

# Northwest Rheumatism Society

Annual Meeting

Vancouver, BC

## Update in Gout

# Treat to Target

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# Pertinent Disclosures

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- Amgen: Speaker, Advisor, IP
- Johnson & Johnson: Speaker
- SOBI: Consulting
- UCB: Speaker

# Prevalence of Gout in US

Gout is often underdiagnosed and undertreated<sup>1</sup>



**12.1 million adults\***  
in the US have gout<sup>2</sup>



**3.5 million adults**  
receive treatment with oral ULT<sup>2,3</sup>



**An important subset**  
of patients on oral ULTs fail  
to achieve control of sUA  
levels (uncontrolled gout)<sup>2,4</sup>

**10-fold increase in gout prevalence among patients with moderate-to-severe CKD<sup>5</sup>**

\*Based on NHANES 2017-2018.

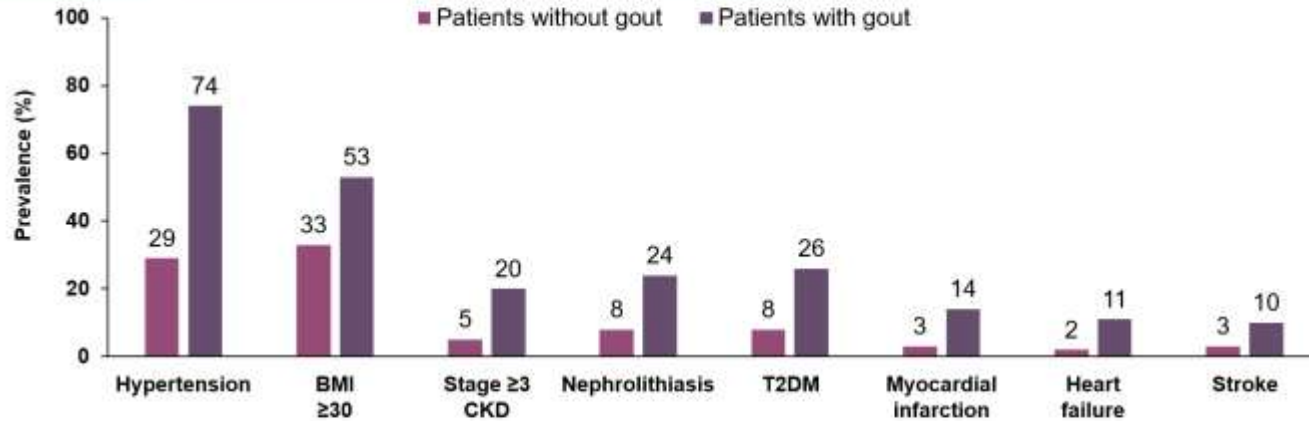
CKD, chronic kidney disease; NHANES, National Health and Nutrition Examination Survey; sUA, serum uric acid; ULT, urate-lowering therapy.

1. Nuki G, Simkin PA. *Arthritis Res Ther*. 2006;8(suppl 1):S1-S5. 2. Yokose C, et al. *JAMA Netw Open*. 2023;6(4):e230501. 3. Ortiz-Urriarte M, et al. *Rheumato*. 2023;3(1):74-85. 4. Data on File. Horizon, July 2024. 5. Krishnan E. *PLoS One*. 2012;7(11):e50046.



# Gout is a Serious Disease

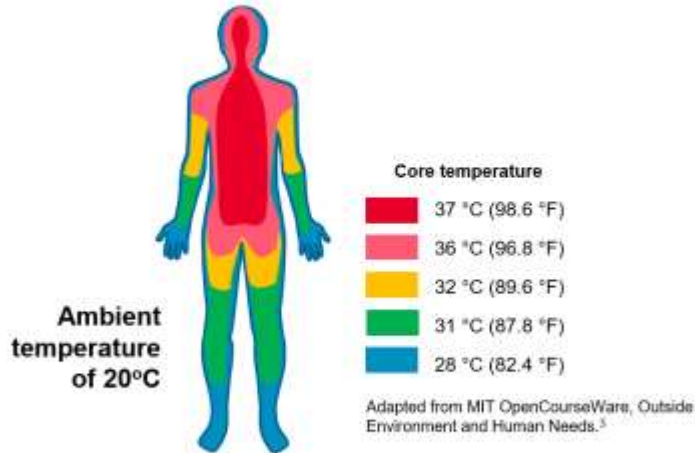
Gout is highly comorbid with a range of diseases



These common comorbidities may be a signal to assess your patients for gout

# It is Simple Chemistry

Lower temperature, pH, and trauma increase the formation of urate crystals in the extremities<sup>1</sup>



The influence of temperature on the solubility of urate in vitro<sup>2</sup>

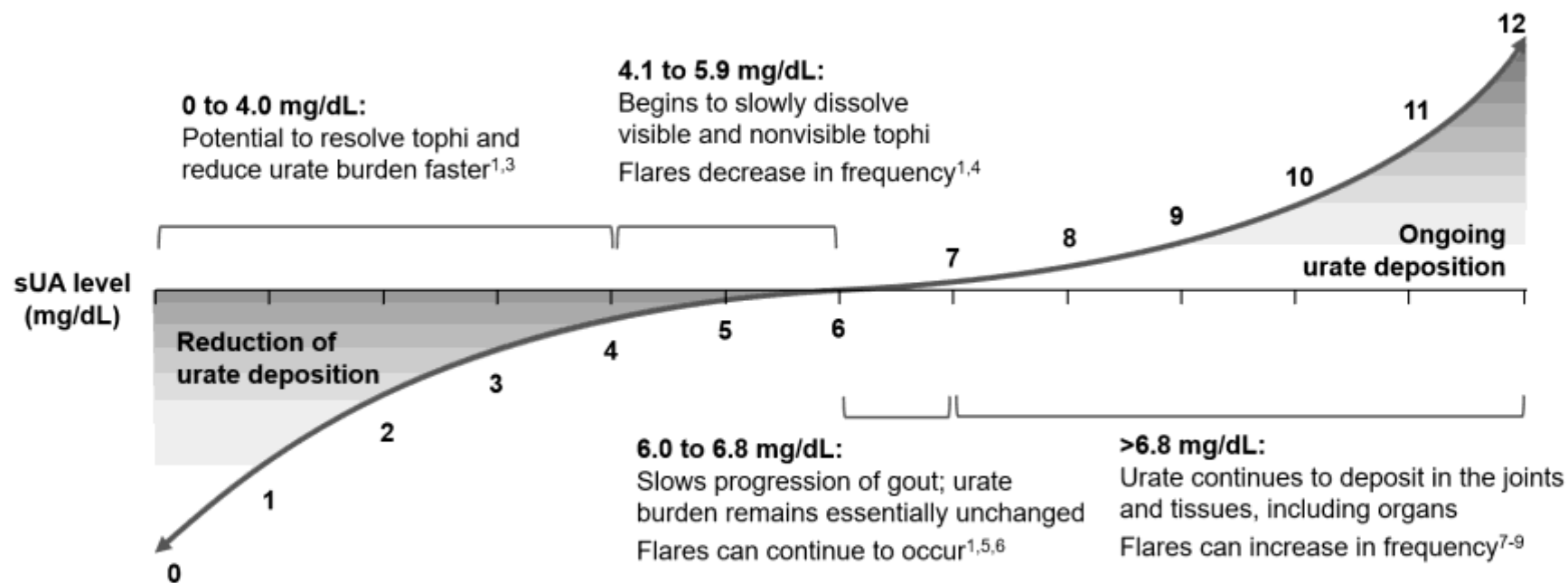
Temperature	Calculated urate solubility (mg/dL)*
98.6 °F (37 °C) Core body temperature	6.8
95.0 °F (35 °C)	6.0
86.0 °F (30 °C)	4.5
77.0 °F (25 °C)	3.3

With permission

\*in vitro in the presence of 140 mM of sodium  
MIT, Massachusetts Institute of Technology

1. Roddy E. *J Foot Ankle Res*. 2011;4:13. 2. Loeb JN. *Arthritis Rheum*. 1972;15:189-192. 3. MIT OpenCourseWare. <https://ocw.mit.edu/courses/4-401-introduction-to-building-technology-spring-2006/resources/ec2/>. Accessed May 3, 2024.

The lower the sUA level, the greater the potential to more quickly reduce urate burden<sup>1,2</sup>



Other factors that affect urate crystal deposition are cation concentration, temperature, intra-articular dehydration, pH, and trauma<sup>10,11</sup>

# Lab is a Big Problem

- Uric Acid

result 2.8 mg/dL

range: 3.2-8.7mg/dL

## Uric Acid

result 2.8mg.dL

range: 3.0-8.2mg/dL

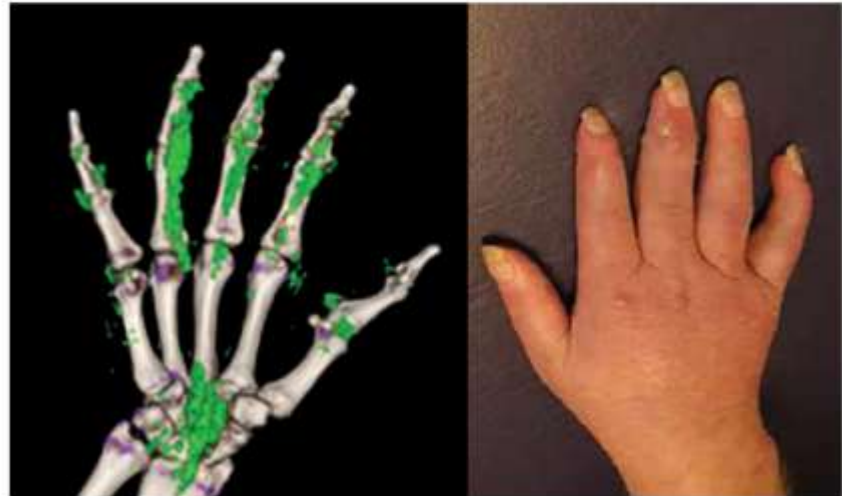
\*for gout patients recommended level less than 6.0mg/dL

\*\*\* Best to test sUA FASTING\*\*\*

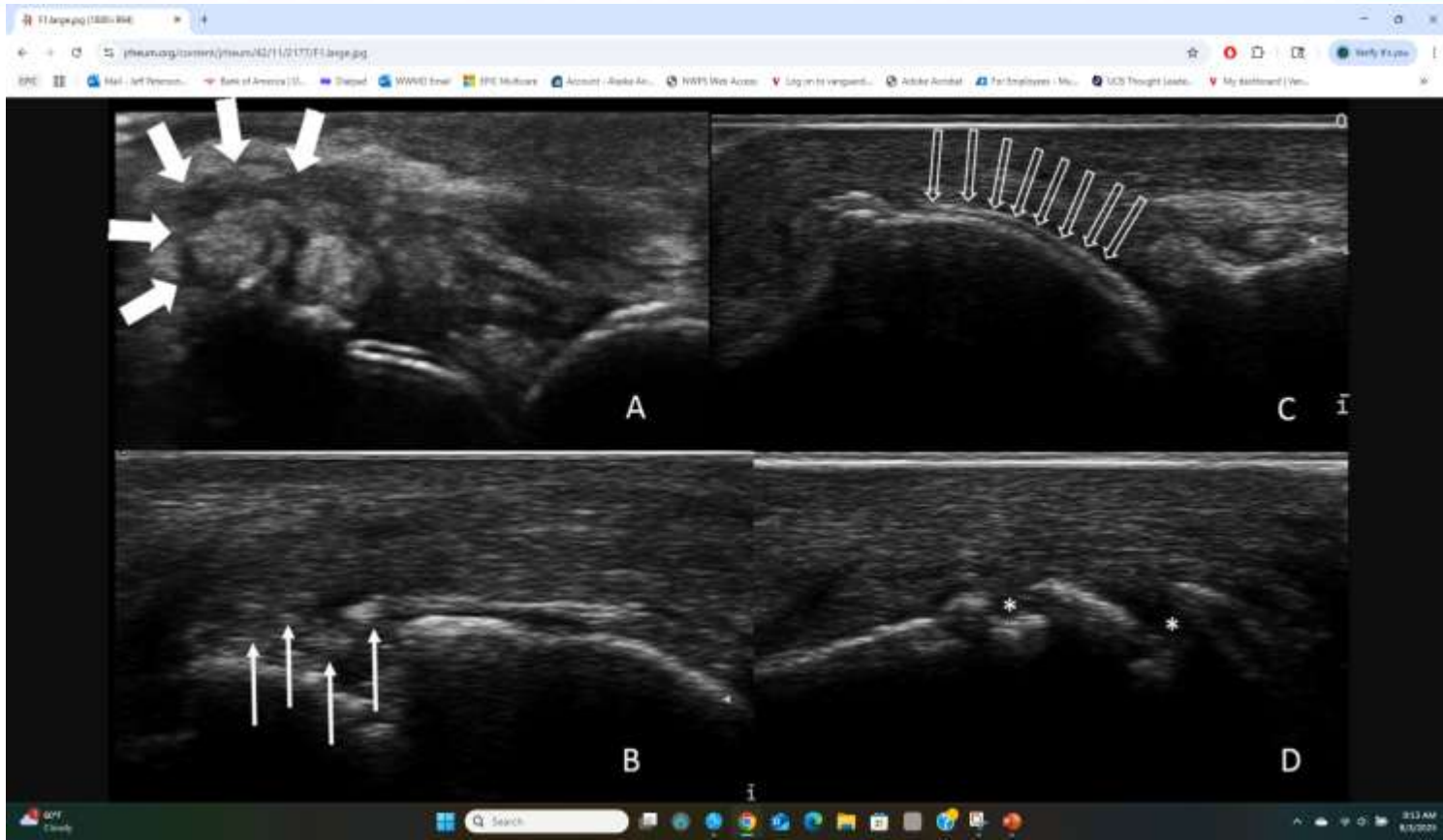
# DECT

Up to 75% of urate burden may not be detected upon physical examination<sup>1</sup>

- Dual-energy computed tomography (DECT) is an imaging modality that highlights uric acid deposition (green) and calcium (purple)<sup>2</sup>
- Imaging studies show that the majority of patients with gout have nonvisible tophi<sup>1,3,4</sup>



# Ultrasound



# Case

78yo woman with many years of OA.

sUA=6.7

Frequent hand pain/stiffness comes and goes

Never had a “gout flair”

Aspiration of R 3<sup>rd</sup> PIP= monosodium urate crystals

Treated to sUA =3.2 with febuxostat 40mg

Dramatic reduction in hand pain, increased ROM, now able to do fine motor movements ( buttons)



# Treatments

- Oral
  - Allopurinol, febuxostat
  - Probenecid, AR882 (URAT1)
- IV
  - Pegloticase, Nasp (SEL-212)
    - Steroid Reduced/free protocol
- Flare treatments
  - NSAID's, corticosteroids, Colchicine, Canakinumab (IL-1 lasts 3 months), NLRP3, Anakinra ( IL-1 for hospital approx. \$160/shot)

# Treat to Target

- What **is** the target?
  - sUA=3.5mg/dL or lower?
  - Hypopuricemia sUA<2.0mg/dL associated with co-morbidity--kidney disease, Alzheimer's, Huntington's, Parkinson's, MS
- Combination therapy
- Debulking therapy
- Counseling
  - Systemic disease
  - Lifelong therapy
  - Diet and Lifestyle modifications

# Diet and Lifestyle Modification

Dietary changes at max can reduce serum urate by 1mg/dL<sup>(1)</sup>

Alcohol and high fructose corn syrup dramatically increase serum uric acid

Vitamin C and tart cherry (quercetin) are mildly uricosuric<sup>(2)</sup>

Yogurt ( Lactobacillus, Bacillota) can increase fecal excretion of uric acid by sequestering purines<sup>(3)</sup>

Weight loss reduces inflammation ( increases pH, fewer circulating inflammatory cells) GLP-1?

Yokose C, McCormick N et al. [Effects of Low-Fat, Mediterranean, or Low-Carbohydrate Weight Loss Diets on Serum Urate and Cardiometabolic Risk Factors: A Secondary Analysis of the Dietary Intervention Randomized Controlled Trial \(DIRECT\)](#). Diabetes Care. 2020 Nov;43(11):2812-2820

2. Shi Y, Williamson G. Quercetin lowers plasma uric acid in pre-hyperuricaemic males: a randomised, double-blinded, placebo-controlled, cross-over trial. Br J Nutr. 2016 Mar 14;115(5):800-6

3. Terkeltaub R, Dodd D: The Gut Microbiome in Hyperuricemia and Gout, Arthritis Rheumatol 2025 Aug;77(8):955-965

Thank You!

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Questions?