Norwegian Fracture Register
Annual Report 2025

Jørn Døvling Kaspersen[1], Ane Djuv[1]

[1]Stavanger University Hospital, Helse Stavanger (Stavanger Health Trust), in Stavanger

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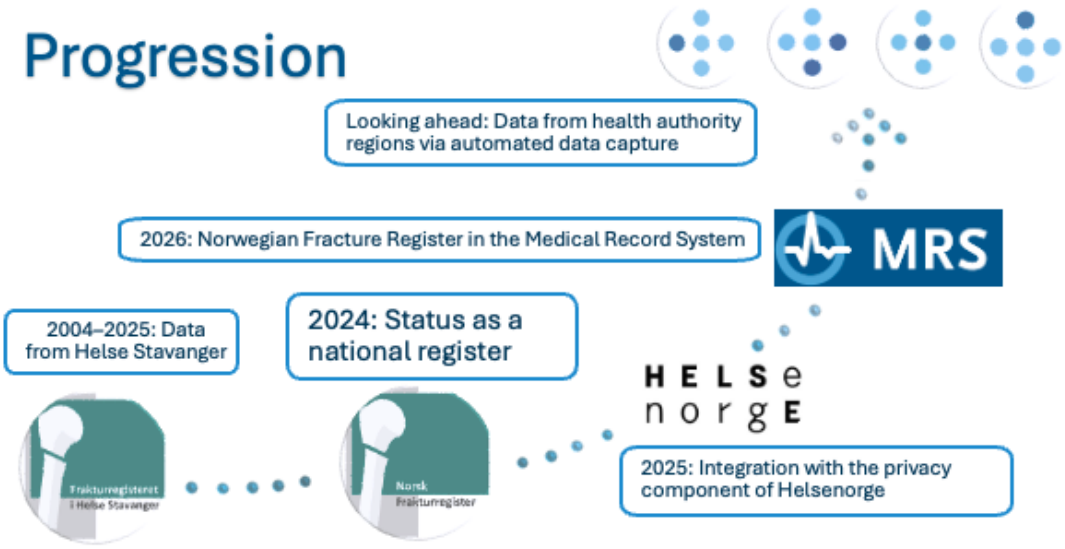
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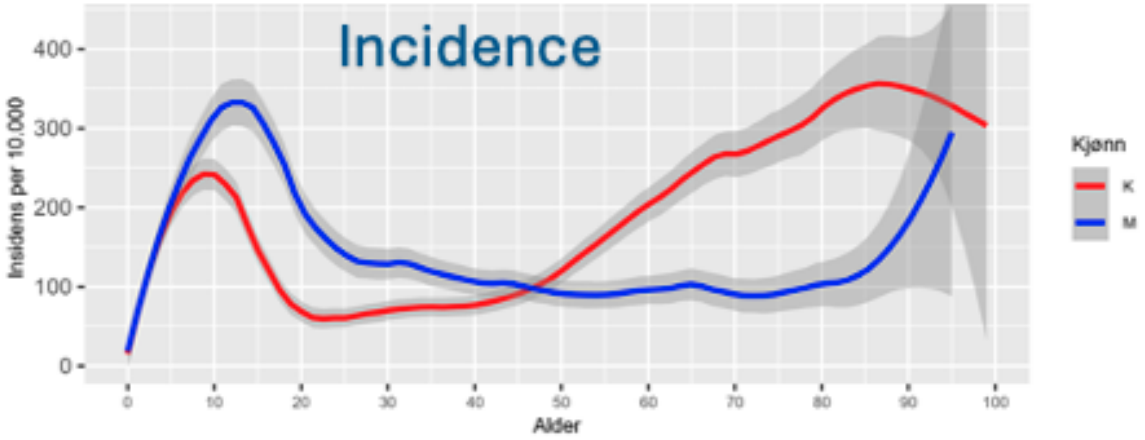
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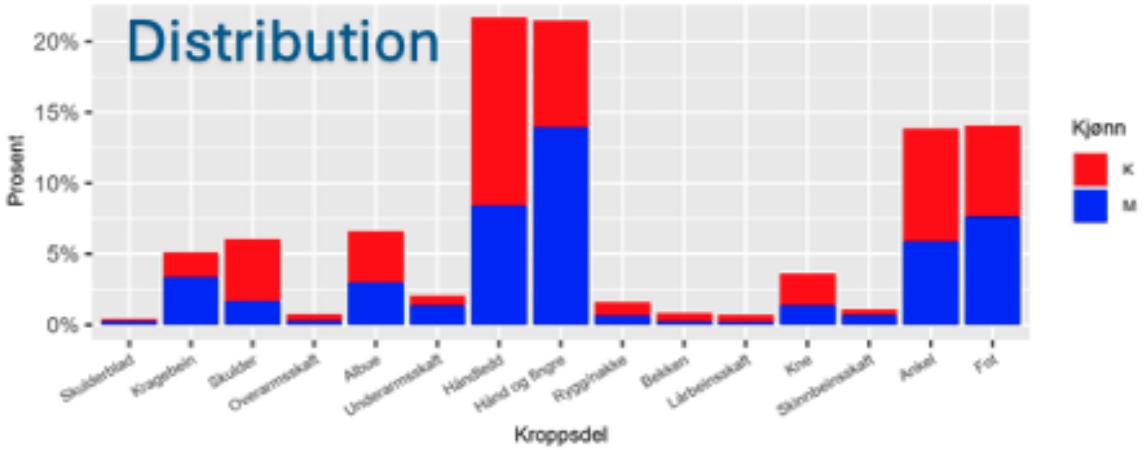
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Abbreviations used in the report

Abbreviations	Explanations
API	Application Programming Interface
CW	CheckWare
DHO	Digital patient follow-up
DXA	Dual-energy X-ray absorptiometry
EPR	Electronic patient records
HF	Health trusts
MRS	Medical record system
NHN	Norsk Helsenett (Norwegian e-health service provider)
NPR	Norwegian Patient Registry
PROM	Patient-Reported Outcome Measures
RPA	Robotic process automation







Figures show the number of females (red) and males (blue).
Body parts, in the order listed: Scapula, clavicle, shoulder, humeral shaft, elbow, forearm shaft, wrist, hand and fingers, back/neck, pelvis, femoral shaft, knee, tibia shaft, ankle, foot.

Quality indicators

Time from injury to starting treatment:	**97%** within 24 hours	(target > 90%)
Time from injury to surgery:	**96%** within 14 days	(target > 90%)
Percentage of primary fractures not re-operated:	**95%** for closed fractures	(target > 90%)
Percentage of unsuccessful conservative treatments:	**2%** switched to surgical treatment	(target > 5%)

Part 1
Results from the register

1 Summary

The Norwegian Fracture Register was granted national status in 2024, when work to collect data throughout Norway began. This work is still ongoing in 2025. From its introduction on 20 June 2024 to 31 December 2025, 9,293 fractures were recorded. The Norwegian Fracture Register is a major medical register, which lists around 95,000 fractures a year (calculated on the basis of the incidence figures for 2022 from the Fracture Register at Helse Stavanger). To avoid time-wasting duplicate entries, it was determined – upon the granting of national status – that the Norwegian Fracture Register would be the first register in Norway based entirely on automated data capture from medical records software. Health authorities in different regions use different electronic systems for medical records and surgery scheduling. The implementation of automatic data capture will therefore require a significant amount of work on the part of the various suppliers of medical records systems and specialised systems to ensure that these systems can communicate accurately with one another (Figure 1). This work has been initiated for certain systems and must be co-ordinated with regard to requirements specifications, procurement and resources that must be allocated to the various regions. This is a challenging task, which will take time to complete.

Each regional health authority has confirmed, at inter-regional director meetings (AD, ICT and specialist director meetings), that it will facilitate automated data capture in its medical records systems and make resources available for this purpose as part of the application process for national status, which began in autumn 2023.

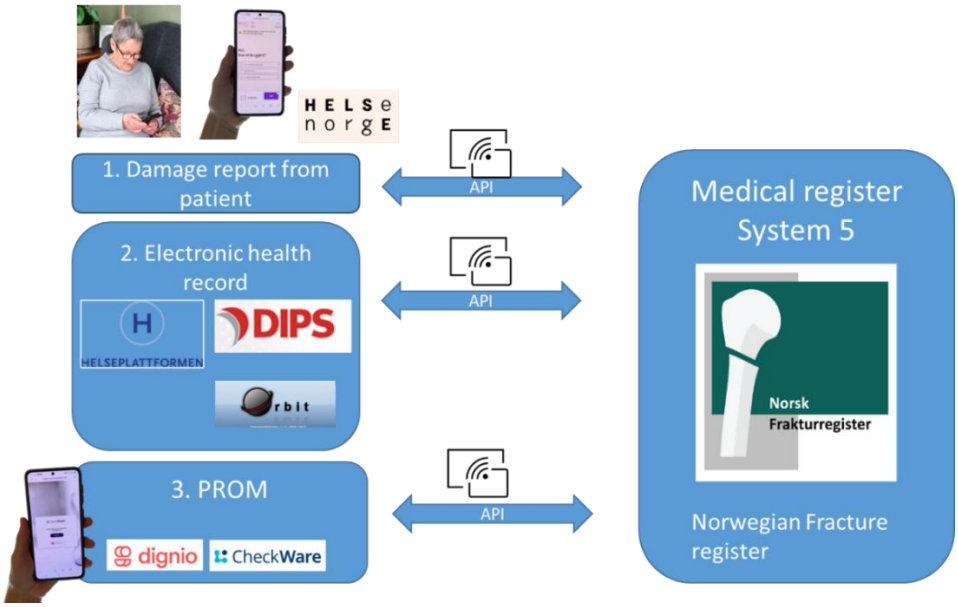


Figure 1: Different systems currently in use within Norwegian healthcare intended to supply data to the Norwegian Fracture Register

We have obtained data from Helse Stavanger as this health trust has maintained structured fracture records since 2004. Work has also begun on collecting data from various fracture PROMs for the most common orthopaedic fracture sites (wrist fractures, ankle fractures and proximal humerus fractures) at health trusts in Helse Vest (Western Norway Health Authority), Helse Nord (Northern Norway Regional Health Authority), and Helse Sør-Øst (South-Eastern Norway Regional Health Authority). In collaboration with Helse Vest, and with the aid of innovation funding, the Norwegian Fracture Register intends to further develop and expand this system to include additional types of fractures: in the elbow, the humerus shaft, the forearm shaft, and fractures in the knee and tibia (ID R-11368). The only fractures recorded in 2025 have come from Stavanger University Hospital, which has had a functioning local fracture register since 2004, albeit with fewer variables than are planned for the national register. Progress in making data available for transfer to the Norwegian Fracture Register via an API (Application Programming Interface) will depend on each individual health trust and its associated

regional health authority, and on their prioritisation of structured fracture records and the work on integration with the Norwegian Fracture Register. The Norwegian Fracture Register will in turn provide digitalisation expertise. It also has several ongoing digitalisation projects at the implementation stage and in the concept phase.

1.1 Summary in English

The Norwegian Fracture Register was granted national status in 2024, when work began on collecting data throughout Norway. This work is still ongoing in 2025. From its introduction on 20 June 2024 to 31 December 2025, 9,293 fractures were recorded. The Norwegian Fracture Register is a major medical register, which lists around 95,000 fractures a year (calculated on the basis of the incidence figures for 2022 from the Fracture Register at Helse Stavanger). To avoid time-wasting duplicate entries, it was determined – upon the granting of national status – that the Norwegian Fracture Register would be the first register in Norway to be based entirely on automated data capture from medical records software.

Health authorities in different regions use different electronic systems for medical records and surgery scheduling. The implementation of automatic data capture will therefore require a significant amount of work on the part of the various suppliers of medical records systems and specialised systems to ensure that these systems can communicate accurately with one another (Figure 1). This work has been initiated for certain systems and must be co-ordinated with regard to requirements specifications, procurement and resources that must be allocated to the various regions. This is a challenging task, which will take time to complete.

At interregional director meetings (CEO, ICT and medical director meetings), each inter-regional health authority has confirmed that they will facilitate automated data capture in their record systems and make resources available for this as part of the application process for national status in autumn 2023.

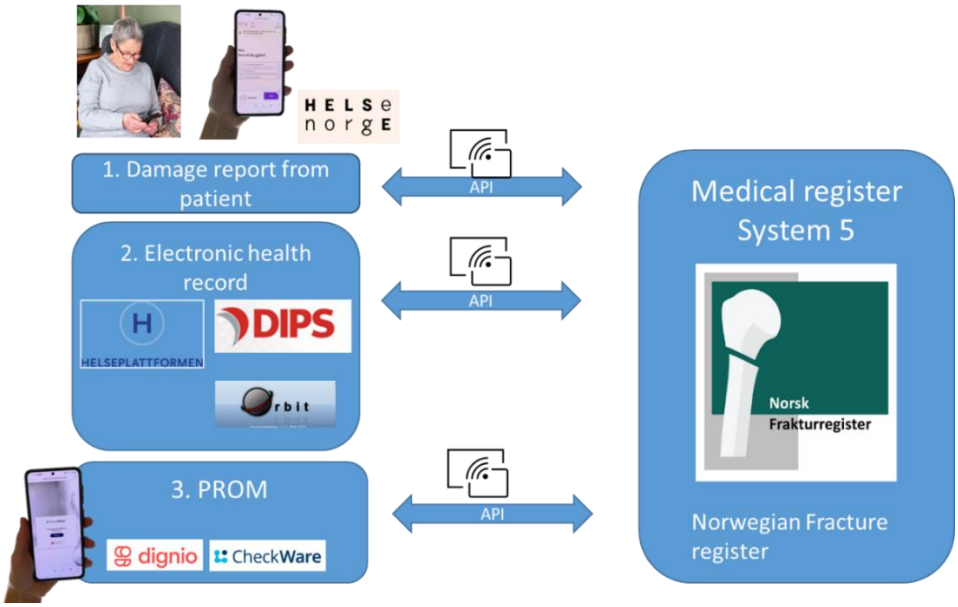


Figure 1: Different systems currently in place within the Norwegian healthcare system that should be able to deliver data to the Norwegian Fracture Register

Structured fracture records have been in place at Helse Stavanger since 2004, which has enabled us to collect data from this health trust. We have also begun collecting data from various fracture PROMs for the most common orthopaedic fracture sites (wrist, ankle and proximal humerus fractures) at several healthcare institutions within Helse Vest, Helse Nord and Helse Sør-Øst. In collaboration with Helse Vest, and with the aid of innovation funding, the Norwegian Fracture Register intends to further develop and expand this system to include additional types of fractures: in the elbow, the humerus shaft, the forearm shaft, and fractures in the knee and tibia (ID R-11368). The only fractures recorded in 2025 have come from Stavanger University Hospital, which has had a functioning local fracture register since 2004, albeit with fewer variables than are planned for the national register. Progress in

making data available for transfer to the Norwegian Fracture Register via an API (Application Programming Interface) will depend on each individual health trust and its associated regional health authority, and on their prioritisation of structured fracture records and the work on integration with the Norwegian Fracture Register. The Norwegian Fracture Register will in turn provide digitalisation expertise, and it has several ongoing digitalisation projects, both in the implementation and concept phase.

2 Results

As noted in the summary, the Norwegian Fracture Register was granted status as a national quality register on 19 June 2024, and data collection will be conducted with the aid of automated data capture. This requires the various systems in the different health authority regions to be set up to enable the regions to communicate with one another, which will take some time. No similar work has previously been conducted for other national registers. Therefore, the Norwegian Fracture Register is not currently able to present national data. However, we are collecting structured medical record data from Helse Stavanger, which has extensive experience with fracture records. Variables that have been recorded are not complete in relation to the entire dataset from the Norwegian Fracture Register. However, we are able to report on certain quality indicators based on a population of roughly 390,000. Figure 2 shows data relating to fractures as presented on Helse Stavanger's dashboard for statistics and management of the health trust.

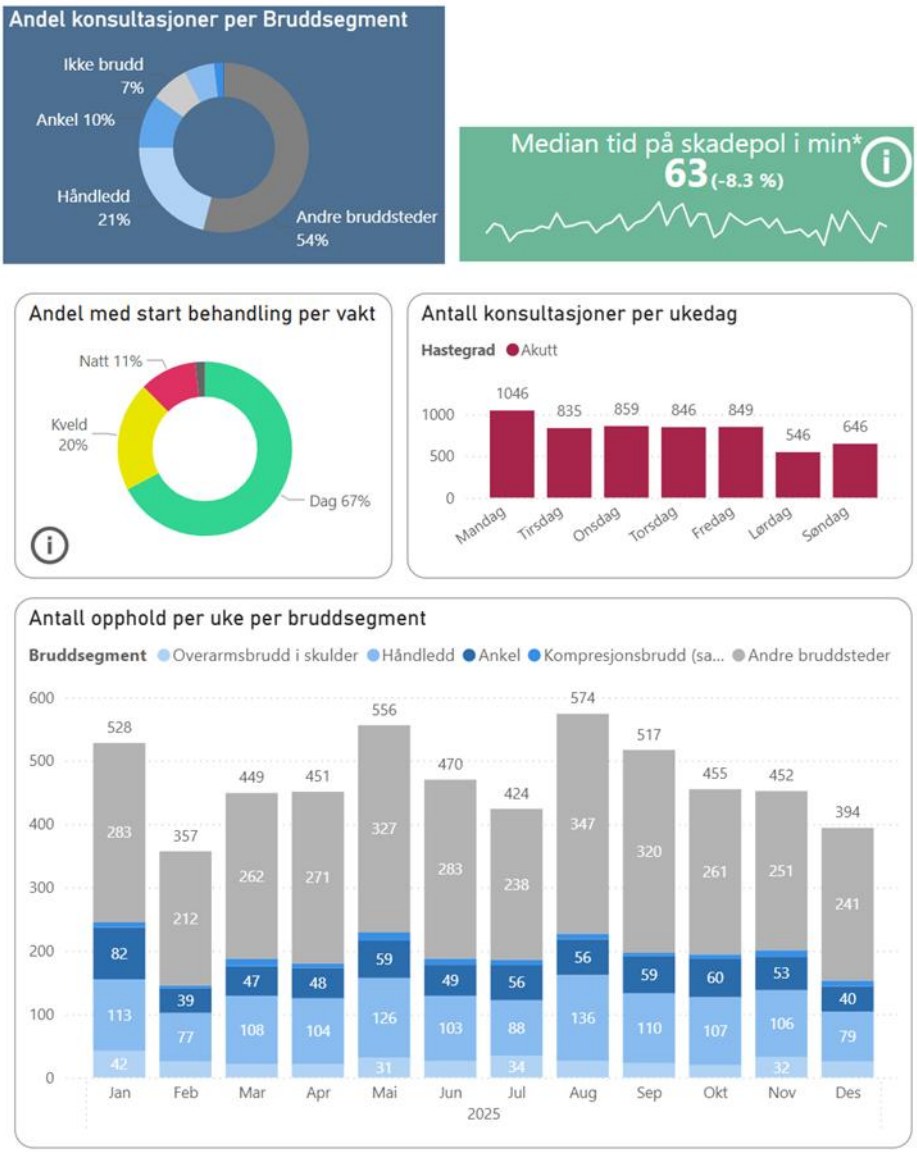


Figure 2: The number of patients treated at the Injury Outpatient Clinic in 2025, presented in the dashboard, along with the mean waiting time for acute fractures from Helse Stavanger. Data can be used for local, regional and national management via a dashboard that displays real-time data.

Dashboard titles, listed from top left to bottom: Number of consultations per fracture segment, Mean time spent at the injury outpatient clinic in minutes, Percentage starting treatment per shift, Daily number of consultations per week, Number of stays per week per fracture segment.

The AO fracture and dislocation classification system [1] will be used to classify fractures in the Norwegian Fracture Register (Figure 3). Hip fractures (AO prefix 31) are included in the Norwegian Hip Fracture Register but are not included in further analyses in the Norwegian Fracture Register.

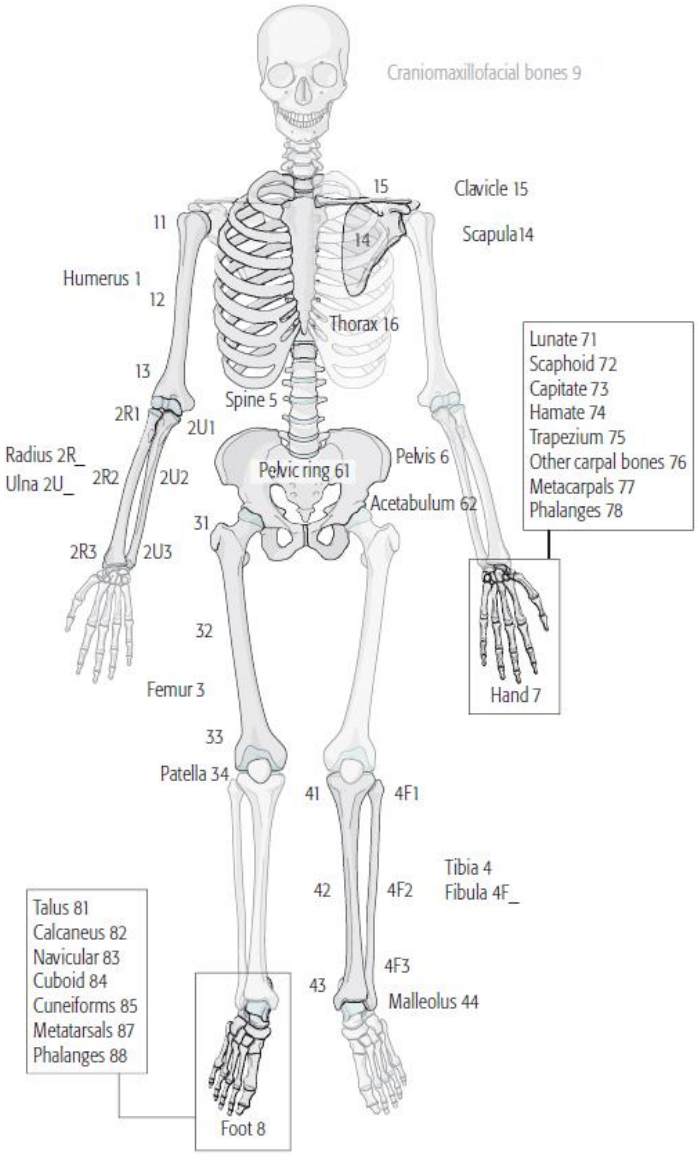


Figure 3: Illustration of the general classification of bones in the AO classification system.

2.1 Quality indicators

The Norwegian Fracture Register has data for 2025 from Helse Stavanger for calculating the following quality indicators:

Indicator	**Definition**	Target achieved
A. Percentage of patients receiving treatment within 24 hours of the injury*	Percentage of fracture patients arriving at the treatment site and starting treatment within <24 hours for acute fractures	High: ≥ 90% Moderate: >80–89% Low: <80%
B. Percentage of selected fractures and the time from injury to first-line surgical treatment	Percentage of selected fractures and the time from injury to surgery (first-line treatment) – wrist fracture <14 days - ankle fracture <14 days	High: ≥ 90% Moderate: >80–89% Low: <80%
C. Percentage not re-operated for fractures, by type of selected fracture	Percentage of patients **not re-operated** for **primary, closed** fractures by fracture type for the two most common types of fracture	High: ≥ 90% Moderate: >80–89%

	requiring surgery (excluding planned re-operation, such as removal of metal implants); wrist fractures and ankle fractures.	Low: <80%
D. Percentage of patients with fractures switched from conservative to surgical treatment (failed conservative treatment):	Percentage of patients with fractures switched from conservative to surgical treatment (failed conservative treatment).	High: <5% Moderate: <5–9.9% Low: >10%
E: Percentage of patients over age 50 who are offered an osteoporosis assessment after a low energy fracture	Percentage of patients over age 50 who are offered an osteoporosis assessment in accordance with international and national guidelines [2], see www.lavenergibrudd.no[2].	High: >80% Moderate: 50–79% Low: 0–49% [3]

*The start of treatment is defined as the time the patient first comes into contact with healthcare personnel who are able to adequately assess the injury or fracture at an injury outpatient clinic, and out-of-hours medical service or an accident and emergency department. Treatment may be temporary while awaiting surgery, e.g. plaster casts, stabilising orthoses/splints, a sling/brace/Collar&Cuff, or elevation to reduce swelling or other risks, such as in cases of multiple trauma. The aim is to assess access to healthcare services in the country for patients with fractures.

2.1.1 A. Time from the injury to starting treatment

Definition/description	Percentage of fracture patients arriving at the treatment site and starting treatment within <24 hours for acute fractures Source: EPR and surgery scheduling
Type of indicator	Structure
Target achieved	High: ≥ 90% Moderate: >80–89% Low: <80%
Knowledge base	The Effects of Delayed Stabilization on Fracture Healing – PMC
Calculation	Numerator: the number of fractures at the injury outpatient clinic, out-of-hours medical service or accident and emergency department, where the injury date to the registration date is 0–1 day + the number of patients who underwent surgery, where the time until treatment is recorded as <24 hours Denominator: Number of fractures at the injury outpatient clinic, out-of-hours medical service or accident and emergency department + number of fractures treated surgically

Data from Helse Stavanger show a figure of 97 per cent for this quality indicator, meaning the goal has been attained..

2.1.2 B. Time from injury to surgery

Definition/description	Percentage of selected fractures and the time from injury to surgery (first-line treatment) – wrist fracture <14 days - ankle fracture <14 days
Type of indicator	Process
Target achieved	High: ≥ 90% Moderate: >80–89% Low: <80%
Knowledge base	If treatment for an ankle or wrist fracture is delayed for more than 14 days, there is a risk that the fracture will significantly progress in the healing process, which makes surgery more difficult and increases the

	risk of a longer and more complicated post-operative recovery. This may still be indicated in cases of severe swelling from an ankle fracture or open fractures, or other major traumas that must be prioritised[4].
Calculation	Numerator: the number of fractures requiring surgery where the time until surgery is less than 14 days from the injury date for wrist and ankle fractures, and which are not classified as 'failed conservative treatment'. Denominator: the number of fractures treated surgically that are not classified as 'failed conservative treatment'.

Data from Helse Stavanger show that 95 per cent of surgically treated wrist fractures and 99 per cent of surgically treated ankle fractures underwent surgery within two weeks of the injury date.

2.1.3 C. Percentage not re-operated for fractures, by type of selected fracture

Definition/description	Percentage of patients **not re-operated** for **primary, closed** fractures by fracture type for the two most common types of fracture requiring surgery (excluding planned re-operation, such as removal of metal implants); wrist fractures and ankle fractures: Source: EPR
Type of indicator	Result
Target achieved	High: ≥ 90% Moderate: >80–89% Low: <80%
Knowledge base	Post-surgery complications for wrist fractures: Complications following volar locking plate fixation of distal radius fractures in adults: A systematic review of randomized control trials. ScienceDirect [5]
Calculation	Numerator: Number of primary surgeries minus the number of unplanned re-operations Denominator: Number of primary surgeries

Data from Helse Stavanger show a rate of 95 per cent for closed ankle fractures and 96 per cent for closed wrist fractures.

2.1.4 Percentage of patients with fractures switched from conservative to surgical treatment

Definition/description	Percentage of patients with fractures switched from conservative (non-surgical) to surgical treatment (failed conservative treatment): Source: EPR and PROM form
Type of indicator	Result
Target achieved	High: <5% Moderate: <5–9.9% Low: >10%
Knowledge base	[6]
Calculation	Numerator: Surgical treatment of fractures where the doctor indicated failed conservative treatment, or where surgery was performed >14 days after the injury date. Denominator: Patients with fractures who were meant to receive conservative treatment, i.e. patients from the injury outpatient clinic, excluding those who had undergone surgery and were scheduled for temporary treatment

Data from Helse Stavanger show that only 1% of ankle fractures and 3% of wrist fractures were switched from conservative to surgical treatment.

2.1.5 Percentage of patients over age 50 who are offered an osteoporosis assessment after a low energy fracture

Definition/description	Percentage of patients over 50 who are offered an osteoporosis assessment after a low energy fracture or who were started on treatment within 12 weeks Source: EPR and PROM form (CheckWare)
Type of indicator	Process
Target achieved	High: >80% Moderate: 50–79% Low: 0–49%
Knowledge base	NICE guidelines, UK and Best Practice Framework – Capture the Fracture, www.lavenergibrudd.no
Calculation	Numerator: Number of fractures where patients over 50 are offered an assessment for osteoporosis or are started on treatment based on risks associated with their fracture history within 12 weeks Denominator: Number of fractures in patients over age 50

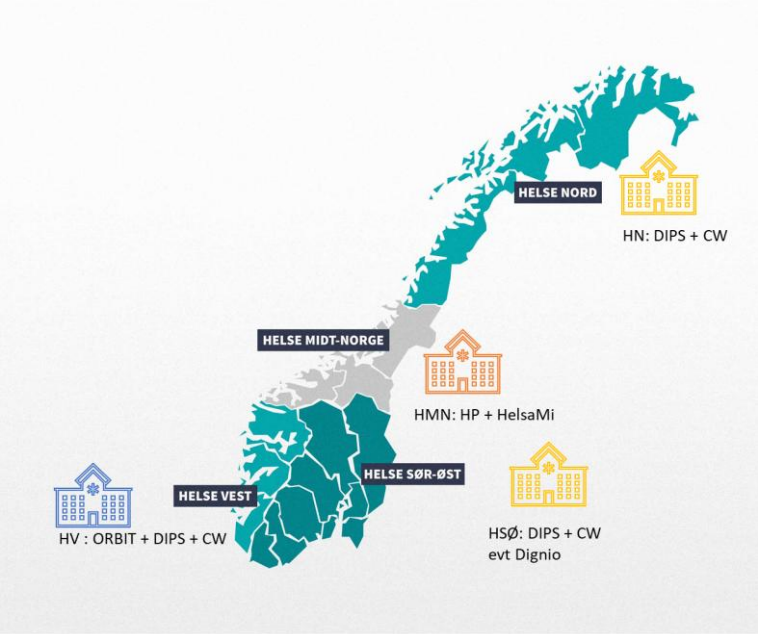
All patients over the age of 50 at Helse Stavanger who have fractures are offered an osteoporosis assessment in the form of an invitation to undergo a bone density scan (Dual-energy X-ray absorptiometry, DXA).

2.2 Patient-reported outcome measures (PROM)

The register will collect patient-reported outcome measures (PROM data) for several types of fractures to monitor treatment outcomes in the long term. One challenge with collecting PROMs is that the registry must, if possible or desirable, send out electronic PROMs (ePROMs) via patient records at the orthopaedic treatment centres, for example via CheckWare (CW). This requires:

- Automated data capture from medical records among health trusts that can provide this in the form of e-PROM, for example via CheckWare.
- That the patient has access to digital services and wishes to respond digitally.
- The option to send ePROM data from the Norwegian Fracture Register via the PROM functionality of the MRS if ePROM data has not been collected for the medical record.

Each region works independently or on an inter-regional basis to collect PROM data on key fractures such as wrist, upper arm and ankle fractures (see the status in Figure 4). A framework has been established for PROM data collection that is aligned with the fracture register in CW, which has been procured by all health regions, and work is underway to achieve integration between CW and the MRS.



Initiating fracture follow-up plan with PROMs for the NFR

Helse Sør-Øst
- Innlandet Hospital
- Oslo University Hospital
- Sørlandet Hospital
- Østfold Hospital, Kalnes

Helse Vest
- All public health authorities are underway with one or more

Helse Nord
- Nordland Hospital Trust
- University Hospital of North Norway

Helse Midt-Norge
- Work is underway on HP/Helsa Mi, but not ready for testing or launch

Figure 4: Status of initiating the fracture follow-up plan with PROMs for the NFR

PROM forms consist of three main sections:
- anchor questions to determine the patient's perception of the treatment,
- the generic EQ-5D-5L questionnaire for measuring general health and health-related quality of life,
- area-specific forms for assessing treatment status

Area-specific forms include the following:
- Foot: MOxFQ – Manchester Oxford Foot Questionnaire
- Shoulder/arm: Quick-DASH – Short version of the Disabilities of the Arm, Shoulder and Hand Questionnaire
- Hip: HOOS-12 – Hip Disability and Osteoarthritis Outcome Score
- Knee: KOOS-12 – Knee Injury and Osteoarthritis Outcome Score
- Hand/wrist: PRWHE – Patient Rated Wrist/Hand Evaluation
- Elbow: Oxford Elbow Score
- Back: AO Spine PROST

Helse Stavanger has collected PROM responses for wrist fractures, ankle fractures and upper arm fractures throughout 2025. Data for responses where treatment took place in 2025 are presented below (the collection of PROM data for collarbone fractures began in 2025, but there is not enough data to present here). Consequently, 1-year responses were only possible where treatment took place between January and May 2025, which means there is significantly less PROM data for responses after 1 year than there is for responses after 6 weeks and 3 months.
Innlandet Hospital, Elverum, Helse Bergen and Helse Fonna have collected PROM data on wrist fractures in 2025. However, due to a lack of integration with the MRS, the data will be published in the 2026 report. Data will also be obtained from other hospitals in the process of implementing PROMs for wrist and ankle fractures, including Nordland Hospital, the University Hospital of North Norway (UNN), Østfold Hospital (Kalnes branch) and Sørlandet Hospital.

2.2.1 PROM for wrist fractures

Figure 5 and Figure 6 shows the distribution of responses as a percentage per measurement point (6 weeks, 3 months and 1 year) for the various anchor questions concerning conservative and surgical

treatment of wrist fractures. Here, the bars representing responses after 1 year (the darkest bars) are located further to the right than those for 6 weeks and 3 months, which indicates an improvement in wrist condition and health after 1 year, as expected. Please note that it is not possible to draw a direct comparison between conservative and surgical treatment based on these two figures, as it is to be expected that fractures requiring surgery are, on average, more complex and therefore also carry a higher risk of complications. Once the Norwegian Fracture Register is fully operational, it will be possible to compare data relating to the same type of fracture but with different treatments, in order to improve the quality and consistency of treatment in Norway.

Figure 7 shows the total PRWHE score for conservative and surgical treatment of wrist fractures as violin plots (top) and the EQ-VAS score for surgical treatment (bottom). It was not possible to include the EQ-VAS for conservative treatment of wrist fractures in this report due to a technical issue with CW. Violin plots are density plots that show the distribution of every score, and the actual values of the responses are represented by points in a random horizontal skewing to make it easier to see all the points. Each violin within a subplot (three subplots in Figure 7) is scaled for the same area. The size of the area depends on the maximum value of the distributions within the respective subplot, as the width of the distributions within a subplot is normalised by this maximum value. The size of the area is therefore unrelated to the amount of data. The horizontal lines in each violin correspond to the median, as well as the 25th and 75th percentiles. The total score for PRWHE ranges from 0 to 100, where the lower the score, the better. Figure 7 thus shows a clear improvement, with a wide spread of score values after 6 weeks skewing towards a clear cluster around 0 after 1 year, although there are still some who score poorly even after 1 year.

The EQ-VAS is a score obtained when a patient has been asked to rate their health on a visual scale ranging from 0 to 100 on the day of the assessment, where 100 is best. The distribution is fairly consistent across the various measurement points, with a slight skewing towards higher values at later measurement points.

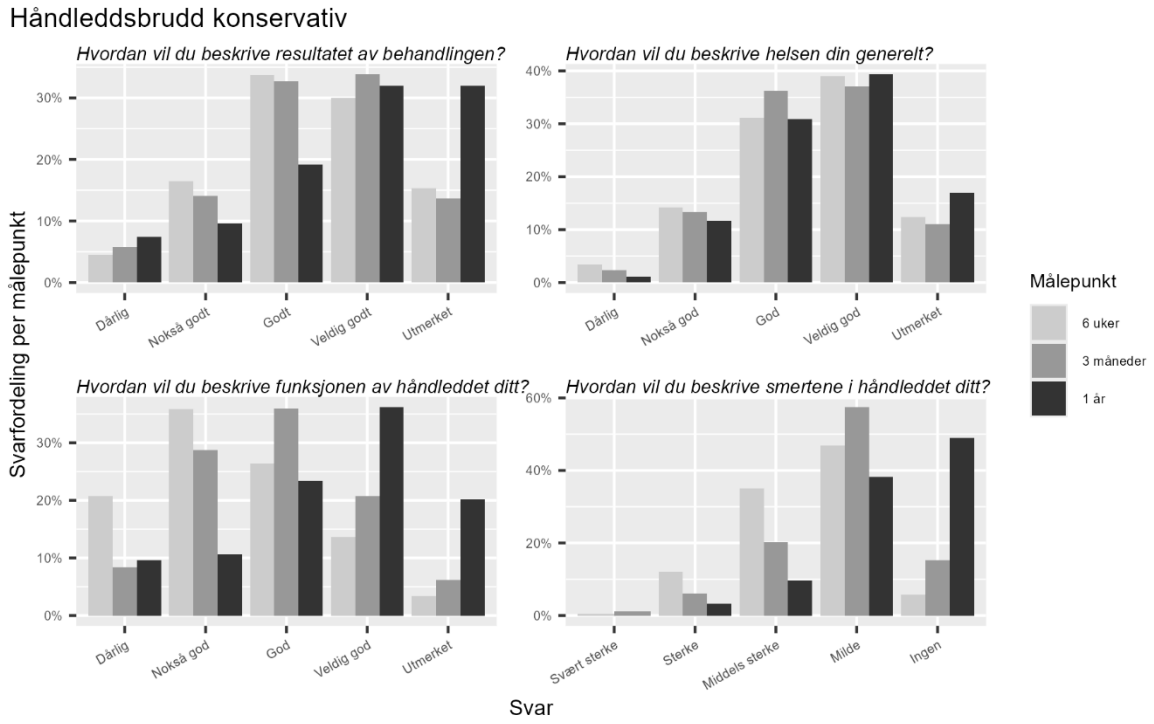


Figure 5: Responses to anchor questions about conservatively treated wrist fractures.
Shows treatment outcome, general health and wrist function, ranging from poor to excellent, as well as wrist pain, ranging from severe to none. Measurement points are 6 weeks, 3 months and 1 year.

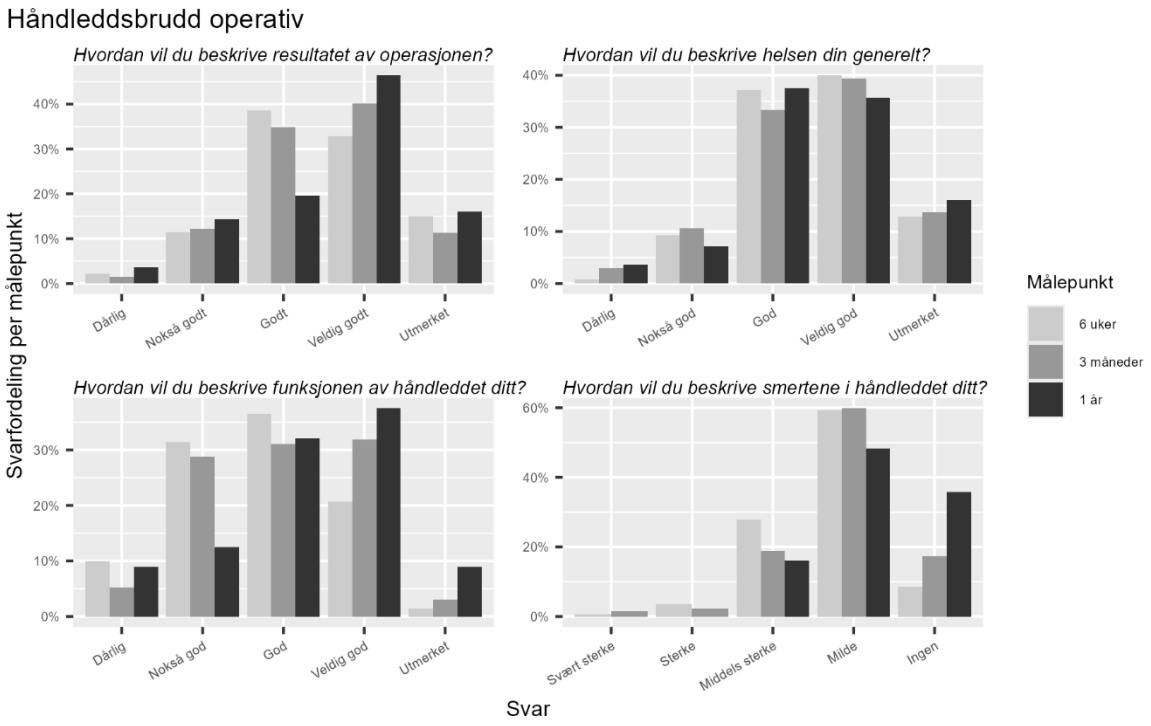


Figure 6: Responses to anchor questions about surgically treated wrist fractures.
Shows surgery outcome, general health and wrist function ranging from poor to excellent, as well as wrist pain, ranging from severe to none. Measurement points are 6 weeks, 3 months and 1 year.

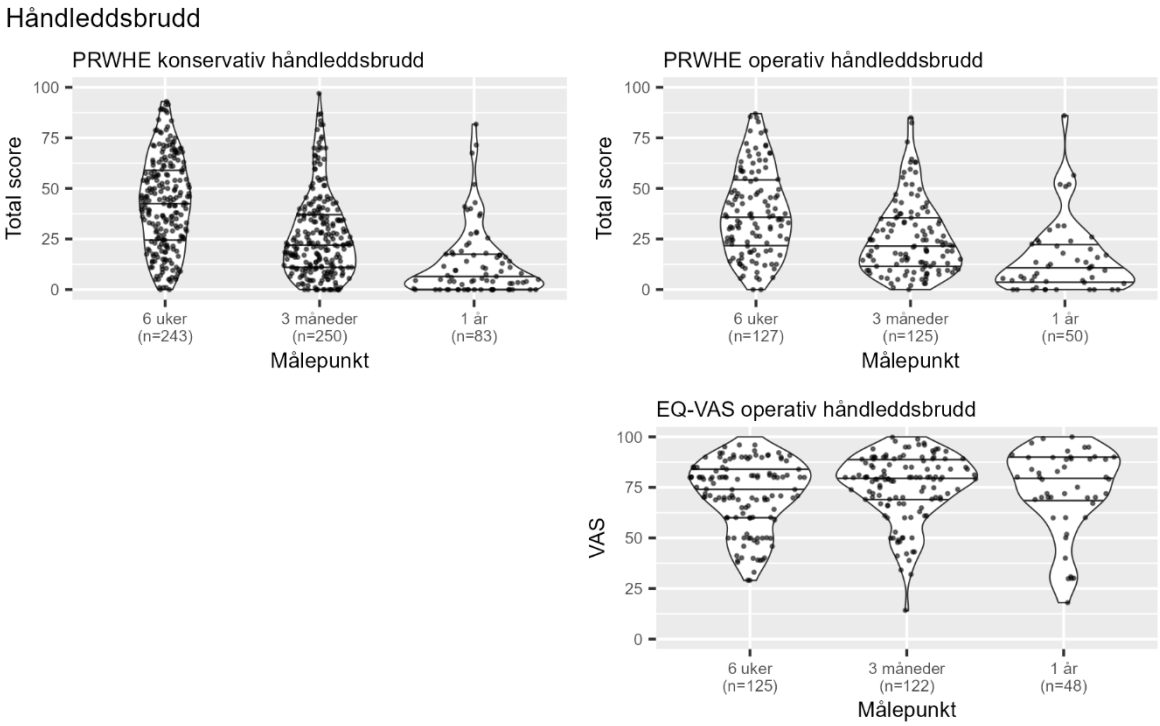


Figure 7: Violin plot of the PRWHE total score for conservatively and surgically treated wrist fractures, and the EQ-VAS for surgical treatment (we were unable to obtain EQ-VAS data for conservative treatment due to a technical error with CW). The points display the recorded data points.
Measurement points are 6 weeks, 3 months and 1 year.

2.2.2 PROM for ankle fractures

Figure 8 and Figure 9 shows the distribution of responses as a percentage per measurement point for the various anchor questions relating to conservative and surgical treatment of ankle fractures, using the same type of figure as for wrist fractures in Figure 5 and Figure 6. Again, it is clear that the responses after 1 year are generally more skewed to the right than at the other two assessment points, indicating that the patients are doing better than expected.

Figure 10 MOxFQ index scores and EQ-VAS for conservative and surgical treatment of ankle fractures. The MOxFQ index for conservatively treated ankle fractures shows a clear skewing towards lower index scores, indicating a marked improvement. For surgically treated ankle fractures, the difference is less pronounced, with the distribution of index scores at 6 weeks and 3 months being fairly similar. This may be explained by the fact that surgically treated ankle fractures are more complex than those treated conservatively. Some improvement can be seen after one year, although this is not as clear as for conservatively treated ankle fractures.

The results for the EQ-VAS show the same trend as for surgically treated wrist fractures in Figure 7, which shows a fairly uniform VAS distribution at each measurement point, although the distribution is slightly skewed towards higher values as a function of time after treatment.

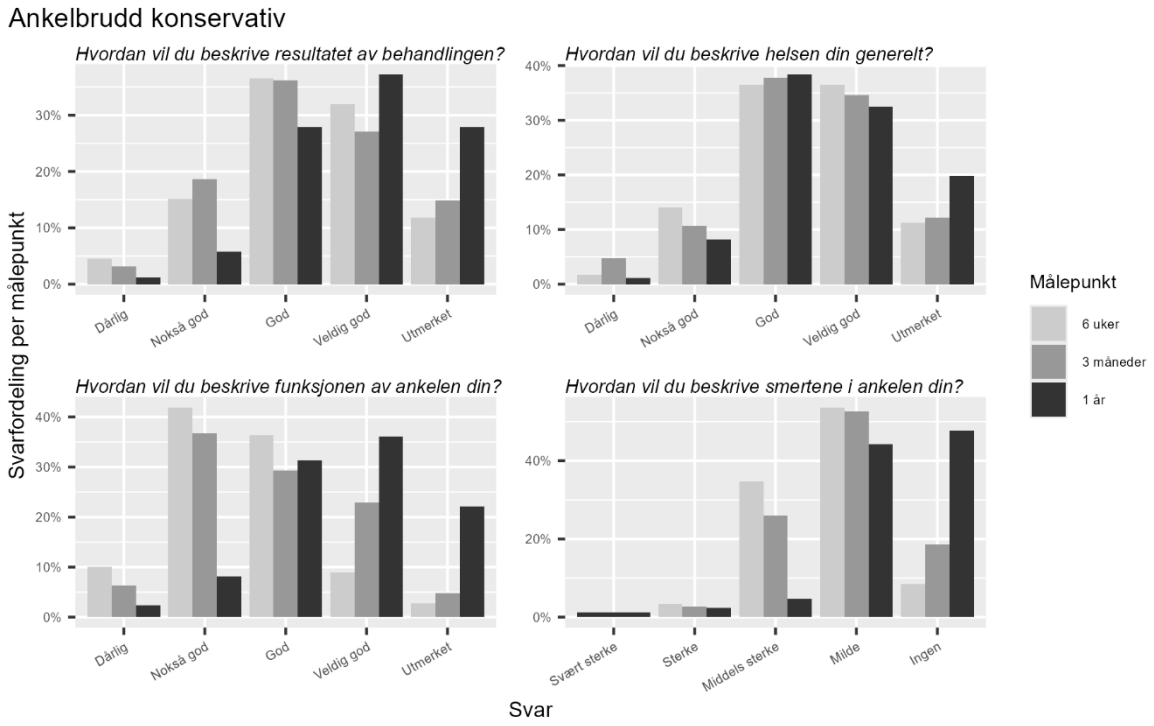


Figure 8: Answers to anchor questions regarding conservatively treated ankle fractures. Shows treatment outcome, general health and ankle function, ranging from poor to excellent, as well ankle pain, ranging from severe to none. Measurement points are 6 weeks, 3 months and 1 year.

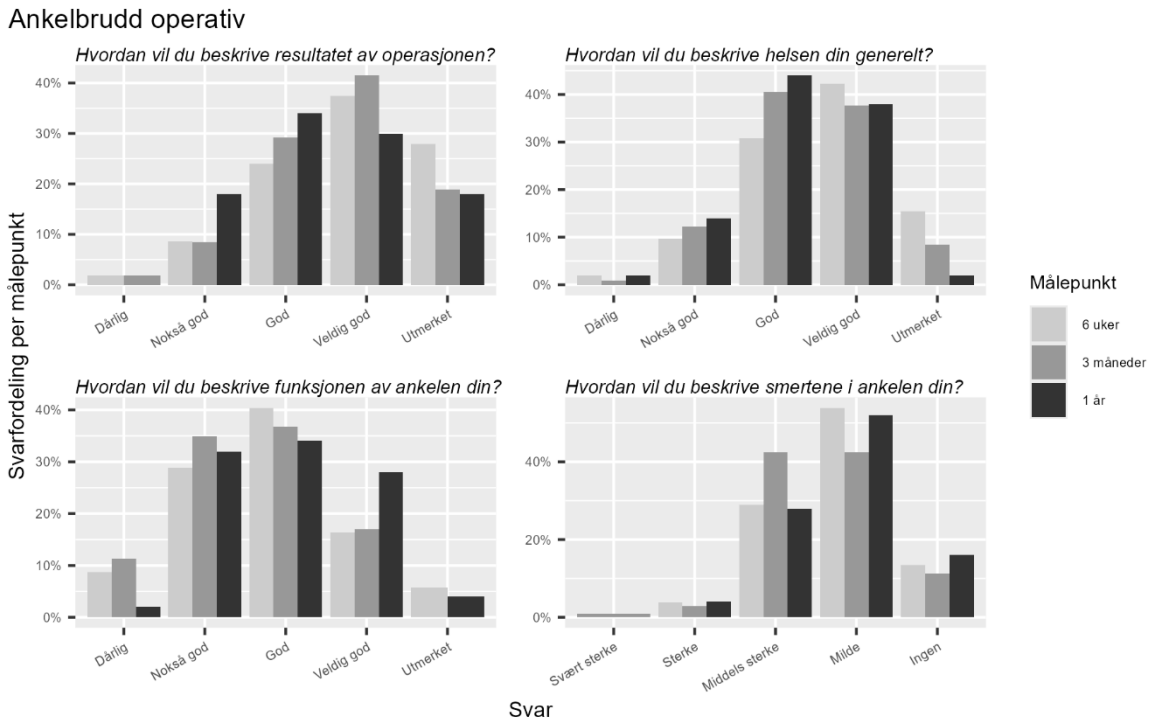


Figure 9: Answers to anchor questions regarding surgically treated ankle fractures. Shows surgery outcome, general health and ankle function, ranging from poor to excellent, as well as ankle pain, ranging from severe to none. Measurement points are 6 weeks, 3 months and 1 year.

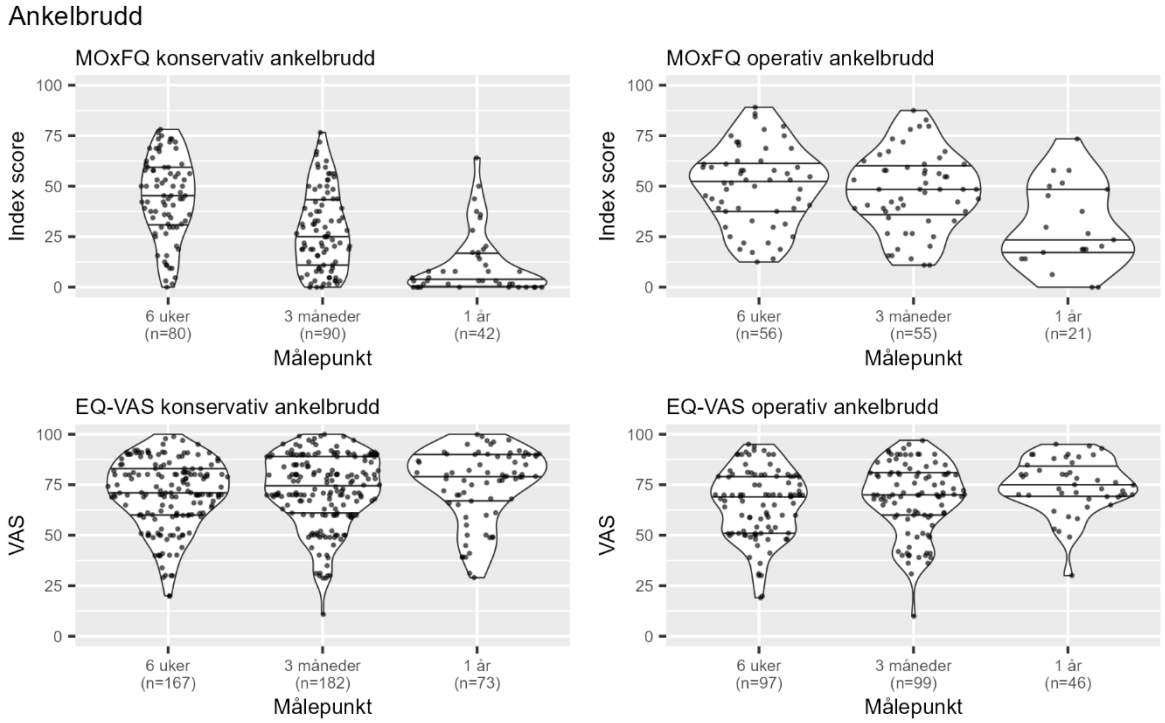


Figure 10: Violin plot of the MOxFQ index score for ankle fractures (top) and EQ-VAS (bottom) for conservative and surgical treatment. The points display the recorded data points. Measurement points are 6 weeks, 3 months and 1 year.

2.2.3 PROM for upper arm fractures

The distribution of responses to the anchor questions about conservatively and surgically treated upper arm fractures in Figure 11 and Figure 12 shows the same trend as for wrist and ankle fractures,

skewing towards better outcomes after treatment over time. The specific PROMs Quick-DASH and EQ-VAS in Figure 13 also show a clear improvement in disability/symptom scores for both treatments, but this is most evident for conservative treatment. The EQ-VAS for conservatively treated upper arm fractures indicates a slight improvement, while there is no clear change in the EQ-VAS for surgically treated humerus fractures as a function of time after treatment. It should be noted, however, that the number of data points for surgically treated upper arm fractures is low, particularly for the 1-year data, which makes the distribution less reliable.

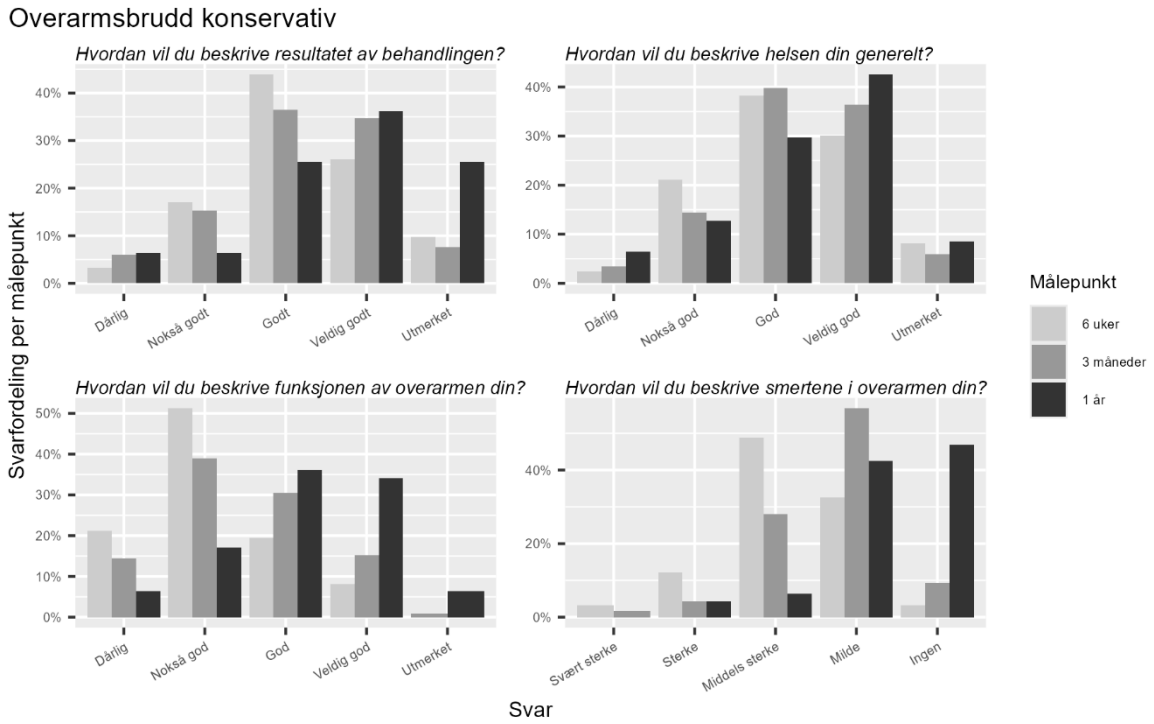


Figure 11: Responses to anchor questions about conservatively treated upper arm fractures. Shows treatment outcome, general health and upper arm function, ranging from poor to excellent, as well as upper arm pain, ranging from severe to none. Measurement points are 6 weeks, 3 months and 1 year.

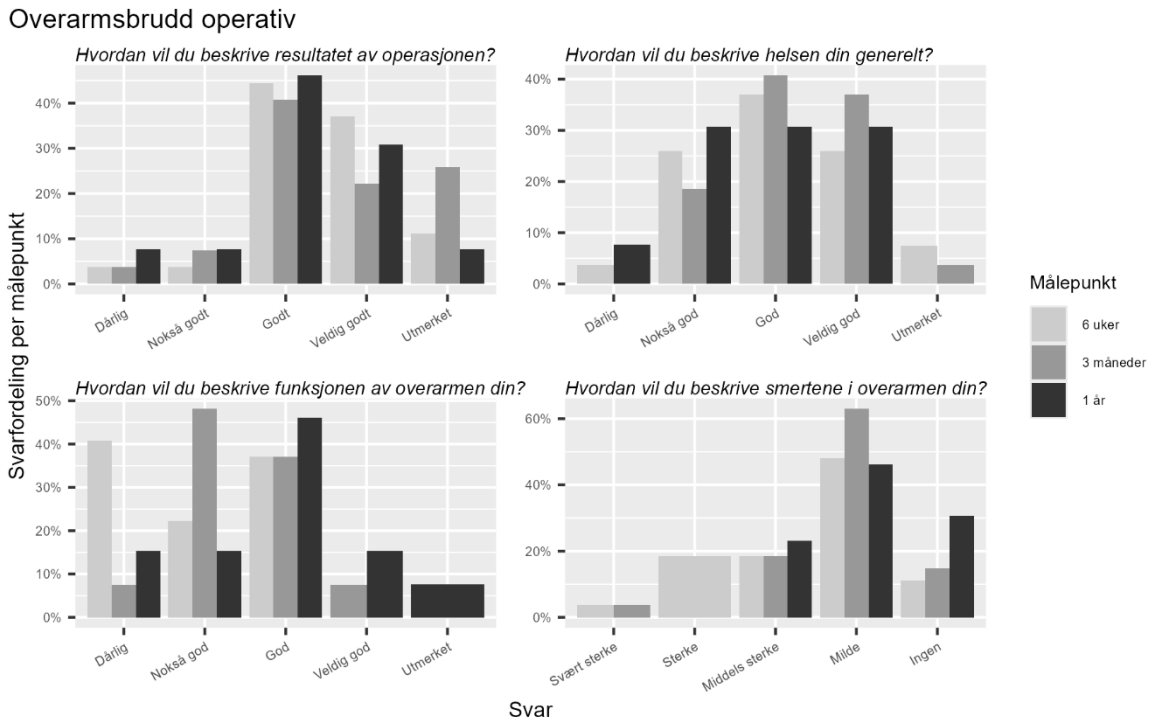


Figure 12: Responses to anchor questions about surgically treated upper arm fractures.
Shows surgery outcome, general health and upper arm function, ranging from poor to excellent, as well as upper arm pain, ranging from severe to none. Measurement points are 6 weeks, 3 months and 1 year.

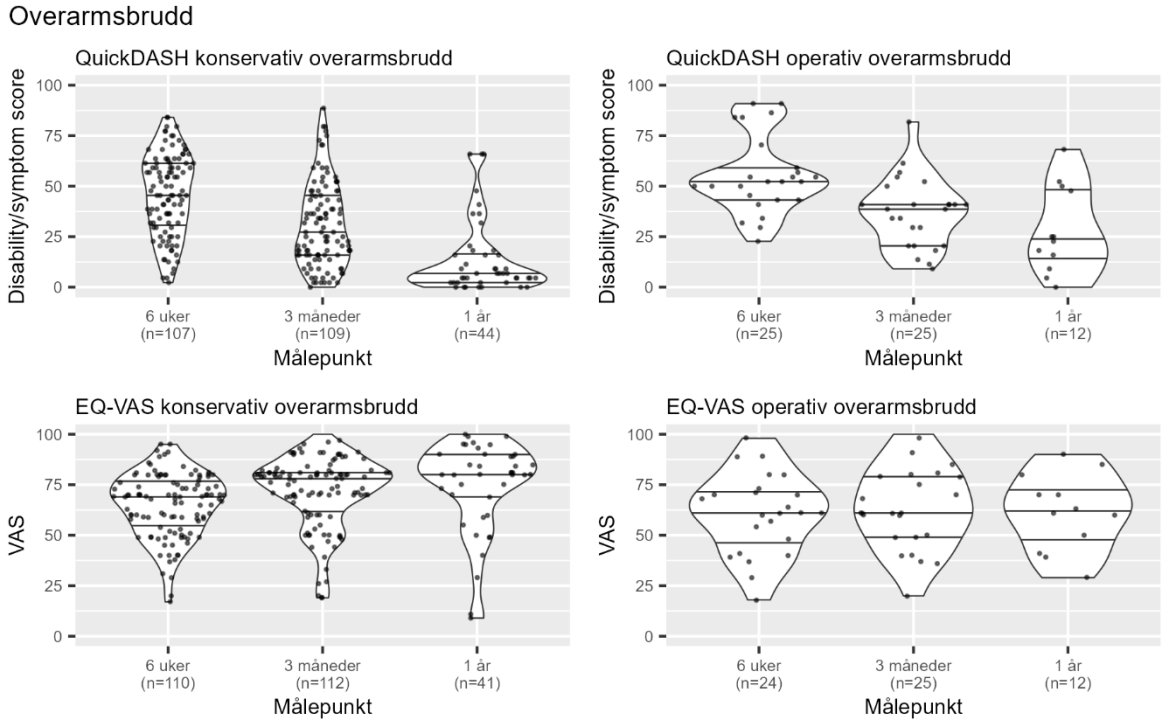


Figure 13: Violin plot of the Quick-DASH disability/symptom score for upper extremity fractures (top) and the EQ-VAS (bottom) for conservative and surgical treatment. The points display the recorded data points.
Measurement points are 6 weeks, 3 months and 1 year.

2.3 Other analyses

Data from Helse Stavanger show 6,102 unique fractures recorded with a date of injury in 2025 (excluding hip fractures), distributed by gender and body part in Figure 14 and by primary treatment and body part for children and adults in Figure 15 (elbow includes the distal humerus and proximal radius/ulna; knee includes the distal femur, patella and proximal tibia; ankle includes the distal tibia and malleoli). Here, it is evident that fractures of the wrist and hand/fingers are the most common, followed by fractures of the ankle and foot. It is also evident in Figure 15 that wrist and ankle fractures, in particular, are more often treated surgically in adults than in children.

The age distribution for fractures by gender is shown in Figure 16. The number of fractures among men gradually declines after the teenage years, while the number of fractures among women increases after the age of 50, due to the high prevalence of osteoporosis in women over 50.

Figure 17 shows the estimated incidence of fractures per 10,000 inhabitants, distributed by age; a bimodal distribution with a peak of well over 300 fractures per 10,000 around the age of 12, and with an increasing incidence from the age of 50 and above. This is consistent with epidemiological studies from other countries [7] and the Swedish Fracture Register (-rsrapport-2024-Q9dBtbCBJ.pdf). In Figure 18, the incidence is distributed by gender, where it is evident that men and boys have a higher incidence than women and girls in the 10–30 age group, while women have the highest incidence from age 50 (and where the difference increases with age) due to osteoporosis. Although the incidence is highest amongst the oldest members of the population, a large proportion of all fractures still occur in people of working age. There is therefore an additional social cost associated with fractures in the form of lost labour productivity for a certain period.

Figure 19 shows the incidence of various fractures among patients at Helse Stavanger in 10-year age groups. Here, injuries to the hands, fingers and feet are most common among children and young people, probably due to increased physical activity during this period. There is a high incidence of wrist fractures among children, young people and the elderly, while the incidence of shoulder fractures increases from the age of 50.

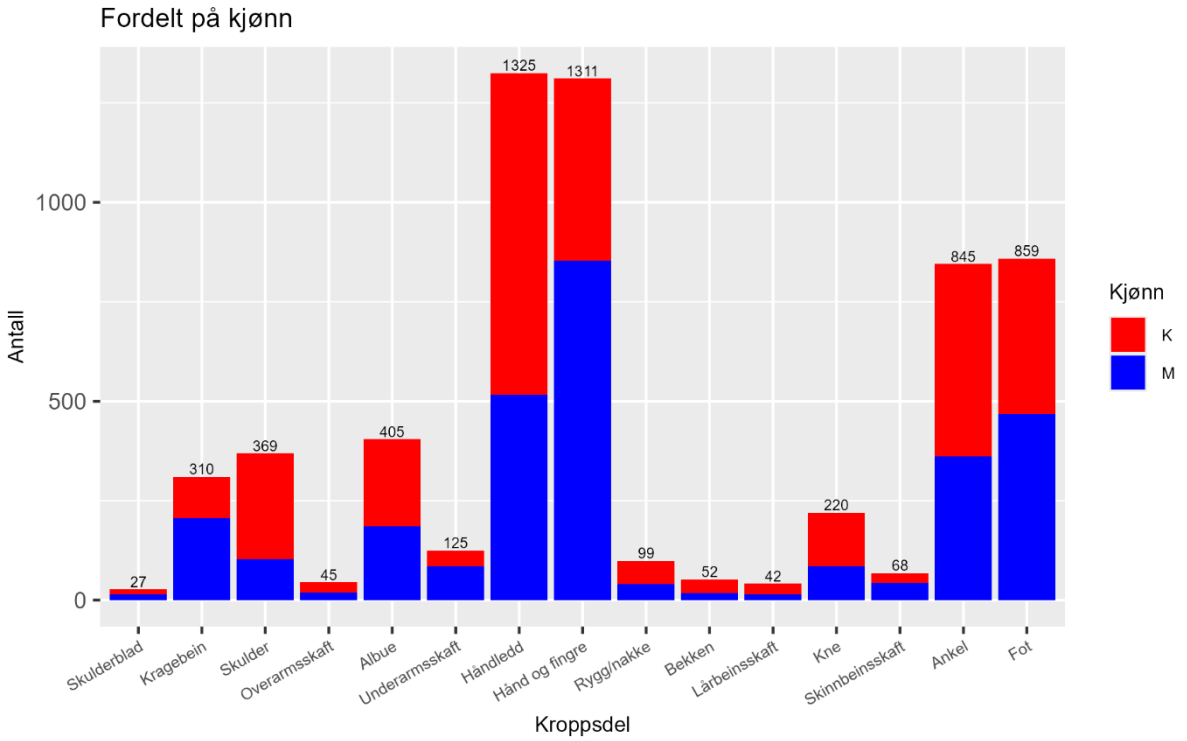


Figure 14: Distribution of fractures by body part from Helse Stavanger, by gender.
Figures show the number of females (red) and males (blue).
Body parts, in the order listed: Scapula, clavicle, shoulder, humeral shaft, elbow, forearm shaft, wrist, hand and fingers, back/neck, pelvis, femoral shaft, knee, tibia shaft, ankle, foot.

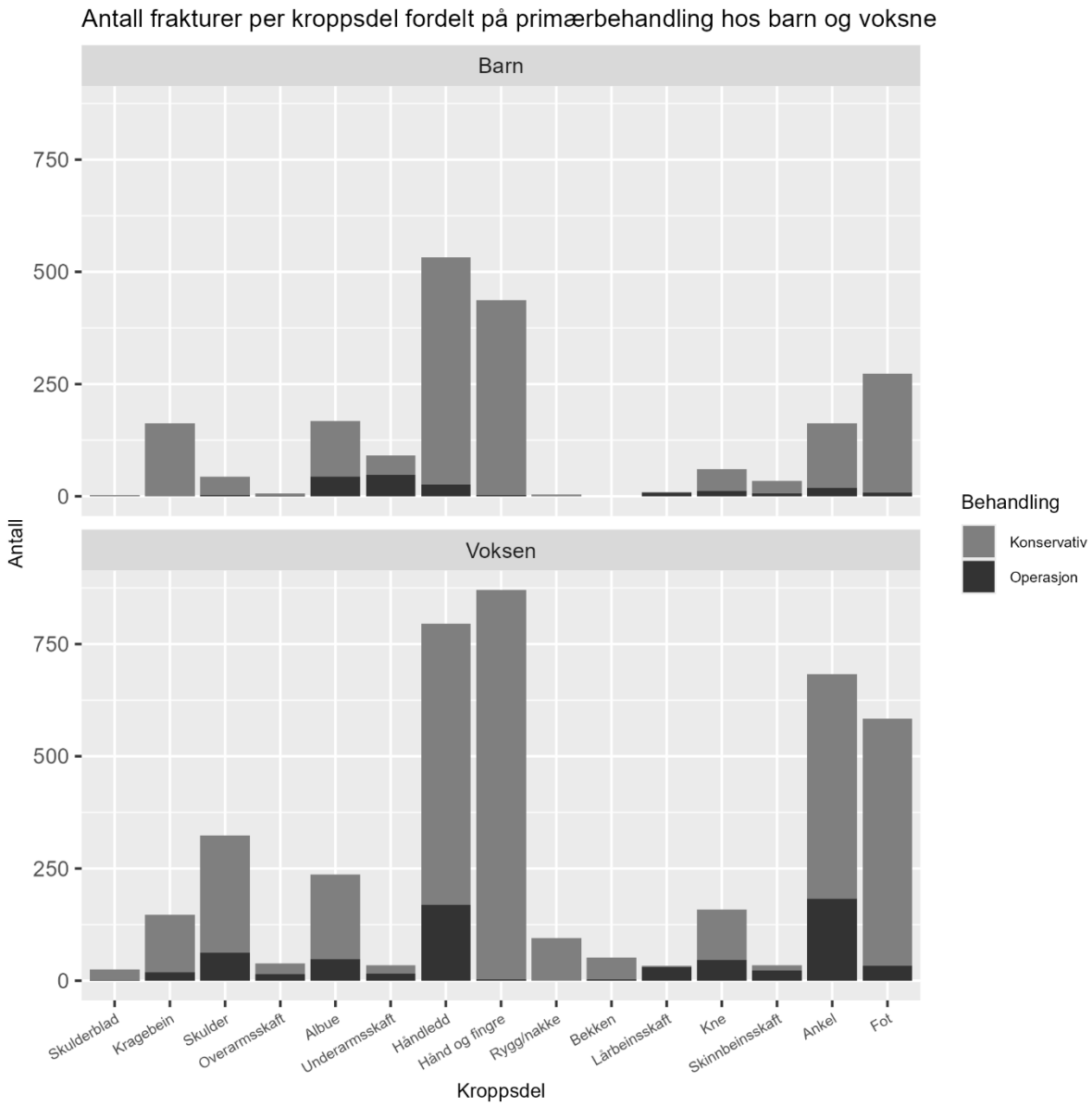


Figure 15: Distribution of fractures by body part, grouped into primary treatment (conservative in light colour, surgery in dark colour) for children (top) and adults (bottom).
Body parts, in the order listed: Scapula, clavicle, shoulder, humeral shaft, elbow, forearm shaft, wrist, hand and fingers, back/neck, pelvis, femoral shaft, knee, tibia shaft, ankle, foot.

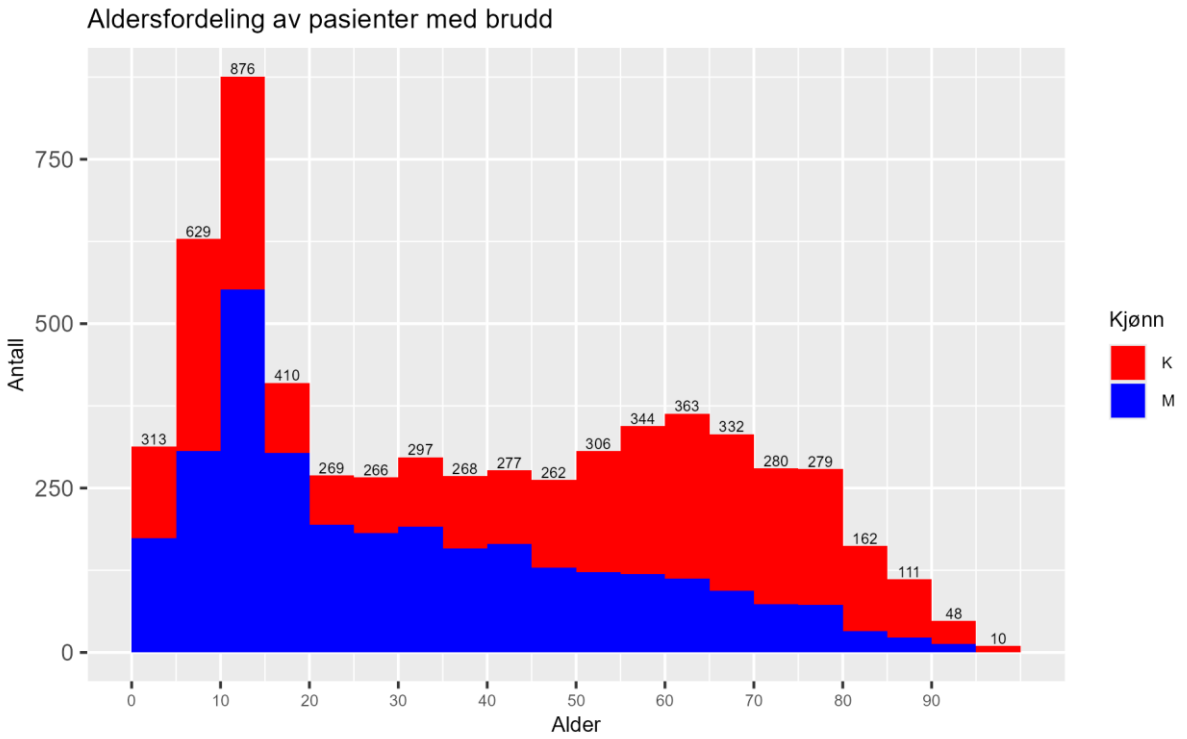


Figure 16: Age distribution of patients with reported fractures. Figures show the number of females (red) and males (blue).

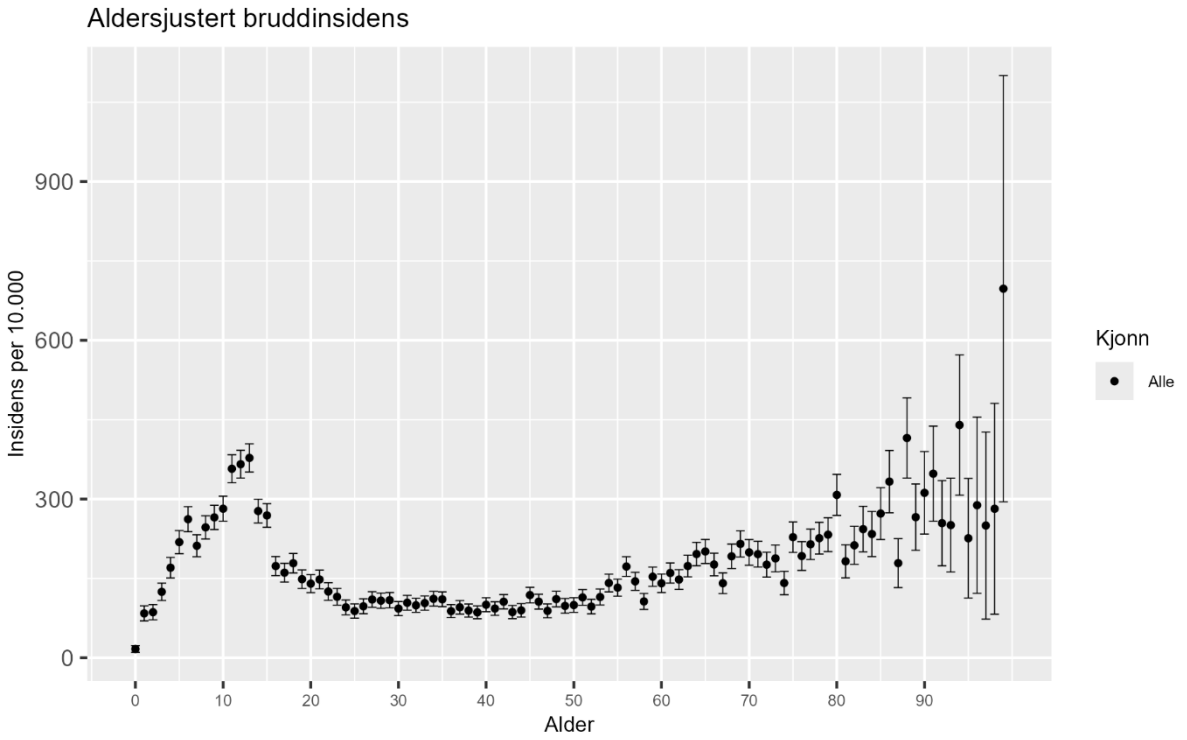


Figure 17: Age-adjusted fracture incidence per 10,000 inhabitants in an area with good reporting (Helse Stavanger). The error fields indicate the standard error (the square root of the number of fractures divided by the population), regardless of sex.

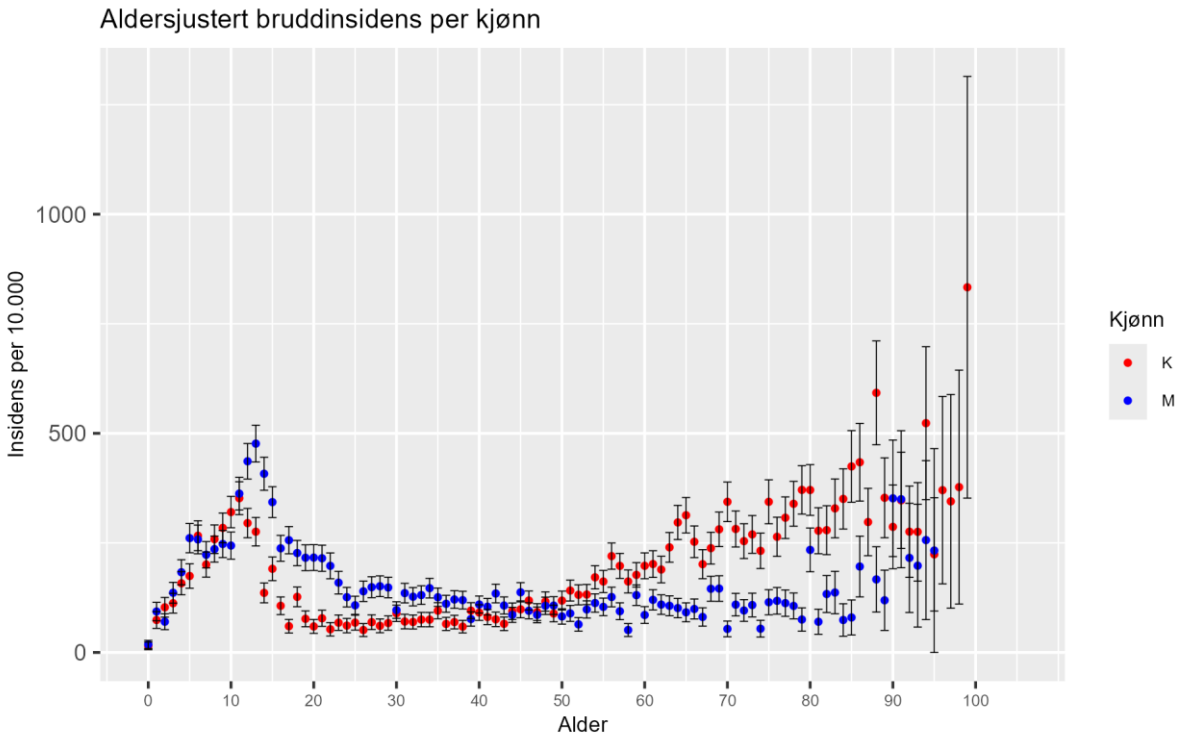


Figure 18: Age-adjusted fracture incidence per 10,000 inhabitants in an area with good reporting (Helse Stavanger), distributed by gender. The error fields indicate the standard error (the square root of the number of fractures divided by the population) – females (red) and males (blue).

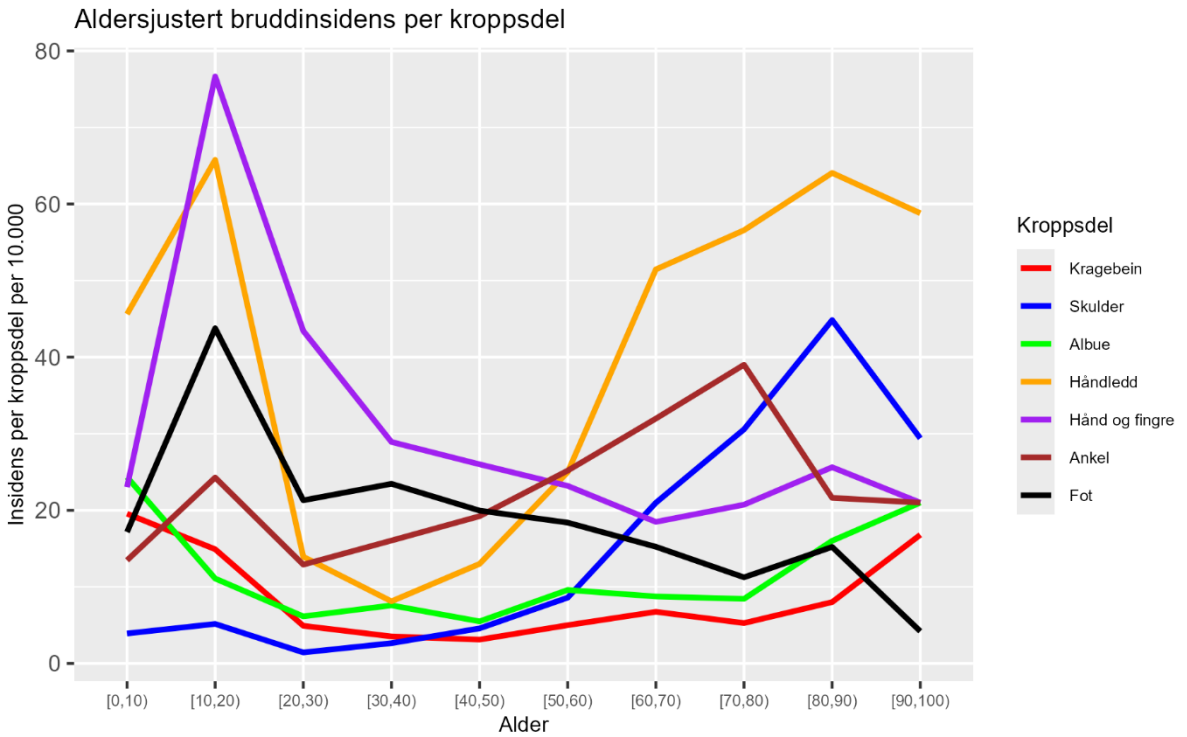


Figure 19: Age-adjusted fracture incidence for Helse Stavanger, broken down by body part in 10-year age groups, for body parts with the highest number of fractures.
Body parts, in the order listed: Clavicle, shoulder, elbow, wrist, hand and fingers, ankle, foot.

PART 2
Administrative information

3 Register description

Rationale for the register	In 2017, the Ministry of Health and Care Services tasked the regional health authorities with preparing a plan to determine prioritised areas for developing new medical quality registers. The following ranked priorities were presented [8]: 1. Treatment of substance abuse, 2. Physical healthcare, 3. Selected specialisations within physical health care. The Norwegian Fracture Register falls into the latter category. Based on this report, the inter-regional meeting of medical directors/steering group concluded on 12 December 2022, that the Norwegian Fracture Register could begin the process of applying for national status.
Type of register	Medical Quality Register
Year established	2024
Year of national approval	2024
Year in which data collection began	2024
Purpose of the register	The register is intended to ensure quality, evaluate and improve the assessment, treatment and follow-up of any complications after treatment of fractures is carried out at orthopaedic departments in Norway, including conservative treatment at injury outpatient clinics.
Analyses that highlight the purpose of the register	The register has identified five quality indicators that can currently be used to monitor and ensure the quality of treatment within selected areas. Quality indicators may change over time. In Chapter 9, we describe several quality indicators we intend to include once we have more data. The register plans to use Rapporteket to publish data at the unit level, so that each unit registering data will be able to monitor whether it is meeting the targets for the quality indicators.
Legal basis	Article 6(1)(e) of the General Data Protection Regulation (public interest) and the Regulation relating to medical quality registers, section 1-4. The regulation provides the necessary supplementary legal basis in accordance with Article 6(1)(e), cf. no. 3, and exceptions to the prohibition on the processing of health data in accordance with Article 9 (2)(j). In accordance with the Royal Decree on the adoption of the Regulation relating to medical quality registers, the purpose of the quality registers, which is to improve the quality of health and care services, is undoubtedly in the public interest. The register is based on the right to opt out, as set out in section 3-2 of the Regulations relating to medical quality registers. National status entails an obligation on the part of the relevant organisations and healthcare professionals to submit relevant and necessary information to the register, cf. section 2-3, second paragraph, of the Regulations relating to medical quality registers.
Data Processor	Helse Stavanger and Norsk Helsenett
Data controller	Helse Stavanger represented by its CEO
Medical adviser / Register secretariat Contact information	Ane Djuv, Dept. of Orthopaedics, Stavanger University Hospital, Ane.djuv@sus.no E-mail address for the register: frakturregister.post@sus.no Website: Norwegian Fracture Register – Helse Stavanger and Norwegian Service Environment for Medical Quality Registers
Members of the Medical Specialist Council	Head of the Medical Specialist Council: • Lars Gunnar Johnsen, PhD, Senior consultant at St Olav's Hospital, Central Norway Regional Health Authority Service user representative: • Lise Lunde Nilsen, experienced service user representative with the

	Fracture Register Group at Helse Stavanger Members: • Jan-Erik Gjertsen, PhD, Senior consultant at Haukeland University Hospital, Head of the Norwegian Hip Fracture Register • John Clarke-Jenssen, PhD, Senior consultant, Dept. of Orthopaedics Oslo University Hospital, South-Eastern Norway Regional Health Authority (Helse Sør-Øst) • Gunn Hulleberg, Senior consultant, Department of Orthopaedics, St Olavs Hospital, Central Norway Regional Health Authority (Helse Midt-Norge) • Cato Kjærvik, Senior consultant, Dept. of Orthopaedics Nordland Hospital Trust, Northern Norway Regional Health Authority (Helse Nord) • Berte Bøe, Senior consultant at Oslo University Hospital, South-Eastern Norway Regional Health Authority (Helse Sør-Øst). To be replaced from 2025 by Kaare S. Midtgaard, Senior consultant at Oslo University Hospital, South-Eastern Norway Regional Health Authority (Helse Sør-Øst) • Jonas M Fevang, PhD, Senior consultant, Dept. of Orthopaedics Haukeland University Hospital, Western Norway Regional Health Authority (Helse Vest)
Activities of the Medical Specialist Council	The Medical Specialist Council communicates regularly via email and Teams and has held two in-person meetings in 2025 – one in Stavanger in January and one in Oslo in October. Key issues raised for discussion: • Quality indicators • Reports from all regional health authorities
Inclusion criteria	• All patients with fractures treated at injury outpatient clinics out-of-hours medical service or accident and emergency departments (Oslo and Bergen) or orthopaedic departments, or in consultation with the specialist health services (e.g. doctors on call with radiological facilities in rural areas linked to a hospital department) • All age groups • All fractures (described in the following section) that are treated either primarily at the injury outpatient clinic and/or in operating theatres. The exception is hip fractures, which are recorded in the Norwegian Hip Fracture Register. • Fractures and dislocations included in the register according to the AO classification with the prefixes 5, 6, 7, 8, 11, 12, 13, 14, 15, 16, 21, 22, 23, 32, 33, 41, 42, 43 and 44. Fractures with the fracture code AO31 are recorded in the Norwegian Hip Fracture Register. • The fracture must have initially been treated in Norway, and further treatment must take place in Norway. • The patient must be registered with a Norwegian national identity number (or a D-number) and have an address listed in the National Population Register in Norway. • Labour immigrants without a permanent residence (must have a D-number)
Method of data collection	The register will be based on automatic data capture from medical records and the surgery scheduling program, and work to implement this is currently ongoing. PROM data is also obtained directly from the patient and entered in the register via digital home follow-up. See the status and plans in section 9.

Technical solution for data capture, and year of start-up	The register will use the medical record system (MRS) solution for data capture, beginning in June 2026.
Metadata	The register has not yet begun publishing metadata at helsedata.no.
Data access solution	The register has not yet implemented any data access solution.
Number of patients/forms/incidents in the reporting year	Helse Stavanger is the only region where data has been recorded. For fractures that occurred in 2025, the following was recorded: 6,102 fractures 6,841 consultations/fracture reports 1,321 PROM questionnaires sent out after 6 weeks 1,317 PROM questionnaires sent out after 3 months 551 PROM questionnaires sent out after 1 year (Please note that the injury date was in 2025, which means some PROM forms were sent in 2026)
Total number of patients/forms/incidents	The same as in the reporting year. Helse Stavanger is the only region where data has been recorded. For fractures that occurred after 19 June 2024, the following was recorded: 9,293 fractures 10,458 consultations/fracture reports 1,697 PROM questionnaires sent out after 6 weeks 1,775 PROM questionnaires sent out after 3 months 1,172 PROM questionnaires sent out after 1 year (Please note that injury date was no later than 31 December 2025, so some PROM forms were submitted in 2026)
Stage and level	Stage 1, level C

4 Data quality

4.1 Consent and number of registrations

The Norwegian Fracture Register is still in a start-up phase with regard to implementing automatic data capture, which has not yet begun. Only data from Helse Stavanger have been made available for 2025. Here a total of 6,102 unique fractures have been recorded.

4.2 Coverage and response rate

4.2.1 Method for calculating the coverage ratio

The register has not yet calculated the coverage rate

4.2.2 Latest calculated coverage ratio

The register has not yet calculated the coverage rate

4.2.3 Response rate for patient-reported data

In the PROM forms presented in this report, 62 per cent of the responses were sufficiently completed in order to be categorised as ‘completed’.

4.3 Assessment of data quality

It is too early for the register to assess data quality.

5 Patient-centred quality improvement

5.1 Areas identified for improvement

To date, the register has not identified any areas for improvement.

5.2 Improvement measures initiated/implemented

To date, the register has not initiated or implemented any improvement measures.
We will focus on obtaining and recording data from more hospitals and regions.

6 Dissemination of results

	Form	Frequency	Target group/recipients
1.	Annual Report – Results	Annually	Medical specialist field of orthopaedics
2.	We plan to publish the results for each quality indicator at the national level on kvalitetsregistre.no	Quarterly	Politicians, the media
3.	Presentation/poster at a conference by medical adviser Ane Djuv.	Annually	The field of orthopaedics, politicians, healthcare trust management, other quality registers, digital health enterprises
4.	Information posters have been distributed to all units currently carrying out registrations, along with QR code cards linked to our website (Figure 20). Distributed at the medical specialist council meeting in January 2025 and sent by post	Continuous	General information
5.	Poster at the Health and Quality Register Conference, 23–24 September 2025	23–24 September 2025	Managers and medical directors in Norway
6.	Invited guest speaker at the regional register conference in May 2025	3–4 June 2025	Management at Helse Vest



Figure 20: Business cards with a QR code linked to a website containing information about the register

7 Collaboration and research

7.1 Collaboration with other medical communities and health and quality registers

The Norwegian Fracture Register works closely with the other national orthopaedic registers, particularly the Norwegian Hip Fracture Register. The head of the Norwegian Hip Fracture Register is also in the medical specialist council of the Norwegian Fracture Register, and vice versa. The national quality registries based at Stavanger University Hospital also form a registry consortium, of which the Norwegian Fracture Register is a part, where the registries assist one another and share advice and experiences. The register also collaborates on a daily basis with the orthopaedic research group at Stavanger University Hospital, including digital patient follow-up and innovation projects relating to the reuse of data for both clinical and register purposes (R-11210-D10020 and R-11368-D10020). By using the PROM questionnaire and anchor questions, it is possible, based on specific threshold values, to assess whether a patient will require a follow-up appointment at the outpatient clinic. Data from PROM is reused in the fracture register to further improve the calculation of clinical threshold values. This saves time for both the patient and the hospital, and it is a major benefit for the Norwegian Fracture Register, as data can be transferred directly from the electronic PROM form to the register. The project has received innovation funding and strategic research funding from Helse Vest to conduct research into, and expand the use of digital home follow-up for all fracture treatments, which will aid the Norwegian Fracture Register in collecting PROM data for the register. Efforts are also underway in other health regions to innovate and/or introduce the same system, which, among other things, is harmonised with the PROM data from the Norwegian Fracture Register, for development of Helseplattformen (the Norwegian Health Platform) and DIPS software. The Norwegian Fracture Register also has a strong professional foundation within the medical specialist council, which provides expert input on variables and quality indicators. In addition, the register has a professional collaboration with the Swedish Fracture Register, which was established in 2009 and has developed into a major register with a high level of research activity (www.registercentrum.se). Since 2015, we have endeavoured to hold at least one joint meeting for professional discussions. Our approach has been to harmonise as many variables as possible. We also collaborate with a medical profession group in Denmark that is working to rebuild the Danish Fracture Database.

7.2 Data disclosures from the register

In 2025, the register provided data for a medical master's thesis entitled 'Digital home follow-up of patients following wrist fractures', written for the Western Norway University of Applied Sciences, Faculty of Health and Social Sciences, Department of Health and Care Sciences. The plan is to develop this into a scientific article and initiate a joint study between Stavanger University Hospital and the University of Oslo as part of a PhD research study – the TACT study "Beyond acute orthopaedic trauma care: A mixed-methods study on patients' unmet needs after hospital discharge".

Strategic research partner in Helse Vest's 2025 call for proposals, in which the projects were awarded more than NOK 20 million for three different PhD projects: Digital, patient-led follow-up of ankle and wrist fractures – Helse Stavanger

7.3 Scientific articles

As the Norwegian Fracture Register is not yet collecting data at the national level, no scientific articles containing national data from the register have been published.

Part 3
Progress assessment and plan for further developing the register

8 References for the assessment of stages

8.1 Assessment criteria

Table: Assessment criteria for the Norwegian Fracture Register and the register's own evaluation.

Number	Description	Chapter	Self-assessment 2025 Yes	No
	Stage 2			
1	Collect data from all relevant health authority regions	4.1	□	×
2	Present the quality indicators at the national level	2.1	□	×
3	Have a specific plan for carrying out coverage analyses	4.2	□	×
4	Have a specific plan for carrying out analyses and regularly reporting the results at the unit level back to the participating units	0	x	□
5	Have an up-to-date plan for further development	9	×	□
	Stage 3			
6	Can document the completeness of quality indicators	4.3	□	×
7	Can demonstrate a coverage rate of at least 60 per cent over the last two years	4.2	□	×
8	The register will publish the results of its quality indicators interactively on the website kvalitetsregistre.no at least once a year	0	□	×
9	Registered units may be provided with or granted access to their own aggregated and national results	0	x	□
10	Present participating organisations' compliance with the most important professional guidelines	2.1	x	□
11	Have an up-to-date plan for the further development of the register	9	×	□
	Stage 4			
12	Have in the five years documented whether the data collected is accurate and reliable	4.3	□	×

13	Can provide evidence of a coverage rate of at least 80% over the last two years	4.2	□	×
14	Present quality indicator results interactively on the website kvalitetsregistre.no at least twice a year	0	□	×
15	The register will document that the data is used for scientific purposes	7.3	□	×
16	Present results at the unit level for PROM/PREM (where possible)	2.2	x	□

	Level A, B or C **Tick the box corresponding to the level met by the register**		**Yes**
	Level A		
17	The register can document the results of quality improvement measures that have been implemented over the last three years. The measures must be based on knowledge from the register	5.2	□
	Level B		
18	The register can demonstrate that it has identified areas for improvement during the reporting year, and that patient-centred quality improvement work has been initiated or continued/advanced	5.1, 5.2	□
	Level C		
19	Does not meet the requirements for Level B		×

9 Development of the register

9.1 The register's follow-up of the previous year's assessment by the expert group

The Norwegian Fracture Register was in a very early start-up phase in 2024, so the expert group's assessment from last year was simply that the work was well underway, with no specific areas requiring follow-up.

9.2 Plans and needs

The Norwegian Fracture Register remains in a start-up phase, and a great deal of work is still needed on the electronic systems at the various health trusts before it is possible to collect all types of data from all regions.

The major advantage of automatic data capture is that the coverage rate will be virtually 100 per cent once the technical solutions are in place, without the need for extensive training or follow-up of routines for data recording procedures at the various health trusts in Norway.

To enable automatic data capture from medical records/surgical scheduling systems to the Norwegian Fracture Register, it is first and foremost essential that patient records in the orthopaedic departments contain structured data rather than free text. The first step is therefore to introduce structured orthopaedic patient records that include the variables required for the register, and then to establish data extraction to the Norwegian Fracture Register. Each region is responsible for ensuring that this work is carried out. The Norwegian Fracture Register has neither the mandate nor the capacity to commission this directly, which complicates the process.

Below is an overview of the current status and plans for the MSR and the various regions.

9.2.1 Medical record system

The work on integrating the Norwegian Fracture Register with the MRS has taken longer than initially expected, but the system went live on 12 June 2026, and NHN will be launching the functionality for reservations on 16 June 2026.

The use of automatic data capture means that any subsequent changes to the MRS after it has gone live, such as variables, will also require changes to all the different input programmes. We have therefore been continuously updating the code book to make the first edition as comprehensive as possible, in order to minimise the number of updates required later on.

The remaining work on the part of the register is to verify the version put into production and then carefully review the metadata, for which the register assumes responsibility. This is to include as much information as possible about the variables, so that the metadata/code book can be used as a specification for setting up the input programmes.

9.2.2 Helse Vest

Helse Vest uses DIPS Arena as its patient medical records system, whilst Orbit is used as its surgery scheduling system. Consequently, data from both these systems must be transferred to the Norwegian Fracture Register in the MRS via an API.

An extension to the surgery scheduling system is also being developed for Orbit, where the intent is to help each doctor to efficiently select the correct AO fracture code (see the example illustration in Figure 21). The extension uses a skeletal avatar in a tree-like structure, where the doctor first clicks on a fracture region and then follows a branch on the tree, selecting the type of fracture with a description and illustration in greater detail until the final AO code is selected in just a few clicks. This will guide doctors in selecting the correct fracture code by comparing the image and text in the extension with the X-ray image.

The images and descriptions for all levels of the skeletal avatar have long been ready for implementation, and can be shared with other health regions. However, much to the frustration of many doctors, the opportunity to test the extension has been put on hold due to ongoing operational

challenges with Orbit, which means that new functionalities are not being prioritised. The register has developed an online version of the AO code selector, which can be tested at https://norskfrakturregister.shinyapps.io/AOkodevelger/. This version was initially intended as a demonstration for other health trusts, but it is now being considered whether it should be made available via a link in Orbit until the extension is implemented.

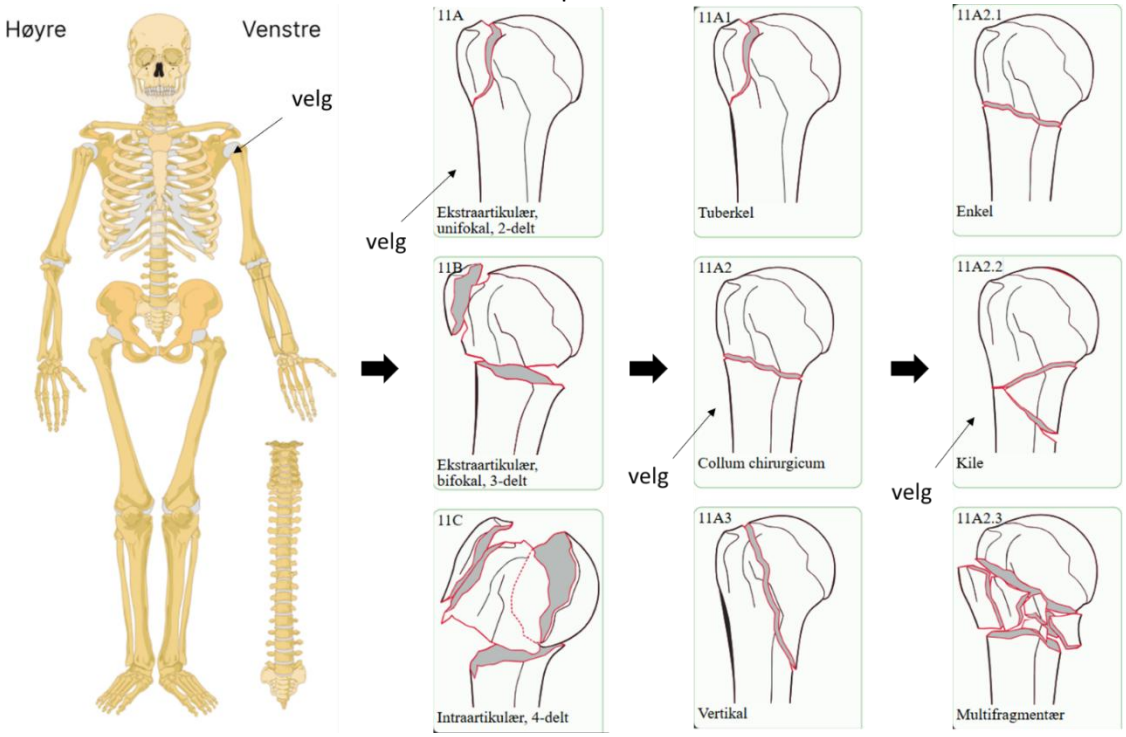


Figure 21: Illustration of the tree-like structure in the Orbit extension to guide doctors in selecting the correct AO code. Each click on an image determines what will appear in the next image, where greater detail from the AO classification can be selected. After the final image, the AO code from the selected image (11A2.2 in this example) is automatically entered into Orbit, and from there forwarded to the Norwegian Fracture Register.

Helse Vest uses CheckWare to collect PROM data from patients. This data must be transferred to the Norwegian Fracture Register in the MRS. Work on developing an integration to transfer data from CW to MRS via an API began after a number of meetings in November and December 2025.
A protocol for digital home follow-up via CW, developed by the orthopaedic surgery research group at Helse Stavanger, the Norwegian Fracture Register and the medical specialist council in collaboration, has been made available for use by other health trusts.

9.2.3 Helse Sør-Øst and Helse Nord

Both Helse Sør-Øst and Helse Nord use DIPS Arena for both patient medical records and for as a surgery scheduling system, and a new, more structured orthopaedic fracture record with automatic data capture linked to the MRS must be developed for this purpose. The requirement has been reported to the respective regions. The consensus is that the process is highly dependent on individuals, and it could all come to a standstill if certain people in key roles are absent.
Helse Nord plans to use RPA technology (robotic process automation) to send out patient follow-up notifications and automate data collection. PROM is currently being implemented for wrist fractures, so that patients do not have to attend the hospital in person. This follows the same model as in Helse Vest where CW is used. Upgrading the surgery module in DIPS is essential for putting the necessary registration forms in place, and the plan is to transfer the structure of the surgery module to the conservative treatment module. The regional board meeting for clinical systems in Helse Nord took place on 29 May 2026, where the priority list for orders from DIPS was to be finalised. However, the outcome of the meeting is not yet known.
The CW setup for fracture treatment pathways, developed by Helse Stavanger, is available for use and

have been implemented to collect fracture-related PROMs at several health trusts, including Innlandet Hospital Trust and Sørlandet Hospital Trust.
It should be noted that the ICT Director at Helse Sør-Øst has been promised a role in the process.

9.2.4 Helse Midt-Norge

Helse Midt-Norge uses Helseplattformen as its medical records system, which has been impacted by start-up issues in recent years. However, Helseplattformen has received the requirements specification and the necessary information, and discussions on resources and funding are currently ongoing. A cost quote is expected shortly, and Helseplattformen anticipates available capacity in June 2026. Unfortunately, the funding has not yet been finalised, and Helse Midt-Norge has not yet disbursed the funds it pledged to allocate at the AD meeting in December 2024. Other possible sources of funding could include innovation resources or support for quality improvement initiatives from its Department of Orthopaedics.
Working with Helseplattformen can feel like an unpredictable process. There are frequent changes to points of contact, and feedback on the scope of the work varies between staff members at Helseplattformen.
However, a digital channel of communication with patients is being established through the use of the HelsaMi app. The CW setup for fracture management, developed by Helse Stavanger, is available for use.

9.2.5 Future quality indicators

When the Norwegian Fracture Register was introduced, it was proposed that the following quality indicators be included. The register does not yet have the data required to calculate these. However, there are plans to include them at a later date.

Definition/description	Percentage of wrist fractures according to the latest updated national guidelines for adults under age 65 Source: EPR and surgery scheduling
Type of indicator	Process
Target achieved	>80%
Knowledge base	MAGICapp guidelines: Treatment guidelines for wrist fractures among adults [9]. A new, updated handbook of clinical practice from the Norwegian Orthopaedic Association is currently under development.
Calculation	Surgical treatment: Numerator: The number of *unstable* distal radius fractures in patients ages 18–64 who have undergone surgery. Denominator: Total number of unstable distal radius fractures in patients ages 18–64. Conservative treatment: Numerator: The number of *stable* distal radius fractures in patients ages 18–64 who have been treated conservatively. Denominator: Total number of stable distal radius fractures in patients ages 18–64.

Definition/description	Percentage of compression fractures of the spine that are diagnosed by X-ray/CT/DXA and treated with appropriate secondary pharmacological prevention Source: EPR and radiology program
Type of indicator	Process
Target achieved	>80%

Knowledge base	It will often be difficult to determine the exact time at which a compression fracture occurred.
Calculation	

Definition/description	Percentage of fracture patients who have received treatment at a recommended centre (e.g. pelvic fractures) Source: EPR and radiology program
Type of indicator	Process
Target achieved	>90%
Knowledge base	Guidelines for the national and regional distribution of resources in orthopaedic trauma care (Norwegian Trauma Plan NKT, 2020)
Calculation	Percentage of pelvic fractures treated at established 'pelvic fracture centres' compared with the total number of pelvic fractures surgically treated in Norway

Definition/description	Percentage of fractures where antibiotic prophylaxis is administered during implant surgery in accordance with the national guidelines on the use of antibiotics in hospitals Source: NPR, electronic chart (lab systems)
Type of indicator	Process
Target achieved	≥ 90%
Knowledge base	Norwegian clinical guidelines for the use of antibiotics (www.antibiotika.no)
Calculation	Number of fracture surgeries involving implants where antibiotic prophylaxis is administered, compared with all surgeries on fractures involving implants.

Definition/description	30-day and 12-month mortality rates (a distinction must be made between age groups and fracture types) Source: EPR
Type of indicator	Result
Target achieved	<10% 12-month mortality rate for proximal humerus fractures in people over age 65
Knowledge base	Bergdahl, C., et al., Mortality following a proximal humeral fracture. *Bone Joint J, 2020*. ***102-B***(11), p. 1484–1490 [10]
Calculation	To be linked to the National Population Register in the MRS. Numerator: Number of patients who have suffered a fracture and died within the specified period Denominator: Number of patients who have suffered a fracture within the specified period

9.2.6 Rapporteket (analysis and reporting service)

To ensure that data from the Norwegian Fracture Register is utilised as quickly as possible, the register is already working to enable Rapporteket data portal to display data from the register. The Norwegian Fracture Register will be a large database containing many variables and observations. The aim is therefore to give users ample opportunity to filter and select the aggregated data they wish to study. This is already functioning locally for test data based on metadata from the MRS, and we do not anticipate any major challenges in getting this functionality to work on Rapporteket. Locally, users can also save their chosen charts on the home page so that they are updated with the latest data each

time the user logs in. We hope to implement this in Rapporteket as well. In this way, each user will easily be able to create their own dashboard containing exactly the information they wish to see.

10 References

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