

Hip Fracture Care – the Case for Improvement

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Hip Fracture Clinical Care Standard



- 1** A patient presenting to hospital with a suspected hip fracture receives care guided by timely assessment and management of medical conditions, including diagnostic imaging, pain assessment and cognitive assessment.



- 2** A patient with a hip fracture is assessed for pain at the time of presentation and regularly throughout their hospital stay, and receives pain management including the use of multimodal analgesia, if clinically appropriate.



- 3** A patient with a hip fracture is offered treatment based on an orthogeriatric model of care as defined in the *Australian and New Zealand Guideline for Hip Fracture Care*.¹



- 4** A patient presenting to hospital with a hip fracture, or sustaining a hip fracture while in hospital, receives surgery within 48 hours, if no clinical contraindication exists and the patient prefers surgery.



- 5** A patient with a hip fracture is offered mobilisation without restrictions on weight-bearing the day after surgery and at least once a day thereafter, depending on the patient's clinical condition and agreed goals of care.



- 6** Before a patient with a hip fracture leaves hospital, they are offered a falls and bone health assessment, and a management plan based on this assessment, to reduce the risk of another fracture.



- 7** Before a patient leaves hospital, the patient and their carer are involved in the development of an individualised care plan that describes the patient's ongoing care and goals of care after they leave hospital. The plan is developed collaboratively with the patient's general practitioner. The plan identifies any changes in medicines, any new medicines, and equipment and contact details for rehabilitation services they may require. It also describes mobilisation activities, wound care and function post-injury. This plan is provided to the patient before discharge and to their general practitioner and other ongoing clinical providers within 48 hours of discharge.

Purpose

This document supports the implementation of the *Hip Fracture Care Clinical Care Standard* by highlighting what is known about the evidence, best practice and current practice and the opportunities to bring these closer together.

A Clinical Care Standard is a small number of quality statements that describe the clinical care that a patient should be offered for a specific clinical condition. A Clinical Care Standard supports:

- People to know what care should be offered by their healthcare system and to make informed treatment decisions in partnership with their clinician
- Clinicians to make decisions about appropriate care
- Health services to examine the performance of their organisation and make improvements in the care they provide.

Where possible, examples are provided showing how specific approaches or systems for implementing best practice have demonstrated measurable change.

This document will be of interest to a wide audience, including clinicians and health services, policy makers, health system managers, researchers and the general public, and all those with an interest in the implementation of the *Hip Fracture Care Clinical Care Standard*.

While there is an *Australian and New Zealand Guideline for Hip Fracture Care*¹, not all patients are currently receiving guideline-recommended or best practice care.^{2,3} Opportunities exist to better align clinical practice and its supporting systems and processes with current evidence, to ensure that all hip fracture patients across Australia and New Zealand receive the best care possible.

This document outlines the following for each quality statement:

- Why is it important?
- What is known about current practice?
- What could be achieved with more consistent application of the aspects of care described?

Hip Fracture Care – the Case for Improvement

The healthcare burden of hip fracture care is growing

Each day an average of 52 people in Australia^{4,5} and 11 people in New Zealand⁶ are admitted to hospital with a hip fracture. Hip fractures in Australia account for 20% of all fall injury hospitalisations and 50% of their total cost.^{4,5} Most people with a hip fracture are women (72%), and up to five times more dwell in residential aged care facilities than in the community.^{4,5}

While the last decade has seen a reduction in the age-standardised rate of hip fracture, the total number of people affected is expected to increase due to the ageing of the population. Forecasting, based on NSW data, suggests that by 2026, the number of bed days required for hip fracture care will increase by between 15.2% and 47.9%, depending on whether hip fracture rates continue to decline or remain stable.⁷

The human cost is high

A hip fracture is a devastating injury for an older person and can result in death or disability, pain and loss of independence, and may trigger the need for long-term care in a residential aged care facility. Hip fracture is associated with a 30-day mortality rate of between 6% and 10%, and approximately half of those deaths occur during the initial hospitalisation.^{8,9,10,11,12} Equally important is the impact on overall quality of life for the majority of people who survive the hip fracture but live with the functional consequences including pain, reduced mobility and loss of independence. Many people who sustain a hip fracture never regain their pre-existing level of function.¹³

Variation exists in both care and outcomes

Evidence of variation in care for hip fracture exists in both the processes and outcomes. Time to surgery and 30-day mortality vary markedly in Australia, with the differences not simply due to casemix variation.² There is also demonstrated poor uptake relating to best practice care protocols and minimising the risk of the next fracture.¹⁴

One Australian jurisdiction undertook a detailed review of unexpected deaths following hip fracture and identified a number of areas where care was considered to be sub-optimal, suggesting that outcomes may be different if the quality of care was improved. The key factors included delayed and inadequate treatment, failure to recognise clinical deterioration, and inadequate communication and coordination of care.³

Hospitalisations for hip fracture are more frequent for Aboriginal and Torres Strait Islander people than for other Australians, with rates for Aboriginal and Torres Strait Islander men double those of other Australian men.¹⁵



Systems and standards can improve outcomes

Data from the United Kingdom show that lives can be saved by systematisation of care, applying best practice evidence, and having structures and processes to support consistent delivery of care.¹⁶

The UK National Hip Fracture Database initiative was launched in 2007, consisting of a registry, national guidelines, clinical standards and use of continuous audit and feedback. It was augmented in 2010 by the introduction of the Best Practice Tariff scheme, with financial incentives for meeting certain clinical standards.¹⁷ An evaluation using data from 471,590 hip fracture patients found that the initiative appeared to have a significant impact, including:

- Hundreds of lives saved¹⁸, with a significant reduction in 30-day mortality from 10.9% to 8.5% within four years¹⁶
- A 7.6% relative reduction per year in annual 30-day mortality for each year of the initiative, compared to a 1.8% relative reduction before the initiative¹⁶
- An increase in early surgery rates from 54.5% to 71.3% after the initiative, with no change in rates beforehand.¹⁶

National guidelines¹ and standards for hip fracture care are new to Australia and New Zealand, and the impact of a nationally coordinated approach to improving the consistency of care is not yet known. The UK experience suggests there is great opportunity for improvement if services adhere to the quality statements described in this Clinical Care Standard.

Quality statement 1 – Care at presentation

A patient presenting to hospital with a suspected hip fracture receives care guided by timely assessment and management of medical conditions, including diagnostic imaging, pain assessment and cognitive assessment.

Why is this important?

Most patients with a hip fracture will have surgery with a view to alleviating pain and maximising the chances of a meaningful functional recovery. While preparation for surgery, including discussions about the appropriateness of surgery, starts at presentation to hospital, opportunities exist to improve the timeliness and quality of assessment at this point to improve both the functional outcomes for the patient and their experience.

From a patient perspective, one of the most important aspects of care at presentation is management of pain. Rapid assessment followed by timely intervention and review of the effectiveness of analgesia is critical. Failure to manage pain adequately affects the patient experience, and can carry an increased risk of delirium.^{19,20}

High-quality plain X-ray imaging with review by an experienced clinician is sufficient to make the diagnosis of a hip fracture in the vast majority of patients (96%).¹ High-quality plain imaging involves moving the patient's broken hip; pain management is crucial before undertaking imaging. For the small number of patients in whom a fracture is not apparent on plain imaging, further imaging is required.¹

Comprehensive clinical assessment, including cognitive assessment, allows for an individualised plan of care to be developed. Up to 30% of hip fracture patients will have an underlying diagnosis of cognitive impairment²¹ and this greatly increases their chance of developing delirium in hospital and the associated poor outcomes.²² A patient's cognitive function also needs to be considered when seeking informed consent to treatment and for discussions about the goals and limits of care.

What is current practice?

Relatively little data are available regarding systems and processes of care for the hip fracture patient in the emergency department (ED). The Australian and New Zealand Hip Fracture Registry (ANZHFR) annual facility-level audit collects data from all public hospitals in Australia and New Zealand that operate on hip fracture patients (n=121: 98 in Australia and 23 in New Zealand). In 2016, among participating hospitals:

- 72% had a hip fracture pathway: 26% (31/121) in ED only and 46% (56/121) for the whole acute journey
- 50% (60/120) had protocols for what to do if plain imaging was inconclusive
- 61% reported having pain management protocols: 23% (28/121) in ED only and 38% (46/121) for the whole acute journey.¹⁴

There is evidence to show that the timeliness of pain assessment and management could be improved. Two Australian studies specifically looked at time to receipt of analgesia in ED.^{24,25} The median time to first receipt of analgesia was 75 minutes in one study, which involved a medical chart audit of 646 patients across 36 hospitals.²⁴ Another study looked at the impact of workload on timely access to analgesia. Delays in assessment of pain had a significant impact on the time to receipt of analgesia.²⁵

What could be achieved?

Implementing hip fracture protocols in the ED that incorporate pain assessment and management, imaging and medical optimisation have the potential to improve the patient experience. Such protocols are also likely to reduce length of time in ED and time to surgery. Reducing time in ED can contribute to achieving the national emergency access target (NEAT), which aims to ensure patients are either admitted, discharged, or referred on within four hours of presenting to the ED.

Quality statement 2 – Pain management

A patient with a hip fracture is assessed for pain at the time of presentation and regularly throughout their hospital stay, and receives pain management including the use of multimodal analgesia, if clinically appropriate.

Why is this important?

Most patients with a hip fracture will experience significant pain requiring analgesia throughout the course of their hospital stay. The primary driver for ensuring optimal pain management is a humane one and the desire to improve the patient experience. Pain is also associated with an increased risk of delirium²⁰, particularly in patients with existing cognitive impairment, and can adversely affect a patient's ability to mobilise and engage in a rehabilitation process after surgery.

Regular assessment of pain using a validated tool is recommended in the *Australian and New Zealand Guideline for Hip Fracture Care*.¹ Assessing pain in people with dementia, cognitive impairment, or when there are language barriers is challenging. Tools are available to assess pain in these patient groups and should be accessible to hospital staff.²⁶

Multimodal pain management strategies (such as nerve blocks in combination with systemic analgesia) are effective and reduce the need for high doses of strong systemic analgesics, which are frequently associated with side effects including nausea, vomiting, constipation and delirium.

What is current practice?

Studies in Australia have looked at pain management at different stages of the hip fracture journey, but none have looked at the whole journey.

Time to receipt of analgesia in ED has been identified as an issue.^{24,25} A retrospective medical chart audit of hip fracture patients in 36 hospitals across Australia²⁴ found the following:

- Median time to first analgesia was 75 minutes
- Time to analgesia varied by state or territory, ranging from a median of 43 minutes to 115 minutes
- Less than half (48%) of patients had any pain score documented in ED

- Cognitive impairment and language difficulties were the most commonly reported barriers to providing analgesia.

While not suitable for all patients, nerve blocks may be underused for analgesia. Only 7% of the audited patients received a nerve block in ED, while 58% received morphine.²⁴ Use of nerve blocks is more common at the time of surgery when the anaesthetist has the opportunity to administer local analgesia in addition to either general or regional anaesthesia. In a single-Australian hospital study, 38% of hip fracture patients received a nerve block.⁸ ANZHFR patient-level data from 2015 (25 hospitals; 3519 individual patient records) identified substantial variation in the use of nerve blocks between hospitals across Australia and New Zealand.¹⁴

What could be achieved?

ED hip fracture protocols that specify the prompt assessment of pain at presentation and throughout the hospital stay, followed by timely intervention, have the potential to improve the time to receipt of analgesia. Increasing the number of ED staff who are trained and competent in the delivery of nerve blocks may also improve early pain management.

Immobility caused by pain following hip fracture has been associated with increased risk of pressure injuries, pneumonia and venous thromboembolism (VTE). Patients who experience pain are at a higher risk of delirium, depression and sleep disturbance and have a decreased response to interventions for other comorbidities.^{27,28} The beneficial outcomes of ensuring adequate analgesia is provided to allow patients' movements are likely to offset the staff time required.²⁹

The introduction of pain assessment scales as a routine part of hospital observation charts is increasing, although it is unclear whether this results in better pain management – more work is required in this area.

Quality statement 3 – Orthogeriatric model of care

A patient with a hip fracture is offered treatment based on an orthogeriatric model of care as defined in the *Australian and New Zealand Guideline for Hip Fracture Care*.

Why is this important?

Evidence supports a shared care approach to hip fracture care between the orthopaedic team and orthogeriatric team. Working in partnership with the orthopaedic team, the orthogeriatric team takes responsibility for the medical management of the patient from admission to discharge as well as the care coordination and discharge planning. The benefits include a reduction in post-operative complications, improved functional recovery and reduced mortality on discharge.^{1,29} A detailed health economic review of the different models of care provided to hip fracture patients suggests with a high degree of statistical certainty that the orthogeriatric model of care is likely to be cost-effective.²⁹

The core components to the orthogeriatric model of care include:

- Medical optimisation prior to surgery (e.g. nutrition, hydration, pressure care, bowel and bladder management, and monitoring of cognition)
- Effective pain management
- Multidisciplinary input with clear goals and limits for care
- Care co-ordination
- Proactive secondary fracture prevention plans (falls risk and bone health).

Improved outcomes with this model of care include a lower risk of post-operative complications (for example, chest infection, pressure injury and delirium), better functional outcomes, reduced future fracture risk and ultimately reduced mortality. This may also reduce the overall costs of care.²⁹

What is current practice?

The most basic model of hospital care, which still exists in many parts of Australia and New Zealand, involves the hip fracture patient being admitted under the care of an orthopaedic or surgical team. Other specialties including geriatric medicine may be consulted on a needs basis, but sole responsibility for ongoing care rests with the admitting team. This is referred to as ‘usual care’ in the *Australian and New Zealand Guidelines for Hip Fracture Care*.¹

The more advanced model of care is known in Australia as an ‘orthogeriatric model of care’ and involves a shared care arrangement of hip fracture patients between the specialties of orthopaedics and geriatric medicine. The geriatrician is involved in the pre-operative optimisation of the patient in preparation for surgery, takes the lead in medical care post-operatively, and coordinates the discharge planning process. Implicit in the orthogeriatric model of care are many of the aspects of basic care including nutrition, hydration, pressure care, bowel and bladder management and monitoring of cognition. Hybrids of this model exist across Australia and New Zealand.¹

In the 2016 ANZHFR facility-level audit report, 65% of hospitals (78/121) provided a formal orthogeriatric service for hip fracture patients and 20% provided a shared care model.¹⁴ It is important to note that geriatric medicine services are not available in all hospitals and that general physicians or general practitioners (GPs) may take the shared care role in some areas.

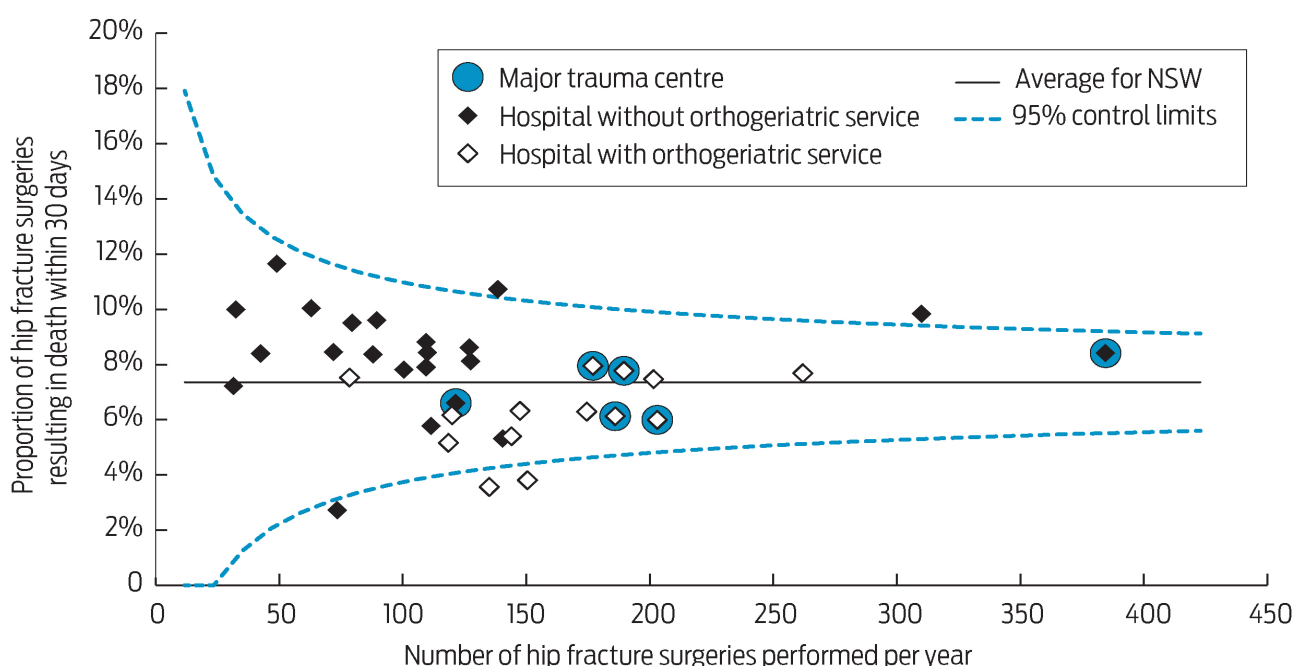
What could be achieved?

The quality of care provided and outcomes for those who sustain a fractured hip have been shown to be much better when there is close collaboration between departments of orthopaedics and geriatric medicine.¹

Recently published data from Australia show that hospitals with a formal orthogeriatric service have significantly lower 30-day mortality than those that do not.¹⁰ There was significant variation between hospitals in 30-day mortality for hip fracture even after accounting for casemix.

Data from a dedicated hip fracture unit in Queensland run by orthopaedic surgeons and geriatricians in partnership confirms what is known from the literature, with evidence of shorter times to theatre, reduced post-operative complications and reduced mortality.³⁰

Figure 1. Adjusted 30-day mortality rates after hip fracture surgery in public hospitals according to the presence or absence of an orthogeriatric service and by major trauma centre status, New South Wales, July 2009–June 2011*



Zeltzer J, Mitchell RJ, Toson B, et al. Orthogeriatric services associated with lower 30 day mortality for older patients who undergo surgery for hip fracture care. *Med J Aust* 2014;201(7):409-411. © Copyright 2014 The Medical Journal of Australia – reproduced with permission.

* One hospital without an orthogeriatric was omitted from the analysis due to low number of surgeries

Quality statement 4 – Timing of surgery

A patient presenting to hospital with a hip fracture, or sustaining a hip fracture while in hospital, receives surgery within 48 hours, if no contraindication exists and the patient prefers surgery.

Why is this important?

The main driver for timely access to surgery for hip fracture is a compassionate one. Leaving an older person immobilised, bed bound, fasting and often in pain is not desirable practice. The broader consequences of delayed surgery include an increased length of stay and increased post-operative complications, such as pneumonia, thromboembolic events and pressure injury, all of which further increase length of stay.²⁹

What is known about current performance in Australia?

There are a number of factors that directly impact on time to surgery in Australia. While some people need to be transferred considerable distances to have surgery, these people make up a small percentage of all hip fracture patients. Data suggest there is considerable variability in time to surgery between hospitals that cannot be explained either by the need for initial transfer or by casemix.

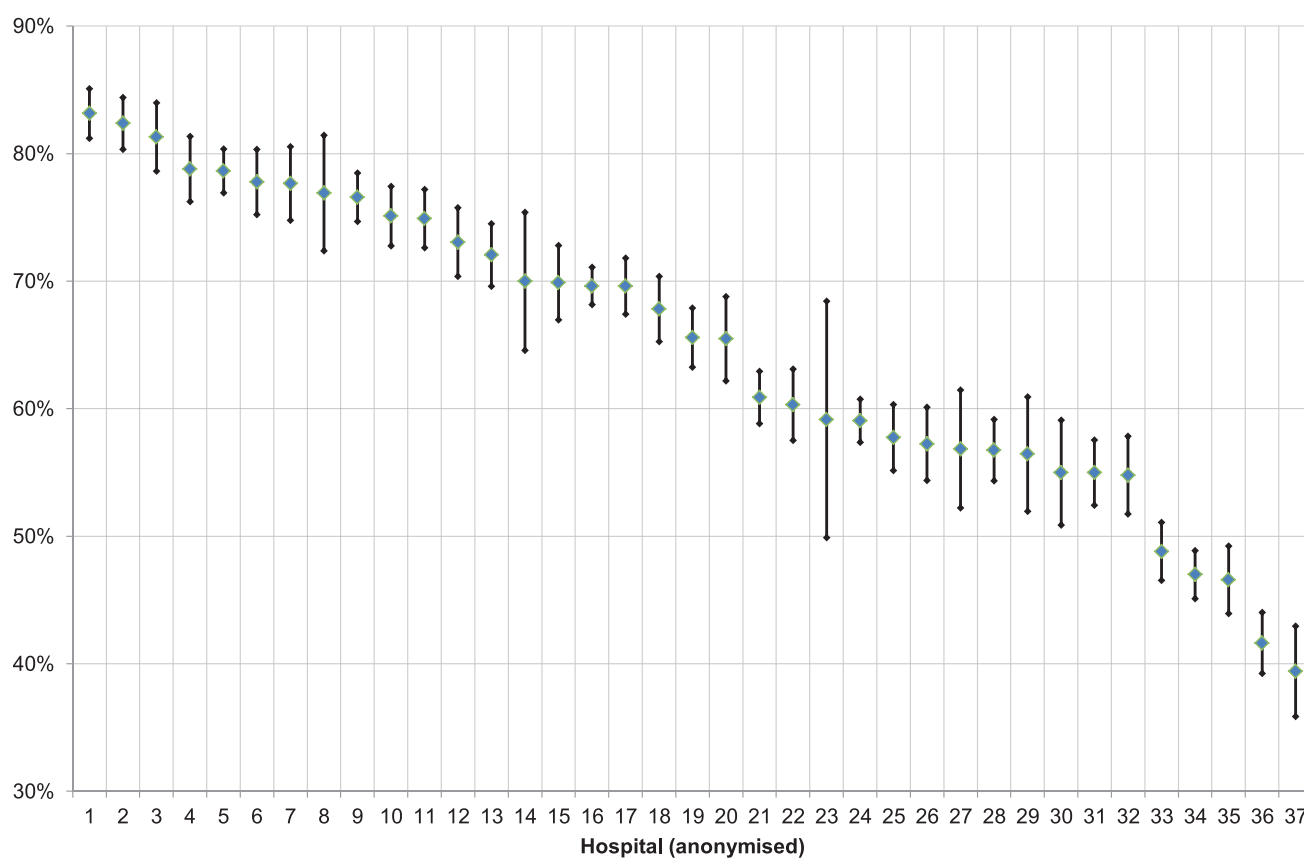
In one state, the percentage of patients undergoing surgery within two calendar days ranged from 40%-83% between hospitals (Figure 2).² This suggests marked variation in the systems and processes to support clinical care, such as access to theatre time and availability of an appropriately skilled team. The 2016 ANZHFR annual facility-level audit found that 39% (47/121) of hospitals reported having a planned theatre or trauma list for hip fracture patients. ANZHFR patient-level data from 2015 (25 hospitals; 3519 individual patient records) identified that for participating hospitals, the median time to surgery in Australia and New Zealand was 24 hours and 27 hours, respectively.¹⁴ In one Queensland hospital the introduction of a dedicated hip fracture service has shown many benefits, including a reduction in time to surgery.³⁰

What could be achieved?

Serial reports from the UK National Hip Fracture Database show that time to surgery can be reduced, with the latest report showing that 72% of hip fracture patients have surgery on the day of or day after admission.³¹ Evidence indicates that early surgery (within 48 hours of admission) is associated with a statistically and clinically significant reduction in mortality, increased rates of return to independent living and reduced rates of pressure injuries and complications compared with late surgery (beyond 48 hours of admission).²⁹

Drivers for change in the UK were twofold – the regular provision of data to clinicians³¹ and financial incentives¹⁷ to hospitals based on a set of quality indicators including time to surgery. Improvements in access to operating theatres and in scheduling of theatre time for hip fracture patients has been crucial to the improvements seen in the UK. Similar results could be achieved in Australia, with anticipated health benefits for the older person and cost benefits to the healthcare system.

Figure 2. Percentage of patients with hip fracture undergoing surgery within two calendar days after admission, NSW public hospitals, 1 July 2000 to 30 June 2011*.



Zeltzer J, Mitchell RJ, Toson B, et al. Determinants of time to surgery for patients with hip fracture. ANZ J Surg 2014;84(9):633-638
 © Copyright 2014 ANZ Journal of Surgery – reproduced with permission.

* Adjusted for age, sex and co-morbidity of patient by indirect standardisation. Expected values generated by logistic regression and 95% confidence intervals shown for estimates.

Quality statement 5 – Mobilisation and weight-bearing

A patient with a hip fracture is offered mobilisation without restrictions on weight-bearing the day after surgery and at least once a day thereafter, depending on the patient's clinical condition and agreed goals of care.

Why is this important?

After surgery, the focus for the patient and the treating team is on restoring function while managing pain. Early mobilisation has been shown to result in earlier functional recovery and independence.³² For many hip fracture patients, the ability to walk and live independently is the primary goal.

Any post-operative surgical order in the patient's file that places a restriction on weight-bearing for the operated limb can substantially impact the rehabilitation process, and for many patients the restriction will lead to many more weeks in hospital. Such orders should be the exception rather than the rule.

What is known about current practice?

ANZHFR patient-level data from 2015 (25 hospitals; 3519 individual patient records) identified that 85% of Australian patients and 56% of New Zealand patients were given the opportunity to mobilise the day after surgery.¹⁴

Availability of services may also be an issue; in 2016, 79% (95/121) of participating hospitals had routine access to weekend therapy for hip fracture patients, according to data from the ANZHFR annual facility-level audit.¹⁴ This figure increased from 60% of hospitals (72/120) in 2015.²³

What could be achieved?

For patients willing and able to engage in a rehabilitation process after surgery, this should start the day after surgery. The benefits for the patient of early mobilisation include earlier functional recovery and reduced risk of post-operative complications.^{29,32}

Early mobilisation after hip fracture helps to reduce bed-rest-induced loss of muscle mass and function in this group who are known to be high-risk.³³

Quality statement 6 – Minimising risk of another fracture

Before a patient with a hip fracture leaves hospital, they are offered a falls and bone health assessment, and a management plan based on this assessment, to reduce the risk of another fracture.

Why is this important?

A fracture significantly increases the risk of a future fracture. One in three hip fracture patients will re-fracture at one year, and over one in two will have another fracture within five years.³⁴

Approximately 50% of hip fracture patients will have already sustained a low-trauma fracture^{35,36}, yet most will not be on treatment for osteoporosis. A fracture resulting from a fall from standing height is a sufficient indication of osteoporosis in an older person to support treatment. A large body of evidence supports the benefits of secondary fracture prevention mainly with treatment of bone health³⁷, while falls prevention strategies can reduce falls risk.^{38,39} Both are important aspects of comprehensive, secondary fracture prevention services. Opportunities exist with this high-risk population to put in place strategies to minimise future falls and fracture risk.

What is current practice?

An audit of 16 Australian hospitals found that only 10% of patients presenting with a low trauma fracture between 2003 and 2005 were investigated for osteoporosis, and only 8% were commenced on appropriate treatment for it.⁴⁰ The 2004 Australian BoneCare Study looked at secondary fracture prevention in the primary care setting and showed that less than 28% of women aged 60 years and over with a fracture history received any treatment for osteoporosis.⁴¹ More recent data from Australia suggests this care gap remains.^{42,43}

In Australia, there are pockets of good practice and attempts are being made at both the national and state level to promote effective secondary fracture prevention. Despite this progress, the delivery of care remains inconsistent.^{44,45,46}

Data from the ANZHFR annual facility-level audit showed that in 2016, 25% of public hospitals had

access to a fracture liaison service, 48% had access to a public osteoporosis clinic and 64% had access to a public falls clinic.¹⁴ Access to all these services has been gradually increasing.¹⁴

ANZHFR patient-level data from 2015 (25 hospitals; 3519 individual patient records) identified that 76% of Australian patients, and 46% of New Zealand patients were reported to have undergone a falls assessment while in hospital. These data also showed that in Australia, 22% of patients leave hospital on bone protection medication; in New Zealand this figure was reported to be 40% (noting however that this figure does not identify treatments initiated on transfer to another hospital).¹⁴

What is achievable?

Models of care that include systematic identification, investigation of risk factors for future falls and fractures, and individualised treatment plans for falls prevention and treatment of osteoporosis can significantly reduce the risk of future fractures, further pain and suffering, and hospitalisation. This approach is also cost effective.⁴⁷

Data shows that the UK's Glasgow Fracture Liaison Service has used systematised models of practice to assess 97% of hip fracture patients for risk of another fall or fracture (compared to less than 30% for other service configurations).⁴⁸ The Glasgow Fracture Liaison Service's approach identifies fracture patients while they are still in hospital and arranges a management plan that includes out-patient follow-up.

There are limited data on patient outcomes for secondary fracture prevention services in Australia, although data from the UK has shown that a coordinated approach assists in ensuring that more patients receive this intervention before they leave hospital. Some aspects of this approach can be applied in the Australian context.

Quality statement 7 – Transition from hospital care

Before a patient leaves hospital, the patient and their carer are involved in the development of an individualised care plan that describes the patient's ongoing care and goals of care after they leave hospital. The plan is developed collaboratively with the patient's general practitioner. The plan identifies any changes in medicines, any new medicines, and equipment and contact details for rehabilitation services they may require. It also describes mobilisation activities, wound care and function post-injury. This plan is provided to the patient before discharge and to their general practitioner and other ongoing clinical providers within 48 hours of discharge.

Why is this important?

The acute stay in hospital following a hip fracture is a short but important part of the overall hip fracture journey. It is a time when changes may occur in health status and medications are frequently reviewed and altered. All this may be done with limited consultation with the patient and/or their family/carer.

At the point of discharge, it is crucial that patients feel able and empowered to resume control of their own health. It is important to provide an individualised care plan in an appropriate format to ensure the patient and/or their family/carer has information about any changes to medications, as well as plans for future falls and fracture prevention.

What is known about current practice?

It is not known what resources are available at the point of discharge to the 19,000 patients in Australia and 3,500 patients in New Zealand who fracture their hip each year.^{49,50} Discharge summaries are often seen as the mechanism linking services between the hospital and the community, but the format and content of these summaries is rarely constructed with the patient in mind.

Data from the ANZHFR annual facility level audit showed that in 2016, 46/121 (38%) of hospitals provided patients and/or their family/carers with some form of written information about their treatment plan for a hip fracture.¹⁴ In the same period, 27% (33/121) of hospitals identified that patients were provided with individualised, written information on discharge that included recommendations for the prevention of future falls and fractures (not only the discharge summary).¹⁴

What could be achieved?

Informed and empowered patients and carers are more likely to adhere to health recommendations, including uptake and adherence to interventions likely to enhance functional recovery and minimise the chances of future fracture prevention.

Glossary

Assessment: A clinician's evaluation of the disease or condition based on the patient's subjective report of the symptoms and course of the illness or condition and the clinician's objective findings, including data obtained through tests, physical examination, medical history, and information reported by family members and other healthcare team members.⁵¹

Care plan (individualised): A written agreement between a consumer and health professional (and/or social services) to help manage day-to-day health.⁵² This information is identified in a health record.

Carers: People who provide unpaid care and support to family members and friends who have a disease, disability, mental illness, chronic condition, terminal illness or general frailty. Carers include parents and guardians caring for children.⁵³

Casemix: The range and types of patients (the mix of cases) treated by a hospital or other health service. This provides a way of describing and comparing hospitals and other services for planning and managing health care. Casemix classifications put patients into manageable numbers of groups with similar conditions that use similar healthcare resources, so that the activity and cost-efficiency of different hospitals can be compared.

Clinical team: See **clinician**.

Clinician: A healthcare provider, trained as a health professional. Clinicians include registered and nonregistered practitioners, or a team of health professionals, who provide direct clinical care.⁵³

Cognition: The mental activities associated with thinking, learning, and memory.⁵⁴

Cognitive impairment: Deficits in one or more of the areas of memory, communication, attention, thinking and judgement. Dementia and delirium are common forms of cognitive impairment seen in hospitalised older patients.⁵⁵

Comorbidities: Co-existing diseases (other than the one being studied or treated) in an individual.

Delirium: A disturbance of consciousness, attention, cognition and perception that develops over a short period of time (usually hours or days) and tends to fluctuate during the course of the day.⁵⁶

Health record: Information about a patient held in hard or soft copy. The health record may be made up of clinical records (such as medical history, treatment notes, observations, correspondence, investigations, test results, photographs, prescription records, medication charts), administrative records (such as contact and demographic information, legal and occupational health and safety records) and financial records (such as invoices, payments and insurance information).⁵⁷

Health service: A service responsible for the clinical governance, administration and financial management of unit(s) providing health care. A service unit involves a grouping of clinicians and others working in a systematic way to deliver health care to patients and can be in any location or setting, including pharmacies, clinics, outpatient facilities, hospitals, patients' homes, community settings, practices and clinicians' rooms.⁵³

Hospital: A licensed facility providing healthcare services to patients for short periods of acute illness, injury or recovery.⁵⁸

Individualised care plan: See **care plan**.

Medical optimisation: The process of ensuring that reversible medical problems are identified and treated and irreversible problems are maximally managed in preparation for surgery.¹

Medical practitioner: A person whose primary employment role is to diagnose physical and mental illnesses, disorders and injuries and prescribe medications and treatments that promote or restore good health.⁵⁹ This could include medical specialists, non-specialists and general practitioners.

Medication review: A critical review of all prescribed, over-the-counter and complementary medications undertaken to optimise therapy and minimise medication-related problems.⁶⁰

Medicine: A chemical substance given with the intention of preventing, curing, controlling or alleviating disease, or otherwise improving the physical or mental welfare of people. Prescription, non-prescription and complementary medicines, irrespective of their administration route, are included.⁵²

Mobilisation: Mobilisation is the process of re-establishing the ability to move between postures (for example, sit to stand), maintain an upright posture, and to ambulate with increasing levels of complexity (speed, changes of direction, dual and multi-tasking).¹

Model of care: A configuration of services and staff designed to provide care for a particular health issue. A model of care takes into account the evidence to support an approach to care as well as context in relation to delivery of a service.¹

Multimodal analgesia: Balanced or multimodal analgesia involves the selective use of specific drugs in combination. The concept relies on using multiple analgesic drugs with different modes of action (for example, non-opioid combined with opioid), or by different routes of administration (for example, local anaesthetic block combined with a systemic analgesic).⁶¹ The rationale for this strategy is to use the additive or synergistic effects of different analgesics to achieve sufficient pain control, with lower doses, thus minimising dose-related side effects.⁶²

Orthogeriatric model of care: In Australia and New Zealand, this involves a shared-care arrangement of hip fracture patients between the specialties of orthopaedics and geriatric medicine. The geriatrician is involved in the preoperative optimisation of the patient in preparation for surgery and then takes a lead in the postoperative medical

care and coordinates the discharge planning process. Implicit in this role are many of the aspects of basic care including nutrition, hydration, pressure care, bowel and bladder management and monitoring of cognition.¹

Risk factor: A characteristic, condition, or behaviour that increases the possibility of disease or injury.⁶³

Pain management: The use of pain-controlling agents (including long-acting local anaesthetic agents, opiates and other pain-modulating drugs) to normalise pre-preoperative, postoperative and ongoing pain states.⁶⁴

Protocol: An established set of rules used for the completion of tasks or a set of tasks.⁵³

Shared care: See **orthogeriatric model of care**.

System: The resources, policies, processes and procedures that are organised, integrated, regulated and administered to accomplish the objective of a standard. The system:

- Interfaces risk management, governance, operational processes and procedures, including education, training and orientation
- Deploys an active implementation plan and feedback mechanisms
- Includes agreed protocols and guidelines, decision-support tools and other resource material
- Employs a range of incentives and sanctions to influence behaviours and encourage compliance with policy, protocol, regulation and procedures.⁵³

Weight-bearing: The ability of a part of the body to support weight. Unrestricted weight-bearing refers to a patient who is able to mobilise with full use of the affected limb to bear weight as pain allows.⁶⁵

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