

# Clinical Practice Guideline Overview

## Diagnosis and Prevention of Periprosthetic Joint Infections

Published March 11, 2019

This clinical practice guideline addresses interventions employed to mitigate the risk for periprosthetic joint infection (PJI) in primary hip and knee arthroplasty and explores tools available to diagnose PJI.

*Photo courtesy of Antonia Chen, MD, MBA, FAAOS*



### Literature Review

9,328  
abstracts reviewed



1,283  
articles recalled  
for full review



248  
articles included  
after full text review  
and quality analysis



### Strong and Moderate Guideline Recommendations\*



**Strong evidence** supports the use of the following to aid in the preoperative diagnosis of prosthetic joint infection (PJI): Serum erythrocyte sedimentation rate (ESR); Serum C-reactive protein (CRP); Serum interleukin-6.



**Moderate strength evidence** supports that the practitioner avoid the use of intraoperative gram stain to rule out periprosthetic joint infection.



**Strong evidence** supports the use of histopathology to aid in the diagnosis of PJI.



**Moderate evidence supports** avoiding administration of antimicrobials in patients suspected of having a periprosthetic joint infection until cultures have been obtained and a diagnosis has been established.



**Moderate strength evidence** supports that obesity is associated with increased risk of periprosthetic joint infection (PJI).



**Moderate strength evidence** does not support the clinical utility of the following to aid in the diagnosis of PJI: Peripheral blood leukocyte count; Serum tumor necrosis factor- $\alpha$ .



**Moderate strength evidence** supports the use of the following to aid in the diagnosis of prosthetic joint infection (PJI): Synovial fluid leukocyte count and neutrophil percentage; Synovial fluid aerobic and anaerobic bacterial cultures; synovial fluid leukocyte esterase; Synovial fluid alpha-defensin ( $\alpha$ -defensin); Synovial fluid C-reactive protein (CRP); Synovial fluid nucleic acid amplification testing [(e.g., polymerase chain reaction (PCR))] for bacteria.



**Moderate strength evidence** supports the use of the following to aid in the diagnosis of prosthetic joint infection (PJI): Multiple aerobic and anaerobic bacterial periprosthetic tissue cultures; Implant sonication fluid aerobic and anaerobic bacterial cultures; Implant sonication fluid nucleic acid amplification testing (e.g., PCR) for bacteria.

**Strong evidence supports that preoperative prophylactic antibiotics be given prior to revision surgery in patients at low preoperative suspicion for periprosthetic infection and those with an established diagnosis of periprosthetic joint infection of known pathogen who are undergoing reoperation.**



### Future Research

Consideration for future research is provided for each recommendation. Review of the published literature does indicate two overarching themes: (1) complex and interrelated modifiable / non-modifiable patient factors as an important aspect in understanding risk for PJI, and (2) ongoing challenges in accurately ruling in or ruling out PJI.

## Learn More at OrthoGuidelines!

\* Please visit [OrthoGuidelines.org](http://OrthoGuidelines.org) to view the limited and consensus recommendations and all recommendation rationale for this guideline.

