

Falls and fractures outcomes framework

Indicator methodology for dashboard v2.0, released July 2018

Indicator methodology

General notes

- All sub-analyses that return a value of five or less, and their corresponding rates, are suppressed for privacy reasons.
- Dollar amounts are rounded to the nearest \$100.
- Ethnicity data is presented as prioritised ethnic group (Māori, Pacific, Asian and Other). Other includes unknown ethnicities.
- All indicators are for people aged 50+ years only, unless otherwise specified.

Data requests

Please contact Falls.Dashboard@hqsc.govt.nz to request the data underlying the dashboard.

Feedback

We welcome your feedback on the dashboard and the indicator methodology. Please send any feedback to Falls.Dashboard@hqsc.govt.nz.

Landing page

Domain 1: ACC claims for falls

Number of fall injuries – refer Indicator 1a.

Domain 2: Fewer serious-harm falls

Number of serious-harm falls – refer Indicator 2a.

Domain 3: Improved recovery (hospital)

Average length of stay – refer <u>Indicator 3a</u>.

Domain 3: Improved recovery (home)

Percentage of people on bisphosphonates – refer <u>Indicator 3d</u>.

Domain 4a: Integrated care (community)

Number of people in community classes – refer <u>Domain 4</u>.

Domain 4b: Integrated care (home)

Number of people in home programme – refer Domain 4.

Domain 1: Fewer falls injuries

1a: ACC new falls claims

Rationale

This indicator shows the number and rate of older people who had ACC claims accepted for an injury caused by a fall. This indicator includes minor injuries through to more serious injuries like fractures (some of which may result in a hospital admission). ACC claims are made across a range of health care settings, so this indicator is our broadest available measure of the number of falls among older people.

This measure also shows claims for falls that either did or did not result in a fracture separately. It is assumed that fractures cause more serious harm, and are more likely to lead to hospital admission, than non-fractures.

Description Description	Number and rate of new ACC claims for falls, by fracture type
Current status	April 2017: Measure implemented. January 2018: Measure now available as a rolling twelve-month total, and the national total now includes claims with an unknown DHB.
Numerator	Total number of new and accepted ACC claims due to a fall
Denominator	Number: None Rate per 1,000 population: Population estimates, smoothed across quarters
Data source(s)	ACC; Stats NZ
Collection period	Quarterly and rolling twelve months, based on the date of the fall
Inclusions	Total accepted, new claims from ACC45 form, with a cause of any of the following: - Slipping, Skidding on Foot, - Tripping or Stumbling, - Loss of Consciousness/Sleep, - Something Giving Way Underfoot, - Misjudgement of Support, - Loss Balance/Personal Control
Exclusions	This indicator excludes falls that did not result in an ACC claim being made or accepted.
Analysis	 Sub analysis: Type of fracture: fracture, non-fracture Repeat: The client had made a separate claim for a fall in the previous 12 months DHB of domicile Age: 50-64, 65-74, 75-84, 85+ years Ethnicity: Māori, Pacific, Asian and Other (including unknown) Gender: Male, Female

1c: ACC active falls claims cost

Rationale

This indicator shows the cost of ACC claims due to a fall. This is a complementary measure to show impact when viewed alongside outcome data. For ACC it is also a measure of benefit and contribution to sustaining the wider ACC scheme.

Description	Cost of active ACC claims due to a fall injury, by claim type
Current status	October 2017: Measure implemented. January 2018: Measure now available as a rolling twelve-month total, and the national total now includes claims with an unknown DHB.
Numerator	Quarterly cost (excluding GST) of accepted and active ACC claims due to a fall.
	 Costs are separated into the following groups: Entitlement claims Claims considered to cover moderate to serious injuries requiring entitlement beyond medical treatment only. Examples of these payments include compensation for loss of earnings, allowances for attendant care and childcare, provision of wheelchairs and other equipment, and modifications to home and vehicles. Claims are recorded as an entitlement claim if they have previously received an entitlement, at any point in the lifetime of the claim. They did not necessarily receive an entitlement during the corresponding period. The figures are subject to change as some claims which to date have not received an entitlement may do so in the future. Medical fees only claims Where ACC has made payments to cover medical treatment costs such as those provided by a GP, physiotherapist or dentist in the period but the client has not received entitlements or Other payments in the period. These claims may be counted as entitlement claims in future periods, if an entitlement is received after medical fees. Other claims
Denominator	both Medical fees and Other payments. Rate per 1,000 population: Population estimates, smoothed across quarters
Data source(s)	ACC; Stats NZ
Collection period	Quarterly and rolling twelve months, based on the date of the payment

Description	Cost of active ACC claims due to a fall injury, by claim type
Inclusions	Costs of accepted claims from ACC45 form. This includes the cost to ACC of all treatment and entitlements incurred for that claim, except for acute care at public hospitals (see exclusions). Cause was any of the following: - Slipping, Skidding on Foot, - Tripping or Stumbling, - Loss of Consciousness/Sleep,
	Something Giving Way Underfoot,Misjudgement of Support,Loss Balance/Personal Control
Exclusions	The cost of emergency treatment at public hospitals is not included, as this is bulk funded. As a result, the costs of emergency treatment are not allocated to individual claims.
	This indicator does not include falls that did not result in an accepted ACC claim.
Analysis	Sub analysis: - Claim type: Entitlement, Medical fees, Other - DHB of domicile - Age: 50-64, 65-74, 75-84, 85+ years - Ethnicity: Māori, Pacific, Asian and Other (including unknown) - Gender

Domain 2: Fewer serious harm falls and fractures

2a: Acute falls hospital admissions by fracture type

Rationale

This indicator shows the number of hospital admissions for fractured neck of femur (NOF), other fractures, and non-fractures. This indicator provides further insight into the relative levels of harm.

Elective admissions and falls that occurred in hospital are excluded from this analysis.

Detailed methodok	
Description	Number and rate of acute/arranged falls hospital admissions, by fracture type
Current status	April 2017: Measure implemented. October 2017: Modified to identify stays more consistently with the Ministry of Health's methodology, and to include stays that started with an acute or arranged admission only. January 2018: Measure now available as a rolling twelve-month total, stays are now shown by discharge date rather than admission date, and the national total now includes events with an unknown DHB.
Numerator	The number of acute and arranged admissions (stays) in hospital as the result of a fall, by type of injury.
	Type of fall injury is based on the first event in the stay. Fractured neck of femur: ICD10 code S720* to S722* in diag 1-30 Other fracture: ICD code S*2*, T02* and T12* and excluding fractured neck of femur in diag 1-30 Non-fracture: No fracture code recorded in diag 1-30
	Calculating stays Consecutive events, that together make a stay, are calculated with similar methodology to the Ministry of Health's System Level Measure 'Acute Hospital Bed Days'.
	Events are considered part of the same stay if: - The NHI was the same
	 The previous event had a transfer end type (DA, DF, DO, DP, DT, DW, ET) The end date of the previous event was prior to or within one day of the next event There was an external cause code of a fall (W00-W19) that occurred either on
	or before the event start date.
Denominator	Number: None Rate per 1,000 population: Population estimates, smoothed across quarters
Data source(s)	National minimum dataset (NMDS); Stats NZ
Collection period	Quarterly, based on date of discharge of the last event in the stay.

Description	Number and rate of acute/arranged falls hospital admissions, by fracture type
Inclusions	 Stays included in this measure are those that: started with an acute or arranged event (Admission type codes AA, AC, ZA, or ZC) started with an event that had an external cause code of a fall (W00-W19), and that occurred either on or before the event start date.
Exclusions	 Stays excluded from this measure are those that: had an unknown DHB, age, or gender. consisted of only non-casemix events (EXCLU purchase unit). Non-casemix events are otherwise included, as long as there is a casemix event within the stay. started with a non-acute event code (ie, excluding falls that clearly occur in hospitals, like those measured in the HQSC Quality & Safety Measures).
Analysis	All sub-analyses are based on the information recorded in the first event in the stay. Sub analysis: Injury type: Fractured NOF, other fracture, non-fracture DHB of domicile Age: 50-64, 65-74, 75-84, 85+ years Gender: Male, Female Ethnicity: Māori, Pacific, Asian and Other (including unknown)
Other notes	This indicator differs from the <u>HQSC Falls Atlas</u> Indicator 2, as it is counts all acute/arranged hospital admissions (stays), rather than people with more than one fall only counted once.

2b: Acute falls hospital admissions by place of residence

Rationale

The falls that result in the most serious harm may require a hospital admission, especially for older people. It is important to know where these falls occur to guide service development and quality improvement. People in aged residential care will tend to be more frail and vulnerable than those not, and the potential approaches to reducing falls in different settings vary.

Detailed methodology	
Description	Number and rate of acute/arranged falls hospital admissions, by place of residence
Current status	April 2017: Measure implemented. October 2017: Modified to identify stays more consistently with the Ministry of Health's methodology, and to include stays that started with an acute or arranged admission only. January 2018: Measure now available as a rolling twelve-month total, stays are now shown by discharge date rather than admission date, and the national total now includes events with an unknown DHB. July 2018: Updated to link to aged residential care data with hospital admissions, to provide a more accurate account of the number of people living in ARC who were admitted for a fall.
Numerator	This indicator replicates the one above (2a), but shows the place of residence at the time of admission.
	Aged residential care: Was living in ARC at the time of admission. Community: Was not living in ARC at the time of admission.
Denominator	Aged residential care: Total number of ARC residents who were in ARC for the whole quarter. Community: Population projections minus number of ARC residents.
Data source(s)	National minimum dataset (NMDS), Client Claims Processing System (CCPS).
Collection period	Quarterly, based on date of discharge of the last event in the stay.
Inclusions	As per indicator 2a.
Exclusions	As per indicator 2a.
Analysis	All sub-analyses are based on the information recorded in the first event in the stay. Sub analysis: Place of residence: ARC, community DHB of domicile Age: 50-64, 65-74, 75-84, 85+ Gender and ethnicity not available
Other notes	This indicator differs from the <u>HQSC Falls Atlas</u> Indicator 2, as it is counts all acute/arranged hospital admissions (stays), rather than people with more than one fall only counted once.

Domain 3: Improved recovery

3a: Falls hospital bed days, by fracture type

Rationale

This indicator replicates 2a, but shows bed days (ie, the total amount of time spent in hospital) instead of admissions. It is a proxy for the hospital resources that are used by different types of fall admissions. Improving the rehabilitation process inside hospital can reduce the time spent in a hospital bed.

This indicator aligns closely with the System Level Measure Framework contributory measure for Acute Hospital Bed Days.

Detailed methodology	
Description	Number of hospital bed days due to a fall injury, by fracture type
Current status	April 2017: Measure implemented. October 2017: Modified to identify stays more consistently with the Ministry of Health's methodology, and to include stays that started with an acute or arranged admission only. January 2018: Measure now available as a rolling twelve-month total, stays are now shown by discharge date rather than admission date, and the national total now includes events with an unknown DHB.
Numerator	This indicator replicates the one above (2a), but shows the total bed days by type of injury instead of place of occurrence. The total bed days for all events in acute and arranged admissions (stays) in hospital as the result of a fall, by type of injury. Type of fall injury is based on the first event in the stay. - Fractured neck of femur: ICD10 code \$720* to \$722* in diag 1-30 - Other fracture: ICD code \$*2*, T02* and T12* and excluding fractured neck of femur in diag 1-30 - Non-fracture: No fracture code recorded in diag 1-30
Denominator	Number: None Rate per 1,000 population: Population estimates, smoothed across quarters
Data source(s)	National minimum dataset (NMDS); Stats NZ
Collection period	Quarterly, based on date of discharge of the last event in the stay.
Inclusions	As per indicator 2a.
Exclusions	As per indicator 2a. Additionally, total bed days excludes: - Bed days for residential care (health speciality code D10-D19, D30-39, D50-59, or D70-79) - Leave days

Description	Number of hospital bed days due to a fall injury, by fracture type
Analysis	All sub-analyses are based on the information recorded in the first event in the stay. Sub analysis: Injury type: Fractured NOF, other fracture, non-fracture
	 DHB of domicile Age: 50-64, 65-74, 75-84, 85+ Gender: Male, Female Ethnicity: Māori, Pacific, Asian and Other (including unknown)

3b: Acute ALOS for falls hospital admissions by fracture type

Rationale

This measure shows the average length of time that a person spent in hospital after an out-of-hospital fall. It is calculated by dividing the total number of bed days (indicator 3a) by the number of admissions (indicator 2a). Improving the rehabilitation process inside hospital can reduce the time spent in a hospital bed.

Description	Average length of stay for falls hospital admissions, by fracture type
Current status	April 2017: Measure implemented. October 2017: Modified to identify stays more consistently with the Ministry of Health's methodology, and to include stays that started with an acute or arranged admission only. January 2018: Measure now available as a rolling twelve-month total, stays are now shown by discharge date rather than admission date, and the national total now includes events with an unknown DHB.
Numerator	The number of falls hospital bed days (Indicator 3a)
Denominator	The number of falls hospital admissions (Indicator 2a)
Data source(s)	National minimum dataset (NMDS)
Collection period	Quarterly, based on date of discharge
Inclusions	As per indicator 2a and 3a.
Exclusions	As per indicator 2a and 3a.
Analysis	All sub-analyses are based on the information recorded in the first event in the stay. Sub analysis: Injury type: Fractured NOF, other fracture, non-fracture DHB of domicile Age: 50-64, 65-74, 75-84, 85+ Gender: Male, Female Ethnicity: Māori, Pacific, Asian and Other (including unknown)
Other notes	This indicator differs from the <u>HQSC Falls Atlas</u> Indicator 4, as it is counts all acute/arranged hospital admissions (stays), rather than people with more than one fall only counted once.

3c: Percentage of fractured neck of femur patients operated on the same or next day of admission

Rationale

Pain is a significant factor in a hip fracture and surgery is one of the best ways to address the root cause of the pain. The postponement of surgery prolongs pain, and increases the risk of complications and the need for repeated pre-operative fasting.

The Hip Fracture Care Clinical Care Standard recommends that surgery is performed within 48 hours of the patient presenting to hospital, if no clinical contraindication exists and the patient prefers surgery.

Our goal is to report 48 hours. However, due to a lack of complete and accurate time being captured in the National Minimum Dataset (NMDS), only 'same or next day' can be reported at present.

When interpreting this indicator, it is important to remember there may be a number of reasons why surgery was delayed, such as medical instability, or a need for further investigation.

Description	Fractured NOF operated on the same or next day of admission
Current status	Implemented in April 2017.
Numerator	The number of people with a fractured NOF who were operated on the same or next day of admission.
Denominator	Admissions with any diagnosis of fractured NOF, an external cause code of fall, and who had a hip operation in the year.
Data source(s)	NMDS
Collection period	Annual, by date of operation.
Inclusions	Fractured NOF: ICD10 S72.0, S72.1, S72.2 Hip operation codes: fixation, hip joint (4930600), application of external fixator device (5013000, 4748300), implantation of internal device, hip joint (4792100), fixation, femur (4751900, 4753700, 4753400, 4758800, 4759100, 4753100), implantation of internal device, hip joint (4792100), closed reduction of fracture with internal fixation (4753100, 4751900), open reduction of fracture with internal fixation (4752801), total hip replacement (4931800, 4931900, 9060700, 9060701), partial hip replacement (4931500, 4752200).
Exclusions	To avoid double counting, only one fracture per person in one year was counted. Excludes falls and fractures that occurred after the admission date.
Analysis	Sub analysis: - DHB of service - Age: 50-64, 65-74, 75-84, 85+ - Gender: Male, Female - Ethnicity: Māori, Pacific, Asian and Other (including unknown)
Other notes	This measure is the same as the <u>HQSC Falls Atlas</u> – Indicator 6

3d: Number of new starts on bisphosphonates

Rationale

Bisphosphonates are a class of drugs that reduce bone density loss. Bisphosphonates should be considered for older people who have fallen and fractured, to reduce their future risk of fracture. 'New starts' identifies people who were not covered by bisphosphonates in the previous two years.

Description	Number of new starts on bisphosphonates
Current status	January 2018: Measure implemented. March 2018: Updated to correct an error in the calculation caused an undercount of the number of new starts.
Numerator	The number of people newly started on bisphosphonates.
	A new start is defined as when a bisphosphonate was dispensed to person who was not covered by a bisphosphonate in the previous two years. Two years is the recommended duration for a drug holiday from bisphosphonates.
	Calculating coverage Different bisphosphonate drugs have different dosing intervals. For example, zoledronic acid is typically administered annually. To account for this, the median gap between dispensations for each person and each bisphosphonate chemical ID was calculated. This median was calculated from all bisphosphonates dispensed between 2011 and 2017 to the population aged 50+ years. Then, for each person, coverage was approximated by adding the drug's median dispense gap to the date that the drug was dispensed for that person. For example, if a person was dispensed zoledronic acid on 1 January 2017, they were covered for 400 days (the median dispense interval for zoledronic acid), until 5 February 2018.
Denominator	Volume: None Rate: The number of ACC claims for a fracture
Data source(s)	Pharmaceutical Claims Collection; ACC
Collection period	Quarterly
Inclusions	All bisphosphonates dispensed (chemical IDs: 1037, 3938, 4015, 3868, 3939, 6033, 1487, 3913) for people aged 50+ years.
Exclusions	This measure does not include bisphosphonates that were dispensed in hospital. Interpretation of this measure should consider local practice for bisphosphonate dispensing.

Description	Number of new starts on bisphosphonates
Analysis	All sub-analyses are based on the information recorded in the first event in the stay. Sub analysis: DHB of domicile Age: 50-64, 65-74, 75-84, 85+ Gender: Male, Female Ethnicity: Māori, Pacific, Asian and Other (including unknown)
Other notes	The methodology for bisphosphonate coverage was initially developed by Rodney Jones, Data Scientist at Healthshare Ltd.

3e: Percentage of ARC residents on vitamin D

Rationale

Internationally, Vitamin D is widely recommended for reducing falls and fall-related injuries in older people. Vitamin D supplements are thought to prevent falls by improving muscle strength and psychomotor performance in older people at risk of Vitamin D deficiency.

Nationally, there has been a long-established programme to increase the uptake of prescribed Vitamin D supplements to older people in aged residential care (ARC).

Description	Percentage of ARC residents who were dispensed vitamin D
Current status	April 2017: Measure implemented. July 2018: Measure methodology updated. The original methodology calculated the number of ARC residents who were dispensed vitamin D in the previous 12 months, regardless of where they were living in those previous 12 months. The new methodology calculates the number of people who lived in ARC for the whole quarter, and were dispensed vitamin D in that quarter. This new methodology produces a slightly lower result (approximately 2% lower, at the national level) than the previous methodology.
Numerator	The number of residents who lived in ARC for the whole quarter, and were dispensed vitamin D in that quarter.
Denominator	The number of residents in ARC for the whole quarter.
Data source(s)	Pharmaceutical Claims Collection; Client Claims Processing System.
Collection period	Quarterly
Inclusions	ARC residents who were in ARC for the whole quarter, with service category of: - Resthome-Age - Hospital-Age - Dementia-Age - Psycgeri-Age

Description	Percentage of ARC residents who were dispensed vitamin D
Exclusions	None
Analysis	Sub-analysis - DHB of domicile - Age Gender and ethnicity not available due to poor data quality in the CCPS dataset.
Other notes	This measure was previously provided by the Ministry of Health to ACC on a quarterly basis.

Domain 4: Integrated care

The measures in Domain 4 come from quarterly reporting provided by DHBs and community organisations.

Measure	Rationale and definition	
Community group strength & balance		
Places Number of places offered	To gauge whether sufficient opportunities are being provided for older people to gain benefits, with an aspiration for the majority of the at-risk population by the end of year three. Places will be counted per quarter, i.e. continuously offered places can be recounted in the subsequent quarter.	
Reach Number of individual people participating in the classes	To gauge whether we are seeing "at population level" numbers of older people coming through the programme. This measure will be counted per annum, they are the reach measures which tell us how many unique people have participated in Community Group Strength and Balance classes in one year. This is like counting of people receiving FLS or In-Home services (the number of people who will receive these services twice a year will most likely be very small). Given classes will be offered for a 10 to 12 week period per quarter, this will require that participating people will only be counted once a year (rather than re-counted each quarter).	
Super-reach Number of people who participated for 10 weeks (this is directly linked to positive benefits for older people).	To help identify reasons to celebrate success (this is quite an achievement). To provide a link between the planned outcomes and benefits. To understand the challenges of keeping people on the programme. These participants will be counted per quarter. Someone who achieved 10 weeks and doesn't stay on the programme will likely lose the gained benefit quickly (unless they graduate to some other form of appropriate continuous exercise). Someone who stays on the programme will sustain the benefit, relative to someone who doesn't stay on the programme. Therefore, everyone who does 10 consecutive weeks in a subsequent quarter, can be re-counted within each subsequent quarter.	

Measure	Rationale and definition
Participated In Home Strength and Balance Service	To ensure the appropriate exercises are provided (with additional support) to reduce the risk of falling or prevent the next fall.
Fracture Liaison Service	Seen by the fracture liaison service (or similar). To ensure the assessment of bone health and referral to appropriate falls prevention programme.