*National Imaging Associates, Inc.	
Clinical guidelines: **KNEE ARTHROPLASTY**	**Original Date: November 2015**
CPT Codes** - **Total Knee Arthroplasty (TKA): 27447** - **Partial-Unicompartmental Knee Arthroplasty (UKA): 27438, 27446** - **Revision Knee Arthroplasty: 27486, 27487** ***See UM Matrix for allowable billed groupings and additional covered codes*	**Last Revised Date: December~~May~~ 2023**
Guideline Number: NIA_CG_315	**Implementation Date: July~~anuary~~ 2024**

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GENERAL INFORMATION

It is an expectation that all patients receive care/services from a licensed clinician. All appropriate supporting documentation, including recent pertinent office visit notes, laboratory data, and results of any special testing must be provided. If applicable: All prior relevant imaging results and the reason that alternative imaging cannot be performed must be included in the documentation submitted.

STATEMENT

Purpose

This guideline addresses elective, non-emergent knee arthroplasty (knee replacement) procedures, including total knee arthroplasty (TKA), unicompartmental/unicondylar knee arthroplasty (UKA) or hemiarthroplasty (partial knee replacement), and revision arthroplasty procedures.

Scope

Surgical indications are based on relevant subjective clinical symptoms, objective physical exam & radiologic findings, and response to previous non-operative treatments when medically appropriate.

See* LEGISLATIVE REQUIREMENTS *for specific mandates in the State of Washington

General Requirements

Elective knee arthroplasty may be considered if the following general criteria are met:

- Knee pain with documented loss of function, which may include painful weight bearing, painful or inadequate range of motion to accomplish age -appropriate activities of daily living (ADLs) and/or employment, and painful mechanical catching, locking, or popping
- ~~Individual is medically stable and optimized for surgery with no uncontrolled comorbidities (such as diabetes)~~ Individual is medically stable and optimized for surgery, and any treatable comorbidities are adequately medically managed such as diabetes, nicotine addiction, or an excessively high BMI. There should also be a shared decision between the patient and physician to proceed with a total joint replacement when comorbidies exist as it pertains to the increased risk of complications. [1]
- Individual does not have an active local or systemic infection

- Individual does not have active, untreated drug dependency (including but not limited to narcotics, opioids, muscle relaxants) unless engaged in treatment program
- Individual has good oral hygiene and does not have major dental work scheduled or anticipated (ideally within one year of joint replacement), due to increased post-surgical infection risk

Clinical notes should address:

- Symptom onset, duration, and severity
- Loss of function and/or limitations
- Type and duration of non-operative management modalities
- Discussion with patient regarding decision making and timing

Non-operative management must include at least **TWO** or more of the following unless otherwise specified in clinical indications below: [2, 3]

- Rest or activity modifications/limitations
- Weight reduction for individual with elevated BMI
- Protected weight-bearing with cane, walker, or crutches
- Brace/orthosis
- Physical therapy modalities
- Physician-supervised exercise program (including home exercise program)
- Application of heat or ice
- Pharmacologic treatment: oral/topical NSAIDS, acetaminophen, or analgesics
- Intra-articular injection(s)

INDICATIONS

Total Knee Arthroplasty (TKA)

There is no medical necessity to perform TKA in individuals with severe radiological disease and no symptoms). If medical records indicate that possibly either a TKA or a UKA will be performed, based on the findings at the time of surgery, separate requests are to be submitted.

TKA may be considered medically necessary when the following criteria are met, [4]

- Extensive disease or damage due to rheumatoid arthritis,[1] post-traumatic arthritis (i.e., previous proximal tibia or distal femur fracture causing subsequent arthritis), fracture,[2] avascular necrosis [5][3] confirmed by imaging (radiographs, MRI, or other advanced imaging), or radiographs (X-rays) demonstrate bone-on-bone articulation;
- **AND**

- There is persistent pain and documented loss of function with any of the above~~. **NOTE:** There is no medical necessity to perform TKA in individuals with severe radiological disease and no symptoms~~

  OR

- When **ALL** of the following criteria are met:
  - Pain due to advanced osteoarthritis (Kellgren-Lawrence (K-L) grade 3 or grade 4 degeneration [see grading appendix]) that is persistent and severe and/or individual has documented loss of function that has been present for at least 12 weeks resulting in a diminished quality of life [6]~~4~~
  - Failure of **at least 12 weeks** of non-operative treatment, including at least **TWO** of the following: [2, 3]~~ 5-8~~
    - Rest or activity modifications/limitations
    - Weight reduction for individual with elevated BMI~~8~~
    - Protected weight-bearing with cane, walker, or crutches
    - Brace/orthosis
    - Physical therapy modalities
    - Physician-supervised exercise program (including home exercise program)
    - Application of heat or ice
    - Pharmacologic treatment: oral/topical NSAIDS, acetaminophen, or analgesics~~8~~
    - Injections: corticosteroid or viscosupplementation
  - Physical exam findings demonstrate **one or more** of the following: tenderness, swelling/effusion, limited range of motion (decreased from uninvolved side or as compared to a normal joint), flexion contracture, palpable or audible crepitus, instability and/or angular deformity (not required if radiographs demonstrate bone-on bone articulation)
  - Radiographic findings show evidence of advanced arthritic changes, described as Kellgren-Lawrence grade 3 or grade 4 degeneration or described as X-rays demonstrating advanced changes such as severe narrowing or bone-on-bone compartment collapse, subchondral sclerosis or cysts, osteophyte formation and/or bony deformity. [7]~~ 4, 9~~ X-rays described only as showing "severe", "advanced" or "end-stage" arthritis require more definitive descriptions as stated above. The severity of knee osteoarthritis is commonly determined with weight-bearing radiographs, however, if severe arthritic changes (e.g., bone on bone joint space narrowing) are noted on non-weightbearing images, further weight-bearing radiographs are not required

    NOTE: MRI should not be the primary radiographic test used to determine the presence or severity of arthritic changes in the joint. [7]~~10~~ Likewise,

determinations as to the degree of arthritis should not routinely be determined by findings described from prior arthroscopic surgery of the knee

- **NO** corticosteroid injection into the joint within 12 weeks of surgery [8, 9, 1, 10, 11, 12]~~11 20~~
- **NO** prior arthroscopic knee surgery within 6 months of surgery [13, 14, 15]~~21 26~~

~~**Additional Information**~~**Simultaneous Bilateral TKA**

- **ALL** requests for simultaneous bilateral total knee replacements should clearly indicate why simultaneous TKA is preferable to staged procedures. Associated risks with simultaneous bilateral total knee replacements should also be discussed with the patient and documented in the medical record [16, 17]~~27 31~~
  ~~If medical records indicate that possibly either a TKA or a UKA will be performed, based on the findings at the time of surgery, separate requests are to be submitted~~

Absolute Contraindication

- Active infection (local or remote). If a local or remote infection is documented in the patient's history, records should clearly demonstrate that the previous infection has been treated and symptoms have resolved or that the individual has no clinical signs or symptoms of the previous infection at the time of the operation [4]
- **ANY** corticosteroid injection into the joint within 12 weeks of surgery [8, 9, 1, 10, 11, 12]~~11 15~~
- **ANY** prior arthroscopic knee surgery within 6 months of surgery [13, 14, 15]~~21 25~~

Relative Contraindication [4]

- Prior infection at site (unless aspiration with cultures and serology [CBC with differential, ESR, CRP] demonstrates no infection). If prior infection at site, tissue biopsies should be sent intra-operatively to exclude latent/dormant infection
- Documented allergy to any proposed component
- BMI > 40~~32~~ without ~~attempts at weight loss or~~ discussion of increased risk ~~conferred by BMI~~ [18]
- Severe peripheral vascular disease
- Compromised soft tissue envelope
- Uncontrolled comorbidities [19]~~33~~

Unicompartmental Knee Arthroplasty (UKA) / Partial Knee Replacement (PKA)

All requests for UKA in individuals with chronic, painless effusion and extensive radiographic arthritis will be evaluated on a case-by-case basis.

Medial or lateral UKA/PKA may be medically necessary when **ALL** of the following criteria are met: [20]

- At least 12 weeks of pain localized to the medial or lateral compartment~~4~~
- Unless bone-on-bone articulation is present, f~~F~~ailure of at least 12 weeks of non-operative treatment, including at least **TWO** of the following: [2, 3]~~5-8~~
    - Rest or activity modifications/limitations
    - Weight reduction for individual with elevated BMI[8]
    - Protected weight-bearing with cane, walker, or crutches
    - Brace/orthosis
    - Physical therapy modalities
    - Physician-supervised exercise program (including home exercise program)
    - Application of heat or ice
    - Pharmacologic treatment: oral/topical NSAIDS, acetaminophen, or analgesics~~8~~
    - Injections: corticosteroid or viscosupplementation
- Total arc of motion (goniometer) > 90 degrees
- Normal ACL or stable reconstructed ACL per physical exam test [21, 22]~~34~~
- Weight-bearing radiographs demonstrate ***only*** unicompartmental disease (with or without patellofemoral involvement), described as Kellgren-Lawrence grade 3 or grade 4 degeneration

  NOTE: MRI should not be the primary radiographic test used to determine the presence or severity of arthritic changes in the joint [7]~~10~~

- Contracture < or equal to 10 degrees upon physical exam (goniometer) [23]~~35~~
- Angular deformity < or equal to 10 degrees, passively correctable to neutral upon physical exam (goniometer)~~36~~
- **NO** corticosteroid injection into the joint within 12 weeks of surgery [8, 9, 1, 10, 11, 12]~~11-15~~
- **NO** prior arthroscopic knee surgery within 6 months of surgery [13, 14, 15]~~21-25~~
- **ALL** requests for simultaneous bilateral partial knee replacements should clearly indicate why simultaneous UKA is preferable to staged procedures. Associated risks with simultaneous bilateral partial knee replacements should also be discussed with the patient and documented in the medical record [16, 17]~~27~~

~~All requests for UKA in individuals with chronic, painless effusion and extensive radiographic arthritis will be evaluated on a case-by-case basis.~~

Contraindications for Medial or Lateral UKA/PKA [20]

- **ANY** corticosteroid injection into the joint within 12 weeks of surgery [8, 9, 1, 10, 11, 12]~~11-15~~
- **ANY** prior arthroscopic knee surgery within 6 months of surgery [13, 14, 15]~~21-25~~
- Local or systemic active infection

- Inflammatory arthritis
- Angular deformity or contracture greater than indicated range
- Significant arthritic involvement of opposite compartment
- ACL instability
- Poor bone quality or significant osteoporosis or osteopenia
- Meniscectomy of the opposite compartment, involving > 25% of meniscus
- Stiffness greater than indicated range of motion

Patellofemoral UKA/PKA

May be medically necessary when **ALL** of the criteria are met within **ONE** of the following two subsections:

Subsection One: [20, 24]

- Failure of prior patellofemoral unloading procedures (i.e., Maquet or Fulkerson)
- Unless patellofemoral bone-on-bone articulation is present, fFailure of at least 12 weeks of non-operative treatment, including at least **TWO** of the following:
    - Rest or activity modifications/limitations
    - Weight reduction for individual with elevated BMI
    - Protected weight-bearing with cane, walker, or crutches
    - Brace/orthosis
    - Physical therapy modalities
    - Physician-supervised exercise program (including home exercise program)
    - Application of heat or ice
    - Pharmacologic treatment: oral/topical NSAIDS, acetaminophen, or analgesics
    - Injections: corticosteroid or viscosupplementation
- Standing, AP, or PA weight-bearing x-rays demonstrate only unicompartmental disease of the patellofemoral joint, described as Kellgren-Lawrence grade 3 or grade 4 degeneration (joint space narrowing, osteophyte formation, sclerosis and/or subchondral cystic changes), with no evidence of medial or lateral compartment arthritis.

OR

Subsection Two: [20]

- At least 6 months of isolated patellar/anterior knee pain
- Patellar/anterior knee pain that is exacerbated by stairs, inclines, transfers, or prolonged sitting
- Reproducible patellofemoral pain upon physical exam
- **NO** ligamentous instability upon physical exam
- Failure of **at least 12 weeks** of non-operative treatment, including at least **TWO** of the following:

    - Rest or activity modifications/limitations
    - Weight reduction for individual with elevated BMI
    - Protected weight-bearing with cane, walker, or crutches
    - Brace/orthosis
    - Physical therapy modalities
    - Physician-supervised exercise program (including home exercise program)
    - Application of heat or ice
    - Pharmacologic treatment: oral/topical NSAIDS, acetaminophen, or analgesics
    - Injections: corticosteroid or viscosupplementation
- Standing, AP, or PA weight-bearing radiographs demonstrate only unicompartmental disease of the patellofemoral joint, described as Kellgren-Lawrence grade 3 or grade 4 degeneration, with no evidence of medial or lateral compartment arthritis
- **NO** cortisone injection into the joint within 12 weeks of surgery [8, 9, 1, 10, 11, 12][11-15]

  NOTE: MRI should not be the primary radiographic test used to determine the presence or severity of arthritic changes in the joint [7][10]

Contraindications for Patellofemoral UKA/PKA: [20]

- **ANY** corticosteroid injection into the joint within 12 weeks of surgery [8, 9, 1, 10, 11, 12][11-15]
- Local or systemic active infection
- Inflammatory arthritis
- Angular deformity or contracture greater than indicated range
- Significant arthritic involvement of the medial or lateral knee compartment(s)
- Ligament instability
- Poor bone quality or significant osteoporosis or osteopenia
- Stiffness greater than indicated range of motion

Revision Arthroplasty

Revision TKA may be considered medically necessary when the following criteria are met:

- Previous removal of infected knee prosthesis **AND** no evidence of current, ongoing, or inadequately treated knee infection (ruled out by normal inflammatory markers* (ESR and CRP) or significant improvement in these markers and a clear statement by the treating surgeon that infection has been adequately treated) **AND** off antibiotics [25, 26][37-39]

  ***NOTE**: If these inflammatory markers are elevated, further evaluation is required, including an aspiration with synovial fluid WBC count, gram stain and cultures, or an intraoperative frozen biopsy [27, 28][37];

  OR

- When **ALL** of the following criteria are met [29, 30][40, 41]:

- Symptomatic UKA/PKA or TKA as evidenced by persistent, severe, disabling pain, complaints of instability, mechanical abnormalities ("clunking" or audible crepitus), any of which result in a loss of function
- Any of the following findings upon physical exam: tenderness to palpation objectively attributable to the implant, swelling or effusion, pain on weight-bearing or motion, instability on stress-testing, abnormal or limited motion (compared to usual function), palpable or audible crepitus or "clunking" associated with reproducible pain
- Aseptic loosening, instability, osteolysis, progressive bone loss, or mechanical failure confirmed on radiographic or advanced imaging (bone scan, CT scan, or MRI)
- For implant loosening seen on routine X-rays or advanced imaging, documentation of no ~~-~~current, ongoing, or inadequately treated knee infection, ruled out by normal inflammatory markers (ESR and CRP) [25, 31, 26]~~38, 39, 42-44~~
- If the revision is for obvious radiographic evidence of hardware failure or there is a history of instability ~~only~~, inflammatory markers are not required
- Cases that do not demonstrate any radiographic abnormalities yet show findings of gross instability on physical examination will be evaluated on a case-by-case basis

- **NO** corticosteroid injection into the joint within 12 weeks of surgery [8, 9, 1, 10, 11, 12]~~11-15~~

~~Additional Information~~**Prosthesis Removal**

- Removal of infected knee prosthesis and subsequent insertion of antibiotic spacer is not considered a revision knee arthroplasty

Absolute Contraindication

- Active infection (local or remote). If a local or remote infection is documented in the patient's history, records should clearly demonstrate that the previous infection has been treated and symptoms have resolved or that the individual has no clinical signs or symptoms of the previous infection at the time of the operation
- **ANY** corticosteroid injection into the joint within 12 weeks of surgery [8, 9, 1, 10, 11, 12]~~11-15~~

Relative Contraindication:

- Unstable or poorly controlled comorbidities
- Severe peripheral vascular disease
- Compromised soft-tissue envelope (revision may be performed in conjunction with plastic surgical consultation for soft tissue coverage via pedicle flaps or other acceptable procedure)

~~OTHER NOTES~~Manipulation Indications

Manipulation following total knee arthroplasty: SEE KNEE ARTHROSCOPY & OTHER OPEN PROCEDURES Guideline for specific Manipulation indications.

LEGISLATIVE REQUIREMENTS

State of Washington

- Washington State Health Care Authority Technology Assessment [32]
  20101022A – Total Knee Arthroplasty
  - HTTC Coverage Determination
    - Computer navigated and unicompartmental knee arthroplasty is a covered benefit for treatment of osteoarthritis and rheumatoid arthritis of the knee.
    - Multi-compartmental arthroplasty is not a covered benefit
  - HTTC Reimbursement Determination
    - Limitations of Coverage
      - For Treatment of end stage osteoarthritis and rheumatoid arthritis of the knee
        - Total Knee Arthroplasty with Computer Navigation is a covered benefit
        - For individuals with uni-compartmental disease, uni-compartmental partial Knee Arthroplasty is a covered benefit
    - Non-Covered Indicators
      - Multi-compartmental partial knee arthroplasty, (including bi-compartmental and bi-unicompartmental) is not a covered benefit.

BACKGROUND

Knee Arthroplasty

Total, Partial & Revision Knee Replacement

~~This guideline addresses elective, non-emergent knee arthroplasty (knee replacement) procedures, including total knee arthroplasty (TKA), unicompartmental/unicondylar knee arthroplasty (UKA) or hemiarthroplasty (partial knee replacement), and revision arthroplasty procedures.~~Arthroplasty describes the surgical replacement and reconstruction of a joint with implanted devices when the joint has been damaged by an arthritic or traumatic process. ~~A~~

~~normal knee functions as a hinge joint between the femur and the tibia. The surfaces where these bones meet can become worn out over time, due to arthritis or other conditions, which can cause pain and swelling.~~

TKA replaces and reconstructs all articular joint surfaces. In some cases, only one surface within the knee develops arthritis and associated pain and functional loss. In these cases, a partial knee replacement may be necessary to remove and reconstruct only the damaged region of the knee.

In some cases, the knee prosthesis may wear out or loosen. If loosening is painful, a revision surgery may be necessary. In this procedure some or all of the components of the original replacement prosthesis are removed and replaced with new ones.

~~*Overview*~~

Unicompartmental Knee Arthroplasty / Partial Knee Replacement

Unicompartmental knee arthroplasty (UKA) is also called partial replacement, hemiarthroplasty, unicondylar knee, or bicondylar knee arthroplasty. This procedure involves reconstruction of either the medial or lateral weight bearing compartment of the knee and/or patellofemoral joint. Medial UKA is performed more frequently than lateral procedures.

Revision Arthroplasty

Revision describes surgical reconstruction due to failure or complication of a previous arthroplasty.

Grading Appendix

Kellgren-Lawrence Grading System (Standing/weight-bearing X-rays)

Grade	Description
0	No radiographic features of osteoarthritis
1	Possible joint space narrowing and osteophyte formation
2	Definite osteophyte formation with possible joint space narrowing
3	Moderate multiple osteophytes, definite narrowing of joint space, some sclerosis and possible deformity of bone contour (*some sclerosis and cyst formation)*
4	Large osteophytes, marked narrowing of joint space, severe sclerosis and definite deformity of bone contour.

POLICY HISTORY

Date	Summary
December 2023	• Legislative Requirements added for the State of Washington for Total Knee Arthroplasty 20101022A • Indications for TKA/UKA/PKA: added physical exam findings were not required if radiographs show bone-on bone articulation • Relative contraindications: BMI – removed attempts at weight loss and conferred by BMI • Revision Arthroplasty: added in language of radiographic evidence of hardware failure or history of instability, then inflammatory markers are not required • Added table of contents • Reduced background section • Updated references
May 2023	• Additional references pertaining to the risk of infection following a cortisone injection within 3 months of surgery • Deleted risk/benefit discussion requirement for revision knee arthroplasty
May 2022	• Added arthroscopic surgery within 6 months of an arthroplasty as a contraindication • Removed the risk/benefit discussion requirement • Clarified language (General Requirements) for medically stable and surgically optimized individuals • Revised 3-months to 12-weeks throughout • Replaced “patient” with “individual” where appropriate

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