AAOS
American Academy of Orthopaedic Surgeons

Acute Treatment of Hip Fractures in Older Adults

Appropriate Use Criteria

Reissued by:
The American Academy of Orthopaedic Surgeons Board of Directors
September 17, 2023

Please cite this Appropriate Use Criteria as: American Academy of Orthopaedic Surgeons Appropriate Use Criteria for Postoperative Rehabilitation of Low Energy Hip Fractures in Older Adults. https://www.aaos.org/globalassets/quality-and-practice-resources/hip-fractures-in-the-elderly/hip-fx-auc_treatment_reapproval.pdfReissued 09/17/2023

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.

Funding Source
The American Academy of Orthopaedic Surgeons exclusively funded development of these Appropriate Use Criteria. The American Academy of Orthopaedic Surgeons received no funding from outside commercial sources to support the development of these Appropriate Use Criteria.

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Re-Issued 2023 by the American Academy of Orthopaedic Surgeons
Published 2015 by the American Academy of Orthopaedic Surgeons
9400 West Higgins Road
Rosemont, IL 60018
First Edition

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WRITING PANEL

W Timothy Brox, MD
American Academy of Orthopaedic Surgeons

Karl C. Roberts, MD
American Academy of Orthopaedic Surgeons

Daniel Ari Mendelson, MD
The American Geriatrics Society

Kathleen Kline Mangione, PT, PhD, FAPTA
American Physical Therapy Association

Thomas DiPasquale, DO
American Osteopathic Academy of Orthopedics

Pierre Guy, MD, MBA
Orthopaedic Trauma Association

Michael C. Munin, MD
American Academy of Physical Medicine & Rehabilitation

William B. Macaulay, MD
American Association of Hip and Knee Surgeons and the Hip Society

Kamal Bohsali, MD
American Academy of Orthopaedic Surgeons

Brett Russell Levine, MD
American Academy of Orthopaedic Surgeons

William Sherman, MD
American Academy of Orthopaedic Surgeons

Victor H Frankel, MD
American Academy of Orthopaedic Surgeons

Jan Paul Szatkowski, MD
American Academy of Orthopaedic Surgeons

Farbod Malek, MD
American Academy of Orthopaedic Surgeons

Brian Edkin, MD
American Academy of Orthopaedic Surgeons

Madhusudhan Yakkanti, MD
American Academy of Orthopaedic Surgeons

Julie Switzer, MD
American Academy of Orthopaedic Surgeons

Mark Charles Olson, MD
American Academy of Orthopaedic Surgeons

Steven Olson, MD
American Academy of Orthopaedic Surgeons

Laura Bruse Gehrig, MD
American Academy of Orthopaedic Surgeons

Jaimo Ahn, MD, PhD, FACS
American Academy of Orthopaedic Surgeons

RATING PANEL

Karen Duane, MD
American Academy of Orthopaedic Surgeons

Stephen L. Kates, MD
Orthopaedic Trauma Association

Chick Yates Jr, MD
American Association of Hip and Knee Surgeons

Eric G Meinberg, MD
Orthopaedic Trauma Association

Steve Morton, DO, FAOAO
American Osteopathic Academy of Orthopaedics

Douglas White, PT, DPT
American Physical Therapy Association

Thiru Annaswamy, MD, MA
American Academy of Physical Medicine and Rehabilitation

Daniel Hurley, MD
American Association of Clinical Endocrinologists

Voting Panel Round Two Discussion Moderator

Robert H. Quinn, MD & Pekka Mooar, MD

AUC Section Leader, AAOS Committee on Evidence-Based Quality and Value

Robert H. Quinn, MD

Chair, AAOS Committee on Evidence-Based Quality and Value

David S. Jevsevar, MD, MBA

Chair, AAOS Council on Research and Quality

Kevin J. Bozic, MD, MBA

AAOS STAFF

William O. Shaffer, MD
Medical Director

Deborah S. Cummins, PhD
Director, Department of Research and Scientific Affairs

Jayson Murray, MA
Manager, Evidence-Based Medicine Unit

Ryan Pezold, MA
Research Analyst, Evidence-Based Medicine Unit

Peter Shores, MPH
Statistician, Evidence-Based Medicine

Kaitlyn Sevarino, MBA
Evidence-Based Quality and Value (EBQV) Coordinator

Erica Linskey
Administrative Assistant, Evidence-Based Medicine Un

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 the treatment of hip fractures in older adults (for the purposes of this AUC, "older adult" is defined as 60 years of age and older). 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 provided the writing panel and voting panel with the 2014 and 2021 AAOS Clinical Practice Guideline on the Management of Hip Fractures in Older Adults, which can be accessed via the following link: http://www.aaos.org/hipfxcpg.

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 or download the OrthoGuidelines app from Google Play or Apple Store.

These criteria should not be construed as including all indications or excluding indications reasonably directed to obtaining the same results. The criteria intend to address the most common clinical scenarios facing all appropriately trained surgeons and all qualified physicians managing patients under consideration for treating hip fractures in older adults. 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 RATING

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

"Appropriate"). Before these 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 patient has been optimized and risk stratified and deemed an appropriate candidate for surgical intervention and non-operative treatment has been excluded.
2. The patient or their representative has given adequate and informed consent for planned procedure and understands risks, benefits, and alternatives.
3. The operating surgeon is trained and capable of performing planned operative techniques.
4. The facility has proper implants, ancillary equipment available, and capable support personnel.
5. Utilize a restrictive transfusion trigger (hemoglobin <8) to minimize use of blood transfusion according to published AAOS Guideline on Management of Hip fractures in Older Adults (http://www.aaos.org/hipfxcpg).
6. For the purposes of this AUC, Older Adults is defined as age 60 and above.

METHODS

This AUC for the Treatment of Hip fractures in Older Adults, hereafter referred to as Hip Fractures Treatment AUC, 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 Hip Fractures Treatment AUC (see list on page i). Members of the writing panel developed a list of 30 patient scenarios, for which six 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 Sunday, September 27th 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 Hip Fractures Treatment AUC. 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

Panel members of the Hip Fractures Treatment AUC, 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 hip fractures *[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]*

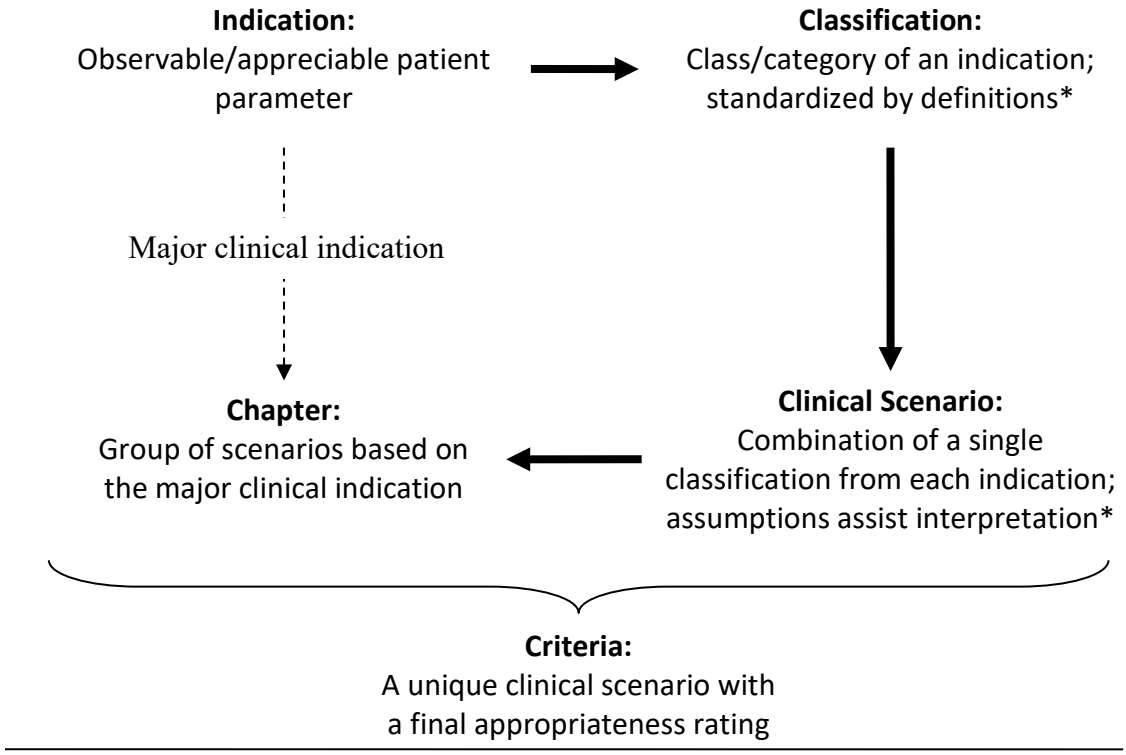
The writing panel developed the scenarios by categorizing patients in terms of indications evident during the clinical decision making process (Figure 1). These

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 hip fractures 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 (http://www.aaos.org/hipfxcpg) served as a starting point for the writing panel and ensured that these Appropriate Use Criteria referred to the evidence base for the Hip Fractures in Older Adults 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: fracture type, preoperative mobility/functional status, preexisting and symptomatic arthritis.

CREATING DEFINITIONS AND ASSUMPTIONS

The Hip Fractures Treatment AUC 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 amendment/addition to the original AUC materials:

1. Change "low" or "high" to "lower" or "higher" within indications/functional status

LITERATURE REVIEW

The 2014 and 2021 Clinical Practice Guidelines on the Management of Hip fractures in Older Adults[4] was used as the evidence base for this AUC. The full guideline can be accessed via the OrthoGuidelines website (http://www.aaos.org/hipfxcpg) or mobile app (available via the Apple or Google Play Stores). This guideline helped to inform the decisions of the writing panel and voting panel where available and necessary.

DETERMINING APPROPRIATENESS

VOTING PANEL

A multidisciplinary panel of clinicians was assembled to determine the appropriateness of treatments for the Hip Fractures Treatment AUC. A non-voting moderator, who is an orthopaedic surgeon, but is not a specialist in the treatment of hip fractures, 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 hip fractures in older adults.

RATING APPROPRIATENESS

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

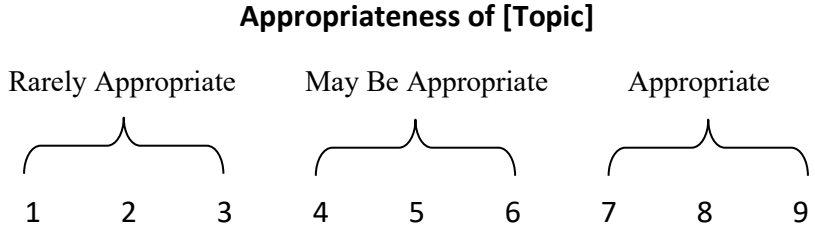
> "An appropriate treatment for a hip fracture is one for which the treatment **is** generally acceptable, **is** a reasonable approach for the indication, and **is** likely to improve the patient's health outcomes or survival."

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 September 27th, 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). The 8-10 panel member disagreement cutoff was used for this voting panel, because four of the 12 panel members recused themselves from voting on surgical treatments due to their not being experts in surgical management techniques for hip fractures in older adults. 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

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

14,15,16	≥ 5	≤ 4

Adapted from RAM [1]

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

Table 3 Interpreting Final Ratings of Criteria

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

REVISION PLANS

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

DISSEMINATING APPROPRIATE USE CRITERIA

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

Publication of the 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.

PATIENT INDICATIONS AND TREATMENTS

INDICATIONS

Table 4 Patient Indications and Classifications

Fracture Type	a) Nondisplaced Femoral Neck (Garden 1 or 2) b) Displaced Femoral Neck (Garden 3 or 4) c) Stable Intertrochanteric d) Unstable Intertrochanteric e) Subtrochanteric/Reverse Obliquity
Preoperative Mobility/Functional Status	a) Higher functioning/higher demand patient ("athlete independent, physically active, community ambulator, etc.") b) Moderate to lower functioning patient (Not able to shop without assistance but able to leave house with or without assistance) c) Non–ambulatory/bed-dependent/palliative – (Lower Function/ Lower Demand Patient)
Preexisting and Symptomatic Arthritis	a) Yes b) No

TREATMENTS

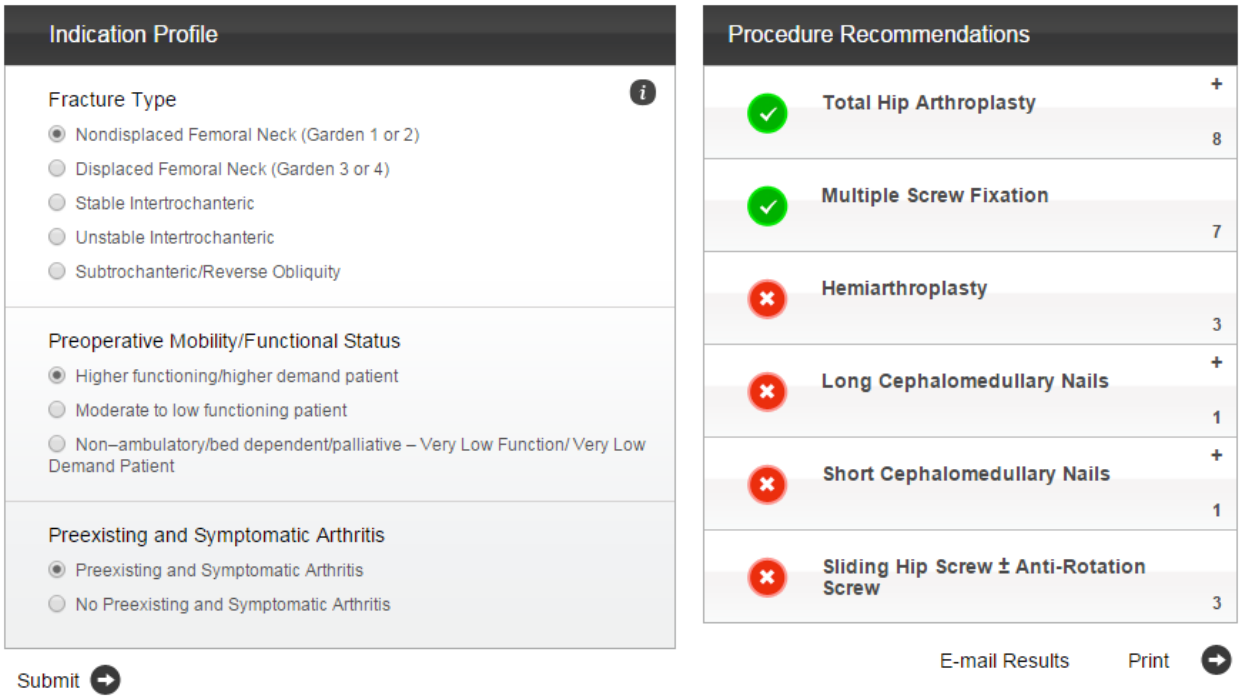
Treatments Addressed Within This AUC

1. Total Hip Arthroplasty
2. Hemiarthroplasty
3. Long Cephalomedullary Nails
4. Short Cephalomedullary Nails
5. Sliding Hip Screw ± Anti-Rotation Screw
6. Multiple Screw Fixation

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



Click Here to Access the AUC App!

Results

The following Appropriate Use Criteria tables contain the final appropriateness ratings assigned by the eight 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 6 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 180 total voting items (i.e. 30 patient scenarios x 6 treatments), 55 (31%) voting items were rated as "Appropriate", 32 (18%) voting items were rated as "May Be Appropriate", and 93 (52%) voting items were rated as "Rarely Appropriate" (Figure 1). Additionally, the voting panel members were in agreement on 112 (62%) voting items and were in disagreement on three (2%) voting items (Figure 2). For a within treatment breakdown of appropriateness ratings, please refer to Figure 3.

Figure 1. Breakdown of Appropriateness Ratings

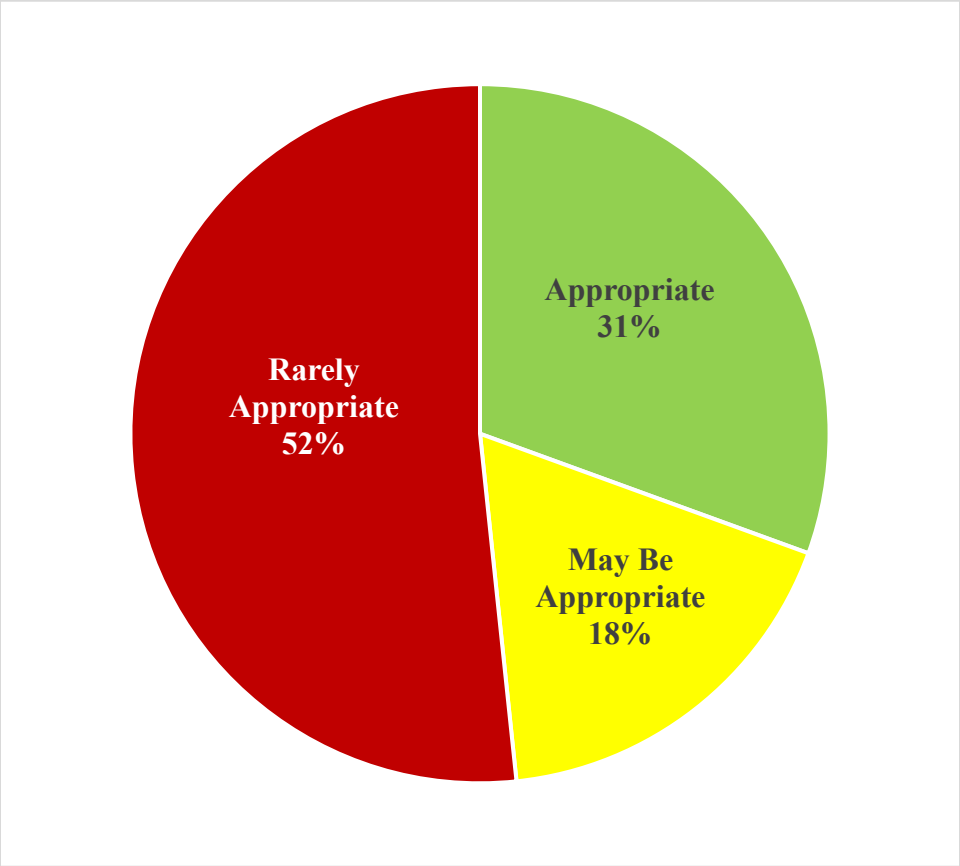


Figure 2. Breakdown of Agreement amongst Voting Panel

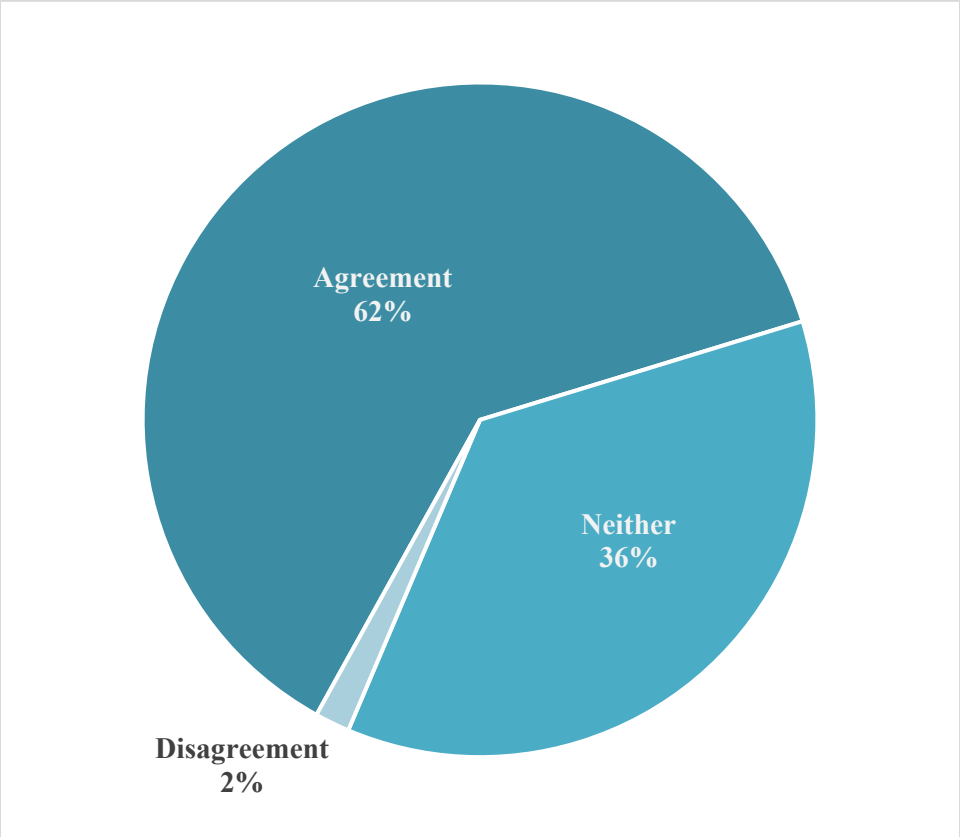


Figure 3. Distribution of Appropriateness Ratings on 9-Point Rating Scale

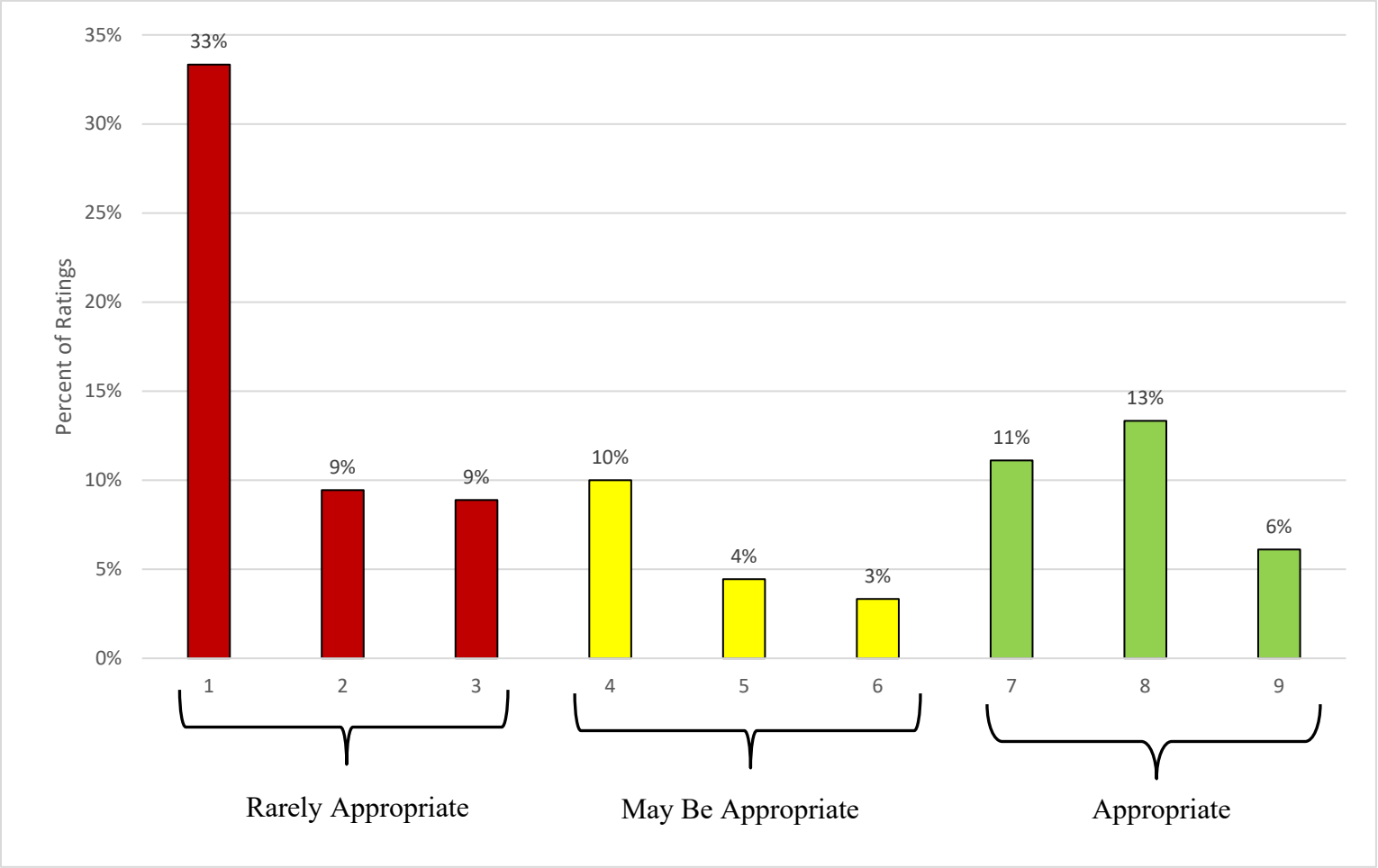
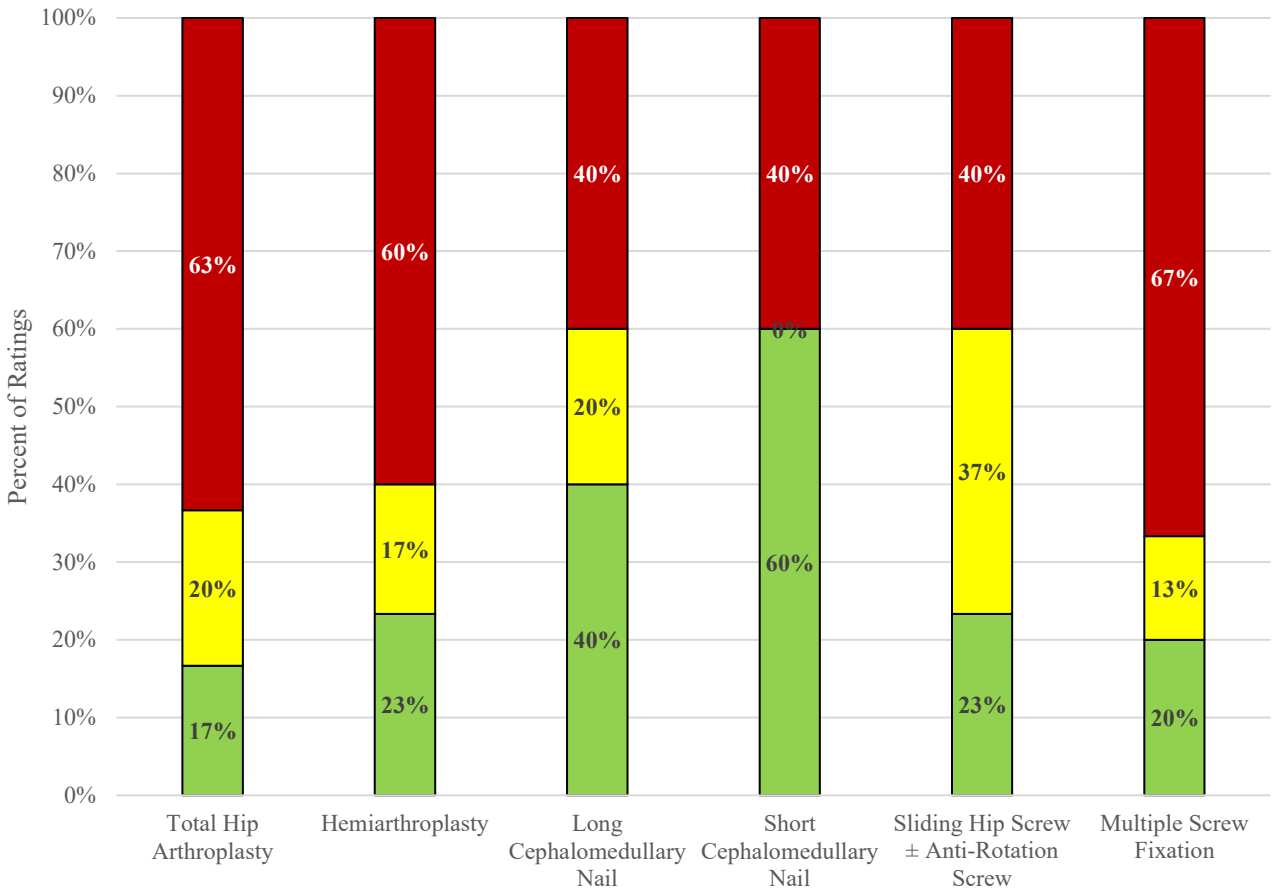


Figure 4. Within Treatment Appropriateness Ratings



APPROPRIATE USE CRITERIA FOR THE TREATMENT OF HIP FRACTURES IN OLDER ADULTS

Interpreting the AUC tables:

- R = Rarely Appropriate, M = May Be Appropriate, A = Appropriate
- Numbers under "M" 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 1:	**Treatment (click to view evidence)**	**Appropriateness**	**M**	**A**	**Agreement**
Nondisplaced Femoral Neck (Garden 1 or 2), High functioning/high demand patient, Preexisting and Symptomatic Arthritis	Total Hip Arthroplasty	Appropriate	8	A	+
	Hemiarthroplasty	Rarely Appropriate	3	N	
	Long Cephalomedullary Nails	Rarely Appropriate	1	A	+
	Short Cephalomedullary Nails	Rarely Appropriate	1	A	+
	Sliding Hip Screw ± Anti-Rotation Screw	Rarely Appropriate	3	N	
	Multiple Screw Fixation	Appropriate	7	N	

Scenario 2:	**Treatment (click to view evidence)**	**Appropriateness**	**M**	**A**	**Agreement**
Nondisplaced Femoral Neck (Garden 1 or 2), High functioning/high demand patient, No Preexisting and Symptomatic Arthritis	Total Hip Arthroplasty	Rarely Appropriate	3	N	
	Hemiarthroplasty	May Be Appropriate	4	N	
	Long Cephalomedullary Nails	Rarely Appropriate	2	A	+
	Short Cephalomedullary Nails	Rarely Appropriate	2	A	+
	Sliding Hip Screw ± Anti-Rotation Screw	May Be Appropriate	5	D	-
	Multiple Screw Fixation	Appropriate	9	A	+

Scenario 3:	Treatment (click to view evidence)	Appropriateness	M	A	Agreement
Nondisplaced Femoral Neck (Garden 1 or 2), Moderate to low functioning patient, Preexisting and Symptomatic Arthritis	Total Hip Arthroplasty	Appropriate	8	A	+
	Hemiarthroplasty	May Be Appropriate	5	N	
	Long Cephalomedullary Nails	Rarely Appropriate	1	A	+
	Short Cephalomedullary Nails	Rarely Appropriate	1	A	+
	Sliding Hip Screw ± Anti-Rotation Screw	Rarely Appropriate	3	N	
	Multiple Screw Fixation	Appropriate	7	N	

Scenario 4:	Treatment (click to view evidence)	Appropriateness	M	A	Agreement
Nondisplaced Femoral Neck (Garden 1 or 2), Moderate to low functioning patient, No Preexisting and Symptomatic Arthritis	Total Hip Arthroplasty	Rarely Appropriate	3	N	
	Hemiarthroplasty	May Be Appropriate	4	N	
	Long Cephalomedullary Nails	Rarely Appropriate	2	A	+
	Short Cephalomedullary Nails	Rarely Appropriate	2	A	+
	Sliding Hip Screw ± Anti-Rotation Screw	Rarely Appropriate	3	D	-
	Multiple Screw Fixation	Appropriate	9	A	+

Scenario 5:	Treatment (click to view evidence)	Appropriateness	M	A	Agreement
Nondisplaced Femoral Neck (Garden 1 or 2), Non-ambulatory/bed-dependent/palliative - Very Low Function/ Very Low Demand Patient, Preexisting and Symptomatic Arthritis	Total Hip Arthroplasty	May Be Appropriate	4	N	
	Hemiarthroplasty	Appropriate	7	N	
	Long Cephalomedullary Nails	Rarely Appropriate	1	A	+
	Short Cephalomedullary Nails	Rarely Appropriate	1	A	+
	Sliding Hip Screw ± Anti-Rotation Screw	Rarely Appropriate	2	A	+
	Multiple Screw Fixation	Appropriate	8	A	+

Scenario 6:	Treatment (click to view evidence)	Appropriateness	M	A	Agreement
Nondisplaced Femoral Neck (Garden 1 or 2), Non-ambulatory/bed-dependent/palliative - Very Low Function/ Very Low Demand Patient, No Preexisting and Symptomatic Arthritis	Total Hip Arthroplasty	Rarely Appropriate	2	A	+
	Hemiarthroplasty	Rarely Appropriate	2	A	+
	Long Cephalomedullary Nails	Rarely Appropriate	1	A	+
	Short Cephalomedullary Nails	Rarely Appropriate	1	A	+
	Sliding Hip Screw ± Anti-Rotation Screw	Rarely Appropriate	1	N	
	Multiple Screw Fixation	Appropriate	9	A	+

Scenario 7:	Treatment (click to view evidence)	Appropriateness	M	A	Agreement
Displaced Femoral Neck (Garden 3 or 4), High functioning/high demand patient, Preexisting and Symptomatic Arthritis	Total Hip Arthroplasty	Appropriate	9	A	+
	Hemiarthroplasty	Appropriate	7	N	
	Long Cephalomedullary Nails	Rarely Appropriate	1	A	+
	Short Cephalomedullary Nails	Rarely Appropriate	1	A	+
	Sliding Hip Screw ± Anti-Rotation Screw	Rarely Appropriate	1	A	+
	Multiple Screw Fixation	May Be Appropriate	4	N	

Scenario 8:	Treatment (click to view evidence)	Appropriateness	M	A	Agreement
Displaced Femoral Neck (Garden 3 or 4), High functioning/high demand patient, No Preexisting and Symptomatic Arthritis	Total Hip Arthroplasty	Appropriate	8	A	+
	Hemiarthroplasty	Appropriate	8	A	+
	Long Cephalomedullary Nails	Rarely Appropriate	1	A	+
	Short Cephalomedullary Nails	Rarely Appropriate	1	A	+
	Sliding Hip Screw ± Anti-Rotation Screw	Rarely Appropriate	1	A	+
	Multiple Screw Fixation	Rarely Appropriate	2	N	

Scenario 9:	**Treatment (click to view evidence)**	**Appropriateness**	**M**	**A**	**Agreement**
Displaced Femoral Neck (Garden 3 or 4), Moderate to low functioning patient, Preexisting and Symptomatic Arthritis	Total Hip Arthroplasty	Appropriate	8	A	+
	Hemiarthroplasty	Appropriate	7	A	+
	Long Cephalomedullary Nails	Rarely Appropriate	1	A	+
	Short Cephalomedullary Nails	Rarely Appropriate	1	A	+
	Sliding Hip Screw ± Anti-Rotation Screw	Rarely Appropriate	1	A	+
	Multiple Screw Fixation	Rarely Appropriate	3	N	

Scenario 10:	**Treatment (click to view evidence)**	**Appropriateness**	**M**	**A**	**Agreement**
Displaced Femoral Neck (Garden 3 or 4), Moderate to low functioning patient, No Preexisting and Symptomatic Arthritis	Total Hip Arthroplasty	May Be Appropriate	6	N	
	Hemiarthroplasty	Appropriate	8	A	+
	Long Cephalomedullary Nails	Rarely Appropriate	1	A	+
	Short Cephalomedullary Nails	Rarely Appropriate	1	A	+
	Sliding Hip Screw ± Anti-Rotation Screw	Rarely Appropriate	1	A	+
	Multiple Screw Fixation	May Be Appropriate	4	N	

Scenario 11:	**Treatment (click to view evidence)**	**Appropriateness**	**M**	**A**	**Agreement**
Displaced Femoral Neck (Garden 3 or 4), Non-ambulatory/bed-dependent/palliative - Very Low Function/ Very Low Demand Patient, Preexisting and Symptomatic Arthritis	Total Hip Arthroplasty	May Be Appropriate	4	N	
	Hemiarthroplasty	Appropriate	7	A	+
	Long Cephalomedullary Nails	Rarely Appropriate	1	A	+
	Short Cephalomedullary Nails	Rarely Appropriate	1	A	+
	Sliding Hip Screw ± Anti-Rotation Screw	Rarely Appropriate	1	A	+
	Multiple Screw Fixation	May Be Appropriate	5	N	

Scenario 12:	Treatment (click to view evidence)	Appropriateness	M	A	Agreement
Displaced Femoral Neck (Garden 3 or 4), Non-ambulatory/bed-dependent/palliative - Very Low Function/ Very Low Demand Patient, No Preexisting and Symptomatic Arthritis	Total Hip Arthroplasty	Rarely Appropriate	3	N	
	Hemiarthroplasty	Appropriate	7	A	+
	Long Cephalomedullary Nails	Rarely Appropriate	1	A	+
	Short Cephalomedullary Nails	Rarely Appropriate	1	A	+
	Sliding Hip Screw ± Anti-Rotation Screw	Rarely Appropriate	2	N	
	Multiple Screw Fixation	May Be Appropriate	6	N	

Scenario 13:	Treatment (click to view evidence)	Appropriateness	M	A	Agreement
Stable Intertrochanteric, High functioning/high demand patient, Preexisting and Symptomatic Arthritis	Total Hip Arthroplasty	May Be Appropriate	4	N	
	Hemiarthroplasty	Rarely Appropriate	2	A	+
	Long Cephalomedullary Nails	May Be Appropriate	6	N	
	Short Cephalomedullary Nails	Appropriate	7	N	
	Sliding Hip Screw ± Anti-Rotation Screw	Appropriate	9	A	+
	Multiple Screw Fixation	Rarely Appropriate	1	A	+

Scenario 14:	Treatment (click to view evidence)	Appropriateness	M	A	Agreement
Stable Intertrochanteric, High functioning/high demand patient, No Preexisting and Symptomatic Arthritis	Total Hip Arthroplasty	Rarely Appropriate	1	A	+
	Hemiarthroplasty	Rarely Appropriate	1	A	+
	Long Cephalomedullary Nails	May Be Appropriate	4	N	
	Short Cephalomedullary Nails	Appropriate	7	N	
	Sliding Hip Screw ± Anti-Rotation Screw	Appropriate	9	A	+
	Multiple Screw Fixation	Rarely Appropriate	1	A	+

Scenario 15:	**Treatment (click to view evidence)**	**Appropriateness**	**M**	**A**	**Agreement**
Stable Intertrochanteric, Moderate to low functioning patient, Preexisting and Symptomatic Arthritis	Total Hip Arthroplasty	May Be Appropriate	4	N	
	Hemiarthroplasty	Rarely Appropriate	3	A	+
	Long Cephalomedullary Nails	May Be Appropriate	4	N	
	Short Cephalomedullary Nails	Appropriate	7	N	
	Sliding Hip Screw ± Anti-Rotation Screw	Appropriate	8	A	+
	Multiple Screw Fixation	Rarely Appropriate	1	A	+

Scenario 16:	**Treatment (click to view evidence)**	**Appropriateness**	**M**	**A**	**Agreement**
Stable Intertrochanteric, Moderate to low functioning patient, No Preexisting and Symptomatic Arthritis	Total Hip Arthroplasty	Rarely Appropriate	1	A	+
	Hemiarthroplasty	Rarely Appropriate	1	A	+
	Long Cephalomedullary Nails	May Be Appropriate	4	N	
	Short Cephalomedullary Nails	Appropriate	7	N	
	Sliding Hip Screw ± Anti-Rotation Screw	Appropriate	9	A	+
	Multiple Screw Fixation	Rarely Appropriate	2	A	+

Scenario 17:	**Treatment (click to view evidence)**	**Appropriateness**	**M**	**A**	**Agreement**
Stable Intertrochanteric, Non-ambulatory/bed-dependent/palliative - Very Low Function/ Very Low Demand Patient, Preexisting and Symptomatic Arthritis	Total Hip Arthroplasty	Rarely Appropriate	2	A	+
	Hemiarthroplasty	Rarely Appropriate	2	A	+
	Long Cephalomedullary Nails	May Be Appropriate	4	N	
	Short Cephalomedullary Nails	Appropriate	7	N	
	Sliding Hip Screw ± Anti-Rotation Screw	Appropriate	8	A	+
	Multiple Screw Fixation	Rarely Appropriate	1	A	+

Scenario 18:	Treatment (click to view evidence)	Appropriateness	M	A	Agreement
Stable Intertrochanteric, Non-ambulatory/bed-dependent/palliative - Very Low Function/ Very Low Demand Patient, No Preexisting and Symptomatic Arthritis	Total Hip Arthroplasty	Rarely Appropriate	1	A	+
	Hemiarthroplasty	Rarely Appropriate	1	A	+
	Long Cephalomedullary Nails	May Be Appropriate	4	N	
	Short Cephalomedullary Nails	Appropriate	7	N	
	Sliding Hip Screw ± Anti-Rotation Screw	Appropriate	8	A	+
	Multiple Screw Fixation	Rarely Appropriate	1	A	+

Scenario 19:	Treatment (click to view evidence)	Appropriateness	M	A	Agreement
Unstable Intertrochanteric, High functioning/high demand patient, Preexisting and Symptomatic Arthritis	Total Hip Arthroplasty	Rarely Appropriate	3	A	+
	Hemiarthroplasty	Rarely Appropriate	3	N	
	Long Cephalomedullary Nails	Appropriate	8	A	+
	Short Cephalomedullary Nails	Appropriate	7	N	
	Sliding Hip Screw ± Anti-Rotation Screw	May Be Appropriate	5	N	
	Multiple Screw Fixation	Rarely Appropriate	1	A	+

Scenario 20:	Treatment (click to view evidence)	Appropriateness	M	A	Agreement
Unstable Intertrochanteric, High functioning/high demand patient, No Preexisting and Symptomatic Arthritis	Total Hip Arthroplasty	Rarely Appropriate	1	A	+
	Hemiarthroplasty	Rarely Appropriate	1	A	+
	Long Cephalomedullary Nails	Appropriate	8	A	+
	Short Cephalomedullary Nails	Appropriate	8	A	+
	Sliding Hip Screw ± Anti-Rotation Screw	Appropriate	7	N	
	Multiple Screw Fixation	Rarely Appropriate	1	A	+

Scenario 21:	Treatment (click to view evidence)	Appropriateness	M	A	Agreement
Unstable Intertrochanteric, Moderate to low functioning patient, Preexisting and Symptomatic Arthritis	Total Hip Arthroplasty	May Be Appropriate	5	N	
	Hemiarthroplasty	May Be Appropriate	4	N	
	Long Cephalomedullary Nails	Appropriate	8	A	+
	Short Cephalomedullary Nails	Appropriate	7	A	+
	Sliding Hip Screw ± Anti-Rotation Screw	May Be Appropriate	6	N	
	Multiple Screw Fixation	Rarely Appropriate	1	A	+

Scenario 22:	Treatment (click to view evidence)	Appropriateness	M	A	Agreement
Unstable Intertrochanteric, Moderate to low functioning patient, No Preexisting and Symptomatic Arthritis	Total Hip Arthroplasty	Rarely Appropriate	2	A	+
	Hemiarthroplasty	Rarely Appropriate	2	A	+
	Long Cephalomedullary Nails	Appropriate	8	A	+
	Short Cephalomedullary Nails	Appropriate	8	A	+
	Sliding Hip Screw ± Anti-Rotation Screw	May Be Appropriate	6	N	
	Multiple Screw Fixation	Rarely Appropriate	1	A	+

Scenario 23:	Treatment (click to view evidence)	Appropriateness	M	A	Agreement
Unstable Intertrochanteric, Non-ambulatory/bed-dependent/palliative - Very Low Function/ Very Low Demand Patient, Preexisting and Symptomatic Arthritis	Total Hip Arthroplasty	Rarely Appropriate	1	N	
	Hemiarthroplasty	May Be Appropriate	4	N	
	Long Cephalomedullary Nails	Appropriate	8	A	+
	Short Cephalomedullary Nails	Appropriate	7	A	+
	Sliding Hip Screw ± Anti-Rotation Screw	May Be Appropriate	6	N	
	Multiple Screw Fixation	Rarely Appropriate	1	A	+

Scenario 24:	Treatment (click to view evidence)	Appropriateness	M	A	Agreement
Unstable Intertrochanteric, Non-ambulatory/bed-dependent/palliative - Very Low Function/ Very Low Demand Patient, No Preexisting and Symptomatic Arthritis	Total Hip Arthroplasty	Rarely Appropriate	1	A	+
	Hemiarthroplasty	Rarely Appropriate	1	A	+
	Long Cephalomedullary Nails	Appropriate	8	A	+
	Short Cephalomedullary Nails	Appropriate	8	A	+
	Sliding Hip Screw ± Anti-Rotation Screw	May Be Appropriate	5	D	-
	Multiple Screw Fixation	Rarely Appropriate	1	A	+

Scenario 25:	Treatment (click to view evidence)	Appropriateness	M	A	Agreement
Subtrochanteric/Reverse Obliquity, High functioning/high demand patient, Preexisting and Symptomatic Arthritis	Total Hip Arthroplasty	Rarely Appropriate	3	N	
	Hemiarthroplasty	Rarely Appropriate	3	N	
	Long Cephalomedullary Nails	Appropriate	9	A	+
	Short Cephalomedullary Nails	Appropriate	7	N	
	Sliding Hip Screw ± Anti-Rotation Screw	Rarely Appropriate	3	N	
	Multiple Screw Fixation	Rarely Appropriate	1	A	+

Scenario 26:	Treatment (click to view evidence)	Appropriateness	M	A	Agreement
Subtrochanteric/Reverse Obliquity, High functioning/high demand patient, No Preexisting and Symptomatic Arthritis	Total Hip Arthroplasty	Rarely Appropriate	1	A	+
	Hemiarthroplasty	Rarely Appropriate	1	A	+
	Long Cephalomedullary Nails	Appropriate	9	A	+
	Short Cephalomedullary Nails	Appropriate	8	N	
	Sliding Hip Screw ± Anti-Rotation Screw	Rarely Appropriate	3	N	
	Multiple Screw Fixation	Rarely Appropriate	1	A	+

Scenario 27:	**Treatment (click to view evidence)**	**Appropriateness**	**M**	**A**	**Agreement**
Subtrochanteric/Reverse Obliquity, Moderate to low functioning patient, Preexisting and Symptomatic Arthritis	Total Hip Arthroplasty	Rarely Appropriate	3	N	
	Hemiarthroplasty	Rarely Appropriate	3	N	
	Long Cephalomedullary Nails	Appropriate	8	A	+
	Short Cephalomedullary Nails	Appropriate	7	N	
	Sliding Hip Screw ± Anti-Rotation Screw	May Be Appropriate	4	N	
	Multiple Screw Fixation	Rarely Appropriate	1	A	+

Scenario 28:	**Treatment (click to view evidence)**	**Appropriateness**	**M**	**A**	**Agreement**
Subtrochanteric/Reverse Obliquity, Moderate to low functioning patient, No Preexisting and Symptomatic Arthritis	Total Hip Arthroplasty	Rarely Appropriate	2	A	+
	Hemiarthroplasty	Rarely Appropriate	2	A	+
	Long Cephalomedullary Nails	Appropriate	8	A	+
	Short Cephalomedullary Nails	Appropriate	7	N	
	Sliding Hip Screw ± Anti-Rotation Screw	May Be Appropriate	4	N	
	Multiple Screw Fixation	Rarely Appropriate	1	A	+

Scenario 29:	**Treatment (click to view evidence)**	**Appropriateness**	**M**	**A**	**Agreement**
Subtrochanteric/Reverse Obliquity, Non-ambulatory/bed-dependent/palliative - Very Low Function/ Very Low Demand Patient, Preexisting and Symptomatic Arthritis	Total Hip Arthroplasty	Rarely Appropriate	1	A	+
	Hemiarthroplasty	Rarely Appropriate	1	A	+
	Long Cephalomedullary Nails	Appropriate	9	A	+
	Short Cephalomedullary Nails	Appropriate	8	N	
	Sliding Hip Screw ± Anti-Rotation Screw	May Be Appropriate	5	N	
	Multiple Screw Fixation	Rarely Appropriate	1	A	+

Scenario 30:	**Treatment (click to view evidence)**	**Appropriateness**	**M**	**A**	**Agreement**
Subtrochanteric/Reverse Obliquity, Non-ambulatory/bed-dependent/palliative - Very Low Function/ Very Low Demand Patient, No Preexisting and Symptomatic Arthritis	Total Hip Arthroplasty	Rarely Appropriate	1	A	+
	Hemiarthroplasty	Rarely Appropriate	1	A	+
	Long Cephalomedullary Nails	Appropriate	9	A	+
	Short Cephalomedullary Nails	Appropriate	8	N	
	Sliding Hip Screw ± Anti-Rotation Screw	May Be Appropriate	4	N	
	Multiple Screw Fixation	Rarely Appropriate	1	A	+

APPENDICES

APPENDIX A. DOCUMENTATION OF APPROVAL

AAOS BODIES THAT APPROVED THIS APPROPRIATE USE CRITERIA

Committee on Evidence-Based Quality and Value: Approved on 6/15/2023
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 6/30/2023
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 9/17/2023
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

HIP FRACTURES TREATMENT AUC WRITING PANEL

W Timothy Brox, MD 9 - American Orthopaedic Association ($0); Submitted on: 06/02/2014

Karl C Roberts, MD 8 - Journal of Arthroplasty ($0) (Self) - Elite Reviewer; Submitted on: 05/31/2014

Daniel Ari Mendelson, MD, MS, FACP, AGSF 8 - Geriatric Orthopaedic Surgery and Rehabilitation/Sage ($0) (Self) Editorial Board Member; Submitted on: 08/25/2014

Kathleen Mangione, PT, PhD, FAPTA (n); Submitted on: 10/09/2014

Thomas Dipasquale, DO 2 - Synthes ($0) Number of Presentations: 0; 5 - Eli Lilly ($0); Submitted on: 09/23/2014

Pierre Guy, MD 2 - Stryker ($0) Number of Presentations: 0; 3B - Stryker ($0); 4 - Traumis Surgical Systems Inc. Number of Shares: 0; 5 - Synthes; Stryker; DePuy, A Johnson & Johnson Company ($0); 9 - Canadian Orthopedic
Foundation ($0); 9 - Orthopaedic Trauma Association ($0) Program Committe(Self); 9 - Orthopaedic Trauma Association ($0) Strategic Research Initiative WG(Self); 9 - West Coast Hip Fracture Society ($0) not for profit(Self); Submitted on: 10/07/2014

Michael Munin, MD 2 - Allergan Inc ($0) Number of Presentations: 0; 5 - Allergan, Inc ($0); Submitted on: 09/20/2014

William B Macaulay, MD 2 - Merck ($3,000) Number of Presentations: 1 MSD Spain sponsored lecture in Madrid, Spain(Self); 3B - Johnson & Johnson ($1,200) Janssen subsidiary(Self); 3B - OrthAlign ($1,200) n/a(Self); 4 - OrthAlign Number of Shares: 15,000 (Self); 5 - Pfizer ($0) (Self); 5 - Wright Medical Technology, Inc. ($2,000) (Self); 8 - Arthritis and Rheumatism ($0) n/a(Self); 8 - Clinical Orthopaedics and Related Research ($0) (Self); 8 - Journal of Arthroplasty ($0) (Self); 9 - AAOS ($0) Hip Fractures in Elderly Patients Guidelines(Self); 9 - American Association of Hip and Knee Surgeons ($0) (Self); 9 - American Association of Hip and Knee Surgeons ($0) Health Policy Committee(Self); Submitted on: 04/02/2014

Kamal I Bohsali, MD 2 - DePuy, A Johnson & Johnson Company ($0) Number of Presentations: 0; 9 - AAOS ($0); Submitted on: 04/01/2014

Brett Russell Levine, MD 3B - CONMED Linvatec ($2,500) Sales training and surgeon education; 3B - DePuy, A Johnson & Johnson Company ($10,000) Surgeon video and surgeon to surgeon training (Self)--Ethicon division; 3B - Janssen Pharmaceuticals ($5,000) Product training(Self); 3B - Orthoview ($2,500) Product develop and training(Self); 3B - Zimmer ($50,000) Resident and surgeon education nationally and internationally. Participate in an ongoing digital templating study and its development; 5 - Biomet ($10,000) Receive research money for cemented and cementless THA research projects; 5 - Zimmer ($0) Institutional research money is received. Nothing is directly given to me or my research funds.(Self); 8 - Human kinetics ($500) Author of book (Self); 8 - SLACK Incorporated ($0) Publishing a board review book. not yet completed.; 9 - CORD ($0) Education Committee Member (CORD Report Liason)(Self); Submitted on: 09/22/2014

William Sherman, MD (n); Submitted on: 05/31/2013

Jan Paul Szatkowski, MD 8 - Lineage Medical Publishing ($0); Submitted on: 05/12/2014

Farbod Malek, MD (n); Submitted on: 09/22/2014

Brian S Edkin, MD 3B - Biomet ($18,000) Faculty for FDA mandated(Self); 5 - Smith & Nephew ($0) Knee product study(Self); Submitted on: 10/31/2014

Madhusudhan R Yakkanti, MD 6 - Synthes- Received honororium for participation as a table instructor in a shoulder course sponsored by Synthes ($0); Submitted on: 04/01/2014

Julie A Switzer, MD (n); Submitted on: 09/22/2014

Mark Charles Olson, MD (n); Submitted on: 05/01/2014

Steven A Olson, MD 5 - Synthes ($100,000) (Self)Support for Research in Orthopaedic Trauma - supports salaries of Clinical research database coordinator, and research engineer. No faculty salary support provided; 9 - Orthopaedic Trauma Association ($0) Second President elect(Self); 9 - Southeastern Fracture Consortium ($0) (Self)President and member of Board of Directors; Submitted on: 04/01/2014

Laura M Bruse Gehrig, MD 9 - Chair, Women's Health Issues Advisory Board (WHIAB) ($0); Submitted on: 09/30/2014

Jaimo Ahn, MD, PhD 2 - Synthes ($1,000) Number of Presentations: 2 (Self); 3B - Merck ($10,000) (Self) legal consulting; 3B - Synthes ($5,000) (Self) teaching, scientific, product; 3C - Skelegen ; 8 - Fronteirs in Surgery ($0); 8 - Journal of Orthopaedic Trauma ($0); 9 - AAOS ($0) (Self) Basic Science Evaluation Subcommittee; 9 - American Orthopaedic Association ($0); 9 - American Physician Scientists Association ($0) (Self) Board of Directors; 9 - Foundation for Orthopaedic Trauma ($0) (Self) Executive Board, Research Committee; 9 - NBME ($0); 9 - Orthopaedic Research Society ($0); 9 - Orthopaedic Trauma Association ($0) (Self) Evidence Based Value, Quality, and Safety committee; Submitted on: 05/22/2014

HIP FRACTURES TREATMENT AUC VOTING PANEL

Karen Duane, MD: Submitted on: 04/26/2015 - AAOS: Board or committee member

Thiru Annaswamy, MD: Submitted on: 06/02/2015 - American Academy of PM&R: Board or committee member; American Journal of Physical Medicine & Rehabilitation: Editorial or governing board; Association of Academic Physiatrists: Board or committee member; North American Spine Society: Board or committee member

Daniel L Hurley, MD: Submitted on: 08/12/2015- Treasure and BOD, American Association of Clinical Endocrinologists: Board or committee member

Chick J Yates Jr, MD: Submitted on: 08/08/2015- American Association of Hip and Knee Surgeons: Board or committee member

Steven David Morton, DO: Submitted on: 05/07/2015- American Osteopathic Academy of Orthopedic Surgeons: Board or committee member; Saint Clair County Medical Society: Board or committee member

Douglas M White, DPT: Submitted on: 06/01/2015- AAOS: Board or committee member; American Physical Therapy Assoc Orthopaedic Section: Board or committee member

Stephen L Kates, MD: Submitted on: 04/02/2015- AAOS: Board or committee member; AO Foundation: Paid presenter or speaker; AO North America: Board or committee member; AOTrauma: Board or committee member; Orthopaedic Trauma Association: Board or committee member; Sage Publications: Editorial or governing board; Publishing royalties, financial or material support; Surgical Excellence: Paid consultant

Eric G Meinberg, MD: Submitted on: 05/19/2015- AOTrauma North America: Board or committee member; Northern California Orthopaedic Society: Board or committee member; Springer: Editorial or governing board; Synthes: Other financial or material support

Moderators

Robert H Quinn, MD: Submitted on: 04/07/2015
AAOS: Board or committee member; American Orthopaedic Association: Board or committee member; Jaypee: Publishing royalties, financial or material support; Journal of Wilderness & Environmental Medicine: Editorial or governing board; Musculoskeletal Transplant Foundation: Research support; Musculoskeletal Tumor Society: Board or committee member; Wilderness Medical Society: Board or committee member

Trainee

Pekka A Mooar, MD: Submitted on: 04/17/2015
AAOS: Board or committee member; Web MD: Editorial or governing board

(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

(4) American Academy of Orthopaedic Surgeons. Management of Hip Fractures in the Older Adults Clinical Practice Guideline. www.orthoguidelines.org/hipfxguideline. Published December 3, 2021.