

Measure Title	RISK-ADJUSTED COMPLICATIONS POST PRIMARY TOTAL KNEE REPLACEMENT (TKR) SURGERY	
Disease State	Knee Arthroplasty	Indicator Category¹ Disease Management
Strength of Recommendation²	Not applicable. Not a key recommendation for clinicians regarding diagnosis or treatment.	
Physician Specialties	Orthopedic Surgery	

Clinical Rationale

Disease Burden

- According to the National Center for Health Statistics (NCHS), total knee replacement procedures increased steadily during the 1990s to a rate of 104 per 100,000 individuals, or approximately 300,000 total procedures in the year 2000.[1]
- Post-operative complications:
 - The incidence of lower extremity deep vein thrombosis ranges from 40 to 88 percent. Campbell's operative orthopedics, 9th ed. 1999.[2]
 - The incidence of asymptomatic pulmonary embolism (PE) ranges from 10 to 20 percent, while that of symptomatic PE ranges from 0.5 to 3 percent. The mortality rate from PE is 2.0 percent.[2]
 - The incidence of infection among low risk patients who receive prophylactic antibiotics is 1.6 percent and higher in those with diabetes.[3]
 - Patellofemoral disorders, including patellar instability, loosening of the patellar components, patellar component failure, patella fracture, patella clunk syndrome, and rupture of the extensor mechanism, are the most common complications after knee arthroplasty.[4, 5]

Reason for Indicated Intervention or Treatment

- The inter-institutional and provider-level variation in the incidence of risk-adjusted complications after primary total knee replacement surgery suggests that differences in care may have an impact on these rates.

Evidence supporting Intervention or Treatment

- Risk reductions of up to 40 percent in the frequency of thrombosis after knee replacement surgery have been achieved with the use of thromboprophylaxis such as low molecular weight heparin.[6-8]
- Prophylactic administration of antibiotics can decrease postoperative morbidity, shorten hospitalization, and reduce the overall costs attributable to infections.[9-12]

Guidelines

- *Venous Thromboembolic Disease:*
 - The Sixth American College of Chest Physicians Consensus Conference on Antithrombotic Therapy recommends one of the following three regimens for the prevention of thromboembolic disease: LMWH, fondaparinux, or adjusted-dose vitamin K antagonist (VKA) [international normalized ratio (INR) target, 2.5; range, 2.0 to 3.0][13]

- *Infection:*
 - The National Surgical Infection Prevention Project recommends Preoperative antimicrobial prophylaxis should be standard for all patients undergoing joint replacement. The first-line agents are cefazolin (1 g if less than 80 kg and 2 g if more than 80 kg) or cefuroxime (1.5 g) given intravenously at the induction of anesthesia and repeated for two doses postoperatively at two to five and three to four hour intervals, respectively.[9]
- There are no specific specialty society recommendations or evidenced based practice guidelines regarding the prevention of patellofemoral disorders related to total knee replacement surgery.

Source	Algorithm for Provider Volume of Total Knee Arthroplasties and Patient Outcomes in the HCUP-Nationwide Inpatient Sample (Hervey 2003)
Comparative Baseline Data	<National benchmarks when available; Plan level rates>
Denominator	Count all episodes for continuously enrolled members who underwent a knee replacement surgery during the one year period starting 150 days prior to the measurement year.
Denominator Exclusion	Members with evidence of the following conditions: patella fracture, conversion of previous knee surgery, complications from a previous TKR, arthropathy associated with infection, knee arthrotomy for infection with drainage; metastatic cancer; or bone cancer.
Numerator	Score all members who do NOT have evidence of pulmonary embolism, joint infection, dislocation, deep vein thrombosis, or musculoskeletal readmission in <u>the 90 days following the discharge date from the index surgery (in FI, check for thru date on index claim, in FO/PF, use DOS)</u> .. Members who expired during a hospitalization for primary total hip replacement will also be counted.
Interpretation of Score	High score implies better performance
Physician Attribution	Score only the physicians who performed the index surgery.
External Files Required for Analysis	None

References

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8. Leclerc, J.R., et al., *Prevention of venous thromboembolism after knee arthroplasty. A randomized, double-blind trial comparing enoxaparin with warfarin*. Ann Intern Med, 1996. **124**(7): p. 619-26.
9. Bratzler, D.W. and P.M. Houck, *Antimicrobial prophylaxis for surgery: an advisory statement from the National Surgical Infection Prevention Project*. Clin Infect Dis, 2004. **38**(12): p. 1706-15.
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¹ **Indicator Classification** (Adapted from Health Plan Employer Data Information Set (HEDIS®) technical specifications)

Diagnosis	Measures applicable to patients receiving diagnostic workups for a symptom or condition that delineate appropriate laboratory or radiological testing to be performed (e.g. evaluation of thyroid nodule; pregnancy test in patients with vaginal bleeding or abdominal pain)
Effectiveness of Care	
Prevention	Measures applicable to asymptomatic individuals that are designed to prevent the onset of the targeted condition (e.g. immunizations).
Screening	Measures applicable to asymptomatic patients who have risk factors or pre-clinical disease, but in whom the condition has not become clinically apparent (e.g. pap smears; screening for elevated blood pressure).
Disease Management	Measures applicable to individuals diagnosed with a condition that are part of the treatment or management of the condition (e.g. cholesterol reduction in patients with diabetes; radiation therapy following breast conserving surgery; appropriate follow-up after acute event).
Medication Monitoring	Measures applicable to patients taking medications with narrow therapeutic windows and / or potential preventable significant side effects or adverse reactions (e.g. thyroid stimulating hormone (TSH) testing after levothyroxine dose change; hepatic enzyme monitoring for patients using antimycotic pharmacotherapy)
Medication Adherence	Measures applicable to patients taking medications for chronic conditions that are designed to assess patient adherence to medication (e.g. adherence to lipid lowering medication).
Utilization	Measures applicable to patients receiving treatment for a symptom or condition that advocate appropriate utilization of laboratory and pharmaceutical resources (e.g. conservative use of imaging for low back pain; inappropriate use of antibiotics for viral upper respiratory infection).

² Strength of Recommendation

Strength of Recommendation Based on a Body of Evidence

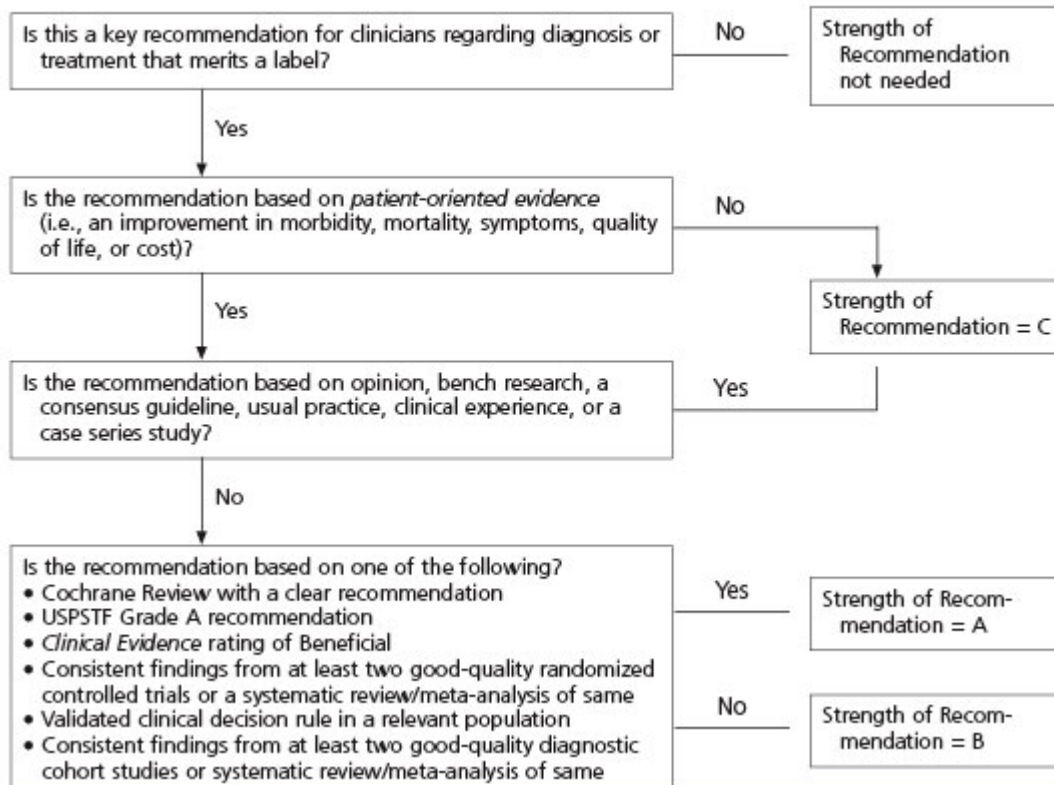


FIGURE 2. Algorithm for determining the strength of a recommendation based on a body of evidence (applies to clinical recommendations regarding diagnosis, treatment, prevention, or screening). While this algorithm provides a general guideline, authors and editors may adjust the strength of recommendation based on the benefits, harms, and costs of the intervention being recommended. (USPSTF = U.S. Preventive Services Task Force)