

**American College of Rheumatology (ACR) and American Association of Hip and Knee Surgeons
(AAHKS) Guideline: Indications for Total Hip and Knee Replacement**

Project Plan – August 2021

PARTICIPANTS

Core Oversight Team

Susan M. Goodman, MD (*ACR Principal Investigator*)
Matthew S. Austin, MD (*AAHKS Co-principal Investigator*)
Adolph Yates, Jr., MD, FAAOS, FAOA (*AAHKS Co-principal Investigator*)
Jasvinder Singh, MD, MPH (*ACR Literature Review Leader*)
Charles P. Hannon, MD, MBA (*AAHKS Literature Review Leader*)
Gordon Guyatt, MD (*GRADE Expert*)

Literature Review Team

Nicholas Bedard, MD
Jason L. Blevins, MD
Cara A. Cipriano, MD
P. Maxwell Courtney, MD
Lauren King, MD
Alexa Simon Meara, MD
Bella Mehta, MBBS, MS
Adam J. Rana, MD
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ACR Board Liaison

TBD

AAHKS Key Support Member

Sigita Wolfe

Voting Panel

Joshua F. Baker, MD, MSCE
Delamo Isaac Bekele, MBBS
David S. Jevsevar, MD, MBA
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Patient Panel

TBD

ACR Staff

Cindy Force
Regina Parker
Amy Turner

American College of Rheumatology (ACR) and American Association of Hip and Knee Surgeons (AAHKS) Guideline: Indications for Total Hip and Knee Replacement

Project Plan – August 2021

1 **ORGANIZATIONAL LEADERSHIP AND SUPPORT**

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3 This is a collaborative project of the American College of Rheumatology (ACR) and the American
4 Association of Hip and Knee Surgeons (AAHKS). The group includes rheumatologists, orthopedic
5 surgeons, patients, and methodologists, supported by ACR and AAHKS staff.

6

7 **BACKGROUND** While hip and knee arthroplasty performed for symptomatic osteoarthritis or
8 osteonecrosis are two of the most common surgeries performed in the United States, with excellent
9 overall outcomes, there is wide variability in risk and outcomes associated with factors such as co-
10 morbidities, age, BMI, or even operative joint anatomy or deformity. There are no evidence-based
11 indications for the two procedures that consider the impact of these clinically important factors.
12 Opinions differ on if and when hip or knee arthroplasty should be performed in patients with certain
13 medical comorbidities (e.g., diabetes mellitus, nicotine use) or certain patient characteristics such as
14 obesity. In addition, evidence is limited on the effectiveness of nonoperative treatment options such as
15 physical therapy in these patients with end-stage osteoarthritis. Existing Clinical Practice Guidelines
16 (CPGs), based on the current state of the scientific literature, provide evidence-supported, consensus-
17 driven best practices for operative and non-operative treatment of arthritis of the hip and knee. They
18 are designed for the use of medical professionals caring for patients with the knowledge that there are
19 significant gaps in the literature regarding both non-operative and operative care of the arthritic patient.
20 These CPGs focus on the general diagnosis of osteoarthritis and prompt a dichotomous choice of non-
21 operative versus operative options and do not offer guidance on when non-operative interventions lose
22 efficacy and arthroplasty is indicated. Evidence-based guidelines to guide indications and timing for total
23 hip or knee arthroplasty do not exist. The purpose of this CPG project is to develop evidence-based
24 consensus recommendations for common clinical situations encountered in people with advanced
25 symptomatic osteoarthritis or osteonecrosis of the knee or the hip and include consideration of those
26 factors that are known to increase operative risk or change outcome.

27

28 For the purposes of this clinical practice guideline, our defined population is patients with
29 radiographically moderate to advanced osteoarthritis of the hip or knee and moderate to severe pain or
30 loss of function. Moderate to severe pain or loss of function may be measured on a validated patient
31 reported outcome scale (e.g., HOOS, KOOS, VAS, or WOMAC) or by patients' reported symptoms such as
32 walking limited to less than two blocks or night pain. Radiographic severity may be measured by
33 validated grading systems such as Kellgren-Lawrence or Tonnis.

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American College of Rheumatology (ACR) and American Association of Hip and Knee Surgeons (AAHKS) Guideline: Indications for Total Hip and Knee Replacement

Project Plan – August 2021

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38 **OBJECTIVES**

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40 The objective of this project is to develop a clinical practice guideline that includes evidence-based
41 consensus recommendations regarding indications for total hip and knee replacement versus
42 conservative treatments in patients with moderate to severe osteoarthritis or osteonecrosis of the hip
43 or knee.

44

45 Specifically, we aim to:

- 46 1. Define the indications for conservative treatment in patients with moderate to severe osteoarthritis
47 or osteonecrosis.
- 48 2. Define indications for total hip and knee replacement in patients with moderate to severe
49 osteoarthritis or osteonecrosis.
- 50 3. Develop recommendations regarding the timing of hip or knee arthroplasty for patients with specific
51 medical co-morbidities.

52 **METHODS**

53

54 *Identification of Studies*

55 Literature search strategies, based on PICO questions (Population/patients, Intervention, Comparator,
56 and Outcomes; *see Appendix A and Appendix C*) were drafted by the Core Team and a research librarian.
57 Searches were performed in OVID Medline (1946 +), Embase (1974 +), and PubMed (mid-1960s +).

58

59 The search strategies were developed using the controlled vocabulary or thesauri language for each
60 database: Medical Subject Headings (MeSH) for OVID Medline and PubMed; and Emtree terms for
61 Embase. Text words were also used in OVID Medline, PubMed, and Embase.

62

63 *Search Limits*

64 Only English language articles will be retrieved.

65

66 *Literature Search Update*

67 Literature searches will be updated just before the voting panel meeting to ensure completeness.

68

69 *Inclusion/Exclusion Criteria*

70 *Appendix A* includes the project's PICO questions, which outline the defined patient population,
71 interventions, comparators, and outcomes (also in *Appendix C*). *Appendix B* includes the list of
72 inclusion/exclusion criteria.

73

American College of Rheumatology (ACR) and American Association of Hip and Knee Surgeons (AAHKS) Guideline: Indications for Total Hip and Knee Replacement

Project Plan – August 2021

74 *Management of Studies and Data*

75 References and abstracts have been imported into bibliographic management software (EndNote) (1),
76 duplicates removed, and exported to Distiller SR, a web-based systematic review manager (2). Screening
77 and data abstraction forms are being created in Distiller SR. Search results will be divided among
78 reviewers, and two reviewers will screen each title/abstract, with disagreements at the title/abstract
79 screening stage defaulting to inclusion for full manuscript review. Following the same dual review
80 process, disagreements at the full manuscript screening stage will be discussed and adjudicated by the
81 literature review leadership, if necessary.

82

83 *Phases*

- 84 1. A search for randomized controlled trials and observational studies has been performed to
85 determine existing studies covering outcomes of interest.
- 86 2. Additionally, recently published systematic reviews covering outcomes of interest will also be
87 sought and used for reference cross-checking.
- 88 3. Chosen studies will be quality-assessed using the Instrument to assess the Credibility of Effect
89 Modification Analyses.
- 90 4. Subsequently, identified studies will be assessed using the RevMan (4) and GRADE Pro tools (5).

91

92 *GRADE Methodology*

93

94 GRADE methodology will be used in this project to grade available evidence and facilitate development
95 of recommendations. The certainty in the evidence (also known as ‘quality’ of evidence) will be graded
96 as high, moderate, low or very low. The recommendations will have a strength, strong or conditional,
97 and a direction, as in favor or against the intervention. The strength of recommendations will not
98 depend solely on the certainty in the evidence, but also on patient preferences and values, and the
99 weight between benefits and harms. A series of articles that describe the GRADE methodology can be
100 found on the GRADE working group’s website: www.gradeworkinggroup.org.

101

102 *Data Analysis and Synthesis*

103

104 The literature review team will analyze and synthesize data from included studies that address the PICO
105 questions. An evidence profile, including a GRADE Summary of Findings table, will be prepared for each
106 PICO question using Review Manager (RevMan) (4) and GRADEprofiler (GRADEpro) software (5). The
107 Summary of Findings table contains the benefits and harms for each outcome across studies, the
108 assumed and corresponding risk for comparators and interventions (95% CI), the absolute risk and
109 relative effect (95% CI), the number of participants/number of studies, and the certainty in the evidence
110 for each critical and important outcome (i.e., high, moderate, low or very low).

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American College of Rheumatology (ACR) and American Association of Hip and Knee Surgeons (AAHKS) Guideline: Indications for Total Hip and Knee Replacement

Project Plan – August 2021

112 The evidence profile documents the overall certainty in the evidence for each critical and important
113 outcome across studies and summarizes the rationale of the GRADE criteria for downgrading (risk of
114 bias, inconsistency, indirectness, imprecision, and publication bias), or upgrading the certainty in a body
115 of evidence (large magnitude of effect, dose-response gradient, and all plausible confounding that
116 would reduce a demonstrated effect).

117

118 *Development of Recommendation Statements*

119

120 PICO questions will be revised into drafted recommendation statements. Using the GRADE Evidence
121 Profiles and Summaries of Findings tables, the voting panel, consisting of 5 rheumatologists, 5
122 orthopedic surgeons, and 2 patients who have undergone total joint replacement, will consider the
123 drafted recommendation statements in two stages. The first assessment will be done individually, and
124 the results will be anonymous; this vote will only be used to determine where consensus might or might
125 not already exist and develop the voting panel meeting agenda. At the face-to-face voting panel
126 meeting, chaired by the principal investigators, the panelists will discuss the evidence in the context of
127 their clinical experience and expertise to arrive at consensus on the final recommendations. The voting
128 panel meeting discussions will be supported by the literature review leader, the GRADE expert, and
129 selected members of the literature review team, who will attend the meeting to provide details about
130 the evidence, as requested. Voting panel discussions and decisions will also be informed by a separately
131 convened patient panel, which will meet in the days before the voting panel meeting, to provide unique
132 patient perspectives on the drafted recommendations based on their experiences and the available
133 literature.

134

135 **PLANNED APPENDICES (AT MINIMUM)**

136

137 A. Final literature search strategies

138 B. Inclusion/Exclusion Criteria

139 C. GRADE evidence profiles and summary of findings tables for each PICO question

140

141 **AUTHORSHIP**

142

143 Authorship of the guideline will include: ACR principal investigator, Dr. Susan Goodman, and AAHKS co-
144 principal investigators, Drs. Adolph Yates and Matthew S. Austin, as lead authors; ACR literature review
145 leader Dr. Jasvinder Singh; AAHKS literature review leader Dr. Charlie Hannon; and Dr. Gordon Guyatt,
146 GRADE expert. Members of the voting panel and literature review team will also be authors. The PIs will
147 determine final authorship, dependent on the efforts made by individuals throughout the guideline
148 development process, using international authorship standards as guidance.

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150

American College of Rheumatology (ACR) and American Association of Hip and Knee Surgeons (AAHKS) Guideline: Indications for Total Hip and Knee Replacement

Project Plan – August 2021

151 **DISCLOSURES/CONFLICTS OF INTEREST**

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153 The ACR's disclosure and COI policies for guideline development will be followed for this project. These
154 can be found in the ACR Guideline Manual on [this page of the ACR web site](#), under Policies &
155 Procedures. *See Appendix D for participant disclosures.*

156

157 **REFERENCES**

158

- 159 1. EndNote [software]. <https://endnote.com>
- 160 2. DistillerSR. Ottawa, Canada: Evidence Partners; 2013. <http://systematic-review.net/>
- 161 3. Wells GA, Shea B, O'Connell D, Welch V, Losos M, Tugwell P. The Newcastle-Ottawa Scale (NOS)
162 for assessing the quality of nonrandomised studies in meta-analyses. 2010. Available:
163 http://www.ohri.ca/programs/clinical_epidemiology/oxford.asp
- 164 4. Review Manager [software]. [https://training.cochrane.org/online-learning/core-software-](https://training.cochrane.org/online-learning/core-software-cochrane-reviews/revman)
165 [cochrane-reviews/revman](https://training.cochrane.org/online-learning/core-software-cochrane-reviews/revman)
- 166 5. GRADEprofiler [software]. <https://gradepror.org/>

American College of Rheumatology (ACR) and American Association of Hip and Knee Surgeons (AAHKS) Guideline: Indications for Total Hip and Knee Replacement

Project Plan – August 2021

APPENDIX A – PICO Questions

DRAFT QUESTIONS FOR ACR/AAHKS HIP AND KNEE ARTHROPLASTY INDICATIONS WORKGROUP

1. In our defined population, what is the relative impact of a 3 month “waiting period” prior to arthroplasty versus no waiting period on patient reported outcomes including pain, function, infection, hospitalization, and death at one year?

All answers to the following questions assume the waiting period in #1 has been met and the patient meets our defined inclusion criteria listed above.

2. In our defined population, what is the relative impact of physical therapy versus arthroplasty at one year on patient important outcomes including pain, function, infection, hospitalization, and death at one year?
3. In our defined population, what is the relative impact of NSAIDs versus arthroplasty in patient important outcomes including pain, function, infection, hospitalization, and death at one year?
4. In our defined population, what is the relative impact of braces/ambulatory aides versus arthroplasty on patient important outcomes including pain, function, infection, hospitalization, and death at one year?
5. In our defined population, what is the relative impact of corticosteroid injections versus arthroplasty at one year on patient important outcomes including pain, function, infection, hospitalization, and death at one year?
6. In our defined population, what is the relative impact of viscosupplementation versus arthroplasty at one year on patient important outcomes including pain, function, infection, hospitalization, and death at one year?

American College of Rheumatology (ACR) and American Association of Hip and Knee Surgeons (AAHKS) Guideline: Indications for Total Hip and Knee Replacement

Project Plan – August 2021

- 190 7. In our defined population with BMI between 35-39, what is the relative impact of delaying arthroplasty to achieve weight reduction to BMI
191 <35 versus proceeding to arthroplasty on patient important outcomes including pain, function, infection, hospitalization, and death at one
192 year?
- 193 8. In our defined population with BMI between 40-49, what is the relative impact of delaying arthroplasty to achieve weight reduction to BMI
194 <40 versus proceeding to arthroplasty on patient important outcomes including pain, function, infection, hospitalization, and death at one
195 year?
- 196 9. In our defined population with BMI between >50, what is the relative impact of delaying arthroplasty to achieve weight reduction to BMI
197 <50 versus proceeding to arthroplasty on patient important outcomes including pain, function, infection, hospitalization, and death at one
198 year?
- 199 10. In our defined population with poorly controlled diabetes mellitus, what is the relative impact of delaying arthroplasty to improve glycemic
200 control versus proceeding to arthroplasty on patient important outcomes including pain, function, infection, hospitalization, and death at
201 one year?
- 202 11. In our defined population with nicotine dependence, what is the relative impact of delaying arthroplasty for nicotine cessation versus
203 proceeding to arthroplasty on patient important outcomes including pain, function, infection, hospitalization, and death at one year?
- 204 12. In our defined population who have bone loss with deformity, or severe ligamentous instability, what is the relative impact of delaying
205 arthroplasty for optimization of non-life-threatening conditions versus proceeding to arthroplasty on patient important outcomes including
206 pain, function, infection, hospitalization, and death at one year?
- 207 13. In our defined population who have a neuropathic joint, what is the relative impact of delaying arthroplasty for optimization of non-life-
208 threatening conditions versus proceeding to arthroplasty at one year?

American College of Rheumatology (ACR) and American Association of Hip and Knee Surgeons (AAHKS) Guideline: Indications for Total Hip and Knee Replacement

Project Plan – August 2021

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14. In our defined population with unicompartmental osteoarthritis, what is the impact of medical co-morbidities such as obesity or inflammatory arthritis or mechanical conditions such as instability or deformity on unicompartmental versus total joint arthroplasty on patient important outcomes including pain, function, infection, hospitalization, and death at one year?

American College of Rheumatology (ACR) and American Association of Hip and Knee Surgeons (AAHKS) Guideline: Indications for Total Hip and Knee Replacement

Project Plan – August 2021

215 **APPENDIX B – INCLUSION/EXCLUSION CRITERIA**

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The purpose of this clinical practice guideline is to provide evidence-based recommendations regarding indications for total joint arthroplasty and conservative treatments in patients with moderate to severe degenerative joint disease of the hip or knee.

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For the purposes of this clinical practice guideline, our defined population is patients with radiographically moderate to advanced osteoarthritis of the hip or knee and moderate to severe pain or loss of function. Moderate to severe pain or loss of function may be measured on a validated patient reported outcome scale (e.g. HOOS, KOOS, VAS, or WOMAC) or by patients' reported symptoms such as walking limited to less than two blocks or night pain. Radiographic severity may be measured by validated grading systems such as Kellgren-Lawrence or Tonnis.

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Below are the inclusion and exclusion criteria reviewers will consider when reviewing titles/abstracts and full manuscripts.

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1. Study must have had a full journal publication; studies published only as meeting abstracts will be excluded.
2. Study must be an English language publication.
3. Study must include a population, intervention, comparison, and outcome specified in the protocol.
4. Population studied must include patients with moderate to severe degenerative joint disease of the hip or knee. If patients with both mild and moderate to severe degenerative joint disease are included in the study, data must be able to be extracted for only the subset of patients with moderate to severe degenerative joint disease.
5. The following study designs may be included:
 - a. Randomized controlled trial

American College of Rheumatology (ACR) and American Association of Hip and Knee Surgeons (AAHKS) Guideline: Indications for Total Hip and Knee Replacement

Project Plan – August 2021

- 236 b. Controlled clinical trial
237 c. Prospective cohort study
238 d. Retrospective cohort study
239 e. Case-control study
240 f. Registry studies
241 g. Systematic review
242 i. Systematic reviews will be included only to scan reference lists to capture relevant individual studies that may have been
243 missed by the literature search.
244
245 6. Studies of the following designs should be excluded:
246 a. Case series
247 b. Case report
248 c. Narrative review
249 d. Editorials or commentaries
250 e. Surveys
251 f. Expert opinion
252 g. Foreign language studies
253
254 7. Studies evaluating conservative treatment must have a minimum of 20 patients with moderate or severe degenerative joint disease.
255
256 8. Studies evaluating arthroplasty must have a minimum of 20 patients who underwent hip or knee arthroplasty.
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Project Plan – August 2021

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APPENDIX C: OUTCOMES

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1. Infection including peri- and post-operative

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- Deep surgical site infections within 30 days, within 90 days, within 1 year

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- Superficial surgical site infections within 30-90 days

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- Minor, non-surgical site infections within 30-90 days

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- Serious, non-surgical site infections such as pneumonia, bacteremia/sepsis within 30-90 days

264

- Delayed wound healing within 30-90 days

265

2. Venous thromboembolic disease within 30-90 days

266

3. Acute cardiac/cardiovascular events within 30-90 days

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4. Death within 30-90 days

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5. Need for revision surgery within 5 years

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6. Return to OR within 30-90 days

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7. Readmission to the hospital within 30-90 days

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8. Emergency department visits within 30-90 days

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9. Admission to a higher level of care (ICU or CCU) during index hospital admission

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10. Overall complication rates within 30-90 days

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11. Length of hospital stay

275

12. Discharge to long-term care facility up to 3 weeks post-op and the duration of long-term facility use

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13. Arthroplasty patient-reported outcomes up to 5 years

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Project Plan – August 2021

- 277 ○ Pain
- 278 ○ Function
- 279 ○ Quality of life scores
- 280 ○ Work/at-home productivity
- 281 ○ Social participation, and
- 282 ○ Patient satisfaction



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Project Plan – August 2021

APPENDIX D: DISCLOSURES

Participant Disclosures - American College of Rheumatology (ACR) and American Association of Hip and Knee Surgeons (AAHKS) Guideline: Indications for Total Hip and Knee Replacement

In order for the College to most effectively further its mission and to otherwise maintain its excellent reputation in the medical community and with the public, it is important that confidence in the College's integrity be maintained. The cornerstone of the ACR's Disclosure Policy is disclosure of actual and potential conflicts so that they can be evaluated by the College in order to avoid undue influence of potential conflicts. The purpose of the ACR's Disclosure Policy is identification of relationships which may pose actual or potential conflicts. These actual or potential conflicts can then be evaluated by the College so that adjustments can be made that will avoid any undue influence. This policy is based on the principle that, in many cases, full disclosure of the actual or potentially conflicting relationship will of itself suffice to protect the integrity of the College and its interests.

Participants	Role	Primary Employer	Interest Held By	Interest Type	Entity/Licensee	Additional Information	Value
Susan M. Goodman	Core Team - ACR Co-PI	Hospital for Special Surgery	Self	Independent Contractor - Data and Safety Monitoring	UCB Biosciences Inc.		\$5,000.00
			Self	Grant/Contract	Novartis		\$601,771.00
Matthew S. Austin	Core Team - AAHKS Co-PI	Rothman Orthopaedic Specialty Hospital	Self	Intellectual Property - Other Intellectual Property			
			Self	Intellectual Property - Patent			
			Self	Stock	Corin Group		\$200,000.00
Adolph Yates, Jr.	Core Team - AAHKS Co-PI	University of Pittsburgh Medical Center		NA		Nothing to disclose	
Jasvinder Singh	Core Team - ACR Literature Review Leader	University of Alabama at Birmingham	Self	Stock	TPT Global Tech		\$440.00
			Self	Independent Contractor - Consultant	Trio Health		
			Self	Independent Contractor - Consultant	Putnam Associates		
			Self	Stock	Moderna		\$8,300.00



American College of Rheumatology (ACR) and American Association of Hip and Knee Surgeons (AAHKS) Guideline: Indications for Total Hip and Knee Replacement

Project Plan – August 2021

Spouse/ Partner	Stock	Amarin Pharma Inc.	\$1,997.00
Self	Stock	Charlotte's Web Holdings	\$2,375.00
Self	Independent Contractor - Consultant	Simply Speaking	\$10,650.00
Self	Independent Contractor - Consultant	WebMD	
Self	Independent Contractor - Consultant	Jupiter Life Science	
Self	Independent Contractor - FDA Arthritis Advisory Committee Committee member	U.S. FDA	
Self	Stock	Vaxart	\$1,900.00
Self	Independent Contractor - Consultant	Clearview Healthcare Partners	
Self	Independent Contractor - Consultant	Spherix	
Self	Independent Contractor - Consultant	UBM, LLC	
Self	Independent Contractor - Consultant	Two Labs Inc.	
Self	Independent Contractor - committee chair	Veterans Affairs Rheumatology Field Advisory Committee	No compensation
Self	Independent Contractor - Steering Committee Member	OMERACT	
Self	Independent Contractor - Consultant	Focus Forward	
Self	Independent Contractor - Consultant	Adept Field Solutions	
Self	Independent Contractor - editor and the Director of the center	University of Alabama at Birmingham (UAB) Cochrane Musculoskeletal Group	No compensation received for this position.



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Project Plan – August 2021

	Self		Independent Contractor - Editorial Board Member	JCR: Journal of Clinical Rheumatology	
	Self		Independent Contractor - Consultant	Horizon Orphan LLC	
	Self		Independent Contractor - Consultant	Health Advances	
	Self		Independent Contractor - Editorial Board Member	BMC Medicine	
	Self		Independent Contractor - Consultant	Foundation for the National Institutes of Health	
	Self		Independent Contractor - Consultant	Krog Partners	
	Self		Independent Contractor - Consultant	MedIQ	\$2,625.00
	Self		Independent Contractor - Consultant	PK Med	
	Self		Independent Contractor - Consultant	Medscape	
	Self		Independent Contractor - Consultant	Clinical Care Options	
	Self		Independent Contractor - Consultant	Fidia Pharma USA Inc.	
	Self		Independent Contractor - Rheumatology Field Advisory Committee member, now Chair	Veterans Affairs Rheumatology Field Advisory Committee	
	Self		Independent Contractor - Consultant	Medisys	
	Self		Stock	Viking Pharmaceuticals	\$2,600.00
	Self		Independent Contractor - Consultant	Navigant Consulting	
	Self		Independent Contractor - Consultant	The American College of Rheumatology	
Charles P. Hannon	Core Team - AAHKS Literature Review Leader	Rush University Medical Center	Self	Independent Contractor - Committee Member	American Association of Hip and Knee Surgeons



American College of Rheumatology (ACR) and American Association of Hip and Knee Surgeons (AAHKS) Guideline: Indications for Total Hip and Knee Replacement

Project Plan – August 2021

			Self	Independent Contractor - Health Policy Fellow	American Association of Hip and Knee Surgeons	
			Self	Independent Contractor - Investigator	American Association of Hip and Knee Surgeons	
Gordon Guyatt	Core Team - GRADE Expert	McMaster University				Nothing to disclose
TBD	ACR Board of Directors Liaison					Disclosures forthcoming
Kim Bartosiak	Literature Review Team					Disclosures forthcoming
Nicholas Bedard	Literature Review Team	University of Iowa Hospitals & Clinics	Self	Independent Contractor - Consultant	DePuy Orthopaedics Inc.	
			Self	Independent Contractor - Editorial Board Member	Journal of Arthroplasty	
Jason L. Blevins	Literature Review Team	Hospital for Special Surgery	Self	Independent Contractor - Consultant	Limacorporate S.p.A.	\$2,000.00
			Self	Independent Contractor - Consultant	Globus Medical, Inc.	\$1,000.00
Cara A. Cipriano	Literature Review Team					Disclosures forthcoming
Anna R. Cohen-Rosenblum	Literature Review Team					Disclosures forthcoming
P. Maxwell Courtney	Literature Review Team	Rothman Orthopaedic Specialty Hospital	Self	Independent Contractor - Data and Safety Monitoring	Hip Innovation Technology	
			Self	Fiduciary Officer	AAHKS	
			Self	Independent Contractor - Consultant	Smith and Nephew	
			Self	Independent Contractor - Consultant	Stryker	
			Self	Stock	Parvizi Surgical Innovation	\$100,000.00

American College of Rheumatology (ACR) and American Association of Hip and Knee Surgeons (AAHKS) Guideline: Indications for Total Hip and Knee Replacement

Project Plan – August 2021

Ruth Fernandez	Literature Review Team	NYU Langone Medical Center	Self	Employment	NYU Langone Medical Center	
Elizabeth Gausden	Literature Review Team					Disclosures forthcoming
Lauren King	Literature Review Team	University of Toronto	Self	Independent Contractor - Canadian Rheumatology Association Annual Scientific Meeting Committee Member	Canadian Rheumatology Association	
			Self	Independent Contractor - Canadian Rheumatology Association Research Committee	Canadian Rheumatology Association	
			Self	Grant/Contract	Canadian Institutes of Health Research	\$560,000.00
			Self	Independent Contractor - OMERACT Flares in Osteoarthritis Working Group Steering Committee	OMERACT	
Alexa Simon Meara	Literature Review Team	The Ohio State Wexner Medical Center	Self	Independent Contractor - Consultant	AbbVie Biotherapeutics	
			Self	Independent Contractor - Consultant	Ampel	
			Self	Independent Contractor - Consultant	Aurinia	
			Self	Independent Contractor - Consultant	GLG	
Bella Mehta	Literature Review Team	Hospital for Special Surgery	Self	Independent Contractor - Consultant	Novartis	\$2,500.00
Adam J. Rana	Literature Review Team	Maine Medical Partners	Self	Independent Contractor - Consultant	Smith and Nephew Orthopaedics	
Nancy Sullivan	Literature Review Team	ECRI		NA		Nothing to disclose
Marat Turgunbaev	Literature Review Team	American College of Rheumatology		NA		Nothing to disclose
Katherine D. Wysham	Literature Review Team	VA Puget Sound Health Care System	Brother	Independent Contractor - Consultant	Verathon	



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Project Plan – August 2021

			Brother	Independent Contractor - Consultant	AstraZeneca	
			Parent-Mother	Grant / Contract	Corcept Therapeutics	\$10,000.00
			Parent-Mother	Grant / Contract	Regeneron Pharmaceuticals, Inc.	\$15,000.00
			Parent	Independent Contractor - President	Endocrine Society	
			Brother	Other Business Ownership	Veronix	
			Parent-Mother	Grant / Contract	Allergan	\$25,000.00
			Parent-Mother	Grant / Contract	Abbott Diabetes Care	\$12,000.00
			Self	Grant / Contract	Rheumatology Research Foundation	\$225,000.00
			Parent-Mother	Grant / Contract	Eli Lilly and Company	\$36,000.00
			Self	Employment	U.S. Department of Veterans Affairs	
			Parent-Mother	Grant / Contract	Novo Nordisk	\$40,000.00
			Self	Independent Contractor - Chapter Lead	Association of Women in Rheumatology	
Kevin Yip	Literature Review Team	Hospital for Special Surgery	Self	Independent Contractor - OMERACT Fellow	OMERACT	Fellow in rheumatology training program at HSS
Linda Yue	Literature Review Team	Hospital for Special Surgery		NA		Nothing to disclose
Michael Zywił	Literature Review Team					Disclosures forthcoming

**AMERICAN COLLEGE
of RHEUMATOLOGY**
Empowering Rheumatology Professionals

American College of Rheumatology (ACR) and American Association of Hip and Knee Surgeons (AAHKS) Guideline: Indications for Total Hip and Knee Replacement

Project Plan – August 2021

Joshua F. Baker	Voting Panel	University of Pennsylvania	Self	Independent Contractor - Consultant	Bristol-Myers Squibb	\$2,400.00
			Self	Independent Contractor - Consultant	Pfizer	\$2,100.00
Delamo Isaac Bekele	Voting Panel	Mayo Clinic	Matthew Koster MD, Primary Investigator	Independent Contractor - Epidemiology of Polymyalgia Rheumatica 2000-2014: A Population Based Study	Mayo Clinic	
			Self	Independent Contractor - Committee Member	SPARTAN	Meeting every 3 months
			Cornelia Weyand MD, PI	Independent Contractor - Biomarkers in Patients with Rheumatoid Arthritis and Interstitial Lung Disease	Mayo Clinic	
			Self	Grant / Contract	Mayo Clinic	\$10,000.00
			Floranne Ernste MD, primary investigator	Independent Contractor - Use of plasma exchange for the treatment of MDA-5 positive dermatomyositis patients and anti-synthet	Mayo Clinic	
			Hu Zeng PhD	Independent Contractor - Biomarkers in Autoimmune and Inflammatory Diseases	Mayo Clinic	Co-investigator
David S. Jevsevar	Voting Panel	Dartmouth-Hitchcock	Dartmouth-Hitchcock	Grant / Contract	DePuy Mitek	\$16,000.00
C. Kent Kwoh	Voting Panel	University of Arizona Arthritis Center	Self	Independent Contractor - Consultant	LG Chem	
			Self	Employment	University of Arizona	
			Self	Grant / Contract	Eli Lilly and Company	\$263,732.00
			Self	Independent Contractor - Speaker	Prime Education, LLC	Speaker at CME event



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Project Plan – August 2021

			Self	Independent Contractor - Data and Safety Monitoring	Kolon Tissue Gene	Cell and gene therapy for osteoarthritis	
			Self	Grant / Contract	GlaxoSmithKline		\$314,050.00
			Self	Fiduciary Officer	International Chinese Osteoarthritis Research Society		
			Self	Grant / Contract	Cumberland Pharmaceuticals, Inc.		\$55,928.00
			Self	Independent Contractor - Speaker at CME event	Focus Medical Communications	Speaker at CME event	
			Self	Independent Contractor - Consultant	Regeneron Pharmaceuticals, Inc.		
			Self	Grant / Contract	AbbVie, Inc.		\$338,295.91
			Self	Independent Contractor - Consultant	Avalor Therapeutics	development of an intra-articular IL-1b inhibitor, initially for gout and CPPD	
			Self	Independent Contractor - Consultant	Express Scripts		\$32,086.00
			Self	Grant / Contract	Pfizer		\$225,841.54
Claudette M. Lajam	Voting Panel	NYU Langone Health	Self	Fiduciary Officer	American Academy of Orthopaedic Surgeons		



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			Spouse/Partner	Employment	Pfizer	Husband is Pfizer employee- Senior Director of Environmental Remediation, part of Global Engineering	
			Self	Fiduciary Officer	American Association of Hip and Knee Surgeons		
			Self	Independent Contractor - Expert Witness	German, Gallagher and Murtaugh	Expert testimony for medical malpractice defense	\$13,000.00
Larry W. Moreland	Voting Panel	University of Colorado Anschutz Medical Campus		NA		Nothing to disclose	
Linda A. Russell	Voting Panel	Hospital for Special Surgery	Self	Independent Contractor - Physician	Arthritis Foundation		
Bryan D. Springer	Voting Panel	OrthoCarolina	Self	Independent Contractor - Consultant	Stryker		\$800,000.00
			Self	Independent Contractor - Consultant	Convatec Inc.		\$15,000.00
			Self	Independent Contractor - Consultant	Osteoremedies, LLC		\$20,000.00
Linda I. Suleiman	Voting Panel	DePuy Orthopaedics Inc.	Self	Independent Contractor - Consultant	DePuy Orthopaedics Inc.		\$1,800.00
Jesse Wolfstadt	Voting Panel	Mount Sinai Hospital		NA		Nothing to disclose	