors Influencing Recovery From Adult Orthopaedic Trauma [2], which can be accessed via the following link:
http://www.orthoguidelines.org/topic?id=1030

The purpose of this AUC is to help determine the appropriateness of clinical practice guideline recommendations for the heterogeneous patient population routinely seen in practice. The best available scientific evidence is synthesized with collective expert opinion on topics where gold standard randomized clinical trials are not available or are inadequately detailed for identifying distinct patient types. When there is evidence corroborated by consensus that expected benefits substantially outweigh potential risks, exclusive of cost, a procedure is determined to be appropriate. The AAOS uses the RAND/UCLA Appropriateness Method (RAM)[1] to assess the appropriateness of a particular treatment. This process includes reviewing the results of the evidence analysis, compiling a list of clinical vignettes, and having an expert panel comprised of representatives from multiple medical specialties to determine the appropriateness of each of the clinical indications for treatment as "Appropriate," "May be Appropriate," or "Rarely Appropriate." To access a more user-friendly version of the appropriate use criteria for this topic online, please visit our AUC web-based application at www.orthoguidelines.org/auc or download the OrthoGuidelines app from Google Play or Apple Store.

These criteria should not be construed as including all indications or excluding indications reasonably directed to obtaining the same results. The criteria intend to address the most common clinical scenarios facing general and other qualified physicians managing patients with high energy lower extremity trauma. The ultimate judgement regarding any specific criteria should address all circumstances presented by the patient and the needs and resources particular to the locality or institution. It is also important to state that these criteria are not meant to supersede clinician expertise and experience or patient preference.

INTERETTING THE APPROPRIATENESS RATING

To prevent misuse of these criteria, it is extremely important that the user of this document understands how to interpret the appropriateness ratings. The appropriateness rating scale ranges from one to nine and there are three main range categories that determine how the median rating is defined (i.e. 1-3 = "Rarely Appropriate", 4-6 = "May Be Appropriate", and 7-9 = "Appropriate"). Before these AUCs are consulted, the user should read through and understand all contents of this document.

INCIDENCE AND PREVALENCE

Injury survivors from a traumatic injury often continue to experience physical and psychological challenges for years following the initial event and hospitalization. [2]

ETIOLOGY

Emotions, such as anxiety and depression, increase risk for postoperative and postinjury pain. [5] Psychosocial challenges can also be related to an individual's affect and values prior to the distressing event, as well as to external details, such as social, financial, mental health and demographic factors. [4]

POTENTIAL BENEFITS, HARMS, AND CONTRAINDICATIONS

Benefits of evaluation of psychosocial factors influencing recovery from any adult orthopaedic trauma include identification of barriers to recovery and early referral for treatment. Barriers to psychosocial evaluation include, but are not limited to, lack of resources to properly assess the risk factor and impediments to patient response.[2]

II. METHODS

This AUC for Early Screening for Psychosocial Risk and Protective Factors is based on a review of the available literature and a list of clinical scenarios (i.e. criteria) constructed and voted on by experts in orthopaedic surgery and other relevant medical fields. This section describes the methods adapted from RAM[1]. This section also includes the activities and compositions of the various panels that developed, defined, reviewed, and voted on the criteria.

Two panels participated in the development of this AUC, a writing panel and a voting panel. Members of the writing panel developed a list of patient scenarios and relevant treatment options. Additional detail on how the writing panel developed the patient scenarios and treatments is below. The voting panel participated in two rounds of voting. During the first round, the voting panel was given approximately one month to independently rate the appropriateness of each the provided treatments for each of the relevant patient scenarios as 'Appropriate', 'May Be Appropriate', or 'Rarely Appropriate' via an electronic ballot. How the voting panel rates for appropriateness is described in more detailed below. After the first round of voting/appropriateness ratings were submitted, AAOS staff calculated the median ratings for each patient scenario and specific treatment. A voting panel meeting was held via webinar on Friday, April 3rd, 2020. During this meeting voting panel members addressed the scenarios/treatments which resulted in disagreement from round one voting. The voting panel members discussed the list of assumptions, patient indications, and treatments to identify areas that needed to be clarified/edited. After the discussion and subsequent changes, the group was asked to rerate their first-round ratings during the voting panel meeting, only if they were persuaded to do so by the discussion and available evidence. There was no attempt to obtain consensus about appropriateness.

The AAOS Committee on Evidence Based Quality and Value, the AAOS Council on Research and Quality, and the AAOS Board of Directors sequentially approve all AAOS AUC.

DEVELOPING CRITERIA

Panel members of this AUC developed patient scenarios using the following guiding principles:

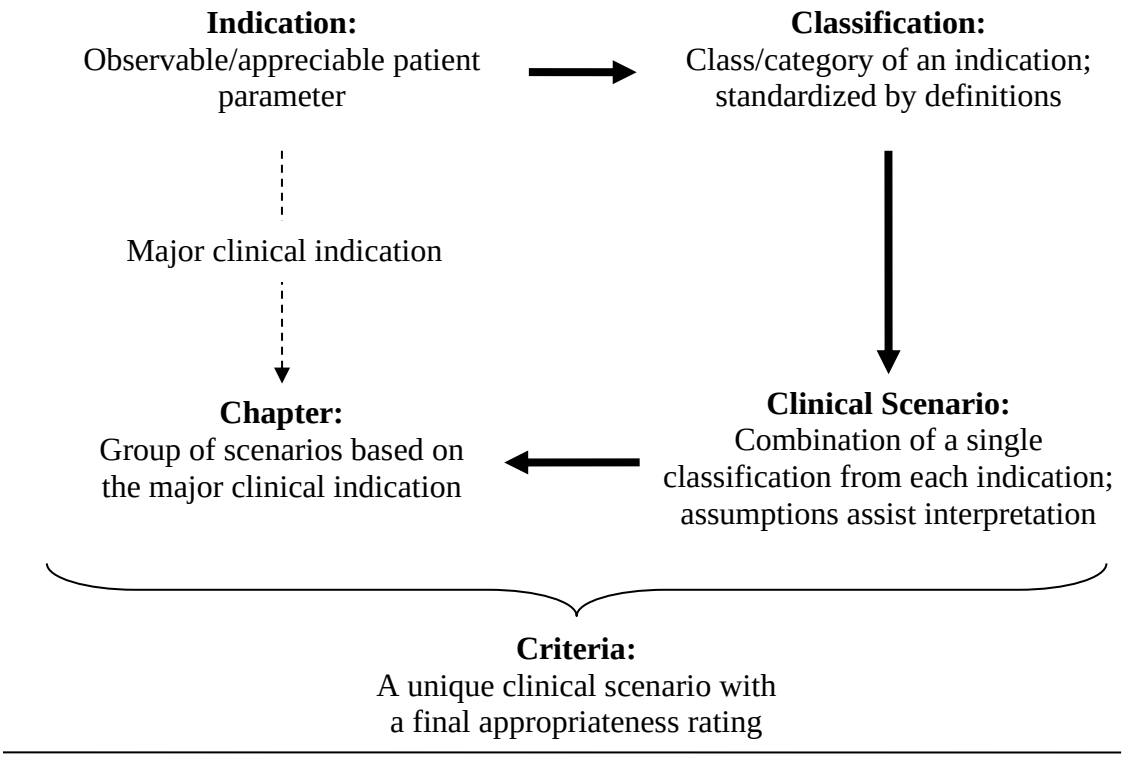
1) **Comprehensive** – Covers a wide range of patients.
2) **Mutually Exclusive** - There should be no overlap between patient scenarios/indications.
3) **Homogenous** –The final ratings should result in equal application within each of the patient scenarios.
4) **Manageable** – Number of total voting items (i.e. # of patient scenarios x # of treatments) should be practical for the voting panel. Target number of total voting items = 2000-6000. This means that not all patient indications and treatments can be assessed within one AUC.

The writing panel developed the scenarios by categorizing patients in terms of indications evident during the clinical decision-making process. These scenarios relied upon definitions and general assumptions, mutually agreed upon by the writing panel during the development of the scenarios. These definitions and assumptions were necessary to provide consistency in the interpretation of the clinical scenarios among experts voting on the scenarios, and readers using the final criteria.

FORMULATING INDICATIONS AND SCENARIOS

The AUC writing panel began the development of the scenarios by identifying clinical indications typical of patients with high energy lower extremity trauma in clinical practice. Indications are most often parameters observable by the clinician, including symptoms or results of diagnostic tests. Additionally, "human factors" (e.g. activity level) or demographic variables can be considered.

FIGURE 1. DEVELOPING CRITERIA



Indications identified in clinical trials, derived from patient selection criteria, and/or included in AAOS Clinical Practice Guidelines[2] (http://www.orthoguidelines.org) served as a starting point for the writing panel, as well as ensured that these AUCs referenced the evidence base for this topic. The writing panel considered this initial list and other indications based on their clinical expertise and selected the most clinically relevant indications. The writing panel then defined distinct classes for each indication to stratify/categorize the indication.

The writing panel organized these indications into a matrix of clinical scenarios that addressed all combinations of the classifications. The writing panel was given the opportunity to remove any scenarios that rarely occur in clinical practice but agreed that all scenarios were clinically relevant. The major clinical decision-making indications chosen by the writing panel divided the matrix of clinical scenarios into chapters, as follows: injury severity/type, pain intensity, magnitude of limitations, pre-morbid exposure to combat, and pre-morbid psychiatric condition.

CREATING DEFINITIONS AND ASSUMPTIONS

The AUC writing panel constructed concise and explicit definitions for the indications and classifications. This standardization helps ensure that the way the writing panel defined the patient indications is consistent among those reading the clinical scenario matrix or the final criteria. Definitions create explicit boundaries when possible and are based on standard medical practice or existing literature.

Additionally, the writing panel formulated a list of general assumptions in order to provide more consistent interpretations of a scenario. These assumptions differed from definitions in that they identified circumstances that exist outside of the control of the clinical decision-making process. Assumptions also address the use of existing published literature regarding the effectiveness of treatment and/or the procedural skill level of physicians. Assumptions also highlight intrinsic methods described in this document such as the role of cost considerations in rating appropriateness, or the validity of the definition of appropriateness. The main goal of assumptions is to focus scenarios so that they apply to the average patient presenting to an average physician at an average facility.

The definitions and assumptions should provide all readers with a common starting point in interpreting the clinical scenarios. The list of definitions and assumptions accompanied the matrix of clinical scenarios in all stages of AUC development and the final list appears below in the "Patient Indications and Treatments" section of this document.

LITERATURE REVIEW

The Clinical Practice Guideline on Evaluation of Psychosocial Factors Influencing Recovery from Adult Orthopaedic Trauma[2], was used as the evidence base for this AUC (see here: http://www.orthoguidelines.org/topic?id=1030). This guideline helped to inform the decisions of the writing panel and voting panel where available and necessary.

VOTING PANEL MODIFICATIONS TO WRITING PANEL DOCUMENT

At the start of the webinar voting panel meeting, the voting panel was reminded that they can amend the original writing panel materials if the amendments resulted in more clinically relevant and practical criteria. To amend the original materials, an instructed voting panel member must make a motion to amend and another member must "second" that motion, after which a vote is conducted. If the majority of voting panel members voted "yes" to amend the original materials, the amendments were accepted.

DETERMINING APPROPRIATENESS

VOTING PANEL

As mentioned above, a multidisciplinary panel of clinicians was assembled to determine the appropriateness of treatments for this AUC. A non-voting moderator, who is an orthopaedic surgeon, but is not a specialist in the evaluation of psychosocial factors influencing recovery from adult orthopaedic trauma, moderated the voting panel. The moderator was familiar with the methods and procedures of AAOS Appropriate Use Criteria and led the panel (as a non-voter) in discussions. Additionally, no member of the voting panel was involved in the development of the scenarios (i.e. served on the writing panel).

The voting panel used a modified Delphi procedure to determine appropriateness ratings. The voting panel participated in two rounds of voting while considering evidence-based information provided in the literature review.

RATING APPROPRIATENESS

When rating the appropriateness of a scenario, the voting panel considered the following definition:

> "An appropriate procedural step for a patient with high energy lower extremity trauma is one for which the procedure **is** generally acceptable, i**s** a reasonable approach for the indication, and i**s** likely to improve the patient's health outcomes or survival."

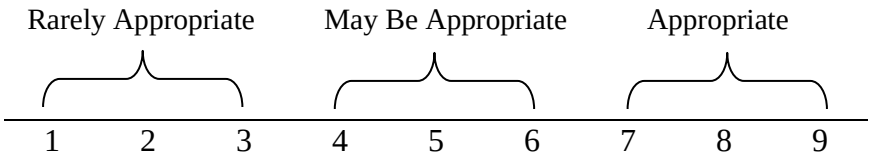
The voting panel rated each scenario using their best clinical judgment, taking into consideration the available evidence, for an average patient presenting to an average physician at an average facility as follows:

FIGURE 2. INTERPRETING THE 9-POINT APPROPRIATENESS SCALE

Rating	Explanation
7-9	**Appropriate**: Appropriate for the indication provided, meaning treatment **is** generally acceptable and **is** a reasonable approach for the indication and **is** likely to improve the patient's health outcomes or survival.
4-6	**May Be Appropriate**: Uncertain for the indication provided, meaning treatment **may** be acceptable and **may** be a reasonable approach for the indication, but with uncertainty implying that more research and/or patient information is needed to further classify the indication.
1-3	**Rarely Appropriate**: **Rarely** an appropriate option for management of patients in this population due to the lack of a clear benefit/risk advantage; **rarely** an effective option for individual care plans; exceptions should have documentation of the clinical reasons for proceeding with this care option (i.e. procedure is not generally acceptable and is not generally reasonable for the indication).

Each panelist uses the scale below to record their response for each scenario:

Appropriateness of [Topic]



ROUND ONE VOTING

The first round of voting occurred after approval of the final indications, scenarios, and assumptions by the writing panel. The voting panel rated the scenarios electronically using the AAOS AUC Electronic Ballot Tool, a personalized ballot created by AAOS staff. There was no interaction between voting panel members while completing the first round of voting. Panelists considered the following materials:

- The instructions for rating appropriateness
- The completed literature review, that is appropriately referenced when evidence is available for a scenario
- The list of indications, definitions, and assumptions, to ensure consistency in the interpretation of the clinical scenarios

ROUND TWO VOTING

The second round of voting occurred after the voting panel meeting on April 3, 2020. Prior to the in-person meeting, each voting panelist received a personalized document that included his/her first-round ratings along with summarized results of the first-round ratings that resulted in disagreement. These results indicated the frequency of ratings for a scenario for all panelists. The document contained no identifying information for other panelists' ratings. The moderator also used a document that summarized the results of the panelists' first round voting. These personalized documents served as the basis for discussions of scenarios which resulted in disagreement.

During the discussion, the voting panel members were allowed to add or edit the assumptions list, patient indications, and/or treatments if clarification was needed. Voting panel members were also able to record a new rating for any scenarios/treatments, if they were persuaded to do so by the discussion and/or the evidence. There was no attempt to obtain consensus among the panel members. After the final ratings were submitted, AAOS staff used the AAOS AUC Electronic Ballot Tool to export the median values and level of agreement for all voting items.

FINAL RATINGS

Using the median value of the second-round ratings, AAOS staff determined the final levels of appropriateness. Disagreement among raters can affect the final rating. Agreement and disagreement were determined using the BIOMED definitions of Agreement and Disagreement, as reported in the RAND/UCLA Appropriate Method User's Manual[1], for a panel of 11-13 voting members (see Figure 3 below). The 11-13 panel member disagreement cutoff was used for this voting panel. For this panel size, disagreement is defined as when ≥ 4 members' appropriateness ratings fell within the appropriate (7-9) and rarely appropriate (1-3) ranges for

any scenario (i.e. ≥ 4 members' ratings fell between 1-3 and ≥ 4 members' ratings fell between 7-9 on any given scenario and its treatment). If there is still disagreement in the voting panel ratings after the last round of voting, that voting item is labeled as "5" regardless of median score. Agreement is defined as ≤ 3 panelists rated outside of the 3-point range containing the median.

FIGURE 3. DEFINING AGREEMENT AND DISAGREEMENT FOR APPROPRIATENESS RATINGS

	Disagreement	**Agreement**
Panel Size	Number of panelists rating in each extreme (1-3 and 7-9)	Number of panelists rating outside the 3-point region containing the median (1-3, 4-6, 7-9)
8,9,10	≥ 3	≤ 2
11,12,13	**≥ 4**	**≤ 3**
14,15,16	≥ 5	≤ 4

Adapted from RAM[1]

The classifications in the table below determined final levels of appropriateness.

FIGURE 4. INTERPRETING FINAL RATINGS OF CRITERIA

Level of Appropriateness	**Description**
Appropriate	• Median panel rating between 7-9 and no disagreement
May Be Appropriate	• Median panel rating between 4-6 or • Median panel rating 1-9 with disagreement
Rarely Appropriate	• Median panel rating between 1-3 and no disagreement

REVISION PLANS

These criteria represent a cross-sectional view of current methods for management of high energy lower extremity trauma and may become outdated as new evidence becomes available or clinical decision-making indicators are improved. In accordance with the standards of the National Guideline Clearinghouse, AAOS will update or withdraw these criteria in five years. AAOS will issue updates in accordance with new evidence, changing practice, rapidly emerging treatment options, and new technology.

DISSEMINATING APPROPRIATE USE CRITERIA

All AAOS AUCs can be accessed via a user-friendly app that is available via the OrthoGuidelines website (www.orthoguidelines.org/auc) or as a native app via the Apple and Google Play stores.

Publication of the AUC document is on the AAOS website at [http://www.aaos.org/auc]. This document provides interested readers with full documentation about the development of Appropriate Use Criteria and further details of the criteria ratings.

AUCs are first announced by an Academy press release and then published on the AAOS website. AUC summaries are published in the *AAOS Now* and the Journal of the American Academy of Orthopaedic Surgeons (JAAOS). In addition, the Academy's Annual Meeting showcases the AUCs on Academy Row.

The dissemination efforts of AUC include web-based mobile applications, webinars, and online modules for the Orthopaedic Knowledge Online website, radio media tours, and media briefings. In addition, AUCs are also promoted in relevant Continuing Medical Education (CME) courses and distributed at the AAOS Resource Center.

Other dissemination efforts outside of the AAOS include submitting the Guidelines International Network library and to other medical specialty societies' meetings.

PATIENT ASSUMPTION AND EXLUSIONS

Assumptions:

1. Adult patients with musculoskeletal injuries to the extremity, spine, and/or pelvis

Exclusions:

1. Patients with significant cognitive deficit (Obtunded, severe head injury, delirium, etc.)

INDICATIONS

PATIENT INDICATIONS

Injury Severity/Type

1. Minor/Moderate (hover examples: metacarpal fracture, radial head fracture, etc.)
2. Major (hover examples: femur shaft fracture, pilon fracture, etc.)

Pain Intensity

1. None/Mild
2. Moderate/Severe

Magnitude of Limitations

1. Minor/Moderate
2. Major

Pre-morbid exposure to combat

1. Yes
2. No

Pre-morbid psychiatric condition (depression, anxiety, PTSD, substance abuse, etc.)

1. Yes
2. No

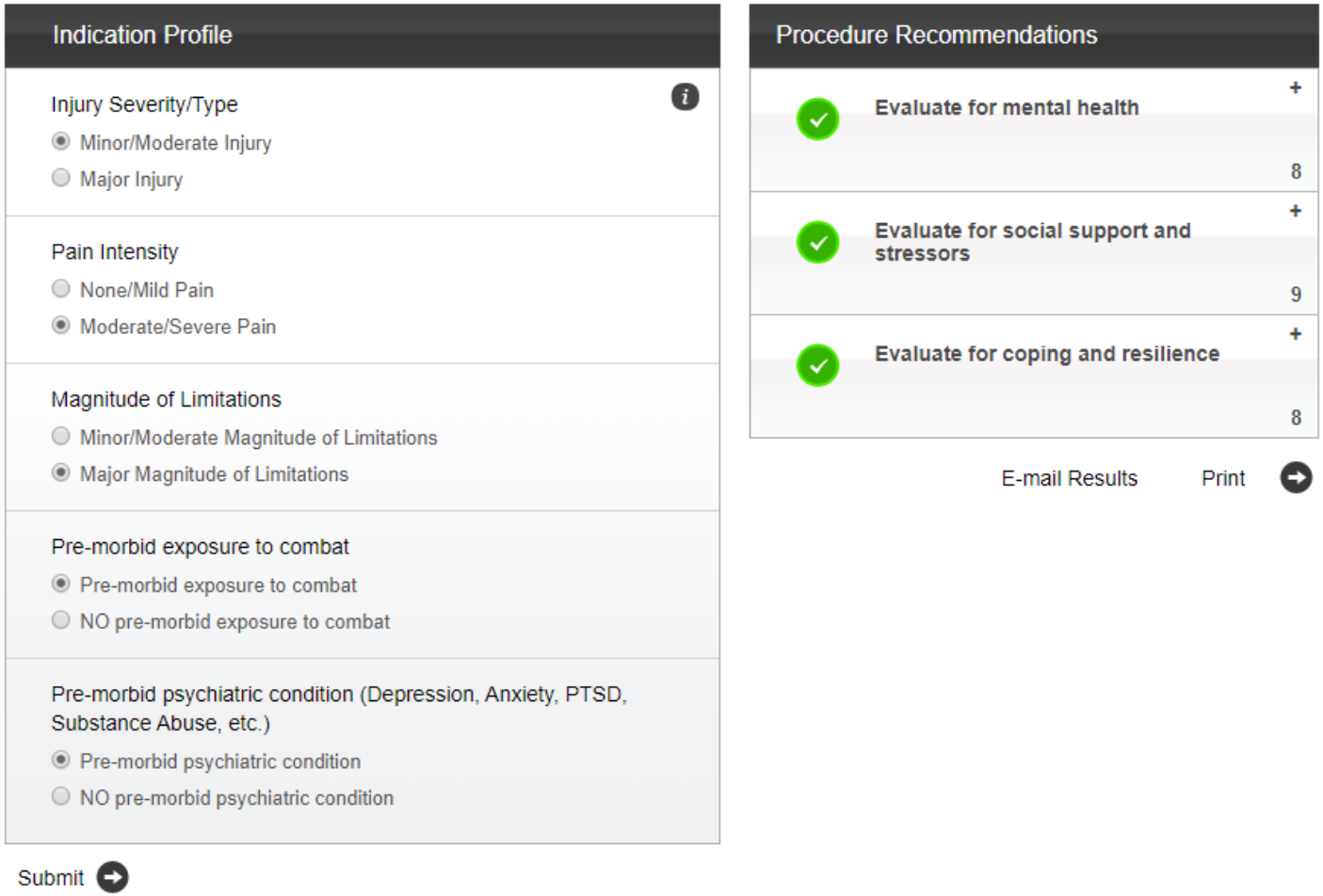
NEXT STEPS (APPROPRIATE, MAYBE APPROPRIATE, OR RARELY APPROPRIATE):

1. Evaluate for mental health (Examples: anxiety, depression, and PTSD)
2. Evaluate for social support and stressors
3. Evaluate for coping and resilience (Examples: catastrophic thinking, self-efficacy, etc.)

III. RESULTS OF APPROPRIATENESS RATINGS

For a user-friendly version of these appropriate use criteria, please access our AUC web-based application at www.orthoguidelines.org/auc. The OrthoGuidelines native app can also be downloaded via the Apple or Google Play stores.

Web-Based AUC Application Screenshot



RESULTS

The following Appropriate Use Criteria tables contain the final appropriateness ratings assigned by the members of the voting panel. Patient characteristics are found under the column titled “Scenario”. The Appropriate Use Criteria for each patient scenario can be found within each of the treatment rows. These criteria are formatted by appropriateness, median rating, and + or - indicating agreement or disagreement amongst the voting panel, respectively.

Out of 96 total voting items, 83 (86%) voting items were rated as “Appropriate”, 13 (14%) voting items were rated as “May Be Appropriate”, and 0 (0%) voting items were rated as “Rarely Appropriate” (Figure 5). Additionally, the voting panel members were in statistical agreement on 72 (75%) voting items with no statistical disagreement on any voting items (Figure 6).

FIGURE 5. BREAKDOWN OF APPROPRIATENESS RATINGS

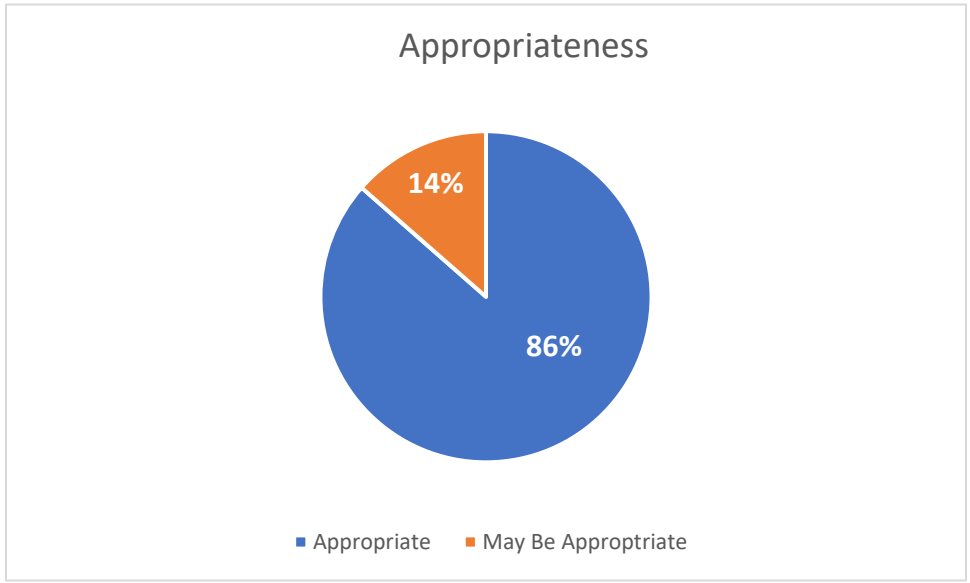


FIGURE 6. BREAKDOWN OF AGREEMENT AMONGST VOTING PANEL

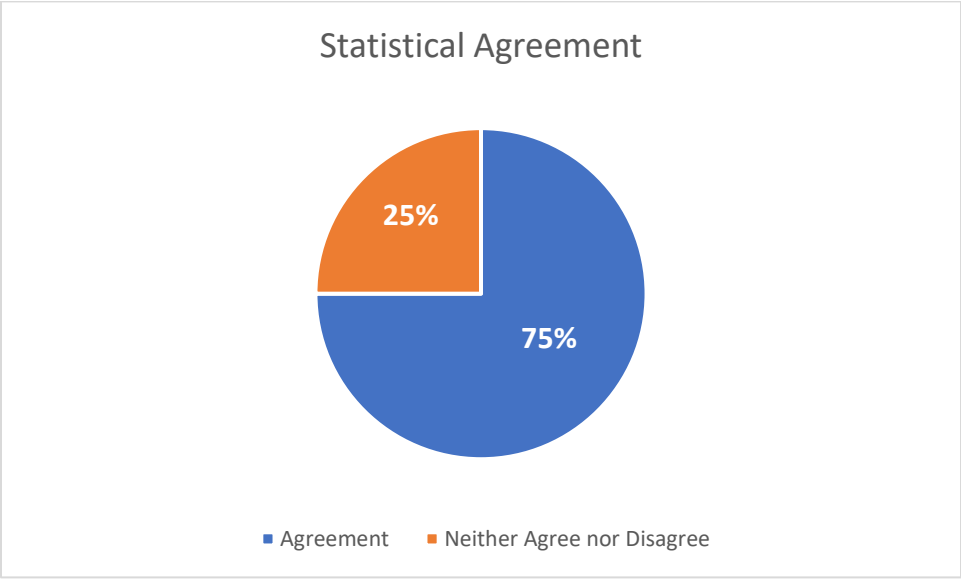
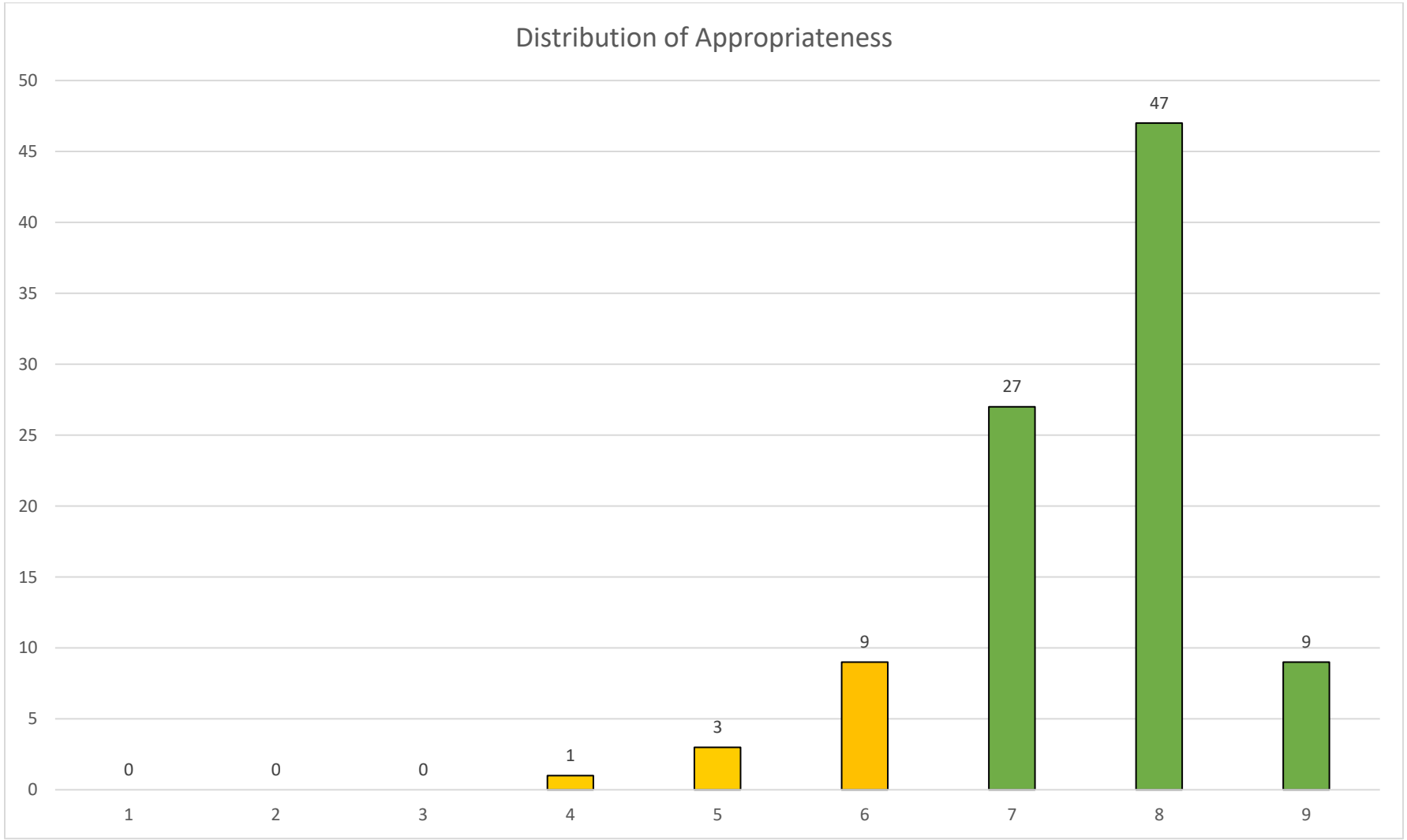


FIGURE 7. DISTRIBUTION OF APPROPRIATENESS ON 9-POINT RATING SCALE



APPROPRIATENESS RATINGS BY PATIENT SCENARIO

Interpreting the AUC tables:

- Each procedure contains the appropriateness (i.e. appropriate, may be appropriate, or rarely appropriate) for each patient scenario, followed by the median panel rating, and the panel's agreement represented by "+", in parentheses.

Scenario 1:	**Treatment**	**Appropriateness Rating**
Minor/Moderate Injury None/Mild Pain Minor/Moderate Magnitude of Limitations Pre-morbid exposure to combat Pre-morbid psychiatric condition	Evaluate for mental health	Appropriate (8, +)
	Evaluate for social support and stressors	Appropriate (7)
	Evaluate for coping and resilience	Appropriate (7)
Scenario 2:	**Treatment**	
Minor/Moderate Injury None/Mild Pain Minor/Moderate Magnitude of Limitations Pre-morbid exposure to combat NO pre-morbid psychiatric condition	Evaluate for mental health	May Be Appropriate (6)
	Evaluate for social support and stressors	May Be Appropriate (6)
	Evaluate for coping and resilience	May Be Appropriate (6)
Scenario 3:	**Treatment**	
Minor/Moderate Injury None/Mild Pain Minor/Moderate Magnitude of Limitations NO pre-morbid exposure to combat Pre-morbid psychiatric condition	Evaluate for mental health	Appropriate (7)
	Evaluate for social support and stressors	May Be Appropriate (6)
	Evaluate for coping and resilience	May Be Appropriate (6)
Scenario 4:	**Treatment**	
Minor/Moderate Injury None/Mild Pain Minor/Moderate Magnitude of Limitations NO pre-morbid exposure to combat NO pre-morbid psychiatric condition	Evaluate for mental health	May Be Appropriate (4)
	Evaluate for social support and stressors	May Be Appropriate (6)
	Evaluate for coping and resilience	May Be Appropriate (5)
Scenario 5:	**Treatment**	
Minor/Moderate Injury None/Mild Pain Major Magnitude of Limitations Pre-morbid exposure to combat Pre-morbid psychiatric condition	Evaluate for mental health	Appropriate (8, +)
	Evaluate for social support and stressors	Appropriate (8, +)

	Evaluate for coping and resilience	Appropriate (7, +)
Scenario 6:	**Treatment**	
Minor/Moderate Injury None/Mild Pain Major Magnitude of Limitations Pre-morbid exposure to combat NO pre-morbid psychiatric condition	Evaluate for mental health	Appropriate (7)
	Evaluate for social support and stressors	Appropriate (8, +)
	Evaluate for coping and resilience	Appropriate (7, +)
Scenario 7:	**Treatment**	
Minor/Moderate Injury None/Mild Pain Major Magnitude of Limitations NO pre-morbid exposure to combat Pre-morbid psychiatric condition	Evaluate for mental health	Appropriate (7, +)
	Evaluate for social support and stressors	Appropriate (8, +)
	Evaluate for coping and resilience	Appropriate (7, +)
Scenario 8:	**Treatment**	
Minor/Moderate Injury None/Mild Pain Major Magnitude of Limitations NO pre-morbid exposure to combat NO pre-morbid psychiatric condition	Evaluate for mental health	May Be Appropriate (5)
	Evaluate for social support and stressors	Appropriate (8, +)
	Evaluate for coping and resilience	Appropriate (7)
Scenario 9:	**Treatment**	
Minor/Moderate Injury Moderate/Severe Pain Minor/Moderate Magnitude of Limitations Pre-morbid exposure to combat Pre-morbid psychiatric condition	Evaluate for mental health	Appropriate (8, +)
	Evaluate for social support and stressors	Appropriate (8, +)
	Evaluate for coping and resilience	Appropriate (8, +)
Scenario 10:	**Treatment**	
Minor/Moderate Injury Moderate/Severe Pain Minor/Moderate Magnitude of Limitations Pre-morbid exposure to combat NO pre-morbid psychiatric condition	Evaluate for mental health	Appropriate (7, +)
	Evaluate for social support and stressors	Appropriate (7, +)
	Evaluate for coping and resilience	Appropriate (7, +)
Scenario 11:	**Treatment**	
	Evaluate for mental health	Appropriate (8, +)
	Evaluate for social support and stressors	Appropriate (7, +)

Minor/Moderate Injury Moderate/Severe Pain Minor/Moderate Magnitude of Limitations NO pre-morbid exposure to combat Pre-morbid psychiatric condition	Evaluate for coping and resilience	Appropriate (7, +)
Scenario 12:	**Treatment**	
Minor/Moderate Injury Moderate/Severe Pain Minor/Moderate Magnitude of Limitations NO pre-morbid exposure to combat NO pre-morbid psychiatric condition	Evaluate for mental health	May Be Appropriate (5, +)
	Evaluate for social support and stressors	Appropriate (7, +)
	Evaluate for coping and resilience	Appropriate (7)
Scenario 13:	**Treatment**	
Minor/Moderate Injury Moderate/Severe Pain Major Magnitude of Limitations Pre-morbid exposure to combat Pre-morbid psychiatric condition	Evaluate for mental health	Appropriate (8, +)
	Evaluate for social support and stressors	Appropriate (9, +)
	Evaluate for coping and resilience	Appropriate (8, +)
Scenario 14:	**Treatment**	
Minor/Moderate Injury Moderate/Severe Pain Major Magnitude of Limitations Pre-morbid exposure to combat NO pre-morbid psychiatric condition	Evaluate for mental health	Appropriate (8, +)
	Evaluate for social support and stressors	Appropriate (8, +)
	Evaluate for coping and resilience	Appropriate (8, +)
Scenario 15:	**Treatment**	
Minor/Moderate Injury Moderate/Severe Pain Major Magnitude of Limitations NO pre-morbid exposure to combat Pre-morbid psychiatric condition	Evaluate for mental health	Appropriate (8, +)
	Evaluate for social support and stressors	Appropriate (8, +)
	Evaluate for coping and resilience	Appropriate (8, +)
Scenario 16:	**Treatment**	
Minor/Moderate Injury Moderate/Severe Pain Major Magnitude of Limitations NO pre-morbid exposure to combat NO pre-morbid psychiatric condition	Evaluate for mental health	May Be Appropriate (7)
	Evaluate for social support and stressors	Appropriate (8, +)
	Evaluate for coping and resilience	Appropriate (8, +)
Scenario 17:	**Treatment**	
	Evaluate for mental health	Appropriate (8, +)

Major Injury None/Mild Pain Minor/Moderate Magnitude of Limitations Pre-morbid exposure to combat Pre-morbid psychiatric condition	Evaluate for social support and stressors	Appropriate (8, +)
	Evaluate for coping and resilience	Appropriate (8)
Scenario 18:	**Treatment**	
Major Injury None/Mild Pain Minor/Moderate Magnitude of Limitations Pre-morbid exposure to combat NO pre-morbid psychiatric condition	Evaluate for mental health	Appropriate (7, +)
	Evaluate for social support and stressors	Appropriate (8, +)
	Evaluate for coping and resilience	Appropriate (7)
Scenario 19:	**Treatment**	
Major Injury None/Mild Pain Minor/Moderate Magnitude of Limitations NO pre-morbid exposure to combat Pre-morbid psychiatric condition	Evaluate for mental health	Appropriate (8, +)
	Evaluate for social support and stressors	Appropriate (8, +)
	Evaluate for coping and resilience	Appropriate (7)
Scenario 20:	**Treatment**	
Major Injury None/Mild Pain Minor/Moderate Magnitude of Limitations NO pre-morbid exposure to combat NO pre-morbid psychiatric condition	Evaluate for mental health	May Be Appropriate (6)
	Evaluate for social support and stressors	Appropriate (7, +)
	Evaluate for coping and resilience	Appropriate (7)
Scenario 21:	**Treatment**	
Major Injury None/Mild Pain Major Magnitude of Limitations Pre-morbid exposure to combat Pre-morbid psychiatric condition	Evaluate for mental health	Appropriate (9, +)
	Evaluate for social support and stressors	Appropriate (8, +)
	Evaluate for coping and resilience	Appropriate (8, +)
Scenario 22:	**Treatment**	
Major Injury None/Mild Pain Major Magnitude of Limitations Pre-morbid exposure to combat NO pre-morbid psychiatric condition	Evaluate for mental health	Appropriate (7, +)
	Evaluate for social support and stressors	Appropriate (8, +)
	Evaluate for coping and resilience	Appropriate (8, +)
Scenario 23:	**Treatment**	
	Evaluate for mental health	Appropriate (8, +)

Major Injury None/Mild Pain Major Magnitude of Limitations NO pre-morbid exposure to combat Pre-morbid psychiatric condition	Evaluate for social support and stressors	Appropriate (8, +)
	Evaluate for coping and resilience	Appropriate (7, +)
Scenario 24:	**Treatment**	
Major Injury None/Mild Pain Major Magnitude of Limitations NO pre-morbid exposure to combat NO pre-morbid psychiatric condition	Evaluate for mental health	Appropriate (7)
	Evaluate for social support and stressors	Appropriate (8, +)
	Evaluate for coping and resilience	Appropriate (7)
Scenario 25:	**Treatment**	
Major Injury Moderate/Severe Pain Minor/Moderate Magnitude of Limitations Pre-morbid exposure to combat Pre-morbid psychiatric condition	Evaluate for mental health	Appropriate (8, +)
	Evaluate for social support and stressors	Appropriate (8, +)
	Evaluate for coping and resilience	Appropriate (8, +)
Scenario 26:	**Treatment**	
Major Injury Moderate/Severe Pain Minor/Moderate Magnitude of Limitations Pre-morbid exposure to combat NO pre-morbid psychiatric condition	Evaluate for mental health	Appropriate (7, +)
	Evaluate for social support and stressors	Appropriate (8, +)
	Evaluate for coping and resilience	Appropriate (8, +)
Scenario 27:	**Treatment**	
Major Injury Moderate/Severe Pain Minor/Moderate Magnitude of Limitations NO pre-morbid exposure to combat Pre-morbid psychiatric condition	Evaluate for mental health	Appropriate (8, +)
	Evaluate for social support and stressors	Appropriate (8, +)
	Evaluate for coping and resilience	Appropriate (8, +)
Scenario 28:	**Treatment**	
Major Injury Moderate/Severe Pain Minor/Moderate Magnitude of Limitations NO pre-morbid exposure to combat NO pre-morbid psychiatric condition	Evaluate for mental health	Appropriate (7)
	Evaluate for social support and stressors	Appropriate (8, +)
	Evaluate for coping and resilience	Appropriate (8, +)
Scenario 29:	**Treatment**	
	Evaluate for mental health	Appropriate (9, +)

Major Injury Moderate/Severe Pain Major Magnitude of Limitations Pre-morbid exposure to combat Pre-morbid psychiatric condition	Evaluate for social support and stressors	Appropriate (9, +)
	Evaluate for coping and resilience	Appropriate (9, +)
Scenario 30:	**Treatment**	
Major Injury Moderate/Severe Pain Major Magnitude of Limitations Pre-morbid exposure to combat NO pre-morbid psychiatric condition	Evaluate for mental health	Appropriate (8, +)
	Evaluate for social support and stressors	Appropriate (9, +)
	Evaluate for coping and resilience	Appropriate (9, +)
Scenario 31:	**Treatment**	
Major Injury Moderate/Severe Pain Major Magnitude of Limitations NO pre-morbid exposure to combat Pre-morbid psychiatric condition	Evaluate for mental health	Appropriate (8, +)
	Evaluate for social support and stressors	Appropriate (9, +)
	Evaluate for coping and resilience	Appropriate (8, +)
Scenario 32:	**Treatment**	
Major Injury Moderate/Severe Pain Major Magnitude of Limitations NO pre-morbid exposure to combat NO pre-morbid psychiatric condition	Evaluate for mental health	Appropriate (7, +)
	Evaluate for social support and stressors	Appropriate (8, +)
	Evaluate for coping and resilience	Appropriate (9, +)

IV. APPENDICES

APPENDIX A. DOCUMENTATION OF APPROVAL

AAOS BODIES THAT APPROVED THIS APPROPRIATE USE CRITERIA

Evidence-Based Quality and Value Committee: Approved on April 27, 2020
The AAOS Committee on Evidence Based Quality and Value consists of 21 AAOS members. The overall purpose of this committee is to plan, organize, direct, and evaluate initiatives related to Clinical Practice Guidelines, Appropriate Use Criteria, and Quality Measures.

Council on Research and Quality: Approved on April 29, 2020
To enhance the mission of the AAOS, the Council on Research and Quality promotes the most ethically and scientifically sound basic, clinical, and translational research possible to ensure the future care for patients with musculoskeletal disorders. The Council also serves as the primary resource to educate its members, the public, and public policy makers regarding evidenced-based medical practice, orthopaedic devices and biologics regulatory pathways and standards development, patient safety, and other related areas of importance.

Board of Directors: Approved on June 6, 2020
The 16 member AAOS Board of Directors manages the affairs of the AAOS, sets policy, and determines and continually reassesses the Strategic Plan.

APPENDIX B. DISCLOSURE INFORMATION

PRF WRITING PANEL MEMBER DISCLOSURES

Atul F Kamath, MD
Submitted on: 10/21/2018
AAOS: Board or committee member ($0) CPG(Self)
American Association of Hip and Knee Surgeons: Board or committee member ($0) AAHKS(Self)
BMC Musculoskeletal Disorders: Editorial or governing board ($0) (Self)
Corin U.S.A.: Paid presenter or speaker ($1) Number of Presentations: 1 N/A(Self)
DePuy, A Johnson & Johnson Company: Paid presenter or speaker ($1) Number of Presentations: 1 N/A(Self)
DePuy, A Johnson & Johnson Company: Paid consultant ($0) N/A(Self)
DePuy, A Johnson & Johnson Company: Research support ($1) N/A(Self)
Heraeus Medical: Paid presenter or speaker ($1) Number of Presentations: 1 Heraeus Medical(Self)
Heraeus Medical: Paid consultant ($1) Heraeus Medical(Self)
Innomed: IP royalties ($0) Design royalties(Self)
Johnson & Johnson: Stock or stock Options Number of Shares: 25 N/A(Self)
Orthofix, Inc.: Research support ($1) N/A(Self)
Pacira Pharmaceuticals: Paid consultant ($1) N/A(Self)
Procter & Gamble: Stock or stock Options Number of Shares: 38 N/A(Both)
Zimmer: Paid presenter or speaker ($1) Number of Presentations: 1 N/A(Self)
Zimmer: Paid consultant ($0) Consulting(Self)
Zimmer: Stock or stock Options Number of Shares: 20 N/A(Self)
Zimmer: Research support ($1) N/A(Self)

Benjamin Keizer, PhD
(This individual reported nothing to disclose); Submitted on: 10/04/2018

Stephen Wegener
Submitted on: 04/26/2018
Springer: Publishing royalties, financial or material support ($0)

David Benedek, MD
Submitted on: 09/10/2018
Allergan INC: Stock or stock Options Number of Shares: 50 N/A(Both)
Amgen Co: Stock or stock Options Number of Shares: 50 N/A(Both)

Kelly L Cozza, MD
(This individual reported nothing to disclose); Submitted on: 09/06/2018

Erik Ensrud, MD
Submitted on: 07/02/2018

American Academy of Neuromuscular and Electrodiagnostic Medicine: Board or committee member ($0) Chair, Neuromuscular Self Assessment Exam Committee(Self)
American Academy of Physical Medicine and Rehabilitation: Board or committee member ($0) Chair, Pain/Neuromuscular Committee(Self)
Muscle and Nerve/Wiley: Editorial or governing board ($0) Editorial Board(Self)
Osler Medical Institute: Publishing royalties, financial or material support ($4,400) Speaker honorarium and online course publication (2017 amount listed, 2018 will be less ~$3000)(Self)

Wade T Gordon, MD
Submitted on: 10/09/2018
AAOS: Board or committee member ($0)
Orthofix, Inc.: Paid presenter or speaker ($0) Number of Presentations: 0
Orthopaedic Trauma Association: Board or committee member ($0)

Ellen MacKenzie, PhD
(This individual reported nothing to disclose); Submitted on: 07/24/2018

Peggy L Naas, MD, MBA
Submitted on: 06/29/2018
AAOS: Board or committee member ($0)
American Society of Anesthesiologists, Steering Committee, Perioperative Surgical Home Collaborative: Board or committee member ($0)
University of Minnesota Department of Orthopaedic Surgery, Liaison, Orthopaedic Surgeon Well-being Project: Board or committee member ($0)

David C Ring, MD
Submitted on: 10/02/2018
AAOS: Board or committee member ($0) Chair, Patient Safety Committee(Self)
Clinical Orthopaedics and Related Research: Editorial or governing board ($5,000) (Self)
Journal of Orthopaedic Trauma: Editorial or governing board ($0) (Self)
Orthopaedic Trauma Association: Board or committee member ($0) Research Committee(Self)
Skeletal Dynamics: IP royalties ($10,000) Royalties for Elbow Device(Self)
Wright Medical Technology, Inc.: IP royalties ($5,000) Royalties for Elbow Plates(Self)

Mara Lynne Schenker, MD
Submitted on: 10/03/2018
Miami Device Solutions: Paid consultant ($0)

Saloni Sharma, MD
(This individual reported nothing to disclose); Submitted on: 08/03/2018

Todd Allen Swenning, MD
Submitted on: 10/23/2018
AAOS: Board or committee member ($0)
Conventus: Paid consultant ($0)
IMAHelps Medical Mission Brigade: Board or committee member ($0)

Mallinckrodt Pharmaceuticals: Paid presenter or speaker ($0) Number of Presentations: 0
Orthopaedic Trauma Association: Board or committee member ($0)
Stryker: Paid consultant ($0)

Ann Marie Warren, PhD
Submitted on: 10/19/2018
Orthopaedic Trauma Association: Board or committee member ($0)

PRF VOTING PANEL MEMBER DISCLOSURES

Heidi Prather, DO
Submitted on: 05/06/2019
American Academy of Physical Medicine and Rehabilitation and PMR Journal pays for travel expenses for meetings
they hold that I am required to attend for being senior editor. NO personal payment is paid to me for any other
reason.: Publishing royalties, financial or material support ($0)
American Academy of Physical Medicine and Rehabilitation and PMR Journal pays for travel expenses for meetings
they hold that I am required to attend for being senior editor. NO personal payment is paid to me for any other
reason.: Editorial or governing board ($0)
North American Spine Society: Board or committee member ($0)

Gudrun Mirick Mueller, MD, FAAOS
Submitted on: 12/23/2019
Orthopaedic Trauma Association: Board or committee member ($0)

Clay A Spitler, MD
Submitted on: 09/12/2019
AAOS: Board or committee member ($0)
AO Trauma: Paid presenter or speaker ($0) Number of Presentations: 0
KCI: Paid consultant ($400) n/a(Self)
Orthopaedic Trauma Association: Board or committee member ($0)

Nicolas Santiago Piuzzi, MD
Submitted on: 10/09/2019
ISCT: Board or committee member ($0) Musculoskeletal committee (Self)
Orthopaedic Research Society: Board or committee member ($0) Clinical Research Committee (Self)
Zimmer: Research support ($75,000) Postmarket analysis – Perfusr (Self)

Melissa Miller, LMSW
Submitted on: 10/15/2019
(This individual reported nothing to disclose)

Cynthia Corral, LCSW
Submitted on: 10/25/2019
(This individual reported nothing to disclose)

Dustin Lybeck, MD, FAAOS
Submitted on: 06/04/2019
(This individual reported nothing to disclose)

Sarah Pierrie, MD
Submitted on: 01/09/2020
(This individual reported nothing to disclose)

Douglas Zatzick, MD

Submitted on: 12/06/2019
(This individual reported nothing to disclose)

Annette Matthews, MD
Submitted on: 01/23/2020
(This individual reported nothing to disclose)

Henry Bone Ellis Jr, MD, FAAOS
Submitted on: 11/05/2019
AAOS: Board or committee member ($0) Evidence Based, Quality, and Value (Self)
Pediatric Orthopaedic Society of North America: Board or committee member ($0)
Pediatric Research in Sports Medicine: Board or committee member ($0)

APPENDIX C. REFERENCES

1. Fitch K, Bernstein SJ, Aguilar MD et al. The RAND/UCLA Appropriateness Method User's Manual. Santa Monica, CA: RAND Corporation; 2001.
2. American Academy of Orthopaedic Surgeons. Clinical Practice Guideline on Evaluation of Psychosocial Factors Influencing Recovery From Adult Orthopaedic Trauma. https://www.aaos.org/metrcdod/.
3. Mark K. M., Stevelink, S. A. M., Choi J., Fear N. T. Post-traumatic growth in the military: a systematic review. Occupational & Environmental Medicine.2018; 75(12): 904-915.
4. Castillo, R. C., Wegener, S. T., Heins, S. E., Haythornthwaite, J. A., Mackenzie, E. J., Bosse, M. J. Longitudinal relationships between anxiety, depression, and pain: results from a two-year cohort study of lower extremity trauma patients. *Pain* 2013; 12: 2860-6

LETTERS OF ENDORSEMENT FROM ORGANIZATIONS

SOMOS
Society of Military Orthopaedic Surgeons

June 12, 2020

Kaitlyn S. Sevarino, MBA, CAE
Senior Manager,
Department of Clinical Quality and Value

Dear Ms. Sevarino,

The Society of Military Orthopaedic Surgeons has voted to endorse the AAOS Appropriate Use Criteria for the Early Screening for Psychosocial Risk and Protective Factors. This endorsement implies permission for the AAOS to officially list our organization as an endorser of this appropriate use criteria and reprint our logo in the introductory section of the appropriate use criteria review document.

Sincerely,

CDR Lance E. LeCelere, MD
President
Society of Military Orthopaedic Surgeons

CDR Lance E. LeClere, MD
US Navy
SOMOS President

110 West Rd.
Suite 227
Towson, MD 21204

American Academy of Physical Medicine and Rehabilitation

aaPM&R

9700 W. Bryn Mawr Ave., Suite 200
Rosemont, Illinois 60018
www.aapmr.org

phone 847/737.6000
fax 847/754.4368
info@aapmr.org

July 24, 2020

Kaitlyn S. Sevarino, MBA, CAE
Senior Manager
Department of Clinical Quality and Value

RE: AAOS Appropriate Use Criteria for the Early Screening for Psychosocial Risk and Protective Factors

Dear Ms. Sevarino,

Thank you for allowing the American Academy of Physical Medicine and Rehabilitation (AAPM&R) the opportunity to review the American Academy of Orthopaedic Surgeons (AAOS) Appropriate Use Criteria for the Early Screening for Psychosocial Risk and Protective Factors. AAPM&R is the national medical specialty organization representing more than 9,000 physicians who are specialists in physical medicine and rehabilitation (PM&R). PM&R physicians, also known as physiatrists, treat a wide variety of medical conditions affecting the brain, spinal cord, nerves, bones, joints, ligaments, muscles, and tendons. PM&R physicians evaluate and treat injuries, illnesses, and disability, and are experts in designing comprehensive, patient-centered treatment plans. Physiatrists utilize cutting-edge as well as time-tested treatments to maximize function and quality of life.

We are pleased to inform you that the AAPM&R Clinical Practice Guideline (CPG) Committee has voted to endorse the AAOS Appropriate Use Criteria for the Early Screening for Psychosocial Risk and Protective Factors. This endorsement implies permission for the AAOS to officially list our organization as an endorser of this appropriate use criteria and reprint our logo in the introductory section of the appropriate use criteria review document. AAPM&R would also like your permission to post the most updated version of the appropriate use criteria on our website or, if you prefer, to provide a link to the appropriate use criteria on your website.

Thank you, again, for the opportunity to review and endorse the AAOS Appropriate Use Criteria for the Early Screening for Psychosocial Risk and Protective Factors. If you have any additional questions or concerns, please contact Brit Galvin, Health Policy and State Legislative Affairs Manager, Department of Health Policy and Practice Services, at bgalvin@aapmr.org or (847) 737-6004.

Sincerely,

Armando Miciano MD, FAAPMR
Clinical Practice Guidelines Committee, Chair
American Academy of Physical Medicine and Rehabilitation

Physicians Adding Quality to Life®