Approach to Arthritis

MUSCULOSKELETAL (MSK)

LR 28 — KEY DECISION RULE
Synovial WBC >100 ×10⁹/L (>100,000/µL)[1]
for septic arthritis; <25 ×10⁹/L lowers it (LR 0.32) but can't exclude

Painful, swollen joint(s) → Confirm synovitis; count joints; tap any effusion: cells, Gram stain, culture, crystals[1,10] → **Could this be a septic joint?**

Yes → **Possible septic joint: tap before antibiotics[1,2]**

- Acute hot, swollen joint(s)
- Older age, DM, RA, prosthesis, skin infection
- Fever in only 57%: absence doesn't exclude
- Gram stain positive or WBC >50 ×10⁹/L
- Pustules and tenosynovitis: gonococcal
- Crystals seen but patient looks septic

→ **Joint and blood cultures, IV antibiotics, ortho to drain[10,11]**

Then: synovial WBC and joint pattern?

	Septic usually >50	Crystal 10–100 ×10⁹/L	Inflammatory 2–100 ×10⁹/L	Noninflammatory <2 ×10⁹/L
CAUSES	• **S. aureus > strep > gram-negatives** • **Gonococcal (DGI)** • **Prosthetic joint infection: ortho/ID[10]**	• Gout (monosodium urate) • CPPD (pseudogout)	• Rheumatoid arthritis • SpA: psoriatic, reactive, IBD, axial • Viral (parvovirus, HBV, HCV), Lyme, SLE	• Osteoarthritis • **Fracture, hemarthrosis** • AVN, internal derangement
CLUES	• Mono (knee ~50%); >1 joint in ~20%[10] • PMN ≥90% (LR 3.4)[1] • Lower WBC: DGI, PJI, immunosupp.[10,11,12]	• 1st MTP; peaks within 24 h; tophi[3] • Diuretics, alcohol, CKD, meat, seafood • Older; knee or wrist; chondrocalcinosis	• Morning stiffness >30 min[10] • Symmetric MCP, PIP, wrist, MTP: RA[5] • Dactylitis, psoriasis, uveitis, GU/GI: SpA	• Age >45, bony swelling, stiff <30 min • Trauma or anticoagulant: bloody tap • Locking or giving way: mechanical
WORKUP	• Gram stain, culture; blood cultures ×2 • GC NAAT: urine, throat, rectum • X-ray; CT or MRI if deep joint[10]	• Needles, negatively birefringent: gout • Rhomboids, positively birefringent: CPPD • Culture anyway: 1.5% also septic[2]	• RF, anti-CCP, ESR/CRP; hand/foot X-ray[5] • HLA-B27, SI imaging; GC/chlamydia NAAT[10] • Parvo IgM, HBV, HCV, HIV, Lyme; ANA[10]	• X-ray: joint space loss, osteophytes • MRI if AVN or derangement suspected • Bloody tap: X-ray for fracture; INR, CBC
MANAGE	• Cefazolin + ceftriaxone ± vancomycin (MRSA)[11] • Drain: serial taps or washout[10,11] • 3–4 wk; 2 wk if hand/wrist washout[9,10]	• Colchicine, NSAID or steroid (oral/IA)[4] • Tophi/≥2 flares/y: allopurinol, <360 µmol/L[4] • CPPD, 1–2 joints: aspirate, IA steroid[7]	• NSAID or short prednisone course[10] • Early rheum; methotrexate for RA[6] • Reactive: treat GU infection[10]	• Exercise, weight loss, tai chi[8] • Topical or oral NSAID; IA steroid[8] • Hemarthrosis: hold anticoagulant; ortho

Stethopedia
stethopedia.ca/approach/arthritis

Evidence [1] Margaretten 2007, JAMA [2] Shah 2007, J Emerg Med [3] Neogi 2015, Ann Rheum Dis [4] FitzGerald 2020, Arthritis Care Res [5] Aletaha 2010, Arthritis Rheum [6] Fraenkel 2021, Arthritis Care Res [7] Zhang 2011, Ann Rheum Dis [8] Kolasinski 2020, Arthritis Care Res [9] Gjika 2019, Ann Rheum Dis [10] Manual 2024–25, pp. 169–171 [11] Ravn 2023, J Bone Jt Infect (SANJO) [12] McNally 2021, Bone Joint J (EBJIS)