



Knee Arthroplasty

Clinical Guidelines for Medical Necessity Review

Version: 4
Effective Date: September 20, 2024

Important Notices

Notices & Disclaimers:

GUIDELINES SOLELY FOR COHERE'S USE IN PERFORMING MEDICAL NECESSITY REVIEWS AND ARE NOT INTENDED TO INFORM OR ALTER CLINICAL DECISION MAKING OF END USERS.

Cohere Health, Inc. ("**Cohere**") has published these clinical guidelines to determine medical necessity of services (the "**Guidelines**") for informational purposes only, and solely for use by Cohere's authorized "**End Users**". These Guidelines (and any attachments or linked third party content) are not intended to be a substitute for medical advice, diagnosis, or treatment directed by an appropriately licensed healthcare professional. These Guidelines are not in any way intended to support clinical decision making of any kind; their sole purpose and intended use is to summarize certain criteria Cohere may use when reviewing the medical necessity of any service requests submitted to Cohere by End Users. Always seek the advice of a qualified healthcare professional regarding any medical questions, treatment decisions, or other clinical guidance. The Guidelines, including any attachments or linked content, are subject to change at any time without notice.

©2023 Cohere Health, Inc. All Rights Reserved.

Other Notices:

HCPCS® and CPT® copyright 2022 American Medical Association. All rights reserved.

Fee schedules, relative value units, conversion factors and/or related components are not assigned by the AMA, are not part of CPT, and the AMA is not recommending their use. The AMA does not directly or indirectly practice medicine or dispense medical services. The AMA assumes no liability for data contained or not contained herein.

HCPCS and CPT are registered trademarks of the American Medical Association.

Guideline Information:

Specialty Area: Diseases & Disorders of the Musculoskeletal System (M00-M99)

Guideline Name: Knee Arthroplasty - Single Service

Literature review current through: 9/20/2024

Document last updated: 9/20/2024

Type: ☒ Adult (18+ yo) | ☒ Pediatric (0-17 yo)

Table of Contents

Important Notices	2
Table of Contents	3
Medical Necessity Criteria	4
Service: Knee Arthroplasty	4
General Guidelines	4
Medical Necessity Criteria	4
Indications	4
Non-Indications	8
Level of Care Criteria	9
Procedure Codes (CPT/HCPCS)	9
Medical Evidence	11
References	12
Clinical Guideline Revision History/Information	14

Medical Necessity Criteria

Service: Knee Arthroplasty

General Guidelines

- **Units, Frequency, & Duration:** None.
- **Criteria for Subsequent Requests:** Consecutive knee arthroplasty should be at least three months apart.¹ Most patients wait six months to one year between the two knee arthroplasty procedures. Recommendations regarding the timing of bilateral total knee arthroplasty (TKA) are unavailable.²⁻³ Six months or more is the standard between arthroplasty procedures for better outcomes.
- **Recommended Clinical Approach:** Bilateral TKA may be appropriate for patients over 70 or who have an American Society of Anesthesiologists Physical Status Classification System (ASA) status of I or II. Periarticular anesthesia is recommended to decrease postoperative pain and opioid use (e.g., local anesthesia infiltration, peripheral nerve block, and neuraxial anesthesia). General anesthesia is also acceptable.
- **Exclusions:** The patient has an active infection.

Medical Necessity Criteria

Indications

→ **Knee arthroplasty** is considered appropriate if **ANY** of the following is **TRUE**:

- ◆ The procedure is an **initial total knee arthroplasty** for advanced joint disease, and **ALL** of the following are **TRUE**⁴⁻⁶:
 - Imaging confirms **ANY** of the following⁷⁻⁸:
 - Joint space narrowing (less than 50%) and marginal osteophytes or subchondral sclerosis; **OR**
 - Joint space narrowing (greater than 50%); **OR**
 - Complete joint space loss; **OR**
 - Joint subluxation; **OR**
 - Avascular necrosis; **OR**
 - Failed previous unicompartmental joint replacement⁴; **AND**

- Pain or functional disability results from injury (e.g., trauma, arthritis of the joint); **AND**
- Documented conservative, non-surgical treatment is **ANY** of the following:
 - Failure of conservative management for greater than 3 months, including **ALL** of the following:
 - ◆ Oral steroids, anti-inflammatory medications, or analgesics; **AND**
 - ◆ Physical therapy, including a self-directed home exercise program; **AND**
 - ◆ **ANY** of the following:
 - Corticosteroid injection if medically appropriate; **OR**
 - Corticosteroid injection is contraindicated; **AND**
 - ◆ **ANY** of the following:
 - Weight reduction if BMI is greater than 40; **OR**
 - Documentation of attempted weight loss if BMI is greater than 40; **OR**
 - Weight loss not applicable (BMI less than 40); **OR**
 - Documentation indicating that treatment would be ineffective or counterproductive based on **ANY** of the following:
 - ◆ Intractable pain or significant disabling interference with activities of daily living (ADLs); **OR**
 - ◆ Bone articulation; **OR**
 - ◆ Severe deformity; **OR**
 - ◆ Failure of a previous osteotomy; **OR**
 - ◆ Distal femur fracture; **OR**
 - ◆ Malignancy of **ANY** of the following:
 - Distal femur; **OR**
 - Proximal tibia; **OR**
 - Knee joint or adjacent soft tissues; **OR**
 - ◆ Failure of previous unicompartmental knee replacement; **OR**
 - ◆ Avascular necrosis of the knee; **OR**

- ◆ Proximal tibia fracture; **OR**
- ◆ The procedure is a **repeat or revision TKA** and **ANY** of the following is **TRUE**⁴:
 - Loosening of one or more components; **OR**
 - Fracture or mechanical failure of one or more components; **OR**
 - Infection; **OR**
 - Treatment of periprosthetic fracture of distal femur, proximal tibia, or patella; **OR**
 - Progressive or substantial periprosthetic bone loss; **OR**
 - Bearing surface wear leading to symptomatic synovitis; **OR**
 - Implant or knee misalignment; **OR**
 - Knee stiffness (arthrofibrosis); **OR**
 - Tibiofemoral instability; **OR**
 - Extensor mechanism instability or disruption; **OR**
- ◆ The procedure is a **unicompartmental knee arthroplasty** and **ANY** of the following is **TRUE**²:
 - Unicompartmental knee degenerative joint disease and **ALL** of the following are **TRUE**:
 - Disabling pain and/or functional disability limit ADLs; **AND**
 - Failure of conservative management for greater than 3 months, including **ALL** of the following:
 - ◆ Oral steroids, anti-inflammatory medications, or analgesics; **AND**
 - ◆ Physical therapy, including self-directed or home exercise program; **AND**
 - ◆ **ANY** of the following:
 - Corticosteroid injection if medically appropriate; **OR**
 - Corticosteroid injection is contraindicated; **AND**
 - ◆ **ANY** of the following:
 - Weight reduction if BMI is greater than 40; **OR**
 - Documentation of attempted weight loss if BMI is greater than 40; **OR**
 - Weight loss not applicable (BMI less than 40); **AND**

- Weight-bearing radiograph shows **ANY** of the following evidence of osteoarthritis in a single compartment of the knee:
 - ◆ Joint space narrowing (less than 50%) and marginal osteophytes or subchondral sclerosis; **OR**
 - ◆ Joint space narrowing (greater than 50%); **OR**
 - ◆ Complete joint space loss; **OR**
- Unicompartmental osteonecrosis⁹; **OR**
- Unicompartmental post-traumatic joint destruction; **OR**
- Partial resection of the knee needed for treatment of malignancy; **OR**
- ◆ The procedure is a **patellofemoral arthroplasty** and **ANY** of the following is **TRUE**¹⁰⁻¹¹:
 - Knee patellofemoral degenerative joint disease and **ALL** of the following are **TRUE**:
 - Isolated pain in the front of the knee; **AND**
 - Disabling pain and/or functional disability limit ADLs; **AND**
 - Failure of conservative management for greater than 3 months, including **ALL** of the following:
 - ◆ Oral steroids, anti-inflammatory medications, or analgesics; **AND**
 - ◆ Physical therapy, including self-directed or home exercise program; **AND**
 - ◆ **ANY** of the following:
 - Corticosteroid injection if medically appropriate; **OR**
 - Corticosteroid injection is contraindicated; **AND**
 - ◆ **ANY** of the following:
 - Weight reduction if BMI is greater than 40; **OR**
 - Documentation of attempted weight loss if BMI is greater than 40; **OR**
 - Weight loss not applicable (BMI less than 40); **AND**

- Weight-bearing radiograph as well as Merchant's view show **ANY** of the following evidence of osteoarthritis in the patellofemoral compartment:
 - ◆ Joint space narrowing (less than 50%) and marginal osteophytes or subchondral sclerosis; **OR**
 - ◆ Joint space narrowing (greater than 50%); **OR**
 - ◆ Complete joint space loss; **OR**
- Patellofemoral post-traumatic destruction (e.g., history of patella fracture); **OR**
- Dysplasia of the trochlea.

Non-Indications

→ **Knee arthroplasty** is not considered appropriate if **ANY** of the following is **TRUE**:

- ◆ Lower extremity weakness, especially quad strength/knee extensor weakness (relative); **OR**
- ◆ Quadriplegia; **OR**
- ◆ Skeletal immaturity (under the age of 18); **OR**
- ◆ **ANY** of the following contraindications is **TRUE**⁴:
 - Active infection of the knee joint or active systemic bacteremia; **OR**
 - Active urinary tract or dental infection; **OR**
 - Active skin infection (exception recurrent cutaneous staph infections) or open wound within the planned surgical site of the knee; **OR**
 - Rapidly progressive neurological disease; **OR**
- ◆ **ANY** of the following relative contraindications is **TRUE**⁴:
 - Insufficiency of extensor mechanism/quadriceps; **OR**
 - Any process that is rapidly destroying bone; **OR**
 - Neurotrophic arthritis; **OR**
- ◆ If the procedure is a unicompartmental knee arthroplasty and **ANY** of the following is **TRUE**:
 - Severe lateral patella facet osteoarthritis with exposed subchondral bone¹²; **OR**
 - Flexion contracture greater than 10 degrees¹³; **OR**
 - More than 10 degrees of fixed varus or valgus
 - Diagnosis of inflammatory arthritis¹²; **OR**

- ◆ If the procedure is a patellofemoral knee arthroplasty and **ANY** of the following is **TRUE**¹¹:
 - Radiographic evidence of tibiofemoral osteoarthritis; **OR**
 - Fixed flexion contracture greater than 10 degrees; **OR**
 - Uncorrected patellofemoral malalignment or instability; **OR**
 - Diagnosis of inflammatory arthritis.

Level of Care Criteria

Inpatient or Outpatient

Procedure Codes (CPT/HCPCS)

CPT/HCPCS Code	Code Description
27437	Arthroplasty, patella; without prosthesis
27438	Arthroplasty, patella; with prosthesis
27440	Arthroplasty, knee, tibial plateau
27441	Arthroplasty, knee, tibial plateau; with debridement and partial synovectomy
27442	Arthroplasty, femoral condyles or tibial plateau(s), knee
27443	Arthroplasty, femoral condyles or tibial plateau(s), knee; with debridement and partial synovectomy
27445	Arthroplasty, knee, hinge prosthesis (e.g., Walldius type)
27446	Arthroplasty, knee, condyle and plateau; medial OR lateral compartment
27447	Arthroplasty, knee, condyle and plateau; medial and lateral compartments with or without patella resurfacing (total knee arthroplasty)
27486	Revision of total knee arthroplasty, with or without allograft; 1 component

27487	Revision of total knee arthroplasty, with or without allograft; femoral and entire tibial component
27599	Unlisted procedure, femur or knee

Medical Evidence

Bin et al. (2023) performed a meta-analysis on randomized control trials (RCTs) to compare surgical interventions for knee osteoarthritis including total knee arthroplasty (TKA), unicompartmental knee arthroplasty (UKA), high tibial osteotomy (HTO), bicompartamental knee arthroplasty (BCA), bi-unicompartmental knee arthroplasty (BIU), and knee joint distraction (KJD). Complications, revisions, reoperations, and functional outcomes were analyzed in 21 studies, including 17 RCTs. Overall, TKA and UKA offer the best outcomes.¹⁴

Papakostidis et al. (2021) analyzed serious adverse events (SAEs) following TKA and thirty-day hospital readmission rates. The authors note reduced SAEs in the last decade, specifically surgical complications, venous thromboembolism (VTE) events, and infection. The decrease results from stricter protocols for VTE prevention, patient decolonization procedures, air quality optimizing strategies during surgery, preoperative cardiac clearance, increased diabetic control, and participation in weight reduction programs.¹⁵

Shichman et al. (2023) analyzed data from the Centers for Medicare & Medicaid Services (CMS) Medicare/Medicaid Part B National Summary and the number of procedures based on Current Procedural Terminology (CPT) codes. The codes were separated into two groups - primary total hip arthroplasty (THA) or total knee arthroplasty (TKA). A total of 480,958 primary TKA were performed in 2019. The values were a baseline for producing point forecasts for procedures expected to be performed between 2020-2060 and 95% forecast intervals (FIs). From 2000 to 2019, TKA increased annually by 156%. Regression analysis predicts annual growth rates of 4.44% for TKA - an increase of 24.28% for TKA every five years post-2020 is expected. By 2040, TKAs are expected to 1,222,988. That number will increase to 2,917,959 for TKAs by 2060. The authors note that by 2040 the number of TKAs is projected to rise by 139% by 2040 and 469% by 2060. Accurately projecting future arthroplasty needs is crucial for understanding future healthcare utilization and surgeon demand. The findings are specific to the Medicare population; additional analysis is required to determine if other groups apply.¹⁶

References

1. Gabr A, Withers D, Pope J, Santini A. Functional outcome of staged bilateral knee replacements. *Ann R Coll Surg Engl*. 2011 Oct;93(7):537–41. doi: 10.1308/147870811X13137608454803. PMID: 22004637.
2. Liu L, Liu H, Zhang H, et al. Bilateral total knee arthroplasty: Simultaneous or staged? A systematic review and meta-analysis. *Medicine (Baltimore)*. 2019 May;98(22):e15931. doi: 10.1097/MD.00000000000015931. PMID: 31145362; PMCID: PMC6708906.
3. Bohm ER, Molodianovitch K, Dragan A, et al. Outcomes of unilateral and bilateral total knee arthroplasty in 238,373 patients. *Acta Orthop*. 2016 Jul;87 Suppl 1(Suppl 1):24–30. doi: 10.1080/17453674.2016.1181817. PMID: 27167849; PMCID: PMC4937774.
4. Centers for Medicare and Medicaid Services (CMS). Local coverage determination (LCD): Total knee arthroplasty (L36575). Revision Effective Date December 1, 2019. Accessed May 25, 2024. <https://www.cms.gov/medicare-coverage-database/search.aspx>.
5. Mihalko WM. Arthroplasty of the knee. In: Azar FM, Beaty JH, editors. *Campbell's Operative Orthopaedics*. 14th ed. Philadelphia, PA: Elsevier; 2021:406–484.e12.
6. Gress K, Charipova K, An D, et al. Treatment recommendations for chronic knee osteoarthritis. *Best Pract Res Clin Anaesthesiol*. 2020 Sep;34(3):369–382. doi: 10.1016/j.bpa.2020.06.006. PMID: 33004154.
7. American Academy of Orthopaedic Surgeons (AAOS). Surgical management of osteoarthritis of the knee. Published December 2, 2022. Accessed May 25, 2024. <https://www.aaos.org/globalassets/quality-and-practice-resources/surgical-management-knee/smoak2cpg.pdf>.
8. Katz JN, Arant KR, Loeser RF. Diagnosis and treatment of hip and knee osteoarthritis: A review. *JAMA*. 2021 Feb 9;325(6):568–578. doi: 10.1001/jama.2020.22171. PMID: 33560326; PMCID: PMC8225295.
9. Chalmers BP, Mehrotra KG, Sierra RJ, et al. Reliable outcomes and survivorship of unicompartmental knee arthroplasty for isolated compartment osteonecrosis. *Bone Joint J*. 2018 Apr 1;100-B(4):450–454. doi: 10.1302/0301-620X.100B4.BJJ-2017-1041.R2. PMID: 29629588.
10. Ennis HE, Phillips JL, Jennings JM, et al. Patellofemoral arthroplasty. *J Am Acad Orthop Surg*. 2023 Oct 1;31(19):1009–1017. doi: 10.5435/JAAOS-D-23-00022. PMID: 37364255.

11. Cuthbert R, Tibrewal S, Tibrewal SB. Patellofemoral arthroplasty: Current concepts. *J Clin Orthop Trauma*. 2018 Jan-Mar;9(1):24-28. doi: 10.1016/j.jcot.2017.11.006. PMID: 29628679; PMCID: PMC5884050.
12. Borus T, Thornhill T. Unicompartmental knee arthroplasty. *J Am Acad Orthop Surg*. 2008 Jan;16(1):9-18. doi: 10.5435/00124635-200801000-00003. PMID: 18180388.
13. Kozinn SC, Scott R. Unicondylar knee arthroplasty. *J Bone Joint Surg Am*. 1989 Jan;71(1):145-50. PMID: 2643607.
14. Bin G, Jinmin L, Cong T, et al. Surgical interventions for symptomatic knee osteoarthritis: A network meta-analysis of randomized control trials. *BMC Musculoskelet Disord*. 2023 Apr 22;24(1):313. doi: 10.1186/s12891-023-06403-z. PMID: 37087428; PMCID: PMC10122318.
15. Papakostidis C, Giannoudis PV, Watson JT, et al. Serious adverse events and 30-day hospital readmission rate following elective total knee arthroplasty: A systematic review and meta-analysis. *J Orthop Surg Res*. 2021 Mar 31;16(1):236. doi: 10.1186/s13018-021-02358-w. PMID: 33789702; PMCID: PMC8011390.
16. Shichman I, Roof M, Askew N, et al. Projections and epidemiology of primary hip and knee arthroplasty in Medicare patients to 2040-2060. *JB JS Open Access*. 2023 Feb 28;8(1):e22.00112. doi: 10.2106/JBJS.OA.22.00112. PMID: 36864906; PMCID: PMC9974080.

Clinical Guideline Revision History/Information

Original Date: December 9, 2020		
Review History		
Version 2	10/23/2023	
Version 3	11/17/2023	
Version 4	9/20/2024	Updated language regarding conservative treatment.