

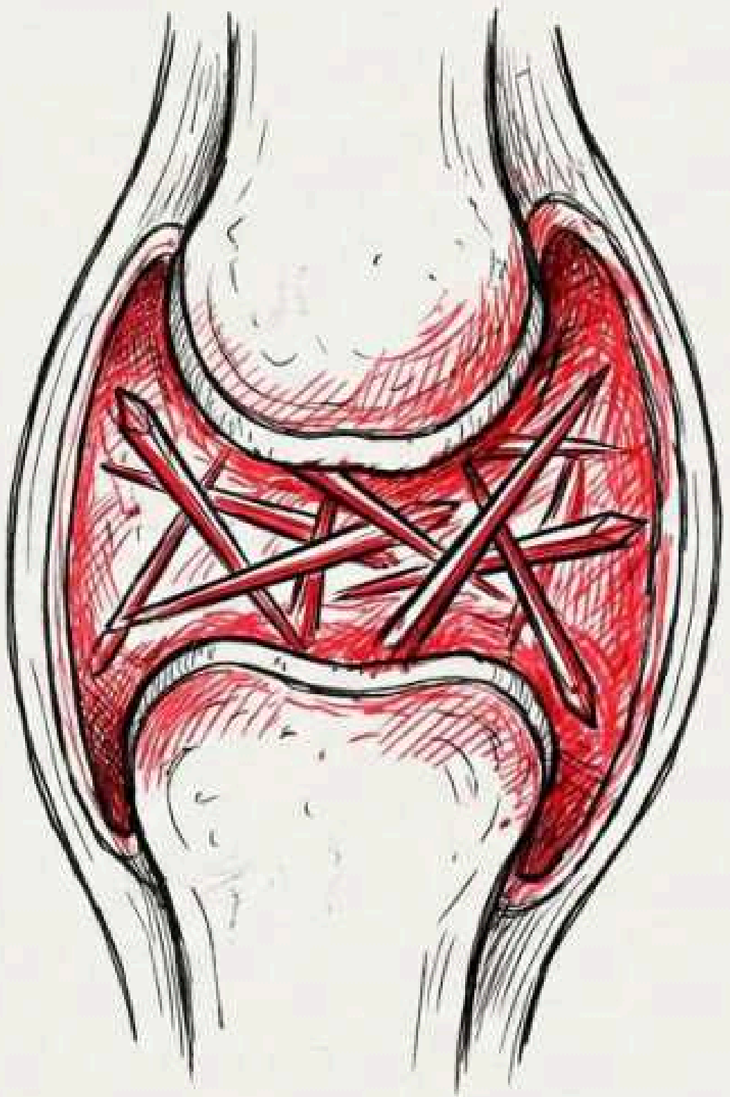
Gout and Crystal Arthritis

MED 533 B — Lecture 4

¶ 4.1



The most common inflammatory arthritis in men



Mechanism

High blood uric acid over a long period

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Monosodium urate crystals form in and around joints.

Dietary & Cellular Sources

¶ 4.2

DNA, Red Meat, Offal, Shellfish

↓

Purines

↓ Metabolic breakdown

Uric Acid — Most is excreted by kidneys

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~~Further breakdown~~

The Human Disadvantage: Ancestors lost a working copy of the uricase enzyme. Humans naturally have high baseline uric acid levels compared to most other mammals.

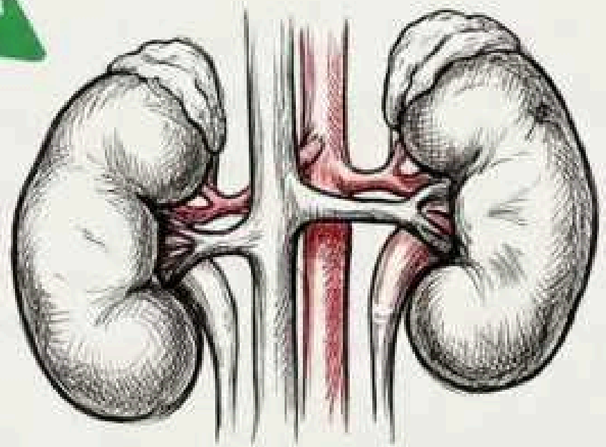
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Dietary Triggers

Alcohol (beer & spirits)

Fructose-sweetened drinks

High intake of meat and seafood



Kidneys:
Excreting too little
(strongly influenced by genes)

Associated Comorbidities

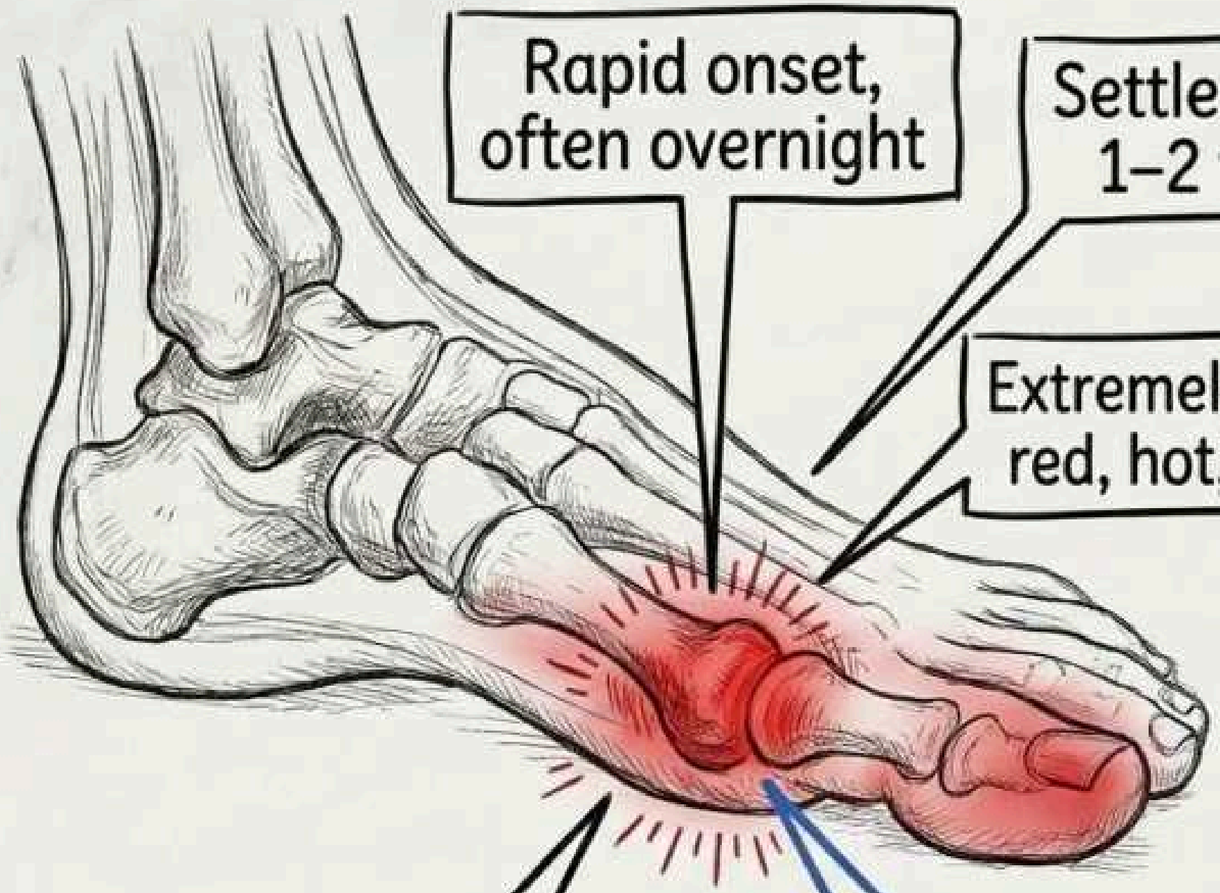
- High blood pressure
- Diabetes
- Kidney disease
- Heart disease

Clinical Factors

Obesity

Diuretic drugs

¶ 4.4



Rapid onset, often overnight

Settles within 1–2 weeks

Extremely painful, red, hot, swollen

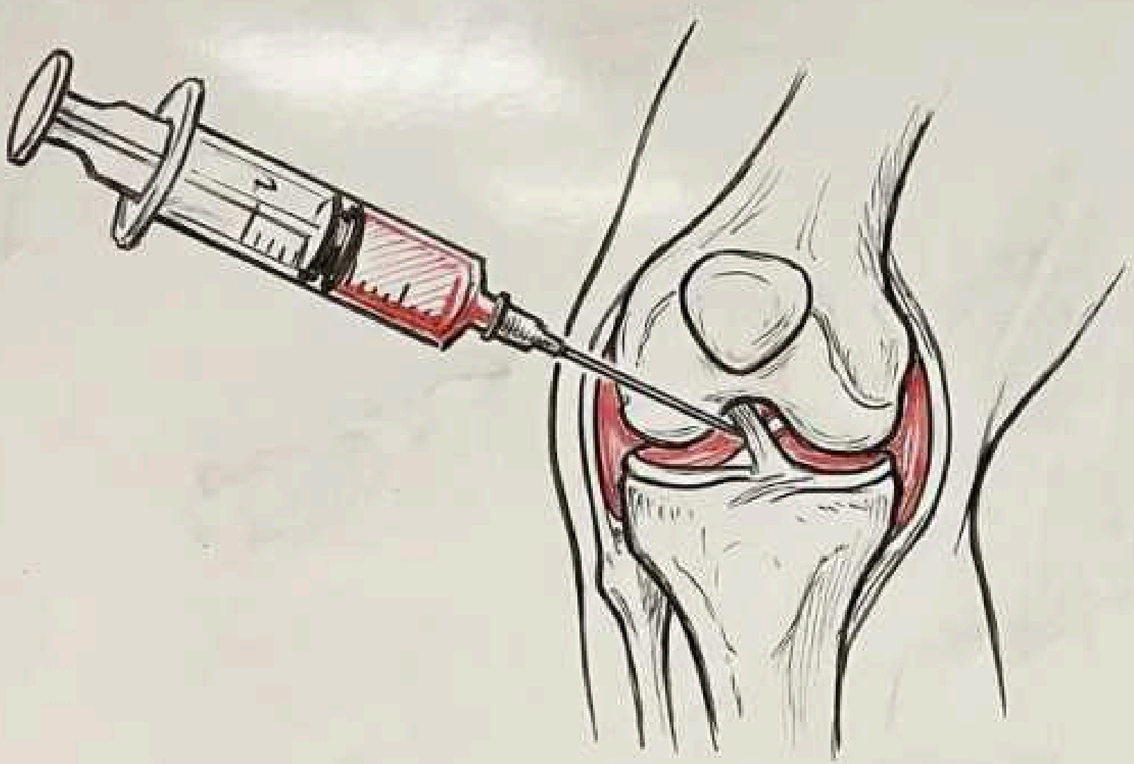
Unbearable tenderness (even a bedsheet touching it is unbearable)

Location:
Base of big toe affected first in ~50% of cases

Triggers

- ☑ Alcohol
- ☑ Large meals
- ☑ Dehydration
- ☑ Illness or surgery
- ☑ Starting/changing urate-lowering treatment

¶ 4.5





Gold Standard: Joint fluid analysis

Crucial Rule-Out: Septic arthritis (infection)

Reveals needle-shaped urate crystals

Warning: Blood uric acid can be normal during an attack— do not use a normal result to rule out gout!

Alternative Imaging: Ultrasound and special CT scans can show urate deposits.

¶ 4.6

Core Goal: Treat acute attacks as early as possible.

- Anti-inflammatory drugs
- Colchicine
  - (Drug derived from this plant; used for centuries.)



- Steroids

Selection Criteria: Chosen according to the person's other medical conditions.

Supportive: Rest and cool the joint.

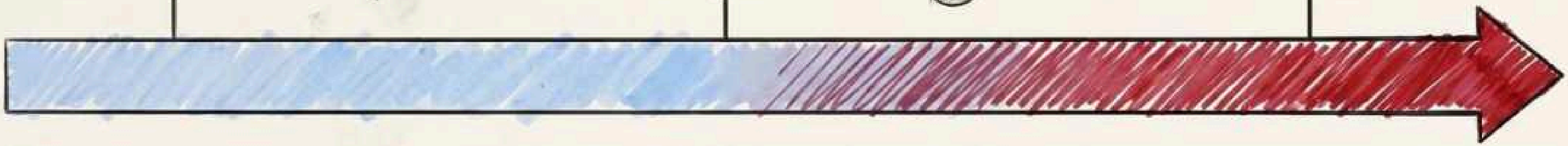
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Phase 1:
Attacks become more frequent.

Phase 2:
Tophi formation
(urate deposits form under skin, around joints, in ears).



Phase 3:
Joint damage and kidney stones.

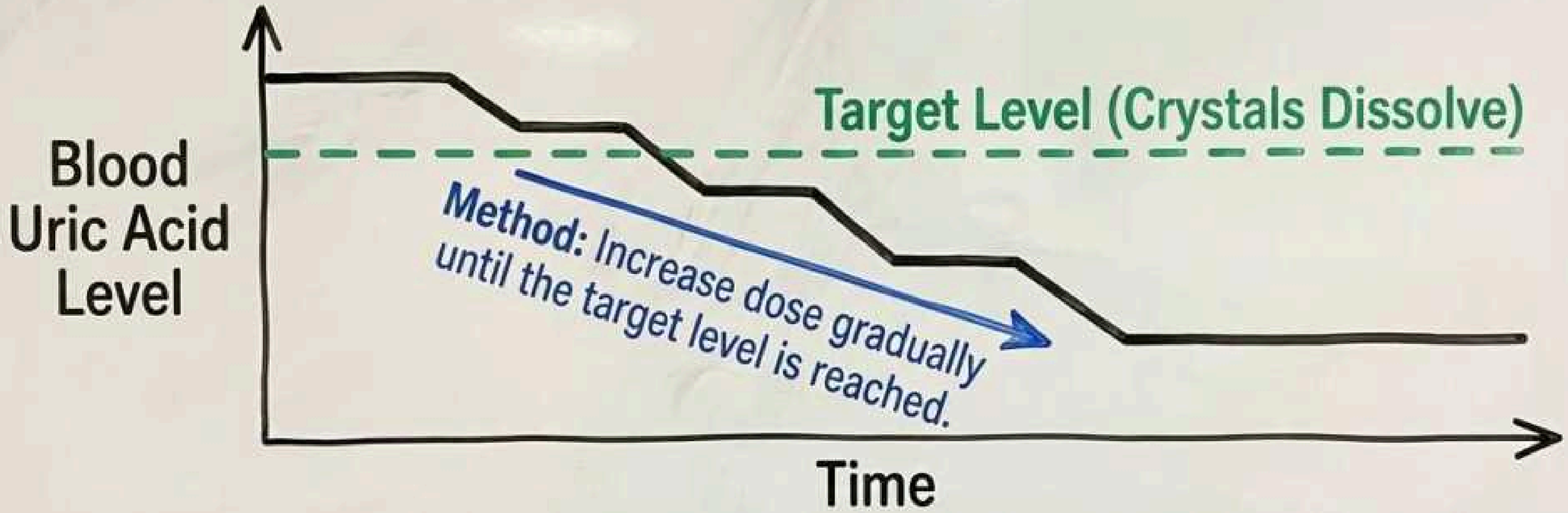


The Paradox: Gout is one of the few effectively curable forms of arthritis. Lowering uric acid enough allows the crystals to permanently dissolve.

¶ 4.8

Indications for Therapy:
Repeated attacks, tophi, joint damage, or kidney stones.

Primary Intervention:
Allopurinol (blocks the enzyme that makes uric acid).



Clinical Caveat: Lowering urate can initially trigger attacks. Low-dose preventive treatment must be given concurrently for the first few months.

The Reality

Gout is often poorly managed.

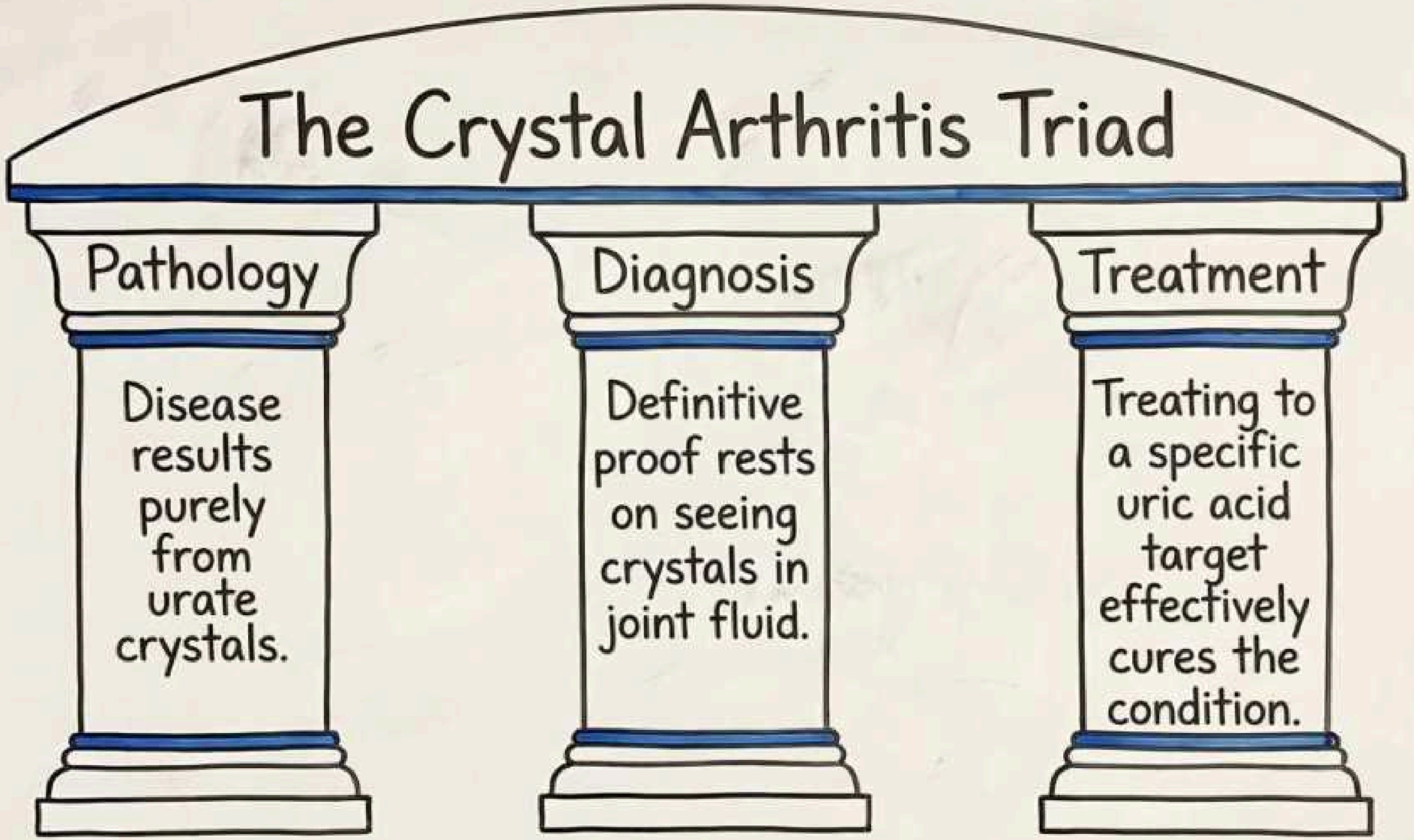
- Patients are never started on urate-lowering treatment
- Dose is never increased to reach the target

The 2018 Solution

A published trial proving the efficacy of Nurse-Led Care.



	Gout 	Pseudogout (CPPD) 
Crystal Type	Monosodium urate crystals	Calcium pyrophosphate crystals
Affected Joints	Base of big toe	Knees or wrists
Demographics	Men	Older people
Joint Fluid Appearance	Needle-shaped in fluid	Different appearance in fluid
X-ray Findings	(Tophi/damage late)	Calcium deposits in cartilage seen on X-ray
Cure	Crystals can be dissolved.	No treatment to dissolve crystals (attacks treated like gout).



Next Lecture → Connective Tissue Diseases and Disorders of Muscle.