Gout
Focus on Pharmacotherapy

Winter 2026-27

Did you know?

- **Genetics** and **declining renal function** are main contributors for developing gout.[Major'18]
- The cause of gout is **mistakenly attributed** to excessive intake of **purine-rich foods and alcohol**. Educate patients that these are potential **flare triggers,** along with **dehydration**, which can ↑SUA concentrations.[BPACNZ'25,Zhang'12,Helget'22]
- Measure **SUA in symptomatic patients only**. It should **not be measured routinely** to evaluate CV risk, obesity, or T2DM.[Choosing Wisely]
- ULT is **not indicated** for asymptomatic hyperuricemia,[NICE'22] as only **1 in 5 people** may develop gout within 5 years.[Campion'87]
- During an **acute flare**, **SUA may not be elevated** in ~40% of patients;[Dalbeth'15,Zhang'23] waiting **2-4 weeks after flare resolution** can allow for **accurate baseline** SUA.[NICE'22,Dalbeth'15]
- It is recommended to **continue ULT indefinitely**, even if clinical remission is achieved.[ACR'20,NICE'22]
- Patients taking ULT should **continue** treatment **during an acute gout flare**, as temporary discontinuation offers no benefit.[Hui'17,Roddy'26(expert)]
- ULT is considered an **essential medication** and is generally **continued during hospitalization** to avoid ↑risk of flares. Reassess if concerns about a new rash, drug interaction, or serious AE.[Alfeld'25,Patel'22]
- Taking **ULT inconsistently** may cause SUA fluctuations contributing to **crystal destabilization**, **inflammation**, & **↑flare risk**;[Safar'25] prospective cohort data suggests patients with nonadherence have **significantly more flares** at 5 years (33% vs 10%).[NOR-Gout'25]

Thank you for participating in an academic detailing visit, please complete a quick survey:

Gout is a common form of arthritis, affecting up to 5% of Canadians.[ACR'20,Arthritis Canada'22] Successful management of gout involves educating on all aspects of the disease and involving patients in shared decision-making to improve adherence & prevent long-term complications.[Kiltz'17,Doherty'18] Online tools: Gout Education Society

Urate Lowering Therapy (ULT): Allopurinol & Febuxostat

ULT remains the cornerstone of gout management. Well-managed comorbidities & dietary interventions are adjuncts.[Zhao'26] Adherence to ULT is challenging; data suggests 60% of patients discontinue ULT within 5 years.[Scheepers'18]

Goal: Clinical Remission=no flares or tophi, & SUA <360$^{mcmol/L}$ sustained for ≥12 months.[G-CAN'26]

WHO MIGHT BENEFIT FROM STARTING ULT? [ACR'20,NICE'22,EULAR'16]

For those with confirmed gout, offer ULT if multiple flares (≥2 flares/year), presence of tophi, or evidence of radiographic damage attributable to gout.[ACR (strong)]
Consider ULT after first flare if: CKD stages 3-5 (eGFR <60), high SUA >535mcmol/L, or kidney stones, utilizing the opportunity for shared decision-making.[ACR (conditional)]

WHAT IS THE EVIDENCE FOR TREATING-TO-TARGET (T2T) SERUM URIC ACID (SUA)?

The T2T approach (ULT dose titration guided by serial SUA measurements) is supported by multiple sources of evidence, including two open-label RCTs, observational studies, & post-hoc RCT analyses, as well as pathophysiological principles. It remains challenging to estimate the magnitude of benefit of T2T vs treat-to-avoid symptoms due to limitations.†

RCT clinical outcomes @ 2yr Shared Decision-Making Tool	T2T vs Usual Care	% reached T2T; baseline SUA	Mean allopurinol; % >300mg/day
GO TEST 2026 *Rheumatologist-led*	1º: Clinical Remission* 39% vs 24% p=0.024 (driven by flare absence)	73% <360$^{mcmol/L}$; 500mcmol/L	332mg/day; not reported
Doherty et al 2018 *Nurse-led vs GP*	2º: proportion of patients with ≥2 flares (8% vs 24%)	95% <360$^{mcmol/L}$; 440mcmol/L	460mg/day; 79% >300mg/d

†**Limitations**: open-label, applicability of care setting, vague definition of usual care group, underpowered clinical outcomes, self-reported flares without blinded adjudication, incomplete reporting of flare events, & lack of SAE reporting (e.g. SCARs).
*Clinical Remission defined as: absence of tophi, low pain score (<2), better global assessment of disease activity (>8), and absence of flares during the final 6 months of RCT.
TRUST 2028: Ongoing primary care open-label RCT (T2T vs treat-to-avoid symptoms) to address the above RCT issues.

The majority of gout guidelines strongly recommend a T2T approach over less intensive strategies, such as fixed-dose or symptom-driven ULT.[ACR'20,NICE'22,EULAR'16,BPACNZ'25]

WHAT SUA LEVEL SHOULD BE TARGETED?

No trials have compared <360mcmol/L with other SUA targets;[Stamp-Dalbeth'24] targets are open to some debate.[Perez-Ruiz'07,Stamp'22,NICE'22]

<360 mcmol/L	Reflects the physiological urate saturation threshold;[Stamp-Dalbeth'24] supported by guidelines based on observational and RCT data, but with limitations†.[ACR'20,NICE'22,EULAR'16]
<300 mcmol/L	Consider if severe gout (e.g. tophi, chronic arthropathy, flares despite <360$^{mcmol/L}$); may promote quicker crystal dissolution. Option to de-intensify to SUA <360$^{mcmol/L}$ after symptoms improved.[NICE'22,EULAR'16] (No benefit seen for lower targets, e.g. <200$^{mcmol/L}$).[Dalbeth'22]

Onset of action: Target SUA is achievable within 3-4 months[(baseline SUA: 500mcmol/L)] with a start-low-go-slow ULT approach,[Stamp'23] but it can take months to years to decrease urate crystal deposits, decrease tophi, and achieve clinical remission.[Stamp-Horne'24,FitzGerald'25]
Gout flare frequency is **substantially lower after 1 year of treatment with allopurinol or febuxostat** (e.g. allopurinol use ≤1 yr: 1.2 flares/yr vs >1 yr: 0.34 flares/yr).[CARES'22]

For references, abbreviations, & Gout Drug Comparison Chart: www.rxfiles.ca/gout

This topic was developed with support from *Canada's Drug Agency* and the *Canadian Academic Detailing Collaboration*. *CDA-AMC* does not endorse any drugs, therapies, treatments, products or services. The views expressed herein do not necessarily represent the views of *CDA-AMC*.

Urate Lowering Therapy (ULT): Allopurinol & Febuxostat

DOES TIMING MATTER WHEN INITIATING ULT? Limited evidence suggests neither benefit nor harm if initiating ULT during a flare.[Tai'24] (Small RCTs [n<100] found no ↑pain or flare duration).[Hill'15,Taylor'12] **Decision can be based on an individualized approach:**

Start 2-4 weeks after gout flare,[NICE'22] if patient preference to wait until pain has resolved.	**Start during a gout flare,**[ACR'20 (conditional)] if symptoms motivating, and/or building on contact with care.
- Enables accurate baseline SUA & more precise AE monitoring, but may not be preferred if concerned about loss to follow-up. Tip: Provide ULT Rx to fill when acute flare resolves.[BPACNZ'25]	- May be a patient preference or clinical priority to establish ULT as soon as possible when frequent or difficult to manage flares.[BPACNZ'25] Tip: Counsel to continue ULT after gout flare medication is stopped.

WHAT ULT MEDICATION SHOULD BE SELECTED? Allopurinol & febuxostat have similar efficacy for decreasing flares when dosages are increased to target SUA <360mcmol/L.[STOP GOUT'22]

❶ **Allopurinol is the preferred first-line agent for most**,[ACR'20] except for those who are HLA-B*58:01 positive.

✓Before initating allopurinol, **order HLA-B*58:01 allele carrier testing in those of Asian or African descent.** This allele is strongly associated with ↑risk of allopurinol-associated severe cutaneous adverse reactions (SCARs);[ACR'20,Keller'18] **OR 118** (95% CI 70-197).[Pham'25]
✓Being HLA-B*58:01 negative does not rule out risk. SCARs incidence is ~1 per 1000 people in those initiating allopurinol, with most events occuring in the first 8-9 weeks of initiating allopurinol.[Stamp'20] See: SHA HLA Typing Lab Requisition.

Allopurinol dosing: Guidelines recommend using eGFR to inform only the initial allopurinol dose.[ACR'20,NICE'22]
In CKD stages 1-3 (eGFR ≥30), it is no longer recommended to limit the maintenance dose based on renal function.[Patel'22]

Start-low-go-slow (but go)
Initiate allopurinol at a low dose and titrate gradually to reduce the risk of SCARs and triggering acute gout flares. (eGFR <30: consult nephrology)

eGFR	Initial Dose	Titration to Maintenance Dose
≥60	100mg	Increase in 50–100mg increments, guided by serial SUA levels. - In a T2T RCT, doses were increased every 4-8 weeks.[GO TEST'26] Consider slower titration if concerns about triggering flares (e.g. recent or severe flare history, flare prophylaxis declined by pt).
45-59	50-100mg	
30-44	50mg	

There is variability in allopurinol doses required to reach target SUA <360mcmol/L (e.g. 200-800mg/day);[STOP GOUT'22] major determinants of the dose are baseline SUA and body weight. See: Easy-Allo Tools to help estimate maintenance dose.[Wright'24]
- **Patients may require doses >300mg/day to reach target, including CKD stages 1-3; (e.g. T2T RCT: 55% pt >300mg).**[STOP GOUT'22]
- Underdosing appears common, as SK provincial data indicates few patients are on doses >300mg/day.

❷ **Febuxostat:** Recommended if allopurinol hypersensitivity (☎ 🤒), HLA-B*58:01 positive, allopurinol intolerance, or not achieving treatment goals with allopurinol. Febuxostat is not recommended if established CVD (CV evidence mixed[CARES'18,FAST'20]).[ACR'20,NICE'22]

Febuxostat dosing: eGFR ≥30: 40mg or 80mg/d,[HC] increase to 80mg/d after 2-4 wk if not at SUA target. Consider initiating at low dose (40mg) to ↓flare risk.[ACR'20,FORTUNE-1'18] Potential for fewer clinic & lab visits than allopurinol; monitor for SCARs.[Lin'19]

IS FLARE PROPHYLAXIS NEEDED WHEN STARTING ULT? ULT initiation can precipitate flares, especially during the first few months, however, evidence is insufficient to reliably predict flare risk.

A start-low-go-slow ULT initiation strategy is foundational. Consider individual risk factors (e.g. recent flare)[Stamp-Horne'24] and utilize shared decision-making to determine whether daily flare prophylaxis or as-needed acute flare treatment is preferred.

Guidelines recommend offering concomitant flare prophylaxis (typically colchicine 0.6mg daily-BID preferred) for the first 3-6 months when initiating ULT.[ACR'20,NICE'22] Low-dose NSAID or corticosteroid an option, yet supported by less evidence.[NICE'22]
One post-guideline RCT found colchicine 0.5mg daily decreased flare frequency during months 0-6 vs placebo:[Stamp'23]
- **1° outcome:** colchicine prophylaxis resulted in 0.26 fewer flares/month (~1.6 fewer flares over 6 months) & was well tolerated.
- No significant difference in total flares over 12mo: suggests colchicine prophylaxis may delay rather than prevent some flares.
- After colchicine discontinuation: flare rates temporarily increased, consider offering acute flare Rx to keep on hand if needed.

Consider longer duration of flare prophylaxis (e.g. beyond 3-6 months) if ongoing gout flares[ACR'20] or SUA not at target.[expert]

Acute Flare Management: Clinical Pearls [ACR'20,NICE'22,EULAR'16,BPACNZ'25,FitzGerald'25]

Utilize **as-needed Rx** for those who can identify early signs. Initiate treatment **as early as possible** and continue until flare resolves. **Severe flares** may require combo tx or longer tx duration (e.g. ≥7 days).

Limited evidence **does not show important differences for ↓pain** between colchicine, NSAID, or oral corticosteroid.[Zeng'21] Medication choice may be informed by: **comorbidities, concomitant medications,** and **patient preference or experience.** (e.g. NSAID not preferred in CKD).[KDIGO'24]

If using the **same drug class for daily prophylaxis and acute flare tx**, ensure patient understands dosing clearly to avoid inadvertent errors.

If PPI added for NSAID gastroprotection, **plan to stop PPI when NSAID ends,** unless there is an indication for ongoing use.
See: NSAID and PPI Co-prescribing (CEP)

Disclaimer: Diagnosis of gout and a comprehensive review of the benefits and harms of NSAID & corticosteroid use are beyond the scope of this newsletter.

Gout: Focus on Pharmacotherapy Newsletter – Published November 2026

Abbreviations:

AE=adverse events **BID=**twice daily **CDA-AMC=**Canada's Drug Agency-Agence des médicaments du Canada **CI=**confidence interval **CKD=**chronic kidney disease **CV=**cardiovascular **CVD=**cardiovascular disease **d=**day **eGFR=**estimated glomerular filtration rate **GP=**general practitioner **HC=**Health Canada **L=**litre **mcmol=**micromole **mg=**milligram **mo=**month(s) **NSAID=**non-steroidal anti-inflammatory drugs **OR=**odds ratio **PPI=**proton pump inhibitor **pt=**patient **RCT=**randomized controlled trial **Rx=**prescription **SAE=**serious adverse event **SCARs=**severe cutaneous adverse reactions **SK=**Saskatchewan **SUA=**serum uric acid **T2DM=**Type 2 Diabetes **T2T=**Treat-to-Target **tx=**treatment **ULT=**Urate Lowering Therapy **vs=**versus **wk=**week(s) **yr=**year

Acknowledgments:

RxFiles Topic Newsletter Writer: T Trischuk. **Content Collaboration (Pan-Canadian Academic Detailing Initiative):** BC Provincial Academic Detailing Service, Dalhousie Academic Detailing Service, Centre for Effective Practice, & Canada's Drug Agency.
RxFiles Academic Detailing Team: A Bloor, D Bunka, Z Dumont, A Holaday, M Legge, K Neil, T McAleer, J Myers, T Nystrom, C Pozniak, P Robertson, T Trischuk.
RxFiles would like to thank: S Hiremath, D Lacaille, L Regier, D Bunka, A Wiebe, J Bareham, B Jensen, C Regier, C Yip, M Berg, C Binsfeld, J Pan, medSask, the SK Drug Plan, & our RxFiles Advisory Committee for their input & review.
This topic was developed with support from Canada's Drug Agency and the Canadian Academic Detailing Collaboration. CDA-AMC does not endorse any drugs, therapies, treatments, products or services. The views expressed herein do not necessarily represent the views of CDA-AMC.

Copyright 1997 RxFiles Academic Detailing, University of Saskatchewan. All Rights Reserved. Use of this work, in whole or in part, for the purpose of developing, improving, testing, training, or otherwise operating any artificial intelligence, machine learning, or automated decision-making system is not permitted by the copyright holder. This includes but is not limited to using a portion of the work as a data input for the purpose of querying an existing third-party AI system. No part of this work may be reproduced, distributed, or transmitted in any form or by any means, including photocopying, recording, or other electronic or mechanical methods, without the prior written permission of the copyright holder. For copyright permission requests, please contact info@RxFiles.ca.

Disclaimer: RxFiles Academic Detailing is part of the College of Pharmacy and Nutrition at the University of Saskatchewan. The content of this work represents the research, experience, and opinions of the authors and not those of the University of Saskatchewan. Neither the authors nor the University of Saskatchewan nor any other party who has been involved in the preparation or publication of this work warrants or represents that the information contained herein is accurate or complete, and they are not responsible for any errors or omissions, or the result obtained from the use of such information. Any use of the materials will imply acknowledgment of this disclaimer and release any responsibility of the University of Saskatchewan, its employees, servants, or agents. Readers are encouraged to confirm the information contained herein with other sources.

References for Gout Newsletter Winter 2026-27:

Guidelines:

ACR 2020: FitzGerald JD et al. 2020 American College of Rheumatology Guideline for the Management of Gout. Arthritis Care Res (Hoboken). 2020 Jun;72(6):744-760. doi: 10.1002/acr.24180.

EULAR 2016: Richette P, et al. 2016 updated EULAR evidence-based recommendations for the management of gout. Ann Rheum Dis. 2017 Jan;76(1):29-42. PMID: 27457514.

NICE 2022: National Institute for Health and Care Excellence. *Gout: diagnosis and management*. NICE guideline NG219. Published June 9, 2022. https://www.nice.org.uk/guidance/ng219

BPACNZ 2025: Best Practice Advocacy Centre New Zealand. Overcoming gout: from acute resolution to long-term prevention (www.bpac.org.nz). May 2025.

Front and Back Pages of Newsletter:

Major 2018. Evaluation of the diet wide contribution to serum urate levels: meta analysis of population based cohorts. BMJ 2018;363:k3951.

Zhang 2012. Purine-rich foods intake and recurrent gout attacks. Ann Rheum Dis. 2012 September ; 71(9): 1448–1453.

Helget LN, Mikuls TR. Environmental Triggers of Hyperuricemia and Gout. Rheum Dis Clin North Am. 2022 Nov;48(4):891-906. doi: 10.1016/j.rdc.2022.06.009. PMID: 36333002; PMCID: PMC10351897.

Choosing Wisely: https://choosingwiselycanada.org/recommendation/medical-biochemistry/

Campion EW, et al. Asymptomatic hyperuricemia: risks and consequences in the Normative Aging Study. Am J Med 1987;82:421–6

Dalbeth N, Winnard D, Gow PJ, et al. Urate testing in gout: why, when and how. N Z Med J 2015;128:65–8.

Zhang J, Sun W, Gao F, et al. Changes of serum uric acid level during acute gout flare and related factors. *Front Endocrinol (Lausanne)*. 2023;14:1077059. Published 2023 Feb 21.

Hui M, Carr A, Cameron S, et al; British Society for Rheumatology Standards, Audit and Guidelines Working Group. The British Society for Rheumatology Guideline for the Management of Gout. Rheumatology (Oxford). 2017 Jul 1;56(7):e1-e20.

Roddy E. Ask an expert: Gout. BMJ. 2026 Jan 8;392:r2248. doi: 10.1136/bmj.r2248. PMID: 41506676.

Alfeld K, Barclay ML, McNeill R, et al. Inpatient Management of Gout: Serum Urate Testing and Allopurinol Dose Adjustment. J Rheumatol. 2025 Apr 1;52(4):383-388. doi: 10.3899/jrheum.2024-1075. PMID: 39814431.

Patel V, Dass N. Things We Do for No Reason™: Discontinuing urate-lowering therapy on admission. J Hosp Med. 2022 May;17(5):393-395. doi: 10.12788/jhm.3705. Epub 2021 Dec 15. PMID: 34910621.

Safar S, Uhlig T. Let us avoid fluctuations in serum urate in gout. Clin Rheumatol. 2025 Oct;44(10):3783-3785. doi: 10.1007/s10067-025-07629-z. Epub 2025 Aug 11. PMID: 40789974.

NOR-Gout 2025: Uhlig T, et al. Non-adherence to urate lowering therapy in gout after 5 years is related to poor outcomes: results from the NOR-Gout study. Rheumatology (Oxford). 2025 Apr 1;64(4):1799-1806.

Arthritis Canada: https://arthritis.ca/about-arthritis/arthritis-types/gout/. Updated Oct 2022.

Kiltz U, Smolen J, Bardin T, et al. Treat-to-target (T2T) recommendations for gout. Ann Rheum Dis. 2017 Apr;76(4):632-638. doi: 10.1136/annrheumdis-2016-209467. Epub 2016 Sep 22. PMID: 27658678.

Doherty M, et al. Efficacy and cost-effectiveness of nurse-led care involving education and engagement of patients and a treat-to-target urate-lowering strategy versus usual care for gout: a randomised controlled trial. Lancet. 2018 Oct 20;392(10156):1403-1412. PMID: 30343856.

Zhao 2026. Efficacy of low purine energy restricted and balanced diet on hyperuricemia and metabolic profiles in gout patients: a randomized controlled trial. Nutrients 2026, 18, 2047.

Scheepers LEJM, Burde AM, Arts ICW, et al. Medication adherence among gout patients initiated allopurinol: a retrospective cohort study in the Clinical Practice Research Datalink (CPRD). Rheumatology 2018;57:1641-50.

Tabi-Amponsah AD, et al. The Gout, Hyperuricemia and Crystal-Associated Disease Network (G-CAN) definition of clinical remission in gout. Ann Rheum Dis. 2026 Jan;85(1):186-194.

GO TEST Overature 2026: Moses A, et al. A treat-to-target strategy versus symptom-driven management of gout in the Netherlands (GO TEST Overture): a multicentre, open-label, pragmatic, superiority, randomised controlled trial. Lancet Rheumatol. 2026 May;8(5):e336-e345. PMID: 41865749.

TRUST 2028: Solomon DH, et al. The Design of a Randomized Controlled Active Comparator Strategy Trial for Gout: Treat to Target Serum Urate Versus Treat to Avoid Symptoms. ACR Open Rheumatol. 2025 Mar;7(3):e70012. PMID: 40126890.

Stamp LK, Dalbeth N. Moving urate-lowering therapy in gout beyond guideline recommendations. Semin Arthritis Rheum. 2024 Apr;65:152358. (Narrative Review)

Perez-Ruiz F, Lioté F. Lowering serum uric acid levels: what is the optimal target for improving clinical outcomes in gout? *Arthritis Rheum* 2007; **57:** 1324–28.

Stamp LK, Frampton C, Morillon MB, et al. Association between serum urate and flares in people with gout and evidence for surrogate status: a secondary analysis of two randomised controlled trials. Lancet Rheumatol. 2022 Jan;4(1):e53-e60.

Stamp L, Horne A, Mihov B, et al. Is colchicine prophylaxis required with start-low go-slow allopurinol dose escalation in gout? A non-inferiority randomised double-blind placebo-controlled trial. Ann Rheum Dis. 2023 Dec;82(12):1626-1634. doi: 10.1136/ard-2023-224731. Epub 2023 Aug 31. PMID: 37652661.

Stamp LK, Horne A, Mihov B, et al. Predicting Gout Flares in People Starting Allopurinol Using the Start-Low Go-Slow Dose Escalation Strategy. Arthritis Care Res (Hoboken). 2024 Oct;76(10):1371-1378. doi: 10.1002/acr.25376. Epub 2024 Jun 5. PMID: 38766703.

FitzGerald JD. Gout. Ann Intern Med. 2025 Mar;178(3):ITC33-ITC48. doi: 10.7326/ANNALS-24-03951. Epub 2025 Mar 11. PMID: 40063960.

CARES 2022: Saag KG, Becker MA, White WB, et al; **CARES** Investigators. Evaluation of the Relationship Between Serum Urate Levels, Clinical Manifestations of Gout, and Death From Cardiovascular Causes in Patients Receiving Febuxostat or Allopurinol in an Outcomes Trial. Arthritis Rheumatol. 2022 Sep;74(9):1593-1601. doi: 10.1002/art.42160. Epub 2022 Aug 5. PMID: 35536764; PMCID: PMC9541704.

Tai V, Gow P, Stewart S, et al. An updated systematic review and meta-analysis of randomised controlled trials on the effects of urate-lowering therapy initiation during a gout flare. Seminars in Arthritis and Rheumatism 2024;65:152367. doi:10.1016/j.semarthrit.2024.152367

Hill EM, Sky K, Sit Met al. Does starting allopurinol prolong acute treated gout? A randomized clinical trial. J Clin Rheumatol. 2015 Apr;21(3):120-5.

Taylor TH, Mecchella JN, Larson RJ, et al. Initiation of allopurinol at first medical contact for acute attacks of gout: a randomized clinical trial. Am J Med. 2012 Nov;125(11):1126-1134.e7.

STOP GOUT 2022: O'Dell JR, et al. Comparative Effectiveness of Allopurinol and Febuxostat in Gout Management. NEJM Evid. 2022 Mar;1(3):10.1056/evidoa2100028.

Keller SF, Lu N, Blumenthal KG, et al. Racial/ethnic variation and risk factors for allopurinol-associated severe cutaneous adverse reactions: a cohort study. Ann Rheum Dis 2018;77:1187–93. [PubMed: 29653927]

Pham HT, Tran MH, Mai Hoang TV, et al. HLA-B*58:01 genotyping prevalence and the association with allopurinol-induced severe cutaneous adverse reactions: a living systematic review and meta-analysis. Sci Rep. 2025 Aug 21;15(1):30742. doi: 10.1038/s41598-025-16062-w. PMID: 40841814; PMCID: PMC12371011.

Stamp LK, Chapman PT. Allopurinol hypersensitivity: Pathogenesis and prevention. Best Pract Res Clin Rheumatol. 2020 Aug;34(4):101501. doi: 10.1016/j.berh.2020.101501. Epub 2020 Apr 4. PMID: 32265121.

Wright DFB, Hishe HZ, Stocker SL, et al. The development and evaluation of dose-prediction tools for allopurinol therapy (Easy-Allo tools). Br J Clin Pharmacol. 2024 May;90(5):1268-1279. doi: 10.1111/bcp.16005. Epub 2024 Feb 15. PMID: 38359899.
The development and evaluation of dose-prediction tools for allopurinol therapy (Easy-Allo tools) - PubMed

CARES 2018: White WB, et al; CARES Investigators. Cardiovascular Safety of Febuxostat or Allopurinol in Patients with Gout. N Engl J Med. 2018 Mar 29;378(13):1200-1210. doi: 10.1056/NEJMoa1710895. Epub 2018 Mar 12. PMID: 29527974.

FAST 2020: Mackenzie IS, Ford I, Nuki G, et al. Long-term cardiovascular safety of febuxostat compared with allopurinol in patients with gout (FAST): a multicentre, prospective, randomised, open-label, non-inferiority trial. *Lancet*. 2020;396(10264):1745-1757. doi:10.1016/S0140-6736(20)32234-0

FORTUNE-1 2018: Yamanaka H, Tamaki S, Ide Y, et al. Stepwise dose increase of febuxostat is comparable with colchicine prophylaxis for the prevention of gout flares during the initial phase of urate-lowering therapy: results from FORTUNE-1, a prospective, multicentre randomised study. Ann Rheum Dis. 2018 Feb;77(2):270-276. doi: 10.1136/annrheumdis-2017-211574. Epub 2017 Nov 4. PMID: 29102957; PMCID: PMC5867413.

Lin CW, Huang WI, Chao PH, et al. Risk of cutaneous adverse reactions associated with allopurinol or febuxostat in real-world patients: A nationwide study. Int J Clin Pract. 2019 May;73(5):e13316. doi: 10.1111/ijcp.13316. Epub 2019 Feb 28. PMID: 30681751.

Zeng L, Qasim A, Neogi T, et al. Efficacy and Safety of Pharmacologic Interventions in Patients Experiencing a Gout Flare: A Systematic Review and Network Meta-Analysis. Arthritis Care Res (Hoboken). 2021 May;73(5):755-764. doi: 10.1002/acr.24402. PMID: 32741131; PMCID: PMC10572733.

Kidney Disease: Improving Global Outcomes (KDIGO) CKD Work Group. KDIGO 2024 Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease. *Kidney Int.* 2024;105(4S):S117-S314. doi:10.1016/j.kint.2023.10.018