Health Quality & Safety Commission
Te Tāhū Hauora

Atlas of Healthcare Variation: Methodology | Gout

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Te Kāwanatanga o Aotearoa

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General points

- Data has not been presented where the number of people in the numerator was less than 10. This is to preserve confidentiality.
- People have been assigned to their Health New Zealand | Te Whatu Ora (Health NZ) district of domicile. Where more than one domicile was recorded, the most recent value has been selected.
- Ethnicity data has been presented by prioritised ethnic group (Māori, Pacific peoples, non-Māori, non-Pacific peoples). Prioritised ethnic groups involve each participant being assigned to a single ethnic group, based on the ethnicities they most recently identified with. These are prioritised in the order of Māori, Pacific peoples, non-Māori non-Pacific peoples. This method may underestimate results for Pacific peoples, as individuals who identify with both Pacific and Māori ethnicities have been classified as Māori. We also acknowledge that Pacific peoples are not a homogenous population, comprising various communities with distinct languages, cultures and identities. If you are interested in estimates for the total Pacific population or for specific Pacific ethnic groups, please contact us at info@hqsc.govt.nz.
- The non-Māori, non-Pacific ethnic group includes people identifying with European (including New Zealand European), Asian, Middle Eastern, Latin American and African (MELAA), and other ethnic groups. In this atlas, Asian and MELAA populations have been combined with the European/Other grouping within the non-Māori, non-Pacific category. This is because the estimated prevalence of gout among Asian populations (3.7%) is lower than that among the European/Other population (5.6%). In some districts, the relatively small size of Asian populations results in suppression of estimates. MELAA populations are also included within the European/Other grouping and therefore within the non-Māori, non-Pacific category.
- Age group is assigned using 30 June of each calendar year as the cut-off point. For example, a person turning 65 years old on 1 July 2024 would have been assigned to the 65 years or over age group for 2024, while a person turning 65 on 30 June 2024 would have been assigned to the 45–64 years age group for the same year.
- The atlas presents observed (crude) rates as this best supports the purpose of quality improvement. These rates reflect the actual experience of the population and support local service planning and improvement activities. However, when comparing ethnic groups to understand equity, we recommend using age-specific rates.
- For primary health organisation (PHO) analyses, we analysed indicator 1 to determine the size of population estimated to have gout that each PHO serves. Then we categorised them into small (<3,000), medium (3,000–5,999), medium-large (6,000–9,999) and large (10,000 and above).
- The following PHOs were combined in the atlas. This was done where PHOs had changed entities or where there were regional subsidiaries with enrolled populations that were too small to report separately.

Recorded PHO name	Atlas reporting PHO name
Alliance Health Plus Trust	Included in The Cause Collective

Comprehensive Care PHO – Northland	Included with Comprehensive Care PHO Limited
National Hauora Coalition – Northland	Included with National Hauora Coalition
ProCare Health (PHO) Limited – Northland	Included with ProCare Health (PHO) Limited

Exclusions

People were excluded from analysis if they:

- weren't enrolled in a PHO in the calendar year (This allowed us to use the number of PHO-enrolled people as the denominator.)
- had died during the calendar year[1]
- were under 20 years of age
- had missing demographics, that is, those with no recorded value for one or more of the NHI fields used to derive the demographic variables of interest (age, gender, ethnicity and district of domicile). This means individuals with a missing value for age would be excluded from all analyses. This approach ensures a consistent denominator throughout the analyses. In total, missing demographic information excluded approximately 12,500 people who could otherwise have been identified with gout (5.2% of the total) and around 175,000 individuals from the overall denominator (4.7% of the total).

People estimated to have gout but not enrolled in a PHO

- People are eligible to enrol with a PHO if they are New Zealand citizens, permanent residents or meet other criteria, such as holding a relevant visa. People are not enrolled in PHOs for a range of reasons, including being unable to find a primary health care provider in their local area who is accepting new patients; barriers to access such as cost, transport, primary health care offered is not perceived as acceptable, appropriate or safe for them or they may receive their health care through a separate system, for example, Defence Force staff or Corrections health service for those in prison. Subsidised medicines are available to New Zealand residents and citizens whether or not they are enrolled with a PHO.

- Our method uses the PHO-enrolled population as the denominator because it provides a linkable population through the National Health Index (NHI), enabling consistent links across datasets.
- In 2024, we identified about 6,800 people who were estimated to have gout but were not included in our cohort (indicator 1) because they were not currently enrolled in a PHO.

[1] This information is obtained from National Health Index database

Acknowledgements

Health Quality & Safety Commission Te Tāhū Hauora (the commission) acknowledges the contribution of people involved in developing the Gout Atlas of Healthcare Variation:

- Prof Nicola Dalbeth, (chair) rheumatologist, Department of Rheumatology, Te Toka Tumai Auckland District and Department of Medicine, University of Auckland
- Dr Doone Winnard, public health physician, Planning, Funding and Outcomes, Health New Zealand | Te Whatu Ora
- Assoc Prof Leanne Te Karu, pharmacist prescriber – general practice, University of Auckland
- Assoc Prof Peter Gow, rheumatologist, Middlemore Hospital
- Prof Tony Dowell, professor of primary health care and general practice, University of Otago, Wellington.

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- Prof Nicola Dalbeth, rheumatologist, Department of Rheumatology, Te Toka Tumai Auckland District and Department of Medicine, University of Auckland
- Dr Doone Winnard, public health physician, Planning, Funding and Outcomes, Health New Zealand | Te Whatu Ora
- Dr Linda Bryant, pharmacist prescriber, Newtown Union Health Service, Wellington.

Disclaimer

The commission is responsible for the content of the gout atlas domain and methodology; any errors of fact or interpretation are ours alone.

Data sources

- Pharmaceutical collection, Health NZ.
- National minimum dataset (NMDS), Health NZ.
- PHO enrolment collection, Health NZ.
- All information on demographics was obtained from the National Health Index (NHI) database, Health NZ.

Confidence intervals

We present indicator data as a percentage or rate per 1,000 or 100,000, calculated for each Health NZ district. We use 95% confidence intervals to understand the range of likely values for each result.

Comparing confidence intervals is a quick heuristic method to determine whether there is a statistically significant difference between rates. If the confidence intervals don’t overlap, the difference can be considered significant at the 0.05 level. If they do overlap, the difference may or may not be significant at the 0.05 level.

- If the district's upper limit is below the New Zealand rate, we say the district's result is 'Significantly lower'.
- If the district's lower limit is above the New Zealand rate, we say the result is 'Significantly higher'.
- If the confidence intervals overlap, we say the result is 'Not significantly different'.

This method is a conservative test of statistical significance; results with overlapping confidence intervals may still be significantly different at the 0.05 level if a formal statistical test is undertaken.

1. PHO-enrolled population aged 20 years or overestimated to have gout, percent

Indicator 1	Estimate of those identified with parameters indicative of gout among those enrolled with a primary health organisation
Numerator	PHO-enrolled population aged 20 years and over, estimated to have gout using an adaptation of the HealthTracker method[2] (any discharge diagnosis of gout (ICD 9 274, ICD 10 M10) from a public hospital admission from 1 January 2005 to 31 December 2024 or who have been dispensed urate-lowering therapy (ULT) (allopurinol, febuxostat, benzbromarone) or colchicine from a community pharmacy between 2005 and 2024). A 15-year, rolling, look-back period was applied to identify prevalent gout cases for each reporting year. For example, for the 2024 reporting year, gout status was determined using data from 1 January 2010 to 31 December 2024. Individuals with a recent diagnosis of leukaemia or lymphoma (ICD-10 codes C81–C96) were excluded if the diagnosis was recorded within the 2 years before their first ULT or colchicine dispensing. However, individuals were otherwise included, regardless of coexisting diagnoses (including leukaemia or lymphoma) if they had a gout diagnosis within the 15-year look-back period. To improve specificity, individuals dispensed colchicine were excluded if they had a hospital diagnosis within the 2 years before dispensing for conditions where colchicine might have been prescribed for non-gout indications. These conditions included: • I010 Acute rheumatic pericarditis • I092 Chronic rheumatic pericarditis • I300 Acute nonspecific idiopathic pericarditis • I301 Infective pericarditis • I308 Other forms of acute pericarditis • I309 Acute pericarditis, unspecified • I310 Chronic adhesive pericarditis • I311 Chronic constrictive pericarditis

[2] See HealthTracker definition at the end of this report for more details on this estimation method.

	• I32 Pericarditis in diseases classified elsewhere • I319 Diseases of pericardium, unspecified • M11 Other crystal arthropathies • E85.0 Non-neuropathic heredofamilial amyloidosis. These exclusions applied only to colchicine-based identification. Individuals with these conditions were retained in the cohort if they met other gout inclusion criteria.
Denominator	PHO enrolments for relevant years
Data source	NMDS, pharmaceutical collection, PHO enrolment collection, New Zealand Cancer Registry (NZCR) and NHI database.
Analysis	For single map analysis: By year (2019–2024), age group (20–44 years, 45–64 years, 65 years and over), gender (female and male), ethnic group (Māori, Pacific peoples, non-Māori non-Pacific) and Health NZ district of domicile. For PHO analysis: By year (2024), age group (in years), gender, ethnic group, PHO most recently enrolled with (for the relevant year), PHO group (small, medium, medium-large and large).
Comment	The method used to calculate gout prevalence is similar to that described by Winnard et al (2012).
Rationale	Gout is the most common form of inflammatory arthritis and contributes significantly to morbidity, pain and reduced quality of life. Understanding demographic and geographic variation in gout prevalence helps identify inequities, highlights populations with higher need and informs targeted prevention, management strategies and resource allocation.
Commentary	Description Data was presented by year, ethnicity, age and gender. This indicator shows the number and percent of the New Zealand PHO-enrolled population, aged 20 years and over, estimated to have gout. The method used to calculate gout prevalence was based on the method described by Winnard et al (2012), combining those who have either been in a public hospital with any diagnosis for gout or been dispensed ULT or colchicine in the 15-year, rolling, lookback period. Why is this important? Understanding demographic and geographic variation in gout prevalence helps identify inequities, highlights populations with higher need and informs targeted prevention and management strategies and resource allocation. Rates of identification of gout are particularly high in male Māori and Pacific peoples, meaning districts with a high Māori and/or Pacific population have higher prevalence. What questions does this prompt? • Why are there regional differences in gout estimates in different ethnic groups?

2. People with estimated gout who received urate-lowering therapy at least once in a year, percent

Indicator 2	People with estimated gout who received urate-lowering therapy at least once in a year, percent
Numerator	Number of people aged 20 years and over with estimated gout who were dispensed a gout-specific ULT (allopurinol, febuxostat, benzbromarone) at least once in the calendar year
Denominator	PHO-enrolled population aged 20 years and over with estimated gout using the adapted HealthTracker method (numerator indicator 1).
Data source	NMDS, pharmaceutical collection, PHO enrolment collection, NZCR and NHI database.
Analysis	For single map analysis: By year (2019–2024), age group (20–44 years, 45–64 years, 65 years and over), gender (female and male), ethnic group (Māori, Pacific peoples, non-Māori non-Pacific) and Health NZ district of domicile. For PHO analysis: By year (2024), age group (in years), gender, ethnic group, PHO most recently enrolled with (for the relevant year), PHO group (small, medium, medium-large and large).
Medicines	ULT: 1026 allopurinol, 4026 febuxostat, and 4003 benzbromarone. This indicator does not include probenecid, as it is commonly used as an adjunct to certain antibiotics to enhance their efficacy. While probenecid is most often dispensed alongside antibiotics, it may also be prescribed for gout in patients who are unable to tolerate other ULTs. In 2024, approximately 870 people who were estimated with gout were regularly dispensed probenecid. Of these, approximately 800 individuals did not receive antibiotics within 7 days of probenecid dispensing, suggesting that probenecid may have been used for gout management in this group.
Rationale	Long-term ULT is used to prevent gout flares and prevent tophus formation, bony erosions and permanent disability in people with gout. Understanding variation in dispensing patterns provides insight into treatment uptake, adherence and continuity of care and helps identify opportunities to improve long-term management and health outcomes for people with gout.
Commentary	Description Data was presented by year, ethnicity, age and gender. This indicator shows the number and percent of people estimated with gout who received ULT at least once a year. This indicator does not assess whether medicine was clinically indicated, whether the dose was optimal or whether the dose was taken. Why is this important? Long-term ULT is used to prevent gout flares and tophus formation, bony erosions and permanent disability in people with gout. Many studies have demonstrated underutilisation of ULT continuously and long term. The results of this indicator are combined with indicator 3 to prompt questions and actions about ‘the persistence gap’ (see commentary for indicator 3). What questions does this prompt?

	• Why is there variation in the rate of ULT dispensing between districts? • What factors might be contributing to low ULT use?

3. People with estimated gout who regularly received urate-lowering therapy, percent

Indicator 3	People with estimated gout who regularly received urate-lowering therapy, percent
Numerator	People aged 20 years and over with estimated gout who were dispensed gout-specific ULT (allopurinol, febuxostat, benzbromarone) for three or four quarters of a year
Denominator	PHO-enrolled population aged 20 years and over with estimated gout using the adapted HealthTracker method (numerator indicator 1).
Data source	NMDS, pharmaceutical collection, PHO enrolment collection, NZCR, NHI database.
Analysis	For single map analysis: By year (2019–2024), age group (20–44 years, 45–64 years, 65 years and over), gender (female and male), ethnic group (Māori, Pacific peoples, non-Māori non-Pacific) and Health NZ district of domicile. For PHO analysis: By year (2024), age group (in years), gender, ethnic group, PHO most recently enrolled with (for the relevant year), PHO group (small, medium, medium-large and large).
Medicines	ULT: 1026 allopurinol, 4026 febuxostat, 4003 benzbromarone. This indicator does not include probenecid, as it is commonly used as an adjunct to certain antibiotics to enhance their efficacy. While probenecid is most often dispensed alongside antibiotics, it may also be prescribed for gout in patients who are unable to tolerate other ULTs. In 2024, approximately 870 people who were estimated with gout were regularly dispensed probenecid. Of these, approximately 800 individuals did not receive antibiotics within 7 days of probenecid dispensing, suggesting that probenecid may have been used for gout management in this group.
Rationale	Long-term ULT is used to prevent gout flares and tophus formation, bony erosions and permanent disability in people with gout. For treatment benefit, ULT needs to be taken regularly. Understanding variation in dispensing patterns provides insight into treatment uptake and continuity of care and helps identify opportunities to improve long-term management and health outcomes for people with gout.
Commentary	Description Data was presented by year, ethnicity, age and gender. This indicator shows the number and percent of people estimated with gout who were regularly receiving long-term ULT. This was defined as ULT being dispensed for at least three quarters of a year. This indicator does not assess whether medicine was clinically indicated, whether the dose was optimal or whether the dose was taken. Why is this important?

	Long-term ULT is used to prevent gout flares and tophus formation, bony erosions and permanent disability in people with gout. For treatment benefit, ULT needs to be taken regularly. Many studies have demonstrated low persistence of ULT. The map for this indicator suggests there is wide variation in the regular dispensing of ULT to those with a diagnosis of gout. What questions does this prompt? • Why is there variation in the rate of ULT dispensing between districts? • Why are rates of any ULT dispensing in Māori and Pacific peoples with gout higher than rates for non-Māori, non-Pacific populations but lower for regular dispensing? • What other factors might be contributing to a persistent gap in regular ULT use?

4. People with estimated gout dispensed funded non-steroidal anti-inflammatory drugs (NSAIDs), percent

Indicator 4	People with estimated gout dispensed funded non-steroidal anti-inflammatory drugs (NSAIDs), percent
Numerator	People with estimated gout aged 20 years and over dispensed publicly funded NSAIDs.
Denominator	PHO-enrolled population aged 20 years and over with estimated gout using the adapted HealthTracker method (numerator indicator 1).
Data source	NMDS, pharmaceutical collection, PHO enrolment collection, NZCR, NHI database.
Analysis	For single map analysis: By year (2019–2024), age group (20–44 years, 45–64 years, 65 years and over), gender (female and male), ethnic group (Māori, Pacific peoples, non-Māori non-Pacific) and Health NZ district of domicile. For PHO analysis: By year (2024), age group (in years), gender, ethnic group, PHO most recently enrolled with (for the relevant year), PHO group (small, medium, medium-large and large).
Medicines	NSAIDs: 1401 diclofenac sodium, 2798 ibuprofen, 1697 ketoprofen, 1769 mefenamic acid, 3912 meloxicam, 2782 naproxen, 2536 tenoxicam, 4081 celecoxib and 2193 sulindac.
Comment	This indicator only includes NSAIDs dispensed at community pharmacies, that is, not medicines given in hospital or purchased over the counter. NSAID dispensing may not be related to gout symptoms.
Rationale	NSAIDs are commonly used as first-line treatment for acute gout flares, and some are available over the counter without prescription. Higher rates of NSAID use may reflect people experiencing acute gout flares who are not receiving or adhering to long-term preventive therapy. Variation in NSAID dispensing patterns can help identify populations at risk of recurrent flares and supports targeted improvements in long-term gout management.

Commentary	Description Data was presented by year, ethnicity, age and gender. This indicator shows the number and percent of people with gout who received an NSAID in a year. This indicator does not capture over-the-counter NSAID use and does not assess the indication for NSAID use. Why is this important? NSAIDs are often the first line of treatment for acute gout flares, and some can be purchased from a pharmacy without a prescription. This indicator may reflect people experiencing acute gout flares who are not on long-term preventive therapy for gout. Gout management guidelines state that people experiencing frequent (two or more) acute gout flares per year should be offered long-term ULT. Although NSAIDs are effective at treating acute gout flares, these medicines have important side effects including kidney injury and peptic ulcer disease. What questions does this prompt? • Why are younger people with estimated gout more likely to be dispensed NSAIDs than older people? • Should some of those receiving NSAIDs for gout flares be treated with long-term ULT?

5. People with estimated gout who were dispensed funded NSAIDs but not dispensed urate-lowering therapy, percent

Indicator 5	People with estimated gout who were dispensed funded NSAIDs but not dispensed urate-lowering therapy, percent
Numerator	People with estimated gout, aged 20 years and over, dispensed publicly funded NSAIDs in a year but not dispensed gout-specific ULT (allopurinol, febuxostat, benzbromarone) in the same year.
Denominator	PHO-enrolled population aged 20 years and over with estimated gout using the adapted HealthTracker method (numerator indicator 1).
Data source	NMDS, pharmaceutical collection, PHO enrolment collection, NZCR, NHI database.
Analysis	For single map analysis: By year (2019–2024), age group (20–44 years, 45–64 years, 65 years and over), gender (female and male), ethnic group (Māori, Pacific peoples, non-Māori non-Pacific) and Health New Zealand district of domicile. For PHO analysis: By year (2024), age group, gender, ethnic group, PHO most recently enrolled with (for the relevant year), PHO group (small, medium, medium-large and large).
Medicines	NSAIDs: 1401 diclofenac sodium, 2798 ibuprofen, 1697 ketoprofen, 1769 mefenamic acid, 3912 meloxicam, 2782 naproxen, 2536 tenoxicam, 4081 celecoxib and 2193 sulindac. ULT: 1026 allopurinol, 4026 febuxostat, 4003 benzbromarone.
Comment	This indicator only includes NSAIDs dispensed at community pharmacies, that is, not medicines given in hospital or purchased over

	the counter. The NSAID dispensing may not necessarily be related to gout symptoms.
Rationale	Variation in NSAID dispensing patterns, particularly where not accompanied by ULT use, may highlight gaps in preventive care. This indicator provides insight into potential over-reliance on acute treatment and supports identification of opportunities to strengthen long-term gout management.
Commentary	Description: Data was presented by age group, gender, ethnic group and year. This indicator shows the number and percent of people estimated with gout who were dispensed a funded NSAID in a community pharmacy and were not dispensed ULT in the same year. Why is this important? While it is not known whether it was gout that led to an NSAID being dispensed, high rates of NSAID dispensing without ULT use may reflect people using NSAIDs to manage their acute gout flares. International best practice indicates that people experiencing frequent gout flares (two or more per year) should be offered long-term ULT. Large variation may reflect variable clinical practice. This indicator does not capture those who use over-the-counter medicine. What questions does this prompt? • Does the pattern of NSAID dispensing without ULT suggest missed opportunities for long-term gout management? • Should some of those receiving NSAIDs for acute gout flares be treated with ULT?

6. People with estimated gout dispensed any of colchicine, prednisone or funded NSAIDs in a year, percent

Indicator 6	People with estimated gout dispensed any of colchicine, prednisone or funded NSAIDs in a year, percent
Numerator	People with estimated gout, aged 20 years and over dispensed any of colchicine, prednisone or funded NSAIDs in a year.
Denominator	PHO-enrolled population aged 20 years and over with estimated gout using the adapted HealthTracker method (numerator indicator 1).
Data source	NMDS, pharmaceutical collection, PHO enrolment collection, NZCR, NHI database.
Analysis	For single map analysis: By year (2019–2024), age group (20–44 years, 45–64 years, 65 years and over), gender (female and male), ethnic group (Māori, Pacific peoples, non-Māori non-Pacific) and Health NZ district of domicile.

	For PHO analysis: By year (2024), age group (in years), gender, ethnic group, PHO most recently enrolled with (for the relevant year), PHO group (small, medium, medium-large and large).
Medicines	1341 colchicine, 2038 prednisone, 1401 diclofenac sodium, 2798 ibuprofen, 1697 ketoprofen, 1769 mefenamic acid, 3912 meloxicam, 2782 naproxen, 2536 tenoxicam, 4081 celecoxib and 2193 sulindac.
Comment	This indicator only includes colchicine, prednisone or NSAIDs dispensed at community pharmacies, that is, medicines given in hospital or purchased over the counter are not included. The NSAID dispensing may not necessarily be related to gout symptoms.
Rationale	Acute gout flares are treated with NSAIDs, colchicine or oral corticosteroids such as prednisone. Understanding variation in dispensing of medicines used to treat acute flares provides insight into patterns of care, including potential reliance on short-term treatment rather than preventive management.
Commentary	Description Data are presented by year, ethnicity, age and gender. This indicator shows the number and percent of people estimated with gout who were dispensed any of colchicine, prednisone or funded NSAIDs in a year. Why is this important? Acute gout flares are treated with NSAIDs, colchicine or oral corticosteroids such as prednisone. Gout management guidelines state that people experiencing frequent (two or more) acute gout flares per year should be offered long-term ULT. Although NSAIDs are effective at treating acute gout flares, these medicines have important side effects including kidney injury and peptic ulcer disease. Prednisone can also worsen glycaemic control. These adverse effects are particularly important in people with gout, who commonly have comorbidities such as chronic kidney disease, cardiovascular disease, diabetes and metabolic syndrome. This indicator does not capture over-the-counter NSAID use and does not assess the indication for NSAID use. What questions does this prompt? • Should some of those receiving colchicine, prednisone or NSAIDs for gout flares be treated with long-term ULT? • Would providing long-term ULT offer a better risk: benefit ratio?

7. People with estimated gout dispensed any of colchicine, prednisone or funded NSAIDs but not urate-lowering therapy in a year, percent

Indicator 7	People with estimated gout dispensed any of colchicine, prednisone or funded NSAIDs but not urate-lowering therapy in a year, percent
Numerator	People with estimated gout, aged 20 years and over dispensed any of colchicine, prednisone or funded NSAIDs in a year but not dispensed

	gout-specific ULT (allopurinol, febuxostat, benzbromarone) in the same year.
Denominator	PHO-enrolled population aged 20 years and over with estimated gout using the adapted HealthTracker method (numerator indicator 1).
Data source	NMDS, pharmaceutical collection, PHO enrolment collection, NZCR, NHI database.
Analysis	For single map analysis: By year (2019–2024), age group (20–44 years, 45–64 years, 65 years and over), gender (female and male), ethnic group (Māori, Pacific peoples, non-Māori non-Pacific) and Health NZ district of domicile. For PHO analysis: By year (2024), age group, gender, ethnic group, PHO most recently enrolled with (for the relevant year), PHO group (small, medium, medium-large and large).
Medicines	1341 colchicine, 2038 prednisone, 1401 diclofenac sodium, 2798 ibuprofen, 1697 ketoprofen, 1769 mefenamic acid, 3912 meloxicam, 2782 naproxen, 2536 tenoxicam, 4081 celecoxib and 2193 sulindac. ULT: 1026 allopurinol, 4026 febuxostat, 4003 benzbromarone.
Comment	This indicator only includes colchicine, prednisone or NSAIDs dispensed at community pharmacies, that is, medicines given in hospital, purchased over the counter or shared are not included. The NSAID and prednisone dispensing may not necessarily be related to gout symptoms.
Rationale	Acute gout flares are treated with NSAIDs, colchicine or oral corticosteroids, such as prednisone. Understanding variation in dispensing of medicines used to treat acute flares provides insight into patterns of care, including potential reliance on short-term treatment rather than preventive management.
Commentary	Description Data was presented by year, ethnicity, age and gender. This indicator shows the number and percent of people estimated with gout who were dispensed any of colchicine, prednisone or funded NSAIDs but not dispensed a ULT in a year. Why is this important? Acute gout flares are treated with NSAIDs, colchicine or oral corticosteroids, such as prednisone. This indicator may reflect people experiencing acute gout flares who are not on long-term preventive therapy for gout. Gout management guidelines state that people experiencing frequent (two or more) acute gout flares per year should be offered long-term ULT. Although NSAIDs are effective at treating acute gout flares, these medicines have important side effects, including kidney injury and peptic ulcer disease. Prednisone may also impact glycaemic control. These adverse effects are particularly important in people with gout, who commonly have comorbidities such as chronic kidney disease, cardiovascular disease, diabetes and metabolic syndrome. This indicator does not capture over-the-counter NSAID use and does not assess the indication for NSAID or prednisone use. What questions does this prompt?

	• Are people with gout using more or less colchicine, prednisone or NSAIDs without ULT than might be expected? • Should some of those receiving colchicine, prednisone or NSAIDs for acute gout flares be treated with ULT?

8. The number of admissions with a primary diagnosis of gout in those estimated with gout, rate per 100,000

Indicator 8	The number of admissions with a primary diagnosis of gout in those estimated with gout, rate per 100,000
Numerator	The number of admissions in people aged 20 years and over with a publicly funded hospital discharge with primary diagnosis of gout (ICD 9 274, ICD 10 M10) in a year
Denominator	PHO-enrolled population aged 20 years and over with estimated gout using the adapted HealthTracker method (numerator indicator 1).
Data source	NMDS, pharmaceutical collection, PHO enrolment collection, NZCR, NHI database.
Analysis	For single map analysis: By year (2019–2024), age group (20–44 years, 45–64 years, 65 years and over), gender (female and male), ethnic group (Māori, Pacific peoples, non-Māori non-Pacific) and Health NZ district of domicile. For PHO analysis: By year (2024), age group, gender, ethnic group, PHO most recently enrolled with (for the relevant year), PHO group (small, medium, medium-large and large).
Rationale	Variation in admission rates to hospital due to gout may indicate different admission criteria between districts, poor gout control or limited access to primary health care.
Commentary	Description This indicator shows the number and rate per 100,000 population of hospital admissions with a primary diagnosis of gout (events), not the number of people. Why is this important? Variation in admission rates to hospital due to gout may indicate different admission criteria between districts, poor gout control or limited access to primary health care. What questions does this prompt? • How much of the variation reflects differences in the characteristics of the gout population (for example, age, ethnicity, comorbidities, disease severity) versus modifiable factors? • To what extent could high admission rates be reduced through more effective primary health care management (for example, optimal ULT, flare prevention)? • Do some of these admissions reflect higher disease severity?

	Note: The denominator of this indicator has been changed to match the denominator for indicators 2–7, so it now displays hospital admissions for people with gout, rather than for the general population. This indicator shows differences in admission rates within the gout population. It isn't affected by the prevalence of gout.

9. The number of admissions with a primary diagnosis of gout among all PHO-enrolled population, rate per 100,000

Indicator 9	The number of admissions with a primary diagnosis of gout among all PHO-enrolled population, rate per 100,000
Numerator	The number of admissions in people aged 20 years and over with a publicly funded hospital discharge with primary diagnosis of gout (ICD 9 274, ICD 10 M10).
Denominator	PHO-enrolled population aged 20 years or over
Data source	NMDS, PHO enrolment collection, NHI database
Analysis	For single map analysis: By year (2019–2024), age group (20–44 years, 45–64 years, 65 years and over), gender (female and male), ethnic group (Māori, Pacific peoples, non-Māori non-Pacific) and Health NZ district of domicile. For PHO analysis: By year (2024), age group (in years), gender, ethnic group, PHO most recently enrolled with (for the relevant year), PHO group (small, medium, medium-large and large).
Rationale	Variation in admission rates to hospital due to gout may indicate different admission criteria between districts, poor gout control or limited access to primary health care.
Commentary	Description This indicator shows the number and rate per 100,000 population of hospital admissions among all PHO-enrolled population. This indicator presents the total number of admissions due to gout (events), not the number of people admitted. Why is this important? Variation in admission rates to hospital due to gout may indicate different admission criteria between districts, poor gout control or limited access to primary health care. What questions does this prompt? • How much of the variation reflects differences in the underlying prevalence of gout across districts versus modifiable factors? • Could some of the high admission rates be prevented by more intensive primary health care management? • Do some of these admissions reflect higher disease severity? This indicator shows the impact of a higher gout prevalence on admission rates.

HealthTracker definition

This definition aligns with the definition used by Winnard et al (2012) with the following exceptions:

1. The cancer exclusion codes used in this indicator were C81–C96 (not C80–C96).
2. Benzbromarone and febuxostat were added to allopurinol in the definition to become part of ULT. Febuxostat, but not benzbromarone, was excluded alongside allopurinol as an indicator of gout when the relevant cancer(s) were diagnosed in the 24 months before the period end date.
3. A 15-year rolling look-back period was applied to identify prevalent gout cases for each reporting year. For example, for the 2024 reporting year, gout status was determined using data from 1 January 2010 to 31 December 2024.
4. To improve specificity, individuals dispensed colchicine were excluded if they had a hospital diagnosis within the 2 years before dispensing for conditions where colchicine may be prescribed for non-gout indications. These conditions included:
    - I010 Acute rheumatic pericarditis
    - I092 Chronic rheumatic pericarditis
    - I300 Acute non-specific idiopathic pericarditis
    - I301 Infective pericarditis
    - I308 Other forms of acute pericarditis
    - I309 Acute pericarditis, unspecified
    - I310 Chronic adhesive pericarditis
    - I311 Chronic constrictive pericarditis
    - I32 Pericarditis in diseases classified elsewhere
    - I319 Diseases of pericardium, unspecified
    - M11 Other crystal arthropathies
    - E85.0 Non-neuropathic heredofamilial amyloidosis.

These exclusions applied only to colchicine-based identification. Individuals with these conditions were retained in the cohort if they met other gout inclusion criteria.

Data sources used

- NMDS
- Pharmaceutical collection
- PHO enrolment collection
- NZCR.

Values of the main indicator variable

1 = Yes, the person showed an indication of having gout, as recorded in national health information datasets.

A person was counted as having showed an indication of gout if they had one of the codes specified below (from any data collection) within the time period searched (for example, 12-month or relevant look-back period, for example, 15 years from the year being reported).

NMDS codes:

- ICD10 diagnosis codes: M10
- ICD 9 CM diagnosis codes: 274.

Pharmaceutical collection:

- 1341 – colchicine
- 1026 – allopurinol*
- 4026 – febuxostat*
- 3754 – benzbromarone
- 4003 – benzbromarone.

* Dispensings of allopurinol or febuxostat were excluded as indications of gout if there was a diagnosis of malignant neoplasm of lymphoid, haematopoietic and related tissues (ICD-10-AM C81-C96) recorded in either the NZCR or in the publicly funded hospitalisations in the NMDS in the 24 months before the period end date.

References

Jackson G, Wright C, Thornley S, et al. 2012. Potential unmet need for gout diagnosis and treatment: capture-recapture analysis of a national administrative dataset. *Rheumatology* 51(10): 1,820–4.

Winnard D, Wright C, Taylor W, et al. 2012. National prevalence of gout derived from administrative health data in Aotearoa New Zealand. *Rheumatology* 51(5): 901–9.