Gout & Crystal Arthropathy

Treat the flare, then treat to target · Urate < 6, and never stop ULT for a flare

TARGET URATE < 6
mg/dL, indefinitely

CONFIRM IT *and rule out the joint you cannot afford to miss*

ASPIRATE WHERE YOU CAN

Negatively birefringent, needle-shaped urate crystals under polarised light. **Pseudogout** gives **positively birefringent rhomboid** calcium pyrophosphate crystals with chondrocalcinosis on X-ray.

SEPTIC ARTHRITIS IS THE PRIORITY

A hot, swollen joint is **septic arthritis until excluded**. **Crystals and infection can coexist** — finding crystals does not exclude sepsis. **Send Gram stain and culture on every aspirate**, and treat empirically if the picture is at all septic.

SERUM URATE MISLEADS ACUTELY

Urate is often normal or low during an acute flare, because it shifts into the joint. **A normal level does not exclude gout**, and you should **recheck it 2–4 weeks after the flare settles** to establish the true baseline.

TREAT THE FLARE *any of three first-line options — choose by comorbidity*

Option	Regimen	Choose when / avoid when
NSAIDs	Full anti-inflammatory dose until resolution	Effective and cheap. **Avoid with CKD, heart failure, active peptic ulcer disease, or anticoagulation.**
Colchicine	**Low dose** — 1.2 mg then 0.6 mg an hour later, then prophylactic dosing	**Low dose works as well as high dose with far less toxicity.** Reduce in renal impairment; beware interactions with **clarithromycin, statins, cyclosporine and diltiazem**. Most effective started early in the flare.
Glucocorticoids	Oral prednisolone, or **intra-articular injection** for a single accessible joint	**The safest option in renal impairment** and often the pragmatic ward choice. Intra-articular is ideal for monoarticular disease — but only **after infection is excluded**.

Do not stop existing urate-lowering therapy during a flare. Stopping and restarting destabilizes urate and provokes further attacks. Where ULT is newly indicated, **starting it during the flare is acceptable** and improves the chance the patient actually begins it.

START URATE-LOWERING THERAPY *who needs it, and how to begin*

1. **Strongly indicated for** ≥ 2 flares per year, **tophi**, **radiographic erosive damage**, or gout with **chronic kidney disease stage 3 or worse**, urolithiasis, or a very high serum urate.
2. **Allopurinol is first-line**, including in chronic kidney disease. **Start low and go slow: ≤ 100 mg/day, or ≤ 50 mg/day in CKD stage 3–4**, then titrate **every 2–5 weeks** against the serum urate. The starting dose is for safety; the maintenance dose is whatever achieves target.
3. **Treat to target: serum urate < 6 mg/dL** (< 5 mg/dL where there are tophi), checked serially. **This is a treat-to-target disease**, and under-titration is the commonest reason patients keep flaring.
4. **Test HLA-B*58:01 before allopurinol** in patients of **Southeast Asian descent** (Han Chinese, Korean, Thai) and in **African American** patients, who carry the allele more often and face a much higher risk of severe allopurinol hypersensitivity.
5. **Give anti-inflammatory prophylaxis for at least 3–6 months** when starting ULT — low-dose colchicine, an NSAID, or low-dose steroid. Mobilizing urate provokes flares, and an unprepared patient concludes the drug is making them worse and stops it.

WHEN ALLOPURINOL IS NOT ENOUGH *and the lifestyle conversation*

ALTERNATIVES

Febuxostat if allopurinol fails or is not tolerated — note the cardiovascular safety signal from CARES and discuss it in established cardiovascular disease. **Uricosurics** such as probenecid where renal function permits and there is no stone history. **Pegloticase** for severe refractory tophaceous disease.

ADDRESS THE DRIVERS

Reduce **alcohol (especially beer), fructose-sweetened drinks, and purine-rich meat and seafood**. Weight loss and treating metabolic syndrome help. **Review the drug chart** — **thiazides and loop diuretics** raise urate; **losartan** and **SGLT2 inhibitors** modestly lower it and may be preferable in a patient who needs those drug classes anyway.

CALCIUM PYROPHOSPHATE DISEASE *the other crystal — and there is no urate-lowering equivalent*

Feature	Detail
Crystals	**Positively birefringent, rhomboid** calcium pyrophosphate crystals — the mirror image of urate, which is negatively birefringent and needle-shaped.
Pattern	Older patients. Commonly the **knee and wrist** rather than the first toe. **Chondrocalcinosis** on plain films — linear calcification of cartilage and menisci. Can present as pseudo-osteoarthritis or, rarely, a pseudo-rheumatoid picture.
Look for a cause	Screen for the metabolic associations in younger or florid cases: **hyperparathyroidism, hemochromatosis, hypomagnesemia, hypophosphatasia**, and hypothyroidism.
Treatment	**The same anti-inflammatory options as gout** — NSAIDs, colchicine, or steroids including intra-articular. **There is no urate-lowering equivalent**; you cannot dissolve the crystals, so management is symptomatic plus treating any underlying metabolic cause.

TOPHACEOUS & DIFFICULT GOUT *what chronic under-treatment looks like*

RECOGNIZE THE BURDEN

Tophi on the ear helix, olecranon, fingers and Achilles indicate a large total urate load. These need a **lower target of < 5 mg/dL** and take **years to dissolve**. Chronic gout causes **erosive joint damage** with characteristic overhanging edges on X-ray, and is frequently mistaken for seronegative arthritis.

WHY PATIENTS FAIL

Almost always **under-titration and non-adherence**, not drug failure. Common patterns: **allopurinol left at 300 mg** without checking a urate, **prophylaxis omitted** so early flares drive discontinuation, **ULT stopped during a flare**, and no serial urate measurements. **Before declaring allopurinol ineffective, confirm it was titrated to target and actually taken.**

PEARLS & PITFALLS

- **Crystals do not exclude infection.** Always send the aspirate for culture, and treat empirically if the joint looks septic.
- **A normal urate during a flare is common.** Do not use it to rule gout out, and recheck weeks later.
- **Never stop urate-lowering therapy because the patient is flaring.** Treat the flare and continue the ULT.
- **Low-dose colchicine is as effective as high dose** and far better tolerated. High-dose regimens are obsolete.
- **Prophylaxis for 3–6 months when starting ULT** is what stops patients abandoning treatment in the first months.
- **Do not treat asymptomatic hyperuricemia.** It is not gout, and routine treatment is not recommended.

References: 2020 American College of Rheumatology Guideline for the Management of Gout (Arthritis Care & Research, 2020) · CARES trial of febuxostat · ACR guidance on HLA-B*58:01 testing.

Educational aid; verify doses against local protocol, renal function, and patient factors.