



AMERICAN ACADEMY OF ORTHOPAEDIC SURGEONS

APPROPRIATE USE CRITERIA FOR MANAGEMENT OF OSTEOCHONDRITIS DISSECANS OF THE FEMORAL CONDYLE

**Adopted by the American Academy of Orthopaedic Surgeons
Board of Directors**

12/4/15

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 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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I. INTRODUCTION

OVERVIEW

The American Academy of Orthopaedic Surgeons (AAOS) has developed this Appropriate Use Criteria (AUC) to determine appropriateness of various health care services for osteochondritis dissecans (OCD). An “appropriate” healthcare service is one for which the expected health benefits exceed the expected negative consequences by a sufficiently wide margin.² 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 Evidence-Based Medicine Unit updated the literature search used to create the 2010 Diagnosis and Treatment of Osteochondritis Dissecans Clinical Practice Guideline, which can be accessed via the following link: <http://www.aaos.org/research/guidelines/OCDGuidelineFINAL.pdf>. For details regarding the search strategy, see Appendix D.

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).² Our process includes these steps: 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 an intuitive and 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.

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 all appropriately trained surgeons and all qualified physicians managing patients under consideration for treating Osteochondritis Dissecans. The ultimate judgment 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 were developed as guidelines and are not meant to supersede clinician expertise and experience or patient preference.

INTERPRETING THE APPROPRIATENESS RATINGS

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 appropriate use criteria are consulted, the user should read through and understand all contents of this document.

ASSUMPTIONS OF THE WRITING PANEL/VOTING PANEL

Before these appropriate use criteria are consulted, it is assumed that:

1. The clinician knows the contraindication to the utilization of certain medications and the anesthetic or important surgical contraindications to operative interventions.
2. The patient is healthy enough to undergo surgery if indicated.
3. The patient has a diagnosis of OCD of the knee (not including irregular epiphyseal ossification or epiphyseal dysplasia).
4. The patient has an OCD lesion that may lead to loss of function or arthritis OR is symptomatic including pain, instability, stiffness, and mechanical symptoms.
5. The patient's symptoms are consistent with the history, physical exam, and imaging findings.
6. The imaging findings are consistent with osteochondritis dissecans of the knee (evidence of OCD lesion, with associated sub-chondral bone changes, in locations including medial femoral condyle and/or lateral femoral condyle
7. AP and/or PA-flexion weight-bearing (notch views), lateral, and patellar view radiographs are obtained. If malalignment is suspected, long leg films.
8. Addressing malalignment, as is appropriate, is recommended.
9. Imaging Definition of Instability:
 - a. Plain Radiograph definition of instability: Fragment is partially or totally displaced.
 - b. If an MRI is obtained, findings of instability are suggested by the following:

In patients with closed physes:

 - A high T2 signal rim surrounding the OCD lesion.
 - The presence of subchondral cyst-like lesions.
 - Disruption of articular cartilage signal.

In patients with open physes:

 - High T2 signal rim indicates instability only if it is the same signal intensity as the joint fluid and the lesion is surrounded by a second, low T2 signal rim.
 - The lesion demonstrates multiple breaks in the subchondral bone plate.
 - Cyst-like lesions suggest instability only if they are large (>5mm) or multiple.
10. The physical examination, history, and imaging studies have excluded the following potential causes of knee pain:
 - Referred pain from the spine
 - Ipsilateral hip disorder, including DDH, SCFE, etc.
 - Ankle/foot deformity

- Non-articular causes of knee pain including soft-tissue disorders
- Neoplasm
- Neuropathy
- Infection
- Acute knee injury
- Stress fractures, insufficiency fracture, osteonecrosis, or symptomatic metabolic bone disease
- Proximal tibiofibular pain

11. The physician has an informed discussion with the patient about the treatment options and that the optimum treatment options may change over time for the patient. Before operative intervention is recommended, the appropriateness and potential efficacy of non-operative intervention has been considered.

12. All patients with defined OCD lesions should receive surveillance and follow up.

13. In patients with open physes, contralateral x-rays may be considered. If symptoms or findings are bilateral, contralateral x-rays should be obtained.

14. The patient has no contralateral lower extremity disease (including OCD) that would preclude appropriate treatment for the OCD lesion in question.

15. Idiopathic familial OCD is not excluded from this AUC.

16. Physical Therapy addresses impaired strength, mobility, and function and can assist with progression back to ADLs sports, work, and functional activities.

17. The location of all lesions in this AUC are assumed to be in the medial or lateral femoral condyle. Although medial and lateral femoral condyle lesions are distinct, the appropriateness of treatment recommendations is the same.

18. If the patient has a change in status regarding pain, swelling, or mechanical symptoms, that patient should be reassessed and treatment modified accordingly.

CONDITIONS NOT COVERED BY THIS AUC

- Irregular epiphyseal ossification (developmental irregularity/accessory ossification centers). Normal variant in child that mimics juvenile osteochondritis dissecans. May be asymptomatic and often bilateral (bilateral radiographs are often indicated). Follow-up may be indicated to distinguish resolving from progressing ossification variants.
- Epiphyseal dysplasias that may include dwarfing syndrome, multiple epiphyseal dysplasia, metaphyseal dysplasias, and genetic syndromes that may mimic OCD.
- Osteonecrosis mimicking OCD.
- Patella, femoral trochlea, and tibial plateau OCD lesions.

II. METHODS

This AUC for Treatment of Osteochondritis Dissecans 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 the RAND/UCLA Appropriateness Method (RAM)². 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 the AAOS AUC for Treatment of Osteochondritis Dissecans (see list on [page i](#)). Members of the writing panel developed a list of 288 patient scenarios, for which 13 treatments were evaluated for appropriateness. The voting panel participated in two rounds of voting. During the first round of voting, the voting panel was given approximately two months 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. After the first round of appropriateness ratings were submitted, AAOS staff calculated the median ratings for each patient scenario and specific treatment. An in-person voting panel meeting was held in Rosemont, IL on August 22nd of 2015. During this meeting, voting panel members addressed the scenarios/treatments which resulted in disagreement (definition of disagreement can be found in Table 3). 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. The voting panel determined appropriateness by rating treatments for the various patient scenarios (i.e. criteria) as ‘Appropriate’, ‘May Be Appropriate’, or ‘Rarely Appropriate’. There was no attempt to obtain consensus about appropriateness.

AAOS Appropriate Use Criteria Section, the AAOS Council on Research and Quality, and the AAOS Board of Directors sequentially approved the Appropriate Use Criteria for Management of Osteochondritis Dissecans. AAOS submits this AUC to the National Guidelines Clearinghouse and, in accordance with the National Guidelines Clearinghouse criteria, will update or retire this AUC within five years of the publication date.

DEVELOPING CRITERIA

Members of the AUC for Treatment of Osteochondritis Dissecans writing panel, who are orthopaedic specialists in treating knee-related injuries/diseases, developed clinical scenarios using the following guiding principles:

- Patient scenarios must include a broad spectrum of patients that may be eligible for treatment of osteochondritis dissecans [*comprehensive*]
- Patient indications must classify patients into a unique scenario [*mutually exclusive*]
- Patient indications must consistently classify similar patients into the same scenario [*reliable, valid indicators*]

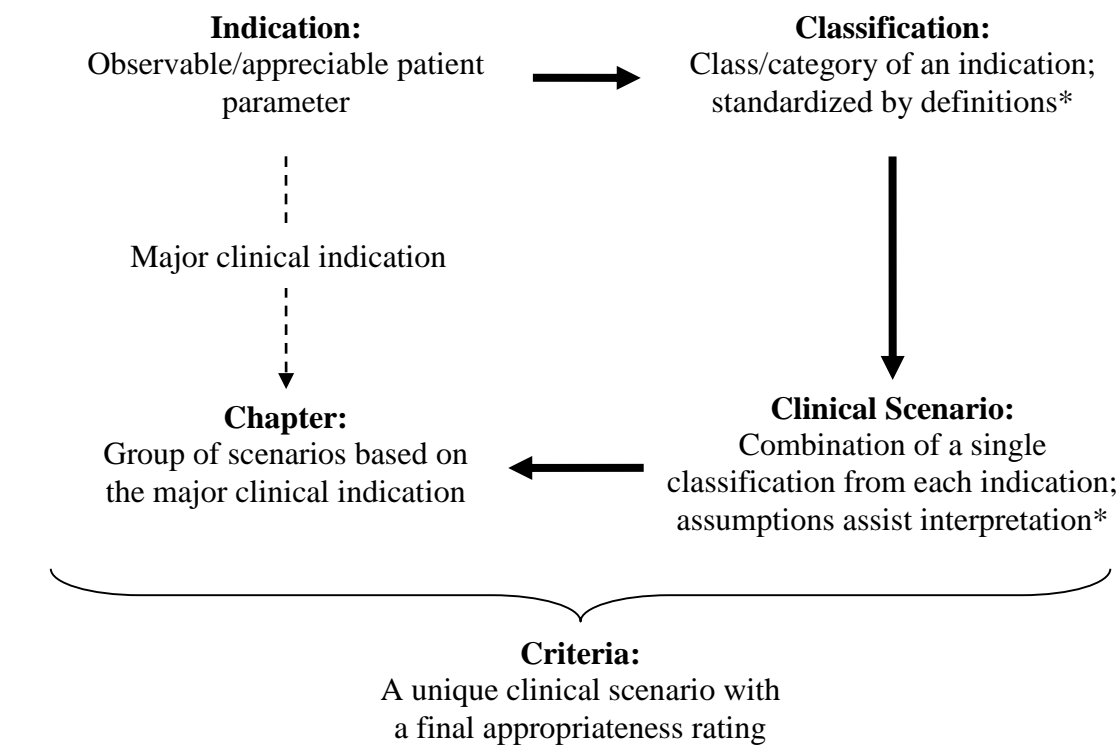
The writing panel developed the scenarios by categorizing patients in terms of indications evident during the clinical decision making process (Figure 1). These scenarios relied upon definitions and general assumptions, mutually agreed upon by the writing panel during the

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 commonly presenting with osteochondritis dissecans in clinical practice. Indications are most often parameters observable by the clinician, including symptoms or results of diagnostic tests. Additionally, “human factor” (e.g. activity level) or demographic variables can be considered.

Figure 1. Developing Criteria



Indications identified in clinical trials (derived from patient selection criteria) included in AAOS Clinical Practice Guidelines served as a starting point for the writing panel and ensured that these Appropriate Use Criteria referred to the evidence base for the Treatment and Diagnosis of Osteochondritis Dissecans CPG. The writing panel considered this initial list and other indications based on their clinical expertise and selected the most clinically relevant indications (Table 4). The writing panel then defined distinct classes for each indication in order to stratify/categorize the indication (Table 4).

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: pain, mechanical symptoms, effusion, skeletal maturity, location of OCD lesion, stability of OCD fragment, and integrity of OCD fragment.

CREATING DEFINITIONS AND ASSUMPTIONS

The AUC for Treatment of Osteochondritis Dissecans writing panel constructed concise and explicit definitions for the indications and classifications. This standardization helped ensure the way that the writing panel defined the patient indications was consistent among those reading the clinical scenario matrix or the final criteria. Definitions drew explicit boundaries when possible and were 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 (see [Assumptions of the Writing Panel](#)). These assumptions differed from definitions in that they identified circumstances that exist outside of the control of the clinical decision making process.

Assumptions also addressed the use of existing published literature regarding the effectiveness of treatment and/or the procedural skill level of physicians. Additionally, assumptions highlighted 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 was to focus scenarios so that they apply to the average patient presenting to an average physician at an average facility.¹

The definitions and assumptions should provide all readers with a common starting point in interpreting the clinical scenarios. This list of definitions and assumptions accompanied the matrix of clinical scenarios in all stages of the development of this AUC and appears in the Assumptions of the Writing Panel section of this document.

VOTING PANEL MODIFICATIONS TO WRITING PANEL MATERIALS

At the start of the in-person voting panel meeting, the voting panel was reminded that they have the ability to amend the original writing panel materials if the amendments resulted in more clinically relevant and practical criteria. In order to amend the original materials, the voting panel members were instructed that a member must make a motion to amend and another member must “second” that motion, after which a vote is conducted. If a majority of voting panel members voted “yes” to amend the original materials, the amendments were accepted.

The voting panel opted to make the following amendments/additions to the original AUC materials:

- 1) Added assumptions 4, 6, 12, 17 and 18.
- 2) Removed “trochlea” from the Imaging: Location of OCD Lesion chapter of the patient indications
- 3) Combine medial and lateral femoral condyle in the Imaging: Location of OCD chapter of the patient indications

- 4) Removed “Fusing (closing) growth plates” in the Imaging: Skeletal Maturity chapter of the patient indications and renamed “Closed growth plates” to “Partially or fully closed growth plates”.
- 5) Renamed “Mechanical Symptoms (catching, locking, or loss of motion)” chapter heading of the patient indications to “Mechanical Symptoms (catching or locking)”
- 6) Removed “surveillance and follow up” treatment
- 7) Removed “immobilization” and “unloading” treatments and added casting, bracing (neutral, varus or valgus producing braces), and restricted weight-bearing” nonoperative treatments
- 8) Removed “fixation with bone grafting” treatment and renamed “fixation without bone grafting” to “ fixation with or without bone grafting”
- 9) Renamed “drilling (retro-articular or trans-articular) treatment to “Drilling of intact OCD lesion (retro-articular or trans-articular)”
- 10) Renamed “Fragment excision and chondroplasty” treatment to “Fragment excision and isolated debridement”
- 11) Renamed “Marrow stimulation” treatment to “Fragment excision and marrow stimulation”

LITERATURE REVIEW

Concurrent with the writing panel developing the criteria, the AAOS Evidence-Based Medicine Unit undertook a literature review update based on the search strategy used to construct the 2010 AAOS Clinical Practice Guideline on Diagnosis and Treatment of Osteochondritis Dissecans. All literature published after the release of the clinical practice guideline was reviewed and reported if it was relevant to the treatment of Osteochondritis Dissecans. This literature review helped to inform the decisions of the writing panel and voting panel where available and necessary. The literature review also considered lower quality evidence when the best available evidence (i.e. randomized control trials) did not contain information relevant to the clinical scenarios.

DETERMINING APPROPRIATENESS VOTING PANEL

A multidisciplinary panel of clinicians was assembled to determine the appropriateness of treatments for Osteochondritis Dissecans. A non-voting moderator, who is an orthopaedic surgeon, but is not a specialist in the treatment of osteochondritis dissecans, 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 (writing panel) of the scenarios.

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. While cost is often a relevant consideration, panelists focused their appropriateness ratings on the effectiveness of treatment for Osteochondritis Dissecans.

RATING APPROPRIATENESS

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

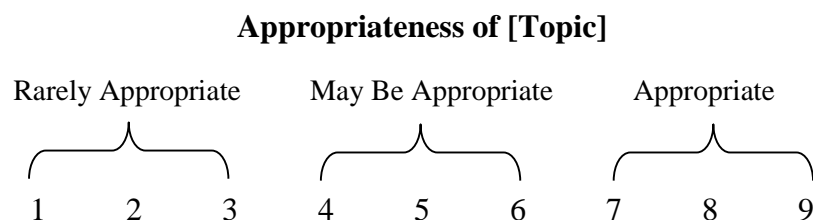
“An appropriate treatment for osteochondritis dissecans is one for which the treatment **is** generally acceptable, **is** a reasonable approach for the indication, and **is** likely to improve the patient’s health outcomes or survival.”

They then 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:

Table 1 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:



ROUND ONE VOTING

The first round of voting occurred after completion of the independent review of the scenarios by the review panel and approval of the final indications, scenarios, and assumptions by the writing

panel. The voting panel rated the scenarios electronically using a personalized ballot created by AAOS staff using the AAOS AUC Electronic Ballot Tool. There was no interaction between 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 during the in-person voting panel meeting on August 22, 2015. Before the in-person meeting started, each panelist received a personalized document that included their 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. They were also asked to record a new rating for any scenarios/treatments, only if they were persuaded to do so by the discussion and/or the evidence. 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. There was no attempt to obtain consensus among the panel members.

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 ², for a panel of 8-10 voting members (see Table 2 below). For this panel size, disagreement is defined as when ≥ 3 members' appropriateness ratings fell within the appropriate (7-9) and rarely appropriate (1-3) ranges for any scenario (i.e. ≥ 3 members' ratings fell between 1-3 and ≥ 5 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 second round of voting, that voting item is labeled as "5" regardless of median score. Agreement is defined as ≤ 2 panelists rated outside of the 3-point range containing the median.

Table 2 Defining Agreement and Disagreement for Appropriateness Ratings

Panel Size	<u>Disagreement</u>	<u>Agreement</u>
	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 RAM¹

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

Table 3 Interpreting Final Ratings of Criteria

Level of Appropriateness	Description
Appropriate	<ul style="list-style-type: none"> • Median panel rating between 7-9 and no disagreement
May Be Appropriate	<ul style="list-style-type: none"> • Median panel rating between 4-6 or • Median panel rating 1-9 with disagreement
Rarely Appropriate	<ul style="list-style-type: none"> • Median panel rating between 1-3 and no disagreement

REVISION PLANS

These criteria represent a cross-sectional view of current use of treatments for Osteochondritis Dissecans 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) or as a native app via the Apple and Google Play stores.

Publication of the Appropriate Use Criteria (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 and at Scientific Exhibits.

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 AUCs to the National Guideline Clearinghouse and to other medical specialty societies' meetings.

III. PATIENT INDICATIONS AND TREATMENTS

INDICATIONS

Table 4 Patient Indications and Classifications

Indication	Classification(s)
History -- Pain	a) Yes
	b) No
History -- Mechanical symptoms (catching or locking)	a) Yes
	b) No
Physical exam -- Effusion	a) Yes
	b) No
Imaging (Plain Radiographs) -- Skeletal Maturity (Distal Femoral Physis)	a) Open growth plates
	b) Partially or fully closed growth plates
Imaging-- Stability of OCD Fragment (Progeny)	a) Stable
	b) Unstable
Imaging (or perhaps arthroscopy) -- Integrity of OCD Fragment (Progeny)	a) Salvageable (<i>Definition = "A salvageable fragment can be saved. Features typically associated with salvageable fragments: fragment contains bone on deep surface; and fragment is one piece; and fragment contains <u>predominantly normal</u> articular cartilage"</i>)
	b) Unsalvageable (<i>Definition = "An unsalvageable fragment cannot be saved. Features typically associated with unsalvageable fragments: fragment consists of cartilage only; or fragment consists of multiple pieces; or fragment contains damaged or absent articular cartilage."</i>)

TREATMENTS

Treatments Addressed Within This AUC

1. Activity Restriction – Eliminate impact or painful activities
2. Physical Therapy (see assumptions for definition)
3. Nonoperative management – Casting
4. Nonoperative management - Bracing
5. Nonoperative management – Restricted weight-bearing (assistive devices)
6. Drilling of intact OCD lesion (retro-articular or trans-articular)
7. Fixation with or without bone grafting
8. Fragment excision and isolated debridement
9. Fragment excision and marrow stimulation
10. Osteochondral autograft transfer
11. Osteochondral allograft transplantation
12. Autologous chondrocyte implantation (with or without bone grafting)

IV. 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

Indication Profile	Procedure Recommendations
History -- Pain i <input checked="" type="radio"/> Pain <input type="radio"/> No Pain	<input checked="" type="checkbox"/> Activity Restriction – Eliminate impact or painful activities + 9
History -- Mechanical symptoms (catching or locking) <input checked="" type="radio"/> Mechanical symptoms (catching or locking) <input type="radio"/> No Mechanical symptoms (catching or locking)	<input checked="" type="checkbox"/> Physical Therapy (see assumptions for definition) + 9
Physical exam -- Effusion <input type="radio"/> Effusion <input checked="" type="radio"/> No Effusion	<input checked="" type="checkbox"/> Non-operative management - bracing + 7
Imaging (Plain Radiographs) -- Skeletal Maturity (Distal Femoral Physis) <input checked="" type="radio"/> Open growth plates <input type="radio"/> Partially or fully closed growth plates	<input checked="" type="checkbox"/> Non-operative management - restricted weight bearing (assistive devices) 7
Imaging-- Stability of OCD Fragment (Progeny) <input checked="" type="radio"/> Stable <input type="radio"/> Unstable	<input type="checkbox"/> Non-operative management - casting 6
Imaging (or perhaps arthroscopy) -- Integrity of OCD Fragment (Progeny) <input checked="" type="radio"/> Salvageable <input type="radio"/> Unsalvageable	<input type="checkbox"/> Drilling of intact OCD lesion (retro-articular or trans-articular) 6
<input type="button" value="Submit"/>	<input type="checkbox"/> Fixation with or without bone grafting 6
	<input checked="" type="checkbox"/> Fragment excision and isolated debridement + 1
	<input checked="" type="checkbox"/> Fragment excision and marrow stimulation + 1
	<input checked="" type="checkbox"/> Osteochondral autograft transfer + 1
	<input checked="" type="checkbox"/> Autologous chondrocyte implantation (with or without bone grafting) + 1
	<input checked="" type="checkbox"/> Osteochondral allograft transplantation + 1

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Results

The following Appropriate Use Criteria tables contain the final appropriateness ratings assigned by the eleven 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 10 treatment rows. These criteria are formatted by appropriateness labels (i.e. “R”=Rarely Appropriate, “M”=May Be Appropriate, and “A”=Appropriate), median rating, and + or - indicating agreement or disagreement amongst the voting panel, respectively.

Out of 768 total voting items (i.e. 64 patient scenarios x 12 treatments), 199 (26%) voting items were rated as “Appropriate”, 279 (36%) voting items were rated as “May Be Appropriate”, and 290 (38%) voting items were rated as “Rarely Appropriate” (Figure 1). Additionally, the voting panel members were in agreement on 291 (38%) voting items and were in disagreement on 40 (5%) voting items (Figure 2). For a within treatment breakdown of appropriateness ratings, please refer to Figure 3.

Figure 1. Breakdown of Appropriateness Ratings

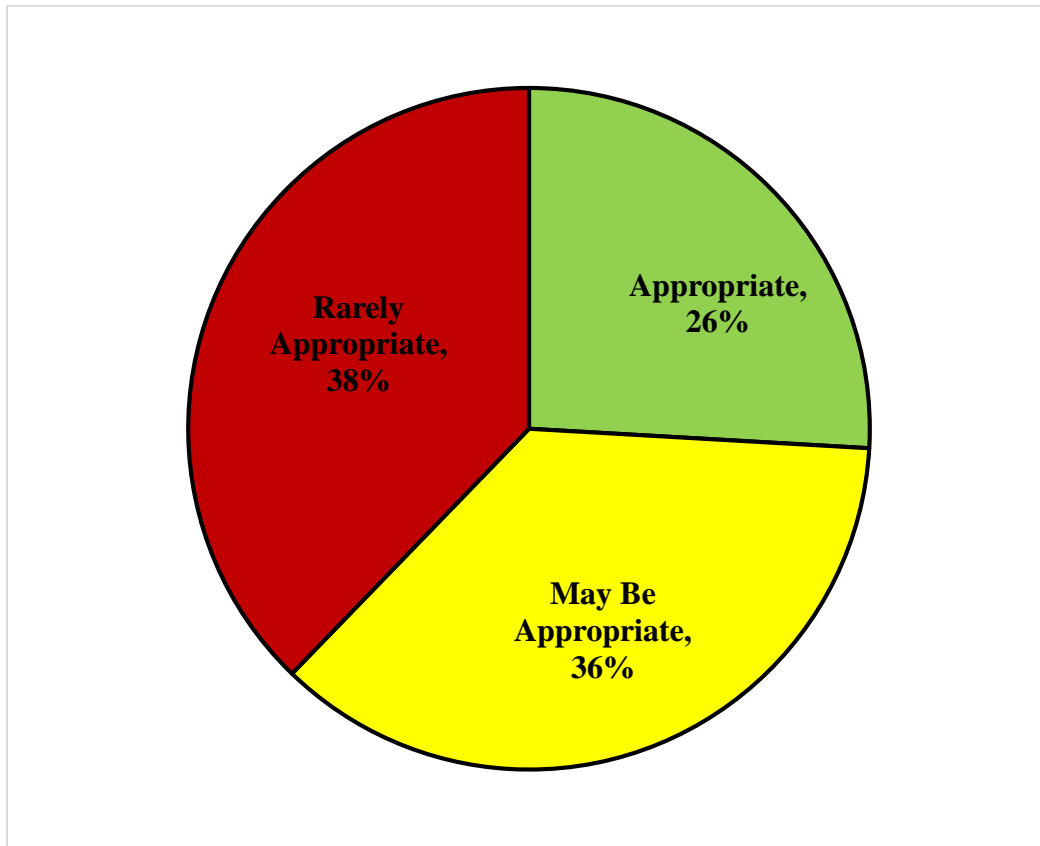


Figure 2. Breakdown of Agreement amongst Voting Panel

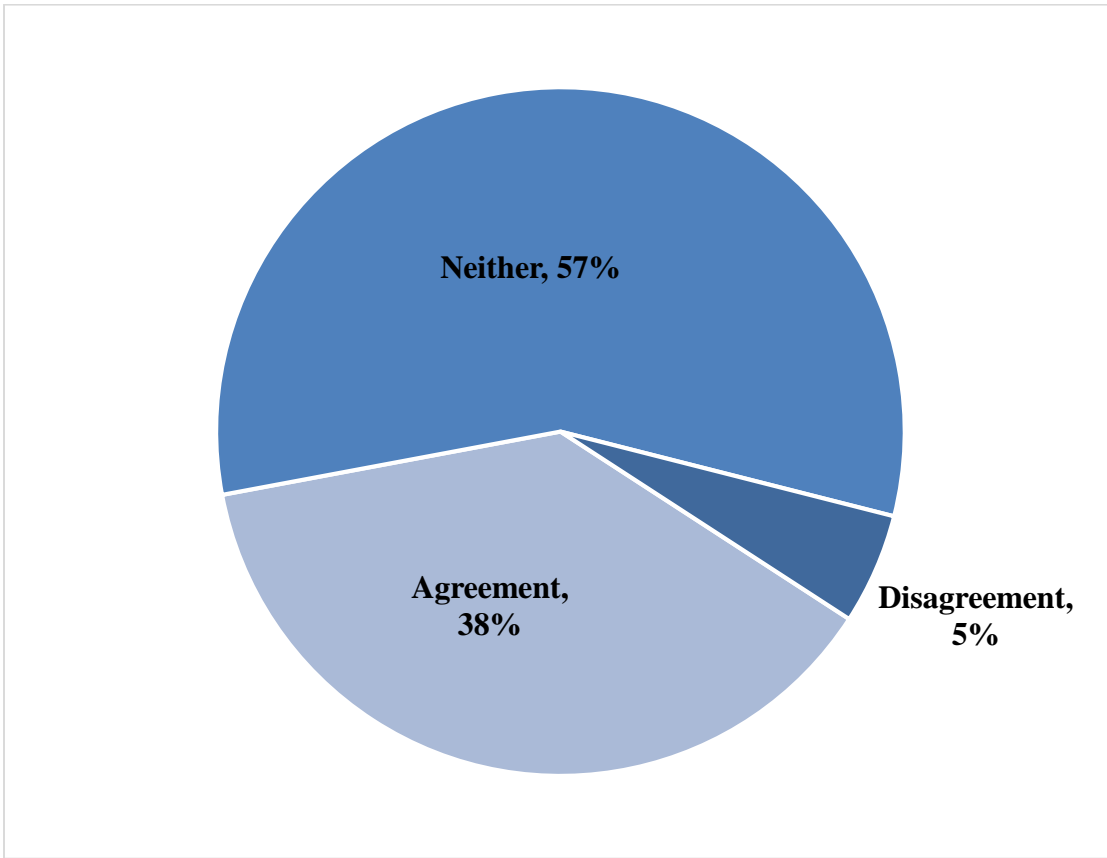


Figure 3. Distribution of Appropriateness Ratings on 9-Point Rating Scale

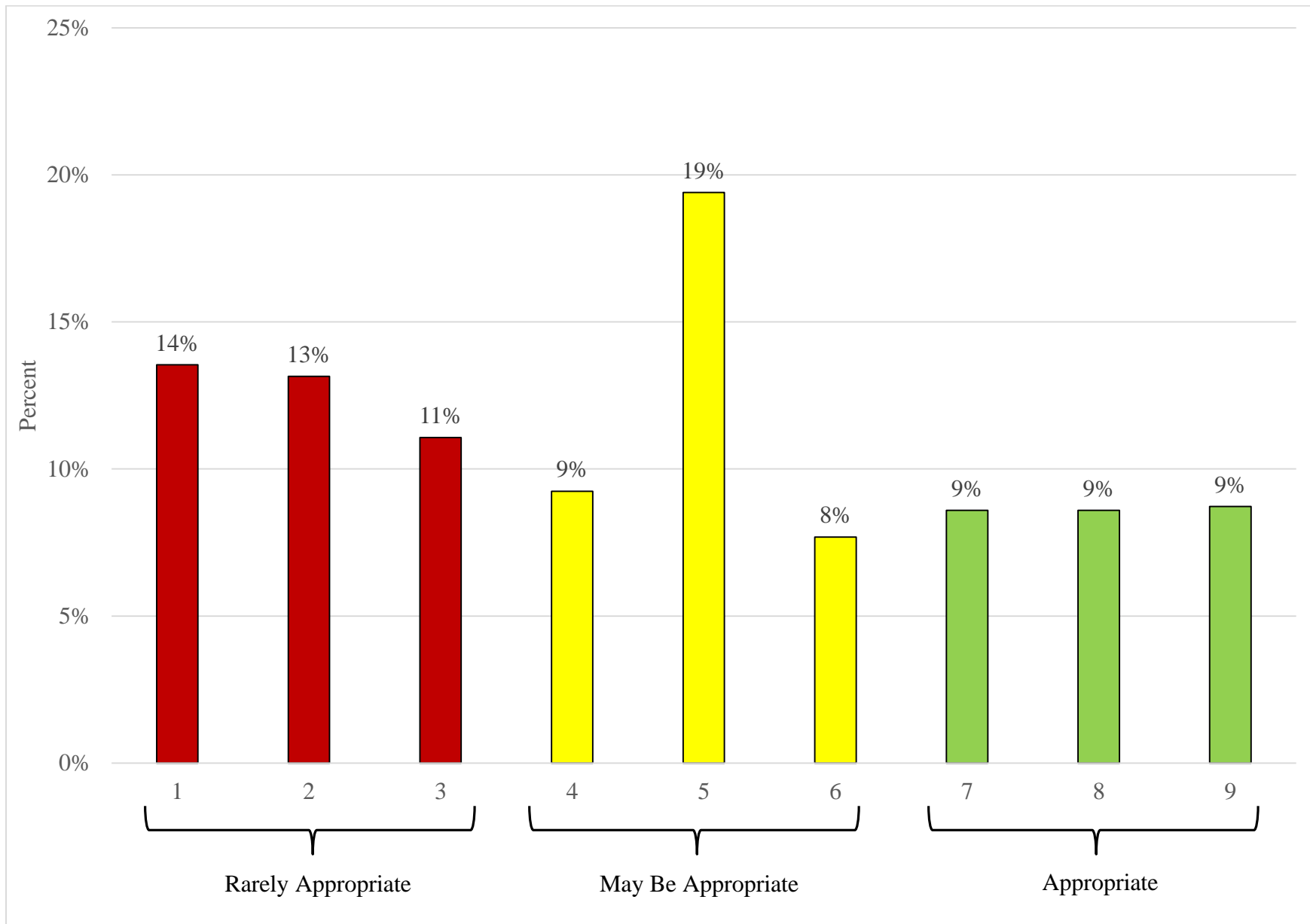
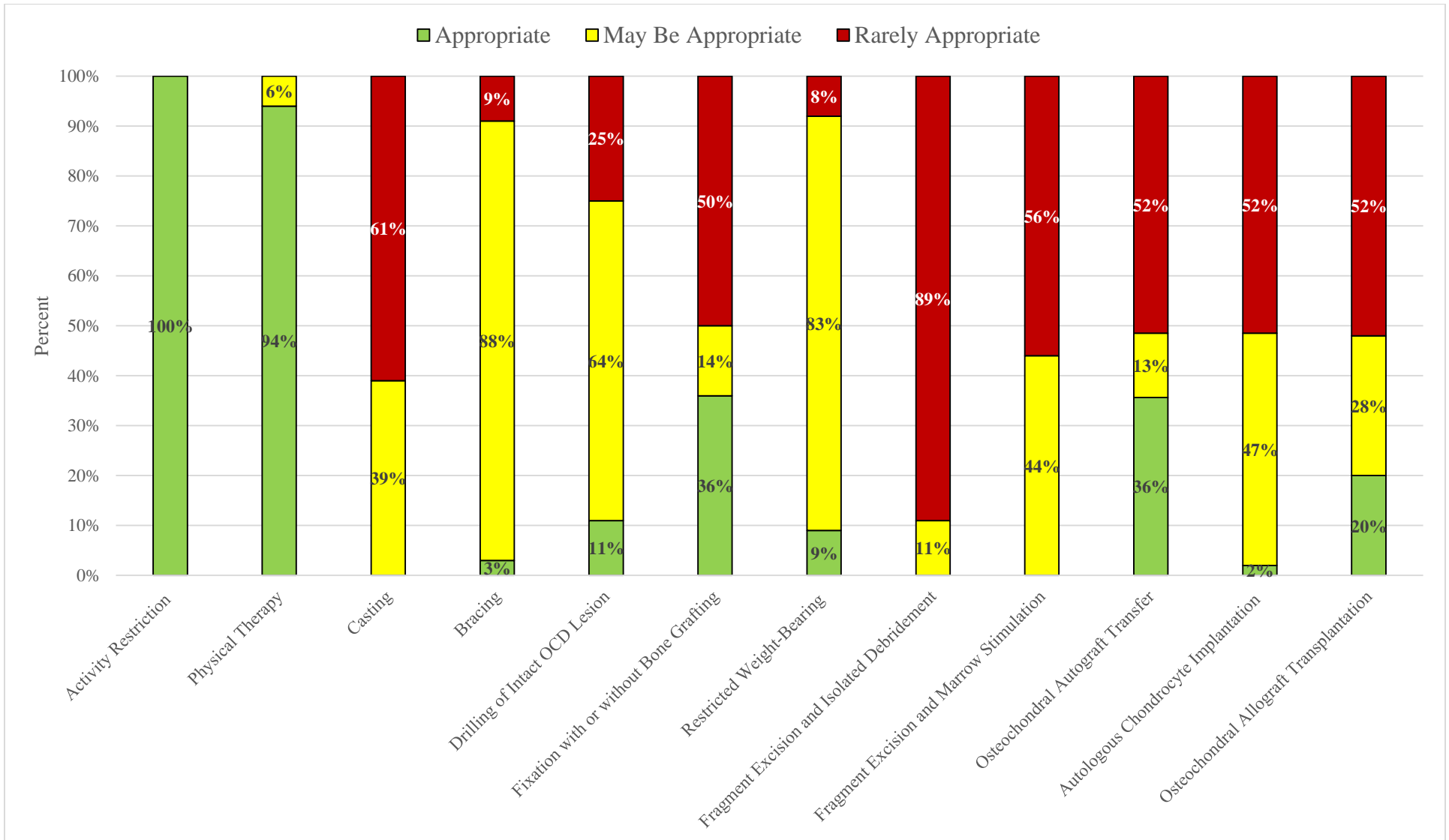


Figure 4. Within Treatment Appropriateness Ratings



APPROPRIATE USE CRITERIA FOR TREATMENT OF OSTEOCHONDRITIS DISSECANS

Interpreting the AUC tables:

- ~~R = Rarely Appropriate, M = May Be Appropriate, A = Appropriate~~
- Numbers under “Median” column indicate the median rating of voting panel
- A plus symbol (+) indicates agreement between voting panel members and a minus symbol (-) indicates disagreement between voting panel members

Scenario #	Patient Factors	Treatment	Appropriateness	Median Rating	Agreement
1	Pain, Mechanical symptoms (catching or locking), Effusion, Open growth plates, Stable, Salvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	9	
		Non-operative management - casting	May Be Appropriate	5	
		Non-operative management - bracing	May Be Appropriate	6	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	May Be Appropriate	6	
		Fixation with or without bone grafting	May Be Appropriate	6	
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	6	
		Fragment excision and isolated debridement	Rarely Appropriate	1	+
		Fragment excision and marrow stimulation	Rarely Appropriate	1	
		Osteochondral autograft transfer	Rarely Appropriate	1	
		Autologous chondrocyte implantation (with or without bone grafting)	Rarely Appropriate	1	
		Osteochondral allograft transplantation	Rarely Appropriate	1	

Scenario #	Patient Factors	Treatment	Appropriateness	Median Rating	Agreement
2	Pain, Mechanical symptoms (catching or locking), Effusion, Open growth plates, Stable, Unsalvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	9	
		Non-operative management - casting	May Be Appropriate	4	
		Non-operative management - bracing	May Be Appropriate	4	-
		Drilling of intact OCD lesion (retro-articular or trans-articular)	May Be Appropriate	5	
		Fixation with or without bone grafting	Rarely Appropriate	2	+
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	5	
		Fragment excision and isolated debridement	May Be Appropriate	4	
		Fragment excision and marrow stimulation	May Be Appropriate	4	
		Osteochondral autograft transfer	May Be Appropriate	6	
		Autologous chondrocyte implantation (with or without bone grafting)	May Be Appropriate	4	
		Osteochondral allograft transplantation	May Be Appropriate	6	
3	Pain, Mechanical symptoms (catching or locking), Effusion, Open growth plates, Unstable, Salvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	8	
		Non-operative management - casting	Rarely Appropriate	3	+
		Non-operative management - bracing	Rarely Appropriate	3	+

Scenario #	Patient Factors	Treatment	Appropriateness	Median Rating	Agreement
		Drilling of intact OCD lesion (retro-articular or trans-articular)	May Be Appropriate	4	
		Fixation with or without bone grafting	Appropriate	8	+
		Non-operative management - restricted weight bearing (assistive devices)	Rarely Appropriate	3	
		Fragment excision and isolated debridement	Rarely Appropriate	1	+
		Fragment excision and marrow stimulation	Rarely Appropriate	1	+
		Osteochondral autograft transfer	Rarely Appropriate	3	+
		Autologous chondrocyte implantation (with or without bone grafting)	Rarely Appropriate	2	+
		Osteochondral allograft transplantation	Rarely Appropriate	2	+
4	Pain, Mechanical symptoms (catching or locking), Effusion, Open growth plates, Unstable, Unsalvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	9	
		Non-operative management - casting	Rarely Appropriate	3	+
		Non-operative management - bracing	Rarely Appropriate	3	+
		Drilling of intact OCD lesion (retro-articular or trans-articular)	Rarely Appropriate	1	+
		Fixation with or without bone grafting	Rarely Appropriate	2	+
		Non-operative management - restricted weight bearing (assistive devices)	Rarely Appropriate	3	

Scenario #	Patient Factors	Treatment	Appropriateness	Median Rating	Agreement
		Fragment excision and isolated debridement	Rarely Appropriate	3	+
		Fragment excision and marrow stimulation	May Be Appropriate	5	+
		Osteochondral autograft transfer	Appropriate	7	+
		Autologous chondrocyte implantation (with or without bone grafting)	May Be Appropriate	6	
		Osteochondral allograft transplantation	Appropriate	7	
5	Pain, Mechanical symptoms (catching or locking), Effusion, Partially or fully closed growth plates, Stable, Salvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	8	
		Non-operative management - casting	Rarely Appropriate	3	
		Non-operative management - bracing	May Be Appropriate	6	+
		Drilling of intact OCD lesion (retro-articular or trans-articular)	Appropriate	7	+
		Fixation with or without bone grafting	Appropriate	7	+
		Non-operative management - restricted weight bearing (assistive devices)	Appropriate	7	
		Fragment excision and isolated debridement	Rarely Appropriate	1	+
		Fragment excision and marrow stimulation	Rarely Appropriate	1	+
		Osteochondral autograft transfer	Rarely Appropriate	1	+
		Autologous chondrocyte implantation (with or without bone grafting)	Rarely Appropriate	1	+

Scenario #	Patient Factors	Treatment	Appropriateness	Median Rating	Agreement
		Osteochondral allograft transplantation	Rarely Appropriate	1	+
6	Pain, Mechanical symptoms (catching or locking), Effusion, Partially or fully closed growth plates, Stable, Unsalvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	9	
		Non-operative management - casting	Rarely Appropriate	3	+
		Non-operative management - bracing	May Be Appropriate	5	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	May Be Appropriate	5	
		Fixation with or without bone grafting	Rarely Appropriate	3	
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	4	
		Fragment excision and isolated debridement	Rarely Appropriate	3	
		Fragment excision and marrow stimulation	May Be Appropriate	5	
		Osteochondral autograft transfer	Appropriate	7	+
		Autologous chondrocyte implantation (with or without bone grafting)	May Be Appropriate	5	
		Osteochondral allograft transplantation	Appropriate	7	
7	Pain, Mechanical symptoms (catching or locking), Effusion, Partially or fully closed growth plates, Unstable, Salvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	8	
		Non-operative management - casting	Rarely Appropriate	2	+

Scenario #	Patient Factors	Treatment	Appropriateness	Median Rating	Agreement
		Non-operative management - bracing	May Be Appropriate	4	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	May Be Appropriate	5	
		Fixation with or without bone grafting	Appropriate	8	+
		Non-operative management - restricted weight bearing (assistive devices)	Rarely Appropriate	3	
		Fragment excision and isolated debridement	Rarely Appropriate	2	+
		Fragment excision and marrow stimulation	Rarely Appropriate	3	+
		Osteochondral autograft transfer	Rarely Appropriate	2	+
		Autologous chondrocyte implantation (with or without bone grafting)	Rarely Appropriate	2	+
		Osteochondral allograft transplantation	Rarely Appropriate	2	+
8	Pain, Mechanical symptoms (catching or locking), Effusion, Partially or fully closed growth plates, Unstable, Unsalvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	8	+
		Physical Therapy (see assumptions for definition)	Appropriate	8	-
		Non-operative management - casting	Rarely Appropriate	2	+
		Non-operative management - bracing	Rarely Appropriate	3	+
		Drilling of intact OCD lesion (retro-articular or trans-articular)	Rarely Appropriate	1	+
		Fixation with or without bone grafting	Rarely Appropriate	2	+

Scenario #	Patient Factors	Treatment	Appropriateness	Median Rating	Agreement
		Non-operative management - restricted weight bearing (assistive devices)	Rarely Appropriate	3	
		Fragment excision and isolated debridement	Rarely Appropriate	3	
		Fragment excision and marrow stimulation	May Be Appropriate	4	-
		Osteochondral autograft transfer	Appropriate	8	+
		Autologous chondrocyte implantation (with or without bone grafting)	May Be Appropriate	6	
		Osteochondral allograft transplantation	Appropriate	7	+
9	Pain, Mechanical symptoms (catching or locking), No Effusion, Open growth plates, Stable, Salvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	9	+
		Non-operative management - casting	May Be Appropriate	6	
		Non-operative management - bracing	Appropriate	7	+
		Drilling of intact OCD lesion (retro-articular or trans-articular)	May Be Appropriate	6	
		Fixation with or without bone grafting	May Be Appropriate	6	
		Non-operative management - restricted weight bearing (assistive devices)	Appropriate	7	
		Fragment excision and isolated debridement	Rarely Appropriate	1	+
		Fragment excision and marrow stimulation	Rarely Appropriate	1	+
		Osteochondral autograft transfer	Rarely Appropriate	1	+

Scenario #	Patient Factors	Treatment	Appropriateness	Median Rating	Agreement
		Autologous chondrocyte implantation (with or without bone grafting)	Rarely Appropriate	1	+
		Osteochondral allograft transplantation	Rarely Appropriate	1	+
10	Pain, Mechanical symptoms (catching or locking), No Effusion, Open growth plates, Stable, Unsalvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	8	
		Non-operative management - casting	May Be Appropriate	4	
		Non-operative management - bracing	May Be Appropriate	6	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	May Be Appropriate	6	
		Fixation with or without bone grafting	Rarely Appropriate	2	
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	5	
		Fragment excision and isolated debridement	May Be Appropriate	4	
		Fragment excision and marrow stimulation	May Be Appropriate	4	
		Osteochondral autograft transfer	May Be Appropriate	6	
		Autologous chondrocyte implantation (with or without bone grafting)	May Be Appropriate	5	
		Osteochondral allograft transplantation	May Be Appropriate	4	-
11	Pain, Mechanical symptoms (catching or locking), No Effusion,	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+

Scenario #	Patient Factors	Treatment	Appropriateness	Median Rating	Agreement
	Open growth plates, Unstable, Salvageable	Physical Therapy (see assumptions for definition)	Appropriate	8	
		Non-operative management - casting	Rarely Appropriate	3	
		Non-operative management - bracing	May Be Appropriate	4	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	May Be Appropriate	5	
		Fixation with or without bone grafting	Appropriate	8	+
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	4	
		Fragment excision and isolated debridement	Rarely Appropriate	1	
		Fragment excision and marrow stimulation	Rarely Appropriate	3	
		Osteochondral autograft transfer	Rarely Appropriate	3	+
		Autologous chondrocyte implantation (with or without bone grafting)	Rarely Appropriate	2	+
		Osteochondral allograft transplantation	Rarely Appropriate	2	+
12	Pain, Mechanical symptoms (catching or locking), No Effusion, Open growth plates, Unstable, Unsalvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	8	
		Non-operative management - casting	Rarely Appropriate	2	
		Non-operative management - bracing	May Be Appropriate	4	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	Rarely Appropriate	3	

Scenario #	Patient Factors	Treatment	Appropriateness	Median Rating	Agreement
		Fixation with or without bone grafting	Rarely Appropriate	2	
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	4	
		Fragment excision and isolated debridement	May Be Appropriate	4	
		Fragment excision and marrow stimulation	May Be Appropriate	5	
		Osteochondral autograft transfer	Appropriate	8	+
		Autologous chondrocyte implantation (with or without bone grafting)	May Be Appropriate	5	
		Osteochondral allograft transplantation	Appropriate	7	
13	Pain, Mechanical symptoms (catching or locking), No Effusion, Partially or fully closed growth plates, Stable, Salvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	7	
		Non-operative management - casting	Rarely Appropriate	3	
		Non-operative management - bracing	May Be Appropriate	5	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	Appropriate	7	
		Fixation with or without bone grafting	Appropriate	7	
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	5	
		Fragment excision and isolated debridement	Rarely Appropriate	1	+

Scenario #	Patient Factors	Treatment	Appropriateness	Median Rating	Agreement
		Fragment excision and marrow stimulation	Rarely Appropriate	3	+
		Osteochondral autograft transfer	Rarely Appropriate	2	+
		Autologous chondrocyte implantation (with or without bone grafting)	Rarely Appropriate	2	+
		Osteochondral allograft transplantation	Rarely Appropriate	2	+
14	Pain, Mechanical symptoms (catching or locking), No Effusion, Partially or fully closed growth plates, Stable, Unsalvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	8	
		Non-operative management - casting	Rarely Appropriate	3	
		Non-operative management - bracing	May Be Appropriate	5	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	May Be Appropriate	5	
		Fixation with or without bone grafting	Rarely Appropriate	3	
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	5	
		Fragment excision and isolated debridement	Rarely Appropriate	3	
		Fragment excision and marrow stimulation	Rarely Appropriate	3	
		Osteochondral autograft transfer	Appropriate	8	
		Autologous chondrocyte implantation (with or without bone grafting)	May Be Appropriate	5	-
		Osteochondral allograft transplantation	Appropriate	7	-

Scenario #	Patient Factors	Treatment	Appropriateness	Median Rating	Agreement
15	Pain, Mechanical symptoms (catching or locking), No Effusion, Partially or fully closed growth plates, Unstable, Salvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	8	
		Non-operative management - casting	Rarely Appropriate	3	
		Non-operative management - bracing	May Be Appropriate	5	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	May Be Appropriate	5	
		Fixation with or without bone grafting	Appropriate	8	+
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	6	
		Fragment excision and isolated debridement	Rarely Appropriate	1	
		Fragment excision and marrow stimulation	Rarely Appropriate	2	
		Osteochondral autograft transfer	Rarely Appropriate	2	+
		Autologous chondrocyte implantation (with or without bone grafting)	Rarely Appropriate	2	+
		Osteochondral allograft transplantation	Rarely Appropriate	2	+
16	Pain, Mechanical symptoms (catching or locking), No Effusion, Partially or fully closed growth plates, Unstable, Unsalvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	7	
		Non-operative management - casting	Rarely Appropriate	2	+
		Non-operative management - bracing	Rarely Appropriate	3	+

Scenario #	Patient Factors	Treatment	Appropriateness	Median Rating	Agreement
		Drilling of intact OCD lesion (retro-articular or trans-articular)	Rarely Appropriate	2	+
		Fixation with or without bone grafting	Rarely Appropriate	2	+
		Non-operative management - restricted weight bearing (assistive devices)	Rarely Appropriate	3	+
		Fragment excision and isolated debridement	Rarely Appropriate	3	
		Fragment excision and marrow stimulation	May Be Appropriate	4	
		Osteochondral autograft transfer	Appropriate	8	+
		Autologous chondrocyte implantation (with or without bone grafting)	May Be Appropriate	6	
		Osteochondral allograft transplantation	Appropriate	7	
17	Pain, No Mechanical symptoms (catching or locking), Effusion, Open growth plates, Stable, Salvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	8	
		Non-operative management - casting	May Be Appropriate	6	
		Non-operative management - bracing	Appropriate	7	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	Appropriate	7	
		Fixation with or without bone grafting	Appropriate	7	-
		Non-operative management - restricted weight bearing (assistive devices)	Appropriate	7	

Scenario #	Patient Factors	Treatment	Appropriateness	Median Rating	Agreement
		Fragment excision and isolated debridement	Rarely Appropriate	1	+
		Fragment excision and marrow stimulation	Rarely Appropriate	1	+
		Osteochondral autograft transfer	Rarely Appropriate	1	+
		Autologous chondrocyte implantation (with or without bone grafting)	Rarely Appropriate	1	+
		Osteochondral allograft transplantation	Rarely Appropriate	1	+
18	Pain, No Mechanical symptoms (catching or locking), Effusion, Open growth plates, Stable, Unsalvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	8	
		Non-operative management - casting	May Be Appropriate	5	
		Non-operative management - bracing	May Be Appropriate	6	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	May Be Appropriate	5	-
		Fixation with or without bone grafting	Rarely Appropriate	2	
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	5	
		Fragment excision and isolated debridement	May Be Appropriate	4	
		Fragment excision and marrow stimulation	May Be Appropriate	4	
		Osteochondral autograft transfer	Appropriate	7	
		Autologous chondrocyte implantation (with or without bone grafting)	May Be Appropriate	5	

Scenario #	Patient Factors	Treatment	Appropriateness	Median Rating	Agreement
		Osteochondral allograft transplantation	Appropriate	7	-
19	Pain, No Mechanical symptoms (catching or locking), Effusion, Open growth plates, Unstable, Salvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	9	
		Non-operative management - casting	May Be Appropriate	4	
		Non-operative management - bracing	May Be Appropriate	5	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	Appropriate	7	
		Fixation with or without bone grafting	Appropriate	8	+
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	4	-
		Fragment excision and isolated debridement	Rarely Appropriate	2	+
		Fragment excision and marrow stimulation	Rarely Appropriate	2	+
		Osteochondral autograft transfer	Rarely Appropriate	2	+
		Autologous chondrocyte implantation (with or without bone grafting)	Rarely Appropriate	3	+
		Osteochondral allograft transplantation	Rarely Appropriate	2	+
20	Pain, No Mechanical symptoms (catching or locking), Effusion, Open growth plates, Unstable, Unsalvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	8	
		Non-operative management - casting	May Be Appropriate	4	

Scenario #	Patient Factors	Treatment	Appropriateness	Median Rating	Agreement
		Non-operative management - bracing	May Be Appropriate	4	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	Rarely Appropriate	3	-
		Fixation with or without bone grafting	Rarely Appropriate	2	
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	4	
		Fragment excision and isolated debridement	May Be Appropriate	4	
		Fragment excision and marrow stimulation	May Be Appropriate	4	
		Osteochondral autograft transfer	Appropriate	8	+
		Autologous chondrocyte implantation (with or without bone grafting)	May Be Appropriate	5	
		Osteochondral allograft transplantation	Appropriate	7	
21	Pain, No Mechanical symptoms (catching or locking), Effusion, Partially or fully closed growth plates, Stable, Salvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	8	+
		Physical Therapy (see assumptions for definition)	Appropriate	8	
		Non-operative management - casting	Rarely Appropriate	2	
		Non-operative management - bracing	May Be Appropriate	5	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	May Be Appropriate	6	
		Fixation with or without bone grafting	Appropriate	7	

Scenario #	Patient Factors	Treatment	Appropriateness	Median Rating	Agreement
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	5	
		Fragment excision and isolated debridement	Rarely Appropriate	1	
		Fragment excision and marrow stimulation	Rarely Appropriate	1	+
		Osteochondral autograft transfer	Rarely Appropriate	1	+
		Autologous chondrocyte implantation (with or without bone grafting)	Rarely Appropriate	1	+
		Osteochondral allograft transplantation	Rarely Appropriate	1	+
22	Pain, No Mechanical symptoms (catching or locking), Effusion, Partially or fully closed growth plates, Stable, Unsalvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	7	
		Non-operative management - casting	Rarely Appropriate	3	
		Non-operative management - bracing	May Be Appropriate	5	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	May Be Appropriate	5	-
		Fixation with or without bone grafting	Rarely Appropriate	3	
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	5	
		Fragment excision and isolated debridement	Rarely Appropriate	2	
		Fragment excision and marrow stimulation	May Be Appropriate	4	
		Osteochondral autograft transfer	Appropriate	8	

Scenario #	Patient Factors	Treatment	Appropriateness	Median Rating	Agreement
		Autologous chondrocyte implantation (with or without bone grafting)	Appropriate	7	
		Osteochondral allograft transplantation	Appropriate	7	
23	Pain, No Mechanical symptoms (catching or locking), Effusion, Partially or fully closed growth plates, Unstable, Salvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	7	
		Non-operative management - casting	Rarely Appropriate	2	+
		Non-operative management - bracing	May Be Appropriate	4	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	May Be Appropriate	5	
		Fixation with or without bone grafting	Appropriate	7	+
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	5	
		Fragment excision and isolated debridement	Rarely Appropriate	2	+
		Fragment excision and marrow stimulation	Rarely Appropriate	3	
		Osteochondral autograft transfer	Rarely Appropriate	2	+
		Autologous chondrocyte implantation (with or without bone grafting)	Rarely Appropriate	2	+
		Osteochondral allograft transplantation	Rarely Appropriate	2	+
24	Pain, No Mechanical symptoms (catching or locking), Effusion,	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+

Scenario #	Patient Factors	Treatment	Appropriateness	Median Rating	Agreement
	Partially or fully closed growth plates, Unstable, Unsalvageable	Physical Therapy (see assumptions for definition)	Appropriate	7	
		Non-operative management - casting	Rarely Appropriate	3	+
		Non-operative management - bracing	Rarely Appropriate	3	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	Rarely Appropriate	3	
		Fixation with or without bone grafting	Rarely Appropriate	3	
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	4	
		Fragment excision and isolated debridement	Rarely Appropriate	3	
		Fragment excision and marrow stimulation	May Be Appropriate	4	-
		Osteochondral autograft transfer	Appropriate	8	
		Autologous chondrocyte implantation (with or without bone grafting)	May Be Appropriate	5	
		Osteochondral allograft transplantation	May Be Appropriate	6	
25	Pain, No Mechanical symptoms (catching or locking), No Effusion, Open growth plates, Stable, Salvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	8	
		Non-operative management - casting	May Be Appropriate	5	
		Non-operative management - bracing	May Be Appropriate	6	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	Appropriate	7	

Scenario #	Patient Factors	Treatment	Appropriateness	Median Rating	Agreement
		Fixation with or without bone grafting	May Be Appropriate	6	
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	6	
		Fragment excision and isolated debridement	Rarely Appropriate	1	+
		Fragment excision and marrow stimulation	Rarely Appropriate	1	+
		Osteochondral autograft transfer	Rarely Appropriate	1	+
		Autologous chondrocyte implantation (with or without bone grafting)	Rarely Appropriate	1	+
		Osteochondral allograft transplantation	Rarely Appropriate	1	+
26	Pain, No Mechanical symptoms (catching or locking), No Effusion, Open growth plates, Stable, Unsalvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	8	
		Non-operative management - casting	May Be Appropriate	5	-
		Non-operative management - bracing	May Be Appropriate	6	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	May Be Appropriate	4	
		Fixation with or without bone grafting	Rarely Appropriate	2	
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	6	
		Fragment excision and isolated debridement	Rarely Appropriate	2	

Scenario #	Patient Factors	Treatment	Appropriateness	Median Rating	Agreement
		Fragment excision and marrow stimulation	May Be Appropriate	4	
		Osteochondral autograft transfer	Appropriate	7	
		Autologous chondrocyte implantation (with or without bone grafting)	May Be Appropriate	4	
		Osteochondral allograft transplantation	May Be Appropriate	5	-
27	Pain, No Mechanical symptoms (catching or locking), No Effusion, Open growth plates, Unstable, Salvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	8	
		Non-operative management - casting	May Be Appropriate	4	
		Non-operative management - bracing	May Be Appropriate	5	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	May Be Appropriate	5	
		Fixation with or without bone grafting	Appropriate	8	+
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	5	
		Fragment excision and isolated debridement	Rarely Appropriate	2	+
		Fragment excision and marrow stimulation	Rarely Appropriate	2	+
		Osteochondral autograft transfer	Rarely Appropriate	3	+
		Autologous chondrocyte implantation (with or without bone grafting)	Rarely Appropriate	3	+
		Osteochondral allograft transplantation	Rarely Appropriate	3	+

Scenario #	Patient Factors	Treatment	Appropriateness	Median Rating	Agreement
28	Pain, No Mechanical symptoms (catching or locking), No Effusion, Open growth plates, Unstable, Unsalvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	8	
		Non-operative management - casting	May Be Appropriate	4	
		Non-operative management - bracing	May Be Appropriate	5	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	May Be Appropriate	4	-
		Fixation with or without bone grafting	Rarely Appropriate	3	-
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	5	
		Fragment excision and isolated debridement	Rarely Appropriate	3	
		Fragment excision and marrow stimulation	May Be Appropriate	4	
		Osteochondral autograft transfer	Appropriate	7	
		Autologous chondrocyte implantation (with or without bone grafting)	May Be Appropriate	5	-
		Osteochondral allograft transplantation	May Be Appropriate	5	-
29	Pain, No Mechanical symptoms (catching or locking), No Effusion, Partially or fully closed growth plates, Stable, Salvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	8	
		Non-operative management - casting	Rarely Appropriate	2	
		Non-operative management - bracing	May Be Appropriate	6	

Scenario #	Patient Factors	Treatment	Appropriateness	Median Rating	Agreement
		Drilling of intact OCD lesion (retro-articular or trans-articular)	May Be Appropriate	6	
		Fixation with or without bone grafting	Appropriate	7	
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	6	
		Fragment excision and isolated debridement	Rarely Appropriate	1	+
		Fragment excision and marrow stimulation	Rarely Appropriate	1	+
		Osteochondral autograft transfer	Rarely Appropriate	2	+
		Autologous chondrocyte implantation (with or without bone grafting)	Rarely Appropriate	2	+
		Osteochondral allograft transplantation	Rarely Appropriate	2	+
30	Pain, No Mechanical symptoms (catching or locking), No Effusion, Partially or fully closed growth plates, Stable, Unsalvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	7	
		Non-operative management - casting	May Be Appropriate	4	
		Non-operative management - bracing	May Be Appropriate	5	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	May Be Appropriate	5	
		Fixation with or without bone grafting	Rarely Appropriate	3	
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	5	

Scenario #	Patient Factors	Treatment	Appropriateness	Median Rating	Agreement
		Fragment excision and isolated debridement	Rarely Appropriate	2	
		Fragment excision and marrow stimulation	Rarely Appropriate	3	
		Osteochondral autograft transfer	Appropriate	7	
		Autologous chondrocyte implantation (with or without bone grafting)	May Be Appropriate	6	-
		Osteochondral allograft transplantation	Appropriate	7	
31	Pain, No Mechanical symptoms (catching or locking), No Effusion, Partially or fully closed growth plates, Unstable, Salvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	7	
		Non-operative management - casting	Rarely Appropriate	2	+
		Non-operative management - bracing	May Be Appropriate	4	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	May Be Appropriate	4	
		Fixation with or without bone grafting	Appropriate	8	+
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	4	
		Fragment excision and isolated debridement	Rarely Appropriate	3	
		Fragment excision and marrow stimulation	Rarely Appropriate	3	+
		Osteochondral autograft transfer	Rarely Appropriate	3	+
		Autologous chondrocyte implantation (with or without bone grafting)	Rarely Appropriate	3	+

Scenario #	Patient Factors	Treatment	Appropriateness	Median Rating	Agreement
		Osteochondral allograft transplantation	Rarely Appropriate	2	+
32	Pain, No Mechanical symptoms (catching or locking), No Effusion, Partially or fully closed growth plates, Unstable, Unsalvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	8	+
		Physical Therapy (see assumptions for definition)	Appropriate	7	
		Non-operative management - casting	Rarely Appropriate	2	+
		Non-operative management - bracing	May Be Appropriate	4	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	May Be Appropriate	4	
		Fixation with or without bone grafting	Rarely Appropriate	3	
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	4	
		Fragment excision and isolated debridement	Rarely Appropriate	3	
		Fragment excision and marrow stimulation	May Be Appropriate	4	
		Osteochondral autograft transfer	Appropriate	7	
		Autologous chondrocyte implantation (with or without bone grafting)	May Be Appropriate	6	
		Osteochondral allograft transplantation	May Be Appropriate	6	
33	No Pain, Mechanical symptoms (catching or locking), Effusion, Open growth plates, Stable, Salvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	9	
		Non-operative management - casting	May Be Appropriate	5	

Scenario #	Patient Factors	Treatment	Appropriateness	Median Rating	Agreement
		Non-operative management - bracing	May Be Appropriate	6	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	Appropriate	7	
		Fixation with or without bone grafting	Appropriate	7	
		Non-operative management - restricted weight bearing (assistive devices)	Appropriate	7	
		Fragment excision and isolated debridement	Rarely Appropriate	1	+
		Fragment excision and marrow stimulation	Rarely Appropriate	1	+
		Osteochondral autograft transfer	Rarely Appropriate	1	+
		Autologous chondrocyte implantation (with or without bone grafting)	Rarely Appropriate	1	+
		Osteochondral allograft transplantation	Rarely Appropriate	1	+
34	No Pain, Mechanical symptoms (catching or locking), Effusion, Open growth plates, Stable, Unsalvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	8	
		Non-operative management - casting	May Be Appropriate	4	-
		Non-operative management - bracing	May Be Appropriate	6	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	May Be Appropriate	5	
		Fixation with or without bone grafting	Rarely Appropriate	3	+

Scenario #	Patient Factors	Treatment	Appropriateness	Median Rating	Agreement
		Non-operative management - restricted weight bearing (assistive devices)	Appropriate	7	
		Fragment excision and isolated debridement	Rarely Appropriate	1	
		Fragment excision and marrow stimulation	Rarely Appropriate	3	
		Osteochondral autograft transfer	Appropriate	7	
		Autologous chondrocyte implantation (with or without bone grafting)	May Be Appropriate	5	
		Osteochondral allograft transplantation	May Be Appropriate	5	-
35	No Pain, Mechanical symptoms (catching or locking), Effusion, Open growth plates, Unstable, Salvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	8	
		Non-operative management - casting	Rarely Appropriate	3	
		Non-operative management - bracing	May Be Appropriate	5	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	May Be Appropriate	5	
		Fixation with or without bone grafting	Appropriate	8	
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	5	
		Fragment excision and isolated debridement	Rarely Appropriate	2	
		Fragment excision and marrow stimulation	Rarely Appropriate	2	
		Osteochondral autograft transfer	Rarely Appropriate	3	

Scenario #	Patient Factors	Treatment	Appropriateness	Median Rating	Agreement
		Autologous chondrocyte implantation (with or without bone grafting)	Rarely Appropriate	2	+
		Osteochondral allograft transplantation	Rarely Appropriate	2	+
36	No Pain, Mechanical symptoms (catching or locking), Effusion, Open growth plates, Unstable, Unsalvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	8	
		Non-operative management - casting	May Be Appropriate	4	
		Non-operative management - bracing	May Be Appropriate	5	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	May Be Appropriate	5	-
		Fixation with or without bone grafting	Rarely Appropriate	3	
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	5	
		Fragment excision and isolated debridement	Rarely Appropriate	2	
		Fragment excision and marrow stimulation	May Be Appropriate	5	
		Osteochondral autograft transfer	Appropriate	7	
		Autologous chondrocyte implantation (with or without bone grafting)	May Be Appropriate	5	
		Osteochondral allograft transplantation	May Be Appropriate	5	-
37	No Pain, Mechanical symptoms (catching or locking), Effusion,	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+

Scenario #	Patient Factors	Treatment	Appropriateness	Median Rating	Agreement
	Partially or fully closed growth plates, Stable, Salvageable	Physical Therapy (see assumptions for definition)	Appropriate	8	
		Non-operative management - casting	Rarely Appropriate	2	+
		Non-operative management - bracing	May Be Appropriate	5	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	May Be Appropriate	6	
		Fixation with or without bone grafting	May Be Appropriate	6	
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	5	
		Fragment excision and isolated debridement	Rarely Appropriate	1	+
		Fragment excision and marrow stimulation	Rarely Appropriate	1	+
		Osteochondral autograft transfer	Rarely Appropriate	2	
		Autologous chondrocyte implantation (with or without bone grafting)	Rarely Appropriate	2	
		Osteochondral allograft transplantation	Rarely Appropriate	2	+
38	No Pain, Mechanical symptoms (catching or locking), Effusion, Partially or fully closed growth plates, Stable, Unsalvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	8	
		Non-operative management - casting	Rarely Appropriate	3	
		Non-operative management - bracing	May Be Appropriate	5	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	May Be Appropriate	5	

Scenario #	Patient Factors	Treatment	Appropriateness	Median Rating	Agreement
		Fixation with or without bone grafting	Rarely Appropriate	3	
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	6	
		Fragment excision and isolated debridement	Rarely Appropriate	2	
		Fragment excision and marrow stimulation	May Be Appropriate	4	
		Osteochondral autograft transfer	Appropriate	8	
		Autologous chondrocyte implantation (with or without bone grafting)	May Be Appropriate	6	-
		Osteochondral allograft transplantation	Appropriate	7	-
39	No Pain, Mechanical symptoms (catching or locking), Effusion, Partially or fully closed growth plates, Unstable, Salvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	7	
		Non-operative management - casting	Rarely Appropriate	2	
		Non-operative management - bracing	May Be Appropriate	4	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	May Be Appropriate	4	
		Fixation with or without bone grafting	Appropriate	8	+
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	4	
		Fragment excision and isolated debridement	Rarely Appropriate	2	+

Scenario #	Patient Factors	Treatment	Appropriateness	Median Rating	Agreement
		Fragment excision and marrow stimulation	Rarely Appropriate	2	+
		Osteochondral autograft transfer	Rarely Appropriate	2	+
		Autologous chondrocyte implantation (with or without bone grafting)	Rarely Appropriate	2	+
		Osteochondral allograft transplantation	Rarely Appropriate	2	
40	No Pain, Mechanical symptoms (catching or locking), Effusion, Partially or fully closed growth plates, Unstable, Unsalvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	7	-
		Non-operative management - casting	Rarely Appropriate	3	+
		Non-operative management - bracing	May Be Appropriate	4	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	Rarely Appropriate	2	+
		Fixation with or without bone grafting	Rarely Appropriate	2	+
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	4	-
		Fragment excision and isolated debridement	Rarely Appropriate	3	+
		Fragment excision and marrow stimulation	May Be Appropriate	4	
		Osteochondral autograft transfer	Appropriate	7	-
		Autologous chondrocyte implantation (with or without bone grafting)	May Be Appropriate	5	-
		Osteochondral allograft transplantation	May Be Appropriate	6	

Scenario #	Patient Factors	Treatment	Appropriateness	Median Rating	Agreement
41	No Pain, Mechanical symptoms (catching or locking), No Effusion, Open growth plates, Stable, Salvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	9	
		Non-operative management - casting	May Be Appropriate	4	
		Non-operative management - bracing	May Be Appropriate	6	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	Appropriate	7	
		Fixation with or without bone grafting	Appropriate	7	
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	6	
		Fragment excision and isolated debridement	Rarely Appropriate	1	+
		Fragment excision and marrow stimulation	Rarely Appropriate	1	+
		Osteochondral autograft transfer	Rarely Appropriate	1	+
		Autologous chondrocyte implantation (with or without bone grafting)	Rarely Appropriate	1	+
		Osteochondral allograft transplantation	Rarely Appropriate	1	+
42	No Pain, Mechanical symptoms (catching or locking), No Effusion, Open growth plates, Stable, Unsalvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	8	
		Non-operative management - casting	May Be Appropriate	4	
		Non-operative management - bracing	May Be Appropriate	5	

Scenario #	Patient Factors	Treatment	Appropriateness	Median Rating	Agreement
		Drilling of intact OCD lesion (retro-articular or trans-articular)	Rarely Appropriate	3	
		Fixation with or without bone grafting	Rarely Appropriate	2	
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	6	
		Fragment excision and isolated debridement	May Be Appropriate	4	
		Fragment excision and marrow stimulation	May Be Appropriate	5	
		Osteochondral autograft transfer	May Be Appropriate	6	
		Autologous chondrocyte implantation (with or without bone grafting)	May Be Appropriate	5	
		Osteochondral allograft transplantation	May Be Appropriate	6	-
43	No Pain, Mechanical symptoms (catching or locking), No Effusion, Open growth plates, Unstable, Salvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	8	
		Non-operative management - casting	May Be Appropriate	4	
		Non-operative management - bracing	May Be Appropriate	5	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	May Be Appropriate	5	
		Fixation with or without bone grafting	Appropriate	8	+
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	5	

Scenario #	Patient Factors	Treatment	Appropriateness	Median Rating	Agreement
		Fragment excision and isolated debridement	Rarely Appropriate	2	+
		Fragment excision and marrow stimulation	Rarely Appropriate	2	+
		Osteochondral autograft transfer	Rarely Appropriate	1	+
		Autologous chondrocyte implantation (with or without bone grafting)	Rarely Appropriate	1	+
		Osteochondral allograft transplantation	Rarely Appropriate	1	+
44	No Pain, Mechanical symptoms (catching or locking), No Effusion, Open growth plates, Unstable, Unsalvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	8	
		Non-operative management - casting	Rarely Appropriate	3	
		Non-operative management - bracing	May Be Appropriate	4	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	Rarely Appropriate	2	
		Fixation with or without bone grafting	Rarely Appropriate	2	+
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	5	
		Fragment excision and isolated debridement	Rarely Appropriate	3	
		Fragment excision and marrow stimulation	May Be Appropriate	5	
		Osteochondral autograft transfer	Appropriate	7	+
		Autologous chondrocyte implantation (with or without bone grafting)	May Be Appropriate	5	

Scenario #	Patient Factors	Treatment	Appropriateness	Median Rating	Agreement
		Osteochondral allograft transplantation	Appropriate	7	
45	No Pain, Mechanical symptoms (catching or locking), No Effusion, Partially or fully closed growth plates, Stable, Salvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	8	
		Non-operative management - casting	Rarely Appropriate	3	
		Non-operative management - bracing	May Be Appropriate	5	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	May Be Appropriate	6	
		Fixation with or without bone grafting	May Be Appropriate	6	
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	6	
		Fragment excision and isolated debridement	Rarely Appropriate	1	+
		Fragment excision and marrow stimulation	Rarely Appropriate	1	+
		Osteochondral autograft transfer	Rarely Appropriate	1	+
		Autologous chondrocyte implantation (with or without bone grafting)	Rarely Appropriate	1	+
		Osteochondral allograft transplantation	Rarely Appropriate	1	+
46	No Pain, Mechanical symptoms (catching or locking), No Effusion, Partially or fully closed growth plates, Stable, Unsalvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	8	
		Non-operative management - casting	Rarely Appropriate	2	+

Scenario #	Patient Factors	Treatment	Appropriateness	Median Rating	Agreement
		Non-operative management - bracing	May Be Appropriate	5	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	Rarely Appropriate	3	
		Fixation with or without bone grafting	Rarely Appropriate	3	
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	6	
		Fragment excision and isolated debridement	Rarely Appropriate	3	
		Fragment excision and marrow stimulation	May Be Appropriate	5	
		Osteochondral autograft transfer	Appropriate	8	
		Autologous chondrocyte implantation (with or without bone grafting)	May Be Appropriate	5	
		Osteochondral allograft transplantation	Appropriate	7	
47	No Pain, Mechanical symptoms (catching or locking), No Effusion, Partially or fully closed growth plates, Unstable, Salvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	8	
		Non-operative management - casting	Rarely Appropriate	2	
		Non-operative management - bracing	May Be Appropriate	5	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	May Be Appropriate	5	
		Fixation with or without bone grafting	Appropriate	7	+

Scenario #	Patient Factors	Treatment	Appropriateness	Median Rating	Agreement
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	5	
		Fragment excision and isolated debridement	Rarely Appropriate	1	+
		Fragment excision and marrow stimulation	Rarely Appropriate	1	+
		Osteochondral autograft transfer	Rarely Appropriate	2	+
		Autologous chondrocyte implantation (with or without bone grafting)	Rarely Appropriate	2	+
		Osteochondral allograft transplantation	Rarely Appropriate	1	+
48	No Pain, Mechanical symptoms (catching or locking), No Effusion, Partially or fully closed growth plates, Unstable, Unsalvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	8	
		Non-operative management - casting	Rarely Appropriate	2	+
		Non-operative management - bracing	Rarely Appropriate	3	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	Rarely Appropriate	1	
		Fixation with or without bone grafting	Rarely Appropriate	2	+
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	4	
		Fragment excision and isolated debridement	Rarely Appropriate	3	
		Fragment excision and marrow stimulation	May Be Appropriate	5	
		Osteochondral autograft transfer	Appropriate	7	

Scenario #	Patient Factors	Treatment	Appropriateness	Median Rating	Agreement
		Autologous chondrocyte implantation (with or without bone grafting)	May Be Appropriate	5	
		Osteochondral allograft transplantation	Appropriate	7	
49	No Pain, No Mechanical symptoms (catching or locking), Effusion, Open growth plates, Stable, Salvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	8	
		Non-operative management - casting	May Be Appropriate	6	
		Non-operative management - bracing	May Be Appropriate	6	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	May Be Appropriate	6	
		Fixation with or without bone grafting	May Be Appropriate	6	
		Non-operative management - restricted weight bearing (assistive devices)	Appropriate	7	
		Fragment excision and isolated debridement	Rarely Appropriate	1	+
		Fragment excision and marrow stimulation	Rarely Appropriate	1	+
		Osteochondral autograft transfer	Rarely Appropriate	1	+
		Autologous chondrocyte implantation (with or without bone grafting)	Rarely Appropriate	1	+
		Osteochondral allograft transplantation	Rarely Appropriate	1	+
50	No Pain, No Mechanical symptoms (catching or locking),	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+

Scenario #	Patient Factors	Treatment	Appropriateness	Median Rating	Agreement
	Effusion, Open growth plates, Stable, Unsalvageable	Physical Therapy (see assumptions for definition)	Appropriate	8	
		Non-operative management - casting	May Be Appropriate	4	
		Non-operative management - bracing	May Be Appropriate	5	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	May Be Appropriate	4	
		Fixation with or without bone grafting	Rarely Appropriate	2	
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	6	
		Fragment excision and isolated debridement	Rarely Appropriate	2	
		Fragment excision and marrow stimulation	May Be Appropriate	5	
		Osteochondral autograft transfer	May Be Appropriate	5	
		Autologous chondrocyte implantation (with or without bone grafting)	May Be Appropriate	5	
		Osteochondral allograft transplantation	May Be Appropriate	5	-
51	No Pain, No Mechanical symptoms (catching or locking), Effusion, Open growth plates, Unstable, Salvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	8	
		Non-operative management - casting	May Be Appropriate	4	
		Non-operative management - bracing	May Be Appropriate	5	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	May Be Appropriate	4	-

Scenario #	Patient Factors	Treatment	Appropriateness	Median Rating	Agreement
		Fixation with or without bone grafting	Appropriate	8	+
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	6	
		Fragment excision and isolated debridement	Rarely Appropriate	1	+
		Fragment excision and marrow stimulation	Rarely Appropriate	1	+
		Osteochondral autograft transfer	Rarely Appropriate	1	+
		Autologous chondrocyte implantation (with or without bone grafting)	Rarely Appropriate	1	+
		Osteochondral allograft transplantation	Rarely Appropriate	1	+
52	No Pain, No Mechanical symptoms (catching or locking), Effusion, Open growth plates, Unstable, Unsalvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	8	
		Non-operative management - casting	May Be Appropriate	4	
		Non-operative management - bracing	May Be Appropriate	4	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	May Be Appropriate	5	
		Fixation with or without bone grafting	Rarely Appropriate	2	
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	5	
		Fragment excision and isolated debridement	Rarely Appropriate	2	

Scenario #	Patient Factors	Treatment	Appropriateness	Median Rating	Agreement
		Fragment excision and marrow stimulation	May Be Appropriate	5	
		Osteochondral autograft transfer	Appropriate	7	
		Autologous chondrocyte implantation (with or without bone grafting)	May Be Appropriate	5	
		Osteochondral allograft transplantation	May Be Appropriate	6	-
53	No Pain, No Mechanical symptoms (catching or locking), Effusion, Partially or fully closed growth plates, Stable, Salvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	9	
		Non-operative management - casting	Rarely Appropriate	2	
		Non-operative management - bracing	May Be Appropriate	5	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	May Be Appropriate	6	
		Fixation with or without bone grafting	Appropriate	7	
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	6	
		Fragment excision and isolated debridement	Rarely Appropriate	1	+
		Fragment excision and marrow stimulation	Rarely Appropriate	1	+
		Osteochondral autograft transfer	Rarely Appropriate	1	+
		Autologous chondrocyte implantation (with or without bone grafting)	Rarely Appropriate	1	+
		Osteochondral allograft transplantation	Rarely Appropriate	1	+

Scenario #	Patient Factors	Treatment	Appropriateness	Median Rating	Agreement
54	No Pain, No Mechanical symptoms (catching or locking), Effusion, Partially or fully closed growth plates, Stable, Unsalvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	9	
		Non-operative management - casting	Rarely Appropriate	3	+
		Non-operative management - bracing	May Be Appropriate	5	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	May Be Appropriate	4	
		Fixation with or without bone grafting	Rarely Appropriate	2	
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	5	
		Fragment excision and isolated debridement	Rarely Appropriate	3	
		Fragment excision and marrow stimulation	May Be Appropriate	4	
		Osteochondral autograft transfer	May Be Appropriate	5	-
		Autologous chondrocyte implantation (with or without bone grafting)	May Be Appropriate	5	
		Osteochondral allograft transplantation	May Be Appropriate	5	-
55	No Pain, No Mechanical symptoms (catching or locking), Effusion, Partially or fully closed growth plates, Unstable, Salvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	8	
		Non-operative management - casting	Rarely Appropriate	2	
		Non-operative management - bracing	May Be Appropriate	5	+

Scenario #	Patient Factors	Treatment	Appropriateness	Median Rating	Agreement
		Drilling of intact OCD lesion (retro-articular or trans-articular)	May Be Appropriate	5	
		Fixation with or without bone grafting	Appropriate	8	+
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	5	
		Fragment excision and isolated debridement	Rarely Appropriate	1	+
		Fragment excision and marrow stimulation	Rarely Appropriate	1	+
		Osteochondral autograft transfer	Rarely Appropriate	1	+
		Autologous chondrocyte implantation (with or without bone grafting)	Rarely Appropriate	1	+
		Osteochondral allograft transplantation	Rarely Appropriate	1	+
56	No Pain, No Mechanical symptoms (catching or locking), Effusion, Partially or fully closed growth plates, Unstable, Unsalvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	8	
		Non-operative management - casting	Rarely Appropriate	2	+
		Non-operative management - bracing	May Be Appropriate	4	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	Rarely Appropriate	1	
		Fixation with or without bone grafting	Rarely Appropriate	2	+
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	4	

Scenario #	Patient Factors	Treatment	Appropriateness	Median Rating	Agreement
		Fragment excision and isolated debridement	Rarely Appropriate	3	
		Fragment excision and marrow stimulation	May Be Appropriate	5	
		Osteochondral autograft transfer	Appropriate	7	
		Autologous chondrocyte implantation (with or without bone grafting)	May Be Appropriate	5	
		Osteochondral allograft transplantation	Appropriate	7	
57	No Pain, No Mechanical symptoms (catching or locking), No Effusion, Open growth plates, Stable, Salvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	8	
		Physical Therapy (see assumptions for definition)	May Be Appropriate	6	
		Non-operative management - casting	May Be Appropriate	5	
		Non-operative management - bracing	May Be Appropriate	6	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	Rarely Appropriate	3	
		Fixation with or without bone grafting	Rarely Appropriate	3	
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	6	-
		Fragment excision and isolated debridement	Rarely Appropriate	1	+
		Fragment excision and marrow stimulation	Rarely Appropriate	1	+
		Osteochondral autograft transfer	Rarely Appropriate	1	+
		Autologous chondrocyte implantation (with or without bone grafting)	Rarely Appropriate	1	+

Scenario #	Patient Factors	Treatment	Appropriateness	Median Rating	Agreement
		Osteochondral allograft transplantation	Rarely Appropriate	1	+
58	No Pain, No Mechanical symptoms (catching or locking), No Effusion, Open growth plates, Stable, Unsalvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	7	
		Non-operative management - casting	Rarely Appropriate	2	+
		Non-operative management - bracing	May Be Appropriate	5	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	Rarely Appropriate	2	
		Fixation with or without bone grafting	Rarely Appropriate	2	
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	5	
		Fragment excision and isolated debridement	Rarely Appropriate	1	+
		Fragment excision and marrow stimulation	Rarely Appropriate	3	
		Osteochondral autograft transfer	Rarely Appropriate	3	
		Autologous chondrocyte implantation (with or without bone grafting)	Rarely Appropriate	3	+
		Osteochondral allograft transplantation	Rarely Appropriate	3	+
59	No Pain, No Mechanical symptoms (catching or locking), No Effusion, Open growth plates, Unstable, Salvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	8	
		Non-operative management - casting	May Be Appropriate	4	

Scenario #	Patient Factors	Treatment	Appropriateness	Median Rating	Agreement
		Non-operative management - bracing	May Be Appropriate	5	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	May Be Appropriate	5	
		Fixation with or without bone grafting	Appropriate	7	+
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	6	
		Fragment excision and isolated debridement	Rarely Appropriate	1	+
		Fragment excision and marrow stimulation	Rarely Appropriate	1	+
		Osteochondral autograft transfer	Rarely Appropriate	1	+
		Autologous chondrocyte implantation (with or without bone grafting)	Rarely Appropriate	1	+
		Osteochondral allograft transplantation	Rarely Appropriate	1	+
60	No Pain, No Mechanical symptoms (catching or locking), No Effusion, Open growth plates, Unstable, Unsalvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	8	
		Non-operative management - casting	Rarely Appropriate	2	+
		Non-operative management - bracing	May Be Appropriate	4	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	Rarely Appropriate	1	+
		Fixation with or without bone grafting	Rarely Appropriate	1	+

Scenario #	Patient Factors	Treatment	Appropriateness	Median Rating	Agreement
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	4	
		Fragment excision and isolated debridement	Rarely Appropriate	3	
		Fragment excision and marrow stimulation	May Be Appropriate	4	
		Osteochondral autograft transfer	May Be Appropriate	5	
		Autologous chondrocyte implantation (with or without bone grafting)	May Be Appropriate	5	
		Osteochondral allograft transplantation	May Be Appropriate	5	
61	No Pain, No Mechanical symptoms (catching or locking), No Effusion, Partially or fully closed growth plates, Stable, Salvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	8	
		Physical Therapy (see assumptions for definition)	May Be Appropriate	6	
		Non-operative management - casting	Rarely Appropriate	2	
		Non-operative management - bracing	May Be Appropriate	5	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	May Be Appropriate	6	-
		Fixation with or without bone grafting	May Be Appropriate	5	
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	5	
		Fragment excision and isolated debridement	Rarely Appropriate	1	+
		Fragment excision and marrow stimulation	Rarely Appropriate	1	+
		Osteochondral autograft transfer	Rarely Appropriate	1	+

Scenario #	Patient Factors	Treatment	Appropriateness	Median Rating	Agreement
		Autologous chondrocyte implantation (with or without bone grafting)	Rarely Appropriate	1	+
		Osteochondral allograft transplantation	Rarely Appropriate	1	+
62	No Pain, No Mechanical symptoms (catching or locking), No Effusion, Partially or fully closed growth plates, Stable, Unsalvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	9	+
		Physical Therapy (see assumptions for definition)	Appropriate	7	
		Non-operative management - casting	Rarely Appropriate	2	+
		Non-operative management - bracing	May Be Appropriate	5	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	Rarely Appropriate	3	
		Fixation with or without bone grafting	Rarely Appropriate	2	
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	5	
		Fragment excision and isolated debridement	Rarely Appropriate	1	
		Fragment excision and marrow stimulation	May Be Appropriate	4	
		Osteochondral autograft transfer	May Be Appropriate	4	-
		Autologous chondrocyte implantation (with or without bone grafting)	May Be Appropriate	4	
		Osteochondral allograft transplantation	May Be Appropriate	4	-
63	No Pain, No Mechanical symptoms (catching or locking),	Activity Restriction Eliminate impact or painful activities	Appropriate	8	+

Scenario #	Patient Factors	Treatment	Appropriateness	Median Rating	Agreement
	No Effusion, Partially or fully closed growth plates, Unstable, Salvageable	Physical Therapy (see assumptions for definition)	Appropriate	7	+
		Non-operative management - casting	Rarely Appropriate	3	+
		Non-operative management - bracing	May Be Appropriate	5	+
		Drilling of intact OCD lesion (retro-articular or trans-articular)	May Be Appropriate	4	
		Fixation with or without bone grafting	Appropriate	8	+
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	5	
		Fragment excision and isolated debridement	Rarely Appropriate	2	+
		Fragment excision and marrow stimulation	Rarely Appropriate	2	+
		Osteochondral autograft transfer	Rarely Appropriate	3	+
		Autologous chondrocyte implantation (with or without bone grafting)	Rarely Appropriate	2	+
		Osteochondral allograft transplantation	Rarely Appropriate	2	+
64	No Pain, No Mechanical symptoms (catching or locking), No Effusion, Partially or fully closed growth plates, Unstable, Unsalvageable	Activity Restriction Eliminate impact or painful activities	Appropriate	8	+
		Physical Therapy (see assumptions for definition)	Appropriate	7	
		Non-operative management - casting	Rarely Appropriate	3	+
		Non-operative management - bracing	May Be Appropriate	6	
		Drilling of intact OCD lesion (retro-articular or trans-articular)	Rarely Appropriate	3	

Scenario #	Patient Factors	Treatment	Appropriateness	Median Rating	Agreement
		Fixation with or without bone grafting	Rarely Appropriate	2	+
		Non-operative management - restricted weight bearing (assistive devices)	May Be Appropriate	5	+
		Fragment excision and isolated debridement	May Be Appropriate	4	
		Fragment excision and marrow stimulation	May Be Appropriate	5	
		Osteochondral autograft transfer	Appropriate	7	+
		Autologous chondrocyte implantation (with or without bone grafting)	May Be Appropriate	6	
		Osteochondral allograft transplantation	Appropriate	7	+

V. APPENDICES

APPENDIX A. DOCUMENTATION OF APPROVAL

AAOS BODIES THAT APPROVED THIS APPROPRIATE USE CRITERIA

AUC Section: Approved on <DATE>

The AAOS Appropriate Use Criteria Section of the Committee on Evidence Based Quality and Value consists of six AAOS members. The overall purpose of this Section is to plan, organize, direct, and evaluate initiatives related to Appropriate Use Criteria.

Council on Research and Quality: Approved on <DATE>

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, occupational health, technology assessment, and other related areas of importance.

Board of Directors: Approved on <DATE>

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

Osteochondritis Dissecans Writing Panel

Kevin G Shea, MD Submitted on: 07/28/2015

American Orthopaedic Society for Sports Medicine: Board or committee member (\$0) Publications Committee; Clinical Data Solutions, SourceTrust: Unpaid consultant Clinical Data Solutions, SourceTrust(Self); North Pacific Orthopedic Society: Board or committee member (\$0) Board Member(Self); Pediatric Orthopaedic Society of North America: Board or committee member; Board or committee member (\$0); Member of Quality, Safety, Value Initiative Committee(Self)

James L. Carey MD, MPH Submitted on: 4/03/2015

AAOS: Board or committee member (\$0) Committee on Evidence-Based Quality and Value (Self); Philadelphia Orthopaedic Society: Board or committee member (\$0) N/A(Self)
The American Journal of Sports Medicine: Editorial or governing board (\$12,000) Associate Editor (Self)

Carl Wilson Nissen, MD: 9 (American Orthopaedic Society for Sports Medicine); Submitted on: 04/02/2014

Thomas R Carter, MD: 1 (Arthrex, Inc); 2 (Arthrex, Inc; Regeneration Technologies, Inc.); 3B (Arthrex, Inc); 5 (Regeneration Technologies, Inc.; Musculoskeletal Transplant Foundation); 6 (Cayenne Medical; Ossur); 9 (Arthroscopy Association of North America); Submitted on: 04/01/2014

Theodore J Ganley, MD: (n); Submitted on: 04/18/2014

Robert H Brophy, MD: 2 (Smith & Nephew); 3B (ISTO Technologies); 4 (Ostesys); 8 (American Journal of Sports Medicine); 9 (American Orthopaedic Society for Sports Medicine); Submitted on: 04/13/2014

Feza Korkusuz, MD: (n); Submitted on: 04/08/2014

Paul A Manner, MD: 3A (JointMetrix Medical); 8 (Clinical Orthopaedics and Related Research); Submitted on: 04/01/2014

Kent A Reinker, MD: 8 (Journal of Pediatric Orthopedics); Submitted on: 04/03/2014

Richard Justis Haynes, MD: 4 (Pfizer); 9 (Orthopaedic Research and Education Foundation, Collaborative Spine Research Foundation); Submitted on: 04/01/2014

Mark R Hutchinson, MD: 8 (Am J Sports Med; Br J Sports Med; Phys & Sportsmed); 9 (AAOS; AAOS; American Board of Orthopaedic Surgery, Inc.; American College of Sports Medicine; American Orthopaedic Society for Sports Medicine; Arthroscopy Association of North America); Submitted on: 04/01/2014

John D Polousky, MD: 4 (Abbott; Addendum; Johnson & Johnson; Norvartis; Organovo; Procter & Gamble); Submitted on: 04/15/2014

Kevin H Latz, MD: 9 (Pediatric Orthopaedic Society of North America); Submitted on: 04/12/2014

Teri M. McCambridge, MD

Timothy J Mosher MD: 3B (Kensey Nash Corporation, Medical Metrics, eImage; DePuy, A Johnson & Johnson Company); 4 (Johnson & Johnson); 7 (Osteoarthritis and Cartilage); 8 (Osteoarthritis and Cartilage, Radiology); 9 (Osteoarthritis Research Society International); Submitted on: 04/09/2014

James Hill, MD, MPH (This individual reported nothing to disclose); Submitted on: 05/02/2014

Mark Paterno, PT: (n); Submitted on: 04/15/2014

Leonard Macrina, MSPT SCS CSCS: 2 (DJ Orthopaedics); Submitted on: 04/24/2014

Benton E Heyworth, MD: 9 (American Orthopaedic Society for Sports Medicine; Pediatric Orthopaedic Society of North America); Submitted on: 04/08/2014

Aaron John Krych, MD: (n); Submitted on: 04/19/2014

Osteochondritis Dissecans Voting Panel

Edward R McDevitt, MD 4 - Biomet; Genzyme; Merck; Pfizer; Zimmer own small amounts of individual stocks, bought over the last 30 years Number of Shares: 0; 8 - American Journal of Sports Medicine (\$0); 9 - Eastern Orthopaedic Society, Irish American Orthopaedic Society; AAOS; American Orthopaedic Society for Sports Medicine (\$0); Submitted on: 10/01/2014

Philip L Wilson, MD 7 - Elsevier (\$0); Submitted on: 06/02/2014

Eric J. Wall, MD 3B - OrthoPediatrics (\$10,000) Travel expenses paid for Advisory Board Meeting(Self); 3C - SpineForm (Self), Unpaid Consultant; 4 - SpineForm Number of Shares: 1,000,000 (Self) Founders equity in company of device that I co-invented; 5 - SpineForm (\$1,000,000) self(Self) PI on multisite FDA IDE study; 6 - SpineForm (\$10,000) (Self) Travel reimbursement to investigative sites; 9 - Cincinnati Children's Physician-Hospital Organization (\$0) Board of Directors(Self); 9 - PRISM (\$0) Board of Directors(Self); 9 - ROCK Group (\$0) (Self) committee member; Submitted on: 11/08/2014

Daniel William Green, MD Submitted on: 11/24/2014

AAOS: Board or committee member; Board or committee member (\$0) (Self) Communications Cabinet, Arthrex, Inc: IP royalties (\$0), Arthrex, Inc: Paid presenter or speaker (\$3,000) Number of Presentations: 2 Course chairman & Speaker adolescent, sports symposium and patella instability course and workshop, Current Opinion in Pediatrics: Publishing royalties, financial or material support (\$1,000) Section Editor for Orthopaedic Surgery, Current Opinion in Pediatrics: Editorial or governing board (\$1,000) Section editor for Orthopaedics, New York County Medical Society: Board or committee member (\$0) Board of Trustees(Self) (Past-President), new york state society of orthopedic surgeons: Board or committee member (\$0) (Board of Directors)(Self), Pediatric Orthopaedic Society of North America: Board or committee member (\$0) (Self) committee member, Pega Medical: IP royalties (\$5,000) Developer of Hinge Plate(Self), Wolters Kluwer Health - Lippincott Williams & Wilkins: Publishing royalties, financial or material support (\$0)

Danielle Katz, MD Submitted on: 10/08/2014

AAOS: Board or committee member (\$0), American College of Surgeons: Board or committee member (\$0), Bristol-Myers Squibb: Stock or stock Options Number of Shares: 0, Eli Lilly: Stock or stock

Options Number of Shares: 0, GlaxoSmithKline: Stock or stock Options Number of Shares: 0, Johnson & Johnson: Stock or stock Options Number of Shares: 0, Merck: Stock or stock Options Number of Shares: 0, Norvartis: Stock or stock Options Number of Shares: 0, Procter & Gamble: Stock or stock Options Number of Shares: 0, Roche: Stock or stock Options Number of Shares: 0, Sanofi-Aventis: Stock or stock Options Number of Shares: 0

Norman Yoshinobu Otsuka, MD Submitted on: 10/05/2014

AAOS: Board or committee member (\$0) Education Committee(Self), American Academy of Pediatrics: Board or committee member (\$0) Executive Committee, American College of Surgeons: Board or committee member (\$0) Surgical Advisory Committee(Self), American Journal of Orthopedics: Editorial or governing board (\$0) Editorial Committee(Self), Journal of Children's Orthopaedics: Editorial or governing board (\$0) Editorial Board, Journal of Orthopaedic Surgical Advances: Editorial or governing board (\$0) Editorial Board Journal of Pediatric Orthopedics, Part B: Editorial or governing board (\$0) Editorial Board Medsonics: Unpaid consultant N/A(Self), Pediatric Orthopaedic Society of North America: Board or committee member; Board or committee member; Board or committee member; Board or committee member (\$0) Trauma Prevention and Disaster Response(Self)

Jutta Ellermann (Minneapolis, MN) (This individual reported nothing to disclose); submitted on: 10/08/2014

Alexander Meininger, MD Submitted on: 07/10/2014

American Orthopaedic Society for Sports Medicine: Board or committee member (\$0), Arthroscopy Association of North America: Board or committee member (\$0), Clinics in Sports Medicine: Editorial or governing board (\$0), Saunders/Mosby-Elsevier: Publishing royalties, financial or material support (\$0), Whitney Medical Solutions: IP royalties (\$0)

Daryl Christopher Osbahr, MD Submitted on: 12/15/2014

American Orthopaedic Society for Sports Medicine: Board or committee member (\$0)

Dennis C Chin, MD Submitted on: 10/01/2014

Smith & Nephew: Employee (\$60,000) I have a son who is an independent contractor for a distributorship that carries Smith and Nephew products. That area is completely separate from the geographic area where I practice. (Family)

Andrew Gregory, MD Submitted on: 04/16/2014

American College of Sports Medicine: Board or committee member (\$0) N/A(Self)

Moderators:

Gregory A. Brown, MD, PhD

AAOS: Board or committee member; ASTM: Board or committee member;
International Standards Organization: Board or committee member;
KareMetrix LLC: Stock or stock Options; Orthopaedic Solutions LLC: Stock or stock Options;
Smith & Nephew: Paid presenter or speaker; Research support. Submitted on: 04/07/2015

James O Sanders, MD

AAOS: Board or committee member; Abbott: Stock or stock Options; Abbvie: Stock or stock Options;
GE Healthcare: Stock or stock Options; Hospira: Stock or stock Options;
Pediatric Orthopaedic Society of North America: Board or committee member;
Scoliosis Research Society: Board or committee member. Submitted on: 04/25/2015

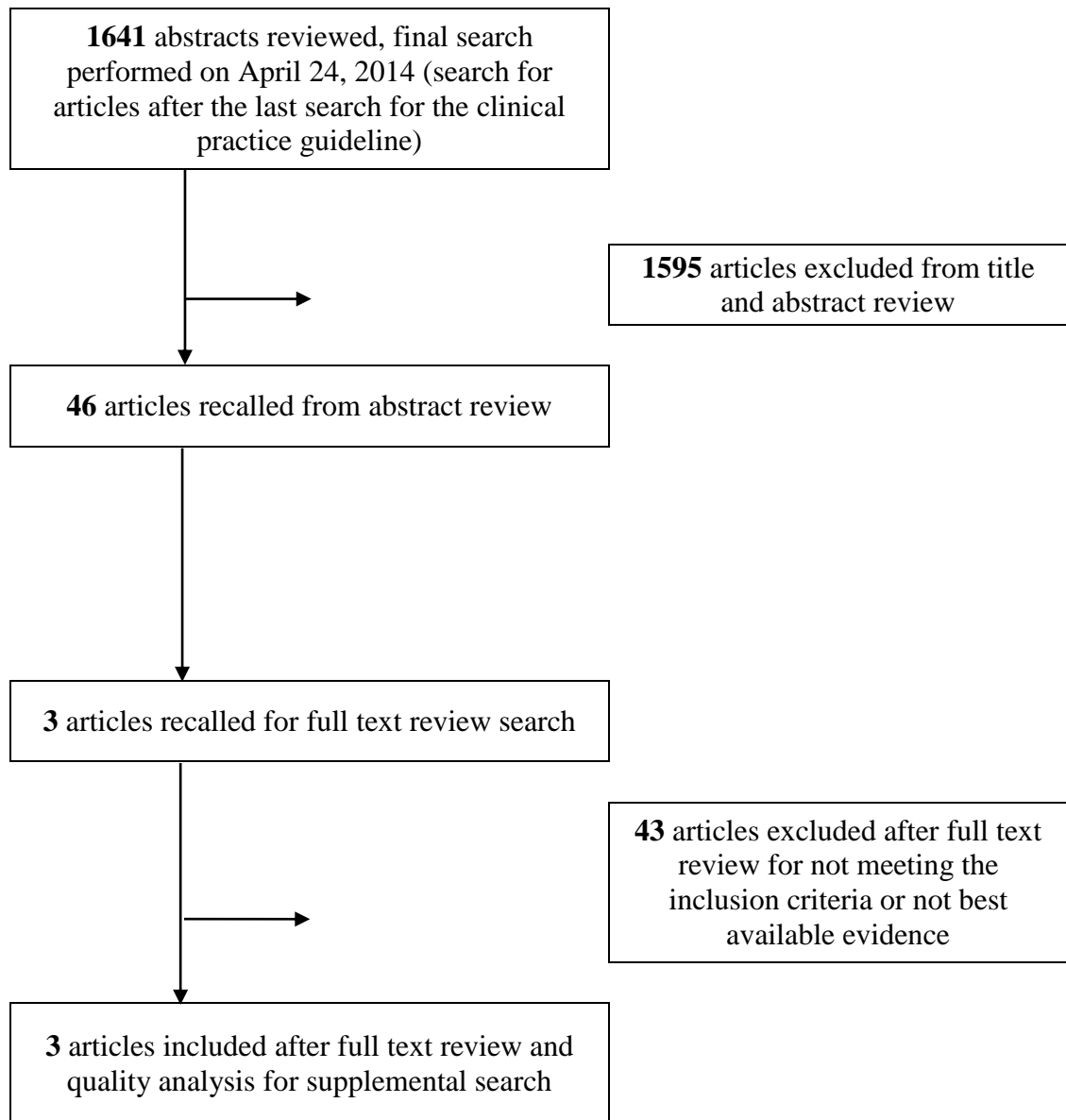
(n) = Respondent answered 'No' to all items indicating no conflicts.

1= Royalties from a company or supplier; 2= Speakers bureau/paid presentations for a company or supplier; 3A= Paid employee for a company or supplier; 3B= Paid consultant for a company or supplier; 3C= Unpaid consultant for a company or supplier; 4= Stock or stock options in a company or supplier; 5= Research support from a company or supplier as a PI; 6= Other financial or material support from a company or supplier; 7= Royalties, financial or material support from publishers; 8= Medical/Orthopaedic publications editorial/governing board; 9= Board member/committee appointments for a society.

APPENDIX C. REFERENCES

- (1) American Academy of Orthopaedic Surgeons. The Burden of Musculoskeletal Diseases in the United States. American Academy of Orthopaedic Surgeons; 2008.
- (2) Fitch K, Bernstein SJ, Aguilar MD et al. *The RAND/UCLA Appropriateness Method User's Manual*. Santa Monica, CA: RAND Corporation; 2001.
- (3) Ahldén, M., Samuelsson, K., Sernert, N., Forssblad, M., Karlsson, J., Kartus, J. The Swedish National Anterior Cruciate Ligament Register: a report on baseline variables and outcomes of surgery for almost 18,000 patients. *Am J Sports Med*. 2012 October; 40(10): 2230–2235. Published online 2012 September 7.
doi: 10.1177/0363546512457348

APPENDIX D – STUDY ATTRITION CHART FOR GUIDELINE SUPPLEMENTAL LITERATURE SEARCH



APPENDIX E – SEARCH STRATEGY

Osteochondritis Dissecans of the Knee – update for AUC (1)

Total citations added to the database: 440

Ref IDs: 1739-2248

RefMan database: G:\GUIDELINES\Treatment of Osteochondritis Dissecans\8

Librarian\OsteochondritisDissecans.rmd

Database: MEDLINE (PubMed interface)

Date searched: April 24, 2014

Total citations retrieved: 401 results / 398 de-duplicated

Ref IDs: 1739-2139

Systematic Reviews: 18 results / 18 de-duplicated

Ref IDs: 1739-1756

Clinical Trials: 55 results / 55 de-duplicated

Ref IDs: 1757-1811

Other Studies: 328 results / 325 de-duplicated

Ref IDs: 1812-2139

Search Strategy

#1

"Osteochondritis Dissecans"[mh] OR (osteochondr*[tiab] AND (dissecans[tiab] OR defect[tiab] OR lesion*[tiab]))

#2

"Knee Joint"[mh] OR "Knee"[Mesh] OR "Osteoarthritis, Knee"[mh] OR knee[tiab] OR knees[tiab] OR "Menisci, Tibial"[mh] OR menisc*[tiab] OR Femur[mh] OR femur[tiab] OR femoral[tiab] OR Tibia[mh] OR tibia*[tiab] OR Patella[mh] OR patella*[tiab]

#3

English[la] AND 1966:2014[dp] AND ("2010/03/24"[edat] : "2014/04/23"[edat])

#4

(animal[mh] NOT human[mh]) OR cadaver[mh] OR cadaver*[ti] OR ((comment[pt] OR editorial[pt] OR letter[pt] OR "historical article"[pt]) NOT "clinical trial"[pt]) OR addresses[pt] OR news[pt] OR "newspaper article"[pt] OR pmcbook OR "case report"[ti]

#5

(#1 AND #2 AND #3) NOT #4

#6

Medline[tw] OR systematic review[tiab] OR Meta-analysis[pt]

#7

"Clinical Trial"[pt] OR (clinical[tiab] AND trial[tiab]) OR random*[tw] OR "Therapeutic use"[sh]

#8

#5 AND #6

#9

(#5 AND #7) NOT #6

#10

#5 NOT (#6 OR #7)

Search Notes: [dp] = journal publication date (includes both print and electronic date of publication)
[edat] = date the record first entered PubMed (helps with reproducibility of results)
[tw] = keyword, in title/abstract/subject headings
[tiab] = keyword in title/abstract
[ti] = keyword in title
[la] = language of publication
[mh] = Medical Subject Heading (MeSH term)
[mh:noexp] = MeSH term, not exploded to include additional, narrower terms below that term in the MeSH tree
[sh] = MeSH subheading
[pt] = publication (study) type

Haynes RB, McKibbin KA, Wilczynski NL, Walter SD, Were S. [Optimal search strategies for retrieving scientifically strong studies of treatment from Medline: analytical survey](#). BMJ 2005 May 21;330(7501):1179.

Montori VM, Wilczynski NL, Morgan D, Haynes RB, for the Hedges Team. [Optimal search strategies for retrieving systematic reviews from MEDLINE: analytical survey](#). BMJ 2005 Jan 8;330(7482):68-73

Database: EMBASE (Embase.com interface)	Date searched: April 24, 2014
<u>Total citations retrieved: 84 results / 38 de-duplicated</u>	<u>Ref IDs 2141- 2220</u>
Systematic Reviews: 0 results / 0 de-duplicated	Ref IDs --
Clinical Trials: 2 results / 0 de-duplicated	Ref IDs --
Other Studies: 82 results / 38 de-duplicated	Ref IDs 2141-2220

Search Strategy

#1

'osteocondritis dissecans'/de OR (osteocondr*:ti,ab AND (dissecans:ti,ab OR defect:ti,ab OR lesion*:ti,ab))

#2

'knee'/de OR 'knee osteoarthritis'/de OR 'knee meniscus'/de OR 'knee disease'/de OR knee:ti,ab OR knees:ti,ab OR menisci*:ti,ab OR femur/de OR femur:ti,ab OR femoral:ti,ab OR 'tibia'/de OR tibia*:ti,ab OR 'patella'/de OR patella*:ti,ab

#3

[english]/lim AND [humans]/lim AND ([embase]/lim NOT [medline]/lim) AND [1966-2014]/py AND [24-3-2010]/sd NOT [23-4-2014]/sd

#4

cadaver/de OR 'in vitro study'/exp OR 'abstract report'/de OR book/de OR editorial:it OR note:it OR letter:it OR 'conference abstract':it OR 'case report':ti

#5
(#1 AND #2 AND #3) NOT #4

#6
#5 AND ([Cochrane review]/lim OR [meta analysis]/lim OR [systematic review]/lim)

#7
(#5 AND ([controlled clinical trial]/lim OR [randomized controlled trial]/lim)) NOT #6

#8
#5 NOT (#6 OR #7)

Search Notes: Database subscription covers 1974-present.

:ti,ab = keyword found in title or abstract

:it = publication type

/de = descriptor, EMTREE thesaurus subject heading

/exp = expand descriptor to include EMTREE headings lower in the tree

/sd = publications added to the database (or not) since a certain date
(helps to ensure reproducibility of search results for reviewers)

/lim = limit

Wilczynski NL and Haynes RB. EMBASE search strategies achieved high sensitivity and specificity for retrieving methodologically sound systematic reviews. *J Clin Epidemiol.* 2007 Jan. 60(1):29-33.

Wong SS, Wilczynski NL, Haynes RB. [Comparison of top-performing search strategies for detecting clinically sound treatment studies and systematic reviews in MEDLINE and EMBASE.](#) *J Med Libr Assoc.* 2006 Oct;94(4):451-5. No abstract available.

Database: Cochrane Library (Wiley interface) Date searched: April 24, 2014

Total citations retrieved: 30 results / 4 de-duplicated Ref IDs 2221-2248

CDSR: 2 results / 2 de-duplicated Ref IDs 2221-2222

CENTRAL: 28 results / 2 de-duplicated Ref IDs 2243-2248

**Foreign language and conference abstracts manually removed during de-duplication*

Search Strategy

#1 MeSH descriptor: [Osteochondritis Dissecans] explode all trees

#2 osteochondr* and (dissecans or defect or lesion*):ti,ab,kw

#3 knee* or femur or femoral or menisci* or tibia* or patella*:ti,ab,kw

#4 (#1 or #2) and #3