

Best-practice pricing and clinical quality information on hip fracture care

Executive Summary	iv
1. Introduction	1
2. Background	2
2.1 Activity Based Funding overview.....	2
2.2 Joint Working Party between IHPA and the Commission.....	2
2.3 Best-practice pricing principles.....	3
3. Best-practice in hip fracture care: national consensus.....	6
3.1 The Australian and New Zealand Guideline for Hip Fracture Care.....	6
3.2 The National Hip Fracture CCS.....	6
4. Designing a national best-practice pricing model for hip fracture care	7
4.1 Defining the target separations and episodes of care	7
4.2 Defining best-practice hip fracture care for the purposes of pricing.....	8
4.3 Costing and pricing best-practice hip fracture care.....	11
5. Providing quality data to drive improvement	13
5.1 What information is needed to support quality improvement and payment determinations?	13
5.2 The audience and timing of providing quality improvement information.....	15
6. Preferred initial national model for best-practice pricing of hip fracture care	16
7. Implementation approach	17
7.1 Using existing data to support pricing and quality improvement.....	17
7.2 Potential data to support pricing, funding and quality improvement.....	17
7.3 Further stakeholder engagement and implementation plans.....	18
7.4 Evaluation	20
8. Appendices	21
Appendix A. Sub-Committee on Best-practice Pricing and Quality Information Terms of Reference.....	22
Appendix B. Suggested design improvements to increase impact of pay for performance schemes.....	25
Appendix C. Australian Commission on Safety and Quality in Health Care draft Hip Fracture Clinical Care Standard quality statements.....	26
Appendix D. Australian Commission on Safety and Quality in Health Care draft Hip Fracture Clinical Care Standard indicators.....	27
Appendix E. International and Australian Hip Fracture Care Best-Practice Pricing Initiatives	29
Appendix F. Supporting analysis for Chapter 5 - Designing a national best-practice pricing model for hip fracture care	35
Appendix G. Additional potential measures for consideration in a hip fracture best-practice pricing approach.....	40
Appendix H. References.....	42

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Executive Summary

This report by the Sub-Committee on Best-Practice Pricing and Clinical Quality Information (the Sub-Committee) was endorsed by the Joint Working Party on Pricing for Safety and Quality in Australian Public Hospitals (JWP) of the Independent Hospital Pricing Authority (IHPA) and the Australian Commission on Safety and Quality in Health Care (the Commission) on 29 June 2015. It outlines the requirements and a potential approach to implementing national best-practice pricing and the provision of hospital-level safety and quality data for hip fracture care in Australian public hospitals. This report was endorsed by the JWP on 29 June 2015, and endorsed by the Commission and IHPA Boards in September and August 2015 respectively.

The Sub-Committee's work was informed by domestic and international consultations, review of literature and analyses of data. A summary of recommendations is provided in Table 1, page vii.

Best-practice pricing describes an approach to purchasing of healthcare services for a specific procedure or intervention at a price that reflects the elements that constitute best-practice. Under a best-practice pricing model, a tariff is set proactively, based on the expected cost of providing best-practice services. Although financial incentives are one lever to influence delivery of care, evidence points to the utility of providing timely, relevant comparable data to front line clinicians.

There is local and international experience in incentivising best-practice hip fracture care to be drawn on in designing a national best-practice pricing approach. Two Australian jurisdictions have implemented a hip fracture pricing scheme; however, it is early days to assess outcomes. One scheme is based on six best-practice criteria (Western Australia) and the other (Queensland) is based on one criterion which is time to surgery. Internationally, a region in Italy introduced a tariff for hip fracture patients who underwent surgical treatment within 48 hours of admission. The United Kingdom's National Health Service (NHS) also has a hip fracture best-practice tariff (BPT). This scheme involves payment of a tariff, based on 8 criteria. The scheme has resulted in a reduction in hip fracture mortality. The simultaneous availability of comparable clinical information was deemed essential to early and successful efforts to achieve these outcomes.⁷

Accordingly, the Sub-Committee recommends that IHPA, in its national price setting role, should work with the Commission to simultaneously provide timely, relevant and comparable clinical information to hospitals should it chose to implement a best-practice pricing scheme for hip fracture (see **Recommendation 1**).

In Australia, there are existing national clinical guidelines and standards that should be utilised in defining criteria for a best-practice pricing scheme. The Sub-Committee recommends that IHPA develop a national best-practice price (BPP) that incentivises care that aligns with the Commission's Hip Fracture Clinical Care Standard (CCS) which has been distributed for community consultation in May 2015 (see **Recommendation 2**). The proposed quality statements are:

- Quality statement 1 – Care at presentation
- Quality statement 2 – Pain management
- Quality statement 3 – Orthogeriatric model of care
- Quality statement 4 – Timing of surgery

- Quality statement 5 – Mobilisation and weight bearing
- Quality statement 6 – Minimise the risk of another fracture
- Quality statement 7 – Transition from hospital care.

The technical design of a hip fracture best-practice pricing scheme requires clarity on which separations are eligible for funding under the scheme, what aspects of the CCS are considered as criteria for the BPP, and how much the BPP is.

Accordingly, the Sub-Committee recommends that the hip fracture cohort eligible or targeted for an initial BPP include:

- Patients aged 50 years and over (which represents 96% of activity and 94% of costs)
- Admissions with a care type of acute (since the Commissions standards focus on the acute episode and IHPA pays for acute and sub-acute separately)*
- Specified principal diagnoses (covering 90% of hip fractures and 88% of costs among those aged 50 years or more), and excluding multiple trauma episodes; and
- Specified hip surgery procedure codes and Australian Refined Diagnosis Related Groups (AR-DRGs) (see **Recommendation 3**).

Best-practice pricing is recommended for surgical and non-surgical interventions (two tariffs) to prevent unintended incentives toward any particular approach to management of hip fractures. In surgical cases where patients are transferred between hospitals, it is recommended that the operating hospital receive the BPP if criteria are met. More information on the rationale for this target cohort and these recommendations is on pages 7 to 11.

In Australia, there are approximately 21,000 hip fracture separations per annum at a total operational cost of just under \$350 million to the health care system. If these criteria were used to establish an initial hip fracture cohort then best-practice pricing would apply to 13,914 separations at a total operational cost of \$258.2 million.

Members recommend that the size of the best-practice price be set after IHPA undertakes or commissions a study to determine the cost of best-practice hip fracture care, as defined using the above-mentioned criteria, compared to the price paid under IHPA's current national efficient price (NEP) methodology. A discussion about implications, for incentives and Commonwealth expenditures, depending on whether the best-practice price is higher, lower or the same as the price paid under the NEP is provided on pages 11 and 12.

Furthermore, IHPA should signal its intention to explore the implementation of a best-practice scheme in its Pricing Framework for Australian Public Hospitals 2016-17 (see **Recommendation 4**).

* Agreement on this recommendation among Sub-Committee members was not universal, though all members agreed on the importance of subacute care to a patient's resultant health status. The lack of existing information systems that follow separations across their care types, however, was seen as a sizable issue to resolve before best-practice pricing could be attributed across the full pathway of care.

Sub-Committee members recommend that performance relevant to one or more of the following priority indicators, based on the Hip Fracture CCS, be considered as criteria relevant to determination of an initial BPP:

- i. Surgery occurred on the same day or the day following presentation for patients who had surgery
- ii. An orthogeriatric model of care was used for patients aged over 65 years, and over 50 years for Indigenous patients
- iii. The opportunity to mobilise occurred on the day after surgery (for surgical patients)
- iv. A cognitive assessment was conducted for all patients; pre-operatively for surgical patients
- v. A falls and bone health assessment was undertaken before the patient was discharged.

Sub-Committee members recommend the Commission and IHPA determine which one or more of these indicators are to be included in an initial BPT. Members considered that indicators need to be meaningful to patients and clinicians, simple to understand and easy to communicate, feasible to collect, precise, achievable, measurable, and cover a spectrum of the standards (see **Recommendations 5 and 6**).

The Sub-Committee noted the evidence that time to surgery has high predictive power for patient outcomes and this measure formed the basis of BPT in the NHS, Italy, WA and Qld. In 2012 the Audit Commission found that NHS organisations found the detail of the BPT for hip fracture difficult to understand (i.e. the eight criteria and how it translates into pricing).

The design and implementation of a best-practice pricing scheme requires reliable information on quality of care to determine eligibility for funding, and the Sub-Committee recommends that the scheme's implementation should be coupled with or preceded by the provision of timely, relevant and comparable clinical information for clinicians.

Interestingly, in 2014 the NHS introduced a new BPT for hip and knee replacement – this is a combination of pay for data and pay for patient reported outcome measures. Payment for performance is expected to follow. In Australia, the Sub-Committee envisions that the Commission might opt to include in its Work Plan activities that support the collection, analyses and provision of timely, comparable hip fracture care information to Local Hospital Networks and relevant public hospitals.

There are two main sources of nationally consistent information on patients who are admitted with hip fracture – the National Non-Admitted Patient Emergency Department Care Database (NNAPED) and the Admitted Patient Care National Minimum Data Set (APC). Both might be useful to measure some of the above-mentioned indicators.

There are other sources of valuable information on clinical quality, though these data are not yet nationally available (e.g. Australian and New Zealand Hip Fracture Registry, ANZHFR) or are not nationally consistent (e.g. patient experience data). The ANZHFR includes data that can be used to calculate indicators for each of Commission's Hip Fracture CCS. Any clinical quality registry used for best-practice pricing in hip fracture care should meet existing national standards, including having an amenable governance structure and national coverage as per the Commission's Framework for Clinical Quality Registries.⁹

Importantly, the ANZHFR has its own governance, funding and ownership arrangements which would need to be considered before implementation of a best-practice pricing model that depends on access, use and disclosure of information derived from ANZHFR data.

IHPA and the Commission would need to include best-practice data items in their Three Year Rolling Data Plans (see **Recommendation 7**).

Members recommend further consultation with stakeholders on the design approach for a best-practice pricing scheme coupled with the provision of timely, relevant clinical information, following any endorsement by the Pricing Authority and Commission Board. A full implementation plan, including an approach to evaluation, should be developed and an indicative plan is provided on page 19 (see **Recommendations 8, 9 and 10**).

Table 1. The ten recommendations made by the Sub-Committee for the Commission and IHPA Boards.

BEST-PRACTICE PRICING RECOMMENDATIONS TO THE JOINT WORKING PARTY ON PRICING FOR SAFETY AND QUALITY IN AUSTRALIAN PUBLIC HOSPITALS

Recommendation 1.1: IHPA, in its national price setting role, should consider the Sub-Committee's and subsequent JWP's advice in relation to best-practice pricing to support best care for hip fracture.

Recommendation 1.2: The design and implementation of a best-practice pricing scheme requires reliable information on quality of care to determine eligibility for funding. Implementation should be coupled with the provision of timely, relevant and comparable clinical information being fed back to clinicians. Jurisdictions may want to target their efforts towards this aspect.

Recommendation 2: Existing CCS and national guidelines be used as a basis of a best-practice pricing approach for hip fracture care, in particular the Hip Fracture CCS established by the Commission in 2015.

Recommendation 3: IHPA, in its national price setting role, should consider implementation of a best-practice pricing model for hip fracture care. This should include:

- Targeting the acute episode of care in public hospitals for people aged 50 years and over;
- Targeting episodes with a hip fracture diagnosis code as specified in Table F1, Appendix F as a principal diagnosis;
- Excluding multiple trauma events as specified in Table F4, Appendix F;
- Targeting episodes that have hip fracture surgery as specified in Table F6, Appendix F;
- Targeting episodes assigned to the AR-DRGs I03A, I03B, I08A, and I08B which account for the majority of separations.

Recommendation 4.1: IHPA should use a purpose designed study to cost best-practice hip fracture care to determine the incremental cost of best-practice care compared to the average cost of care.

Recommendation 4.2: IHPA should determine a best-practice hip fracture care adjustment that provides an incentive for service providers (clinicians and managers) to change practices and deliver care that meets the best-practice criteria.

Recommendation 4.3: IHPA should signal its intention to explore the implementation of a national best-practice price for hip fracture care through the *Pricing Framework for Australian*

Public Hospital Services 2016-17 and, if new data elements are required to support its implementation, through the IHPA Three Year Data Plan 2016-17 to 2018-19.

Recommendation 5.1: Based on the advice of the Sub-Committee, IHPA should determine which of the Hip Fracture CCS indicators will be used to determine whether best-practice has been delivered.

Recommendation 5.2: The Hip Fracture CCS indicators selected for inclusion into a national best-practice pricing model should be coupled with defined, more comparable information than is needed for pricing and funding determinations, and should be provided to support clinical improvement.

Recommendation 5.3: This quality improvement information should be provided through the ANZHFR to Local Hospital Networks and public hospitals in advance of the commencement of any best-practice pricing model on a quarterly basis (even if initially provided on a six-monthly basis).

Recommendation 6.1: That the JWP endorse the Sub-Committee's preferred Hip Fracture CCS indicators for best-practice pricing.

Recommendation 6.2: Subject to consultation with the relevant stakeholders, IHPA should determine which of the initial set of indicators are to be included in the preferred initial model for best-practice pricing for hip fractures to be applied to surgical separations.

Recommendation 7.1: IHPA must include appropriate best-practice data items within their *Three Year Rolling Data Plan* and the Commission similarly within their work program, as the mechanism to stimulate both data to support clinical improvement and a best-practice pricing approach for hip fracture care in Australia.

Recommendation 7.2: JWP must further consult with states and territories about participation in the ANZHFR so that issues such as access, use and disclosure of data derived from this registry will need to be prospectively negotiated to support pricing and funding determinations. These arrangements will also be necessary if the Commission, states and territories are to play a role in the provision of timely, comparable hospital-level information on hip fracture care to clinicians and hospital managers. Importantly, the National Health Information and Performance Principal Committee (NHIPPC) could serve as a national forum for IHPA and the Commission to resolve these important issues.

Recommendation 8: Further consultation with stakeholders on the design approach for the best-practice pricing model for hip fracture care should be undertaken following the Pricing Authority and Commission Board endorsement and be complementary to development of an implementation plan.

Recommendation 9: A phased approach to implementation of a national hip fracture best-practice price should be taken. This should be based around the timing of the development and implementation of the Hip Fracture CCS indicators, and in recognition of IHPA and the Commission's Data Plans and Work Plans, and in recognition of the work and time required to establish processes to support the routine provision of timely, hospital-level comparable information on hip fracture care.

Recommendation 10: An evaluation process should be built into any implementation plan for an Australian national approach to best-practice pricing in hip fracture care.

1. Introduction

This report to the Joint Working Party on Pricing for Safety and Quality in Australian Public Hospital Services (JWP) of the Independent Hospital Pricing Authority (IHPA) and the Australian Commission on Safety and Quality in Health Care (the Commission) outlines a potential approach and requirements for implementing national best-practice pricing and the provision of hospital-level safety and quality data for hip fracture care in Australian public hospitals.

In June 2014, the JWP established the Sub-Committee on Best-Practice Pricing and Clinical Quality Information (the Sub-Committee) to address issues in relation to best-practice pricing schemes supported by evidence, with a particular focus on hip fracture. Hip fracture was selected as the initial area of focus because it is a well-defined patient cohort and a there is reasonable consensus on best-practice management within Australia.

This report supported the JWP by offering advice in relation to the Sub-Committee's terms of reference to explore:

- a. the requirements and feasibility of introducing best-practice pricing in Australian public hospitals, with a specific focus on hip fracture patients; and
- b. an appropriate mechanism and format for providing safety and quality data to clinical teams and hospital leaders to drive quality improvement in ways that support implementation of best-practice in care teams and hospital leaders to drive quality improvement.

The Sub-Committee's terms of reference are provided at Appendix A.

Given this context, this report comprises:

- background and context, including the current approach to Australian public hospital pricing, an outline of, and evidence for, best-practice pricing, current local and international hip fracture best-practice pricing schemes and existing hip fracture care best-practice models;
- a discussion of the technical aspects and requirements for an Australian hip fracture care best-practice pricing model;
- a discussion of the complementary provision of data and information to drive quality improvement; and
- a series of recommendations for consideration by the Commission Board and the Pricing Authority.

2. Background

2.1 Activity Based Funding overview

The majority of public hospital services in Australia are funded on the basis of activity through the introduction of a national activity based funding (ABF) system under the *National Health Reform Agreement 2011* (NHRA). The National Efficient Price (NEP) is the basis for the price paid for an ABF activity. The NEP is empirically derived based on activity and cost data from Australian public hospitals.

Every episode of care provided in Australian public hospitals has a price derived from applying a price weight to the NEP. This is modelled using activity and cost data from the majority of Australian public hospitals. This means that the price of a particular service is constructed from the cost and case-mix data from hospitals.

In the national ABF system, IHPA's current pricing approach is based on the average cost at the patient level, and payments are made with adjustments for certain factors (e.g. remoteness, Indigeneity). Hospitals receive separate payments across emergency, admitted acute, admitted subacute and non-admitted episodes of care.

The National Weighted Activity Unit (NWAU) is the unit of measure of activity for the national ABF system. The NWAU is weighted by complexity, so an admission which is more complex and costly attracts a higher NWAU than an admission that is less complex and less expensive. The NEP is the price for a single NWAU. The NWAU is multiplied by the NEP to calculate the total efficient price of a public hospital service.

For example, in Australia there are approximately 21,000 hip fracture separations per annum at a cost of just under \$350 million to the health care system. Based on the 2015-16 NEP (\$4,971) if one of these hip fracture patients presented to hospital and was assigned to one of the hip fracture Australian Refined Diagnosis Related Groups[†] (AR-DRGs) this episode would have a weight of 3.0929 NWAUs and be priced at \$15,375.

2.2 Joint Working Party between IHPA and the Commission

Since 2012, the Commission and IHPA have examined potential options to incorporate safety and quality into national pricing of Australian public hospital services. The JWP was established to advise the two agencies on this work.

The evidence examined by the JWP indicated that quality of care in the hospital setting is best influenced by the systematic and timely provision of information to clinical teams on quality and performance. This led to the JWP establishing a Clinical Reference Group to develop and pilot a national set of high priority hospital complications and explore how information can be provided to clinical teams in the hospital environment to improve safety and quality. Along with commissioning other work, the JWP established the Sub-Committee to address issues in relation to best-practice pricing schemes supported by evidence, with a particular focus on hip fracture. The intention was that this work would be informed by best-practice pricing principles, domestic and international experiences, work of the Clinical Reference Group and work by the Commission to develop a Hip Fracture Care Clinical Care Standard (CCS). This document is the final report from the Sub-Committee which was endorsed by the JWP on 29 June 2015.

[†] I08B Other Hip and Femur Procedures without Catastrophic Complications and/ or Comorbidities, assuming average length of stay and that no patient adjustments (such as remoteness or Indigeneity) are applied.

2.3 Best-practice pricing principles

Best-practice is commonly specified through clinical standards, guidelines and clinician consensus. Best-practice pricing describes purchasing of healthcare services for a specific procedure or intervention at a price that reflects the elements that constitute best-practice. The approach described in this report encompasses best-practice pricing and providing clinical quality information as mechanisms to improve the quality of care and health outcomes.

Under a best-practice pricing model, provider remuneration is set proactively, based on the expected and agreed cost of providing an evidence-based package of services or elements for an intervention. This is in contrast to other approaches where fees are set based on *ex post* calculation of average costs, or through funder-provider negotiation. The best-practice pricing approach incentivises care that maximises the probability of optimal outcomes.

Behavioural economics and implementation science feature in the literature on development of best-practice pricing schemes. The motivation (utility functions) of individual practitioners is difficult to analyse and predict.¹ These functions become even more complex at the aggregate level of clinical teams and hospitals. Mehrotra et al (2010) also stated that the psychology of how people respond to incentives is not considered enough in the design of pricing incentives in healthcare (refer to Appendix B).² To account for this complexity, the Sub-Committee explored the development of a best-practice pricing approach complemented with providing meaningful data and information to clinicians.

The evidence examined to date supports investigating schemes based on a best-practice pricing model, and focusing on clearly delineated interventions or procedures. The common characteristics of successful best-practice pricing initiatives are:³

- i. **Clinically relevant** and built on an explicit evidence base.
- ii. **Uncomplicated** and, where possible, focused on **outcomes** of care.
- iii. Based on **reliable and timely data** that is trusted by clinicians.
- iv. Aimed at **discrete clinical interventions** and acute care (e.g. surgical procedures rather than care of chronic conditions).
- v. Impact/outcomes correlate with the size of the incentive (**materiality**).
- vi. Rewards or incentives are distributed to, or reinvested at, the **clinical level** (or at the level where behaviour change needs to occur).
- vii. **Aligned** with other quality improvement initiatives and broader policy objectives.
- viii. Clinician-led, with **support** provided to change behaviour.

Clarity on who to pay, what to pay for, the criteria for bonuses or penalties and how much to pay is important in the technical design of a best-practice pricing scheme.⁴

Therefore, Australian national best-practice pricing models should include these principles:

- Who to pay will be determined in line IHPA's current pricing approach, where Local Hospital Networks would receive the best-practice pricing payment
- What to pay for will be established by determining best-practice indicators
- When it comes to how much to pay, it has been suggested that the optimal incentive size should "follow the Goldilocks principle: not too little, but not too much".⁵ Local experience in hip fracture care from Australian states reflects this, as outlined below.

There are local and international experiences in incentivising best-practice hip fracture care to be drawn on, which are outlined below.

2.3.1 Australian initiatives

Two Australian jurisdictions have implemented specific best-practice pricing programs in hip fracture care. A third, South Australia, is considering a similar initiative in 2015-16. The Sub-Committee's recommendations are informed by testimony received from senior health officials from these three jurisdictions, as well as from a senior health official from Victoria regarding relevant initiatives that cross clinical areas.

A summary of each of the initiatives is provided below. For more detail, refer to Appendix E.

Table 2. Australian best-practice pricing initiatives specific to hip fracture care.

Jurisdiction	Program Name	Year Implemented	Details
WA	Hip Fracture Premium Payment	2012/13	From 2012/3, a bonus payment of \$200 is awarded per patient (aged >65 years) in tertiary hospitals where six clinical indicators are met.
QLD	Quality Improvement Payment	2012/13	In 2014/15, the price was reduced for a weighted activity unit for fractured neck of femur (patients aged >60 years) by 20 per cent if the time to surgery is over 48 hours.

2.3.2 National Health Service Best-practice Tariffs

The United Kingdom's National Health Service (NHS) best-practice tariff (BPT) program pays differential prices for a set of hospital procedures/interventions in which specified processes and multiple elements of best-practice are met. The fragility hip fracture BPT, one of several conditions to which an incentive has been applied, was established in 2010-11 and has evolved to reward care meeting the following elements:

Table 3. The eight NHS Fragility Hip Fracture clinical care elements

1	Surgery within 36 hours of admission
2	Shared care by surgeon and geriatrician
3	Admission using a care protocol agreed by geriatrician, surgeon and anaesthetist
4	Assessment by geriatrician within 72 hours of admission
5	Pre- and post-operative abbreviated mental test score (AMTS) assessment
6	Geriatrician-led multidisciplinary rehabilitation
7	Secondary prevention of falls
8	Bone health assessment

In a 2012 audit of the BPT program, the Audit Commission found that NHS organisations found the detail of the payment models difficult to understand and sometimes complex to implement.⁶ Consistency in achieving all of the elements in every case was deemed to be the main stumbling block within the hip fracture payment in delivering both high quality care and claiming the payment. Data quality was also an issue with Primary Care Trusts often making payments without proper evidence of compliance.

A more recent evaluation found evidence of improvements in process quality and outcomes for the hip fracture BPT.⁷ Testimony to the Sub-Committee by individuals in the UK suggests that the availability of comparable clinical information was essential to early and successful efforts to improve outcomes. In this expert testimony, it was claimed that there was a

reduction in mortality of patients with hip fracture associated with the BPT. Most importantly, in addition, the evaluations of the UK experience suggest that good quality care costs less.

In 2014/15, the NHS introduced a new BPT for hip and knee replacement. Effectively this is a combination of pay for data and pay for patient reported outcome measures. This appears to be a signal from the NHS that: (a) the completeness, accuracy and utility of clinical information may have been deemed pre-requisite to supporting efforts to improve patient care in these new clinical areas, and (b) that 'pay for data and useful measures' would commence before paying for shifts in delivery of care.

Australian public hospital services are yet to develop standardised Patient Reported Outcome Measures. Further discussion of available data sources is referred to in Chapters 5 and 7.

2.3.3 Lazio (Italy)

The Lazio region in Italy also recently introduced a tariff mechanism for hip fracture surgery to reduce inappropriate admissions and improve quality of care. The full Diagnosis Related Groups (DRG) rate is paid only for patients that underwent surgical treatment within 48 hours of admission. Rates for surgeries performed more than 48 hours after admission are proportionately reduced on the basis of the interval between admission and surgery.

An impact study concluded that elderly patients with hip fracture benefited from improved quality of care, especially in hospitals that only used the DRG system. This was a short term evaluation with only one year of data pre and post introduction of the new payment method.⁸

Recommendation 1.1: IHPA, in its national price setting role, should consider the Sub-Committee's and JWP's advice in relation to best-practice pricing to support best-practice care for hip fracture.

Recommendation 1.2: The design and implementation of a best-practice pricing scheme requires reliable information on quality of care to determine eligibility for funding. Implementation should be coupled with the provision of timely, relevant and comparable clinical information being fed back to clinicians. Jurisdictions may want to target their efforts towards this aspect.

3. Best-practice in hip fracture care: national consensus

Designing a best-practice pricing model and a mechanism for providing reliable information on quality of care is contingent on defining best-practice care and agreeing on the necessary elements that constitute best practice.

3.1 *The Australian and New Zealand Guideline for Hip Fracture Care*

The Australian and New Zealand Guideline for Hip Fracture Care was approved by the National Health and Medical Research Council and published on their Clinical Practice Guidelines portal in 2014. It is designed to help professionals providing care for hip fracture patients to deliver consistent, effective and efficient care. The guideline includes aspects of care for hip fracture patients from diagnosis and preoperative care, through to post-operative mobilisation strategies, models of care, and patient and carer perspectives. For further information, the guideline is available at:

<http://www.anzhfr.org/images/resources/Guidelines/ANZ%20Guideline%20for%20Hip%20Fracture%20Care.pdf>.

3.2 *The National Hip Fracture CCS*

The Commission is developing a series of CCS for a specified set of conditions and procedures. The Standards specify a set of elements (quality statements) that describe the elements of best-practice for a clinical condition. The standards are being developed in close consultation with clinical experts and consumers.

The hip fracture CCS was released for public consultation in May 2015 (Appendix C). It is due for publication in early 2016. Its finalisation will be instrumental in designing the national best-practice pricing model. For example, the group developing the Standard has discussed limiting it to the acute episode of care, and considered an element relating to re-fracture prevention. The former has clear implications for the model, while the latter would prove challenging to integrate with a financial incentive.

Recommendation 2: Existing CCS and national guidelines should be used as a basis of a best-practice pricing approach for hip fracture care, in particular the Hip Fracture CCS established by the Commission in 2015.

4. Designing a national best-practice pricing model for hip fracture care

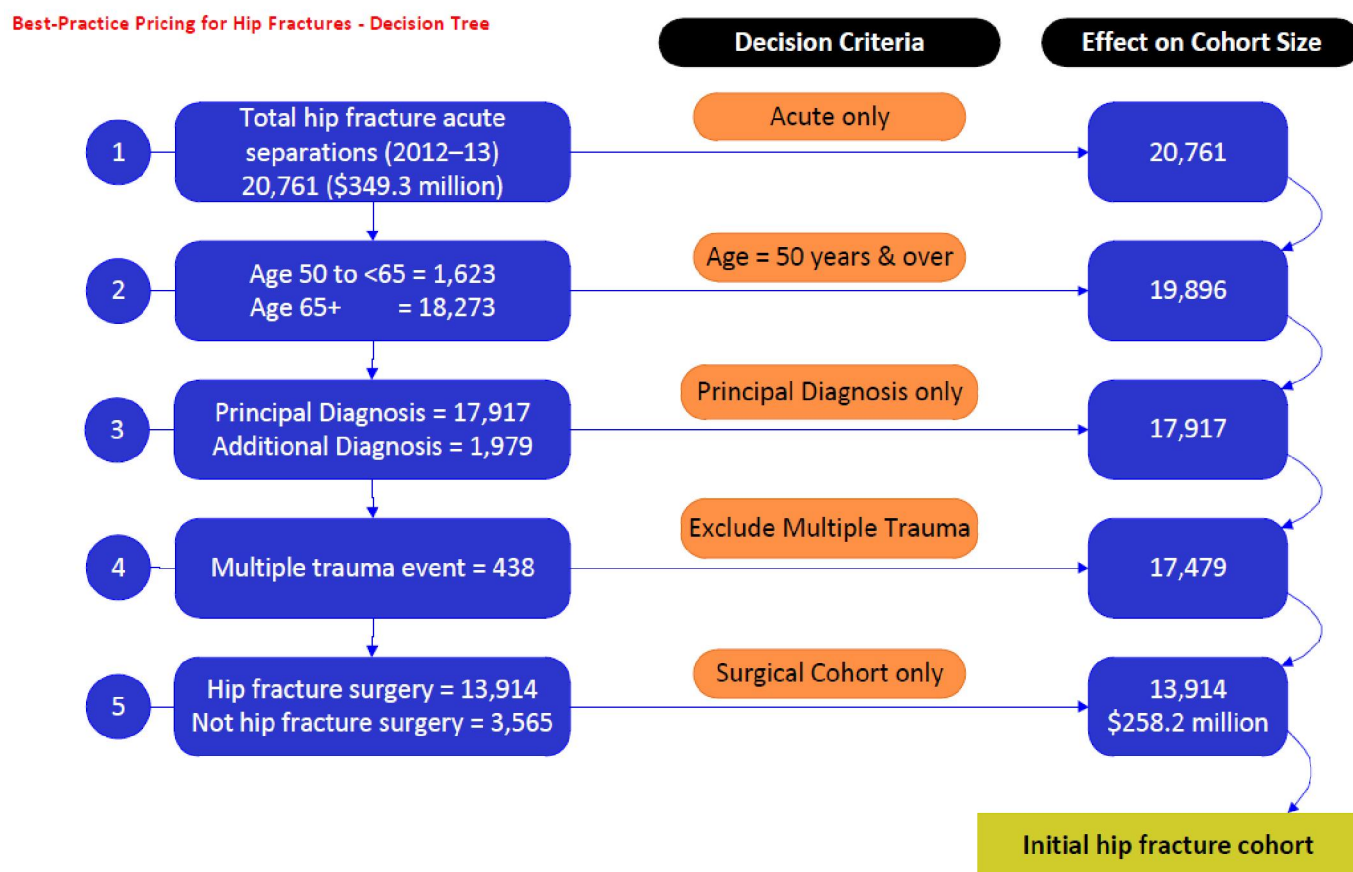
This chapter discusses the summary analysis of national hip fracture separations based on the most recently available national costing and activity data. The analysis uses the relevant hip fracture diagnosis and procedure codes in the ABF national data sets to inform the hip fracture cohort selection and a corresponding pricing approach.

4.1 Defining the target separations and episodes of care

Analyses of national hip fracture cost and activity data were conducted to define the target population. In summary, in 2012-13 there were 20,761 acute hip fracture separations in public hospitals nationally at a total cost of \$349.3 million.

The Sub-Committee further refined the analysis to establish a target hip fracture cohort (Table F1, Appendix F) based on decisions relating to factors including care type, patient age, principal and additional diagnosis, procedure and AR-DRGs. The algorithm is represented in Figure 1 with supporting detailed analysis included in Appendix F. A summary of the subsequent effect on the cohort size from each stage of the Sub-Committee's decision logic algorithm follows.

Figure 1. Target cohort for a best-practice pricing approach to hip fracture care



4.1.1 Target Age

In 2012-13, eighty-eight per cent of the total acute hip fracture separations, at a cost of \$297.3 million, were for patients aged 65 years or more and 7.8 per cent were for people aged 50 to 65 years. Separations for patients aged 50 years and over account for 95.8 per cent of activity and 94.4 per cent of the cost of care for acute hip fracture separations across all hospitals that participated in the National Hospital Cost Data Collection (NHCDC), (Table F2, in Appendix F).

The NHS's BPT for Fragility Hip Fracture targets patients aged 60 years or more and Queensland and Western Australia target patients 60 and 65 or more years of age respectively, in their payment models.

The Sub-Committee received clinical advice and conducted analyses that suggest that a national best-practice pricing approach should target separations for patients aged 50 years or more because Aboriginal and Torres Strait Islander peoples comprise a disproportionately higher proportion of hip fracture patients aged 50 to 65 years (5.7 per cent) than non-Indigenous Australians due to the particular health needs of Indigenous Australians.

4.1.2 Target episode of care

In relation to episode of care decisions, IHPA's current approach is to determine prices separately across emergency, admitted acute, admitted subacute and non-admitted care types. As the Commission's Hip Fracture CCS focuses on the acute episode, particularly the timely receipt of surgery for those who warrant surgical intervention, the Sub-Committee's advice is to focus a national best-practice pricing approach on the admitted acute episode measured from the time of presentation at the initial emergency department. This incentivises both hospitals to perform timely surgery and to actively facilitate timely patient transfers. For more information, refer to 4.2.4 below. For some hospitals, there may be geographical challenges in this. However, from a patient perspective delays at the non-operating hospital may have a significant effect on patient outcomes.

Agreement on this recommendation among Sub-Committee members was not universal, though all members agreed on the importance of subacute care to a patient's resultant health status. The lack of existing information systems that follow separation of patients across their care types, however, was seen as a sizable issue to resolve before best-practice pricing could be attributed across the full pathway of care.

4.2 Defining best-practice hip fracture care for the purposes of pricing

4.2.1 Target cohort based on principal diagnosis

Eligible hip fracture episodes are those with diagnosis codes as outlined in Table F1 in Appendix F. Of the 19,896 admitted acute separations for patients aged 50 years or more, the data show that there were 17,917 separations (90.1 per cent) where hip fracture was the principal diagnosis. This represents 87.9 per cent of hip fracture costs for this cohort (Table F3, Appendix F). This means that the majority of activity and cost is attributable to cases where a hip fracture is the primary reason for an admission.

Separations for patients with a hip fracture as an additional diagnosis were excluded from the patient cohort selection following clinical advice that the most prevalent principal diagnoses for these episodes related to follow up care after surgery, such as rehabilitation type services.

4.2.2 Additional adjustment to further refine the cohort

The analysis showed that there was a relatively small number of cases (n=438) where the hip fracture diagnosis was related to a multiple trauma event (Tables F4 and F5, Appendix F) and the Sub-Committee advised that the consequential serious or life threatening issues, such as a severe head injury or multiple fractures, would directly affect the ability of clinicians and/or the appropriateness of delivering on some of the quality standards, particularly time to surgery. Therefore, multiple trauma episodes were excluded from the target cohort.

Hip fracture surgery was defined using principal or additional procedure codes as outlined in Table F6 in Appendix F. The analysis showed that hip fracture surgery was performed in 13,914 episodes (Table F7, Appendix F).

There were 968 episodes where patients were on anticoagulants. The group considered excluding these from the cohort as these medications may directly affect meeting the time to surgery indicator. The Sub-Committee also noted that the Queensland approach also excludes anticoagulant use. However, the Sub-Committee decided that patients with hip fracture who are on anticoagulants should remain in the target cohort as anticoagulant use is not necessarily a barrier to treatment; other medical issues are not excluded; and anticoagulant use is not comprehensively captured in the administrative data set.

4.2.3 Analysis on non-surgical separations

Further analysis of the separations (n=3,565) that did not have the nominated surgical procedures showed there were 2,038 cases where the patient was transferred to another acute hospital. It is likely that many of these transferred patients had surgery at the second hospital and, if they did, these separations would be included in the initial cohort (13,914 separations) discussed in Section 4.2.2.

690 of these patient separations went home and a further 488 patient separations were transferred to subacute care types such as palliative care or rehabilitation (see Table F9, Appendix F).

4.2.4 Initially targeting hospitals that undertake hip fracture surgery

Best-practice pricing is recommended for both episodes with surgery and without surgical interventions to introduce financial incentives into the system to deliver good quality care and to prevent unintended incentives toward any particular approach to management of hip fractures.

Nonetheless, the Sub-Committee emphasised that the strongest incentive for quality care created through the Hip Fracture CCS (described in Chapter 3) most closely aligns the care provided in hospitals performing surgery during the acute period of an admission. The Sub-Committee advised that IHPA should develop a national best-practice price that incentivises the key elements of the Hip Fracture CCS.

The Sub-Committee noted the evidence that time to surgery has high predictive power for patient outcomes. For the time to surgery indicator, the Sub-Committee's advice is that the 48-hour time limit should commence upon arrival to the emergency department and, for patients who are transferred from other hospitals for surgery, this time should commence from arrival at the initial emergency department. There was some debate about the terminology of '48 hours' compared with the Hip Fracture CCS quality statement which says 'surgery on, or the day after, presentation with hip fracture'. The Sub-Committee has

maintained its terminology consistent with the draft CCS, understanding that this may change dependent on the current public consultation around the standard.

As some patients initially present at a hospital with limited surgical infrastructure, such as small regional and remote hospitals, before being transferred to large or major hospitals for surgery, the Sub-Committee's advice is that the operating hospital should receive the best-practice payment if the best-practice indicators are met. Patients who present to an initial remote hospital should still be included in the cohort. The rationale is as follows:

- i. The best-practice pricing model should ensure compliance with the Clinical Care Standard and match its indicators. (The draft CCS is currently out for consultation and all feedback, including for the 48-hour target, will be considered before the CCS is finalised).
- ii. It encourages appropriate care, in that remote hospitals should have 'upstream' coordinated care networks to ensure that the management of the patient is effective and the patient gets to the incentivised operating hospital as quickly as possible
- iii. There should be no positive or negative discrimination in the best-practice pricing approach based on remoteness, noting that networks should be aware of the referral patterns in their areas
- iv. Often these patients have had longer to travel to present to the remote service, and so they have already experienced delays in care compared with metropolitan hospitals
- v. Non-ABF'd hospitals have no incentive from a pricing perspective which encourages the operating hospital to facilitate timely admission to achieve the best-practice price
- vi. In IHPA's National Efficient Price determination (2014-15), there are adjustments for admitted acute (and admitted subacute care) episodes where patient postcode is listed as outer regional, remote and very remote, at 8%, 16% and 22% respectively.

Commencing the time to surgery target from presentation to the emergency department at the initial hospital incentivises the hospital that performs the surgery to actively facilitate timely patient transfers and mitigate the perverse risk of gaming the time limit by holding patients at the hospital where the patient initially presents.

The Sub-Committee's advice therefore is that the national best-practice price should initially be targeted at episodes where hip fracture surgery is undertaken. The Sub-Committee also advised that IHPA should work with jurisdictions, clinicians and other stakeholders to consider whether additional steps are required for the non-surgical cohort to incentivise quality care and to prevent unintended incentives toward any particular treatment.

4.2.5 Target AR-DRGs

After the exclusions discussed in Sections 4.1.1 to 4.2.2 were applied to the data, the initial target hip fracture surgical cohort includes 13,914 separations at a cost of \$258.2 million. Table F10 presents the initial hip fracture surgical cohort grouped by AR-DRG which shows that four AR-DRGs account for 99.2 per cent of activity and 97.5 per cent of cost. The NHS BPT determined that episodes need to be assigned to specified hip fracture Health Resource Groups as part of the eligibility criteria for receiving the premium payment (Appendix E).

The Sub-Committee therefore recommended that in establishing a best-practice price, IHPA should have regard to limiting the number of AR-DRGs eligible to receive the best-practice price incentive to the top four AR-DRGs.

Recommendation 3: IHPA, in its national price setting role, should consider implementation of a best-practice pricing model for hip fracture care. This should include:

- Targeting the acute episode of care in public hospitals for people aged 50 years and over;
- Targeting episodes with a hip fracture diagnosis code as specified in Table F1, Appendix F as a principal diagnosis;
- Excluding multiple trauma events as specified in Table F4, Appendix F;
- Targeting episodes that have hip fracture surgery as specified in Table F6, Appendix F;
- Targeting episodes assigned to the AR-DRGs I03A, I03B, I08A, and I08B that account for the majority of patients.

In 2012-13 there were 20,761 acute hip fracture separations in public hospitals nationally at a total cost of \$349.3 million. If these criteria were used to establish an initial hip fracture cohort then best-practice pricing would apply to 13,914 separations at a total cost of \$258.2 million.

4.3 Costing and pricing best-practice hip fracture care

The next steps in a national best-practice pricing model after determining an initial target hip fracture cohort are to cost and price the best-practice delivery of admitted acute care.

4.3.1 The incremental cost of best-practice hip fracture care

Costing best-practice care may be undertaken through analysing existing data collections with the potential to augment this analysis with detailed investigations into the costs of providing best-practice care at the hospital level. The key challenge to overcome in costing best-practice care will be costing the elements of care that are not readily captured in existing data collections.

IHPA would then establish the incremental cost for best-practice care for the target hip fracture cohort, then compare the cost of best-practice care to the average cost of care. The incremental cost may be higher than, lower than or the same as the average cost of care.

For example, if delivering best-practice care required a number of hospitals to increase the health and medical workforce for hip fracture care or invest in new data collection systems, then the incremental cost may be higher than the average cost, at least in the initial years. Conversely, reducing time to surgery (with a flow-on effect of decreasing length of stay) may result in an incremental cost that is lower than the average cost because length of stay is a major cost driver.

Understanding whether the incremental cost of best-practice care is higher, lower or the same as the average cost is important because incremental cost will inform the best-practice incentive price differential. If the incremental cost is lower than the average cost, the way in which the incentive price differential is determined will be different because adjustments to the NEP are normally based on empirical cost differences.

4.3.2 Pricing best-practice hip fracture care

IHPA's existing pricing approach includes a number of price adjustments where there are material patient-based empirical cost differences that are not adequately recognised in the classification systems (such as Indigenous status, remoteness and Intensive Care Unit usage). In establishing the best-practice pricing model, IHPA would determine a new adjustment to the NEP (a best-practice hip fracture adjustment) that may or may not be revenue neutral.

A best-practice hip fracture adjustment where the incremental cost of best-practice care is higher than the average cost of care is consistent with the existing approach of basing adjustments on empirical cost differences. The Sub-Committee noted that a key learning from the NHS BPT for fragility hip fractures is that there needed to be an "incentive" price and it needed to be material enough to encourage the service providers (both managers and clinicians) to change practices and deliver care that met the best-practice criteria. This scenario would require existing funds to be re-allocated from other patients, or additional funding to pay for the price adjustment.

However, a best-practice hip fracture adjustment where the incremental cost of best-practice care is the same as or lower than the average cost of care would be a departure from the existing approach because there would not be an empirical cost differential on which to base the adjustment.

Recommendation 4.1: IHPA should use a purpose designed study to cost best-practice hip fracture care to determine the incremental cost of best-practice care compared to the average cost of care.

Recommendation 4.2: IHPA should determine a best-practice hip fracture care adjustment that provides an incentive for service providers (clinicians and managers) to change practices and deliver care that meets the best-practice criteria.

Recommendation 4.3: IHPA should signal its intention to explore the implementation of a national best-practice price for hip fracture care through the *Pricing Framework for Australian Public Hospital Services 2016-17* and, if new data elements are required to support its implementation, through the *IHPA Three Year Data Plan 2016-17 to 2018-19*.

5. Providing quality data to drive improvement

The design and implementation of a best-practice pricing scheme requires reliable information on quality of care to determine eligibility for funding, and its implementation should be coupled with or preceded by the provision of timely, relevant and comparable clinical information fed back to clinicians.

5.1 What information is needed to support quality improvement and payment determinations?

The evidence examined by the JWP indicates that quality of care in the hospital setting is best influenced by the systematic and timely provision of comparable information to clinical teams on quality and performance. Accordingly, the JWP asked the Sub-Committee to provide advice on an appropriate mechanism and format for providing safety and quality data to clinical teams and hospital leaders.

An NHS payment reform report recently described data as a “key limitation to the design, implementation and success of payment systems”⁵ and, at the same time, those familiar with the NHS BPT report that the increased availability of comparable performance information to clinicians on clinical quality of hip fracture care was instrumental to the success of this initiative.

There are two main sources of nationally consistent information on patients who are admitted with hip fracture – the NNAPED and the APC. There are other sources of valuable information on clinical quality, though these data are not yet nationally available (e.g. ANZHFR, see Table 2) or are not nationally consistent (e.g. patient experience data).

Table 4: The Australian and New Zealand Hip Fracture Registry.

The ANZHFR is a clinically owned and clinically driven Registry which provides real time comparative data for hospitals. It has representation from a number of key professional bodies and organisations with an interest in hip fracture care.

The development of the ANZHFR will allow for timely comparison of meaningful data around hip fracture care. It aims to understand practice and trigger the case for change in places where care might be improved. For more information, the registry details are at <http://www.anzhfr.org/home/history>.

Data collection commenced in 2014 with 14 Australian hospitals now collecting data and 17 more in the pipeline awaiting ethics approvals (May 2015). The ANZHFR dataset is modelled on the UK’s National Hip Fracture Database, with modifications for the Australian context. It includes the majority of the key measures that the Commission is considering in the development of the Hip Fracture CCS. However, it has some limitations with only a handful of Australian hospitals currently collecting and recording data in the registry. Data collection is also currently undertaken in a voluntary capacity.

Further investment in the registry will be required to enable all states and territories to collect the measures for purposes of a best-practice pricing approach. These issues are discussed in Chapter 7.

Any clinical quality registry used for best-practice pricing in hip fracture care must meet existing national standards, including having an amenable governance structure and national coverage as per the Commission's Framework for Clinical Quality Registries.⁹

If IHPA, or states and territories elect to commence best-practice pricing using existing nationally consistent information on patients who are admitted with hip fracture, then the Sub-Committee's advice must be specific about the degree to which CCS indicators in the Commission's Hip Fracture CCS could be measured with the NNAPED and APC. Appendix C contains the full list of indicators at time of public consultation of the CCS. It includes:

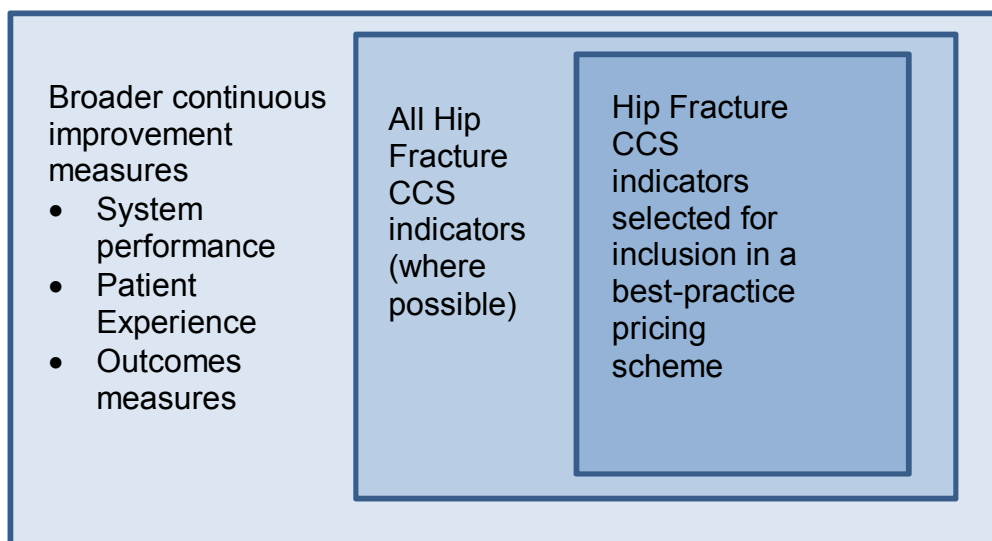
- Quality statement 1 – Care at presentation
- Quality statement 2 – Pain management
- Quality statement 3 – Orthogeriatric model of care
- Quality statement 4 – Timing of surgery
- Quality statement 5 – Mobilisation and weight bearing
- Quality statement 6 – Minimise the risk of another fracture
- Quality statement 7 – Transition from hospital care.

The indicators for each of these quality statements are included in the ANZHFR dataset. Furthermore, the Sub-Committee heard that there may also be a need for information beyond that required to support reporting on the Hip Fracture CCS that can be used by clinicians to support quality improvement. Such information would include, for example:

- System performance measures – such as length of stay and surgery cancellation rates
- Patient experience measures not covered by the CCS
- Outcomes measures – that can demonstrate the benefits of quality improvements over time, including Patient Reported Outcome Measures
- Information on cost drivers.

Figure 2 illustrates how information to inform best-practice price and funding determinations can be considered a subset of information needed across all the Hip Fracture CCS, which can be considered a subset of information that clinicians may desire to support quality improvement. Appendix G provides a broad list of possible measures across these categories.

Figure 2: Subsets of continuous improvement information in relation to hip fracture.



5.2 The audience and timing of providing quality improvement information

The target audience for quality improvement information is clinical teams and hospital managers. The requirements of this audience have particular implications for the timing of information provision and the appropriate level at which it is provided. Clinical information should be frequently used to drive improvements, and with a higher level of detail than the information that would be required for the purposes of determining best-practice for pricing purposes.

To best support clinical teams and hospital leaders to drive continuous improvement, the provision of comparable information would need to commence before a best-practice pricing model. This will give clinicians and hospital managers an understanding of the baseline for continuous improvement before any form of incentive pricing takes effect.

A determination in relation to the timeliness and frequency of this information is important to inform and enable monitoring of continuous improvement initiatives by clinicians and hospital managers. This might initially mean providing information at six-monthly intervals, but in time this would ideally increase to quarterly provision.

Recommendation 5.1: Based on the advice of the Sub-Committee, the ACSQHC and IHPA should determine which of the Hip Fracture CCS indicators will be used to determine whether best-practice has been delivered.

Recommendation 5.2: The Hip Fracture CCS indicators selected for inclusion into a national best-practice pricing model should be coupled with defined, more comparable information be provided to support clinical improvement than is needed for pricing and funding determinations.

Recommendation 5.3: This quality improvement information should be provided through the ANZHFR to Local Hospital Networks and public hospitals in advance of the commencement of any best-practice pricing model on a quarterly basis (even if initially provided on a six-monthly basis).

6. Preferred initial national model for best-practice pricing of hip fracture care

The preferred initial national model for best-practice pricing for hip fractures would require a set of indicators to be established so that it can be determined whether best-practice had been achieved.

The Sub-Committee reviewed the Hip Fracture CCS quality statements and associated indicators (included in Appendices C and D) and selected an initial set of indicators.

The Sub-Committee considered that the indicators need to be meaningful to patients and clinicians, simple to understand and easy to communicate, feasible to collect, precise, achievable, measurable, and cover a spectrum of the standards.

Members recommended including the following preferred indicators for consideration by the JWP:

- i) Surgery occurred on the same day or the day following presentation for patients who had surgery
- ii) An orthogeriatric model of care was used for patients aged over 65 years, and over 50 years for Indigenous patients
- iii) Remobilisation occurred on the day after surgery (for surgical patients)
- iv) An abbreviated mental state test was conducted for all patients; pre-operatively for surgical patients
- v) A falls and bone health assessment was conducted before the patient was discharged.

Subject to consultation with stakeholders, the Commission and IHPA should determine which of the five indicators are to be included in the initial model. That is, there may be one to five indicators initially chosen in the first iteration of a pricing model.

The preferred initial national model for best-practice pricing for hip fractures would apply the best-practice price to all relevant hip fracture episodes that have met all the agreed indicator(s). That is, if data is supplied for an episode that satisfies that the indicator(s) has/have been met, the best-practice price will apply for that episode.

Beyond the preferred initial national model for best-practice pricing for hip fractures, future iterations of the model may include all aspects of the patient journey. This would be dependent on clinical care standards and indicators being available.

Recommendation 6.1: That the JWP endorse the Sub-Committee's preferred Hip Fracture CCS indicators for best-practice pricing. *Note: the recommendations were endorsed by the JWP on 29 June 2015.*

Recommendation 6.2: Subject to consultation with the relevant stakeholders, IHPA should determine which of the initial set of indicators are to be included in the preferred initial model for best-practice pricing for hip fractures to be applied to surgical patients.

7. Implementation approach

7.1 Using existing data to support pricing and quality improvement

In accordance with established processes, the Sub-Committee envisions that IHPA would work with jurisdictions including through the IHPA Jurisdictional Advisory Committee (JAC) to seek advice and guide implementation of any best-practice pricing scheme. IHPA would signal its intention in relation to best-practice pricing for hip fractures to the Australian community in its *Pricing Framework for Australian Public Hospital Services*.

Following the public consultation around the hip fracture CCS, the Sub-Committee envisions that the Commission might opt to include in its Work Plan activities that support the collection, analyses and provision of timely, comparable hip fracture care information to Local Hospital Networks and relevant public hospitals. These activities would support answers to questions such as:

- How might comparable hospital-level information be routinely created from existing, nationally consistent databases to support efforts to improve hip fracture care?
- How might comparable hospital-level information be routinely created with the new national clinical registry to support efforts to improve hip fracture care?
- How might the Commission support this work?

There are established processes for accessing and using existing national databases through *IHPA's Three Year Data Plan* and the Commission's work plan respectively. If the development of new data elements is required, consultation should occur with jurisdictions and IHPA and the Commission, as these data elements might already exist in state and territory data collections (e.g. time to surgery), or might need to be specified through national data governance processes to support their nationally consistent collection.

7.2 Potential data to support pricing, funding and quality improvement

In the NHS, Queensland and WA, the introduction of best-practice pricing has focused on time to surgery and, in the case of the NHS, full participation in their clinical registry.

The Sub-Committee was advised that the new ANZHFR collects information relevant to many more indicators across the seven proposed Hip Fracture CCS quality statements than existing nationally consistent information systems. However, these ANZHFR data are not yet nationally complete for major and large public hospitals, though hospital participation rates are increasing.

If IHPA was to commence best-practice pricing using some of the proposed Hip Fracture CCS indicators, then it should promote early and rapid adoption of the ANZHFR by public hospitals for future use of this data as a source of clinical quality improvement information as well as for establishing whether best-practice has been met for pricing and funding purposes. The Administrator and the National Health Funding Body would need to access the resultant data for the purposes of funding determinations.

IHPA could promote adoption of the ANZHFR by including a requirement for these data in its *Three Year Rolling Data Plan* or by requiring the data as pre-requisite to be eligible for best-practice pricing. IHPA and the Commission could support national coordination of state and territory effort through the National Health Information and Performance Principal Committee (NHIPPC) and, potentially, facilitate a national approach to funding the registry via the NHIPPC.

Importantly, the ANZHFR has its own governance, funding and ownership arrangements which would need to be considered before implementation of a best-practice pricing model that depends on access, use and disclosure of information derived from ANZHFR data.

Recommendation 7.1: IHPA must include appropriate best-practice data items within their *Three Year Rolling Data Plan* and the Commission similarly within their Work Program, as the mechanism to stimulate both data collection to support clinical improvement and a best-practice pricing approach for hip fracture care in Australia.

Recommendation 7.2: JWP must further consult with states and territories about participation in the ANZHFR so that issues such as access, use and disclosure of data derived from this registry will need to be prospectively negotiated to support pricing and funding determinations. These arrangements will also be necessary if the Commission, states and territories are to play a role in the provision of timely, comparable hospital-level information on hip fracture care to clinicians and hospital managers. Importantly, NHPPC could serve as a national forum for IHPA and the Commission to resolve these important issues.

7.3 Further stakeholder engagement and implementation plans

Engaging and persuading stakeholders of the merits of a national best-practice pricing scheme will be important for clinical behaviour change. Key stakeholders include the Commonwealth, states and territories, Local Hospital Networks, Clinical Colleges, clinicians and consumer groups. The existing Commission CCS Hip Fracture Topic Working Group has also been important to elucidate best-practice. Comprising clinicians, consumers and hospital administrators, this is a valuable group for development of an implementation plan.

A formal communication and consultation strategy will need to be developed to manage expectations, refine the best-practice price, and facilitate positive implementation. Subject to public consultation on the Hip Fracture CCS, further consultation will need to be undertaken with relevant clinical groups. These include, for example:

- Australian Orthopaedic Association
- Royal Australian College of Surgeons
- The Royal Australasian College of Physicians
- Australasian College for Emergency Medicine
- Australian and New Zealand College of Anaesthetists
- Australian and New Zealand Society for Geriatric Medicine.

Recommendation 8: Further consultation with stakeholders on the design approach for the best-practice pricing model for hip fracture care should be undertaken following the Pricing Authority and Commission Board endorsement and be complementary to development of an implementation plan.

A full implementation plan should be developed, but the Sub-Committee envisions that an indicative plan might include phases and key activities as illustrated in Figure 3.

Figure 3. Indicative phasing of a best-practice pricing approach to hip fracture care

Key responsibilities	Phasing of key activities				
Timeframe	2014-15	2015-16	2016-17	2017-18	2018-19
Key communication messages	Hip Fracture CCS		Best-practice pricing approach		Implementation
Key communication targets	Sub-Committee JWP Clinicians	Pricing Authority Jurisdictions Clinicians AHMAC Consumers Colleges	Pricing Authority IHPA Committees AHMAC Jurisdictions Other stakeholders	Pricing Authority IHPA Committees The Administrator AHMAC Jurisdictions Other stakeholders	
Commission	Finalise CCS	Incorporate activities into the Commission's Work Plan	Supports work that ensures baseline comparable information is provided locally	Supports work to enhance the provision of comparable information	Continue work to enhance the provision of comparable information
IHPA	BPP development Create dataset specifications for preferred initial model indicators		BPP signalled in Three Year Data Plan, including new data item(s). Price development.	NEP determination	Implementation
Enhance data infrastructure	Enhance nation-wide participation in the ANZHFR		Data extracts support work to enhance the provision of comparable information and, potentially, the next NEP determination		
		Establish agreements around access, use and disclosure of data to support best-practice pricing			

Recommendation 9: A phased approach to implementation of a national hip fracture best-practice price and provision of clinical quality information should be taken. This should be based around the timing of the development and implementation of the Hip Fracture CCS indicators, and in recognition of IHPA and the Commission's Data Plans and Work Plans. It should also recognise the work and time required to establish processes to support the routine collection and provision of timely, hospital-level comparable information on hip fracture care.

7.4 Evaluation

An evaluation process must be considered a key part of implementation of a best-practice pricing approach in Australia. Lessons learned from the NHS recommended building an evaluation process into the approach from the beginning of development.

The evaluation could consider issues such as the impacts of best-practice pricing; intended and unintended consequences; and should carefully identify how pricing and quality information provision separately and/or concurrently influenced behaviour and health outcomes.

Recommendation 10: An evaluation process should be built into any implementation plan for an Australian national approach to best-practice pricing in hip fracture care.

8. Appendices

- A. Sub-Committee on Best-practice Pricing Terms of Reference**
- B. Suggested design improvements to increase the impact of pay for performance schemes**
- C. The Commission's proposed clinical care standard for hip fracture quality statements**
- D. The Commission's proposed clinical care standard for hip fracture indicators**
- E. International and Australian Hip Fracture Care Best-Practice Pricing Initiatives**
 - a. WA Hip Fracture Premium Payments*
 - b. Queensland Health Fractured Neck of Femur Purchasing Initiative*
 - c. SA Health Transforming Care*
 - d. United Kingdom Fragility Hip Fracture Payment*
- F. Supporting data analysis for Chapter 4 - Designing and implementing the best-practice pricing model for hip fracture care**
- G. Additional potential measures for consideration in a hip fracture best-practice pricing approach**
- H. Reference list**

Appendix A. Sub-Committee on Best-practice Pricing and Quality Information Terms of Reference

TRIM (ACSQHC): D14-28232

TERMS OF REFERENCE

Joint Working Party on Pricing for Safety and Quality in Australian Public Hospital Services (JWP) of the Australian Commission on Safety and Quality in Health Care (the Commission) and Independent Hospital Pricing Authority (IHPA)

SUB-COMMITTEE ON BEST-PRACTICE PRICING AND CLINICAL QUALITY INFORMATION
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1. Purpose

To investigate and advise the JWP on potential approaches to (a) best-practice pricing, and (b) provision of hospital-level safety and quality data in relation to select clinical areas identified as a priority by the JWP.

2. Background

The JWP was established in August 2012 to advise the Commission and IHPA on:

1. Emerging local and international literature on, and evidence for, pricing schemes and mechanisms, including how these would translate to the Australian context.
2. The project aiming to develop and pilot ways in which data and information can be provided to clinical teams in the hospital environment to promote improvement in safety and quality. Specifically, the JWP will provide advice on a proof of concept to test the draft national set of high priority hospital complications in selected Australian hospitals.
3. Ongoing consideration of the objectives of incorporating safety and quality in the pricing of Australian public hospital services, including:
 - a. identifying necessary features of potential schemes
 - b. emerging risks and opportunities unique to the Australian context.
4. Possible options for national implementation of mechanisms identified, studied and piloted, including:
 - a. the potential effects, consequences, risks and benefits to the Australian community of the options identified
 - b. strategies and specific issues for consideration prior to, and as part of, implementation of the identified options, including requirements to obtain the support of Australian governments and other stakeholders.

In early 2014 the JWP established a Sub-Committee to undertake work in relation to the proof of concept to test a draft national set of high priority hospital complications (item 2 above).

In June 2014 the JWP agreed to establish a second Sub-Committee to address issues in relation to items 1, 3 and 4 above, with a particular focus on the selected clinical area of hip fracture.

3. Terms of reference

The Sub-Committee on Best-practice Pricing and Clinical Quality Information (the Sub-Committee) is established to support the JWP by developing advice on proof of concepts in select clinical areas identified as a priority by the Chair of the JWP. Specifically, the Sub-Committee will explore, and advise the JWP on the following:

1. The requirements and feasibility of introducing best-practice pricing in Australian public hospitals, with a specific focus on priority clinical areas, focusing on hip care (fractured hip). This includes:
 - a. closer examination of local and international schemes
 - b. process for adopting or developing a clinical pathway or achieving consensus on 'best-practice', with initial focus on management of fractured hip
 - c. preliminary scoping of a national best-practice pricing model in the Australian public hospital funding context in light of (a) and (b).
2. An appropriate mechanism and format for providing safety and quality data to clinical teams and hospital leaders to drive quality improvement (including patient experience). This mechanism should support implementation of best-practice pricing in priority clinical areas, with a focus on hip care.

The Sub-Committee is not expected to undertake pilot work, or explore mechanisms that would involve public reporting.

In exploring and advising the JWP on these matters, the Sub-Committee will communicate with the appropriate agencies including, but not limited to, the Commission, IHPA and clinical specialty groups.

4. Membership

Member	Position
Dr Diane Watson (Co-Chair)	CEO National Health Performance Authority
Dr Robert Herkes (Co-Chair)	Clinical Director, Australian Commission on Safety and Quality in Health Care
A/ Professor Brian McCaughan	Cardiothoracic surgeon, Board Chair, Clinical Excellence Commission Board Chair, Agency for Clinical Innovation
Dr Stephen Christley	Chief Public Health Officer and Executive Director, Public Health and Clinical Systems at SA Health
A/ Professor Graham Reynolds	Consultant Paediatrician and Associate Dean (admissions) Australian National University Medical School
Dr Karen Luxford	Director Patient Based Care, Clinical Excellence Commission, NSW Health

Ms Janet Anderson (or Commonwealth nominee)	First Assistant Secretary, Acute Care Division Australian Government Department of Health
Prof Bernard Whitfield	Otolaryngology Head and Neck Chair – Royal Australasian College of Surgeons (QLD)
Ms Cindy Schultz-Ferguson	Nominee Consumers' Health Forum
Professor Jaqueline Close	Conjoint Professor, UNSW Consultant Geriatrician, Prince of Wales Hospital
Professor Ian Harris	Professor of Orthopaedic Surgery, University of NSW, Director of surgical specialties, South Western Sydney Local Health District
Ms Frances Diver	Deputy Secretary, Health Service Performance and Programs, Victorian Department of Health

Other attendees

Mr Luke Clarke	Director, Policy Development, IHPA
Mr Luke Slawomirski	Program Manager, the Commission
Ms Janelle Painter	Senior Policy Officer, IHPA
Ms Amanda Mulcahy	Senior Program Officer, the Commission (Secretariat)
Mr Michael Frost	Executive Director, National Health Performance Authority

5. Reporting

The Sub-Committee will provide a report at each meeting of the JWP, as a standing agenda item.

6. Timeframe

These Terms of Reference are effective from date of acceptance until 30 June 2015.

7. Acceptance

Version	Date accepted	Accepted by
1.0	19 September 2014	Dr Tony Sherbon, CEO, IHPA Prof D Picone AM, CEO, the Commission

Appendix B. Suggested design improvements to increase impact of pay for performance schemes²

Commonly currently used design	Suggested Improvement
Incentive given as a lump sum	Divide the lump sum into a series of smaller incentive payments
Relative thresholds (e.g. top 25% of physicians)	Tiered absolute thresholds (e.g. 25%, 50%, 75%, 90%)
Long lag time between care and receipt of incentive	Shorten lag time to as short as possible
Use of withhold payments	Bonus payment or use of deposit contracts
Complex uncertain structure of program (e.g. shared savings program)	Simplify program so that uncertainty minimized
Incentive often given as an increase in fee schedule reimbursement	Decouple incentive payment so that it is given separately, consider a lottery
Dollar incentives	“In kind” incentives

Appendix C. Australian Commission on Safety and Quality in Health Care draft Hip Fracture Clinical Care Standard quality statements

Note: public consultation on this standard is available at
<http://www.safetyandquality.gov.au/our-work/clinical-care-standards/hip-fracture-care-clinical-care-standard/>

Hip Fracture Clinical Care Standard as at May 2015	
1	<p>Care at presentation A patient presenting to hospital with a suspected hip fracture receives care guided by timely assessment and management of the medical conditions, including diagnostic imaging, pain assessment and cognitive assessment.</p>
2	<p>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 as clinically appropriate.</p>
3	<p>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.</p>
4	<p>Timing of surgery A patient presenting to hospital with a hip fracture or sustaining a hip fracture while in hospital, receives surgery on the day of or the day after, where clinically indicated and surgery is preferred by the patient.</p>
5	<p>Mobilisation and weight-bearing A patient with a hip fracture is offered mobilisation without weight-bearing restriction the day after surgery and at least once a day thereafter, depending on the patient's clinical condition and agreed goals of care.</p>
6	<p>Minimise the 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.</p>
7	<p>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 ongoing care that the patient will require after they leave hospital. The plan includes a summary of any changes in medicines, any new medicines, mobilisation, wound care and function post injury, recommendations for future fracture prevention and referral to ongoing rehabilitation if clinically indicated.</p> <p>This plan is provided to the patient and their general practitioner or ongoing clinical provider within 48 hours of discharge.</p>

Appendix D. Australian Commission on Safety and Quality in Health Care draft Hip Fracture Clinical Care Standard indicators

	Supports improvement	Outcome measure
Quality statement 1 – Care at presentation: <ul style="list-style-type: none"> - Indicator 1a: Evidence of local arrangements for the management of patients with hip fracture in the emergency department. - Indicator 1b: Proportion of patients with a hip fracture who have had their pre-operative cognitive status assessed. 	<p>✓</p> <p>✓</p>	
Quality statement 2 – Pain management: <ul style="list-style-type: none"> - Indicator 2a: Evidence of local arrangements for timely and effective pain management for hip fracture. - Indicator 2b: Proportion of patients with a hip fracture who receive analgesia or have documented assessment of pain within 30 minutes of presentation to the emergency department. 	<p>✓</p> <p>✓</p>	
Quality statement 3 – Orthogeriatric model of care: <ul style="list-style-type: none"> - Indicator 3a: Evidence of orthogeriatric (or alternative physician) management during their admitted hip fracture episode of care. - Indicator 3b: Proportion of patients with a hip fracture receiving orthogeriatric (or alternative physician) assessment prior to hip fracture surgery. 	<p>✓</p> <p>✓</p>	
Quality statement 4 – Timing of surgery: <ul style="list-style-type: none"> - Indicator 4a: Proportion of patients with a hip fracture receiving surgery on or the day after presentation with hip fracture.^{∞Φ†*} 	<p>✓</p>	
Quality statement 5 – Mobilisation and weight-bearing: <ul style="list-style-type: none"> - Indicator 5a: Proportion of patients with a hip fracture who are mobilised on day one post-surgery.[†] - Indicator 5b: Proportion of patients with a hip fracture with unrestricted weight-bearing immediately post-surgery. - Indicator 5c: Proportion of patients with a hip fracture experiencing a new Stage II or higher pressure injury during their hospital stay.^{†ψ} - Indicator 5d: Proportion of patients with a hip fracture returning to pre-fracture mobility.[†] 	<p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p>	<p>✓</p> <p>✓</p>
Quality statement 6 – Minimise the risk of another fracture: <ul style="list-style-type: none"> - Indicator 6a: Proportion of patients with a hip fracture receiving a specialist falls assessment prior to discharge from hospital.^{*∞Φ} - Indicator 6b: Proportion of patients with a hip fracture receiving bone protection medication at discharge from the operating hospital. - Indicator 6c: Proportion of patients with a hip fracture readmitted to hospital with another fracture. 	<p>✓</p> <p>✓</p> <p>✓</p>	<p>✓</p>
Quality statement 7 – Transition from hospital care: <ul style="list-style-type: none"> - Indicator 7a: Proportion of patients with a hip fracture who have an individualised care plan at discharge. - Indicator 7b: Proportion of patients with a hip fracture returning to private residence. 	<p>✓</p> <p>✓</p>	<p>✓</p>

Indicators of effectiveness:		
- Indicator 8a: Re-operation of hip fracture patients within 30 day follow up.	✓	✓
- Indicator 8b: Survival at 30 days post admission for hip fracture surgery. [†]	✓	✓

Appendix E. International and Australian Hip Fracture Care Best-Practice Pricing Initiatives

WA Health

WA Health has integrated safety and quality into ABF since 2010. One of three WA performance based payments is for fracture neck of femur (others are for Stroke and Acute Myocardial Infarction). A bonus payment of \$200 is awarded per patient with fracture neck of femur over 65 years of age where all of these six clinical indicators are met:

1	Time to surgery within 36 hours from arrival in ED, or time of diagnosis if an inpatient [‡]
2	Admitted under the joint care of a consultant geriatrician and an orthopaedic surgeon
3	Admitted using and assessment protocol agreed by geriatric medicine, orthopaedic surgery and anaesthetics
4	Assessed by a geriatrician in the peri-operative period (within 72 hours of admission)
5	Post-operative geriatrician-directed multi-professional rehabilitation team
6	Fracture prevention assessments (falls and bone health)

The hip fracture bonus payment is implemented at the three tertiary hospitals in WA. Patients who transfer between hospitals only have the data entered at the operating tertiary hospital. Specifically, the time to surgery item is measured from the time the patient arrived in ED at the operating hospital. Patient level data are collected by hospital staff (usually an Orthopaedic Nurse) within a purpose built online clinical registry. To avoid duplication in collecting data items, approximately 1/3 of items migrate across to the clinical registry from existing Patient Administration System data. Data are then extracted by the Department of Health quarterly for payment to the appropriate Health Service.

Queensland Health

The Queensland Health quality improvement incentive for care of fractured neck of femur relates principally to time to surgery and has evolved over the past three financial years. In 2012-13, a target of 95% for patients admitted as an emergency for fractured neck of femur repair to be taken to theatre within 48 hours of admission was set. If the target was achieved, a bonus payment would be paid to the associated health service. The target was not reached in its first year, and was reduced to 80% in 2013-14. In 2014-15 the program was further amended, and Queensland now reduces the price for a weighted activity unit for fractured neck of femur by 20% if the time to surgery is not achieved (refer to appendix 4). Queensland's lessons learned from this project include:

1. Achievability of the target is essential.
2. Executive buy-in and quarterly performance information feedback at the executive team level is an important motivator.
3. Clinical engagement through networks and individual clinicians is essential during development process because it provides a sense of ownership.

[‡] Note: this is time to surgery from admission to Emergency Department of the operating hospital only

SA Health

At time of writing, SA Health was exploring areas of best-practice pricing. The clinical areas of focus are likely to be stroke and hip fracture, with the aim of aligning to national standards and quality indicators where possible. SA Health is reviewing the programs implemented in Queensland and WA, and will keep the Secretariat informed of progress in the coming months.

NHS Best-practice Tariff Program – Fragility Hip Fracture

The NHS United Kingdom's Best-practice Tariff (BPT) program pays differential prices (tariff) for a set of hospital procedures/interventions in which specified processes and elements of best-practice are met. It is a key feature of the NHS 'payment by results', tariff-based payment system for acute care (i.e. activity based funding).

The aim of BPTs is to reduce unwarranted clinical variation and improve quality of care. The number of clinical areas, conditions and procedures covered by the scheme has grown from four to 18 since its inception in 2010-11. The criteria for selecting BPT clinical areas include:¹⁰

1. High impact (high volume, high variation in practice, or impact on outcomes)
2. A strong evidence base on what constitutes best-practice (and demonstrated benefit and cost effectiveness to the patient)
3. Clinical consensus on the characteristics of best-practice
4. The episode of care has a well-defined start and finish point
5. The care is planned in advance.

The fragility hip fracture BPT rewards care meeting the following specified elements:

Table 1. The eight NHS Fragility Hip Fracture clinical care elements

1	Surgery within 36 hours of admission
2	Shared care by surgeon and geriatrician
3	Admission using a care protocol agreed by geriatrician, surgeon and anaesthetist
4	Assessment by geriatrician within 72 hours of admission
5	Pre- and postoperative abbreviated mental test score (AMTS) assessment
6	Geriatrician-led multidisciplinary rehabilitation
7	Secondary prevention of falls
8	Bone health assessment

Data collection

The data are collected in an online clinical registry at www.nhfd.co.uk. Data are entered by hospital staff with new admissions for hip fracture and collected at 30 days, 120 days and 1 year post discharge. The BPT data items are mandatory fields. Data can be exported at any time into excel to be used by hospitals for local reporting and improvements. An annual report is also commissioned by the Healthcare Quality Improvement Partnership and managed by the Royal College of Physicians.

For hip fracture care, the BPT is disbursed only if all elements of care are completed and submitted to the registry. In effect, the scheme also contains a 'pay for data' component.

Incentive mechanism

The incentive mechanism has been a progressive reduction in the base tariff, and the concomitant introduction of an additional payment for meeting best-practice elements. This is illustrated in Figure 1.

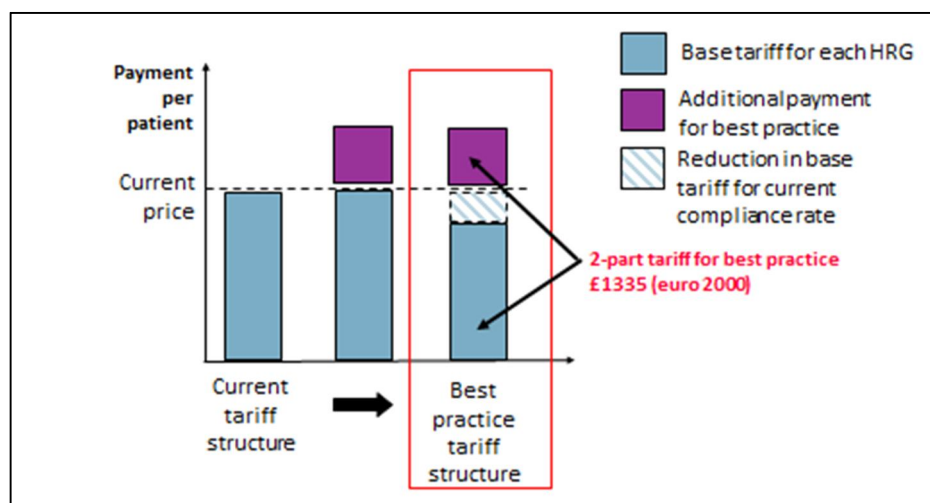


Figure 1. NHS BPT structure and implementation¹¹.

The differential between the base tariff and additional payment has increased since 2010-11,¹² and is now at £1,335. This has been principally achieved by lowering the base tariff and increasing the additional payments (Table 2). The overall payment for hip fracture has been reduced slightly between 2013-14 and 2014-15, in tandem with a reduction of episode-based tariffs across acute services in the NHS as part of a strategy to deliver efficiency dividends.

Table 2. NHS Fragility hip fracture differential between base and best-practice tariff.

Financial year	Differential
2010-11	£445
2011-12	£890
2012-13	£1,335
2013-14	£1,335
2014-15	£1,335

The approach to determining the differential price evolved year by year in consultation with health service managers, senior clinicians and consumers.¹³ To establish the first differential price in 2010-11, a costing exercise was undertaken by the NHS to determine a compliance adjustment to the average price for hip fracture HRGs. The differential between the base and best-practice prices was calculated at 7%, i.e. best-practice care was 7% more expensive than current average (base) care. In 2011-12, the differential was doubled as services improved their compliance with the best-practice elements. It was then then tripled to 21% in 2012-13. The price differential has remained the same since.¹⁴ This is believed to be due to soft intelligence feedback from stakeholder groups. That is, clinicians were wary of the potential of any unintended systemic effects on care if the differential was increased further

(e.g. safety concerns about reprioritizing theatre waitlists).¹³ A list of the 2014-15 base tariffs, best-practice tariffs and differentials for hip fracture HRGs is below in table 3.

Table 3: Base tariffs, BPTs, differential and percentage of base for hip fracture HRGs 2014-15¹⁵.

HRG code	HRG name	Base tariff (£)	Best-practice tariff (£)	Differential	% base
HA11A	Major Hip Procedures category 2 for Trauma with Major CC	7,569	8,904	1,335	18%
HA11B	Major Hip Procedures category 2 for Trauma with Intermediate CC	6,741	8,076	1,335	20%
HA11C	Major Hip Procedures category 2 for Trauma without CC	5,508	6,843	1,335	24%
HA12B	Major Hip Procedures category 1 for Trauma with CC	7,329	8,664	1,335	18%
HA12C	Major Hip Procedures category 1 for Trauma without CC	5,237	6,572	1,335	25%
HA13A	Intermediate Hip Procedures for Trauma with Major CC	5,932	7,267	1,335	23%
HA13B	Intermediate Hip Procedures for Trauma with Intermediate CC	4,549	5,884	1,335	29%
HA13C	Intermediate Hip Procedures for Trauma without CC	4,548	5,883	1,335	29%
HA14A	Minor Hip Procedures for Trauma with Major CC	1,662	2,997	1,335	80%
HA14B	Minor Hip Procedures for Trauma with Intermediate CC	1,052	2,387	1,335	127%
HA14C	Minor Hip Procedures for Trauma without CC	428	1,763	1,335	312%
VA11A	Multiple Trauma Diagnoses score <=23, with Interventions score 1-8	482	1,817	1,335	277%
VA11B	Multiple Trauma Diagnoses score 24-32, with Interventions score 1-8	1,445	2,780	1,335	92%
VA11C	Multiple Trauma Diagnoses score 33-50, with Interventions score 1-8	3,130	4,465	1,335	43%
VA11D	Multiple Trauma Diagnoses score >=51, with Interventions score 1-8	6,657	7,992	1,335	20%
VA12A	Multiple Trauma Diagnoses score <=23, with Interventions score 9-18	2,259	3,594	1,335	59%
VA12B	Multiple Trauma Diagnoses score 24-32, with Interventions score 9-18	3,942	5,277	1,335	34%
VA12C	Multiple Trauma Diagnoses score 33-50, with Interventions score 9-18	5,446	6,781	1,335	25%
VA12D	Multiple Trauma Diagnoses score >=51, with Interventions score 9-18	8,669	10,004	1,335	15%

Results

There has been a considerable increase in the achievement of best-practice elements over the course of the initiative. In the last quarter of 2013, care for 64% of hip fracture patient episodes qualified for the BPT. This figure was 59% for the same period in 2012. Two English hospitals report that none of their patients received care that was eligible for BPT throughout 2013.¹⁶

Overall, hip fracture care has been one of few clinical domains included in the BPT scheme to impact on outcome measures, with a modest but significant reduction in patient 30-day mortality¹². Patient-reported outcomes have not yet been formally evaluated.

Internal reviews of the Hip Fracture BPT have also demonstrated that there was no expenditure by the NHS in implementing the program. The total expenditure on hip fracture care by NHS purchasers has actually slightly reduced year by year (from £320 million in the year prior to the BPT implementation to £295 million two years after implementation).⁴

NHS England 2014-15 National Tariff Payment System Report – Patient Reported Outcome Measures¹⁷

This BPT is the first step towards linking payment to outcomes achieved for patients for the NHS. The system believes that through linking payment more closely to what matters to patients, namely their outcomes and experiences of care, incentives can be created for a more consistent delivery of efficient and clinically effective care.

The aim of the BPT is to reduce the unexplained variation that exists between providers in terms of the outcomes of surgery as reported by patients. The new BPT applies to all elective admissions that generate HRGs HB12B, HB12C, HB21B and HB21C. This BPT replaces the BPT for primary hip and knee replacements set out in previous 2013/14 guidance under the Payment by Results system. Payment of the BPT is conditional on criteria linked to data collected through Patient Reported Outcome Measures (PROMs) and the National Joint Registry (NJR), set out below.

There are considerable differences between individual providers' levels of compliance with both the PROMs and NJR collections. Collecting data on quality of care through PROMs and clinical audits is important as these data underpin high quality care and can inform choices made by commissioners and patients, as well as the development of policy. By linking payment for the BPT to achieving minimum levels of compliance and consent rates, we aim to improve data collection, submission and response rates.

Payment of the new BPT is therefore conditional on two areas of best-practice. The criteria for payment of the BPT are:

1. the provider not having an average health gain significantly below the national average (defined as 3 standard deviations (99.8% significance) below the mean)
2. the provider adhering to the following data submission standards:
 - a minimum PROMs participation rate of 50%;
 - a minimum NJR compliance rate of 75%; and
 - an NJR unknown consent rate below 25%.

Where these criteria are not met, providers will receive a price 10% below the best-practice price.

Health gain will be measured by the condition-specific Oxford hip score and Oxford knee score after applying a casemix adjustment for primary joint replacement procedures only. The casemix adjustment controls for patient characteristics, including the patient's health status before the operation and the average health that would be expected.

Collections of these data are well established so we do not expect this new requirement to be burdensome to providers. These particular collections contain all of the information a commissioner would need to help identify whether a provider is achieving best-practice. As data are regularly updated and published, commissioners will need to use the latest available data sets to assess whether or not providers have met the best-practice payment criteria. These are to be found at:

- PROMs: www.hscic.gov.uk/proms
- NJR: www.njrcentre.org.uk

This is a new and innovative approach to BPTs and the payment criteria have been set accordingly. The minimum criteria required to receive the BPT have been set at a level

thought achievable by most providers but below levels currently delivered by the highest achieving providers. The intention is that these rates will increase in future years in line with improvements. Therefore, all providers should strive to improve regardless of whether or not they meet the current standard. The intention is that providers and commissioners will monitor their data and, where identified as outliers, improve their performance. We recognise that there are circumstances where some providers will not be able to demonstrate that they meet all of the best-practice criteria, but where it would be inappropriate for the full BPT not to be paid.

Appendix F. Supporting analysis for Chapter 5 - Designing a national best-practice pricing model for hip fracture care

Table F1 Defining hip fracture diagnoses for the initial cohort

Diagnosis code	Diagnosis
S72.00	Fracture of neck of femur, part unspecified
S72.01	Fracture of intracapsular section of femur
S72.02	Fracture of upper epiphysis (separation) of femur
S72.03	Fracture of subcapital section of femur
S72.04	Fracture of midcervical section of femur (Transcervical Not Otherwise Specified)
S72.05	Fracture of base of neck of femur (Cervicotrochanteric section)
S72.08	Fracture of other parts of neck of femur (Fracture of hip Not Otherwise Specified, Head of femur)
S72.10	Fracture of trochanteric section of femur, unspecified, (Greater trochanter, lesser trochanter, transtrochanteric fracture)
S72.11	Fracture of intertrochanteric section of femur
S72.2	Subtrochanteric fracture

Clinical advice confirmed that the diagnoses in Table F1 are the relevant International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Australian Modification (ICD-10-AM) hip fracture diagnosis codes for the cohort of interest.

Table F2 Age of patient separations with hip fracture diagnoses*

Age Split	Total number of patients	Average length of stay (days)	Average Cost	Total Cost
0 to <50 years	865	9	\$22,548	\$19,504,265
50 to <65 years	1,623	9.9	\$20,071	\$32,575,118
65 years and over	18,273	9.1	\$16,267	\$297,252,824
Subtotal: 50 years and over	19,896	9.2	\$16,578	\$329,827,942
Total acute episodes	20,761	9.2	\$16,826	\$349,332,206

*Hip fracture diagnoses are those identified in Table F1.

Table F3 Principal and additional diagnoses of hip fracture cohort

Age	Diagnosis split	Number of cases	Average length of stay (days)	Average Cost	Total Cost
50 years and over	Principal diagnosis	17,917	8.7	\$16,179	\$289,873,606
	Additional diagnosis	1,979	13.2	\$20,189	\$39,954,336
	Total aged 50 years and over	19,896	9.2	\$16,578	\$329,827,942

Table F4 Multiple trauma codes (Major Diagnostic Category 21A) AR-DRG version 7

DRG code	DRG Long Descriptions
W01A	Tracheostomy for Multiple Significant Trauma
W01B	Ventilation and Cranial Procedures for Multiple Significant Trauma, without Tracheostomy with (Ventilation >=96hours or Catastrophic Complications and/or Comorbidities)
W01C	Ventilation and Cranial Procedures for Multiple Significant Trauma, without Tracheostomy without Ventilation >=96hrs without Catastrophic Complications and/or Comorbidities
W02A	Hip, Femur & Lower Limb Procedures for Multiple Significant Trauma with Catastrophic or Severe Complications and/or Comorbidities
W02B	Hip, Femur & Lower Limb Procedures for Multiple Significant Trauma without Catastrophic or Severe Complications and/or Comorbidities
W03Z	Abdominal Procedures for Multiple Significant Trauma
W04A	Multiple Significant Trauma with Other Operating Room Procedures with Catastrophic or Severe Complications and/or Comorbidities
W04B	Multiple Significant Trauma with Other Operating Room Procedures without Catastrophic or Severe Complications and/or Comorbidities
W60Z	Multiple Trauma, Died or Transferred to Acute Facility <5 Days
W61A	Multiple Trauma without Operating Room Procedures with Catastrophic or Severe Complications and/or Comorbidities
W61B	Multiple Trauma without Operating Room Procedures without Catastrophic or Severe Complications or Comorbidities

Table F5 Breakdown of principle diagnosis of hip fracture episodes by multiple trauma (Major Diagnostic Category 21A) status

	Number of cases	Average length of stay (days)	Average Cost	Total Cost
MDC 21A * - DRG W01A to W61B	438	10.9	\$20,890	\$9,149,644
Others - DRG NOT in W01A to W61B	17,479	8.7	\$16,061	\$280,723,962
Total DRG category	17,917	8.7	\$16,179	\$289,873,606

* Multiple trauma MDC21A includes DRGs identified in Table F4.

Table F6 Defining hip fracture surgery cohort - Hip fracture procedure codes for episodes with surgery (Australian Classification of Health Interventions Eighth Edition)

Procedure code number	Name of procedure
47519-00	Internal fixation of fracture of trochanteric or subcapital femur
47522-00	Hemiarthroplasty of femur (Austin Moore arthroplasty)
49318-00	Total arthroplasty of hip unilateral (total joint replacement of hip)
49319-00	Total arthroplasty of hip bilateral (total joint replacement of hip)
49312-00	Excision arthroplasty of hip
49315-00	Partial arthroplasty of hip

Table F7 Number of episodes, length of stay and costs associated with surgery (as defined in Table F6) / no surgery status

Principal or additional procedure code*	Number of episodes	Average of length of stay (days)	Average cost	Total Cost
47519-00 47522-00 49318-00 49319-00 49315-00 49312-00	13,914	9.7	\$18,556	\$258,192,621
The remainder of episodes without procedure codes identified in Table F6	3,565	4.8	\$6,320	\$22,531,341

* Refer to Table F6 for names of procedures

Table F8 Episodes with surgery excluding multiple trauma – Mode of admission (indicating transfers in for surgery)

Excluded episodes	Mode of admission split	Number of episodes	Average length of stay (days)	Average cost	Total Cost
Excluding Z92.1 D68.3 T45.5 Y44.2 (as shown in Table 7) and excluding MDC21A – Multiple trauma (DRGs W01A to W61B) as shown in Table F4	1 - admitted patient transferred from another hospital	1,665	8.2	17,374	\$28,927,368
	2 - statistical admission -episode type change	64	14.4	27,861	\$1,783,117
	3-other	12,183	9.8	18,668	\$227,435,561
	9-not reported/unknown	2	14	23,288	\$46,576
	Total	13,914			

Table F9 Length of stay and cost summary for hip fracture separations with no surgery cohort by separation mode

Sep mode	description	number of cases	Med. LOS	Avg. LOS	Med. Cost	Average Cost	Total Cost
1	discharge/transfer to an(other) acute hospital	2,038	1	2.8	\$1,200	\$3,666	\$7,471,395
2	discharge/transfer to a residential aged care service, unless this is the usual place of residence	136	4.5	8.6	\$5,170	\$9,322	\$1,267,747
3	discharge/transfer to an(other) psychiatric hospital	1	8	8	\$7,147	\$7,147	\$7,147
4	discharge/transfer to other health care accommodation (includes hospices)	24	4	7.3	\$4,756	\$11,138	\$267,314
5	statistical discharge - type change	488	6	8.4	\$6,147	\$10,976	\$5,356,097
6	left against medical advice/discharge at own risk	13	2	4.5	\$3,902	\$5,061	\$65,788
8	died	175	3	5.7	\$3,759	\$11,853	\$2,074,289
9	other (usual residence/own accommodation/welfare institution)	690	4	7	\$4,414	\$8,727	\$6,021,564

Table F10 Number, length of stay and cost for the refined cohort, hip fracture surgical episodes by AR-DRG

DRG	Description	No. of cases	Median LOS	Average of LOS	Median cost	Average cost	Total Cost \$m
I08B	Other Hip and Femur Procedures without Catastrophic Complications and/or Comorbidities	4,832	6	7.3	\$12,212	\$13,806	\$66.7
I08A	Other Hip and Femur Procedures with Catastrophic Complications and/or Comorbidities	3,987	9	12.1	\$16,945	\$20,784	\$82.9
I03B	Hip Replacement without Catastrophic Complications and/or Comorbidities	2,536	6	7.3	\$16,210	\$17,675	\$44.8
I03A	Hip Replacement with Catastrophic Complications and/or Comorbidities	2,447	10	12.2	\$20,583	\$23,403	\$57.3
I01A	Bilateral and Multiple Major Joint Procedures of Lower Limb with Revision or with Catastrophic Complications and/or Comorbidities	31	25	30.8	\$59,034	\$60,633	\$1.9
I31A	Revision of Hip Replacement for Infection/Inflammation of Joint Prosthesis or with Catastrophic Complications and/or Comorbidities	19	14	16.1	\$39,639	\$42,227	\$0.8
A06B	Ventilation >=96hrs and Operating Room Procedures (without Tracheostomy or without Catastrophic Complications and/or Comorbidities)	18	20.5	24.4	\$79,213	\$83,457	\$1.5
I02A	Microvascular Tissue Transfers or (Skin Grafts with Catastrophic or Severe Complications and/or Comorbidities), Excluding Hand	15	21	28.1	\$33,672	\$42,472	\$0.6
I31B	Revision of Hip Replacement not for Infection/Inflammation of Joint Prosthesis without Catastrophic Complications and/or Comorbidities	8	9.5	11.3	\$28,930	\$30,344	\$0.2
B82 C	Chronic and Unspecified Paraplegia/Quadriplegia with or without Operating Room Procedures without Catastrophic Complications and/or Comorbidities	5	9	9.6	\$25,093	\$22,822	\$0.1
B82B	Chronic and Unspecified Paraplegia/Quadriplegia with or without Operating Room Procedures with Catastrophic Complications and/or Comorbidities	4	17	15.8	\$26,305	\$33,367	\$0.1
I01B	Bilateral and Multiple Major Joint Procedures of Lower Limb without Revision without Catastrophic Complications and/or Comorbidities	3	8	8.3	\$29,996	\$30,386	\$0.1
I02B	Skin Grafts without Catastrophic or Severe Complications and/or Comorbidities , Excluding Hand	3	9	11.7	\$13,915	\$20,142	\$0.1
I05A	Other Joint Replacement with Catastrophic or Severe Complications and/or Comorbidities	3	21	17	\$37,493	\$36,879	\$0.1
A06A	Tracheostomy with Ventilation >=96hrs with Catastrophic Complications and/or Comorbidities	2	58	58	\$298,107	\$298,107	\$0.6
I07Z	Amputation	1	141	141	\$352,550	\$352,550	\$0.3
TOTALS		13,914	8	9.7	\$15,503	\$18,556	\$258.2

Appendix G. Additional potential measures for consideration in a hip fracture best-practice pricing approach

	Cost drivers	Supports improvement	Outcome measure
SYSTEM MEASURES			
Volume (no.)	✓		
Age profile/proportion geriatric (%)	✓		
Comorbidities (%)			
- Acute lower respiratory tract infection and influenza (%) [✱]	✓		
- Dysrhythmia (%) [✱]	✓		
- Heart failure (%) [✱]	✓		
- Ischaemic heart disease (%) [✱]	✓		
- Kidney failure (%) [✱]	✓		
Average length of stay (days) ^{✱†}	✓	✓	
Surgery cancellation rate (%) [†]	✓	✓	
Standardised mortality ratio, fractured neck of femur (SMR score) [✱] / 12-month mortality [†]		✓	✓
Complications (%)			
- Pressure ulcers (%) ^{†ψ}	✓	✓	
▪ Unspecified decubitus ulcer and pressure area	✓	✓	
▪ Stage I ulcer	✓	✓	
▪ Stage II ulcer (see Indicator 5c above)	✓	✓	
▪ Stage III ulcer (see Indicator 5c above)	✓	✓	
▪ Stage IV ulcer (see Indicator 5c above)	✓	✓	
- Delirium (%) ^{†ψ}	✓	✓	
- Venous thromboembolism (%) ^ψ	✓	✓	
▪ Pulmonary embolism	✓	✓	
▪ Deep vein thrombosis	✓	✓	
- Pneumonia/chest infections (%) [†]	✓	✓	
- Arrhythmia/AMI (%) ^{†ψ}	✓	✓	
- Healthcare-associated infection (%) ^ψ	✓	✓	
Cost information: ^Δ			
- Direct costs of ward nursing staff	✓		
- Direct costs of ward medical staff	✓		
- Direct costs of ward allied health staff	✓		
- Direct costs of prosthetics	✓		
- Direct costs, operating room	✓		
PATIENT EXPERIENCE			
Patient experience (%) [†]			
- Pain management [†] (CATI-PEx Q7a and Q7b) [^] —see indicators 2a and 2b above		✓	✓
- Team coordination (CATI-PEx Q12) [^] —see indicators 3a and 7a above		✓	✓
- Preparation for discharge (CATI-PEx Q10 and Q11) [^] —see indicators 7a and 7b above		✓	✓
- Treated with dignity/respect (CATI-PEx Q1) [^]		✓	✓

- Informed about care (CATI-PEx Qs 1–6) [^]		✓	✓
- Discharge destination [†] —see indicator 7a above		✓	✓
Return to pre-morbid function [‡] —see indicator 5d above		✓	✓
Sources [^] Hip Fracture Care Clinical Care Standard, decisions of the Indicator Subgroup, 11 December 2014 ^Δ Preliminary information from IHPA on most expensive cost buckets in hip fracture surgery. [*] Australian and New Zealand Guideline for Hip Fracture Care, September 2014 [‡] NSW Agency for Clinical Innovation's Minimum Standards for the Management of Hip Fracture in the Older Person, June 2014 [¥] CHBOI mortality risk adjusters [∞] UK National Health Service's Fragility hip fracture Best Practice Tariff (BPT) program ^Φ WA Health Hip Fracture Premium Payments ^Ψ Draft national set of high-priority hospital complications [^] National set of core, common patient experience questions – for overnight-admitted patients, ACSQHC.			

Appendix H. References

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