INTRODUCTION:

Arthroplasty describes the surgical replacement or reconstruction of a joint with implanted devices when the joint has been damaged by an arthritic or traumatic process. This guideline outlines the clinical indications for three types of knee arthroplasty procedures: total, partial/unicompartmental, and revision arthroplasty.

This guideline is structured with clinical indications outlined for each of the following applications: Total Knee Arthroplasty (TKA), Unilateral Knee Arthroplasty (UKA), and Revision Arthroplasty.

a) Total Knee Arthroplasty (TKA)
b) Unicompartmental Knee Arthroplasty (UKA)
c) Revision Arthroplasty

A. Total Knee Arthroplasty (TKA)

Total Knee Arthroplasty (TKA) describes reconstruction of all articular joint surfaces. TKA may be considered medically necessary for treatment of the following knee joint pathology:

- Extensive disease or damage due to rheumatoid arthritis, fracture, or avascular necrosis confirmed by imaging (radiographs, MRI or other advanced imaging); AND
- Patient has pain and documented loss of function (no indication to perform TKA in patient with severe disease and no symptoms);

OR

When ALL of the following criteria are met:

- Pain that is persistent and severe and/or patient has documented loss of function that has been present for at least 6 months resulting in a diminished quality of life; AND
- At least 6 months of non-operative care* that has failed to improve symptoms. Non-operative care should include at least two or more of the following:
  a) Rest or activity modifications/limitations;
  b) Weight reduction for patient with elevated BMI;
  c) Protected weight-bearing with cane, walker or crutches;
  d) Physical therapy modalities;
  e) Supervised home exercise;
f) Pharmacologic treatment: oral/topical NSAIDS, acetaminophen, analgesics;
g) Brace/orthosis;
h) Injections: cortisone/viscosupplementation/PRP (platelet rich plasma):
   AND
   - 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; AND
   - Radiographic findings show evidence of bicompartmental or tricompartmental advanced arthritic changes, documented by weight-bearing radiographs described as Kellgren-Lawrence (K-L)** stage III or stage IV degeneration

NOTE:
- All requests for simultaneous bilateral total knee replacements will be reviewed on a case by case basis.
- All requests for TKA in patients with chronic, painless effusion and extensive radiographic arthritis will be evaluated on a case-by-case basis.

**Kellgren-Lawrence Grading System**:
- Grade 0: No radiographic features of osteoarthritis
- Grade I: Possible joint space narrowing and osteophyte formation
- Grade II: Definite osteophyte formation with possible joint space narrowing
- Grade III: Moderate multiple osteophytes, definite narrowing of joint space, some sclerosis and possible deformity of bone contour
- Grade IV: Large osteophytes, marked narrowing of joint space, severe sclerosis and definite deformity of bone contour

**Contraindications**:
- Absolute contraindication:
  - Active infection (local or remote)

- Relative contraindication: Any of the following:
  - 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.
  - Extreme morbid obesity (BMI > 40)
  - Extensor mechanism deficiency
  - Neuropathic joint
  - Severe peripheral vascular disease
  - Compromised soft tissue envelope
  - Uncontrolled comorbidities

B. Unicompartmental Knee Arthroplasty (UKA)/Partial Knee Replacement (PKA)
Unicompartmental knee arthroplasty (UKA) is also called partial, hemi- or unicondylar knee, bicondylar knee arthroplasty, and involves reconstruction of either the medial (more common than lateral) or lateral weight bearing compartment of the knee and/or patellofemoral joint.

UKA/PKA may be medically necessary when ALL of the following criteria are met:

- Pain localized to the medial or lateral compartment is present for at least 6 months; AND
- At least 6 months of non-operative care that has failed to improve symptoms. *Non-operative care should include at least two or more of the following:
  a) Rest or activity modifications/limitations;
  b) Weight optimization;
  c) Protected weight-bearing with cane, walker or crutches;
  d) Physical therapy modalities;
  e) Supervised home exercise;
  f) Pharmacologic treatment: oral/topical NSAIDS, acetaminophen, analgesics;
  g) Brace/orthosis;
  h) Injections: cortisone/viscosupplementation/PRP (platelet rich plasma); AND
- Total arc of motion (goniometer) > 90 degrees; AND
- Normal ACL or stable reconstructed ACL per physical exam test; AND
- Age > 50 years; AND
- Radiographic findings demonstrate only unicompartmental disease (with or without patellofemoral involvement) with evidence of degeneration equal to K-L* Grade 3 or 4; AND
- Contracture < 5-10 degrees upon physical exam (goniometer); AND
- Angular deformity < 10 passively correctable to neutral upon physical exam (goniometer); AND
- BMI < 40

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

**Kellgren-Lawrence Grading System:**
- Grade 0: No radiographic features of osteoarthritis
- Grade I: Possible joint space narrowing and osteophyte formation
- Grade II: Definite osteophyte formation with possible joint space narrowing
- Grade III: Moderate multiple osteophytes, definite narrowing of joint space, some sclerosis and possible deformity of bone contour
- Grade IV: Large osteophytes, marked narrowing of joint space, severe sclerosis and definite deformity of bone contour

**Outerbridge Arthroscopic Grading System**
Grade 0  Normal cartilage  
Grade I  Softening and swelling  
Grade II  Partial thickness defect, fissures < 1.5cm diameter  
Grade III  Fissures down to subchondral bone, diameter > 1.5cm  
Grade IV  Exposed subchondral bone  

Contraindications:  
  o  Local or systemic active infection  
  o  Inflammatory arthritis  
  o  Angular deformity or contracture greater than indicated range  
  o  Significant arthritic involvement of other knee compartments  
  o  Ligamentous instability (at least ACL [anterior cruciate ligament])  
  o  Poor bone quality or significant osteoporosis or osteopenia  
  o  Meniscectomy of the opposite compartment  
  o  Stiffness greater than indicated range of motion  

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

Revision TKA may be considered medically necessary when the following criteria are met:  
  1. Previous UKA/TKA or TKA joint: AND  
  2. Infection ruled out by synovial fluid aspiration/biospy (cell count and/or culture) AND off antibiotics: OR  
  3. When ALL of the following criteria are met:  
     o  Symptomatic UKA/TKA as evidence by persistent, severe disabling pain and loss of function: AND  
     o  Any of the following 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 associated with reproducible pain: AND  
     o  Aseptic loosening, osteolysis confirmed on radiographic or advanced imaging (nuclear medicine bone scan, CT scan, MRI)  

Contraindications:  
  1. Absolute contraindication:  
     o  Local or systemic active infection  
  2. Relative contraindication: Any of the following:  
     o  Deficiency of the extensor mechanism  
     o  Neuropathic joint  
     o  Unstable or poorly controlled comorbidities  
     o  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)

Non-Covered Services:
The following procedures are not considered a covered service and are not reimbursable based on lack of current scientific evidence for clinically important improvement, safety or efficacy; or based on scientific evidence of increased risk of serious complications:
- Procedures utilizing computer-navigated or patient-specific or gender-specific instrumentation
- Bicompartmental arthroplasty (investigational at this time)
- Robot-assisted TKA (Makoplasty)

Other issues:
- Manipulation following total knee arthroplasty:
  - Nonsurgical treatment is initial treatment
  - However, manipulation is indicated if within 3 months from time of primary arthroplasty if physical therapy is unable to improve motion to satisfactory degree
    - If cause of arthrofibrosis/stiffness is due to technical error (component malpositioning or inappropriate sizing), then surgical revision arthroplasty is indicated
    - If cause of arthrofibrosis/stiffness is due to adhesions/capsular contraction, then either arthroscopic or open lysis of adhesions is indicated
- Poor dental hygiene (e.g. tooth extraction should be performed prior to arthroplasty). Major dental work within 2 year after a joint replacement MAY lead to seeding of the implant and possible revision surgery. If possible, all dental work must be completed prior to shoulder arthroplasty as these procedures increase risk for infection. Following surgery, patients should receive antibiotics for routine dental check-ups for a minimum of two years.
REFERENCES


