



ANZHFR

Australian & New Zealand Hip Fracture Registry

2016 ANNUAL REPORT



ENHANCING OUTCOMES FOR OLDER PEOPLE

This first Annual Report of the ANZHFR was prepared by Ms Elizabeth Armstrong, AHFR Manager, Professor Jacqueline Close, ANZHFR Co-Chair Geriatric Medicine, Professor Ian Harris, ANZHFR Co-Chair Orthopaedics, and Mr Stewart Fleming, Webmaster SO3.

The ANZHFR Steering Group would like to thank the staff of the 25 hospitals contributing to the Patient Level Report for 2015, and the 121 hospitals contributing to the Facility Level Report for 2015. Without their support, dedication, and energy, this report would not be possible.

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CO-CHAIRS FOREWORD



Professor Jacqui Close



Professor Ian Harris AM

Welcome to the first Australian and New Zealand Hip Fracture Registry combined patient and facility level report. The report is the culmination of a number of years of work putting forward the case for a Hip Fracture Registry as a mechanism for improving the care and ultimately the outcomes for older people who are unfortunate enough to sustain a hip fracture.

The approach has been systematic, starting with our first facility level audit in 2013, which provided us with an overview of the current state of play in this area. We then produced the Australian and New Zealand Guideline for Hip Fracture Care, which was published in 2014, providing an evidence base to guide clinical practice (<http://anzhfr.org/guidelines-and-standards/>). This was followed by the publication of the Hip Fracture Care Clinical Care Standard with associated quality indicators. The Clinical Care Standard and Indicators has been developed by the Australian Commission on Safety and Quality in Health Care, the organisation in Australia with responsibility for national standards. Importantly, the Commission involved the New Zealand Health Quality and Safety Commission, which has ensured that Australia and New Zealand continue to work in partnership on this journey to improve hip fracture care.

The majority of the indicators contained within the Hip Fracture Care Clinical Care Standard can be collected through the Registry either at patient or facility level.

This first report does not identify individual hospitals and has intentionally focused on process measures. It is also acute hospital centered, reflecting the difficulty and associated cost in following people beyond the acute episode of care. As such, the report should be seen as the starting point of a conversation and a journey. Over time, we plan to look at outcomes, particularly outcomes that are meaningful to the people who have

sustained the hip fracture. We will also plan to explore how we dovetail the information we can extract from administrative data systems with patient level data captured by the Registry. Over time as IT systems develop, it may be possible to automatically populate some of the data fields.

In addition to the patient level information, this report contains the fourth facility level audit which looks at policies, protocols, pathways and models of care across all 121 public hospitals in Australia and New Zealand operating on hip fracture patients. Variability in practice and in rate of change in practice is notable.

Data is a powerful tool for driving change but it needs to be credible, accessible and provided in a manner that is both timely and meaningful. Reports like this provide a snapshot in time, but ongoing development work with the live Registry will allow sites entering data to see how they perform against others in real time. It is anticipated this will be available in late 2016.

We hope you enjoy reading this report and more importantly we hope that it stimulates action to drive change. Lastly, a huge thanks to all those who have provided data for the facility level and/or patient level reports. We are aware of the challenges in collecting data and the time commitment of the busy clinicians who have already been diligently entering data into the Registry. Our strong belief is that these efforts will reap dividends for patients.

Professor Jacqui Close
Geriatrician

Co-Chair, Australian and
New Zealand Hip Fracture
Registry

Professor Ian Harris AM
Orthopaedic Surgeon

Co-Chair, Australian and
New Zealand Hip Fracture
Registry

MAIN FINDINGS AND RECOMMENDATIONS

This report includes facility-level data from all of the 121 public hospitals in Australia and New Zealand that treat patients with hip fractures. It also includes data from 25 hospitals that submitted sufficient patient level data to the Registry during 2015, the first full year of the Registry. The mean age of patients is 82 years, and 45% of patients were able to walk without an aid prior to their fracture. There was considerable variation between hospitals both in the provision of pre-operative medical assessment by a geriatrician and supervision of surgery by consultant orthopaedic surgeons. This demonstrates room for greater direct involvement in patient care by specialist geriatricians and surgeons.

Overall, 80% of patients are undergoing surgery within 48 hours of presentation, and many of the delays are related to medical conditions and anticoagulation but the number of delays due to lack of operating time remains an area for improvement.

There was wide variation in the surgical management of hip fractures, for example the relative use of half (hemi) and full hip replacements for femoral neck fractures, the use of bone cement, and the relative use of sliding hip screws and intramedullary nails for intertrochanteric fractures. This variation reflects local preferences and uncertainty in the comparative effectiveness of these methods.

94% of patients were allowed to fully weight bear (no restrictions) after their surgery; a consistent finding that shows good adherence to guidelines and maximises the rehabilitation potential for those patients. The proportion of patients offered mobilisation on the first post-operative day was only 79%, which may reflect the availability of physiotherapy services.

Given the proven effectiveness of measures to prevent another fracture, the variation in, and the overall low rate of discharge on bone protection medication (25%, excluding calcium and vitamin D), shows that there is considerable room for improvement in this area. The lack of measures to prevent a further fracture is reflected in the facility level audit, which shows low proportions of facilities with falls clinics, osteoporosis clinics and fracture liaison services.

The facility level audit shows poor uptake of many practices recommended in the Australian and New Zealand Guideline and the Hip Fracture Care Clinical Care Standard (such as care protocols, dedicated orthopaedic trauma lists, weekend physiotherapy cover). The poor uptake, often with little improvement over the period of the four annual reports, indicates considerable room for improvement – improvement that we hope to document in future reports.



80%

OF PATIENTS ARE UNDERGOING SURGERY
WITHIN 48 HOURS OF PRESENTATION

INTRODUCTION

BACKGROUND

Hip fracture is the most serious and costly fall-related injury suffered by older people. There were an estimated 19,000 admissions to hospital for a hip fracture among Australians aged over 50 in 2011-12, an increase of 22% in absolute number since 2002-03.¹ In New Zealand, 3803 people were admitted to hospital with a hip fracture in 2007.² Almost everyone who fractures their hip will be admitted to a hospital, and a large majority will undergo a surgical procedure. In Australia, this means that more than 50 people are admitted every day to a hospital with a hip fracture.^{1,3} The individual consequences are significant: 5% of those admitted will die in hospital; over 10% will be discharged directly to an aged care facility; after 12 months, fewer than 50% of people will be walking as well as they did before their injury; and another 15-20% will have died. In addition, the health and social care systems bear considerable costs associated with the acute treatment of hip fractures, ongoing costs of rehabilitation, assistance with day-to-day living activities, and the impact of long term care placement.

Following on from the British Orthopaedic Association (BOA) and the British Geriatrics Society (BGS) successful implementation of a National Hip Fracture Database (NHFD) in 2011, representatives of the Australian and New Zealand Society of Geriatric Medicine (ANZSGM), the Australian Orthopaedic Association (AOA), the New Zealand Orthopaedic Association (NZOA), Osteoporosis Australia (OA) and Osteoporosis New Zealand (ONZ) agreed in principle to support the development of an Australian and New Zealand Hip Fracture Registry.

The ultimate goal of the Australian and New Zealand Hip Fracture Registry (ANZHFR) is to use data to improve performance, drive change and maximise outcomes for older people. By doing so, it is hoped that the ANZHFR will play a role in reducing rates of institutionalisation, reducing complications and treatment delays, reducing mortality, and maximising functional outcomes for older people after a fractured hip.

The flow-on benefits to health care, in its broadest sense, include reduced length of stay in hospital, a reduction in further falls and fractures, and a delay or avoidance of the need for institutionalisation.

The steps required to achieve the goal were clear from the outset – a Bi-National Guideline for Hip Fracture Care, a Hip Fracture Care Clinical Care Standard, and the Registry as a mechanism for tracking performance and driving change.

ANZHFR is governed by a Steering Group made up of representatives of key professional bodies and societies with an interest and expertise in the area of hip fracture care: Australian and New Zealand Society for Geriatric Medicine (ANZSGM); Australian Orthopaedic Association (AOA); New Zealand Orthopaedic Association (NZOA); Australian and New Zealand Bone and Mineral Society (ANZBMS); Osteoporosis Australia (OA); Osteoporosis New Zealand (ONZ); Australasian College of Emergency Medicine (ACEM); Australian and New Zealand College of Anaesthetists (ANZCA); Australasian Faculty of Rehabilitation Medicine (AFRM); Royal Australasian College of Physicians (RACP); and Royal Australasian College of Surgeons (RACS).

ANZHFR has taken carriage of both the Bi-National Guideline and Registry, whilst the development of the Hip Fracture Care Clinical Care Standard and Indicators has been led by the Australian Commission on Safety and Quality in Health Care (ACSQHC) with input from the New Zealand Health Quality & Safety Commission and representation from the ANZHFR.

Completed Activities

- The Australian and New Zealand Guideline for Hip Fracture Care: Improving Outcomes in Hip Fracture Management of Adults⁴ published on 23rd September 2014 and endorsed by the National Health and Medical Research Council (NHMRC). It is available at <http://www.anzhfr.org>
- Development of the ANZHFR Minimum Data Set for Patient Level Data collection. The patient level form is publicly available from http://www.anzhfr.org/wp-content/uploads/2015/04/ANZHFR_PatientLevelForm_v3_15June2015_Master.pdf
- Development of a web-based electronic data collection system, the ANZHFR, for continuous audit of patient care at Australian and New Zealand hospitals. Access to a demonstration database is available for any hospital in Australia or New Zealand and can be requested at <https://www.hipfracture.com.au/> or <https://www.hipfracture.co.nz>
- Development of a Bi-National Data Dictionary for Hip Fracture, available at www.anzhfr.org
- Seven (7) Human Research Ethics Committee (HREC) approvals for the ANZHFR in all Australian States and New Zealand
- Governance approvals, and Public Health Act approvals in Queensland, for 35 hospitals in Australia and New Zealand to contribute to the ANZHFR
- In total, 31 hospitals (32%) in Australia and 4 hospitals (17%) in New Zealand have been approved to contribute data to the ANZHFR (29%)
- Three annual facility level audits of hip fracture care in public hospitals in Australia and New Zealand treating patients with hip fractures^{4, 5, 6}
- Release of the Annual Report of the ANZHFR including the first patient level data and the fourth facility level data

Ongoing Activities

- Development of ANZHFR Minimum Data Set for Facility Level Data Collection as part of the ANZHFR Data Development Project
- Annual Reports of Hip Fracture Care for public hospitals in Australia and New Zealand undertaking hip fracture surgery
- Continuing support for participating hospitals and support to new hospitals to start contributing data to the ANZHFR by coordinating Human Research Ethics Committee submissions and Site-Specific Governance Applications for any hospital wishing to participate
- Regular ANZHFR newsletters updating people on progress of the work of the Registry
- Creation of the ANZHFR for continuous audit of patient level care. As at end of June 2016, the registry held a total of 5462 records; 4498 Australian records and 964 New Zealand records

PATIENT LEVEL AUDIT

Hospitals are eligible to submit patient level data if they are sites that operate on people with a hip fracture and have both ethics and local governance approval to contribute data. Patients are eligible for inclusion if they are 50 years of age or older and have sustained a low trauma fracture of the hip. Patients have the ability to opt-out of participation in the Registry. Staff at participating hospitals collect the minimum dataset and the data is entered into the electronic Registry.

In this report, the Patient Level Audit has been divided into the following sections, consistent with the ANZ Guideline for Hip Fracture Care released in September 2014⁴:

- Demographic Information
- Initial Care
- Operative Care and Surgery
- Postoperative Care
- Minimising the Risk of the Next Fracture

FACILITY LEVEL AUDIT

The aim of the Facility Level Audit is to assess and document the services, policies, protocols and practices that exist across Australia and New Zealand for hip fracture care. It has been undertaken annually for the past four years. Public hospitals in Australia and New Zealand are eligible to participate if they operate on hip fracture patients. An email is sent to clinicians at hospitals inviting completion of the Audit form. The form can be completed using an online web-based form, or via hard copy and scanned/emailed back to the ANZHFR.

The Facility Level Audit encompasses the following sections:

- General Information
- Models of Care
- Protocols and Processes
- Beyond the Acute Hospital Stay
- Patient and Carer Information

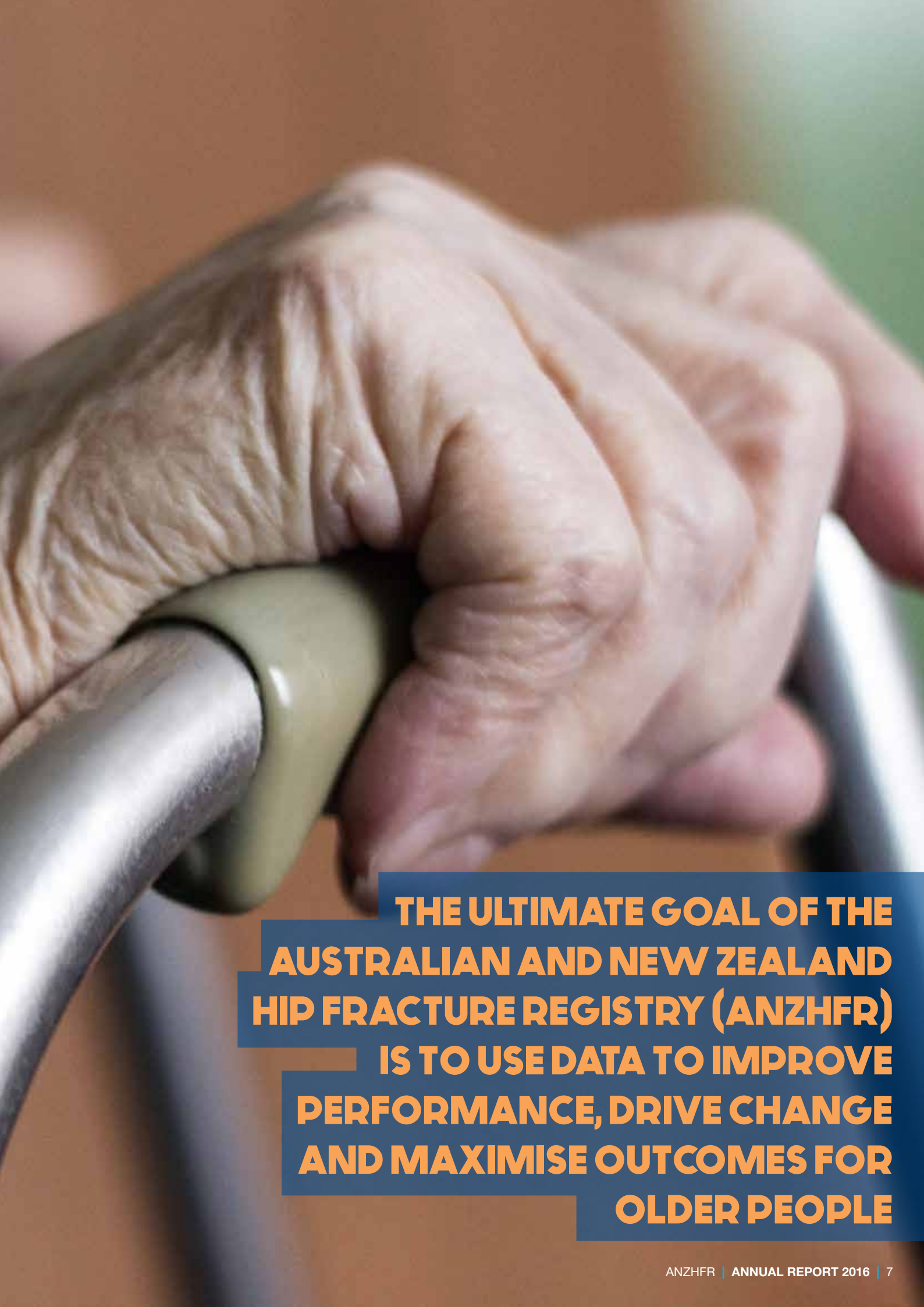
FUTURE PLANS

The ANZHFR will continue to expand its coverage to other hospitals treating people with hip fracture. Future reports will be able to monitor changes in practice and outcomes over time. Currently, the reports are descriptive only, but future reports will contain analyses that will measure associations between many of the variables collected by the Registry, providing a richer source of information that may be used to change practice and drive improvements.

The Registry does not currently report hospital names, but as data verification and completeness improves, and hospitals are satisfied with the quality of the data, hospital names will be provided in the report, as is done in the UK. This will allow hospitals to learn from each other about how to achieve better performance, and will act as a stronger driver of improvement.

Regarding data quality, the Registry aims to continue to monitor the completeness of data entered into the registry, and to feed that back in real-time to contributing sites. Comparison with data from hospital administrative datasets in future will allow measurement and reporting of the coverage of the Registry, and individual site audits of patient level data will assist with measurement of data accuracy, therefore covering all of the three dimensions of data quality set by the registry: completeness, coverage and correctness.

A closer link between Registry reporting and the soon to be released ACSQHC Hip Fracture Care Clinical Care Standard and Indicators will be possible in the future, and it is hoped that the Clinical Care Standard and Indicators will be incorporated in future reports.



THE ULTIMATE GOAL OF THE AUSTRALIAN AND NEW ZEALAND HIP FRACTURE REGISTRY (ANZHFR) IS TO USE DATA TO IMPROVE PERFORMANCE, DRIVE CHANGE AND MAXIMISE OUTCOMES FOR OLDER PEOPLE

PARTICIPATING HOSPITALS

■ Hospitals highlighted in dark blue below are included in both the Patient Level Report and the Facility Level Report. The “n” is the number of records the hospital has included in the Patient Level Report in 2015.

NEW ZEALAND

Auckland City Hospital (n = 15)
Christchurch Hospital
Dunedin Hospital
Gisborne Hospital
Grey Base Hospital
Hawkes Bay Hospital
Hutt Hospital
Rotorua Hospital
Middlemore Hospital (n = 243)
Nelson Hospital
North Shore Hospital (n = 309)
Palmerston North Hospital
Southland Hospital
Taranaki Base Hospital
Tauranga Hospital
Timaru Hospital
Waikato Hospital
Wairarapa Hospital
Wairau Hospital
Wanganui Hospital
Wellington Regional Hospital
Whakatane Hospital
Whangarei Base Hospital (n = 27)

AUSTRALIAN HOSPITALS

NEW SOUTH WALES

Albury Base Hospital
Armidale and New England Hospital
Bankstown - Lidcombe Hospital (n = 55)
Bathurst Base Hospital
Bega District Hospital
Blacktown Hospital (n = 23)
Bowral and District Hospital
Campbelltown Hospital (n = 36)
Canterbury Hospital
Coffs Harbour Base Hospital
Concord Hospital (n = 70)
Dubbo Base Hospital
Gosford Hospital
Goulburn Base Hospital
Grafton Hospital
Hornsby Ku-ring-gai Hospital
John Hunter Hospital (n = 362)
Lismore Base Hospital
Liverpool Hospital (n = 236)
Maitland Hospital
Manly Hospital
Manning Base Hospital
Mona Vale Hospital
Nepean Hospital (n = 174)
Orange Base Hospital
Port Macquarie Base Hospital
Prince of Wales Hospital (n = 138)
Royal North Shore Hospital
Royal Prince Alfred Hospital
Ryde Hospital
Shoalhaven and District Memorial Hospital
St George Hospital (n = 95)
St Vincent's Hospital Darlinghurst
Sutherland Hospital (n = 68)
Tamworth Base Hospital
The Tweed Hospital
The Wollongong Hospital
Wagga Wagga Base Hospital
Westmead Hospital (n = 10)

In all of the following figures and tables no hospital has been individually identified. In the Patient Level Report hospitals have been given a unique identifying number. The Facility Level Report shows aggregated data only. Hospitals have been included in the annual report of patient level data if they contributed more than 9 records to the registry in the 2015 calendar year. The number of records is recorded as “n” in the table below.

VICTORIA

Ballarat Health Services
 Barwon Health Network (Geelong Campus)
 Bendigo Hospital
 Box Hill Hospital
 Dandenong Hospital (n = 173)
 Echuca Regional Health
 Frankston Hospital
 Goulburn Valley Health (Shepparton)
 Latrobe Regional Hospital
 Maroondah Hospital
 Mildura Base Hospital
 Northeast Health Wangaratta
 Royal Melbourne Hospital (City Campus)
 Sandringham Hospital
 South West Healthcare (Warrnambool)
 St Vincent's Hospital
 The Alfred
 The Austin Hospital
 The Northern Hospital (n = 170)
 West Gippsland Healthcare Group (Warragul)
 Western District Health Service (Hamilton)
 Western Hospital (Footscray)
 Wimmera Health Care Group (Horsham)

QUEENSLAND

Bundaberg Hospital
 Cairns Base Hospital
 Gold Coast University Hospital
 Hervey Bay Hospital
 Ipswich Hospital
 Logan Hospital (n = 98)
 Mackay Base Hospital
 Nambour Hospital (n = 66)
 Princess Alexandra Hospital (n = 170)
 QEII Jubilee Hospital
 Redcliffe Hospital
 Robina Hospital
 Rockhampton Base Hospital
 The Prince Charles Hospital (n = 309)
 Toowoomba Hospital (n = 48)
 Townsville Hospital (n = 107)

SOUTH AUSTRALIA

Flinders Medical Centre
 Lyell McEwin Health Service
 Modbury Hospital
 Mount Gambier
 Port Pirie
 Royal Adelaide Hospital
 The Queen Elizabeth Hospital
 Whyalla

WESTERN AUSTRALIA

Albany Hospital
 Bunbury Hospital
 Fiona Stanley Hospital (n = 465)
 Joondalup Health Campus
 Royal Perth Hospital
 Sir Charles Gairdner Hospital (n = 52)

TASMANIA

Launceston General Hospital
 North West Regional Hospital (Burnie)
 Royal Hobart

NORTHERN TERRITORY

Royal Darwin Hospital
 Alice Springs Hospital

AUSTRALIAN CAPITAL TERRITORY

The Canberra Hospital



R



PATIENT LEVEL AUDIT

DATA QUALITY STATEMENT AND DATA NOTES FOR THE PATIENT LEVEL REPORT

DATA QUALITY

ANZHFR data quality assessment involves three components: completeness, coverage (or ascertainment) and correctness (or accuracy).

Completeness refers to the proportion of possible responses completed in the patient level forms that are provided by the sites. The ANZHFR has inbuilt data completeness checks for each record created with record data completeness available in real-time. Per record data completeness is measured as a proportion of eligible data fields completed and it is updated on saving new data in each patient record.

Correctness refers to the accuracy of each individual data field in the Registry. The ANZHFR plans to commence random site audits to verify data accuracy within the next two years. At this time, in-built data validation rules ensure the integrity of a number of the data variables. For example, an age of 200 cannot be entered into the registry. Unusual data entries or unlikely combinations of data variables are also identified. To support participants, the ANZHFR uses explicit definitions for data variables defined in the ANZHFR Data Dictionary and available at www.anzhfr.org

Coverage refers to the proportion of all hip fracture patients that are captured by the Registry. High levels of coverage allow the findings to be generalised to the population at large. If the capture rate is low, selection bias may be introduced where those included/excluded are systematically different from each other and this may affect the generalisability of the results. This report includes data from 25 of 121 public hospitals with 3519 individual patient records (2925 from Australia and 594 from New Zealand).

There has been no check of the total number of eligible patients admitted to the 25 hospitals in the 2015 year. In future reports, the number of hip fractures reported in the Registry, for each country and for each site, will be compared to hospital administrative datasets collected independently from the Registry.

DATA NOTES

The figures provided in this report have the following caveats:

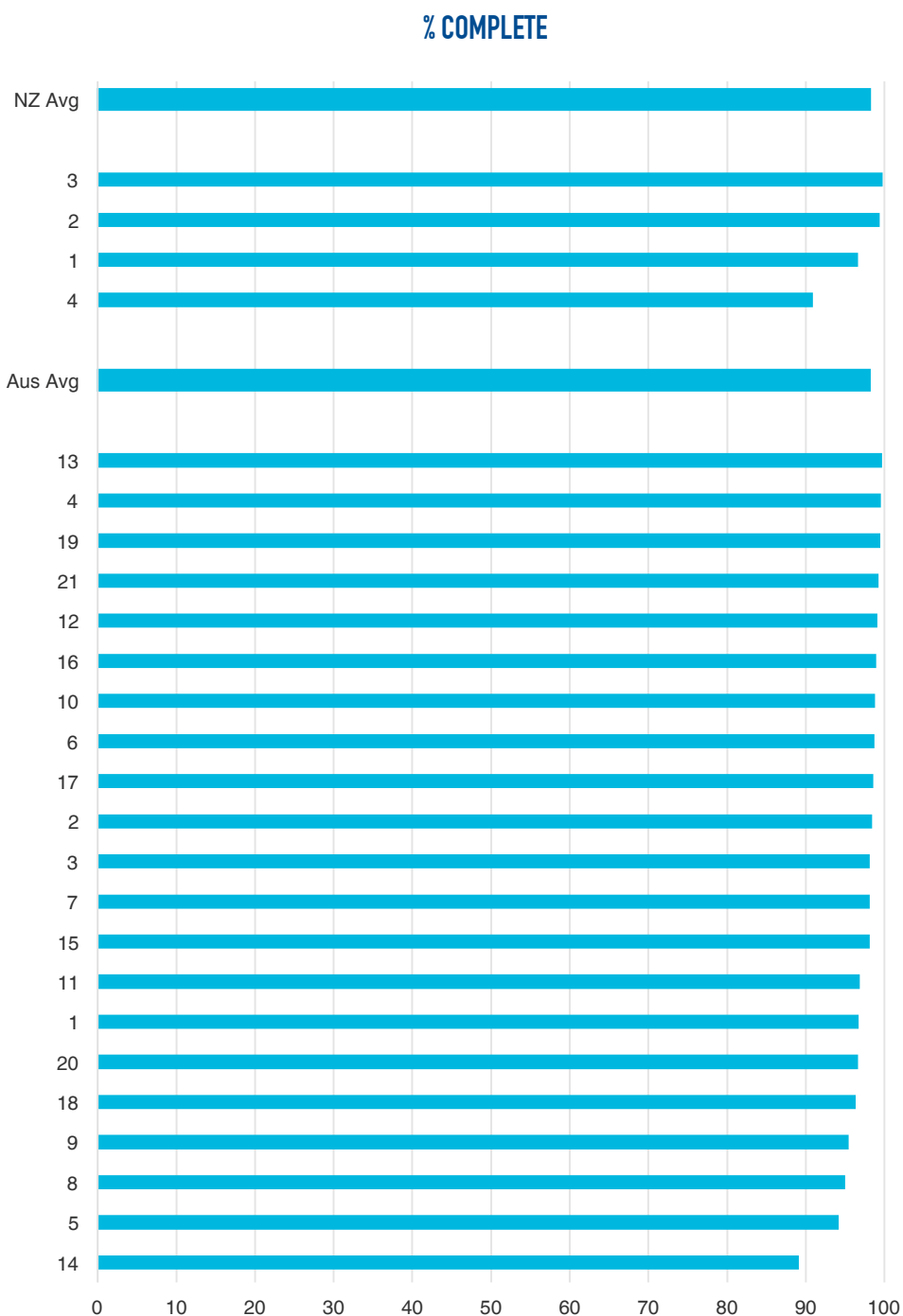
- Report identification is calculated once and used consistently throughout the report. The legend will only be made available to the Co-Chairs or as directed by the ANZHFR Co-Chairs. Principle investigators listed on ethics/governance approvals may request their hospitals report identification from the ANZHFR.
- All figures are based on static tables and cannot be altered by users.
- All time calculations are based on the construct "Start time". This means that the "Start Date-Time", used for calculating time to surgery and length of stay, is calculated by using the Emergency Department Arrival Date and Time, unless there was an in-hospital fracture. In this case, the In-Hospital Date and Time is used.



FIGURE 1

DATA COMPLETENESS

Figure 1 shows the average completeness of data for each patient record, shown as an average for each site, and for each country. Completeness is defined as the proportion of fields completed (questions answered) in the individual patient level data collection form. There is no clear threshold for ‘satisfactory’ completeness and 100% completeness is not always possible as some data may not be available for some patients or from some sites. Completeness differs from coverage and correctness, the other measures of registry data quality outlined in the section on data quality.



SECTION 1: DEMOGRAPHIC INFORMATION

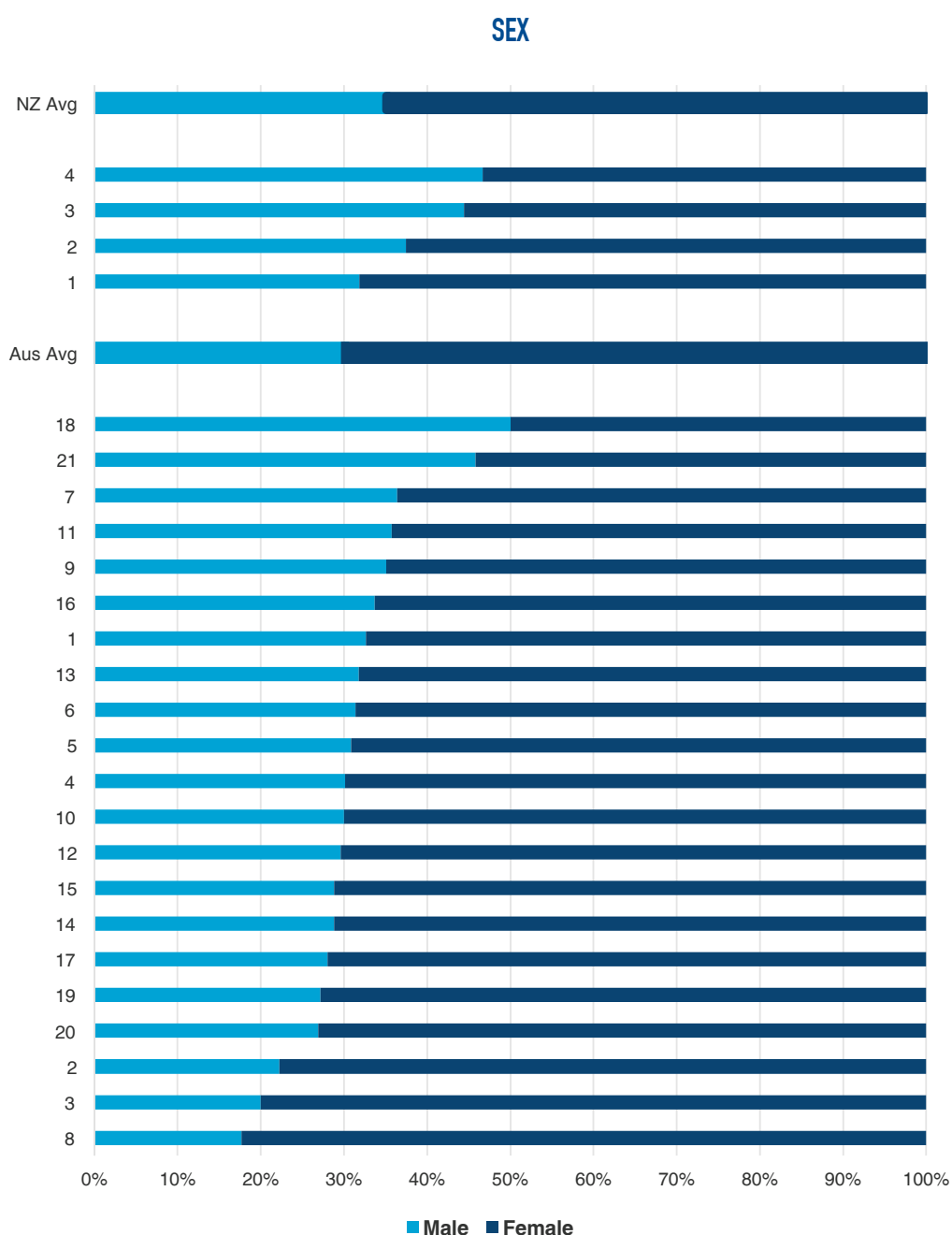
Figures 2 to 9 provide patient demographics, usual place of residence, cognitive status, and walking ability prior to fracture. These variables, in combination with the variable ASA score (American Society of Anesthesiologists), may be used for risk adjustment when reporting outcome data in the future.

FIGURE 2

SEX

Overall, females comprise 65% and 70% of the New Zealand and Australian hip fracture patients respectively in this report. The make-up of the population varies between hospitals with females representing anywhere between 50-82% of the hip fracture population at each hospital.

Note: one case listed as "other" in Australia and none in New Zealand: this record is not included.



24%
OF HIP FRACTURE PATIENTS
ARE 90 YEARS AND OLDER

FIGURE 3

AGE AT ADMISSION

The average age of hip fracture patients is 82 years in both Australia and New Zealand. The median age of males is 83 in both Australia and New Zealand, whilst in women the median age is 85 in both Australia and New Zealand. The figure shows the distribution of hip fracture patients by 10 year age bands. Whilst there is variation in the distribution between individual hospitals, the distribution of patients across the age bands in Australia and New Zealand is similar. People aged 90 years and older make up 24% of hip fracture patients in both Australia and New Zealand.

AGE AT ADMISSION

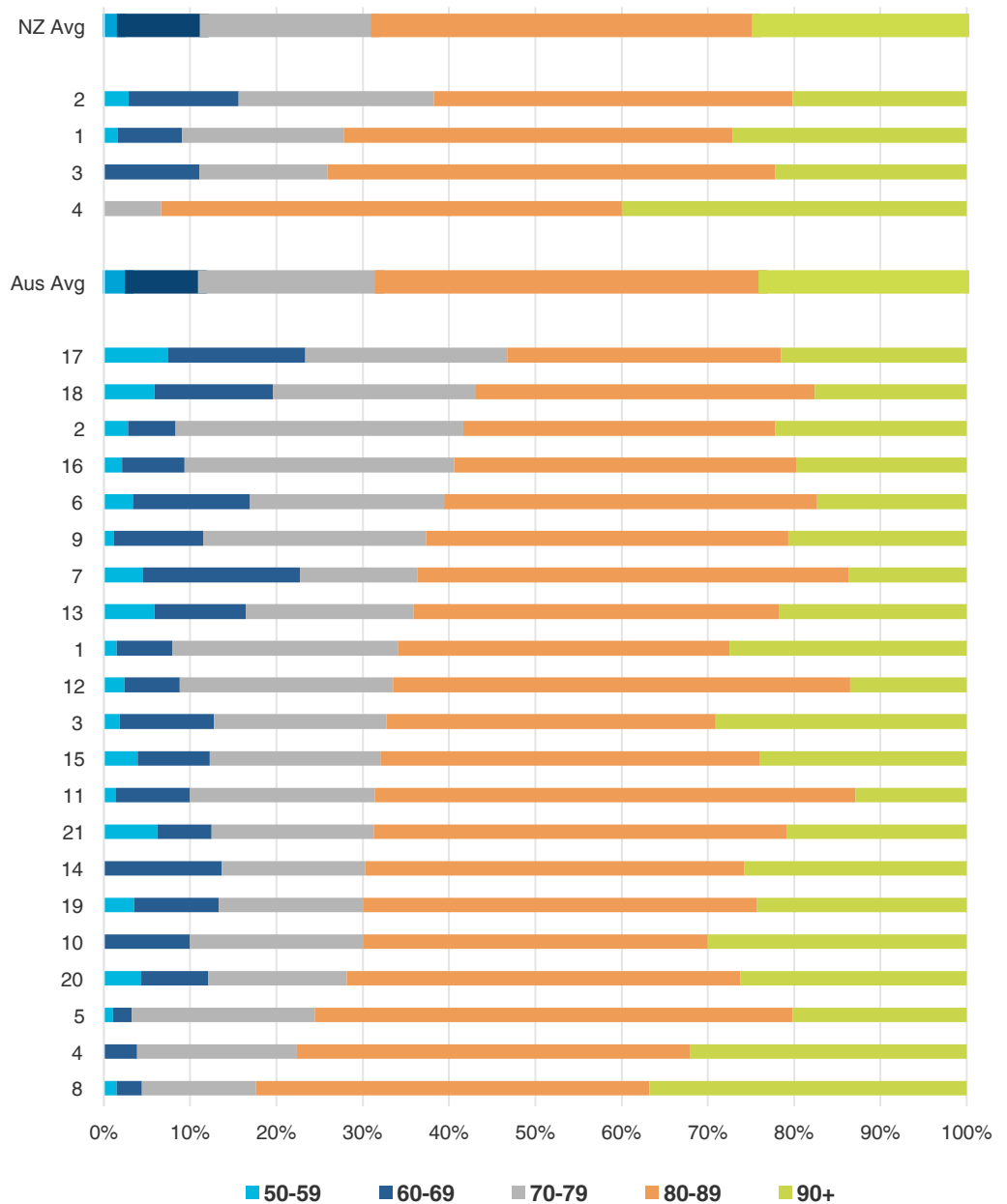
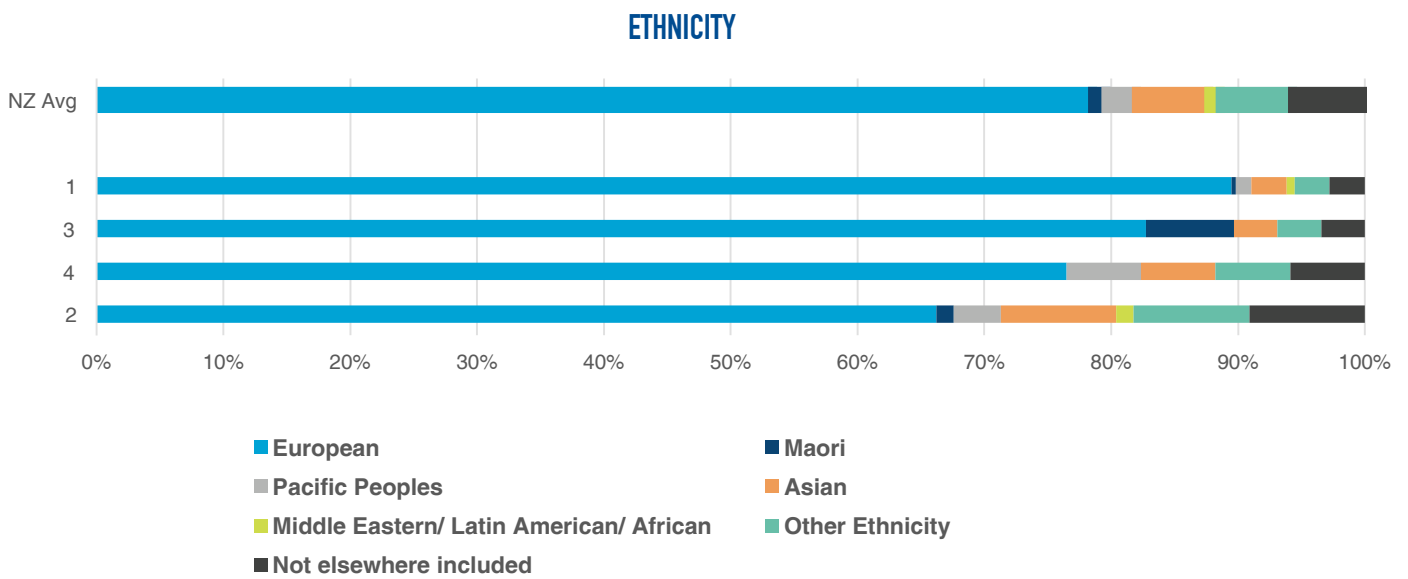




FIGURE 4
ETHNICITY



Indigenous populations constituted less than 1% of the Australian reported data. Maori and Pacific Peoples made up 3.5% of the New Zealand reported data. The majority of New Zealand hip fracture patients report being of European origin. Equivalent data was not collected in Australia. Accuracy in reporting of Indigenous status is known to be variable. We would also expect figures for Indigenous populations to vary between hospitals based on geographical variation.

Note: Australian Indigenous figures not graphed: they constitute less than 1% of the total collected.



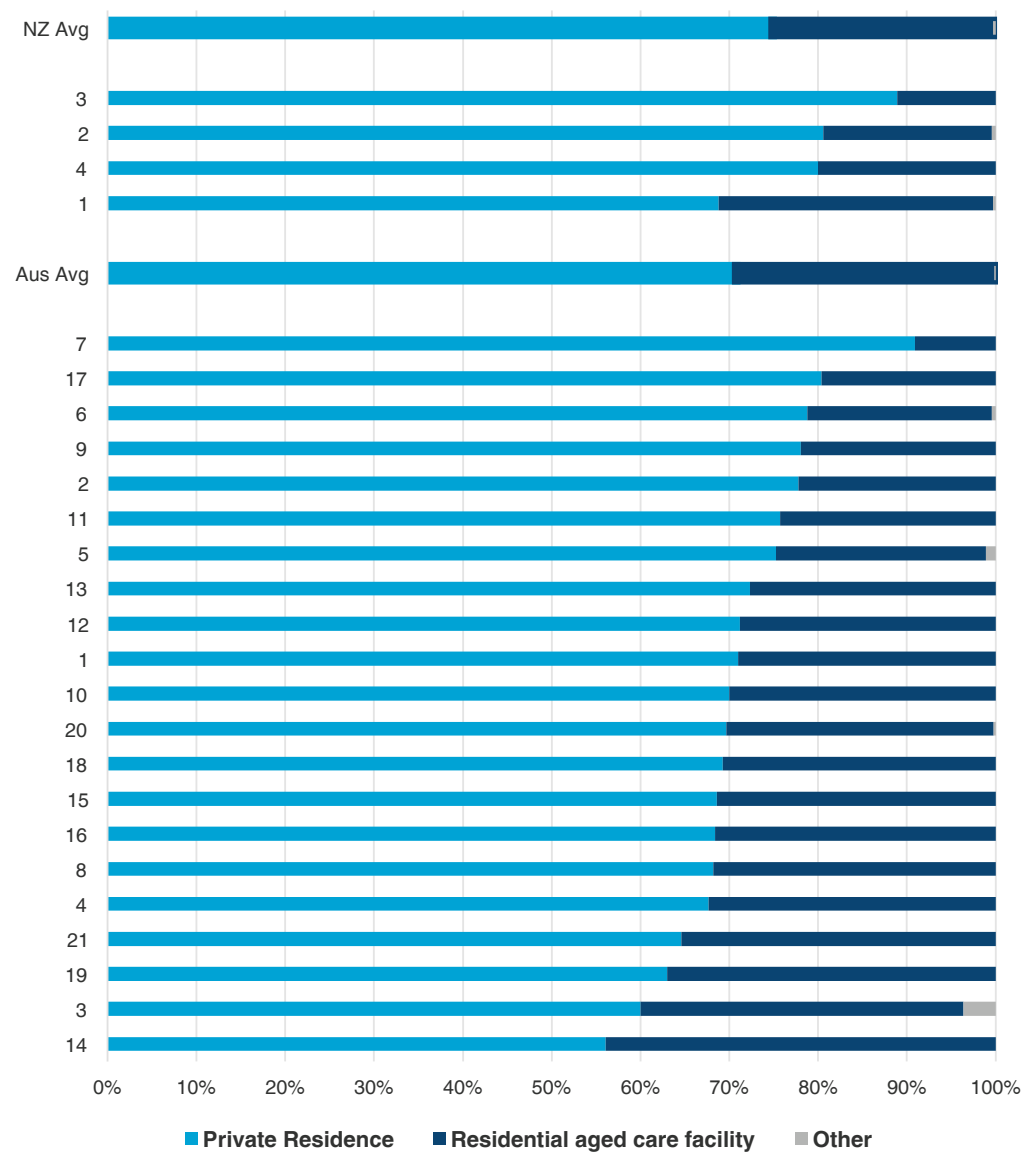
FIGURE 5

USUAL PLACE OF RESIDENCE

The majority of people admitted to hospital with a hip fracture live at home; 75% of New Zealand patients and 71% of Australian patients. However, this also implies that people from residential aged care facilities are over-represented in the hip fracture population – a finding that is expected and consistent with national and international literature. There is variation seen between hospitals which will reflect both the make-up of the local population including the number of residential aged care facilities but it is also important to remember that for some hospitals the number of patients entered into the Registry is small.

Note: no records were recorded as “not known” so this response is not seen in the figure

USUAL PLACE OF RESIDENCE



40%

IN AUSTRALIA, OVER 40% OF HIP FRACTURE PATIENTS HAVE A PRE-EXISTING COGNITIVE IMPAIRMENT

FIGURE 6

COGNITIVE STATE

Documentation of cognitive status prior to hospitalisation varied between countries and hospitals. In New Zealand, of those in whom cognitive status was recorded, 72% were reported to be cognitively normal prior to admission. It is important to note that 36% of patients in New Zealand did not have this information reported compared to 3% of patients in Australia. When looking at Australian data, of those in whom cognitive status was recorded, less than 60% were reported to have normal cognition prior to admission to hospital with a hip fracture. An objective measure of cognition (Abbreviated Mental Test Score) on admission was included in the Registry minimum dataset but was rarely completed. This may be due to lack of formal testing being undertaken or a different measure of cognition having been used.

Note: variable not collected at hospital 20.

COGNITIVE STATE

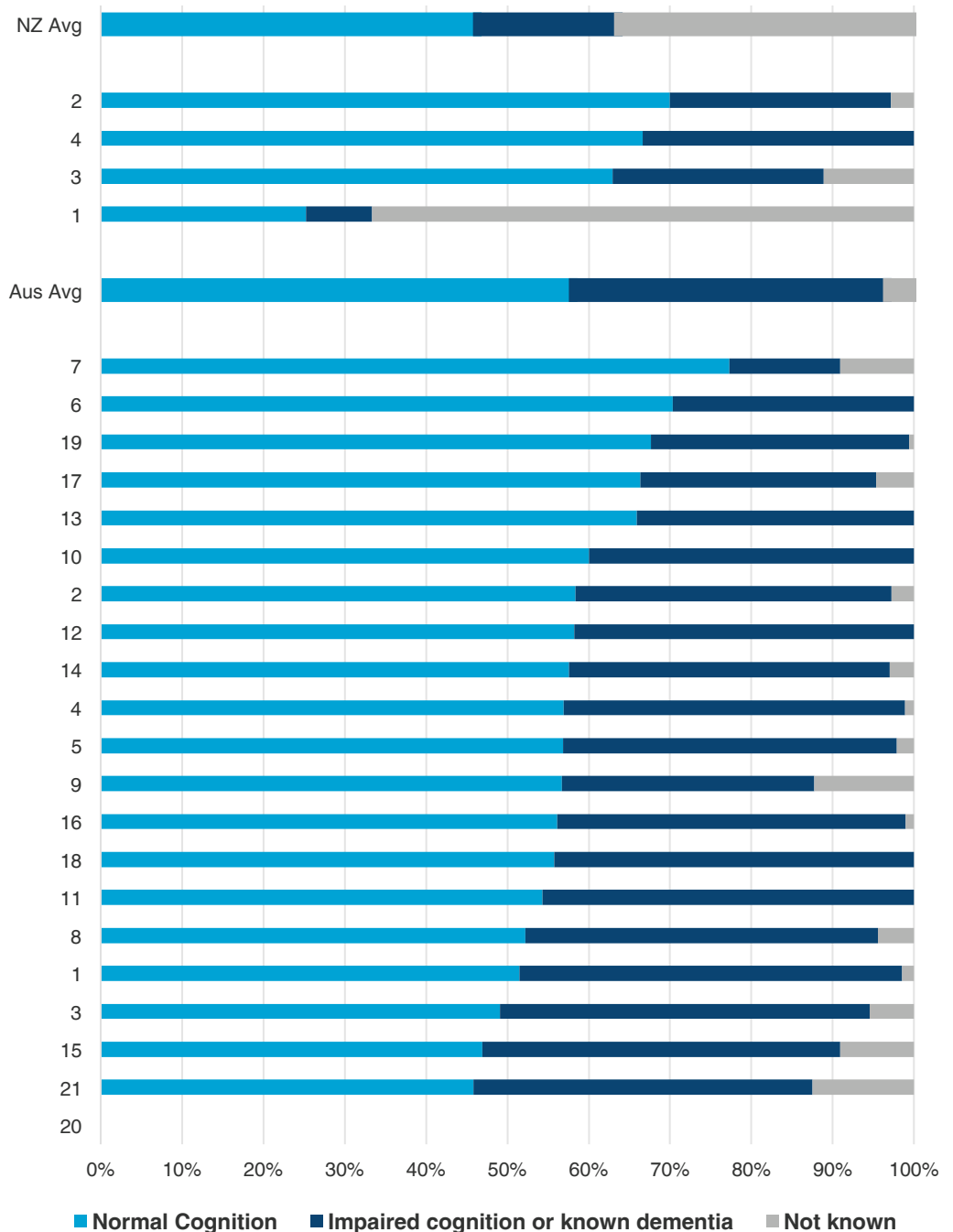
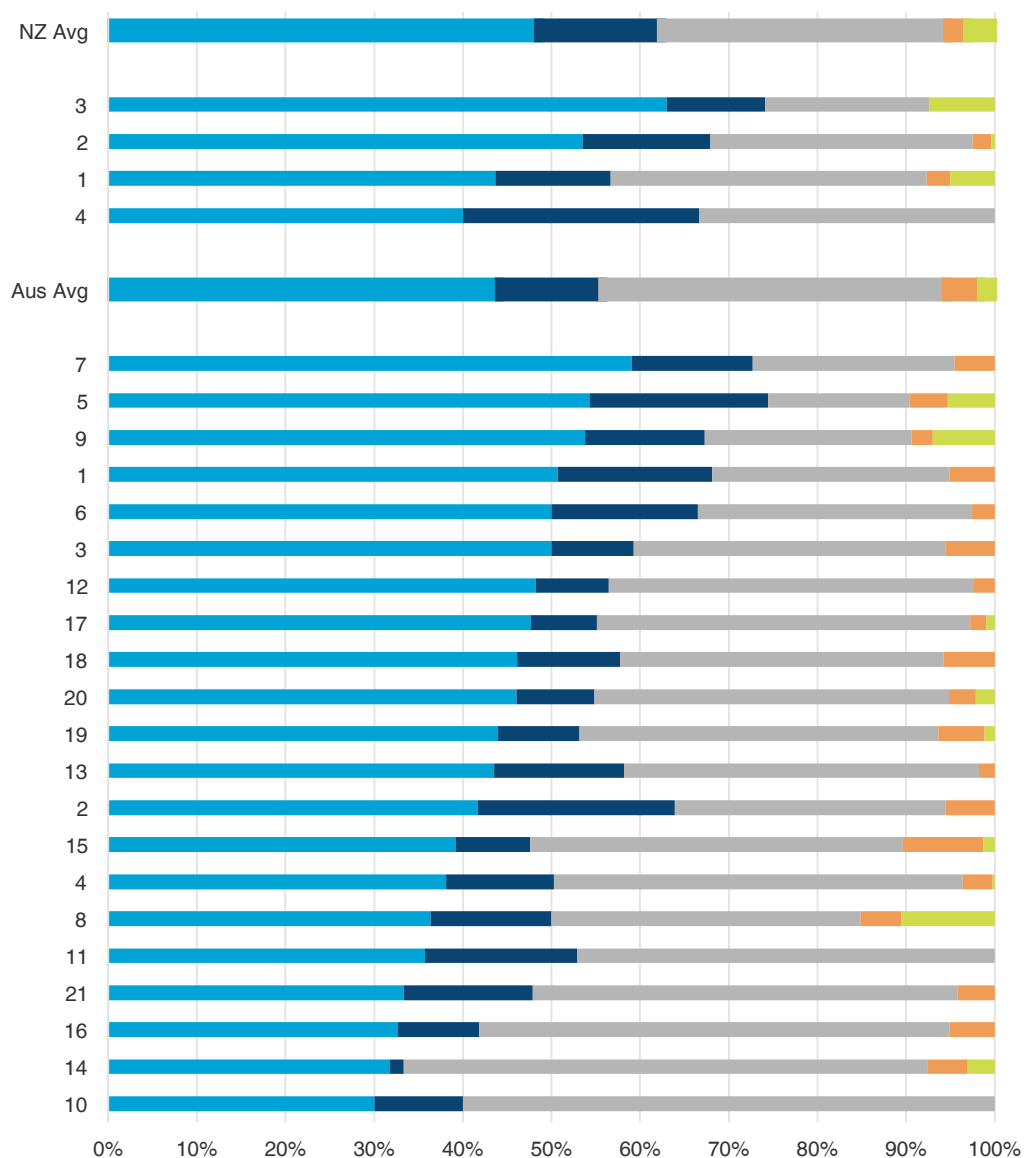


FIGURE 7

PREADMISSION WALKING ABILITY

Pre-admission walking ability is used in case-mix adjustment for 30-day mortality as it is a surrogate marker of overall health status. In New Zealand, 49% of hip fracture patients walked without any assistive device prior to hospitalisation compared to 44% of patients in Australia. There is variation seen between hospitals which will reflect both the make-up of the local population but it is also important to remember that for some hospitals the number of patients entered into the Registry is small.

PREADMISSION WALKING ABILITY



45%

45% OF PEOPLE WALKED WITHOUT ANY ASSISTIVE DEVICE PRIOR TO THE HIP FRACTURE

- Usually walks without walking aids
- Usually walks with either a stick or crutch
- Usually walks with two aids or a frame
- Usually uses a wheelchair or bedbound
- Not known

FIGURE 8
ASA UNKNOWN

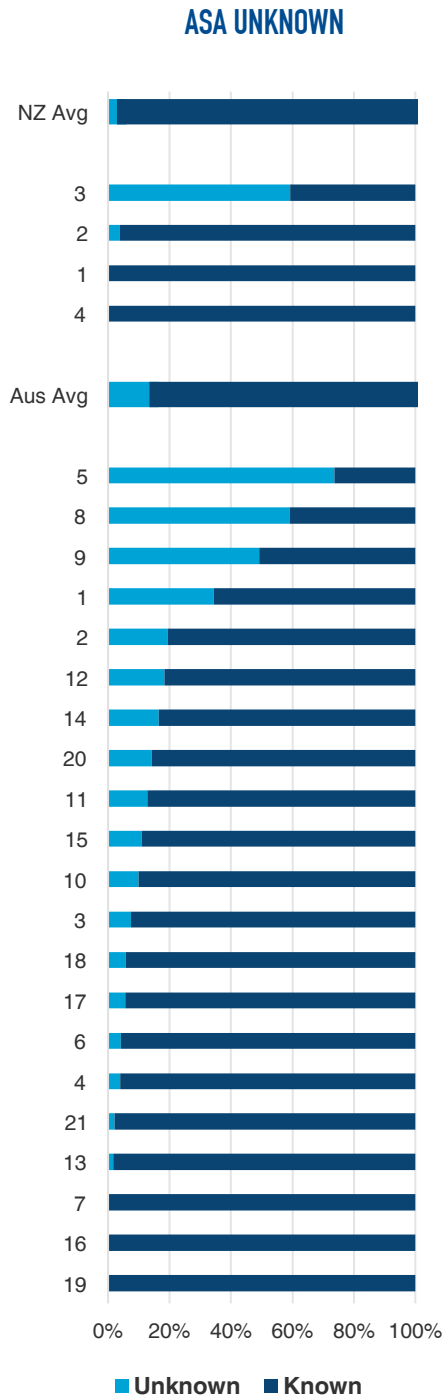
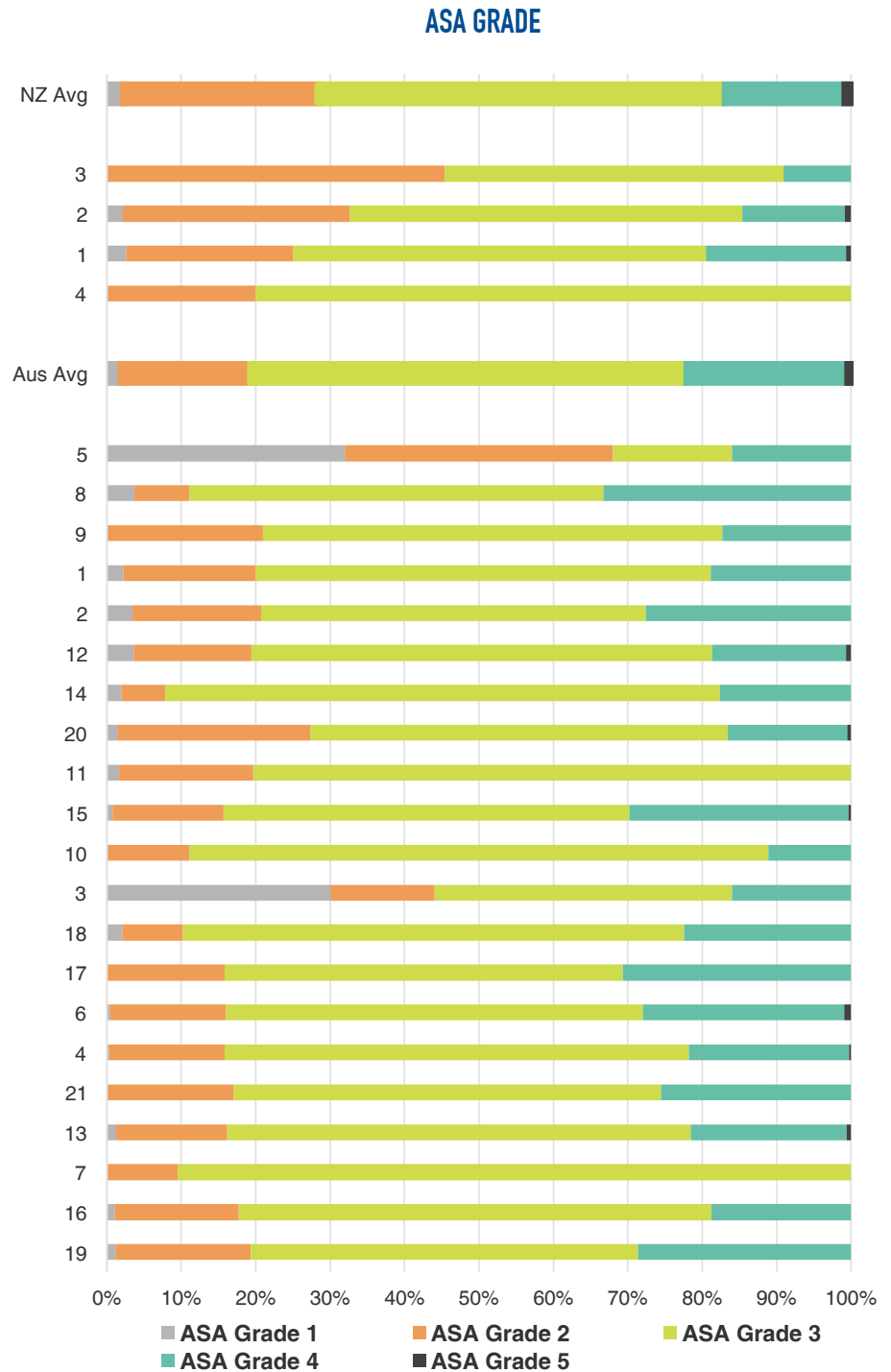


FIGURE 9
ASA GRADE



The ASA grade is a measure of anaesthetic risk that is often used as a general measure of physical health or comorbidity. It is associated with mortality and morbidity risk in patients with hip fractures and in many populations. Figure 8 shows the proportion of records where the ASA is unknown. Of those where the ASA is known, Figure 9 shows the grading of anaesthetic risk. The grading was developed by the American Society of Anesthetists (ASA). Grade 1 is a healthy individual with no systemic disease, Grade 2 is mild systemic disease not limiting activity, and Grade 3 is severe systemic disease that limits activity but is not incapacitating. The ASA grades provided in Figure 9 show that most hip fracture patients have an ASA grade of 3 or higher, indicating significant comorbidities and anaesthetic risk.

SECTION 2: INITIAL CARE

The initial period of care relates to the period from presentation at the first hospital to admission into the operating hospital (if undergoing surgery). This is a period of assessment and initial management of the patient and includes medical assessment, management of pain, and admission to the hospital.

FIGURE 10

TRANSFERRED FROM ANOTHER HOSPITAL

As expected, there was considerable variation between sites in the proportion of patients transferred in from other hospitals. This variation reflects differences in geography and the role delineation of the hospitals. It also impacts ultimately on time to surgery when the period spent in the transferring hospital and the time spent in transition is also included.

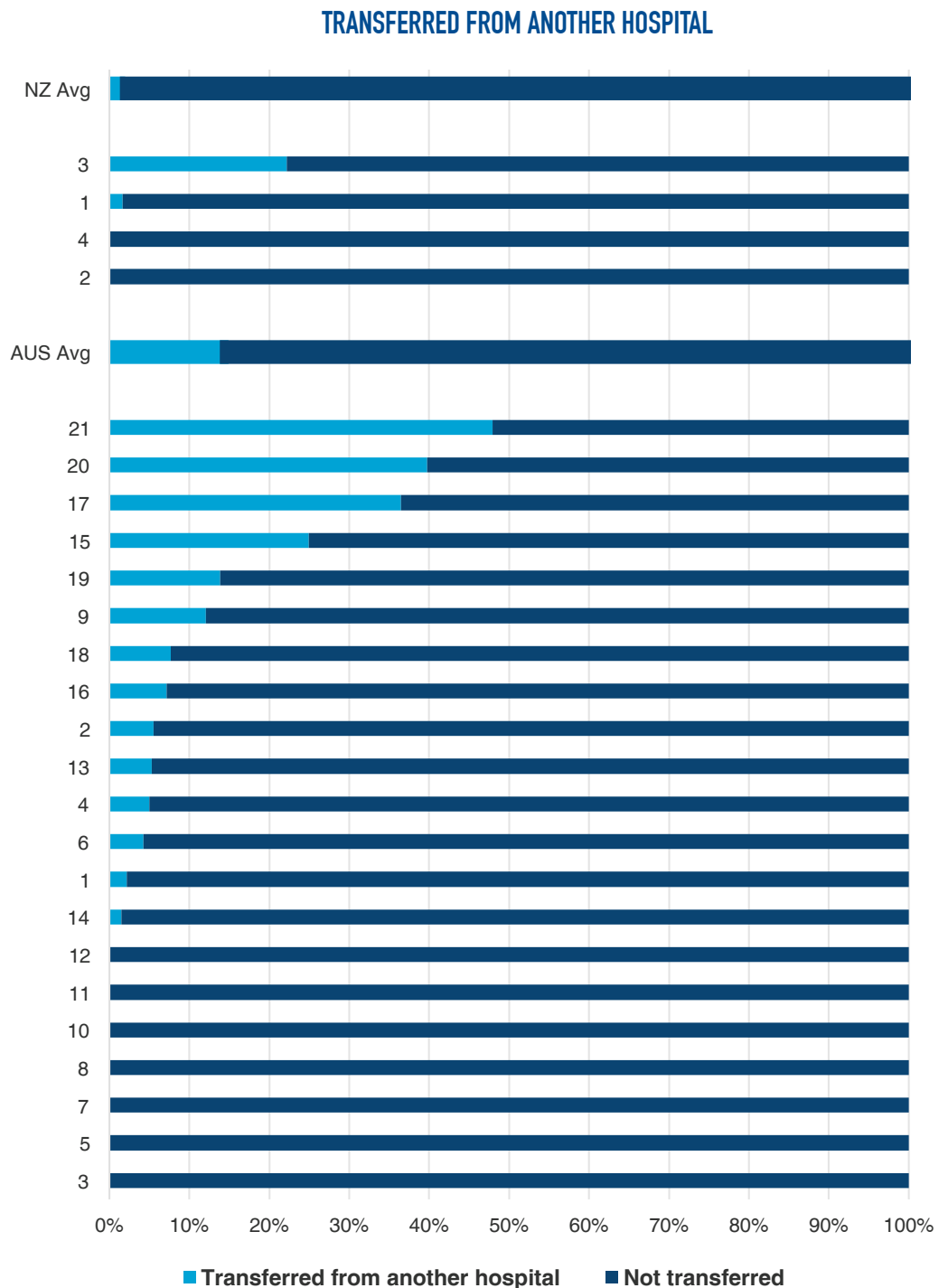


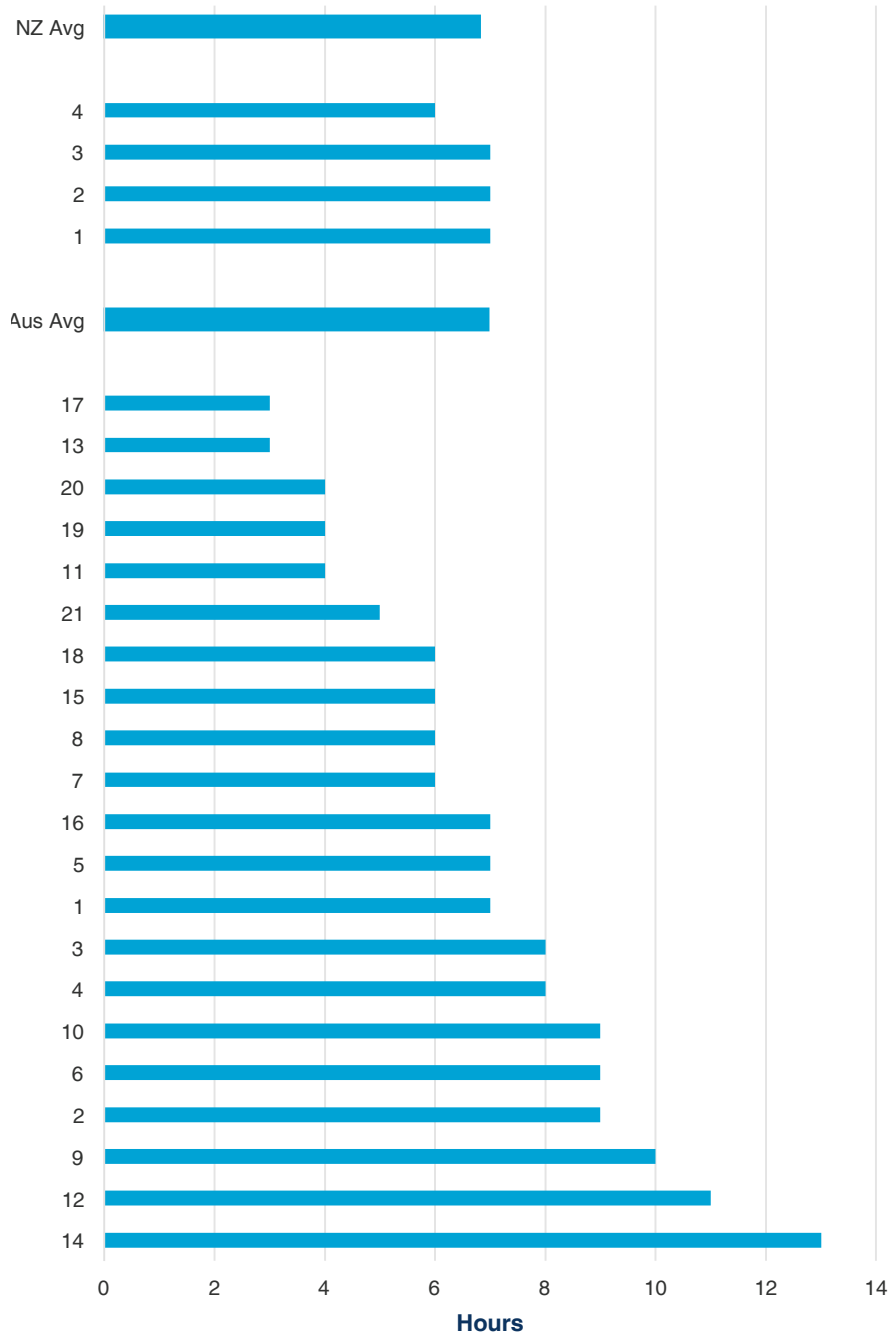


FIGURE 11

AVERAGE LENGTH OF STAY IN THE EMERGENCY DEPARTMENT (ED)

Average length of stay in the Emergency Department was similar between New Zealand and Australia – 6.8 hours and 6.9 hours respectively. Little variation across sites is seen in New Zealand whilst marked variation is noted in Australia with average times ranging from 3.0 hours to 13 hours.

AVERAGE LENGTH OF ED STAY



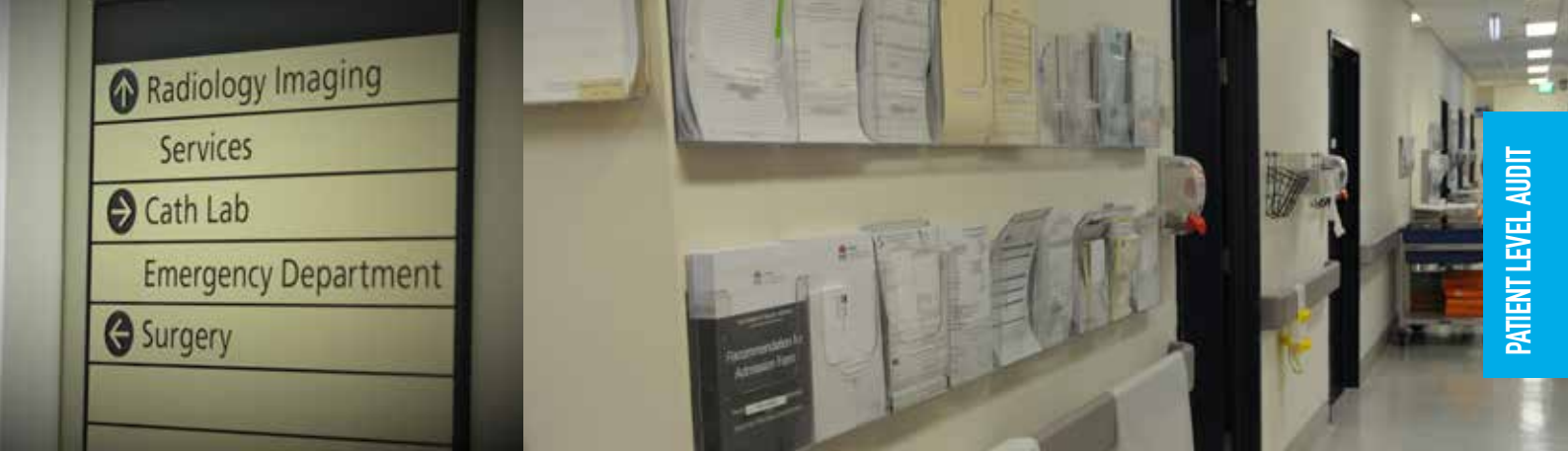


FIGURE 12

WARD TYPE

The type of ward used for hip fracture patients varies between sites due to variations in the supply and demand of specialist wards at each hospital and is determined by other factors such as hospital size. Despite this, the proportion of patients admitted to a specific hip fracture or orthopaedic ward was 99% and 88%, respectively in New Zealand and Australia.

WARD TYPE

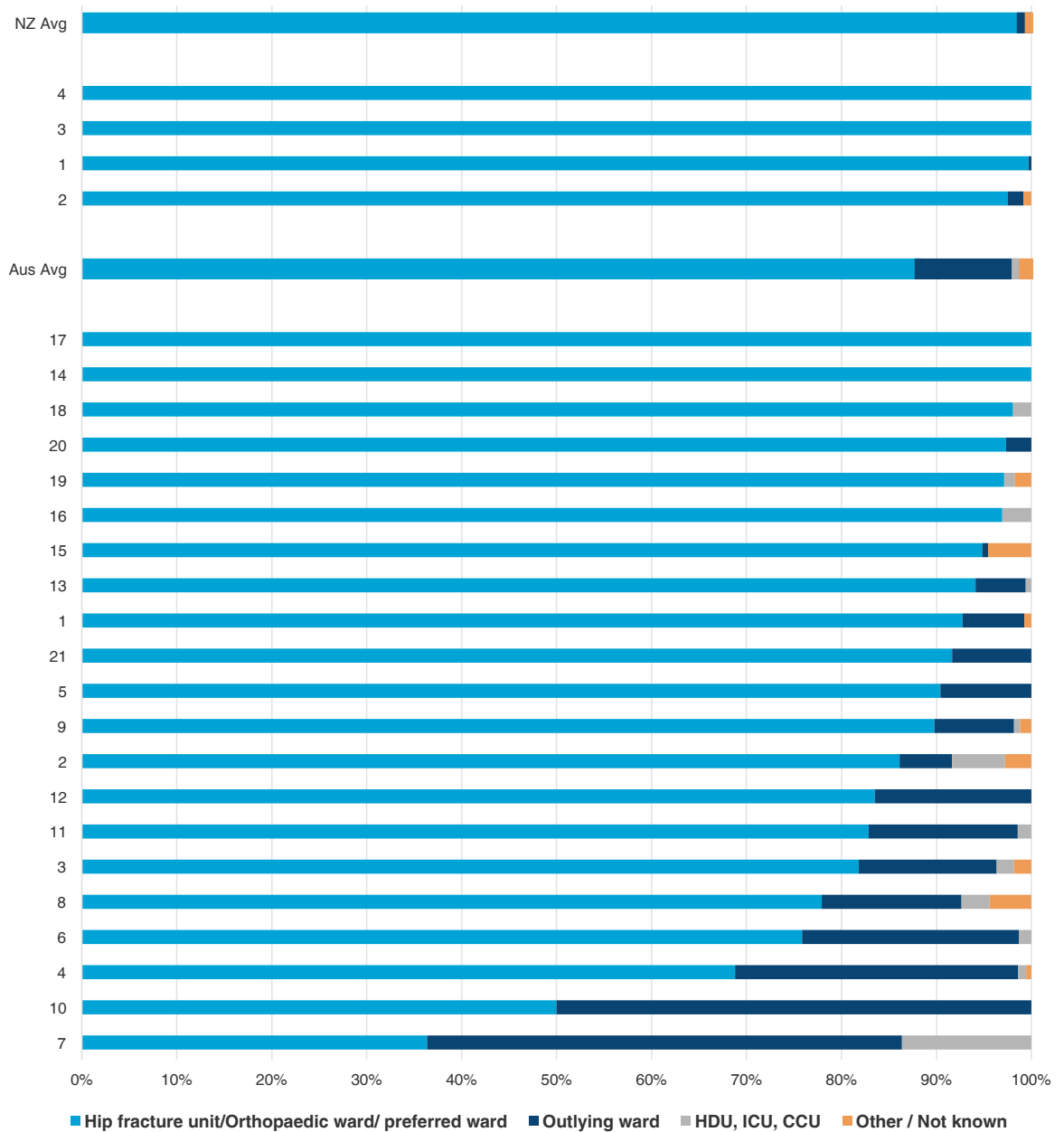
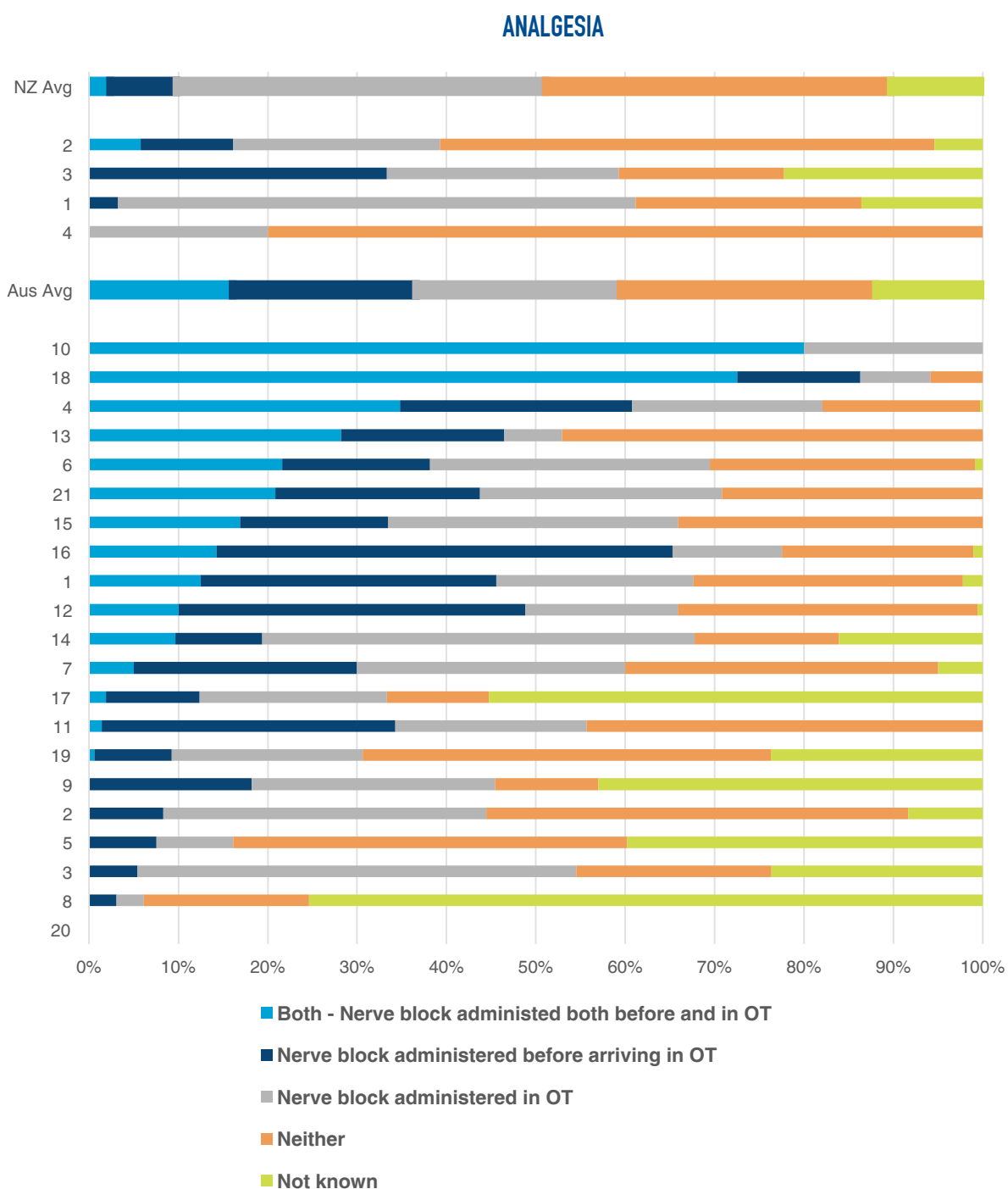


FIGURE 13
ANALGESIA

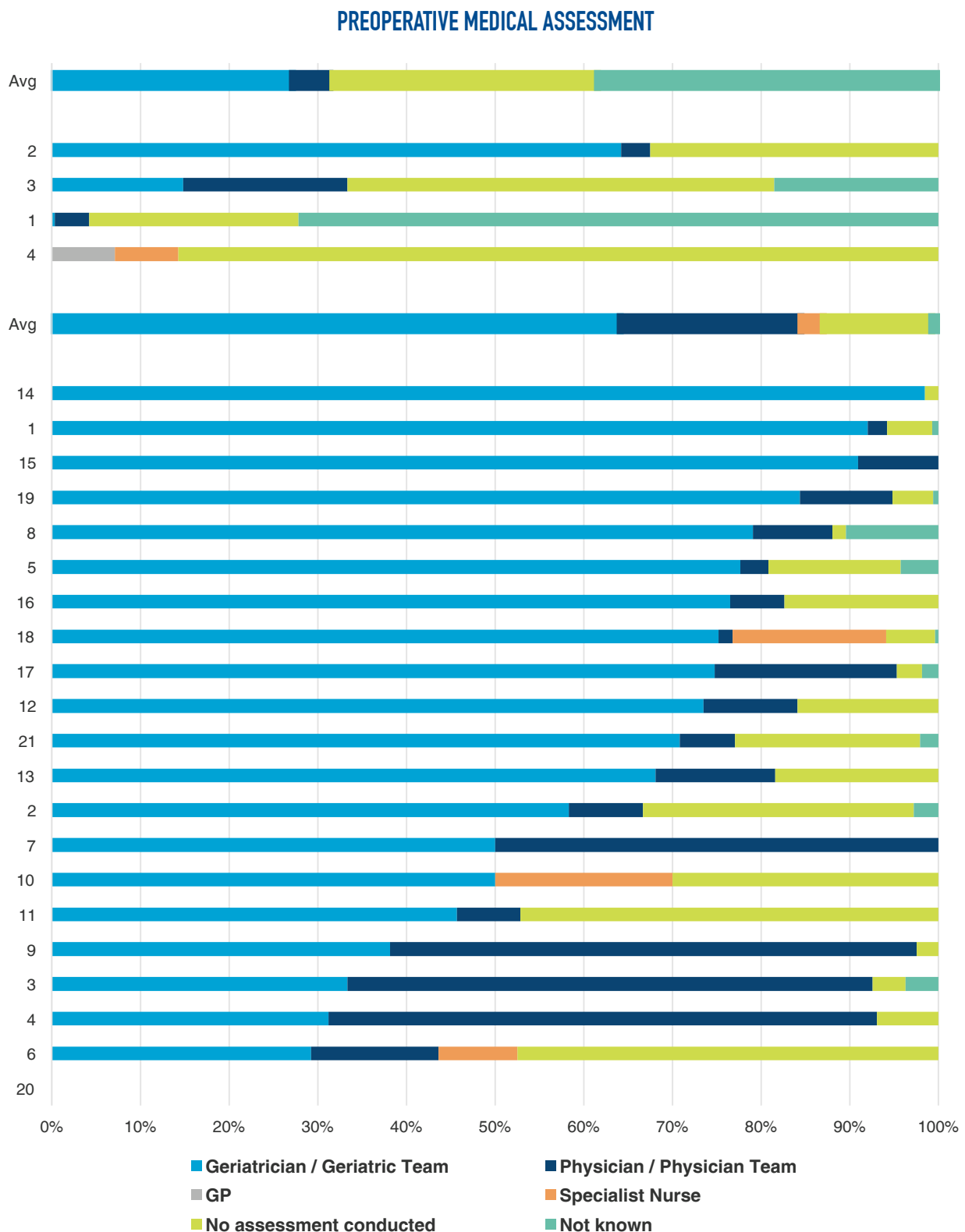


Effective management of the pain associated with a hip fracture is a critical aspect of care and of the overall patient experience. The ANZ Guideline for Hip Fracture Care⁴ recommends that pain is assessed and managed within 30 minutes of arrival and monitored and managed regularly thereafter. Nerve blocks are recommended as an alternative to systemic analgesia and to limit the amount, and therefore potential side effects, of systemic opioid analgesia. Substantial variation in the use of nerve blocks is seen between hospitals across Australia and New Zealand.

Note: hospital 20 not recorded.

FIGURE 14

PREOPERATIVE MEDICAL ASSESSMENT



The ANZ Guideline for Hip Fracture Care⁴ recommends the involvement of geriatricians in the care of hip fracture patients. This includes medical optimisation in advance of surgery as well as establishing ceilings of care in consultation with the patient. There is marked variation seen both between countries and between hospitals in the percentage of hip fracture patients who are assessed by a geriatrician or a physician prior to surgical intervention. This assessment is in addition to an anaesthetic review. This is likely to reflect variation in service model provision between different hospitals and is consistent with the facility level audit where there are clear differences in how orthogeriatric services and medical services are configured. Twenty-seven percent of hip fracture patients in New Zealand are reported to have been seen by a geriatrician prior to surgery whilst 69% in Australia are seen by a geriatrician prior to surgery.

Note: not collected at hospital 20.

SECTION 3: OPERATIVE CARE AND SURGERY

The majority of people sustaining a hip fracture will be treated with surgery. Figures 15 to 27 report data related to operative care.

FIGURE 15

TREATED WITH SURGERY

It is anticipated that nearly all patients with a hip fracture will be treated surgically with a view to optimising function and/or alleviating pain. However, non-operative treatment may be a reasonable option in some circumstances: such as for patients at high risk of peri-operative mortality or those with stable undisplaced fractures who are able to mobilise. The data presented in this report shows some variation between hospitals which may reflect differences in clinical management and in the populations treated. An additional reason to be considered is hospitals who can operate but elect to transfer patients to private facilities for surgery.

TREATED WITH SURGERY





FIGURE 16

CONSULTANT PRESENT

The high institutional variation seen in the proportion of surgical procedures that were supervised by a consultant likely reflects differences in staff levels, staff seniority and theatre availability, as hip fractures that are performed on scheduled operating lists are more likely to have a consultant present compared to cases performed on emergency lists (which are associated with unpredictable start times and after-hours surgery). The ANZ Guideline for Hip Fracture Care⁴ recommends performing hip fracture surgery on scheduled operating lists.

CONSULTANT PRESENT

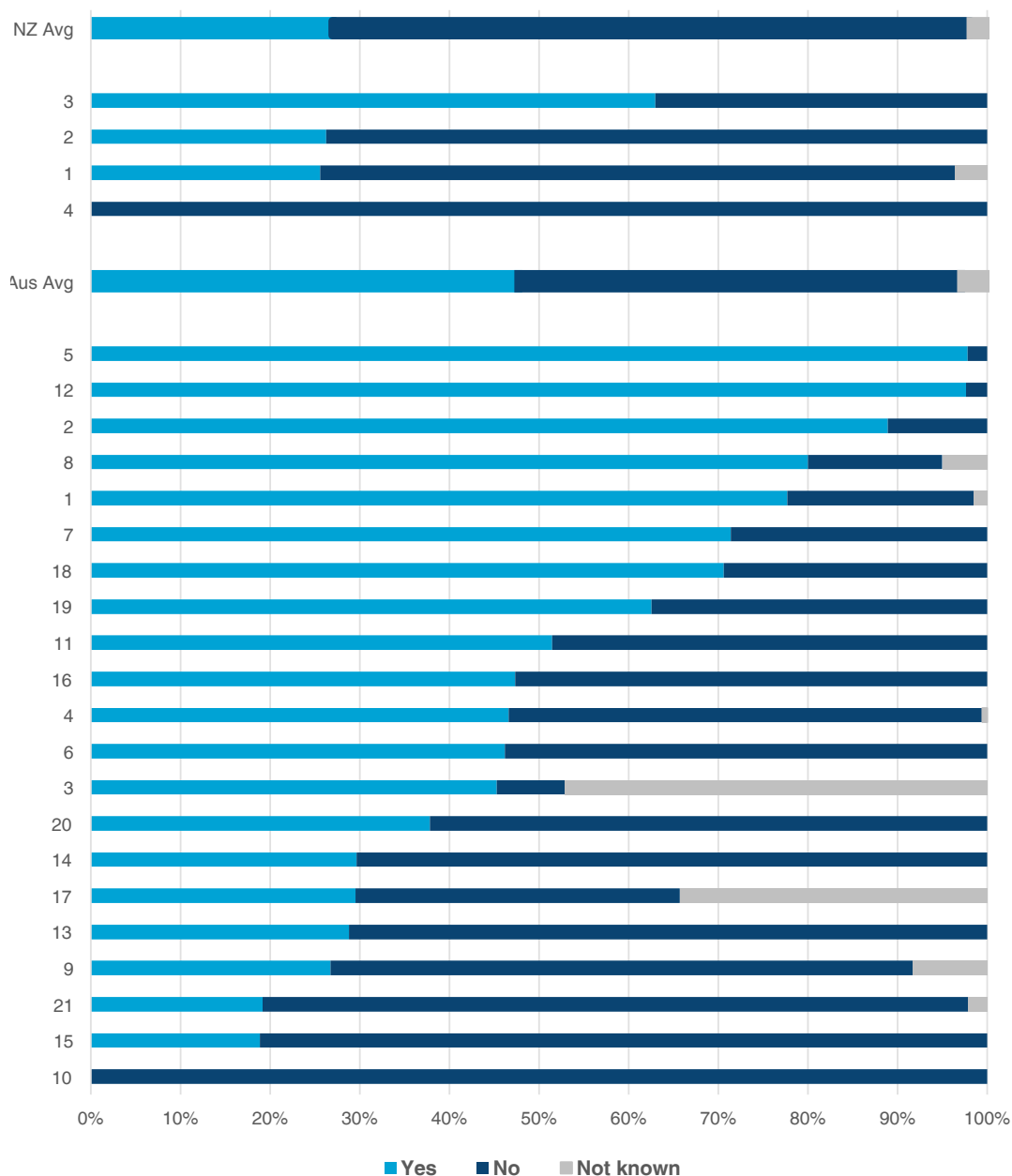
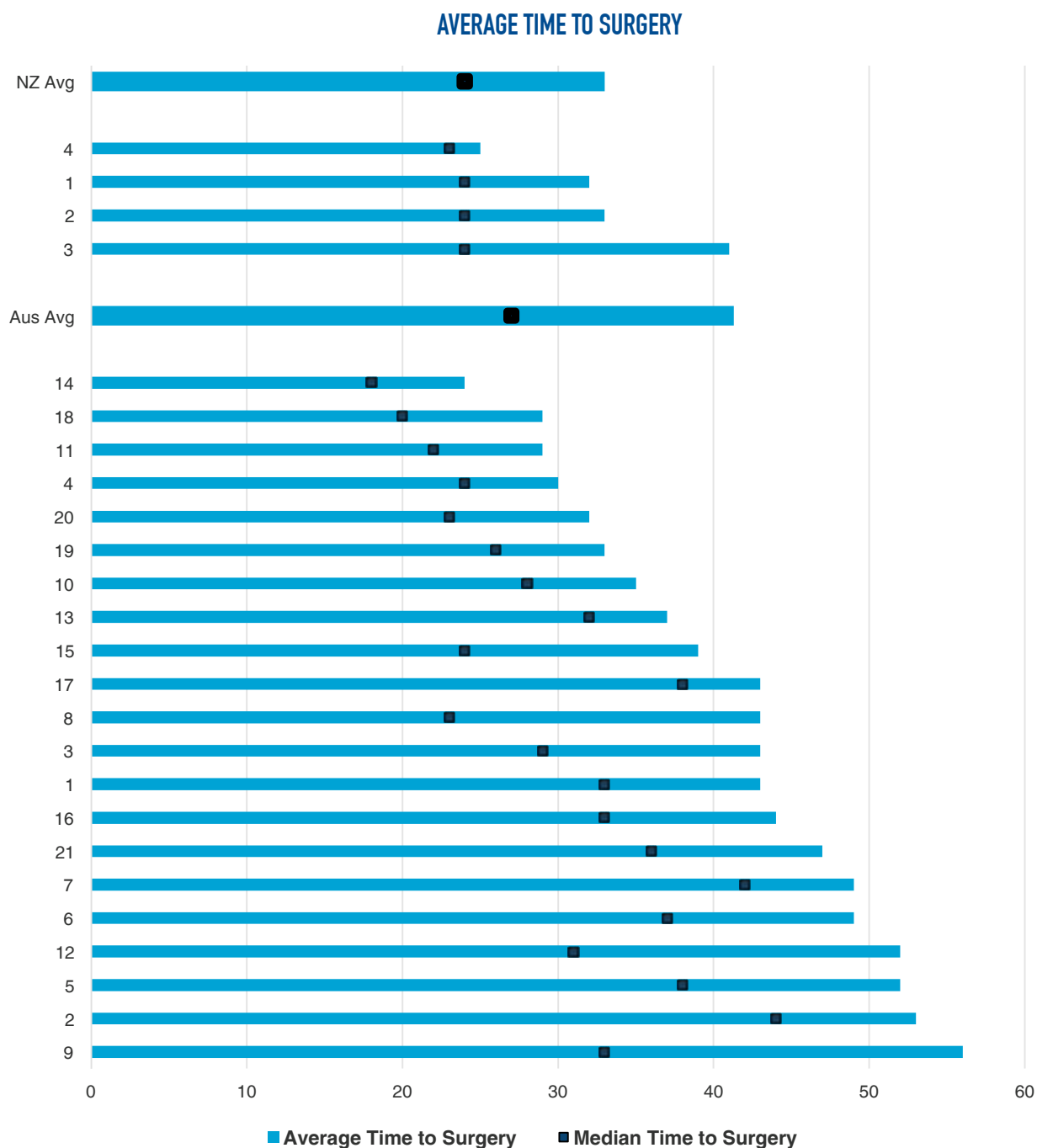


FIGURE 17

AVERAGE TIME TO SURGERY



Although the ANZ Guideline for Hip Fracture Care⁴ states that surgery should be performed on the day of or day after fracture, the average number of hours are reported here as many institutions (including some within the Registry) have their own criteria based on the number of hours from presentation or fracture (usually 36 or 48 hours, but occasionally 24 hours). Early surgery is thought to reduce morbidity, hasten recovery and reduce length of stay.

For the purposes of the ANZHFR, time to theatre is calculated by measuring the difference between the date and time of presentation to the emergency department of the operating hospital and commencement of surgery. Figure 17 shows the data for the median and the average (mean) time to surgery. The median is the time point at which half of the patients were treated in less than that time and half were treated at a time longer than the median. The average or mean (the end of the blue bar) is the average time to theatre and is longer than the median due to some patients waiting many days before undergoing surgery. It is important to consider both measurements as small numbers of patients and a few outliers can significantly alter the average time to surgery. The median time to surgery in New Zealand and Australia is 24 hours and 27 hours, respectively.

FIGURE 18

SURGERY ≤ 48 HOURS

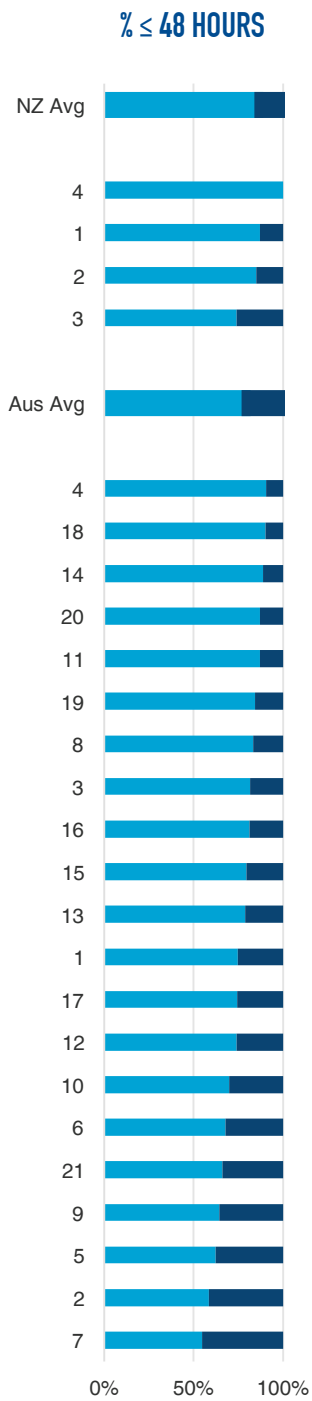


FIGURE 19

REASON FOR DELAY > 48 HOURS

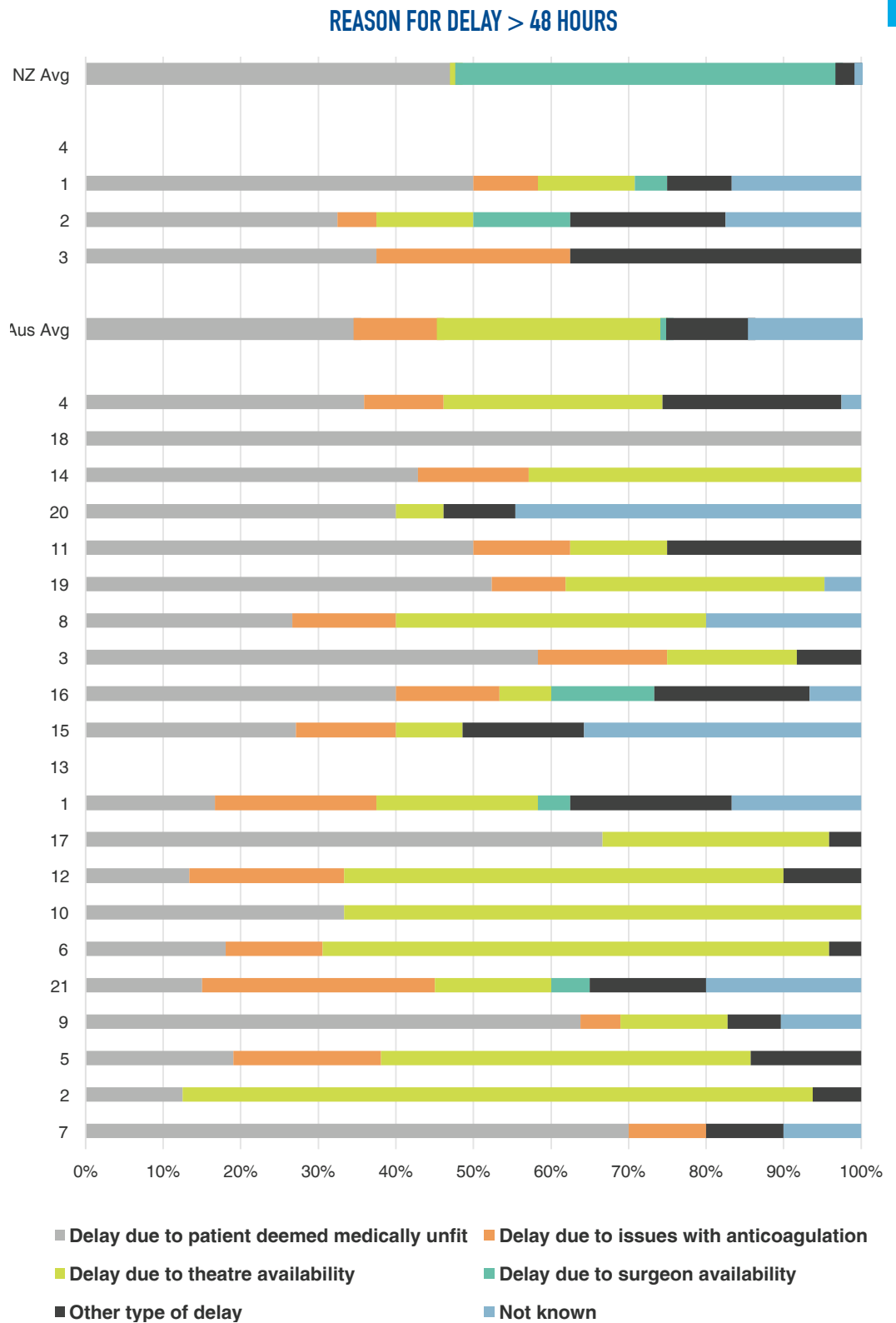
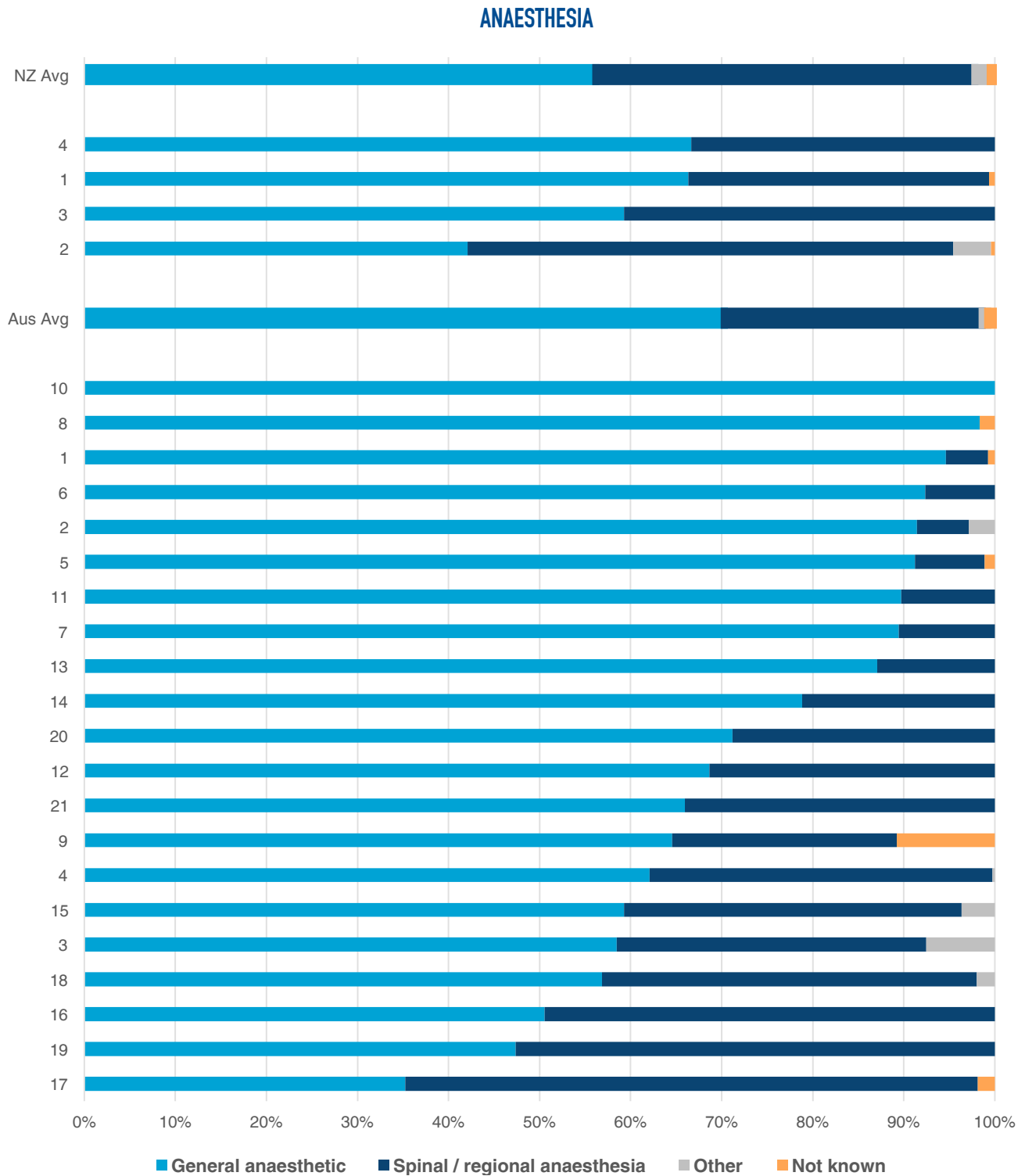


Figure 18 shows that for all sites, most patients were treated within 48 hours of presentation to the operating hospital, but Figure 19 shows considerable variation in the reasons provided for any delays beyond 48 hours. Figure 19 provides useful information for sites wishing to improve the proportion of patients treated within 48 hours as it highlights modifiable causes for surgical delay.

FIGURE 20
ANAESTHESIA



The ANZ Guideline for Hip Fracture Care⁴ suggests that patients should be given a choice in relation to anaesthesia in the absence of strong evidence supporting regional over general anaesthesia. The majority of people undergoing operative intervention for a hip fracture have a general anaesthetic – 56% in New Zealand and 70% in Australia. Marked variation is noted between hospitals. No comment can be made from this data in relation to engagement of the patient in the decision making process.

FIGURES 21, 22, 23, 24, 25, 26 AND 27

OPERATIONS BY TYPE OF FRACTURE

Fractures of the proximal (upper) femur can be classified by the location of the fracture. The fracture locations and terms used by the ANZHFR are shown in Image 1. The different types of fracture are generally treated by different surgical techniques. Hemiarthroplasty involves removing the head of the femur (ball of the hip joint) that has broken away from the shaft of the bone and replacing it with an artificial (metal) ball that is held in place by a connected stem that sits inside the upper end of the femur (thigh bone). A total hip arthroplasty involves the same procedure, but also involves replacing the socket of the hip joint.

Data from the Australian Orthopaedic Association National Joint Replacement Registry (AOANJRR) show a relative increase over time in total hip arthroplasty compared to hemiarthroplasty in patients with hip fracture⁸. The proportion of arthroplasties for hip fracture that were total hip arthroplasties increased from 10.2% in 2003 to 18.9% in 2012 which is a trend seen in other countries. The Guideline recommends the use of cemented stems for hip arthroplasty and this is supported by data from the AOANJRR showing lower rates of revision for cemented stems compared to uncemented stems when used for the treatment of hip fracture. Figures 22 and 23 show the proportions of hip arthroplasty that are hemiarthroplasty and total hip arthroplasty, reported separately, for undisplaced and displaced femoral neck (intracapsular/sub-capital) fractures.

Figure 24 provides information on the variation in surgical treatment for intertrochanteric fractures.

These fractures are usually treated by internally fixing the fractures using metallic devices, rather than replacing the broken part (as with arthroplasty). There is variation in the use of the two most common types of implant: a sliding hip screw and an intra-medullary nail. Comparative studies have not shown large differences in the outcomes between these two devices (and this is reflected in the recommendations within the ANZ Guideline for Hip Fracture Care⁴), but intramedullary fixation is recommended for subtrochanteric fractures and this recommendation appears to have been followed as seen in Figure 25. Figures 26 and 27 show the rates of cement use reported by sites for hemiarthroplasty and total hip arthroplasty.

NOTE: Figures 22 to 25 use the same colour for the same operation.

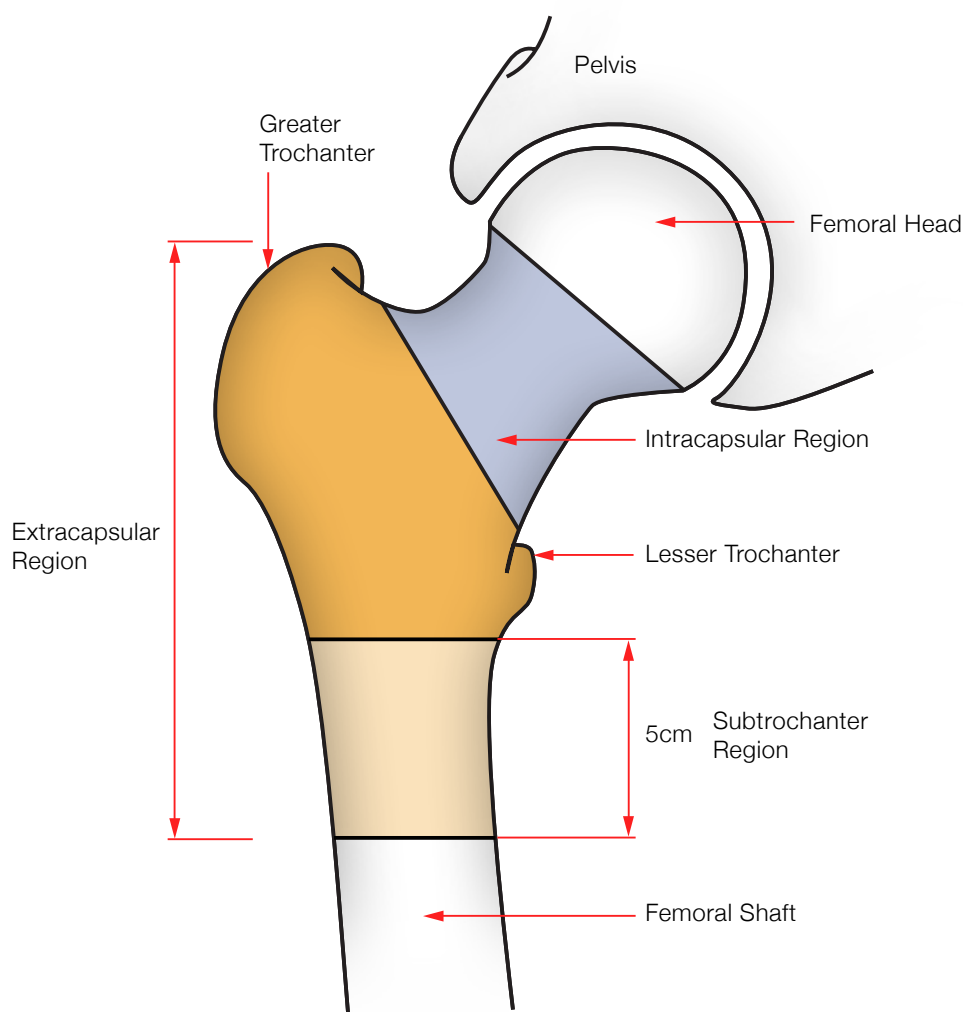
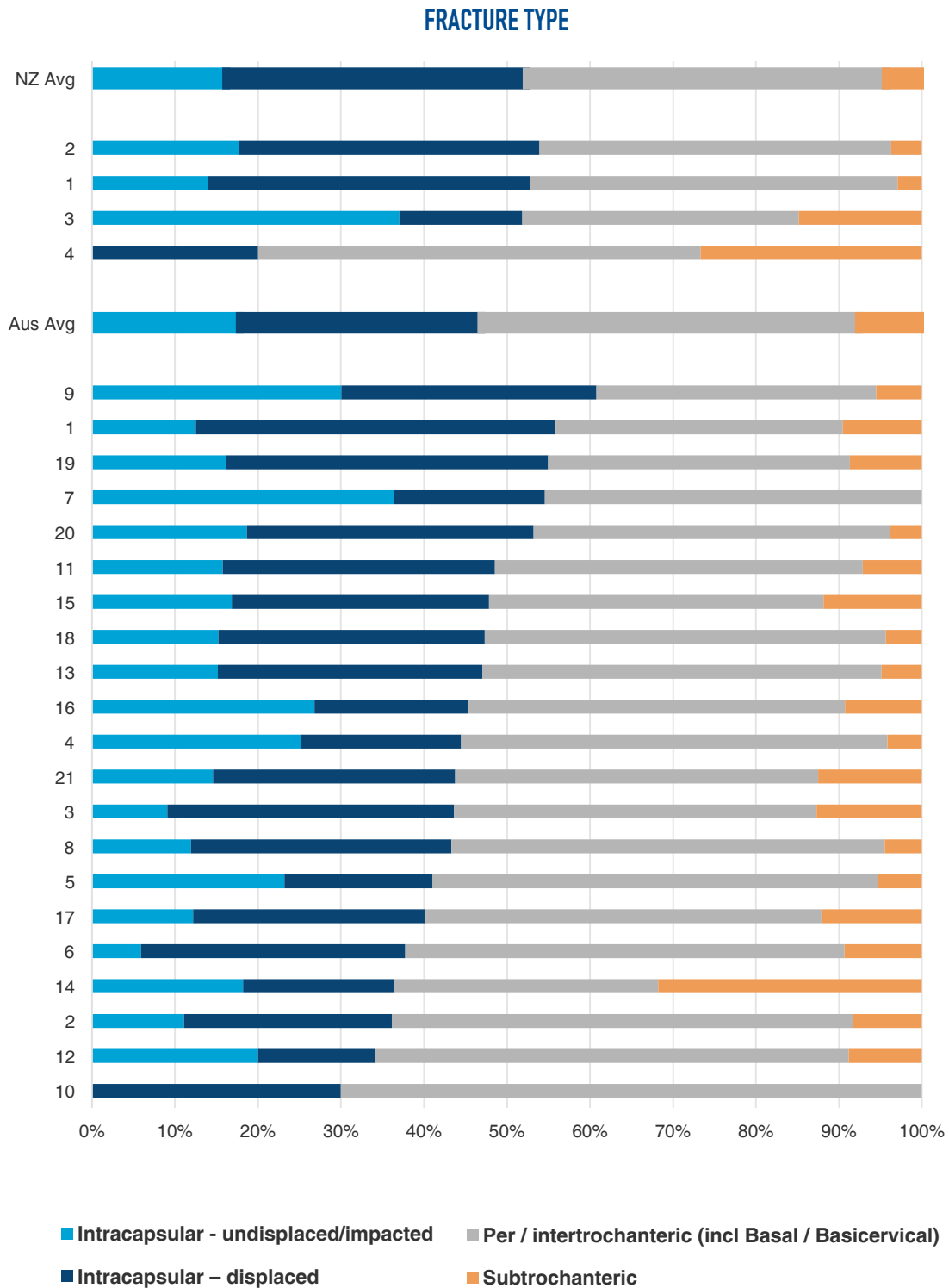


Image 1: Diagram of the hip showing zones of fracture

FIGURE 21

FRACTURE TYPE



The types of fracture seen at each site are consistent with previous reports in that nearly half of all fractures are intertrochanteric, around 5% are subtrochanteric, and the remainder are intracapsular (subcapital). Sites with wide variation from the average are likely to reflect low numbers from those sites.

FIGURE 22

INTRACAPSULAR FRACTURE: UNDISPLACED / IMPACTED

INTRACAPSULAR FRACTURE: UNDISPLACED / IMPACTED

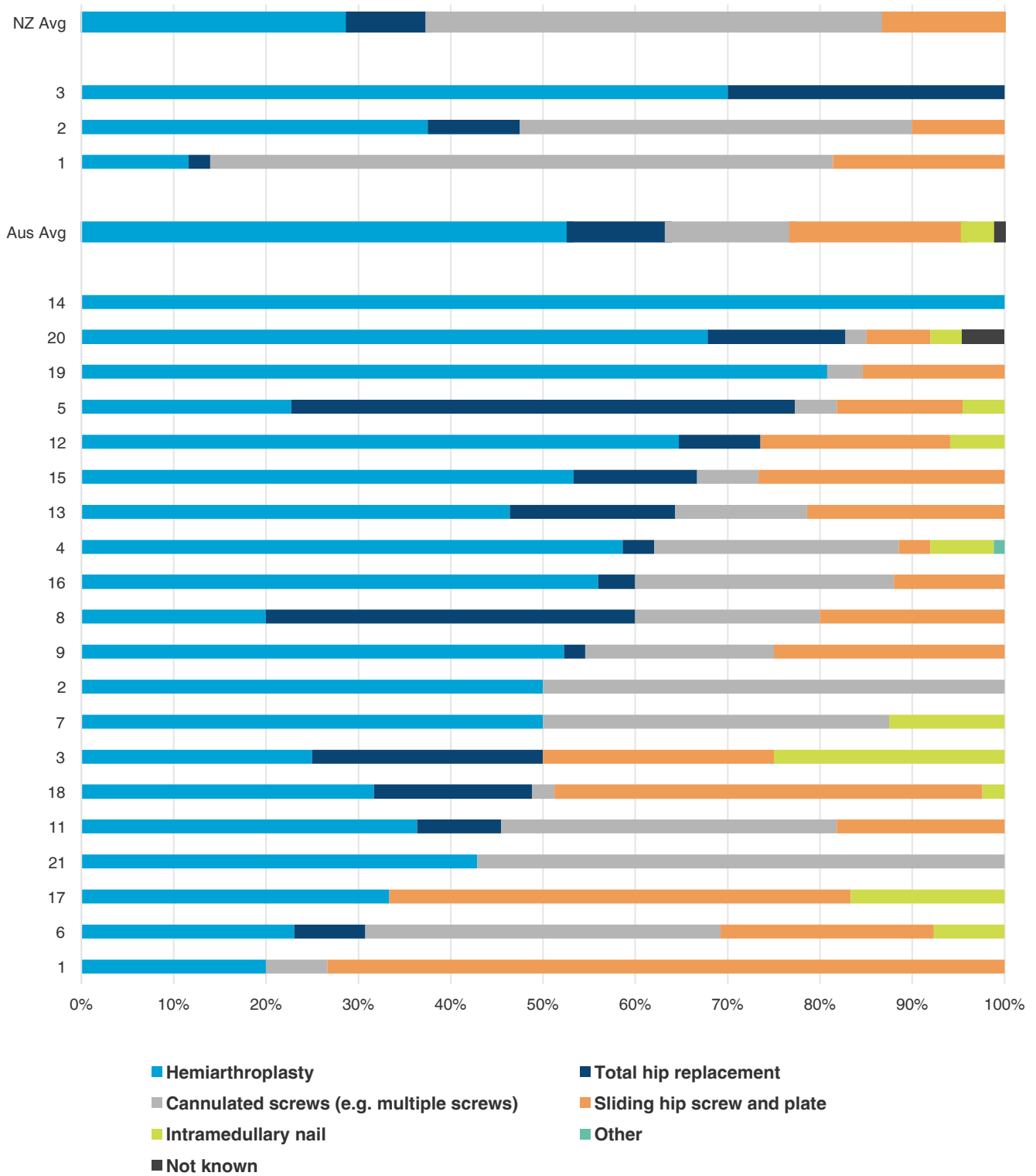


FIGURE 23

INTRACAPSULAR FRACTURE: DISPLACED

INTRACAPSULAR FRACTURE: DISPLACED

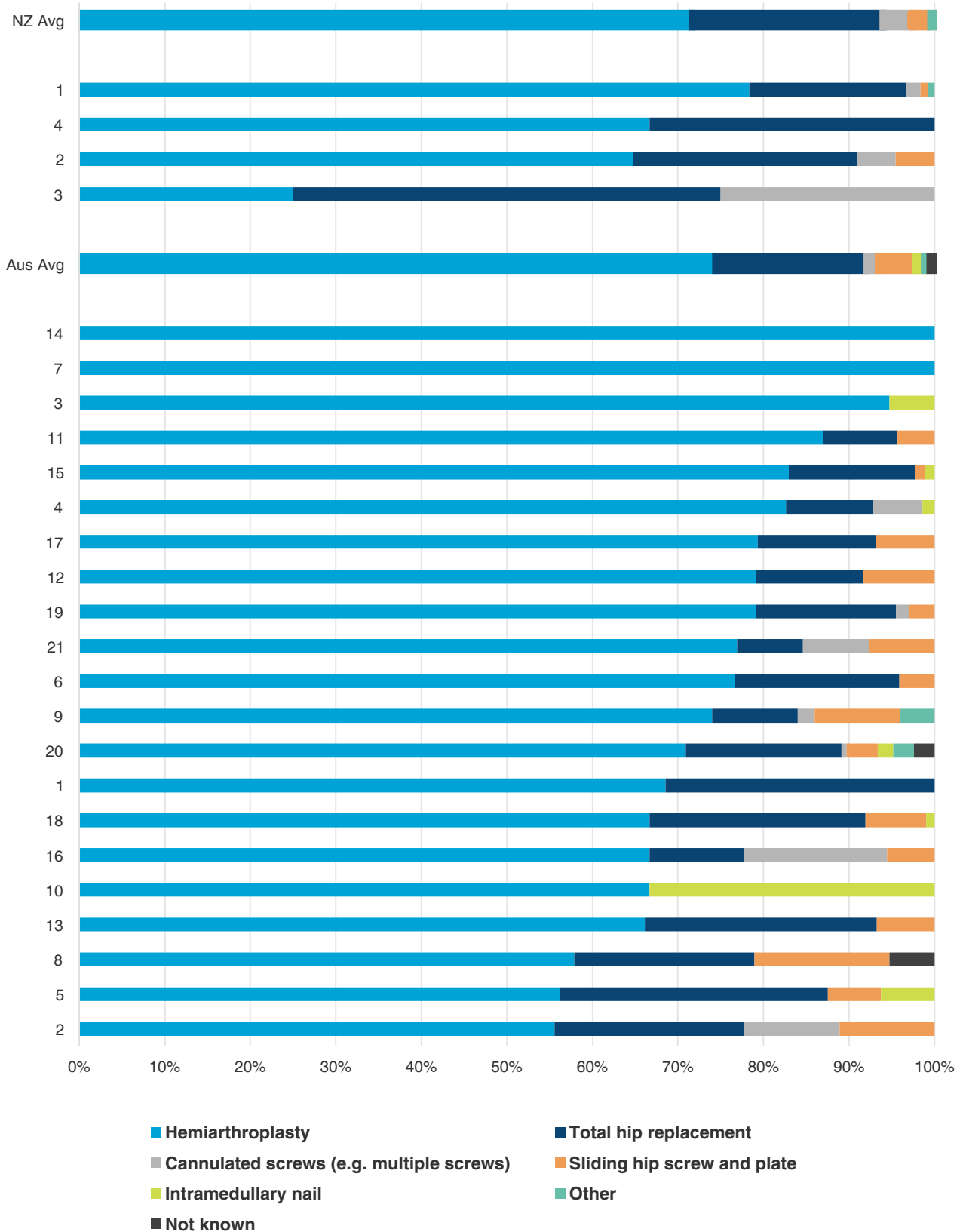


FIGURE 24

PER/INTEROCHANTERIC FRACTURE INCLUDING BASAL/BASICERVICAL

PER/INTEROCHANTERIC FRACTURE INCLUDING BASAL/BASICERVICAL

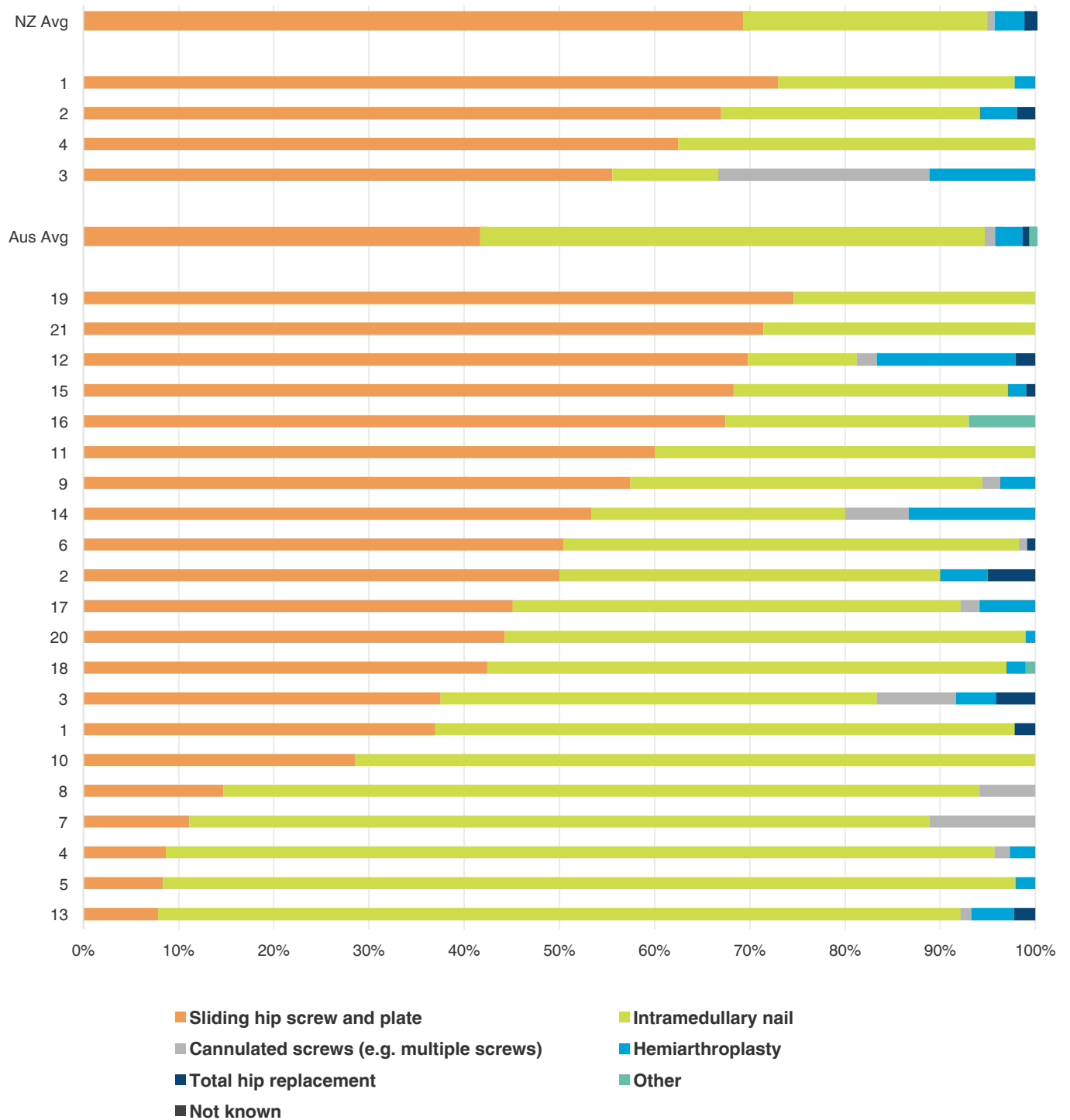


FIGURE 25

SUBTROCHANTERIC FRACTURE

SUBTROCHANTERIC

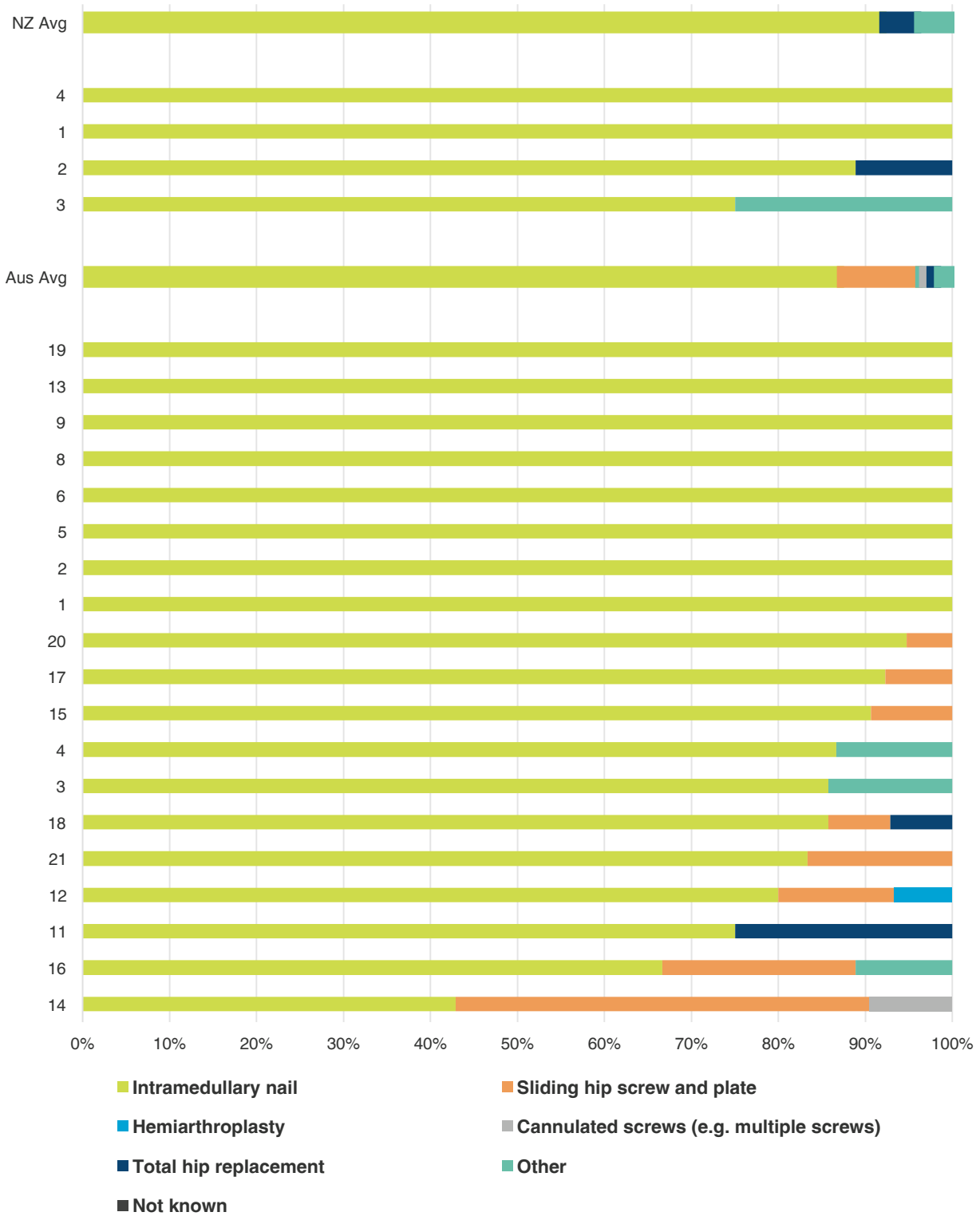
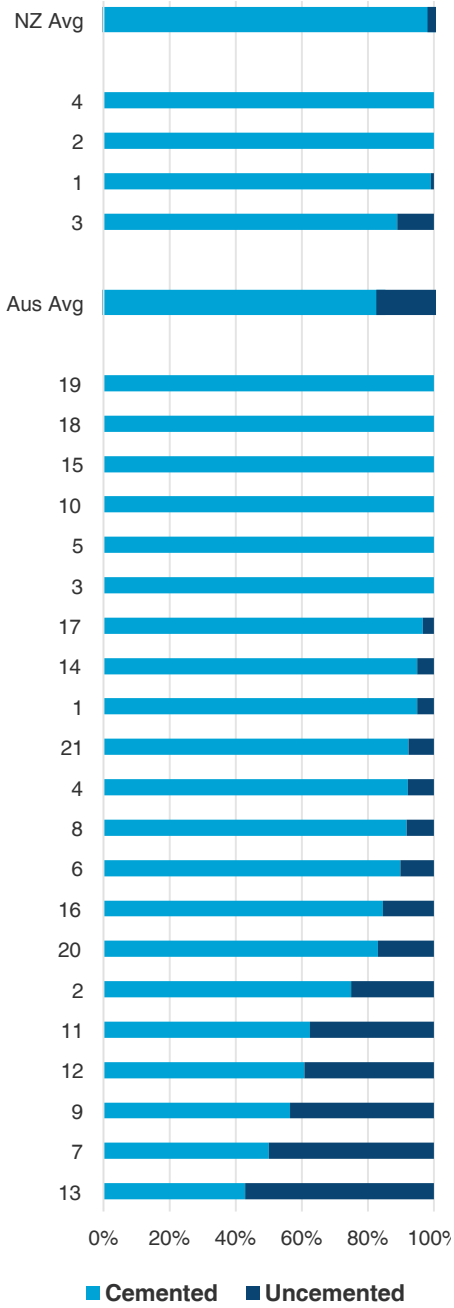


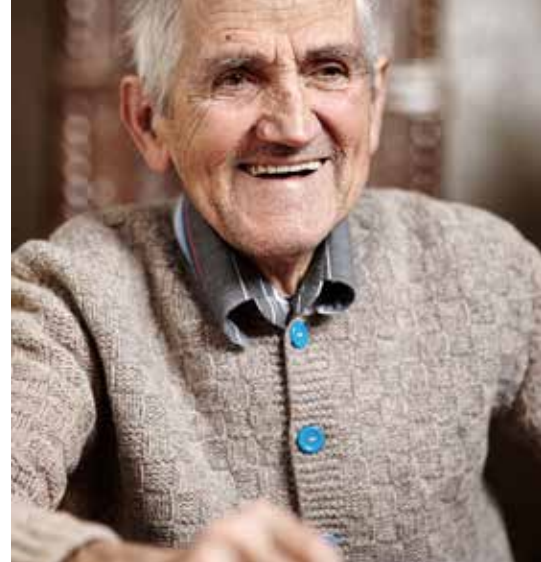
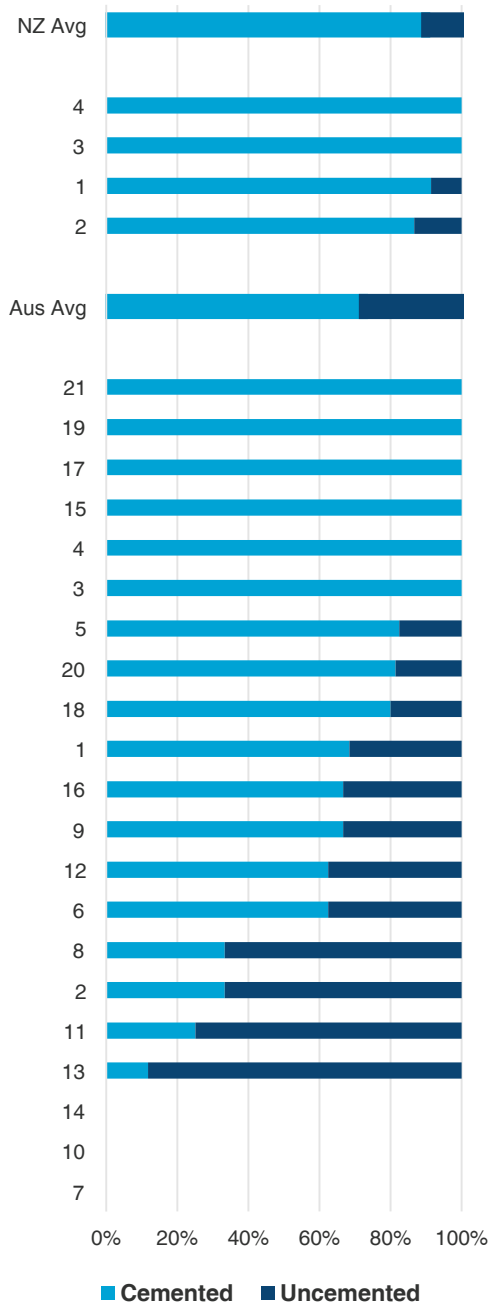
FIGURE 26 AND FIGURE 27

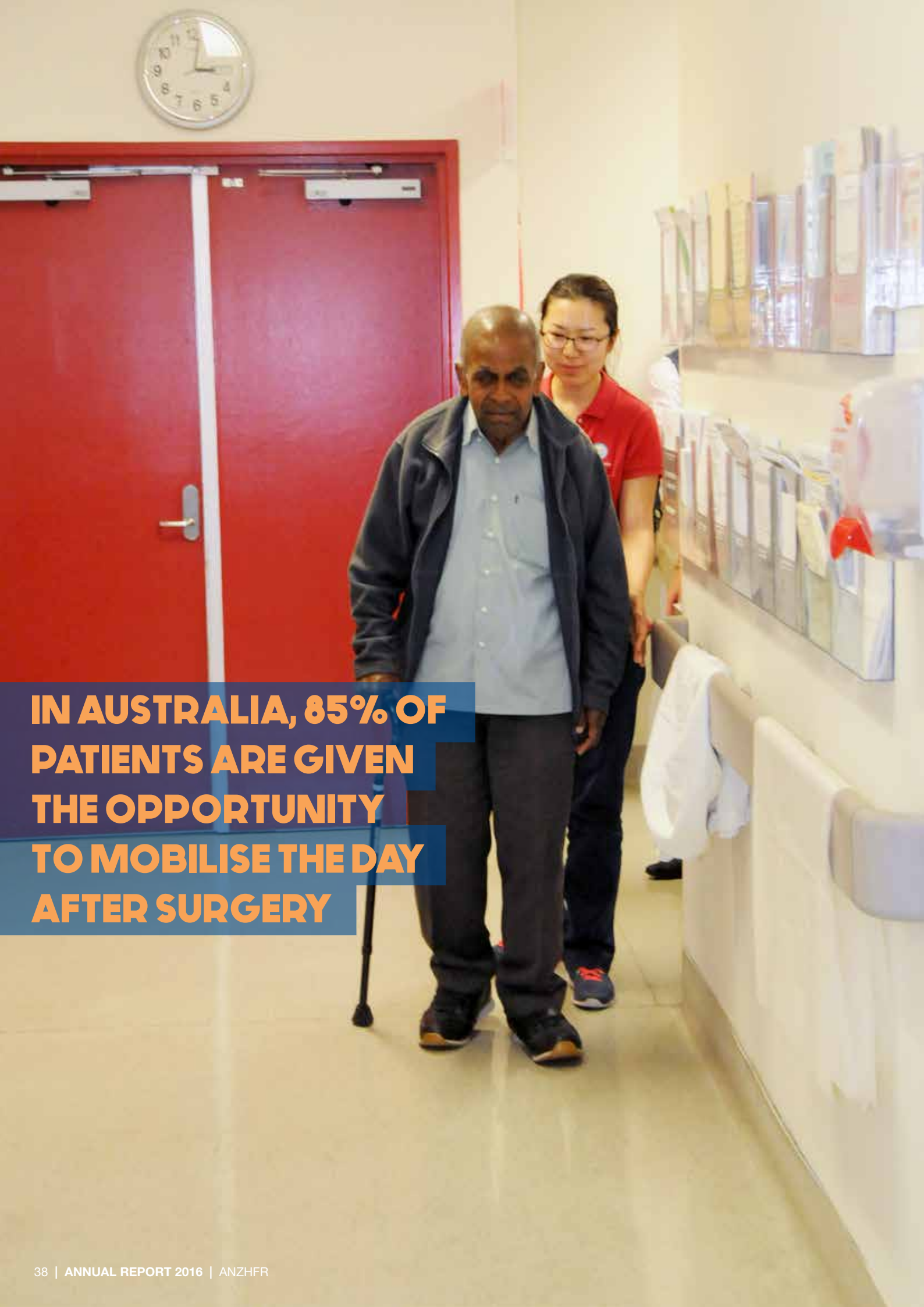
CEMENTED VERSUS UNCEMENTED

**HEMIARTHROPLASTY
% STEM CEMENTED**



**TOTAL ARTHROPLASTY
% STEM CEMENTED**





IN AUSTRALIA, 85% OF PATIENTS ARE GIVEN THE OPPORTUNITY TO MOBILISE THE DAY AFTER SURGERY

SECTION 4: POSTOPERATIVE CARE

This section reports data related to hip fracture care after surgery while the person is cared for in an acute ward.

FIGURE 28

ASSESSED BY GERIATRIC MEDICINE

ASSESSED BY GERIATRIC MEDICINE

The ANZ Guideline for Hip Fracture Care⁴ recommends the involvement of geriatricians in the care of older hip fracture patients. Service models differ across hospitals with some offering a true shared care approach whilst others operate on a consult basis. Even when a geriatric service is available, not all services are currently able to offer a pre-operative assessment. In New Zealand, looking at the 4 hospitals entering data into the Registry, 76% of hip fracture patients see a geriatrician at some stage in their acute hospital stay. In Australia, looking at the hospitals entering data into the Registry, 95% of hip fracture patients see a geriatrician at some stage in their acute hospital stay. Whilst encouraging, it should be remembered that those hospitals with an orthogeriatric service are more likely to be the early adopters of the ANZ Hip Fracture Registry.

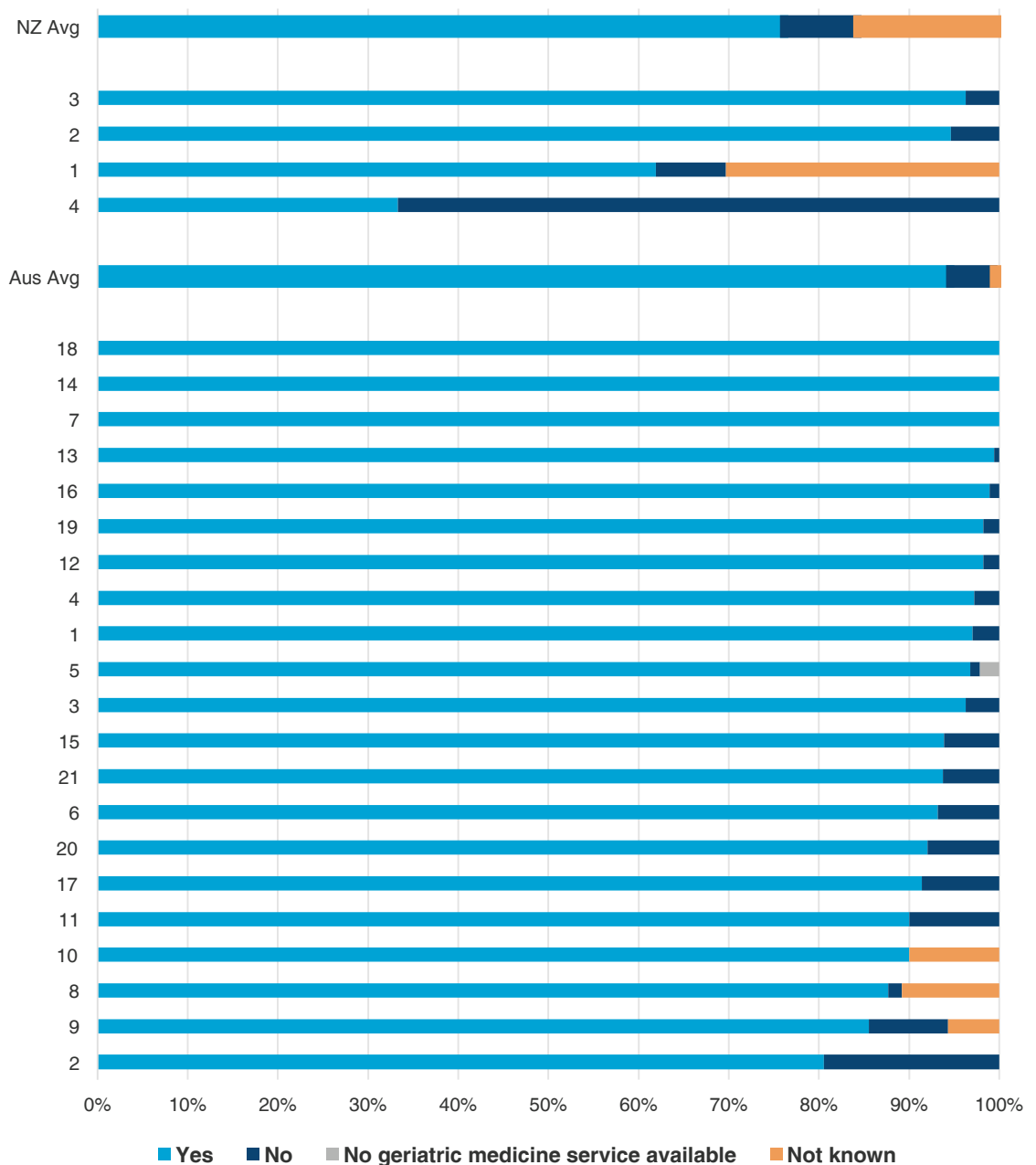
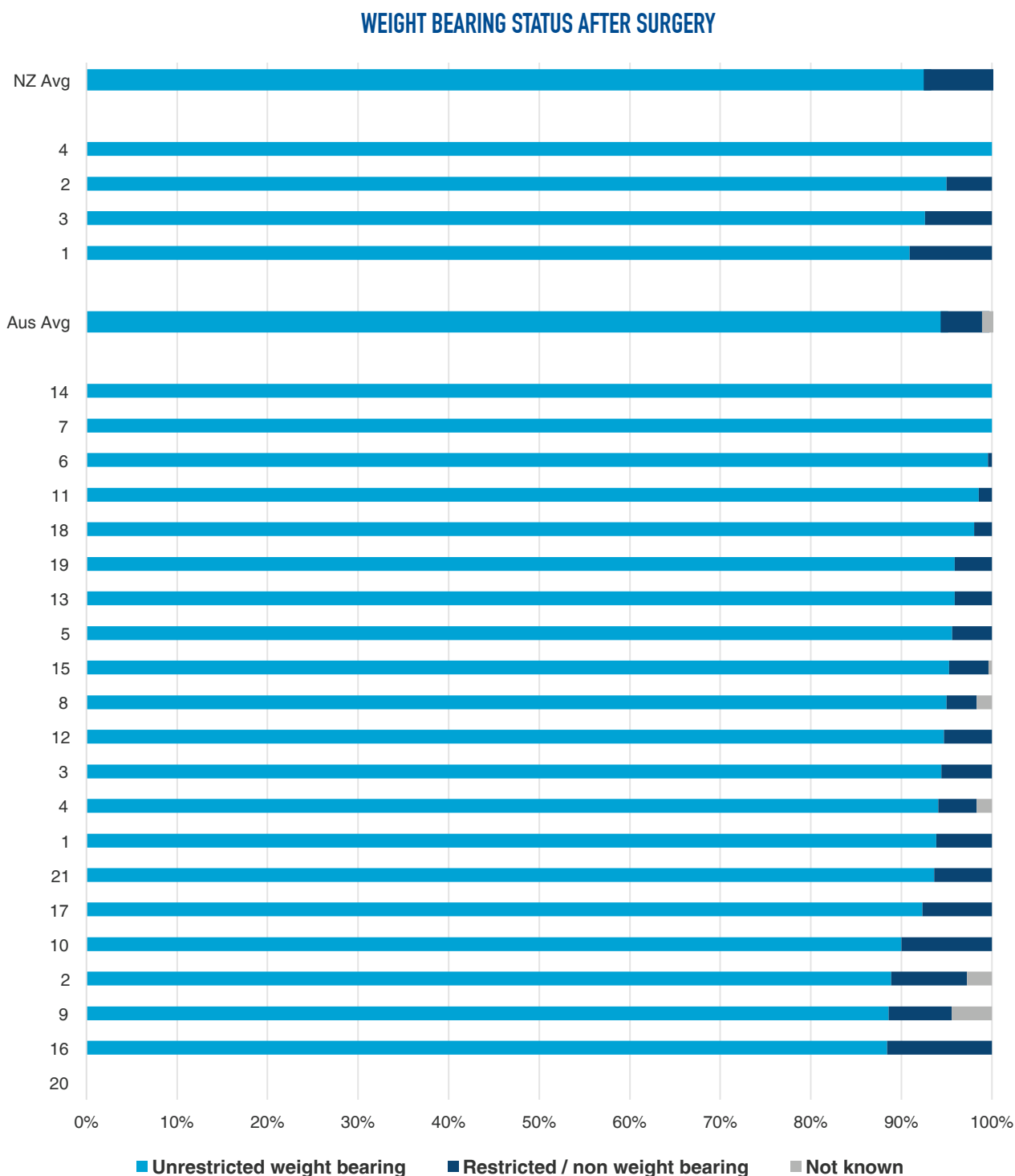


FIGURE 29

WEIGHT BEARING STATUS AFTER SURGERY

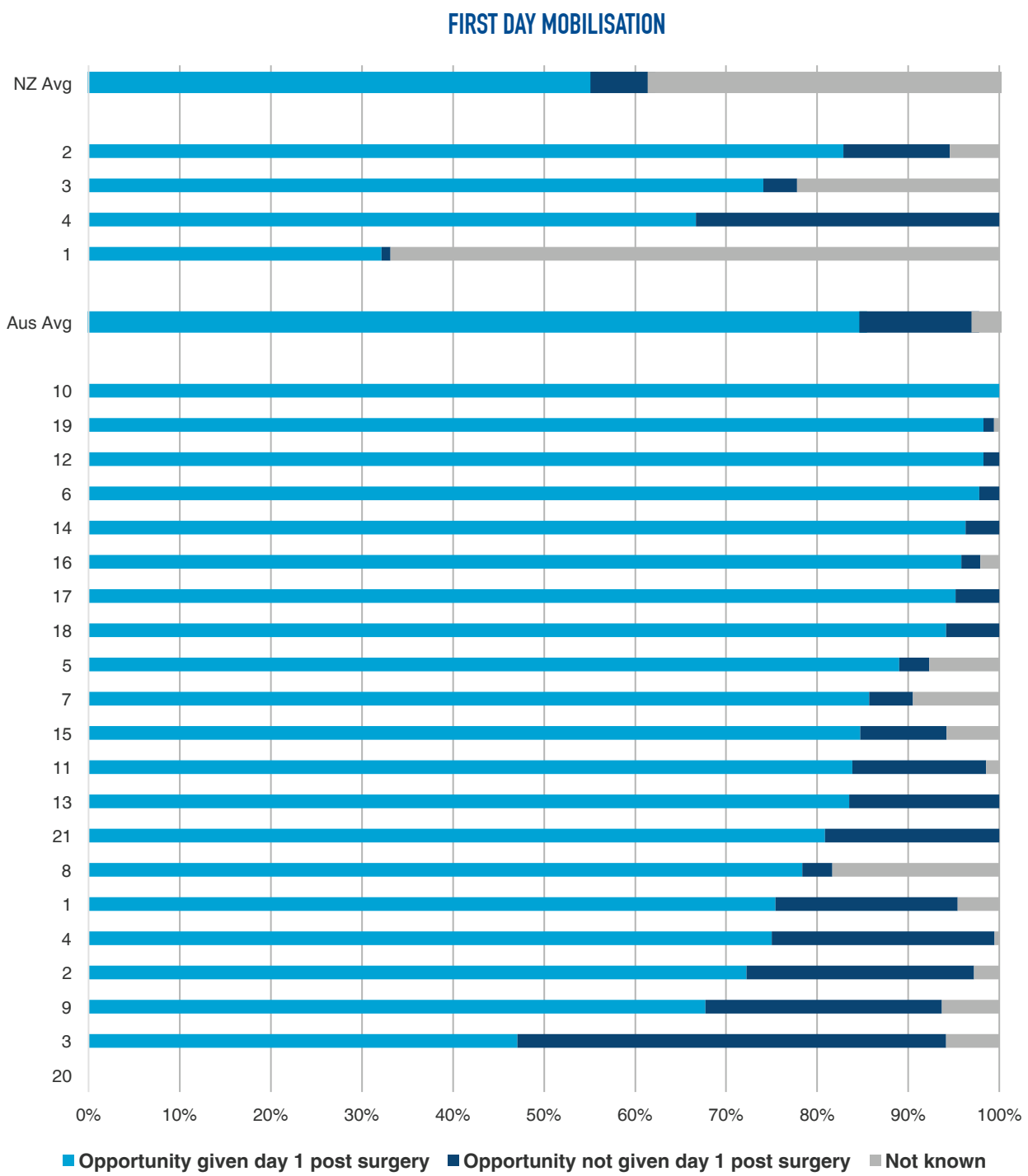


Previously, many patients were not permitted to fully weight bear post-operatively, for fear of disturbing the surgical fixation. However, there is little evidence to support this, and permitting immediate unrestricted weight bearing after surgery permits easier rehabilitation and earlier restoration of mobility. The ANZ Guideline for Hip Fracture Care⁴ recommends that surgery should aim to allow full weight bearing without restriction immediately after surgery. This figure shows that, on average, over 90% of patients are allowed full weight bearing after surgery.

Note: hospital 20 not recorded.

FIGURE 30

FIRST DAY MOBILISATION



The ANZ Guideline for Hip Fracture Care⁴ recommends early mobilisation after surgery to prevent post-operative complications and facilitate early functional recovery. All hip fracture patients should be given the opportunity to sit out of bed and start to mobilise the day after surgery unless there is a specific documented contraindication. In New Zealand, 56% of patients are given the opportunity to mobilise the day after surgery. This may be an underestimate given that 38% of patients had “unknown” recorded for this question. In Australia, 85% of patients are given the opportunity to mobilise the day after surgery. Variation in opportunity is noted between hospitals.

Note: hospital 20 not recorded.

FIGURE 31

PRESSURE INJURIES OF THE SKIN



People hospitalised following a hip fracture are at risk of pressure injury particularly if there is a period of prolonged immobilisation. Pressure injury impacts on functional recovery and length of stay and is potentially avoidable. In New Zealand, 1.7% of patients were reported to have sustained a pressure injury. However the answer to this question is recorded “not known” in 32% of New Zealand hip fracture patients. In Australia, 3.2% of patients were reported to have sustained a new pressure injury.

FIGURE 32

AVERAGE LENGTH OF STAY ACUTE WARD

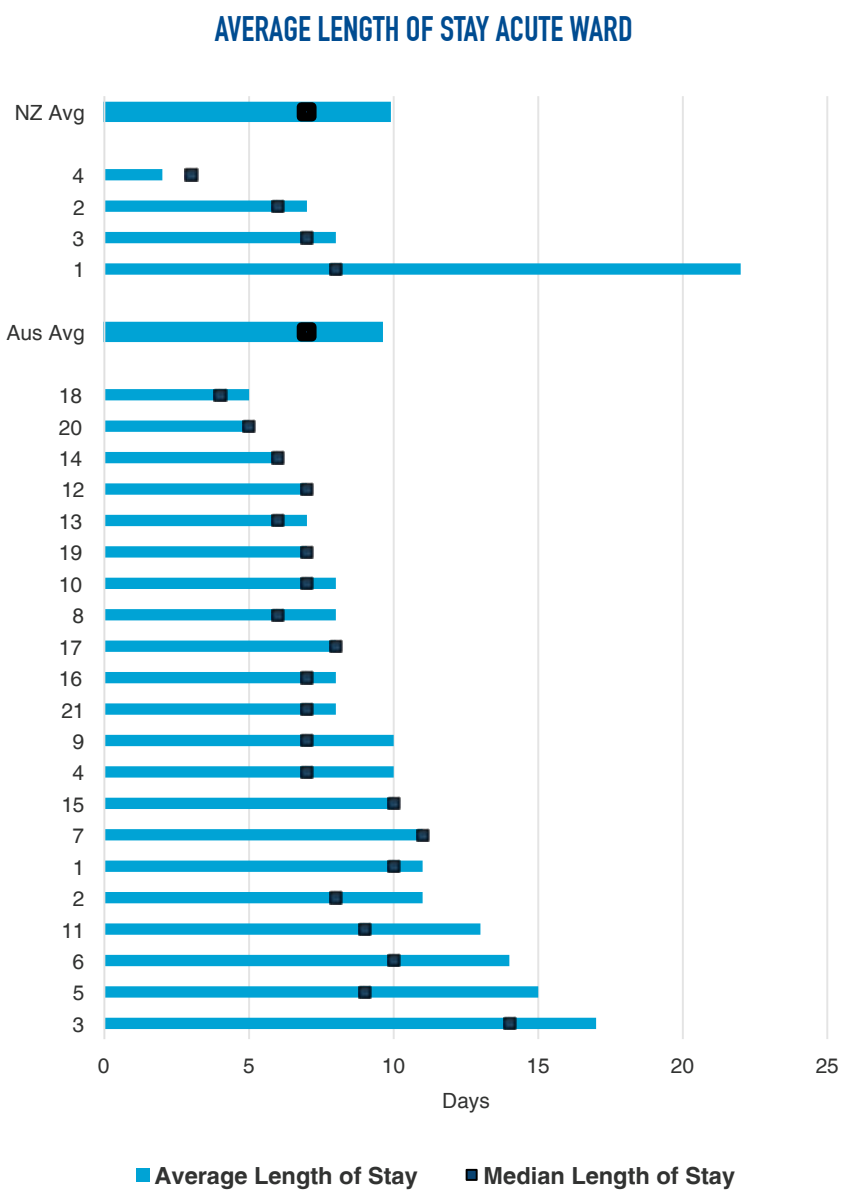
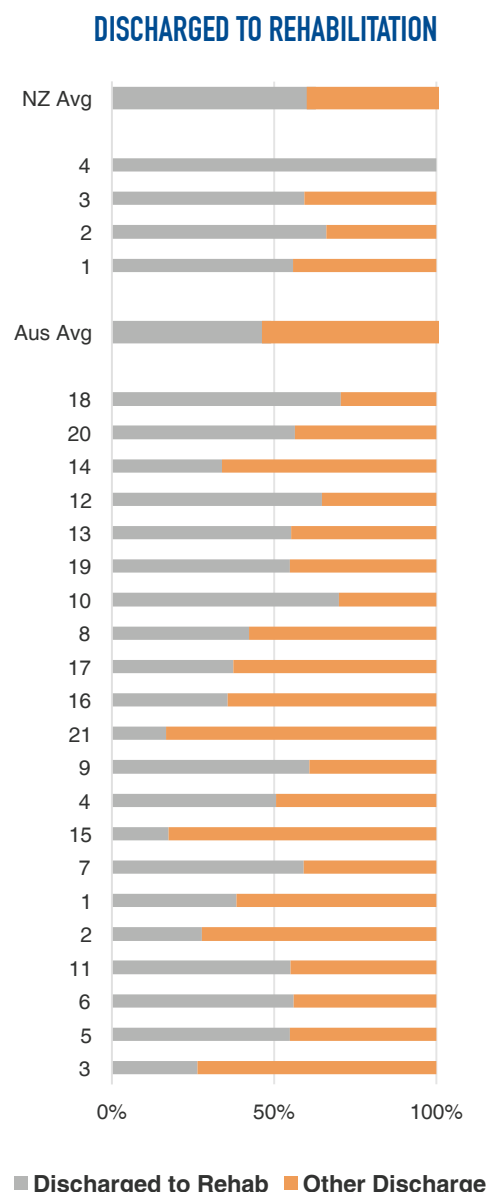


FIGURE 33

DISCHARGE TO REHABILITATION



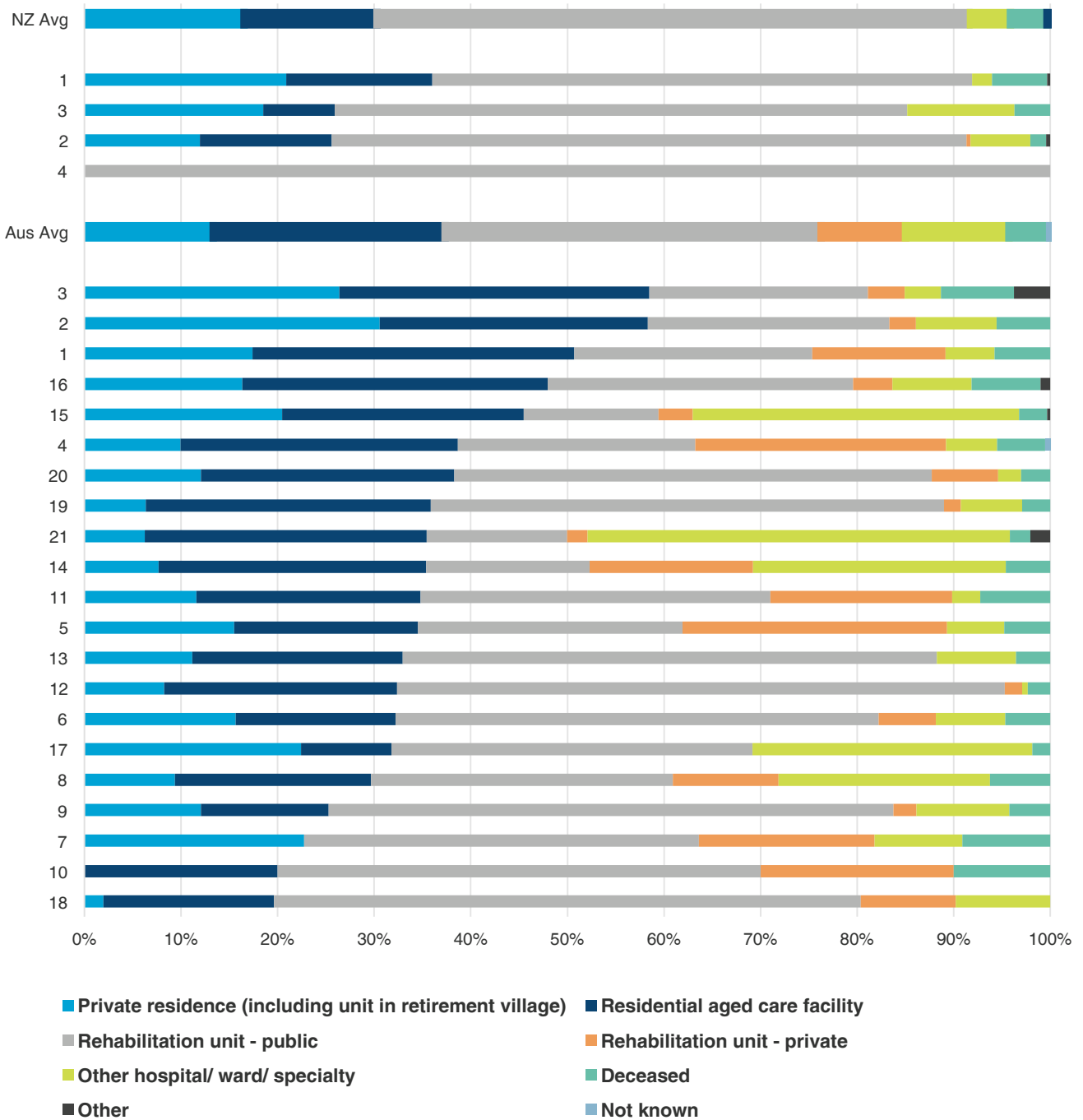
Average and median acute length of stay are presented. Whilst both average and median lengths of stay are very similar in New Zealand and Australia, there is substantial variation seen between hospitals in both countries.

Acute length of stay varies for a number of reasons including access to subacute facilities or services in the community that can deliver home based rehabilitation. Some hospitals have pathways and protocols that take people from the acute setting into the subacute setting within a short period after surgery whilst other places will keep people in the acute setting for longer but discharge directly home. For example, the hospital with the shortest acute length of stay also transfers the largest proportion of patients to rehabilitation whilst some hospitals with a longer acute length of stay, discharge a greater proportion of patients back to their usual place of residence. It is therefore important to consider both acute length of stay as well as discharge destination from the acute setting as shown in the next figure (Figure 34). The preferred measure would be to look at overall length of stay but given the movement of patients between hospitals, including to the private sector, this is not currently possible. Use of linked data in the future will provide a better overall picture.

FIGURE 34

DISCHARGE DESTINATION FROM THE ACUTE WARD

DISCHARGE DESTINATION FROM ACUTE WARD



SECTION 5: MINIMISING THE RISK OF THE NEXT FRACTURE

Figures 35 to 37 show secondary prevention initiatives to reduce subsequent falls and fractures.

FIGURE 35

SPECIALIST FALLS ASSESSMENT

The ANZ Guideline for Hip Fracture Care⁴ recommends that hip fracture patients should be assessed for falls risk so as to minimise risk of future falls and fractures. This should consist of an assessment by a suitably trained person and cover fall history, risk factors for falls including medication review and formulation of a future plan to prevent further falls. This may be undertaken at the time of hospitalisation or planned for future assessment. In New Zealand, 46% of patients are reported to have undergone a falls assessment whilst an in-patient. It should be noted that the answer to this question was “not known” in 49% of New Zealand patients. In Australia, 76% of patients are reported to have undergone a falls assessment whilst an in-patient.

SPECIALIST FALLS ASSESSMENT

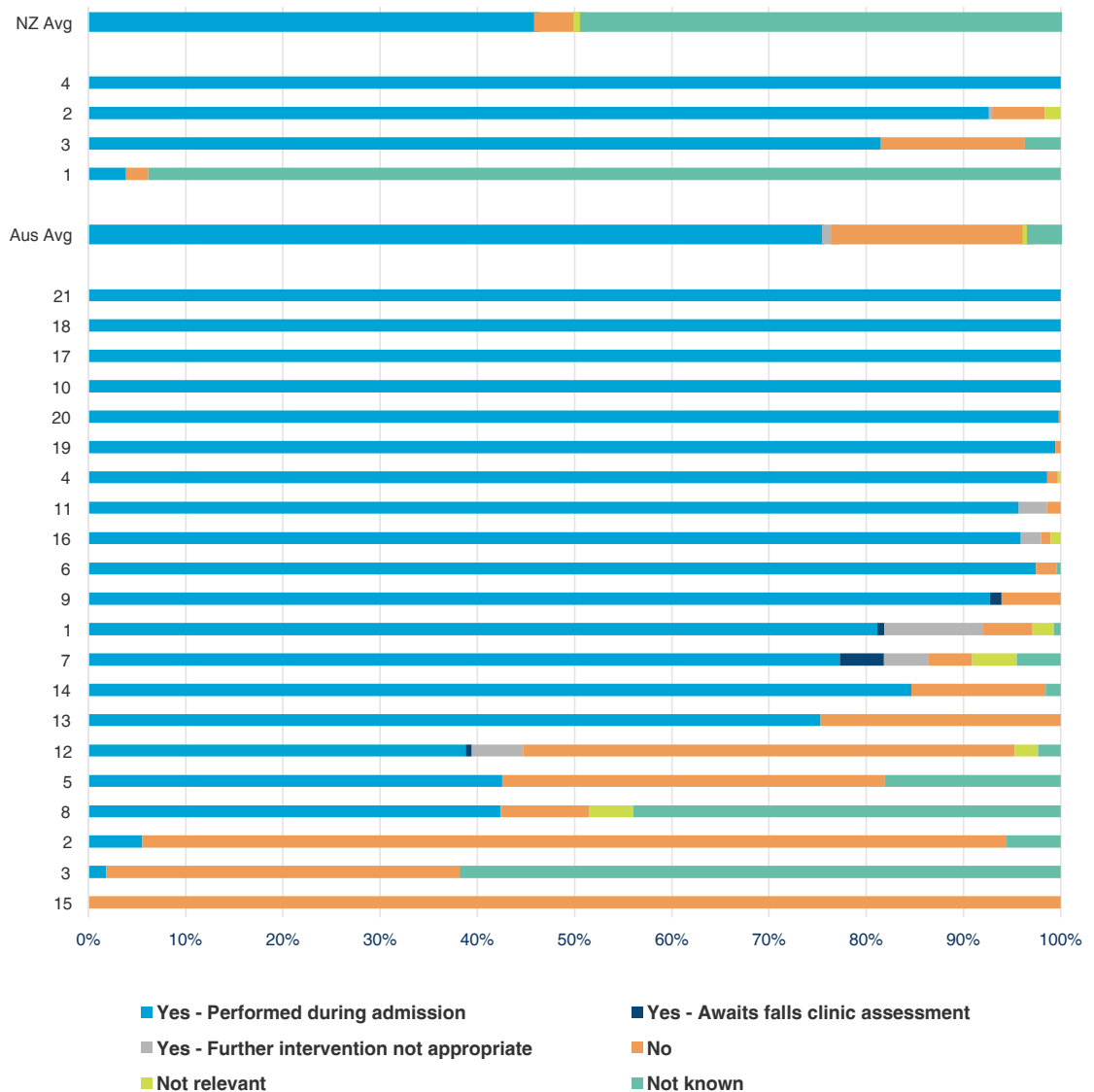
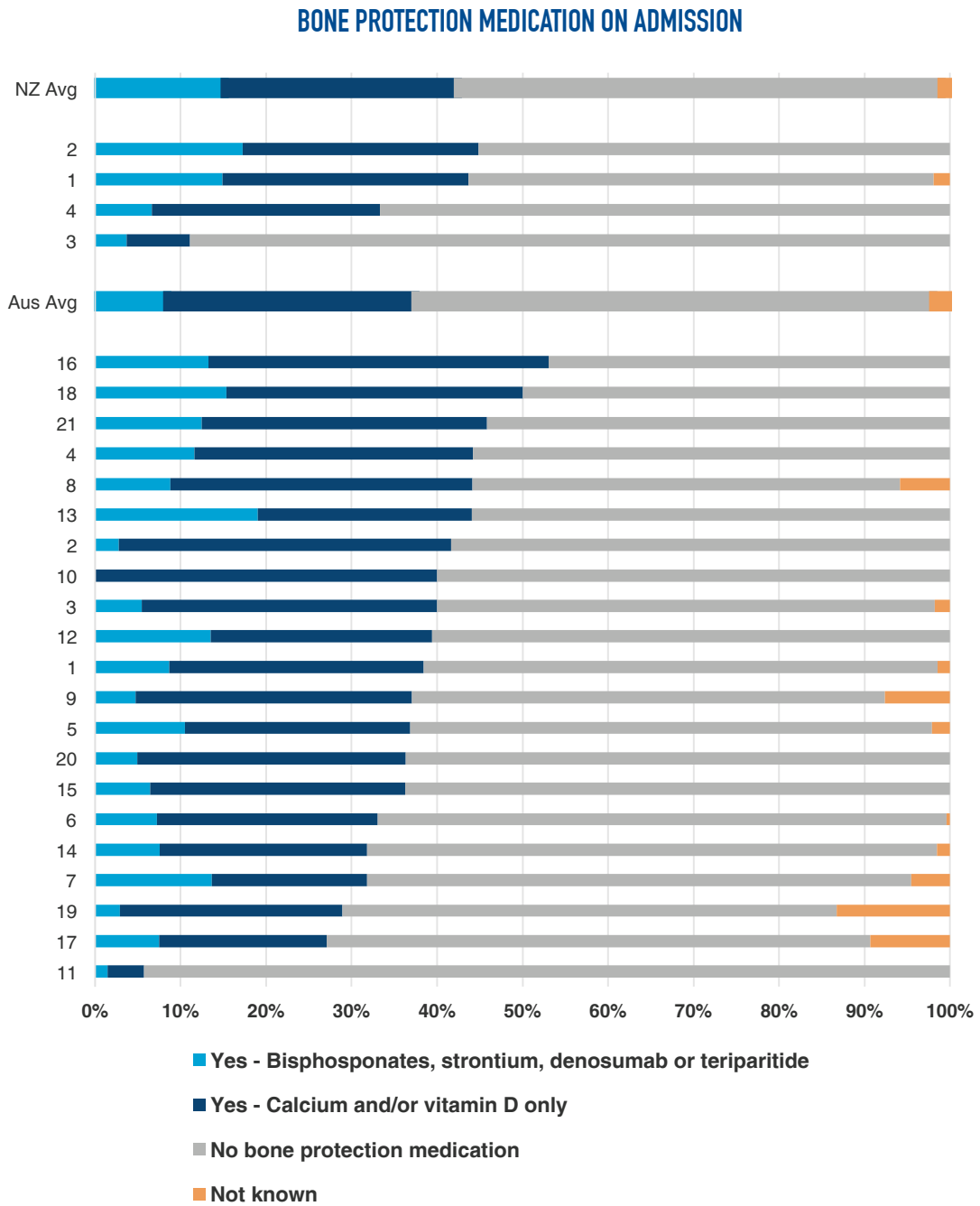


FIGURE 36

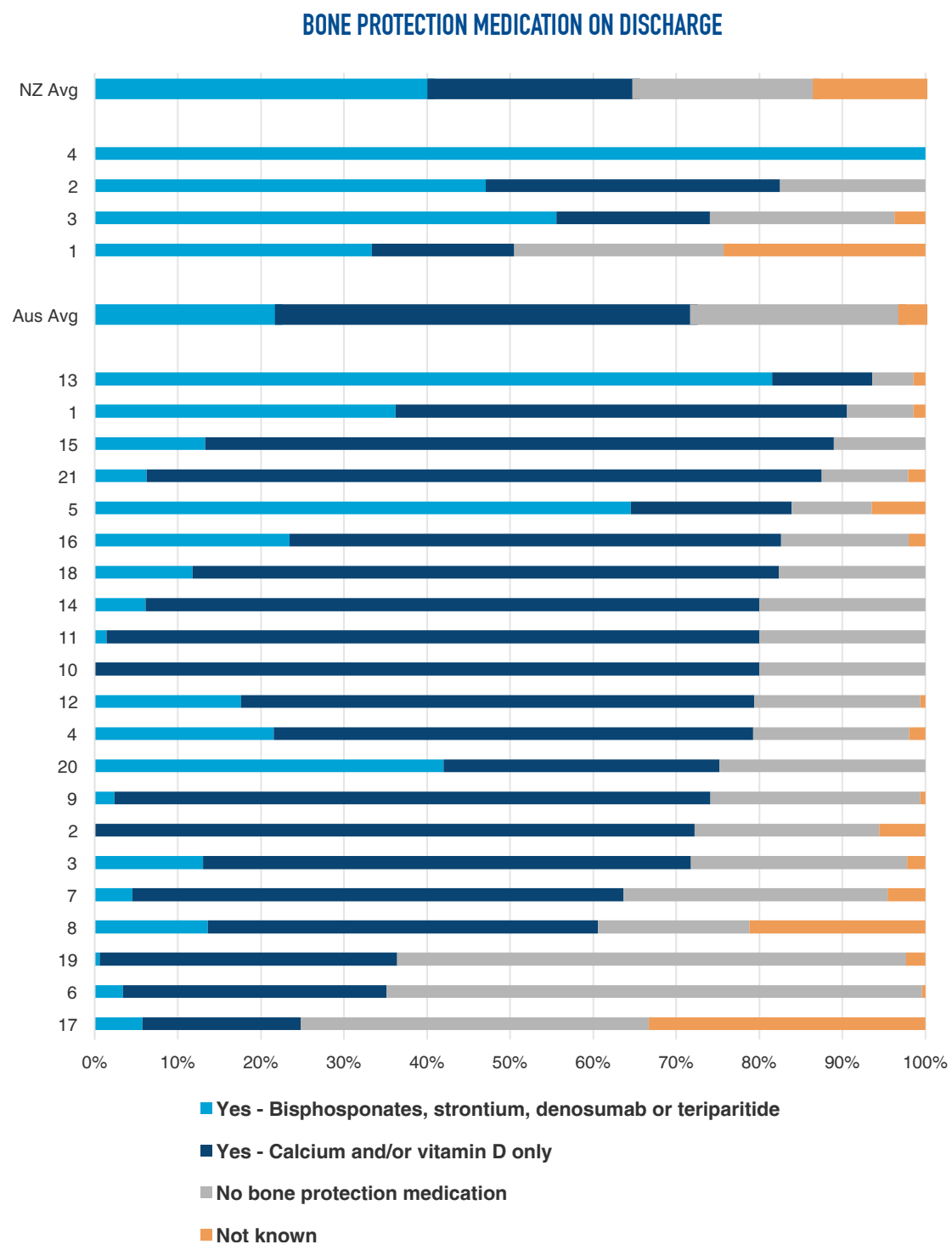
BONE PROTECTION MEDICATION ON ADMISSION



The majority of people admitted with a hip fracture were not on any form of pharmacological treatment for bone health. Data on prior fracture is not currently part of the Registry minimum data set but evidence in the literature would suggest that up to 50% of these people will have already sustained a low trauma fracture. In New Zealand, 27% of people were on calcium and/or vitamin D at admission whilst 15% were taking active treatment for osteoporosis above and beyond calcium and/or vitamin D. In Australia, 29% of people were on calcium and/or vitamin D at admission whilst 8% were taking active treatment for osteoporosis above and beyond calcium and/or vitamin D.

FIGURE 37

BONE PROTECTION MEDICATION ON DISCHARGE



Future fracture prevention includes treatment of osteoporosis. The Registry collects information on bone protection medication prescribed at the point of discharge from the acute hospital. Information on new treatments initiated on transfer to another facility such as a subacute hospital is not available and so the data reported here may underestimate the number of people treated for osteoporosis. In New Zealand, 40% of hip fracture patients leave hospital on a bisphosphonate, denosumab or teriparotide compared to 15% on admission. In Australia, 22% of patients leave hospital on a bisphosphonate, denosumab or teriparotide compared to 8% on admission.



R

FACILITY LEVEL AUDIT

This is the 4th Facility Level Audit of Australian and New Zealand hospitals performing surgery for hip fracture.

This year, 121 hospitals completed the audit. At this time, the information included in the report does not identify individual hospitals, but it is anticipated this will change in 2017 to correspond with the first report following the release of the Australian Commission on Safety and Quality in Health Care Hip Fracture Care Clinical Care Standard.

The aim of the Facility Level Audit is to document and monitor over time the services, resources, policies, protocols and practices that exist across Australia and New Zealand in relation to hip fracture care. In 2012, a standardised audit form was devised by the ANZHFR Steering Group for use in all public hospitals across Australia and New Zealand. The form has been designed to enable comparison of data within and between States and Territories in Australia and New Zealand.

DATA QUALITY STATEMENT AND DATA NOTES FOR THE FACILITY LEVEL AUDIT REPORT

In January 2016, the Facility Level Audit Form was reviewed and minor modifications or rewording were made to the previous data collection tool. Changes or modifications were primarily to clarify the interpretation of the question being asked. No new questions were added, or existing questions removed (Table 1). To enable the fourth Facility Level Audit to be reported with the first Patient Level Audit, instructions were included to answer the questions for the 2015 calendar year.

TABLE 1: 2016 FACILITY LEVEL AUDIT QUESTION MODIFICATIONS

2015	2016 REWORDING
Estimated number of hip fractures in 2014	Estimated number of hip fractures in 2015 (January 2015 to December 2015 inclusive)
Does your hospital offer hip fracture patients routine access to therapy services at weekends? Yes / No	Does your hospital offer hip fracture patients routine access to therapy services at weekends? Yes – Physiotherapy only / Yes – other / No
Do you have a fracture liaison service, whereby there is systematic identification of all fracture patients by a fracture liaison nurse, with a view to onward referrals and management of osteoporosis? Yes / No	Do you have a fracture liaison service, whereby there is systematic identification of all fracture patients by a fracture liaison nurse, with a view to onward referrals and management of osteoporosis? Yes – hip fracture patients only / Yes – all fracture patients (including hip) / No
	Inclusion of a definition for orthogeriatric care: Orthogeriatric care involves a shared care arrangement of hip fracture patients between the specialties of orthopaedics and geriatric medicine. The geriatrician is involved in the pre-operative optimisation of the patient in preparation for surgery and then takes a lead in the post-operative medical care and coordinates the discharge planning process. Implicit in this role are many of the aspects of basic care including nutrition, hydration, pressure care, bowel and bladder management, and monitoring of cognition (ANZHFR Guideline 2014, p.68).



In February 2016, an email was sent to a member of staff at each public hospital in Australia and New Zealand identified as undertaking operative intervention for hip fractures. The email invited the person to complete the audit form and it contained a link to the web-based e-form with a copy of the audit form in Microsoft Word. Each person was asked to complete the survey or advise an alternate contact person. Reminder emails were sent on a weekly basis encouraging completion. Eligible hospitals were identified by the previous years' respondents and confirmed by local clinical networks as required. In Australia, one additional hospital was identified for inclusion and in New Zealand there were no changes identified. This meant that the 2016 Facility Level Audit included 121 public hospitals (98 in Australia and 23 in New Zealand), an increase from 120 in 2015.

Data collection commenced in February 2016 and was completed on receipt of the final survey in May, 2016. All 121 hospitals submitted forms. The e-form required all questions to be completed to enable the form to be submitted hence there were no missing data with web-based completion. For five hospitals, duplicate responses were submitted. Where the response in a data field differed, clinicians were contacted and the correct answer was clarified, confirmed and corrected within the database.

For sites that completed the audit in hard copy, missing or ambiguous responses were also clarified with the person who had completed the form. All responses were entered into the e-form from the hard copy. Other than to clarify unclear responses or differences in duplicate submission, no other checking of the accuracy of the submitted data was undertaken. On receipt of the audit data for the last hospital, the data was exported from Google Forms to Microsoft Excel to be prepared for analysis. Descriptive statistics were generated using IBM SPSS® v23.

RESULTS 1: GENERAL INFORMATION

In 2016, 121 hospitals in Australia and New Zealand were identified as performing hip fracture surgery in 2015 and all completed the audit. Hospitals were asked to estimate the number of hip fracture patients treated in 2015 (Figure 38). Sixty-five percent of hospitals (79/121) estimated that they treated more than 100 hip fracture patients during 2015, a similar result to the previous year (Figure 39). This question was asked for the first time in 2013.

FIGURE 38

ESTIMATED NUMBER OF HIP FRACTURES TREATED BY AUSTRALIAN AND NEW ZEALAND HOSPITALS IN 2015

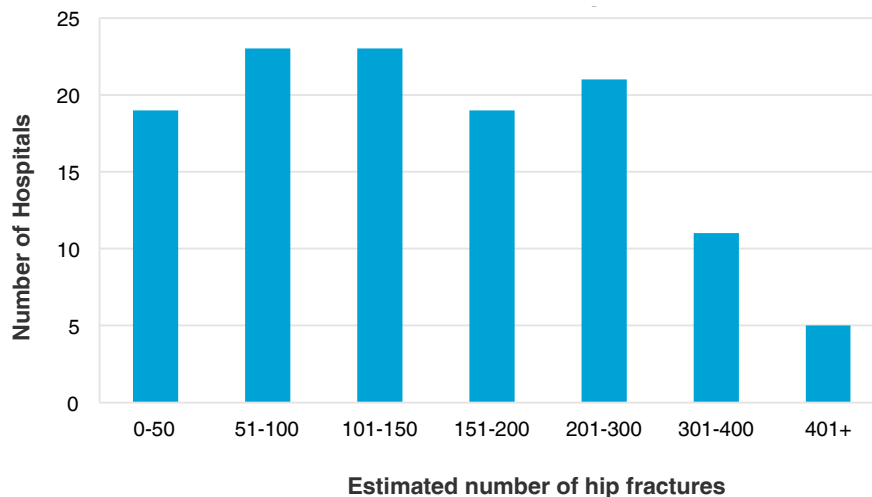
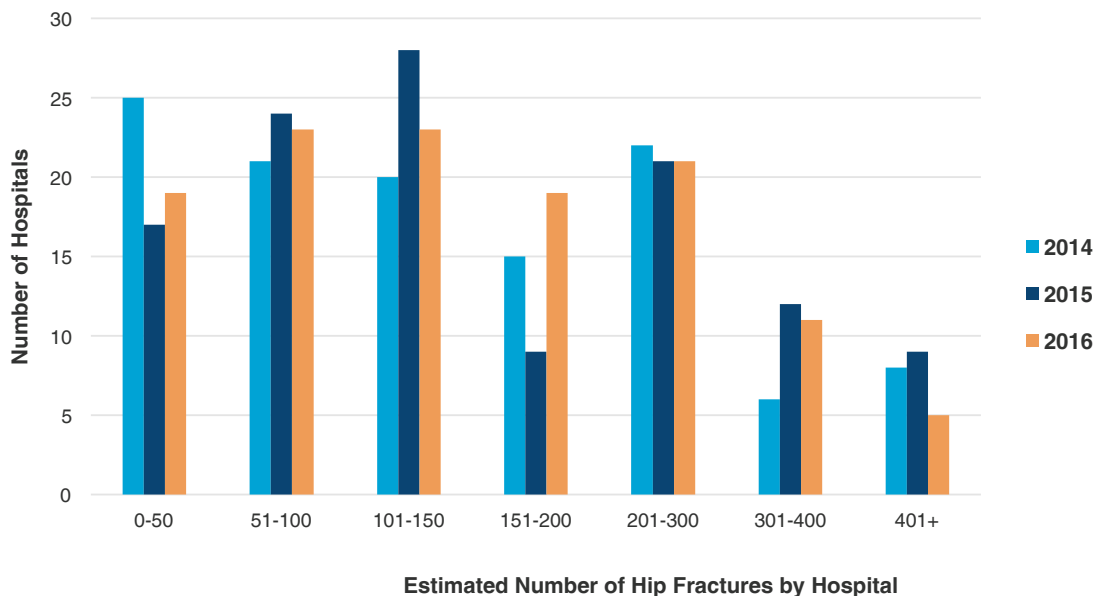


FIGURE 39

ESTIMATED NUMBER OF HIP FRACTURES TREATED BY AUSTRALIAN AND NEW ZEALAND HOSPITALS 2014-2016



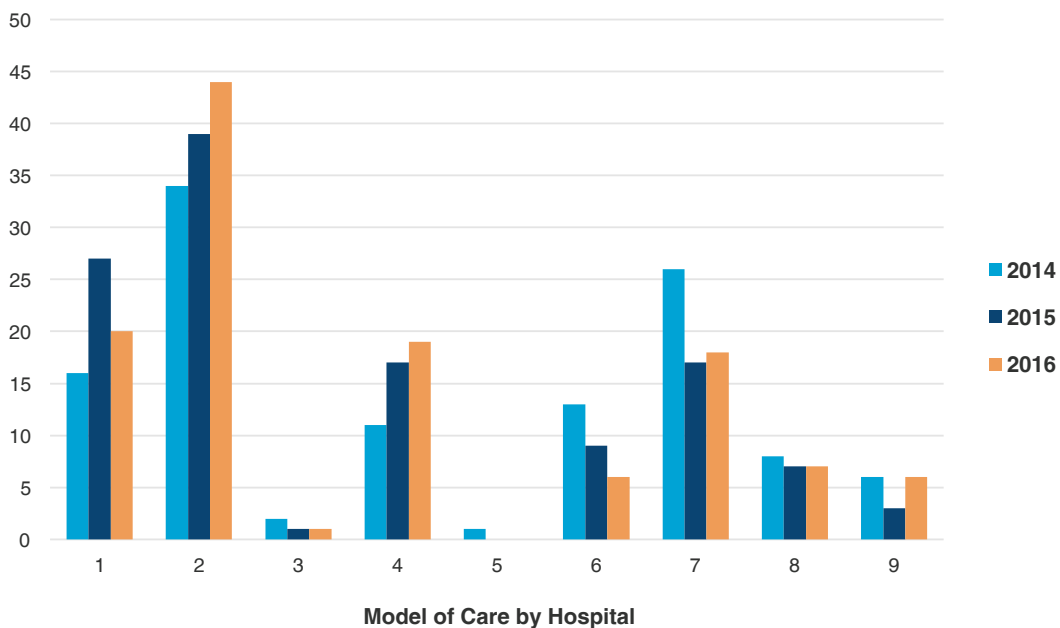
RESULTS 2: MODEL OF CARE

In 2016, 65% (78/121) responded 'yes' to providing a formal orthogeriatric service⁴ for hip fracture patients, compared with 68% (81/120) in 2015. The type of orthogeriatric model varied, as did whether the respondent classified the level of service as a 'formal orthogeriatric service'. For example, some respondents answered 'no' to provision of a formal orthogeriatric service but then best defined their model of care as an orthogeriatric liaison service where geriatric medicine provides intermittent review.

Models that include regular orthogeriatric review, daily or several times during the working week) continue to increase, although there has been a decline in 'shared-care' models of reported this year: 17% (20/121) in 2016; 23% (27/120) in 2015; and 14% (16/117) in 2014. The number of hospitals reporting no formal process for the review of people admitted with a hip fracture remains unchanged at 6% (7/121).

FIGURE 40

MODEL OF CARE FOR OLDER HIP FRACTURE PATIENTS, 2014-2016



1. A shared care arrangement where there is joint responsibility for the patient from admission between orthopaedics and geriatric medicine for all older hip fracture patients
2. An orthogeriatric liaison service where geriatric medicine provides regular review of all older hip fracture patients (daily during working week)
3. A medical liaison service where a general physician or GP provides regular review of all older hip fracture patients (daily during working week)
4. An orthogeriatric liaison service where geriatric medicine provides intermittent review of all older hip fracture patients (2-3 times weekly)
5. A medical liaison service where a general physician or GP provides intermittent review of hip fracture patients (2-3 times weekly)
6. An orthogeriatric liaison service (2014) / geriatric service (2015/6) where a consult system determines which patients are reviewed
7. A medical liaison service (2014) / medical service (2015/6) where a consult system determines which patients are reviewed
8. No formal service exists
9. Other

RESULTS 3: PROTOCOLS AND PROCESSES

The Audit asked hospitals to state whether there are protocols, policies or practices in place for aspects of clinical care identified in the Australian and New Zealand Guideline for Hip Fracture Care⁴ as key markers of high quality hip fracture care. Figure 41 displays the results for 2016 and compares the responses with data from previous years. In terms of hospitals routinely collecting hip fracture data to inform change, responses indicate 69% of hospitals do so, compared with 74% reported in 2015, 61% in the 2014, and 54% in 2013. Summary information regarding services and protocols for hip fracture care, by Australian State and Territory and New Zealand, are shown in Tables 2 to 9 and Figures 42 to 49.

Hip Fracture Pathway: In 2013 and 2014, 33% and 50% of hospitals reported a fast track protocol for hip fracture patients in the Emergency Department (ED). In 2015, the question was reworded to ask whether hospitals had an agreed hip fracture pathway in the ED, for the whole acute journey, or not at all. This question was asked again this year and 72% reported having a hip fracture pathway: 26% (31/121) in ED only and 46% (56/121) for the whole acute journey. This is similar to 2015, where 70% (84/120) reported they had a hip fracture pathway: 23% (27/120) in ED only and 48% (57/120) for the whole acute journey.

Computed Tomography (CT)/Magnetic Resonance Imaging (MRI): In 2016, the presence of a protocol or pathway to access either CT or MRI for inconclusive plain imaging of hip fracture was available in 50% (60/120) of hospitals; the same in 2015, and similar to 2014 with 46% (54/117) of sites reporting the presence of a protocol or pathway to access to CT/MRI. Comparison with 2013 (40%) should be done with caution as the audit question listed MRI as the only imaging modality.

Venous Thromboembolism (VTE): This question has remained constant over the four years of the Audit and in 2013, 81% (94/116) reported presence of a protocol. In 2014, this increased to 89% (104/117); and in 2015 it increased to 96% (115/120). In 2016, there was a decrease to 88% (107/121) of hospitals reporting a VTE protocol in place.

Pain Pathway: This question remained the same in 2016 and 61% (74/121) of hospitals reported they had a protocol or pathway for pain management: 23% (28/121) in ED only and 38% (46/121) for the whole acute journey. This is an increase from 2015 when 59% (71/120) of hospitals reported a protocol or pathway for pain management: 21% (25/120) in ED only; and 38% (46/120) for the whole acute journey. Thirty-nine percent of hospitals have no protocol/pathway for pain management in hip fracture patients compared with 41% in 2015.

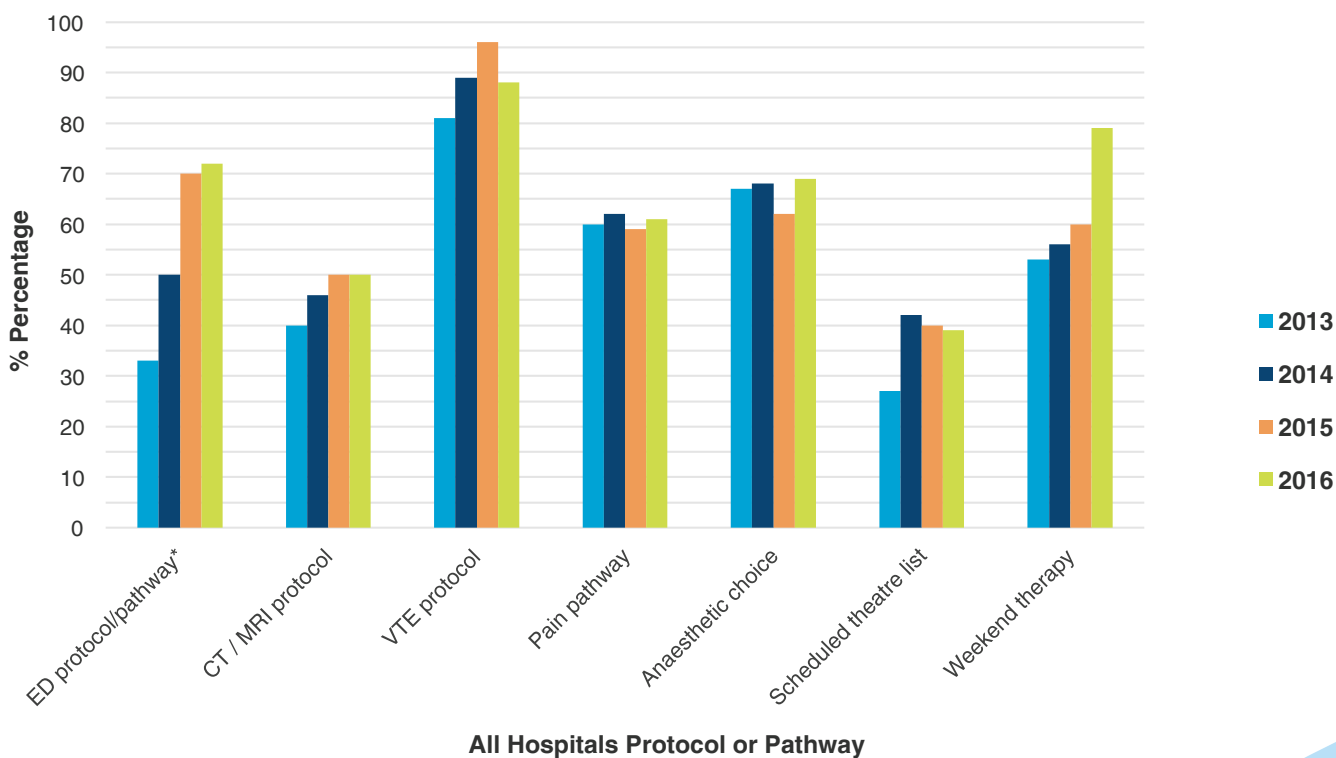
Choice of Anaesthesia: This question has remained constant since 2014, and asks if hip fracture patients are routinely offered a choice of anaesthesia. In 2016, 69% (84/121) of hospitals reported frequently or always providing hip fracture patients with a choice of anaesthesia, compared to 62% (74/120) in 2015 and 68% (80/117) in 2014.

Planned Theatre List: In 2016, 39% (47/121) of hospitals reported having a planned theatre list or planned trauma list for hip fracture patients, similar to previous years' at 40% (48/120) in 2015 and 42% (49/117) in 2014. The question reported in 2013 specified time on a weekly trauma list and this was only 27% (31/116) of hospitals.

Weekend Therapy: In 2016, 79% (95/121) of respondents indicated hip fracture patients had routine access to weekend therapy, 71% (86/121) to physiotherapy and 7% (9/121) to other therapy services. In 2016 the increase seen in previous years continued: in 2015 60% (72/120) reported access to weekend therapy; in 2014, 56% (66/117) reported access; and in 2013, 53% (62/116) reported access to weekend therapy.

FIGURE 41

PRESENCE OF PROTOCOLS OR PATHWAYS FOR HIP FRACTURE CARE AUSTRALIA AND NEW ZEALAND 2013-2016



*2015 and 2016: ED hip fracture protocol/pathway includes pathways for ED only and for the whole acute journey

79%
 OF HOSPITALS PROVIDED HIP FRACTURE PATIENTS WITH ROUTINE ACCESS TO WEEKEND THERAPY

**ACCESS TO EITHER
CT OR MRI FOR
INCONCLUSIVE
PLAIN IMAGING OF
HIP FRACTURE WAS
AVAILABLE IN 50%
OF HOSPITALS**



NSW: SERVICES AND PROTOCOLS

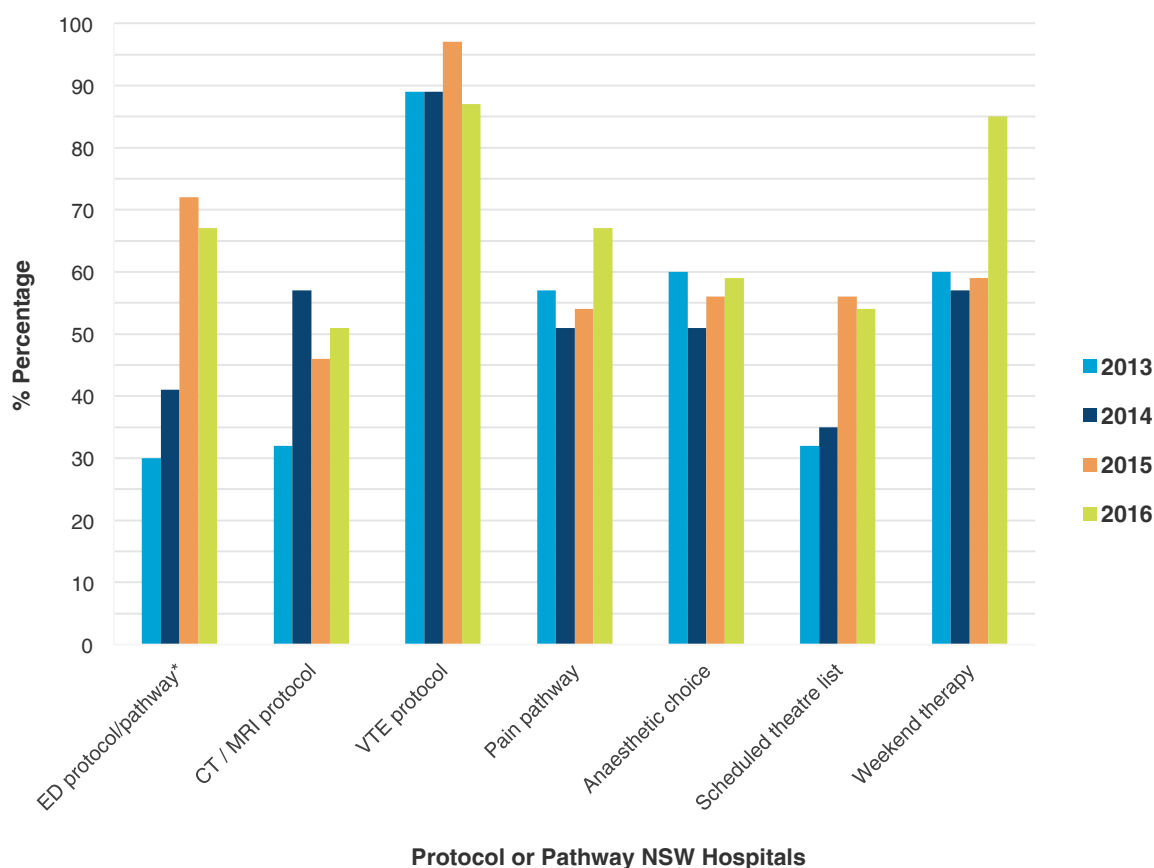
TABLE 2: SERVICES AND PROTOCOLS IN HIP FRACTURE CARE NSW 2013-2016

Year Reported	Number of Hospitals (N)	% with a shared-care Model of Care	% with a hip fracture pathway in ED	% with protocol/pathway for access to CT/MRI	% with a VTE protocol	% schedule theatre list time	% providing choice of anaesthesia*	% with pain management protocol	% providing routine weekend therapy	% collecting hip fracture data
2013	37	.	30	32	89	32	60	57	60	38
2014	37	16	41	57	89	35	51	51	57	49
2015	39	26	72	46	97	56	56	54	59	62
2016	39	23	67	51	87	54	59	67	85	56

*% providing choice of anaesthesia: 2014, 2015 and 2016 Rarely or Never = No; Always or Frequently = Yes

FIGURE 42

PROPORTION OF HOSPITALS WITH PROTOCOLS AND PATHWAYS FOR HIP FRACTURE CARE NSW 2013-2016



*2015 and 2016: ED hip fracture protocol/pathway includes pathways for ED only and for the whole acute journey

VICTORIA: SERVICES AND PROTOCOLS

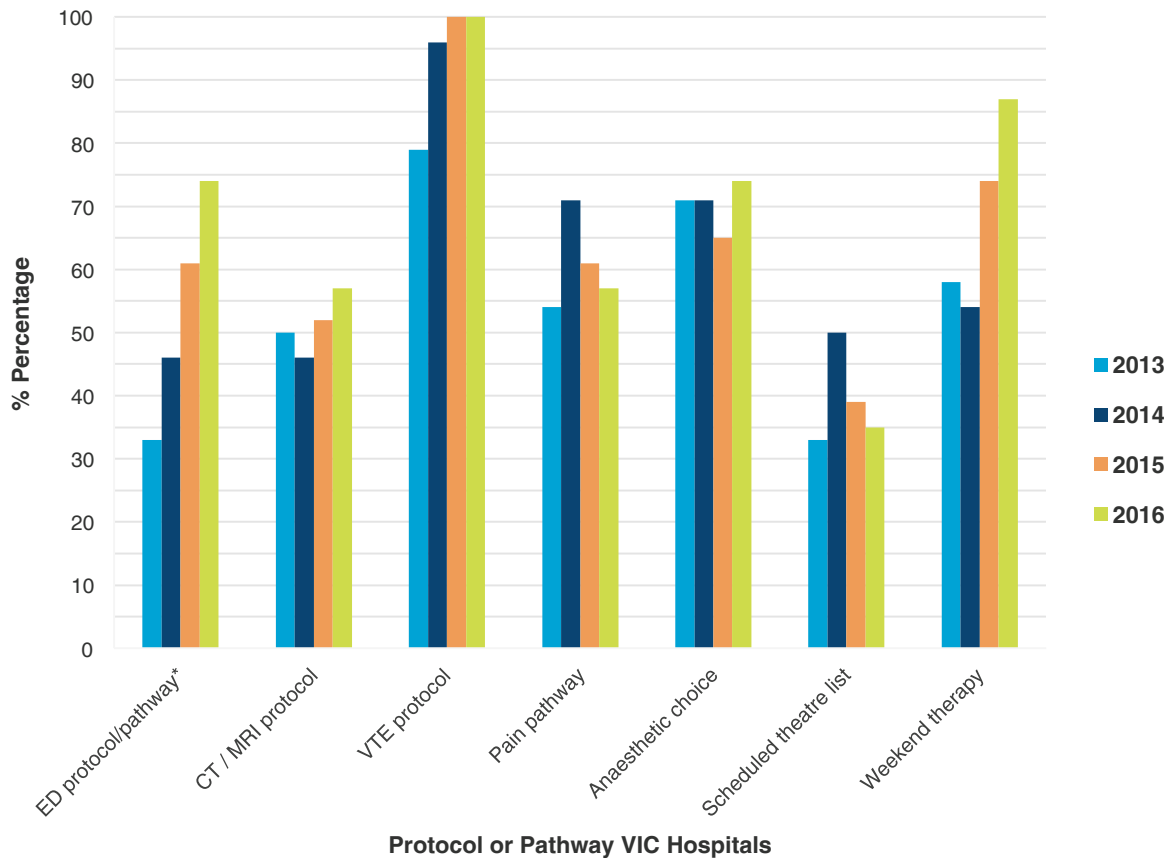
TABLE 3: SERVICES AND PROTOCOLS IN HIP FRACTURE CARE VICTORIA 2013-2016

Year Reported	Number of Hospitals (N)	% with a shared-care Model of Care	% with a hip fracture pathway in ED	% with protocol/pathway for access to CT/MRI	% with a VTE protocol	% schedule theatre list time	% providing choice of anaesthesia*	% with pain management protocol	% providing routine weekend therapy	% collecting hip fracture data
2013	24	.	33	50	79	33	71	54	58	67
2014	24	8	46	46	96	50	71	71	54	63
2015	23	26	61	52	100	39	65	61	74	74
2016	23	13	74	57	100	35	74	57	87	78

*% providing choice of anaesthesia: 2014, 2015 and 2016 Rarely or Never = No; Always or Frequently = Yes

FIGURE 43

PROPORTION OF HOSPITALS WITH PROTOCOLS AND PATHWAYS FOR HIP FRACTURE CARE VICTORIA 2013-20



*2015 and 2016: ED hip fracture protocol/pathway includes pathways for ED only and for the whole acute journey

QUEENSLAND: SERVICES AND PROTOCOLS

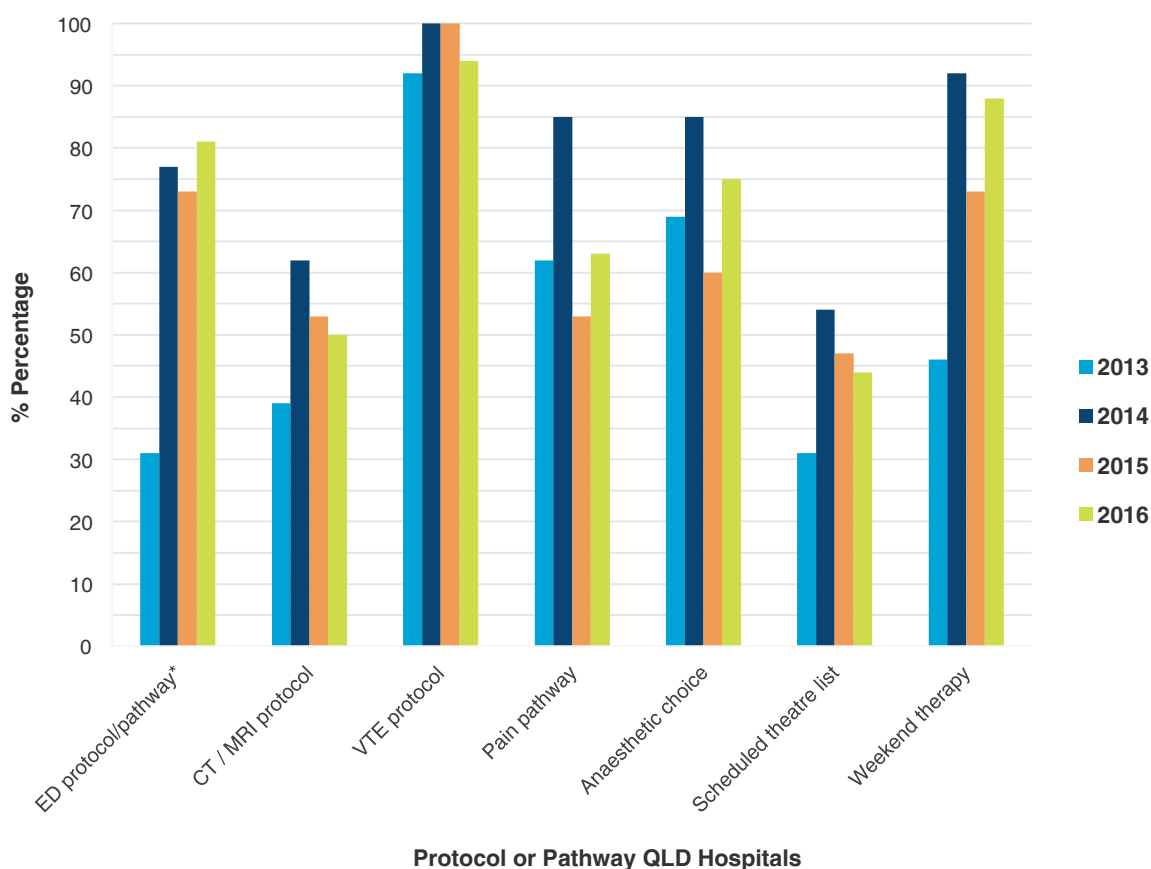
TABLE 4: SERVICES AND PROTOCOLS IN HIP FRACTURE CARE QUEENSLAND 2013-2016

Year Reported	Number of Hospitals (N)	% with a shared-care Model of Care	% with a hip fracture pathway in ED	% with protocol/pathway for access to CT/MRI	% with a VTE protocol	% schedule theatre list time	% providing choice of anaesthesia*	% with pain management protocol	% providing routine weekend therapy	% collecting hip fracture data	
QLD	2013	13	.	31	39	92	31	69	62	46	69
	2014	13	23	77	62	100	54	85	85	92	62
	2015	15	20	73	53	100	47	60	53	73	93
	2016	16	6	81	50	94	44	75	63	88	81

*% providing choice of anaesthesia: 2014, 2015 and 2016 Rarely or Never = No; Always or Frequently = Yes

FIGURE 44

PROPORTION OF HOSPITALS WITH PROTOCOLS AND PATHWAYS FOR HIP FRACTURE CARE QUEENSLAND 2013-2016



*2015 and 2016: ED hip fracture protocol/pathway includes pathways for ED only and for the whole acute journey

SOUTH AUSTRALIA: SERVICES AND PROTOCOLS

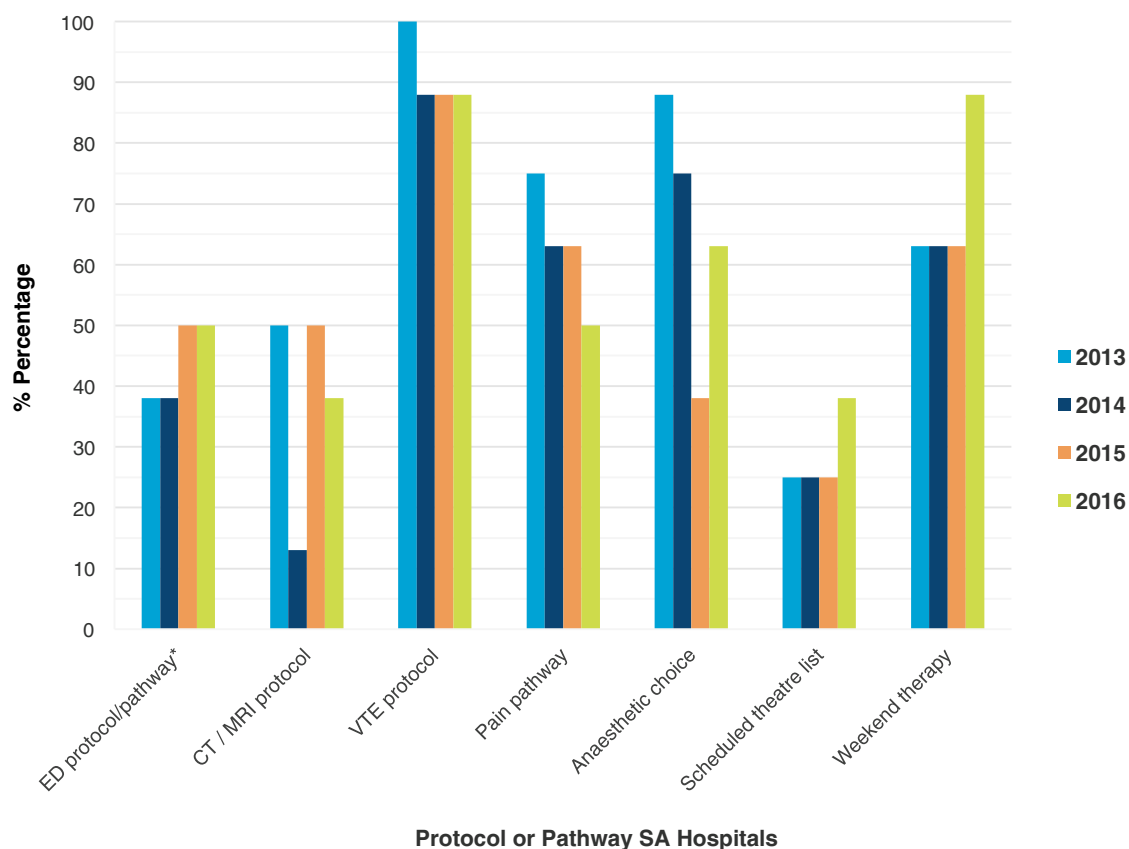
TABLE 5: SERVICES AND PROTOCOLS IN HIP FRACTURE CARE SOUTH AUSTRALIA 2013-2016

Year Reported	Number of Hospitals (N)	% with a shared-care Model of Care	% with a hip fracture pathway in ED	% with protocol/pathway for access to CT/MRI	% with a VTE protocol	% schedule theatre list time	% providing choice of anaesthesia*	% with pain management protocol	% providing routine weekend therapy	% collecting hip fracture data
2013	8	.	38	50	100	25	88	75	63	38
2014	8	13	38	13	88	25	75	63	63	50
2015	8	25	50	50	88	25	38	63	63	63
2016	8	0	50	38	88	38	63	50	88	75

*% providing choice of anaesthesia: 2014, 2015 and 2016 Rarely or Never = No; Always or Frequently = Yes

FIGURE 45

PROPORTION OF HOSPITALS WITH PROTOCOLS AND PATHWAYS FOR HIP FRACTURE CARE SOUTH AUSTRALIA 2013-2016



*2015 and 2016: ED hip fracture protocol/pathway includes pathways for ED only and for the whole acute journey

WESTERN AUSTRALIA: SERVICES AND PROTOCOLS

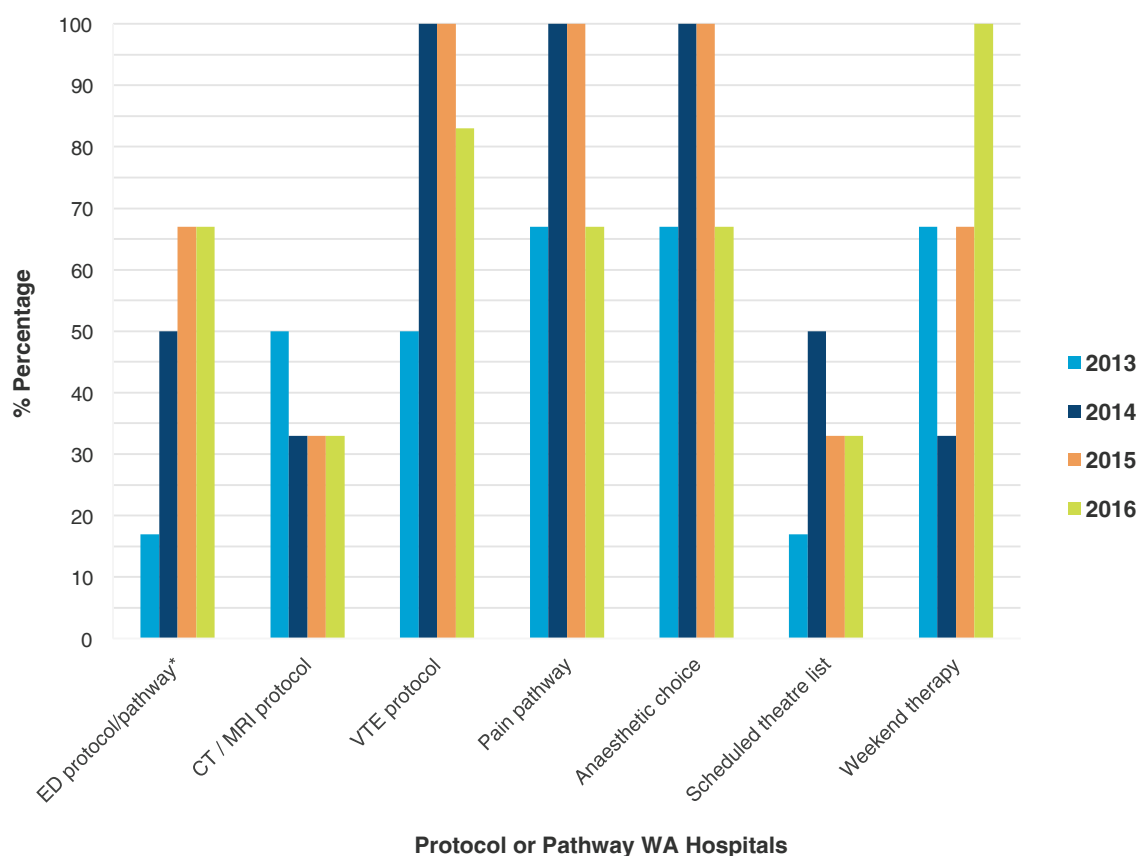
TABLE 6: SERVICES AND PROTOCOLS IN HIP FRACTURE CARE WESTERN AUSTRALIA 2013-2016

Year Reported	Number of Hospitals (N)	% with a shared-care Model of Care	% with a hip fracture pathway in ED	% with protocol/pathway for access to CT/MRI	% with a VTE protocol	% schedule theatre list time	% providing choice of anaesthesia*	% with pain management protocol	% providing routine weekend therapy	% collecting hip fracture data	
WA	2013	6	.	17	50	50	17	67	67	67	83
	2014	6	33	50	33	100	50	100	100	33	50
	2015	6	67	67	33	100	33	100	100	67	83
	2016	6	67	67	33	83	33	67	67	100	67

*% providing choice of anaesthesia: 2014, 2015 and 2016 Rarely or Never = No; Always or Frequently = Yes

FIGURE 46

PROPORTION OF HOSPITALS WITH PROTOCOLS AND PATHWAYS FOR HIP FRACTURE CARE WESTERN AUSTRALIA 2013-2016



*2015 and 2016: ED hip fracture protocol/pathway includes pathways for ED only and for the whole acute journey

TASMANIA: SERVICES AND PROTOCOLS

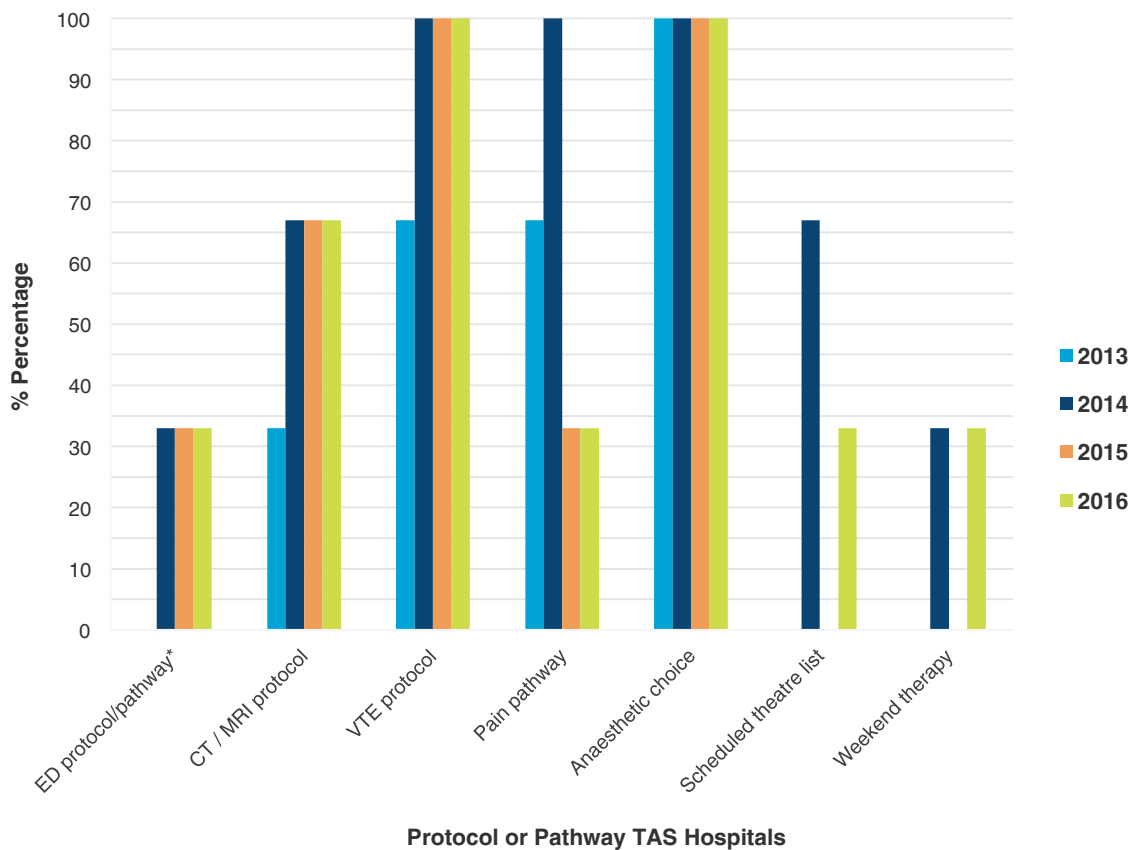
TABLE 7: SERVICES AND PROTOCOLS IN HIP FRACTURE CARE TASMANIA 2013-2016

Year Reported	Number of Hospitals (N)	% with a shared-care Model of Care	% with a hip fracture pathway in ED	% with protocol/pathway for access to CT/MRI	% with a VTE protocol	% schedule theatre list time	% providing choice of anaesthesia*	% with pain management protocol	% providing routine weekend therapy	% collecting hip fracture data
2013	3	.	0	33	67	0	100	67	0	0
2014	3	0	33	67	100	67	100	100	33	100
2015	3	0	33	67	100	0	100	33	0	100
2016	3	0	33	67	100	33	100	33	33	100

*% providing choice of anaesthesia: 2014, 2015 and 2016 Rarely or Never = No; Always or Frequently = Yes

FIGURE 47

PROPORTION OF HOSPITALS WITH PROTOCOLS AND PATHWAYS FOR HIP FRACTURE CARE TASMANIA 2013-2016



*2015 and 2016: ED hip fracture protocol/pathway includes pathways for ED only and for the whole acute journey

NORTHERN TERRITORY AND THE ACT: SERVICES AND PROTOCOLS

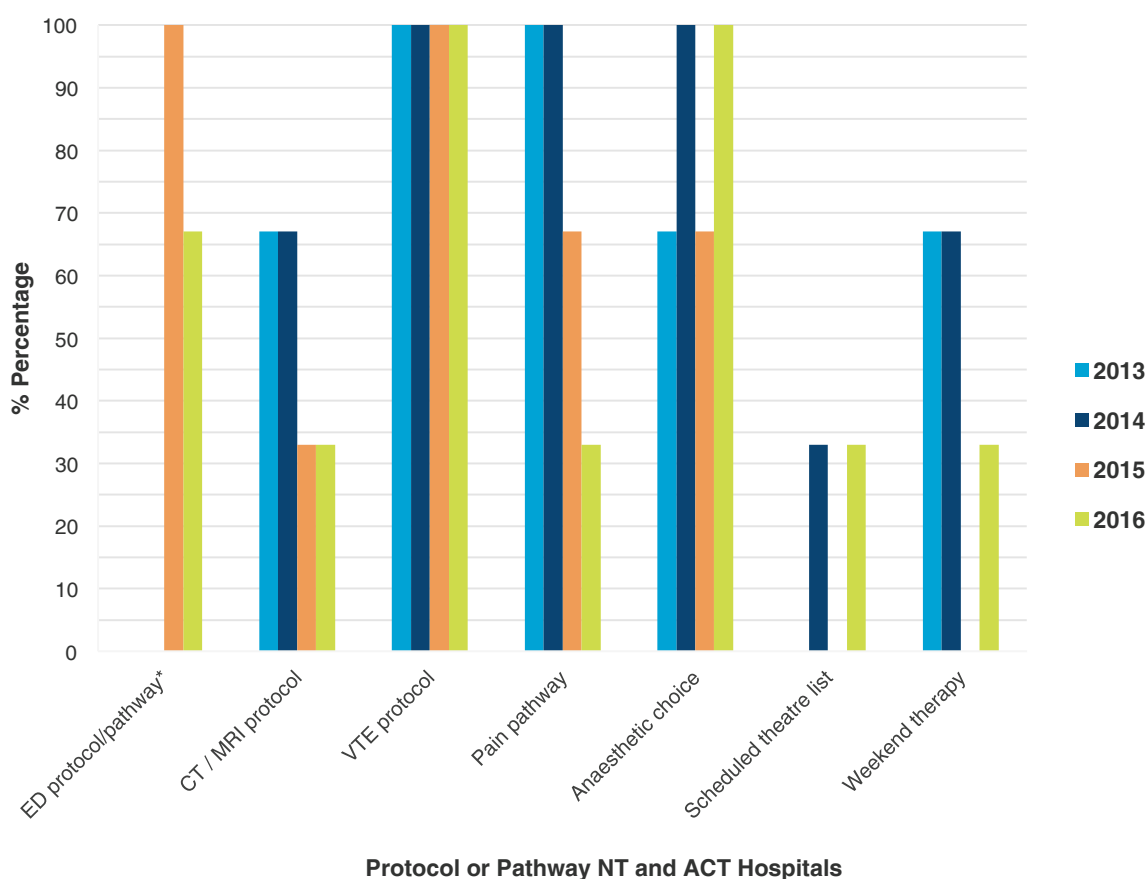
TABLE 8: SERVICES AND PROTOCOLS IN HIP FRACTURE CARE NT AND THE ACT 2013-2016

Year Reported	Number of Hospitals (N)	% with a shared-care Model of Care	% with a hip fracture pathway in ED	% with protocol/pathway for access to CT/MRI	% with a VTE protocol	% schedule theatre list time	% providing choice of anaesthesia*	% with pain management protocol	% providing routine weekend therapy	% collecting hip fracture data
NT/ ACT	2013	3	.	0	67	100	0	67	100	67
	2014	3	0	0	67	100	33	100	100	67
	2015	3	0	100	33	100	0	67	67	0
	2016	3	0	67	33	100	33	100	33	33

*% providing choice of anaesthesia: 2014, 2015 and 2016 Rarely or Never = No; Always or Frequently = Yes

FIGURE 48

PROPORTION OF HOSPITALS WITH PROTOCOLS AND PATHWAYS FOR HIP FRACTURE CARE NT AND THE ACT 2013-2016



*2015 and 2016: ED hip fracture protocol/pathway includes pathways for ED only and for the whole acute journey

NEW ZEALAND: SERVICES AND PROTOCOLS

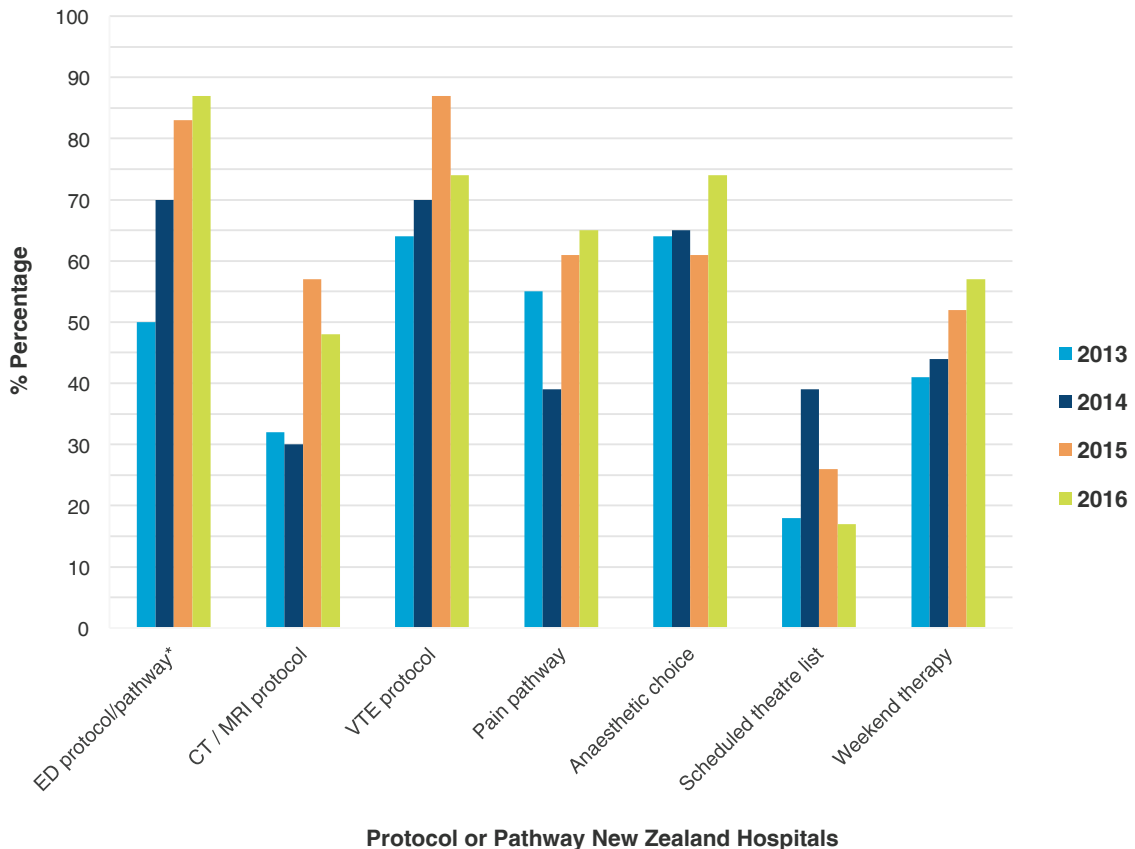
TABLE 9: SERVICES AND PROTOCOLS IN HIP FRACTURE CARE NEW ZEALAND 2013-2016

	Year Reported	Number of Hospitals (N)	% with a shared-care Model of Care	% with a hip fracture pathway in ED	% with protocol/pathway for access to CT/MRI	% with a VTE protocol	% schedule theatre list time	% providing choice of anaesthesia*	% with pain management protocol	% providing routine weekend therapy	% collecting hip fracture data
NZ	2013	22	.	50	32	64	18	64	55	41	64
	2014	23	9	70	30	70	39	65	39	44	78
	2015	23	9	83	57	87	26	61	61	52	83
	2016	23	13	87	48	74	17	74	65	57	70

*% providing choice of anaesthesia: 2014 and 2015 Rarely or Never = No; Always or Frequently = Yes

FIGURE 49

PROPORTION OF HOSPITALS WITH PROTOCOLS AND PATHWAYS FOR HIP FRACTURE CARE NEW ZEALAND 2013-2016



*2015 and 2016: ED hip fracture protocol/pathway includes pathways for ED only and for the whole acute journey

RESULTS 4: BEYOND THE ACUTE HOSPITAL STAY

The Audit asked respondents to report on access for hip fracture patients to rehabilitation services and publicly funded outpatient clinics for the management of their injury and the prevention of future fractures.

Information gathered in 2016 is presented below with comparisons to responses from previous years. Table 10 shows year-on-year comparisons

Inpatient Rehabilitation: In 2016, 37% reported access to both onsite and offsite rehabilitation services. This compares with 41% in 2015, 37% in 2014, and 47% in 2013. Access to onsite rehabilitation services only is reported by 41% in 2016, an increase from 2015 at 38%, 37% in 2014, and 30% in 2013. Access to offsite rehabilitation services only was reported as 22% in 2016, compared with 21% reported in 2015, 26% in 2014, and 23% in 2013.

Home-based Rehabilitation: The audit asked whether hospitals have access to early supported home-based rehabilitation services (not the same as the Commonwealth funded Transitional Care Program or community services). The decrease in reported access has continued with 36% (44/121) of responses reporting access to early home-based rehabilitation for people recovering from a hip fracture. In 2015, 41% (49/120) had the service available for patients upon discharge, compared with 64% (75/117) in 2014, and 68% (79/116) in 2013.

Fracture Liaison Service: Availability of Fracture Liaison Services (FLS) remains limited but continues to show increased availability. In 2016, 25% reported access to a FLS, compared with 21% in 2015, 20% in 2014, and 15% in 2013. This year, responses were split into three categories: Yes – hip fracture patients only; Yes – all fracture patients (including hip); and No. Seven percent (9/121) of FLS were for hip fracture patients only and 17% (21/121) were for all fracture patients.

Public Falls Clinic: Falls clinics were reported to be available in 64% (77/121) of hospitals compared with 57% (68/120) in 2015. Previous years' reported 43% (50/117) in 2014 and 41% (48/116) in 2013.

Public Osteoporosis Clinic: In 2016, osteoporosis clinics were available in 48% of hospitals. This continues the increased availability from 40% (48/120) in 2015, 32% (38/117) reported in 2014, and 35% (40/116) in 2013.

Public Falls and Bone Health Clinic: Combined falls and bone health clinics were reported to be available in 17% (20/121) of hospitals in 2016, a similar result to previous years: 18% (21/120) of hospitals in 2015; 15% (18/117) in 2014; and 16% (18/116) in 2013.

Public Orthopaedic Clinic: High levels of access to orthopaedic clinics continue in 2016, with 90% (109/121) of hospitals reporting access for hip fracture patients. This is similar to 2015, with 91% (109/120) of hospitals, and 2014 with, 90% (105/117). In 2013, 72% (84/116) reported access to an orthopaedic clinic.

RESULTS 5: PATIENT AND CARER INFORMATION

For the third year, the Audit asked whether hospital services routinely provide patients and/or family and carers with written information about treatment and care after a hip fracture. In 2016, 38% (46/121) responded that they did provide this information to patients, families or carers, which compares with 41% (49/120) in 2015 and 27% (32/117) in 2014.

For the second time, the audit asked whether patients were provided with individualised, written information on discharge that included recommendations for the prevention of future falls and fractures. Provision of a copy of the discharge summary was not considered adequate to meet this criterion. In 2016, 27% (33/121) of sites indicated that patients were provided with this information, the same percentage as in 2015 (32/120).

TABLE 10: COMPARISON OF AVAILABLE SERVICES BEYOND THE ACUTE HOSPITAL STAY AUSTRALIA AND NEW ZEALAND 2013-2016

SERVICES	2013 Report (n = 116)	2014 Report (n = 117)	2015 Report (n = 120)	2016 Report (n = 121)
Access to in-patient rehabilitation	Onsite 30% Offsite 23% Both 47%	Onsite 37% Offsite 26% Both 37%	Onsite 38% Offsite 21% Both 41%	Onsite 41% Offsite 22% Both 37%
Access to early home-based rehabilitation services	68%	64%	41%	36%
Fracture Liaison Service (FLS)	15%	20%	21%	25%
Access to a public Falls Clinic	41%	43%	57%	64%
Access to a public Osteoporosis Clinic	35%	32%	40%	48%
Access to a public combined Falls & Bone Health Clinic	16%	15%	18%	17%
Access to a public Orthopaedic Clinic	72%	90%	91%	90%
Routine provision of written information about treatment and care after a hip fracture	n/a [#]	27%	41%	38%
Provision of individualised written information on discharge that included recommendations for the prevention of future falls and fractures	n/a [#]	n/a [#]	27%	27%

[#]n/a = not applicable



Osteoporosis

What is osteoporosis?

Osteoporosis is a condition in which the bones become fragile and brittle, leading to a higher risk of fractures than in normal bone. Osteoporosis occurs when bones lose minerals, such as calcium, more quickly than the body can replace them, leading to a loss of bone thickness (bone mass or density). As a result, bones become thinner and less dense, so that even a minor bump or fall can cause serious fractures. These are known as 'fragility' or 'minimal trauma' fractures.

Fractures and osteoporosis

A 'fracture' is a complete or partial break in a bone. Any bone can be affected by osteoporosis but the most common fracture sites are the spine, hip, upper arm, wrist or forearm. These fractures often result in symptoms until a fracture is identified. Osteoporosis is often why osteoporosis is often a fracture following a fall or over the age of 50. Women are at a higher risk of osteoporosis.

The fracture cascade

About 50% of people with one fracture due to osteoporosis will have another. The risk of further fractures increases with each new fracture. This is known as the 'cascade effect.'

For example, a person who has suffered a fracture in their spine is over 4 times more likely to have another fracture within the next year.

Two thirds of fractures of the spine are not identified or treated, even though they nearly all cause pain and some disability. People often believe that the symptoms of spinal fracture – back pain, height loss or rounding of the spine are just due to 'old age.' However for many people, osteoporotic fractures can be prevented or at least the risk of having further fractures greatly reduced.

To stop the fracture cascade, osteoporotic fractures should be quickly identified and treated as quickly as possible. Women are at a higher risk of osteoporosis.

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- 1 Australian Institute of Health and Welfare 2014. Estimating the prevalence of osteoporosis. Cat. no. PHE 178. Canberra: AIHW.
- 2 Brown, P et al (2011), Current and Future Economic Burden of Osteoporosis in New Zealand, Appl Health Econ Health Policy, doi: 10.2165/11531500-000000000-00000 1175-5652/11/0000-0000/\$49.95/0
- 3 Australian Government: Australian Institute of Health and Welfare. The problem of osteoporotic hip fracture in Australia; 2010.
- 4 Australian and New Zealand Hip Fracture Registry (ANZHFR) Steering Group. Australian and New Zealand Guideline for Hip Fracture Care: Improving Outcomes in Hip Fracture Management of Adults. Sydney: Australian and New Zealand Hip Fracture Registry Steering Group; 2014.
- 5 Australian and New Zealand Facility Level Audit of Hospitals Performing Surgery for Hip Fracture. Australian and New Zealand Hip Fracture Registry, 2013.
- 6 Australian and New Zealand Facility Level Audit of Hospitals Performing Surgery for Hip Fracture. Australian and New Zealand Hip Fracture Registry, 2014.
- 7 Australian and New Zealand Facility Level Audit of Hospitals Performing Surgery for Hip Fracture November 2015. Australian and New Zealand Hip Fracture Registry, 2015.
- 8 Australian Orthopaedic Association National Joint Replacement Registry. Annual Report. Adelaide:AOA; 2013.



APPENDICES

Appendix: Steering Group Terms of Reference

Background

Hip fracture is the most serious and costly fall-related injury suffered by older people. The personal and public cost of these injuries is significant and increasing. Healthcare providers must prepare to develop systematic approaches to the prevention and care of these injuries. The quality of hip fracture care has been shown to be dependent upon the configuration of orthopaedic and geriatric services, and there exists considerable variation in the key markers of care quality for this injury. The Australian and New Zealand Hip Fracture Registry (ANZHFR) is a hip fracture specific clinical quality registry that monitors and reports on key indicators of care for people admitted to hospital in Australia and New Zealand with a fractured hip. The functions of the registry are supported by a National Health and Medical Research Council approved Clinical Guideline for Hip Fracture Care and Australian Commission on Safety and Quality in Health Care Hip Fracture Care Clinical Care Standard and Indicators.

Purpose

The ANZHFR will use data to monitor performance with a view to improving the delivery of health care and therefore maximising outcomes for older people admitted to hospital with a hip fracture.

Terms of Reference

The ANZHFR Steering Group will oversee the development, implementation, maintenance and reporting of the registry and its data. The Group will provide strategic direction to the operations of the registry to ensure its objectives are met. The specific roles of the ANZHFR Steering Group are to:

- Provide oversight to all activities of the ANZHFR, including the activities of the ANZHFR Management Committees and other reference groups, sub-committees, and ad-hoc committees formed by the ANZHFR Steering Group;
- Address any issues identified by the ANZHFR sub-committees, reference groups, and ad-hoc committees;
- Oversee the management of relationships between the ANZHFR and all stakeholders;
- Oversee the development of funding strategies to ensure ANZHFR sustainability;
- Oversee the development of a communication strategy for the Australian and New Zealand contexts;
- Oversee the development and maintenance of a risk register for the identification, assessment, management and monitoring of risks to the registry;
- Develop and implement processes for the review and interpretation of ANZHFR data, including the provision of feedback to participants;
- Advise on the format and content of ANZHFR reports, such as the Annual Registry Report and Facility Level Audit Report;
- Develop and review policies for the identification and escalation of quality of care issues arising from ANZHFR data, including the development of specific policies and processes for the identification and management of outliers;
- Monitor and review the aims of the ANZHFR and its effectiveness in meeting its defined objectives, including review of the minimum data set;
- Oversee the development and management of a data quality assurance plan for data completeness, data correctness and data coverage;
- Oversee the development of policies for access to and use of registry data and consider all requests for access to ANZHFR data.

Membership

- ANZHFR Steering Group members will be appointed for a period of three years and appointment may be renewed for two (2) additional three (3) year periods
- Co-Chair representing ANZSGM
- Co-Chair representing AOA or NZOA
- Clinical Director(s)/Data Custodian(s) Australia and New Zealand
- *Nominated representatives from key professional organisations: ANZSGM; AOA; NZOA; RACS; RACP; ANZONA; ACEM; AFRM; ANZCA; APA; ONZ; OA
- Epidemiologist and/or Biostatistician
- Registry Manager Australia and Registry Manager New Zealand
- Webmaster/IT Manager
- Co-opted members as agreed by the Steering Group

* Australian and New Zealand Society for Geriatric Medicine (ANZSGM); Australian Orthopaedic Association (AOA); New Zealand Orthopaedic Association (NZOA); Royal Australasian College of Surgeons (RACS); Royal Australasian College of Physicians (RACP); Australian and New Zealand Orthopaedic Nurses Association (ANZONA); Australasian College for Emergency Medicine (ACEM); Australasian Faculty of Rehabilitation Medicine (AFRM); Australian and New Zealand College of Anaesthetists (ANZCA); Australian Physiotherapy Association (APA); Osteoporosis New Zealand (ONZ); Osteoporosis Australia (OA)

Meetings

- The ANZHFR Steering Group will meet quarterly with at least one (1) meeting per year face-to-face
- The ANZHFR Management Committee Australia and Management Committee New Zealand will share secretariat functions for the ANZHFR Steering Group
- Extraordinary meetings may be called by agreement of the ANZHFR Co-Chairs and Clinical Director(s)

Reporting

- The ANZHFR Steering Group will report to the operational organisation via the Clinical Director
- The ANZHFR Steering Group will report to key stakeholder organisations via their Group representatives
- The Co-Chairs of the ANZHFR Steering Group, or their nominated delegate, will report to other Australian and New Zealand stakeholder organisations without Group representation

Conflict of Interest

- ANZHFR Steering Group members will declare any potential, perceived or actual conflicts of interest at appointment and prior to each meeting

Quorum

- 50% plus 1

Timeframe

- Terms of Reference will be reviewed annually for the first three (3) year term of the ANZHFR Steering Group

2015 ANZHFR Steering Group Member List

Name	Position
Professor Jacqueline Close	Co-Chair, Geriatrician
Professor Ian Harris	Co-Chair, Orthopaedic Surgeon
Dr Laura Ahmad	RACP Representative
Ms Elizabeth Armstrong	Registry Manager, Australia
Dr John Batten	RACS Representative
Professor Ian Cameron	AFRM Representative
Professor Ross Crawford	Co-opted Member (Orthopaedics)
Dr Owen Doran	ACEM Representative
Dr Kerrin Fielding	OA Representative
Mr Stewart Fleming	Webmaster
Ms Christine Gill	ONZ Representative
Dr Roger Harris	ANZSGM Representative (NZ)
Dr Raphael Hau	Co-opted Member (Orthopaedics)
Dr Sean McManus	ANZCA Representative
Dr Paul Mitchell	Co-opted Member (Synthesis Medical)
A/Prof Rebecca Mitchell	Injury Epidemiologist
Dr Jacob Munro	NZOA Representative
Dr Hannah Seymour	ANZSGM Representative (Australia)
Dr Ralph Stanford	AOA Representative
Ms Linda Roylance	Secretariat
Ms Anita Taylor	ANZONA Representative

Appendix: Terms and Abbreviations

ACEM	Australian College of Emergency Medicine
ACSQHC	Australian Commission on Safety and Quality in Health Care
AFRM	Australasian Faculty of Rehabilitation Medicine
AHFR	Australian Hip Fracture Registry
ANZ	Australian and New Zealand
ANZBMS	Australian and New Zealand Bone and Mineral Society
ANZCA	Australian and New Zealand College of Anaesthetists
ANZHFR	Australian and New Zealand Hip Fracture Registry
ANZONA	Australian and New Zealand Orthopaedic Nurses Association
ANZSGM	Australian and New Zealand Society of Geriatric Medicine
AOA	Australian Orthopaedic Association
AOANJRR	Australian Orthopaedic Association National Joint Replacement Registry
APA	Australian Physiotherapy Association
ASA	American Society of Anesthesiologists
BGS	British Geriatric Society
BOA	British Orthopaedic Society
CT	Computed Tomography
ED	Emergency Department
FLA	Facility Level Audit
FLS	Fracture Liaison Service
HREC	Human Research Ethics Committee
MRI	Magnetic Resonance Imaging
NHFD	National Hip Fracture Database
NHMRC	National Health and Medical Research Council
NZHFR	New Zealand Hip Fracture Registry
NZOA	New Zealand Orthopaedic Association
NZHQSC	New Zealand Health Quality and Safety Commission
OA	Osteoporosis Australia
ONZ	Osteoporosis New Zealand
PLA	Patient Level Audit
RACP	Royal Australasian College of Physicians
RACS	Royal Australasian College of Surgeons
VTE	Venous Thromboembolism



