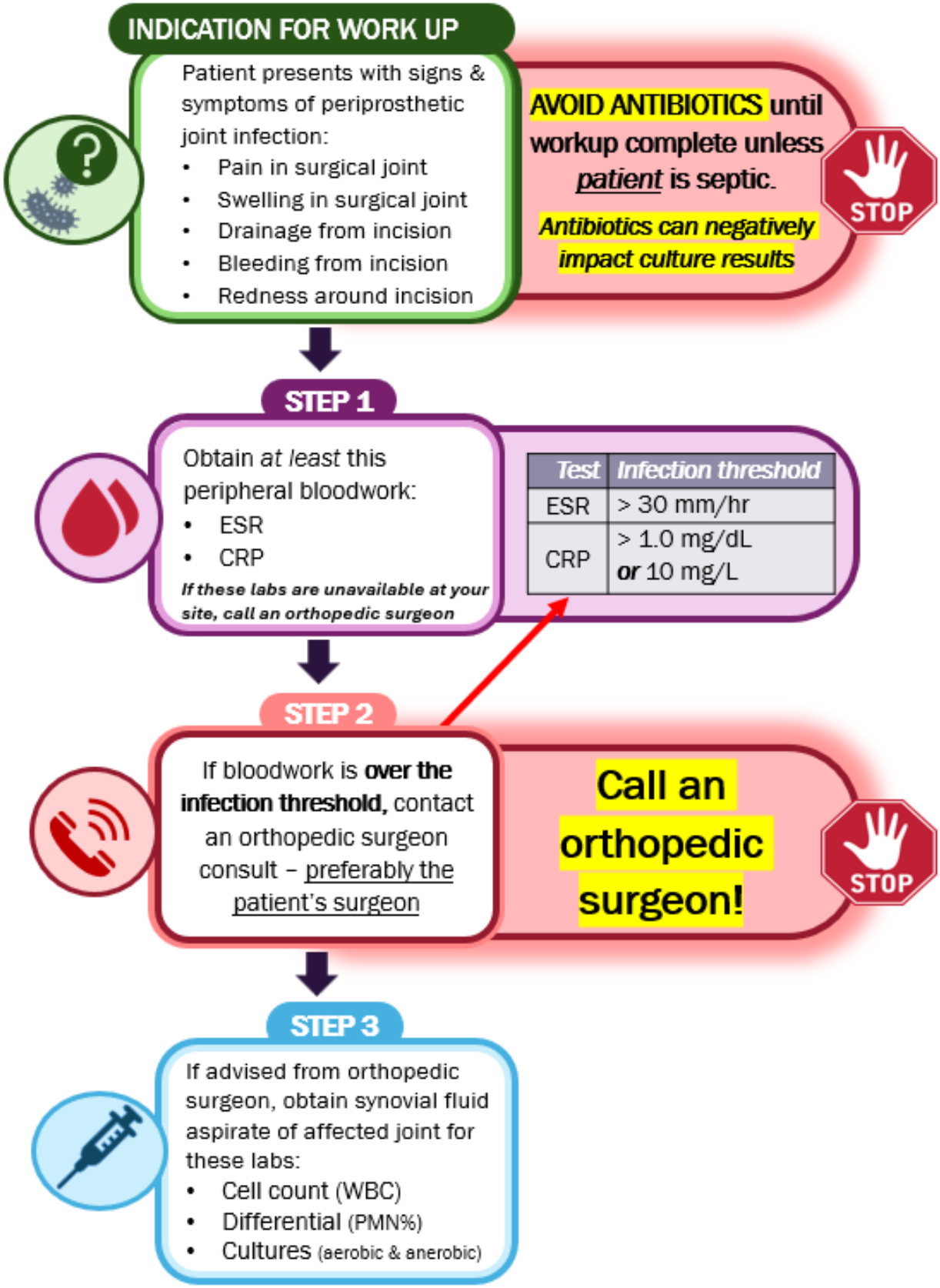
MARCQI Hip & knee periprosthetic joint infection workup recommendations – Community setting

MARCQI
Michigan Arthroplasty Registry Collaborative Quality Initiative



These recommendations & lab baselines are based on the 2018 MSIS PJI capture criteria (Parvizi, Javad et al., 2018):

Additional resources, including literature review reference list:

Evidence based PJI workup pathway for early diagnosis and treatment of possible PJI in post-operative hip and knee arthroplasty patients.

Rationale:

Post-operative (PostOp) periprosthetic joint infection (PJI) in total hip and/or knee arthroplasty patients requires varying degrees of treatment. Treatment of these PostOp PJIs hinges on the identification of the potential infection and is followed by medical (e.g., antibiotics) or surgical intervention—from a washout to implant removal.

Although early detection and eradication of PJI is imperative to optimal outcomes and lower morbidity following joint arthroplasty, the literature provides no "gold standard" in PJI work up. In the absence of clear signs of infection—such as visualization of the sinus tract, studies show multiple biomarkers in varying combinations yield higher predictive ability than individual tests to identify a PJI.[4, 5]

There is strong evidence to suggest the use of peripheral blood erythrocyte sedimentation rate (ESR), C-reactive protein (CRP), and interleukin-6 to aid in diagnosis of PJI.[1, 2, 5] Additionally, synovial fluid analysis for leukocyte and neutrophil counts, cultures, leukocyte esterase (LE), alpha-defensin (αdefensin), and C-reactive protein (CRP) are all strongly supported, though not all tests are easily or equally accessible across all sites of patient care.[2, 3]

With many tests available in the workup process for infection, MARCQI identified high performing and accessible tests to guide initial workup standards for suspected PJI. Taking a stepwise approach from least to most invasive, the MARCQI Medical Advisory Committee approved these tests to provide a strong foundation for PJI workup.

The following evidence-based guidelines are meant to structure the workup process for possible infections, with the intention of early identification and intervention.

References:

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2. Parvizi, Javad et al. "The 2018 Definition of Periprosthetic Hip and Knee Infection: An Evidence-Based and Validated Criteria." *The Journal of arthroplasty* vol. 33,5 (2018): 1309-1314.e2. doi:10.1016/j.arth. 2018.02.078
3. Parvizi, J., & Della Valle, C. J. (2010). AAOS Clinical Practice Guideline: diagnosis and treatment of periprosthetic joint infections of the hip and knee. *The Journal of the American Academy of Orthopaedic Surgeons*, *18*(12), 771–772. https://doi-org.proxy.lib.umich.edu/10.5435/00124635-201012000-00007
4. Tubb CC, Polkowksi GG, Krause B. Diagnosis and Prevention of Periprosthetic Joint Infections. J Am Acad Orthop Surg. 2020 Apr 15;28(8):e340-e348. doi: 10.5435/JAAOS-D-19-00405. PMID: 31972719.
5. Wasterlain AS, Goswami K, Ghasemi SA, Parvizi J. Diagnosis of Periprosthetic Infection: Recent Developments. J Bone Joint Surg Am. 2020 Aug 5;102(15):1366-1375. doi: 10.2106/JBJS.19.00598. PMID: 32769605.

Yu JS, Bornes TD, Youssef MP, Tam KW, Nocon AA, Sculco PK, Carli AV. Which Combination is the Best? A Comparison of the Predictive Potential of Serum Biomarker Combinations to Diagnose Periprosthetic Joint Infection. J Arthroplasty. 2023 Jul;38(7 Suppl 2):S381-S388. doi: 10.1016/j.arth.2023.05.025. Epub 2023 May 24. PMID: 37230226.