Atlas of Healthcare Variation: Methodology | Opioids

November 2021

General points

- Data is not presented where the number of people was less than 10. This is to preserve confidentiality.
- People were assigned to their district health board (DHB) of domicile unless otherwise noted. Where more than one domicile was recorded, the most recent value was selected.
- Ethnic group data presented is prioritised ethnic group (Māori, Pacific peoples, Asian and European/Other). For people reporting multiple ethnic groups, the most recent value was selected.

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Calculating magnitude of variation

When reporting the size of variation between DHBs to prevent either low or high outliers having a large effect on the reported ratio, the top and/or bottom DHBs were excluded to avoid overstating the variation.

Standard deviation
Data is presented as standard deviation from the mean. Standard deviation is a statistical measure of variation from a mean. Assuming that recorded instances are normally distributed (ie, they are in the usual 'bell-shaped curve'), 68 percent of all recorded instances would be expected to be within one standard deviation either side of the mean and 95 percent within two standard deviations. The two 'middle' shades will be within one standard deviation of the mean.

Confidence intervals
Data for each DHB is presented as rate per 1,000 population. Upper and lower confidence intervals were calculated to 95 percent level of confidence.

For data containing additional age band analyses for the dispensing of strong and weak opioids and morphine and oxycodone, see the end of this document.

Analysis by primary health organisation (PHO)
Data is also available analysed by PHO. This is intended primarily for PHOs' use. If you would like a copy of this data, please email atlas@hqsc.govt.nz.

Indicator #1:	**People dispensed one or more strong opioid medicines in a year**
Numerator	Number of people dispensed a strong opioid: morphine, fentanyl, methadone (excluding those using for substance abuse), oxycodone and pethidine
Denominator	Stats NZ resident population
Data source	Pharmaceutical Collection, Stats NZ population projections
Analysis	Analysis by: • year: 2011–19 • age group (years): 0–24; 25–64; 65–79 and 80 and over • gender • ethnic group: Māori, Pacific peoples, Asian, European/Other
Exclusions	Opioid substitution treatment was excluded by identifying people who had methadone dispensed every one, two or three days. People who met this criteria were excluded from further analysis. This method may incorrectly exclude people who had this pattern of dispensing for a different reason, however, a comparison between the number of people registered with the Ministry of Health as receiving opioid substitution treatment and the number of people excluded suggests this method is sufficiently accurate.
Medication	1274 Fentanyl citrate; 1795 Methadone hydrochloride; 1830 Morphine hydrochloride; 1831 Morphine sulphate; 2383 Morphine tartrate; 3801 Fentanyl; 3822 Oxycodone hydrochloride; 3896 Fentanyl citrate; 1953 Pethidine hydrochloride
Commentary	Description: People dispensed one or more strong opioid medicines in a year. This indicator shows the number and rate per 1,000 of people who had a community pharmacy dispensing of a strong opioid by year (2011–19), by ethnic group, age group and gender. Note: A strong opioid is one that is classed as step 3 of the World health Organization (WHO) analgesic ladder. In Aotearoa New Zealand the following strong opioids are subsidised: fentanyl, methadone, morphine, oxycodone and pethidine. Methadone for opioid substitution treatment was excluded from this indicator by removing records of dispensed methadone within three days of the previous dispensing. Why is this important? The Institute for Healthcare Improvement (IHI) classes opioids as one of four groups of medicines (along with anticoagulants, insulin and sedatives) that can cause harm to patients, even when used as intended. What questions does this prompt? • Why are some DHBs consistently lower or higher than the national mean? • How do similar DHBs compare?

Indicator #2:	**People dispensed a ‘strong’ opioid for 6 weeks or more**

Numerator	The number of people dispensed a strong opioid for 6–12 weeks after the first dispensing
Denominator	Stats NZ resident population
Data source	Pharmaceutical Collection, Stats NZ population projections
Analysis	Analysis by: • year: 2011–19 • age group (years): 0–24; 25–64; 65–79 and 80 and over • gender • ethnic group: Māori, Pacific peoples, Asian, European/Other
Inclusions	Date between first dispensing in a year and any subsequent dispensing to be greater than or equal to six weeks and not more than 12 weeks. Only dispensings in the same calendar year were included. The year was truncated at mid-November, ie, first dispensings from mid-November to 31 December were excluded as they would not meet the criteria of a subsequent dispensing 6–12 weeks after the first.
Exclusions	Opioid substitution treatment was excluded by identifying people dispensed methadone every first, second or third day.
Medication	1274 Fentanyl citrate; 1795 Methadone hydrochloride; 1830 Morphine hydrochloride; 1831 Morphine sulphate; 2383 Morphine tartrate; 3801 Fentanyl; 3822 Oxycodone hydrochloride; 3896 Fentanyl citrate; 1953 Pethidine hydrochloride
Commentary	Description: People dispensed a strong opioid for 6 weeks or more in a year. This indicator shows the number and rate per 1,000 of people who had a community pharmacy dispensing of a strong opioid for six weeks or more in 2011–19. To ensure that continuous use was captured, dispensings that occurred within 6–12 weeks from first dispensing in the same calendar year were included. This means the year is truncated at mid-November; first dispensings after mid-November were not included. Note: A strong opioid is one that is classed as step 3 of the WHO analgesic ladder. In Aotearoa New Zealand the following strong opioids are subsidised: fentanyl, methadone, morphine, oxycodone and pethidine. Methadone for opioid substitution treatment was excluded from this indicator by removing records dispensed methadone within three days of the previous dispensing. Why is this important? The IHI classes opioids as one of four groups of medicines (along with anticoagulants, insulin and sedatives) that can cause harm to patients, even when used as intended. Except in particular circumstances, strong opioids are intended for short-term use only, with use for six weeks or more raising questions of appropriateness. What questions does this prompt? • Why are some DHBs consistently lower or higher than the national mean? • How do similar DHBs compare?

Indicator #3:	**People dispensed one or more weak opioid medicines in a year**
Numerator	Number of people dispensed a weak opiate
Denominator	Stats NZ resident population
Data source	Pharmaceutical Collection, Stats NZ population projections
Analysis	Analysis by: • year: 2011–19 • age group (years): 0–24; 25–64; 65–79 and 80 and over • gender • ethnic group: Māori, Pacific peoples, Asian, European/Other • medication: tramadol (tramadol hydrochloride and tramadol) and codeine (codeine phosphate and dihydrocodeine tartrate)
Medication	1229 Tramadol; 1332 Codeine phosphate; 2427 Dihydrocodeine tartrate; 3906 Tramadol hydrochloride
Comment	Paracetamol with codeine was excluded on the basis that it contains a much lower dose of codeine.
Commentary	Description: People dispensed one or more weak opioid medicines in a year. This indicator shows the number and rate per 1,000 of people who had a community dispensing of a weak opioid by year (2011–19), by ethnic group, age group, gender and medication (tramadol or codeine and dihydrocodeine). Note: A weak opioid is classed as step 2 of the WHO analgesic ladder. In Aotearoa New Zealand the following weak opioids are subsidised: tramadol, codeine and dihydrocodeine. Paracetamol with codeine was excluded. Why is this important? The IHI classes opioids as one of four groups of medicines (along with anticoagulants, insulin and sedatives) that can cause harm to patients, even when used as intended. As with strong opioids, continuous use of a weak opioid for six weeks or more raises questions on appropriateness of use. What questions does this prompt? • Why are some DHBs consistently lower or higher than the national mean? • How do similar DHBs compare? • Looking at local data, how many people receive a weak opioid for six or more weeks?

Indicator #3a:	**People dispensed one or more tramadol in a year**
Numerator	Number of people dispensed tramadol
Denominator	Stats NZ resident population
Data source	Pharmaceutical Collection, Stats NZ population projections

Analysis	Analysis by: • PHO only • year: 2011–19 • age group (years): 0–24; 25–64; 65–79 and 80 and over • gender • ethnic group: Māori, Pacific peoples, Asian, European/Other
Medication	1229 Tramadol; 3906 Tramadol hydrochloride
Commentary	Description: People dispensed one or more tramadol in a year. This indicator shows the number and rate per 1,000 of people who had a community dispensing of a weak opioid by year (2011–19), by ethnic group, age group, gender and medication (tramadol). Note: A weak opioid is classed as step 2 of the WHO analgesic ladder. In New Zealand the following weak opioids are subsidised: tramadol. Paracetamol with codeine was excluded. Why is this important? The IHI classes opioids as one of four groups of medicines (along with anticoagulants, insulin and sedatives) that can cause harm to patients, even when used as intended. As with strong opioids, continuous use of a weak opioid for six weeks or more raises questions on appropriateness of use. What questions does this prompt? • Why are some DHBs consistently lower or higher than the national mean? • How do similar DHBs compare? • Looking at local data, how many people receive a weak opioid for six or more weeks?

Indicator #3b:	**People dispensed one or more codeine in a year**
Numerator	Number of people dispensed codeine
Denominator	Stats NZ resident population
Data source	Pharmaceutical Collection, Stats NZ population projections
Analysis	Analysis by: • PHO only • year: 2011–19 • age group (years): 0–24; 25–64; 65–79 and 80 and over • gender • ethnic group: Māori, Pacific peoples, Asian, European/Other
Medication	1332 Codeine phosphate; 2427 Dihydrocodeine tartrate
Comment	Paracetamol with codeine was excluded on the basis that these contain a much lower dose of codeine.
Commentary	Description: People dispensed one or more codeine in a year.

	This indicator shows the number and rate per 1,000 of people who had a community dispensing of a weak opioid by year (2011–19), by ethnic group, age group, gender and medication (codeine and dihydrocodeine). Note: A weak opioid is classed as step 2 of the WHO analgesic ladder. In New Zealand the following weak opioids are subsidised: codeine and dihydrocodeine. Paracetamol with codeine was excluded. Why is this important? The IHI classes opioids as one of four groups of medicines (along with anticoagulants, insulin and sedatives) that can cause harm to patients, even when used as intended. As with strong opioids, continuous use of a weak opioid for six weeks or more raises questions on appropriateness of use. What questions does this prompt? • Why are some DHBs consistently lower or higher than the national mean? • How do similar DHBs compare? • Looking at local data, how many people receive a weak opioid for six or more weeks?

Indicator #4:	**People dispensed morphine one or more times in a year**
Numerator	Number of people dispensed morphine
Denominator	Stats NZ resident population
Data source	Pharmaceutical Collection, Stats NZ population projections
Analysis	Analysis by: • year: 2011–19 • age group (years): 0–24; 25–64; 65–79 and 80 and over • gender • ethnic group: Māori, Pacific peoples, Asian, European/Other
Medication	1830 Morphine hydrochloride; 1831 Morphine sulphate; 2383 Morphine tartrate
Commentary	Description: People dispensed morphine one or more times in a year. This indicator shows the number and rate per 1,000 of people who had a community dispensing of morphine by year (2011–19), by ethnic group, age group and gender. Why is this important? Morphine is a strong opiate that is considered ‘gold standard’ treatment for severe acute pain, particularly in the palliative care setting. NICE recommends that morphine should not be used for neuropathic pain without specialist assessment. What questions does this prompt? • Why are some DHBs consistently lower or higher than the national mean? • How do similar DHBs compare? • How long are people receiving morphine for?

Indicator #5:	**People dispensed morphine for 6 weeks or more**
Numerator	Number of people dispensed morphine for 6–12 weeks following first dispensing in a year
Denominator	Stats NZ resident population
Data source	Pharmaceutical Collection, Stats NZ population projections
Analysis	2011–19
Medication	1830 Morphine hydrochloride; 1831 Morphine sulphate; 2383 Morphine tartrate
Inclusions	Date between first dispensing in year and any subsequent dispensing to be greater than or equal to six weeks but not more than 12 weeks. Only dispensings in the same calendar year were included. The year was truncated at mid-November, ie, first dispensings from mid-November to 31 December were excluded as they would not meet the criteria of a subsequent dispensing 6–12 weeks after the first.
Commentary	Description: People dispensed morphine for 6 weeks or more in a year. This indicator shows the number and rate per 1,000 of people who had a community pharmacy dispensing of morphine for six weeks or more in 2011–19. To ensure that continuous use was captured, dispensing that occurred within 6–12 weeks from first dispensing in the same calendar year were included. This means the year was truncated at mid-November; first dispensings after mid-November are not included. Why is this important? The IHI classes opioids as one of four groups of medicines (along with anticoagulants, insulin and sedatives) that can cause harm to patients, even when used as intended. Except in particular circumstances, morphine is intended for short-term use only, with use for six weeks or more raising questions of appropriateness. What questions does this prompt? • Why are some DHBs consistently lower or higher than the national mean? • How do similar DHBs compare?

Indicator #6:	**People dispensed oxycodone one or more times in a year**
Numerator	Number of people dispensed oxycodone
Denominator	Stats NZ resident population
Data source	Pharmaceutical Collection, Stats NZ population projections
Analysis	Analysis by: • year: 2011–19 • age group (years): 0–24; 25–64; 65–79 and 80 and over • gender • ethnic group: Māori, Pacific peoples, Asian, European/Other
Medication	3822 Oxycodone hydrochloride

Commentary	Description: People dispensed oxycodone one or more times in a year. This indicator shows the number and rate per 1,000 of people who had a community dispensing of oxycodone by year (2011–19), by ethnic group, age group and gender. Why is this important? In a palliative care setting, oxycodone is recommended as second-line treatment for people who cannot tolerate morphine. NICE recommends that oxycodone should not be used for neuropathic pain without specialist assessment. A bpac[nz] review noted that oxycodone is more addictive than morphine and does not have a better side-effect profile. What questions does this prompt? • Why are some DHBs consistently lower or higher than the national mean? • How do similar DHBs compare? • How long are people receiving oxycodone for?

Indicator #7:	**People dispensed oxycodone for 6 weeks or more**
Numerator	Number of people dispensed oxycodone for 6–12 weeks after first dispensing in a year
Denominator	Stats NZ resident population
Data source	Pharmaceutical Collection, Stats NZ population projections
Analysis	Analysis by: • year: 2011–19 • age group (years): 0–24; 25–64; 65–79 and 80 and over • gender • ethnic group: Māori, Pacific peoples, Asian, European/Other
Medication	3822 Oxycodone hydrochloride
Inclusions	Date between first dispensing in year and any subsequent dispensing to be greater than or equal to six weeks but not more than 12 weeks. Only dispensings in the same calendar year were included. The year was truncated at mid-November, ie, first dispensings from mid-November to 31 December were excluded as they would not meet the criteria of a subsequent dispensing 6–12 weeks after the first.
Commentary	Description: People dispensed oxycodone for 6 weeks or more in a year. This indicator shows the number and rate per 1,000 of people who had a community pharmacy dispensing of oxycodone for six weeks or more in 2011–19. To ensure that continuous use was captured, dispensings that occurred within 6–12 weeks from first dispensing in the same calendar year were included. This means the year was truncated at mid-November; first dispensings after mid-November were not included. Why is this important? The IHI classes opioids as one of four groups of medicines (along with anticoagulants, insulin and sedatives) that can cause harm to patients, even when used as intended. Except in particular

	circumstances, oxycodone is intended for short-term use only, with use for six weeks or more raising questions of appropriateness. What questions does this prompt? • Why are some DHBs consistently lower or higher than the national mean? • How do similar DHBs compare?

Indicator #8:	**People dispensed fentanyl one or more times in a year**
Numerator	Number of people dispensed fentanyl
Denominator	Stats NZ resident population
Data source	Pharmaceutical Collection, Stats NZ population projections
Analysis	Analysis by: • year: 2011–19 • age group (years): 0–24; 25–64; 65–79 and 80 and over • gender • ethnic group: Māori, Pacific peoples, Asian, European/Other
Medication	1274 Fentanyl citrate; 3801 Fentanyl; 3896 Fentanyl citrate
Commentary	Description: People dispensed fentanyl one or more times in a year. This indicator shows the number and rate per 1,000 of people who had a community dispensing of fentanyl by year (2011–19). Why is this important? Fentanyl is recommended for people with moderate to severe pain as an alternate option after morphine and depending on patient circumstances. What questions does this prompt? • Why are some DHBs consistently lower or higher than the national mean? • How do similar DHBs compare?

Indicator #9:	**People dispensed fentanyl for 6 or more weeks**
Numerator	Number of people dispensed fentanyl
Denominator	Stats NZ resident population
Data source	Pharmaceutical Collection, Stats NZ population projections
Analysis	Analysis by: • year: 2011–19 • age group (years): 0–24; 25–64; 65–79 and 80 and over • gender • ethnic group: Māori, Pacific peoples, Asian, European/Other
Medication	1274 Fentanyl citrate; 3801 Fentanyl; 3896 Fentanyl citrate

Commentary	Description: People dispensed fentanyl for 6 or more weeks. This indicator shows the number and rate per 1,000 of people who had a community dispensing of fentanyl for six or more weeks in a year (2011–19). Why is this important? Fentanyl is recommended for people with moderate to severe pain as an alternate option after morphine and depending on patient circumstances. What questions does this prompt? • Why are some DHBs consistently lower or higher than the national mean? • How do similar DHBs compare?

Indicator #10:	**People dispensed a strong opioid who had a public hospital event in the 8 days prior to dispensing**
Numerator	People having a 'trigger event' in National Minimum Dataset (NMDS) or National Non-Admitted Patients Collection (NNPAC) in the eight days prior to first dispensing of a strong opioid.
Denominator	People dispensed a strong opioid, excluding those dispensed for opioid substitution treatment.
Data source	Pharmaceutical collection, NMDS, NNPAC
Analysis	Analysis by: • year: 2011–19 • age group (years): 0–24; 25–64; 65–79 and 80 and over • gender • ethnic group: Māori, Pacific peoples, Asian, European/Other
Comment	See below for further analysis of conditions identified from the NMDS. This only includes public hospital events.
Commentary	This indicator shows the rate per 1,000 people had a who received a strong opioid who had a public hospital event in the eight days prior to dispensing of a strong opioid, by DHB. Data is presented by year (2011–19), ethnic group, age and gender. A trigger event was defined as any public hospital inpatient or outpatient event that occurred no more than eight days before a strong opioid was dispensed. Only events occurring in public hospitals were included. Why is this important? All people starting a strong opioid will have a medical reason for doing so, and it is likely that many have a hospital event related to that reason. People receiving a strong opioid without a hospital event are expected to have received their prescription from either a private hospital or their GP. What questions does this prompt? • If there is wide variation in patients not identified as having a trigger event, what might this mean? • Why are some DHBs consistently lower or higher than the national mean? • How many patients were surgical or non-surgical? • How do similar DHBs compare?