The State of Safety and Quality in Australian Health Care



AUSTRALIAN COMMISSION ON SAFETY AND QUALITY IN HEALTH CARE

© Commonwealth of Australia 2013

This work is copyright. It may be reproduced in whole or in part for study or training purposes, subject to the inclusion of an acknowledgement of the source.

Address requests and inquiries concerning reproduction and rights for purposes other than those indicated above in writing to:

Australian Commission on Safety and Quality in Health Care GPO Box 5480 Sydney NSW 2001

Or email mail@safetyandquality.gov.au.

Suggested citation: Australian Commission on Safety and Quality in Health Care (ACSQHC). *Vital Signs 2013: The State of Safety and Quality in Australian Health Care*. Sydney: ACSQHC, 2013.

An online version of this report can be accessed at www.safetyandquality.gov.au.

ISSN 2202-7696 (Print)

Contents

Acronyms and abbreviations	2
Introduction	3
1 Will my care be safe?	5
Accreditation and standards: my health service is tested for safety	6
Medication safety: my health service makes sure medicines are administered to me in a safe way	10
Hand hygiene: healthcare providers clean their hands so that I don't get an infection	13
Staphylococcus aureus infection: my care is safer because the health system is tracking infections	16
2 Will I get the right care?	19
Stroke: if I have a stroke there are standards that say how I should be cared for	20
Cognitive impairment: my hospital will look after me if I have dementia	22
End-of-life care: my hospital will look after me and my family as I approach the end of my life	24

3	Will I be a partner in my care?	27
	Health literacy: the way that I understand and use information is important for my health	28
	Shared decision making: I can share decisions about my care with healthcare providers	30
	Patient experience surveys: my experiences in the health system are important	32
	Open disclosure: if things go wrong I will receive an apology and full explanation of what happened	34
4	Case studies	37
	Acute coronary syndrome	38
	End-stage kidney disease	45
	Intensive care in Australia	55
5	Conclusion	73
Def		70
кет	erences	76

Acronyms and abbreviations

ACS acute coronary syndrome

AMI acute myocardial infarction

ANZICS Australian and New Zealand Intensive Care Society

APD Adult Patient Database

AV arteriovenous

CHD coronary heart disease

Commission, the Australian Commission on Safety and Quality in Health Care

CORE Centre for Outcome Resource and Evaluation

ESKD end-stage kidney disease ICU intensive care unit

KRT kidney replacement therapy

MRSA methicillin-resistant *Staphylococcus aureus*

NIMC National Inpatient Medication Chart

NSQHS Standards National Safety and Quality Health Service Standards

NSTEMI non-ST-segment-elevation myocardial infarction

PCI percutaneous coronary intervention

SMR standardised mortality ratio

STEMI ST-segment-elevation myocardial infarction

INTRODUCTION

Welcome to the Australian Commission on Safety and Quality in Health Care's (the Commission's) first report on the state of safety and quality in Australia, *Vital Signs 2013*.

The Commission leads and coordinates improvements in safety and quality in health care across Australia. This includes developing national standards, providing advice about best practice, coordinating work in specific areas to improve outcomes for patients, and providing information, publications and resources for healthcare teams, healthcare providers, organisations and policy makers.

The purpose of the healthcare system is to provide care to people who are sick or injured in public and private hospitals; provide care to people through community-based services, such as general practices, community health clinics, allied health practices and specialists' rooms; and to promote and maintain the health of the general population.

Patients, carers, consumers and members of the public play an important role in ensuring that the health system achieves its purpose, and that society achieves good health outcomes and safe, high-quality health care. They are also involved in shaping the work of the Commission, and the Commission provides information, publications and resources for these audiences.

One of the Commission's core functions is to report on the state of safety and quality of the Australian health system. This is important, because it can help people understand their health system, what the system is doing to improve safety and quality, and how successful these efforts are. It also can help to bring about change and improvement in experiences and outcomes for patients.

Vital Signs 2013 provides an overview of what is happening in Australia for a series of important safety and quality topics. It is structured around three important questions that members of the public can ask about their health care:

- Will my care be safe?
- Will I get the right care?
- Will I be a partner in my care?

These are followed by three case studies, which focus on the quality of care in some important clinical areas. These case studies present a detailed description and analysis of key quality issues that affect outcomes for patients. The case studies also illustrate the in-depth work that is needed to properly understand issues about safety and quality in health care, and to develop solutions to address them.

The Commission plans to publish *Vital Signs* annually, initially as a companion document to its annual report.

WILL MY CARE BE SAFE?

The Australian health system generally provides safe and high-quality care. Unfortunately, some people are harmed as a result of the care they receive. Doctors, nurses and everyone involved in health work very hard to ensure that people are always safe. But health care is a complex process that requires much planning and coordination, and sometimes things do go wrong.

An important way to minimise the likelihood of harm occurring is to make sure that good processes are in place – that health services have systems to ensure safety, and that people working in health services are aware of what those systems are and use them properly.

This is one of the most important roles of the Australian Commission on Safety and Quality in Health Care (the Commission) – to ensure good systems are in place. One of the main ways this is done is by setting standards about safety and quality, and assessing whether health services meet these standards through a process of accreditation.

This section deals with the question of how to ensure good systems are in place to prevent harm, and the application of these systems to two important areas where harm can occur: infections and the use of medicines.

Will my care be safe?

Accreditation and standards: my health service is tested for safety

Medication safety:

my health service makes sure medicines are administered to me in a safe way

Hand hygiene:

healthcare providers clean their hands so that I don't get an infection

Staphylococcus aureus infection: my care is safer because the health system is tracking infections

Accreditation and standards: my health service is tested for safety

Accreditation checks and ensures that a health service has systems and processes in place to improve the safety and the quality of care for patients. Accreditation cannot guarantee that everyone will be safe all of the time, but it can make sure that safety and quality systems are at the centre of the way health services work.



Health services become accredited by taking part in a formal process that involves:

- the health service assessing itself against standards that have been set externally
- an independent agency reviewing that health service and its assessment, and
- the health service making suggested changes.

All Australian Government, and state and territory health ministers have supported the development of a national accreditation scheme that is coordinated by the Commission. This scheme started on 1 January 2013 – all hospitals and day procedure centres must take part and be accredited if they are to provide health services to the public.

National Safety and Quality Health Service Standards

In consultation with Australian, state and territory governments, the Commission has developed the National Safety and Quality Health Service Standards (NSQHS Standards) as part of the accreditation scheme. The primary aim of the NSQHS Standards is to protect the public from harm and to improve the quality of health service provision.

The NSQHS Standards are in 10 areas where we know that too many people are harmed from their health care and where there is good evidence of how to provide better care. The NSQHS Standards provide a framework for hospitals and day procedure centres to improve the quality of care they provide, and make it the responsibility of everyone involved with the health service to ensure the safest possible care is provided.

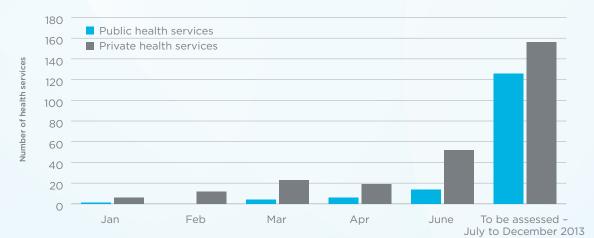
The 10 NSQHS Standards are:



Assessment to the NSQHS Standards

More than 130 hospitals and day procedure centres were assessed to the NSQHS Standards in the first half of 2013 (Figure 1). Other hospitals and day procedure centres are looking at their organisations to make sure that they have the systems in place to meet the NSQHS Standards when they are assessed in the future.

Figure 1



Health services assessed to the NSQHS Standards, January-December 2013

Source: Australian Commission on Safety and Quality in Health Care, 2013.

A new safety and quality accreditation scheme started on 1 January 2013 and hospitals and day procedure centres must take part and be accredited if they are to provide health services to the public

137

Number of hospitals and day procedure centres assessed to NSQHS Standards in first half of 2013

Benefits of the NSQHS Standards and accreditation

Hospitals and day procedure centres that meet all of the NSQHS Standards have systems in place that are known to reduce the risk of harm to patients and improve the safety and quality of care. All hospitals and day procedure centres are now being assessed against the NSQHS Standards – so the same standards for safety and quality are being used across Australia.

A survey of people in hospitals and day procedure services who are working to meet the NSQHS Standards conducted by the Commission found that most can see improvements in their organisation since their implementation. People working in health services thought that the NSQHS Standards were supporting improvements in areas such as:

- seeking feedback from consumers and involving them in decisions about the way in which the health service is run
- supporting more standardised and consistently safer approaches to the delivery of care
- involving everyone working in the hospital and day procedure centre in discussions about safety and quality, and their responsibility to ensure that care is safe
- having greater accountability on the part of the executive and healthcare providers for safety and quality
- improving communication across health services
- ensuring that policies and procedures are up to date and reflect requirements for safety and quality
- improving processes for auditing and measuring compliance with policy, and the safety and quality of care.

Where to next?

Approximately 1320 public hospitals, private hospitals and day procedure centres in Australia will be assessed against the NSQHS Standards over the next four years – 418 will be assessed in 2013. During this time, the Commission will provide support and guidance about how to put systems in place that meet the NSQHS Standards.

The Commission is also looking at how the NSQHS Standards can be used more widely across the health system to ensure safety and quality for patients. As a first step on this path, guidance will soon be available for dentists and community health services about how to meet the NSQHS Standards. The National Safety and Quality Health Service Standards make it the responsibility of everyone working in a health service to ensure that the safest possible care is provided

 \checkmark

What the Commission will do

- Provide guidance and support to hospitals, day procedure centres, dental practices, communitybased services and other organisations that are putting systems in place to meet the NSQHS Standards.
- Coordinate the new accreditation scheme with governments, health services and agencies that accredit healthcare organisations.
- Embed the NSQHS Standards across the health system to ensure a consistent approach to safety and quality in Australia.

1,320

Number of public and private hospitals and day procedure centres that will be assessed over the next four years

418

Number of health services to be assessed in 2013

Medication safety: my health service makes sure medicines are administered to me in a safe way

The National Inpatient Medication Chart makes the complex process of prescribing, dispensing and administering medicines safer for patients Medicines are part of most people's lives. In any two-week period, about seven in ten Australians (and nine in ten older Australians) will take at least one medicine.¹

Medicines can help us to stay healthy, relieve symptoms of diseases, cure some diseases and improve our quality of life. Like any form of treatment, however, medicines are not without risks. Things go wrong for only a small proportion of people but, because medicines are so common, this small proportion can translate into a large number of problems overall. About 1.5 million Australians are thought to suffer some harm each year due to taking a medicine.² The process of using medicines in hospitals is complex and involves a number of different healthcare providers and steps. Doctors prescribe medicines, pharmacists dispense them and nurses administer them. Things can go wrong in many places. Two of the most common places are when information about medicines is written down, and when the name and dose of a medicine is checked before it is given to a patient.³

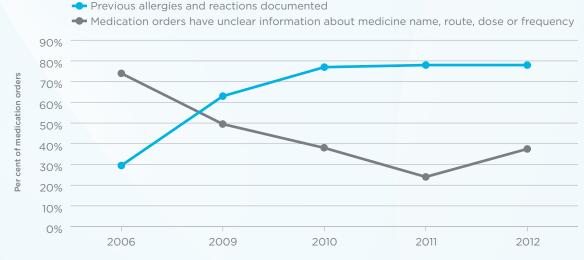
Medication charts to improve safety

One of the most important ways to improve safety is to improve consistency. It makes sense for doctors, nurses and pharmacists, who work in different hospitals and settings at different times, to all use the same systems wherever they go. In 2006, the Commission introduced the National Inpatient Medication Chart (NIMC),⁴ which has become a crucial part of the process of using medicines. The chart is used by doctors to order medicines, by pharmacists to dispense medicines, and by nurses to check medicines before they are given to a patient.

The NIMC is now used in all hospitals and day procedure centres. It reduces the risk of healthcare providers making mistakes as a result of being unfamiliar with how a particular chart works. It also makes the complex process of prescribing, dispensing and administering medicines safer for patients by improving communication between healthcare providers.

Figure 2

Documentation of medicines information on the National Inpatient Medication Chart, 2006–2012



Source: Australian Commission on Safety and Quality in Health Care, NIMC 2012 National Audit Report, 2013.

The systems that have been developed for paper charts will be adapted to improve safety when prescribing is done electronically

7 in 10

Number of Australians taking at least one medicine

1.5 million

Number of Australians believed to suffer harm each year due to taking a medicine

Allergies

Increase in recording of allergies since 2006





Improvement in clarity of ordering medicines

How the National Inpatient Medication Chart is used

Each year the Commission coordinates an audit to look at how the NIMC is being used in hospitals. More and more hospitals are choosing to take part in this audit, and in 2012 the medication charts of more than 13 000 people were reviewed. As a result of these audits, we know that using the chart has reduced the risk of harm for patients, but there are areas where further improvement is possible.

One area of improvement is reducing gaps in information. Since the NIMC has been introduced, it is now more likely that a person's allergies and previous problems with medicines will be seen by healthcare providers at the time medicines are prescribed and dispensed. Since 2006 there has been an increase in recording of information about allergies from 30 per cent to 80 per cent, and the clarity of orders for medicines has improved by 40 per cent (Figure 2). Sometimes, however, information about the medicine, such as the name and dose is unclear or missing from the chart, and these gaps can increase the risk of harm. Because of these gaps, it is particularly important for nurses to check the medicines that are being used before they are given to patients.

Where to next?

The electronic environment is important, because more and more prescribing is being done electronically. The Commission already provides guidance to hospitals on safety aspects of electronic systems for managing medicines.⁵

80%

During the next year, the Commission will work with the National E-Health Transition Authority and the Department of Health to provide guidance to health services and health software businesses on safe ways to present medicines information on computer screens. As part of this process, the systems that have been developed to improve the safety of medicines for paper charts will be adapted for electronic use. These include using standard abbreviations, terminology and symbols when prescribing and administering medicines.⁶

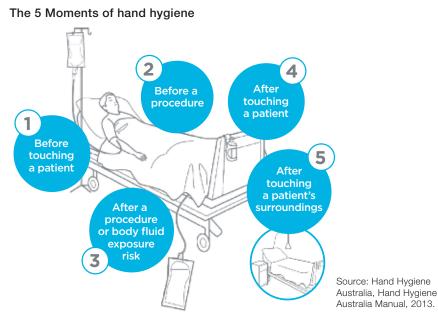
What the Commission will do

- Reduce the risk of harm to patients by standardising the way in which information about medicines is recorded and communicated.
- Provide training for healthcare providers about how to use the NIMC.
- Expand initiatives to make medicines safer in electronic environments.

Hand hygiene: healthcare providers clean their hands so that I don't get an infection

Healthcare associated infections can lengthen time spent in hospital, delay recovery times and put very sick people at risk of further complications Every year, thousands of Australians pick up infections in hospitals and other healthcare facilities.⁷ These healthcare associated infections can lengthen time spent in hospital, delay recovery times and put very sick people at risk of further complications. Hand hygiene – washing your hands thoroughly with soap and water, or using an alcohol-based rub – is one of the most effective ways to reduce and prevent these infections.

Figure 3



For people in hospitals and day procedure centres, the hands of healthcare providers are one of the most important source of preventable infections.⁷ Healthcare providers should clean their hands before, during and after every contact with a patient. However, we know that this does not always happen.

National Hand Hygiene Initiative

In 2008, the National Hand Hygiene Initiative was started to educate and promote change among all healthcare providers in Australia. An expert organisation called Hand Hygiene Australia was contracted by the Commission to develop and coordinate the National Hand Hygiene Initiative.

The National Hand Hygiene Initiative is based on a program developed by the World Health Organization, which specifies '5 Moments' when hand hygiene should be used (Figure 3).

The National Hand Hygiene Initiative offers resources, training, and an audit and reporting process for hospitals to measure how they are doing in this important area of health care. More than 420 000 healthcare staff members nationally have completed online learning packages in hand hygiene.⁸

How are hospitals doing?

There was a six-fold increase between 2009 and 2012 in the number of hospitals regularly auditing staff to see if they are performing hand hygiene before, during and after seeing a patient. In 2013, almost 700 hospitals are measuring compliance with the 5 Moments of hand hygiene.⁸ This improvement will continue because the new NSQHS Standards include requirements about auditing hand hygiene performance (see page 6).

The audits show that overall compliance with proper hand hygiene processes was 76 per cent in 2013, which is a marked improvement from 64 per cent in the first audit in 2010.⁸ Hand hygiene compliance is highest after performing a procedure or after touching a patient (Figure 4).

Nurses have the most direct contact with patients, and are the most commonly audited healthcare providers for hand hygiene.⁸ They have a higher rate of compliance than doctors, and it is good to see that rates are improving in both groups (Figure 5).

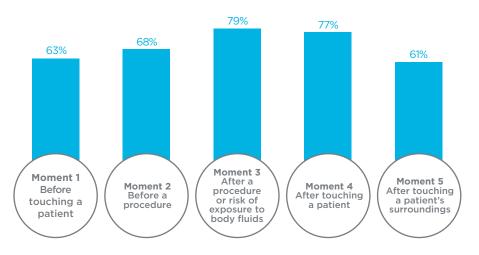
Hand hygiene compliance rates

There has been a marked improvement in compliance since the first audit in 2010

64% 2013 76%

Figure 4

Hand hygiene compliance, by Moment, 2010-2012



Source: Hand Hygiene Australia, www.hha.org.au, 2013.

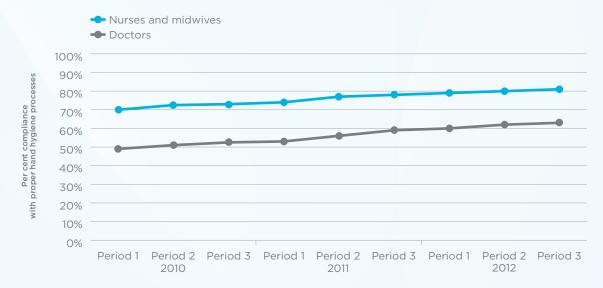
Where to next?

Hand hygiene is essential for ensuring that people are safe, but it is not the only strategy for preventing infections. The NSQHS Standards (see page 6) provide a framework for health services to take a systematic approach to preventing and controlling healthcare associated infections. Health services need to:

- make sure that systems for preventing and controlling infections are in place throughout their organisation
- put in place strategies to prevent the spread of infections, such as hand hygiene and use of protective equipment
- identify people who have an infection promptly, and manage or treat them appropriately
- encourage safe and appropriate prescribing and use of antibiotics
- make sure that healthcare facilities and equipment are clean and hygienic, and
- provide information to consumers about preventing infections.

Figure 5

Hand hygiene compliance, by profession, 2010-2012



 \checkmark

Source: Hand Hygiene Australia, www.hha.org.au, 2013.

What the Commission will do

- Continue to support the National Hand Hygiene Initiative.
- Expand and improve its online training packages for hand hygiene, and infection prevention and control.
- Support health services to meet NSQHS Standard 3: Preventing and Controlling Healthcare Associated Infections.

420,000

Healthcare staff who completed online learning in hand hygiene

Sixfold increase

Number of hospitals regularly auditing staff

700

Number of hospitals measuring compliance

Staphylococcus aureus infection: my care is safer because the health system is tracking infections

Staphlycoccus aureus (Staph aureus) is a bacterium that lives on the surface of people's skin and inside the nose. It is normally harmless and most people who are carrying it are totally unaware that they have it.

If the infection is on the skin, it can cause boils, abscesses, impetigo (school sores) and septic wounds. However, some people develop a *Staph aureus* infection in the blood through a cut on their skin, or sometimes after surgery. If it gets into the bloodstream, *Staph aureus* can cause serious illness – such as heart valve problems or toxic shock syndrome – and sometimes death.

People whose immune system does not function properly, who have a drip attached to them or who have had major surgery are at greater risk than others of getting *Staph aureus* infections.

Staph aureus infection that is resistant to antibiotics

Some *Staph aureus* bloodstream infections can be treated with standard antibiotics, such as penicillin. But if the infection is caused by bacteria that are resistant to these standard antibiotics, the usual treatment does not work. These infections are known as MRSA (methicillin-resistant *Staph aureus*).

In the past, the majority of MRSA infections were picked up in hospitals, but now the proportion that are picked up in the community is rising (Figure 6).

Why is it important to use antibiotics appropriately?

Resistance to antibiotics is rising throughout the world, mainly due to overuse of antibiotics, using antibiotics when they are not needed, or not taking antibiotics at the doses and times that a doctor prescribes.⁹

There are very few new antibiotics being developed and it is important to ensure that the ones that we have continue to work effectively.

Staph aureus is normally harmless, but if it gets into the bloodstream it can cause serious illness and sometimes death

It is already becoming more difficult to treat common bacterial infections.⁹ For example, there are already very few antibiotics that are effective against MRSA.

What is being done about it?

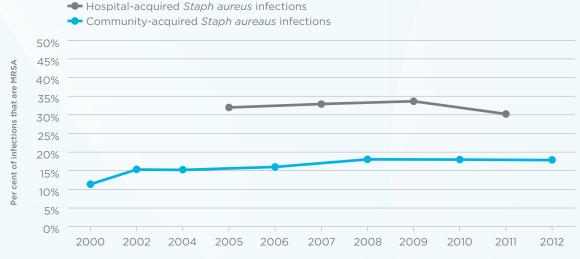
One aspect of tackling MRSA involves hand hygiene (see page 13), as *Staph aureus* infections, including MRSA, can be spread from person to person by touching people or surfaces.

Another way to fight MRSA is through infection prevention strategies. These are widely used in health services to reduce the risk to patients of acquiring *Staph aureus* and other infections. For people who already have an infection, the strategy involves managing their care appropriately during their stay. Infection prevention and control is a core part of the NSQHS Standards. Information about some of the more common infections can be found in the *Australian Guidelines for the Prevention and Control of Infection in Healthcare.*⁷ A third prevention aspect, antibiotic stewardship, involves a range of strategies to encourage the safe and appropriate use of antibiotics. These strategies aim to reduce the development of resistance to antibiotics and the unwanted effects resulting from inappropriate use. Antibiotic stewardship is an important requirement in the NSQHS Standards.

The final strategy to tackle MRSA is national surveillance, because it is important to know how widespread a problem is, and whether it is getting better or worse. This information will influence decisions about what should be done. The information about hand hygiene and *Staph aureus* for nearly every public hospital is available on the MyHospitals website (www.myhospitals.gov.au).

Figure 6

Staph aureus infections that are MRSA 2000-2012, by location of acquiring the infection



Source: Australian Group on Antimicrobial Resistance, Antimicrobial Susceptibility Report, Staphylococcus aureus Program, 2012.

Resistance to antibiotics is rising throughout the world, mainly due to overuse of antibiotics, using antibiotics when they are not needed, or not taking antibiotics at the doses and times that a doctor prescribes

Where to next?

To be able to tackle *Staph aureus* and other infections effectively, and ensure that people are safe when they receive care, we need to know about when and where infections are occurring in health services and in the community. This is about surveillance – an ongoing and coordinated process of tracking infections.

In 2013, the Commission is starting work with governments, health services, pathology laboratories and healthcare providers to coordinate a new national surveillance network. This surveillance network will look at the resistance of the bacteria that cause infections – including *Staph aureus* – to antibiotics, and also the way in which antibiotics are being used.

What the Commission will do

- Support health services to put in place effective antibiotic stewardship programs to improve use of antibiotics.
- Work with governments, healthcare providers, pathology laboratories and health services to establish and coordinate a national surveillance program that targets antibiotic resistance, and safe and appropriate use of antibiotics.
- Support health services to meet NSQHS Standard 3: Preventing and Controlling Healthcare Associated Infections.

WILL I GET THE RIGHT CARE?

Even if the standard of health care is appropriate – if it is safe – other important questions need to be asked.

Sometimes, there is good agreement about what care people should receive, but that care is not provided.¹⁰ There are many reasons for this gap between the evidence and what happens in practice.

The Australian Commission on Safety and Quality in Health Care (the Commission) is working to make sure that everyone gets the care that we know that they should.

This section considers the question of getting the right care through the lens of three examples: stroke, cognitive impairment and as people approach the end of their life.

Will I get the right care?

Stroke:

if I have a stroke there are standards that say how I should be cared for

Cognitive impairment:

my hospital will look after me if I have dementia

End-of-life care:

my hospital will look after me and my family as I approach the end of my life

Stroke: if I have a stroke there are standards that say how I should be cared for

Stroke is a life-threatening condition that occurs when the blood supply to the brain is interrupted. If that happens when an artery is blocked, it is called an ischaemic stroke. If that happens because an artery bursts, it is called a haemorrhagic stroke.¹¹

About 50 000 people have a stroke each year. There are more than 400 000 people living in Australia who have had a stroke. About 65 per cent of these people have a disability that affects their ability to live their lives without help (Figure 7).¹¹

400,000

Number of people living in Australia who have had a stroke

65%

of people live with disability after a stroke

What is the right care for stroke?

Getting the right health care at the right time can significantly improve a person's chance of surviving a stroke and recovering to live a full and independent life. It has been proved that receiving care in a stroke unit staffed by an experienced multidisciplinary team can reduce death and disability.¹²⁻¹³

For people who have had an ischaemic stroke, getting emergency medical care immediately and, where appropriate, receiving medicines that reduce the blockage in the artery have also proved to save lives and minimise the risk of disability.¹²

Once a person has had a stroke, they are at an increased risk of having another stroke in the future. It is recommended that these people get individual advice and education on how to reduce the risk of another stroke, and that they be given a care plan before leaving hospital to support them with their recovery.¹²

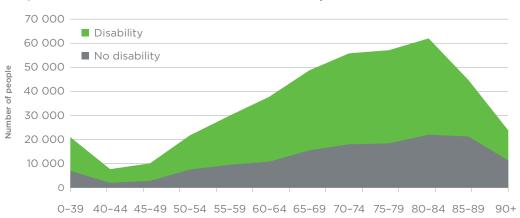
Are people receiving the right care?

In 2011, the Stroke Foundation coordinated an audit of 3548 patient records from 108 hospitals. The audit found that, overall, 60 per cent of patients with a stroke received their care in a stroke unit. This has improved since 2007, when the rate was 50 per cent of patients. When a hospital had a stroke unit, on average only 80 per cent of patients with a stroke received care in this unit. There is considerable variation for this across the country, with rates ranging from 52 per cent to 85 per cent.

For other key markers of good stroke care, only about 50 per cent of the patients in the audit received the care that they should (Figure 8).¹⁴

Figure 7

People with stroke in 2012, with and without a disability



Source: Deloitte Access Economics, The Economic Impact of Stroke in Australia, 2013.



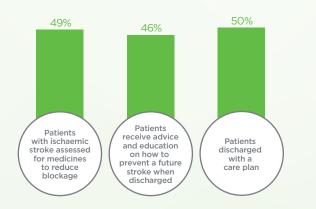
Stroke unit patient care

Variation over time is between 2007 and 2011, where there was an increase in people being cared for in a stroke unit from 50% to 60%.

50%

Figure 8

People with a stroke receiving recommended care



Source: Stroke Foundation, National Stroke Audit Acute Services: Clinical Audit Report 2011, 2011.

Where to next?

There are already comprehensive guidelines about the treatment that people who have had a stroke should receive. However, we know from the Stroke Foundation that many people are not receiving the care that they should.

The Commission is therefore taking a new approach to make it more likely that people will get the right care at the right time. This approach is based on the development of a series of 'Clinical Care Standards', including one about stroke.

The Clinical Care Standard will include a small number of statements that describe the clinical care a patient with stroke should be offered, and the indicators a health service could use to monitor that this care has been provided.

The Commission will also provide strategies to help healthcare providers and services reach the standard. The Clinical Care Standard will help patients and their family to know what care they should expect and will support them to make decision about their care. The Commission will also develop practical tools to help consumers and healthcare providers make decisions together about appropriate stroke care.

What the Commission will do

- Work with consumers and healthcare providers to develop a National Clinical Care Standard for stroke.
- Develop practical tools for consumers and healthcare providers to make decisions together about appropriate stroke care.

Cognitive impairment: **my hospital will look after me if I have dementia**

People in hospital who have dementia are at risk of falls. pressure injuries, healthcare associated infections, errors in medicines, loss of fitness, prolonged stays in hospital, inappropriate transfer to residential aged care facilities and increased risk of readmission after discharge

A person who has cognitive impairment is often confused and forgetful. They may have difficulties with reasoning, remembering or concentrating, or with other aspects of how the mind works.

The most common forms of cognitive impairment are dementia and delirium. Dementia progresses gradually (Alzheimer's disease is the most common form of dementia), unlike delirium, which occurs suddenly. Delirium itself is not a disease, but it can be caused by medications, infections or many other factors. Both dementia and delirium are common in older people who go to hospital.

Dementia is a national health priority. It is estimated that about 300 000 people in Australia have dementia now – this is expected to increase to about 900 000 by 2050¹⁵ (Figure 9). In Australia, about 25 per cent of people with dementia will have a hospital admission in a year. Delirium is also common – 10 per cent of people more than 70 years old will be admitted to hospital with delirium.¹⁶

The impact of dementia and delirium

Dementia and delirium cause significant problems for the people who have them, and they also complicate their care for other health conditions (Figure 10). For example, people in hospital who have dementia are at risk of falls, pressure injuries, healthcare associated infections, errors in medicines, loss of fitness, prolonged stays in hospital, inappropriate transfer to residential aged care facilities and increased risk of readmission after discharge.¹⁷⁻¹⁸ Similar problems arise for people with delirium.¹⁹

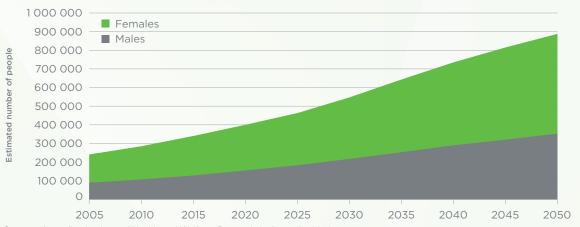
Dementia rates

Estimated number of people with dementia If someone with dementia is admitted to hospital, dementia is recorded as a diagnosis only about one-half of the time.¹⁷ Not identifying dementia in hospital can result in these patients not receiving the right care, which makes them more likely to have a poor result from the care.

The problem is even worse for people with delirium – about two-thirds of patients with delirium admitted to hospital are not recognised as having the condition.^{18,20} In addition, delirium is often mistaken for dementia when people are in hospital, which means that they do not always get the care that they need to treat their underlying medical condition.

2013 **300,000** forecast **2015 900,000**

Figure 9

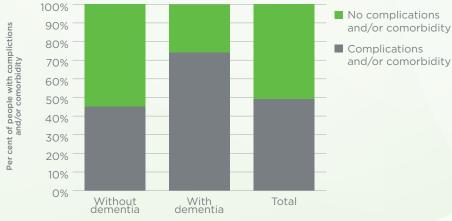


People with dementia, selected years 2005-2050

Source: Australian Institute of Health and Welfare, Dementia in Australia, 2012.

Figure 10

Complications associated with dementia



Source: Australian Institute of Health and Welfare, Dementia in Australia, 2012.

Where to next?

Many people within the health system are working at local, regional, jurisdictional and national levels to improve the care of people with cognitive impairment. There are many guidelines and pathways for the conditions that cause cognitive impairment. However, there is limited national coordination of these efforts, and nothing is mandatory.

The Commission believes that the NSQHS Standards (see page 6) will help provide the basis for nationally coordinated improvement in the care of patients with cognitive impairment in acute care. In 2013, the Commission is starting a new project with the Department of Health to improve the care of people with cognitive impairment using the NSQHS Standards.

By identifying safety and quality issues, then linking the strategies to address these issues to the NSQHS Standards, the system has a way of requiring implementation and monitoring of best practice for patients with cognitive impairment.

What the Commission will do

- Work with consumers, healthcare providers and governments to identify how the NSQHS Standards can improve the care of people with cognitive impairment.
- Identify whether and how the NSQHS Standards should be revised to better meet the needs of people with cognitive impairment.

End-of-life care: my hospital will look after me and my family as I approach the end of my life

Providing safe and high-quality end-of-life care can help people to improve or maintain their quality of life, reduce stress on the person and their family and carers, and help to ensure that people's wishes are followed when they are dving

Providing safe and high-quality end-of-life care can help people to improve or maintain their quality of life, reduce stress on the person and their family and carers, and help to ensure that people's wishes are followed when they are dying.²¹⁻²⁴ Although many Australians receive excellent care at the end-of-life, some do not. This has a considerable impact on the experience of the person and their family and carers.

More and more Australians are living into old age²⁶ and older people often live with chronic illnesses for long periods before they die.²⁷⁻²⁸ These people often experience repeated hospitalisations as their condition worsens. A South Australian study found that one in three hospitalised people had a palliative approach as the primary goal of their care.²⁹ A Canadian study found that people in the last six months of life consume approximately one-fifth of all healthcare costs and one-guarter of hospital days.³⁰ This has significant implications in terms of healthcare costs, but also in terms of people's quality of life.

Why are people at risk of not getting the right end-of-life care?

Most Australians say they would prefer to die at home, but most die in hospital.³¹ But some hospitals have neither appropriate facilities nor provide the best possible management of distressing symptoms.

Many people who are dying have multiple health problems, but hospital-based care tends to focus on a single area, depending on the specialist in charge. Hospitals do not always recognise and deliver all that a person needs as they approach the end of their life.³² At times, unnecessary tests and treatment continue beyond the time they are useful, and can add to the person's suffering.

There can also be problems with getting the care people need at the time they need it and in a place, where possible, of their choosing.³³⁻³⁴

Where to next?

There are many programs that aim to improve care for people at the end of their lives. However, it is clear these initiatives are not always effective for people who are being cared for in hospital. One of the reasons for this is that there is inconsistent agreement about what the standard of care should be for people approaching the end of their lives in hospitals.

The Commission has started a process to get some consistency in the way that care is provided to people being cared for in hospital at the end of their lives. The Commission will work with consumers and healthcare providers to develop a national consensus statement describing the essential elements of safe and high-quality end-of-life care that patients, families and carers should expect. From this statement, the Commission will develop a framework of accountability to ensure improvements in an individual person's care. Further work will develop tools and resources to support patients, families and carers to participate in shared decision making about their care at the end-of-life.

Will I get the right care?

Hospitals do not always recognise and deliver all that a person needs as they approach the end of their life

What the Commission will do

- Develop a national consensus statement about the essential elements for safe and high-quality care at the end-of-life.
- Develop tools and resources for patients, families, carers and healthcare providers to support better end-of-life care.
- Identify whether, and how, the NSQHS Standards should be revised to better meet the needs of people approaching the end of their lives.

[The] patient is in really dire straits, clearly end-of-life but with no meds [medications] written up... They've got nothing appropriate and these people are suffering and it happens way too often. They pass away in grave distress to themselves and their families who have to watch it as well.

> Clinical development nurse – public hospital²⁵

My mother is wriggling about and she's thrashing in pain and she's stopped eating...

Consumer²⁵

There is a problem here. People are dying prolonged, painful deaths in hospital.

Intensive care consultant – public hospital²⁵

> Ad hoc is very much the way things happen because people don't fit a system or a scheme.

> > Chaplain – public hospital²⁵

When we spoke to the doctor...there was an interview room, but there was a girl in there on her mobile so we went into a store room, you know moved things out of the way... And then the discussion was, you know, do we put the [breathing] tube down? I just thought it wasn't appropriate.

Consumer²⁵

WILL I BE A PARTNER IN MY CARE?

The Australian Commission on Safety and Quality in Health Care (the Commission) supports the right of people to be partners in their health care. People who are partners in their health care, who understand the health they are given, who share decisions and who actively engage with the processes of care are more likely to have a better experience of health care³⁵⁻³⁶ and better results from their health care.³⁷

Being a partner requires good communication. Communication failures are one of the most commonly cited underlying causes of complaints³⁵⁻³⁷ and problems³⁸ in health care. Communication failures – particularly about the nature of an illness and the options for treatment – are the most common cause of patient dissatisfaction.³⁹

It also requires shared decision making between patients and healthcare providers. In shared decision making, the healthcare provider provides the scientific evidence and the options, while the patient brings to the table values and preferences. Together, the best decision can be made.

This section looks at different ways partnerships can exist between consumers, healthcare providers and the health system. The focus is on:

- health literacy
- shared decision making
- patient experience surveys
- open disclosure.

Will I be a partner in my care?

Health literacy: the way that I understand and use information is important for my health

Shared decision making: I can share decisions about my care with healthcare providers

> Patient experience surveys: my experiences in the health system are important

Open disclosure: if things go wrong I will receive an apology and full explanation of what happened

Health literacy: the way that I understand and use information is important for my health

Health literacy refers to the way in which a person understands and uses information about health.

It is partly about a persons' skills and abilities. In 2006, the Australian Bureau of Statistics found that only 40 per cent of adults had the level of health literacy needed to take action and make informed decisions about their health care.³⁸ In people more than 65 years old, the rate of health literacy drops further (see Figure 11).

A persons' skills and abilities are important for good health literacy, but the way information is presented is just as important – most health information presented by governments, healthcare organisations and others is just too complex for the average person to understand.³⁹⁻⁴⁰

Why is health literacy important?

If health information or the healthcare system do not make sense, it is hard to make good health decisions.⁴¹ This has an impact on people's health – people with lower health literacy use more health services and know less about their own health.³⁷ Older people with lower health literacy have poorer health overall.³⁷

Health literacy is particularly important for people who have a chronic health condition, where there are many decisions to make about daily life and long-term care. People who are able to understand and use available information, work with their healthcare team and find their way through the health system receive better care and have better health.^{37,42-43} There has been a lot of research about health literacy and safe use of medicines. People with lower levels of health literacy can misunderstand common instructions and warnings about their medicines,⁴⁴⁻⁴⁵ and they are less likely than others to take medicines as directed.⁴³⁻⁴⁵ This means that it is important that information about medicines is presented in a way that everybody – regardless of their level of health literacy – can understand.

The Commission has been working for some time to improve medication safety (see page 10), including being involved in work to make labelling, packaging and consumer medicines information easier to understand. The NSQHS Standards (see page 6) also require health information (such as medicines information) to be developed with consumers and provided in a way that easy to understand and use.⁴⁶

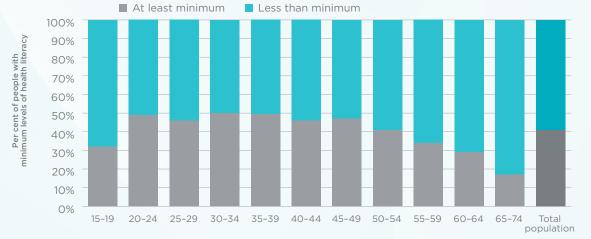
Where to next?

There has already been a lot of work done in Australia to improve health literacy. However, there has not been agreement about a coordinated approach to this problem.

In 2013, the Commission started to develop a national approach to health literacy, which will provide the basis for action, as well as guidance to healthcare organisations on how they can address health literacy barriers in their everyday practice.

A person's skills and abilities is important for good health literacy, but the way information is presented is just as important

Figure 11



Health literacy skills levels required to meet complex demands of everyday life, by age

Source: Australian Bureau of Statistics, Health Literacy, Australia, 2006.

What the Commission will do

- Work with consumers, healthcare providers and governments to develop a nationally coordinated approach to health literacy.
- Provide guidance to health services about how they can make it easier for everyone – regardless of their level of health literacy – to access, understand and use health information and services.
- Support health services to meet the requirements of NSQHS Standards that relate to the provision of information to consumers.

It is important that health information is presented in way that everyone can understand – regardless of their level of health literacy

40%

Number of adults with the level of health literacy needed to make informed decisions about their health care

Shared decision making: I can share decisions about my care with healthcare providers

Different people value different things. Healthcare providers need to be able to explore a person's values and preferences during discussions about treatment options Some people like to hand all decisions about their health care to the doctors looking after them. Some like to gather as much information as possible and make their own decisions. Others like to talk to healthcare providers and make decisions together – this is known as shared decision making. All of these approaches are reasonable.

However, sometimes people make decisions about medical treatment without fully understanding their options, and the risks and benefits associated with each option. This is quite common as health care is complex and good information difficult to find.

All people find different things important. Some are very worried about side effects of medications, others are not. Some put more importance on quality of life, while others value length of life.

Due to these differences, doctors, nurses and others need to be able to explore a person's values and preferences during discussions about treatment options. Research shows that most people prefer to have fewer tests and elective procedures than their doctors think they should have.⁴⁷

Tools to help consumers and healthcare providers make decisions together

Many communication tools and strategies can be used to help conversations between consumers and their healthcare providers. These include coaching tools, patient decision aids and access to healthcare records.⁴⁷

Patient decision aids to support shared decision making lead to increased knowledge, more accurate perceptions of risk, decisions that are more in line with a patient's values, and fewer patients remaining passive or undecided.⁴⁷ People are more likely to take up health screening with decision aids⁴⁸ and some studies have found more consistent use of medicines with the use of decision aids.⁴⁹

Shared decision making for people with chronic conditions

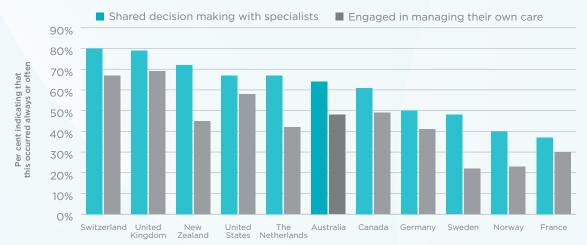
People with chronic conditions often have complex requirements for their medicines, diet and exercise. It is particularly important for these people to make decisions with their healthcare provider – this makes it more likely for them to manage their own care and follow the treatments required.⁵⁰⁻⁵¹

A recent survey found that only 64 per cent of people with a chronic condition in Australia said that they had shared decisions with their specialists; however, only 48 per cent reported that they were involved in managing their own care (Figure 12).⁵²

Australia performs reasonably well internationally for shared decision making, but there is still room for improvement. Better communication around decisions could lead to a better experience for the patient, greater satisfaction for healthcare providers and more appropriate use of resources for the health system.⁴⁷

Figure 12

Experiences of shared decision making, by country



Source: Schoen et al., New 2011 survey of patients with complex care needs in eleven countries finds that care is often poorly coordinated. *Health Affairs* 2011;30:2437–2448.

Where to next?

We know that there is considerable variability in the care that people receive and that not everyone gets the care that they should (see page 19). One of the ways of addressing this problem is to give people information that they can use to participate in decisions about their care.

The Commission develops standards and guidance for healthcare providers that describe the care that people should receive for certain conditions and in certain situations. The Commission is also starting to develop guidance and tools for consumers that are linked to the Clinical Care Standards (see page 21). These will help consumers and healthcare providers to work together to make decisions about care.

48%

Proportion of people with a chronic condition who say they manage their own care

What the Commission will do

- Work with consumers and healthcare providers to develop and promote decision aids and other tools to support shared decision making.
- Provide information for consumers about safety and quality topics, and what they can expect in the health system.

Patient experience surveys: my experiences in the health system are important

Information from people about their experiences of care can help health services to improve the way that they provide care, and help ensure that people get the best outcomes from their care The experience that people have when they receive health care is important. It is not just about whether or not someone's condition has been fixed or they received the care that they needed – it is also about what happens during the process of health care. We know that people who say that they had a better experience of care have better long-term clinical outcomes,³⁰ and that such ratings are associated with better safety and quality of care,⁵³ better adherence to treatment and less spending on diagnostic tests.⁵⁴⁻⁵⁷

Patient experience surveys

An important way of finding out about people's experiences is to ask them. Patient experience surveys are commonly used tools, and the results can be used by local facilities to improve their services. This type of information also provides a guide for how the health system as a whole is faring at a national and international level.

What do people think about the health system?

Most people in Australia people report positive experiences in the health system. A survey by the Australian Bureau of Statistics found that about 90 per cent reported that the healthcare providers that they saw listened carefully, showed respect and spent enough time with them.58 The highest ratings were for dentists, with the lowest for doctors and nurses in the emergency department (Figure 13). These results might reflect differences in the way care is provided in these settings – particularly in busy emergency departments. Due to information like this, some hospitals are now putting in place initiatives to help improve the experience of people while they are receiving care in the emergency department.

In international comparisons, Australia performs well in ratings of people's experiences of interactions with healthcare providers. In 2011, the Commonwealth Fund, a not-for-profit organisation based in the United States, conducted an international survey of adults with serious illnesses or chronic conditions. Australian participants in this survey reported positive experiences in their relationships with their regular doctor. Australia performed third best on these ratings behind Switzerland and the United Kingdom (Figure 14).

Although the result from the Commonwealth Fund's study is positive, these results need to be considered in the light of other types of feedback or information from people receiving care, including complaints. Communication failures are one of the most common underlying causes of complaints to healthcare complaints commissions in Australia.⁵⁹⁻⁶¹

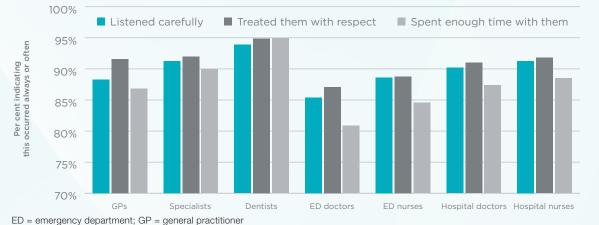
Where to next?

In the NSQHS Standards (see page 6), there is a requirement for health services to collect information about the experiences of people receiving care in their organisation and use this information to make improvements. There are great opportunities to learn from the experiences of people receiving care, their carers and family. This type of information can help health services to improve the way that they provide care, and help ensure that people get the best outcomes from their care.



Figure 13

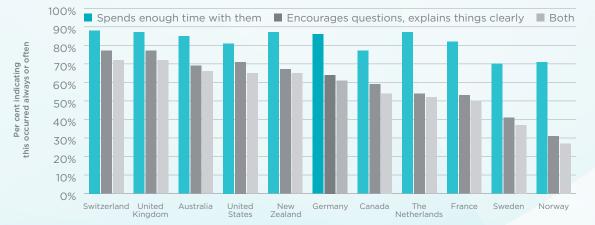
Patient experience in Australia, by healthcare provider



Source: Australian Bureau of Statistics, Patient Experiences in Australia: Summary of Findings 2011-12, 2012.

Figure 14

Patient experience, by country



Source: Schoen et al., New 2011 survey of patients with complex care needs in eleven countries finds that care is often poorly coordinated. Health Affairs 2011;30:2437–2448.

90%

Number of patients reporting positive experiences with their healthcare provider – Australian Bureau of Statistics survey

What the Commission will do

• Support health services to meet the requirements of the NSQHS Standards to collect information about the experience of people in their organisation.

People who say that they have a better experience of care have better long-term clinical outcomes

Open disclosure: if things go wrong I will receive an apology and full explanation of what happened

Open disclosure can relieve the feelings of anger, guilt, grief or helplessness that can follow when things go wrong Open disclosure describes the way healthcare providers communicate with and support patients, and their family and carers, who have experienced harm during health care. Open disclosure is a patient right, is anchored in professional ethics, is considered good clinical practice and is a part of standard care.

Open disclosure is important for patients and families because it can relieve the feelings of anger, guilt, grief or helplessness that can follow when things go wrong.⁶² It can also help people to restore their trust in health care.

Australia's approach to open disclosure

Australia has had a national open disclosure policy (the Open Disclosure Standard⁶⁵) since 2003. In 2011, the Commission undertook a comprehensive review of the standard to make sure it still met the needs of consumers, healthcare providers and health services. As part of the review, public consultations were held and the standard was revised to create a new Australian Open Disclosure Framework (the Framework).⁶⁶

The Framework stresses that:

- the main concern of open disclosure is addressing the needs of patients, their family, carers and other support persons
- open disclosure is approached as a dialogue that may take place over a series of meetings and conversations
- patients and their support persons are given the opportunity to convey their version of the incident, and can expect that this information will be used to improve how care is delivered in the future
- patients and their support persons can expect to hear the words 'I am or we are sorry' as an apology or expression of regret, and
- clinicians and other staff, who are often deeply affected by adverse events, are supported by their institutions throughout the open disclosure process.

The Framework also recognises that open disclosure is inherently complex, and is challenging for all participants.

Where to next?

Since 2003, there has been a lot of work to introduce open disclosure in Australian health services. Open disclosure is now a requirement in the NSQHS Standards (see page 6), which will help further embed it in the health system.

The Commission has developed a suite of resources to help with the implementation and practice of open disclosure. These resources are designed to help patients and their support persons, healthcare providers and health services participate in, practice and implement open disclosure.

What the Commission will do

• Support health services to meet the requirements of the NSQHS Standards to implement disclosure practices.

Open disclosure is now a requirement of the National Safety and Quality Health Service Standards, which will help further embed it in the health system [Open disclosure] needs to be continuous, [it] is one of frequent and cumulative disclosure rather than just disclosing and then okay we've done that.

Senior clinical manager⁶⁴

There was an acknowledgement there was an incident with the patient. That was done poorly from a clinical disclosure by a junior staff member with conflicting information. And that was actually then in itself the incident in that that's what really caused the anxiety for the patient.

Support personnel⁶⁴

I can look back and I'm proud that has changed. That wasn't good enough but now they've listened and you've got to think of how incredibly important it is to that family unit that that person has been given the opportunity to engage in that.

Mother of a patient⁶³

All my experience with [open disclosure] is positive. It is contributing to the culture... it is about getting it off people's chest... there is no dealing with hidden agendas, there is no feelings of [distrust], there is true transparency.

Nursing manager⁶⁴

I think it's more important to have an atmosphere of openness and frankness and that hopefully at the end of the day the participants on both sides, the doctors as well, they're forced to closely review what's happened and their own conduct, et cetera, and that they go away learning something as well. If that happens, that's about the best you can expect.

Patient's son67

CASE STUDIES

Measuring the safety and quality of care is a challenge, and there is often limited information available about whether care is safe, whether people receive the right care and whether people are partners in their care.

One of source of information about quality of care comes from clinical quality registries. These registries are clinical databases that have been established to collect, analyse and report routinely on information to improve healthcare quality at the team or hospital level. These registries are typically run by clinical societies and professional colleges.

In this section, case studies are presented that focus on three important clinical topics – acute coronary syndrome, end-stage kidney disease and intensive care – drawing on data collected through two clinical quality registries and in one stand-alone research project. The case studies focus on two particular aspects of quality of care:

- how closely actual patient care aligns with recommended (evidence-based) care; this is known as 'appropriateness of care' (see page 19)
- the results of care (outcomes) for patients after their stay in hospital; this is known as 'effectiveness of care'.

Appropriateness and effectiveness are difficult to measure. Typically, they require data about patients and their treatment that would not be recorded as part of their normal care. They can also require long-term follow up about what has happened to a patient after their stay in hospital. For the case studies presented here, information about appropriateness and effectiveness is available through the efforts of healthcare providers and health services providing data to the clinical quality registries.

The case studies in this section focus on the appropriateness and effectiveness of care in three areas: acute coronary syndrome, end-stage kidney disease and intensive care. These areas were selected because, in addition to having a high burden of disease, they either have well-established registries with high national participation rates (end-stage kidney disease and intensive care) or were the subject of a recent national snapshot audit (acute coronary syndrome). The data for the case studies were provided by three groups, and the Commission has worked with them to prepare the material presented here. The Commission acknowledges the assistance of:

- Cardiac Society of Australia and the authors of the SNAPSHOT study of acute coronary syndrome⁶⁸
- the Australia and New Zealand Dialysis and Transplant (ANZDATA) Registry
- the Australian and New Zealand Intensive Care Society (ANZICS).

The case studies are based on a 'chartbook' format. This is a standard format that has been developed by experts to support easy understanding and exploration of the quality of care for specific conditions.⁶⁹

Case Studies

Acute coronary syndrome End-stage kidney disease Intensive care in Australia

Acute coronary syndrome

Introduction

Acute coronary syndrome (ACS) refers to two heart conditions: acute myocardial infarction (AMI) and unstable angina. ACS results from a sudden blockage of a heart blood vessel that leads to a decrease in blood supply to a portion of heart muscle. When the blood supply is reduced severely enough to lead to injury or death of the heart muscle, the event is termed an AMI (or 'heart attack'). If the blockage is incomplete and not severe enough to cause injury or death of the heart muscle, the event is termed unstable angina. AMI and unstable angina are sudden, serious and life-threatening events.70

The underlying cause of ACS is most commonly coronary heart disease (CHD) – otherwise known as atherosclerosis – a condition in which an artery wall thickens due to a build-up of fatty materials such as cholesterol. This build-up is known as a atherosclerotic plaque. Atherosclerosis is a chronic disease that may remain asymptomatic for decades. However, if the atherosclerotic plaque ruptures, the resulting clot can lead to blockage of the coronary vessel, restricting oxygen to the heart muscle.⁷⁰

Risk factors for ACS that cannot be changed (non-modifiable) include increasing age and having a family history of heart disease. Modifiable risk factors for ACS include active and passive smoking, high blood cholesterol levels, high blood pressure, diabetes, physical inactivity, excessive weight, depression and insufficient psychosocial support.⁷¹

Diagnosis and treatment

Typically, a patient with suspected ACS undergoes an electrocardiogram (often referred to as an ECG), which is a test that checks the heart's electrical activity. An ECG, as well as other investigations, are used to determine the nature of the condition and the most appropriate strategy for managing it.

There are two major types of AMI, distinguished by the appearance of their respective electrocardiogram traces: ST-segment-elevation myocardial infarction (STEMI) or new left bundle branch block, and non-ST-segment-elevation myocardial infarction (NSTEMI). Categorisation into one type or the other, along with the patient's risk profile, determine which treatment is indicated. Coronary angiography is used to determine whether the arteries of the heart are narrowed or blocked. Coronary angiography is a diagnostic procedure in which dye is injected into the heart's arteries and an X-ray is taken.

Following a diagnosis of ACS, there are a number of guideline-recommended methods for restoring blood flow to the heart muscle. These include dissolving the clot by medication (fibrinolysis) and procedures to open the artery.

Medical management may include the use of fibrinolysis for STEMI, aspirin, beta-blockers, statins, angiotensin-converting enzyme inhibitors or angiotensin receptor blockers, heparin, thienopyridine, glycoprotein receptor agonists, and calcium channel blockers.

The incidence of acute coronary syndrome is likely to double by 2030, mostly due to increased obesity and diabetes

\$17.9 billion

Estimated economic cost of acute coronary syndrome to Australia

Recommended procedures include percutaneous coronary intervention (PCI) and coronary artery bypass graft. In a PCI, a small balloon or similar device is fed through the blood vessels via a thin tube to the point of the blockage, at which point the balloon is inflated to open the artery. If necessary, a small expandable metal tube called a stent is implanted at the narrowed site to keep the artery open. In a coronary artery bypass graft, a healthy artery or vein from elsewhere in the body is connected, or grafted, to the blocked coronary artery. The grafted artery or vein bypasses the blocked portion of the coronary artery, creating a new path through which oxygen-rich blood can flow to the heart muscle.

Effective long-term management of ACS requires:

- the commencement of post-hospital medication before discharge from hospital⁷²
- advice on lifestyle changes that will reduce the risk of further CHD events, including quitting smoking, improving nutrition, reducing alcohol intake, maintaining a healthy level of physical activity and managing weight⁷²
- access and active referral to comprehensive ongoing prevention and cardiac rehabilitation services (as recommended by the current guidelines for every ACS patient following an acute event)⁷²
- a written action plan for chest pain, and
- assessment for depression and level of social support.⁷²

Recent data from the United States and the United Kingdom suggest that secondary prevention therapies have been as significant a factor as acute therapies in the reduction of age-adjusted mortality for CHD seen during the past two decades.⁷³

Why is it important?

In many cases, ACS is preventable and treatable. Evidence-based care for patients with ACS, as detailed in the Guidelines for the Management of Acute Coronary Syndromes,⁷² is associated with lower rates of death and disease.⁷³⁻⁷⁵ However, the quality of management of ACS in Australia varies, with gaps occurring between guideline-recommended care and actual care.⁷⁴ There is evidence that the sooner a patient is treated for a blockage in a coronary artery, the more positive the outcome.⁷⁰ Timely reperfusion (returning blood supply to the injured organ) is associated with significantly better outcomes.⁷⁶ As a result, pre-admission protocols (such as those employed by ambulance services and emergency departments) as well as hospital protocols, are changing, with the aim of reducing the time between the onset of acute coronary symptoms and effective medical intervention.⁷⁰ The new protocols reflect contemporary 'systems-based' approaches to reducing the time between symptom onset and reperfusion.

Deaths in Australia due to AMI declined by 31.3 per cent, from 16 525 to 11 353, from 1997 to 2007;⁷⁰ however, ACS remains one of Australia's leading causes of death.⁷⁷ In 2007–08, ACS accounted for approximately 11 000 deaths and 95 000 hospitalisations in Australia.⁷⁰ Despite the declines, death rates from ACS in Australia remain higher than those in many other developed countries, indicating potential for further improvements.⁷⁸

Of the hospitalisations due to ACS, 59 per cent were due to AMI and 41 per cent to unstable angina.⁷⁰ From 1998 to 2008, the age-standardised separation rates increased by 30.8 per cent for AMI, but decreased by 46 per cent for unstable angina.⁷⁰ These changes are most likely explained by the improved sensitivity of the troponin blood test used to diagnose AMI during that period. Access Economics estimated the associated total economic cost of ACS to Australia to be \$17.9 billion in 2009.⁷⁹ Of this, direct healthcare system costs (primarily hospital stays and pharmaceuticals) accounted for around \$1.8 billion, indirect costs (primarily lost productivity, such as missed work days) accounted for around \$3.8 billion and costs associated with the burden of disease (morbidity and mortality) accounted for around \$12.3 billion.⁷⁹

Moreover, rising levels of obesity and diabetes in an ageing population suggest that the number of ACS events in Australia is likely to double by the year 2030.⁷⁴

Information for this section relies on analyses of Australian data collected by the SNAPSHOT ACS study and published in the *Medical Journal of Australia*.⁶⁸

The SNAPSHOT ACS study aimed to gather clinical information on every patient admitted to hospital with ACS in Australia and New Zealand during a two-week period in May 2012. The data were used to characterise the management of suspected ACS and assess the application of recommended therapies according to published guidelines.⁶⁸

Of 525 hospitals asked to participate, 478 gained ethics approval and 435 provided site survey data describing their local resources. Within the two-week enrolment period, 286 hospitals enrolled 4398 patients with suspected or confirmed ACS. Hospitals not enrolling patients were smaller centres and did not treat patients with suspected ACS during the audit window.

Most patients (65.7 per cent; 2891 of 4398) presented to principal referral hospitals. A further 7.7 per cent presented to other public or hospitals in major cities (7.7 per cent; 337 of 4398), and 7.3 per cent (319 of 4398) presented to private hospitals.

Cardiac services available at the first presenting hospital varied – 79.7 per cent of patients (3415 of 4283) presented to hospitals capable of administering fibrinolysis, 59 per cent (2528 of 4283) presented to hospitals able to provide primary percutaneous coronary intervention and only 1.4 per cent of patients (59 of 4283) presented to hospitals that had no reperfusion therapy for STEMI. Of the patients audited, 25.9 per cent (1138 of 4398) had to be transferred to at least one other hospital for the appropriate treatment.

30%

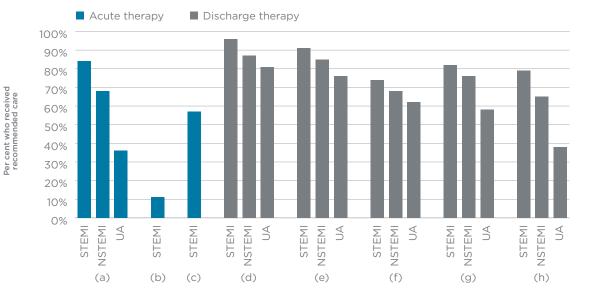
Number of eligible patients who access cardiac rehabilitation programs



Figure 15 shows the proportion of patients with ACS (STEMI, NSTEMI or unstable angina) who received treatment in accordance with evidence-based guideline recommendations across eight therapeutic modalities. The proportion of patients with ACS receiving appropriate therapeutic interventions decreased with decreasing ACS severity, with STEMI and NSTEMI being more severe, and unstable angina the less severe type of ACS. The proportion of STEMI patients presenting within 12 hours of onset of pain receiving fibrinolytic therapy within the recommended period of 30 minutes after arrival at a hospital was low, at 11 per cent. The proportion of STEMI patients who presented within 12 hours of the onset of pain who underwent emergency percutaneous coronary intervention within the recommended period of 90 minutes after arrival at a hospital was 57 per cent.

Figure 15

Proportion of patients with acute coronary syndrome who received appropriate treatment across eight recommended therapeutic modalities



NSTEMI = non-ST-segment-elevation myocardial infarction; STEMI = ST-segment-elevation myocardial infarction; UA = unstable angina

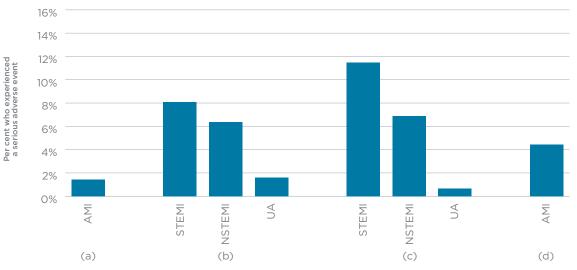
(a) Percentage of patients who received coronary angiography during their hospital stays (n = 322755756).

- (b) Percentage of fibrinolytic therapy patients (for STEMI or left bundle branch block [LBBB] only) who received therapy within 30 minutes (min) of arriving at a hospital (n = 260). (Denominator restricted to STEMI/LBBB patients presenting within 12 hours (h) of incident event.)
- (c) Percentage of percutaneous coronary intervention (PCI) patients (for STEMI or LBBB only) who received intervention within 90 min of arriving at a hospital (*n* = 109). (Denominator restricted to STEMI/LBBB patients presenting within 12 h of the incident and recorded as requiring urgent PCI.)
- (d) Percentage of patients who were discharged with a prescription for/supply of aspirin (n = 298731755).
- (e) Percentage of patients discharged with a prescription for/supply of statin (n = 298731755).
- (f) Percentage of patients discharged with a prescription for/supply of angiotensin-converting-enzyme inhibitor (n = 298731755).
- (g) Percentage of patients discharged with a prescription for/supply of beta blocker (n = 298731755).
- (h) Percentage of patients referred to a cardiac rehabilitation program (n = 298731755).
- Source: ACS SNAPSHOT Audit, 2012.

Figure 16 shows the proportion of patients with ACS who experienced a serious adverse event during their hospital stay. The proportion of patients with ACS who experienced acute renal failure or a repeat myocardial infarction during their hospital stay decreased with the severity of their ACS (STEMI being the most severe and unstable angina being the least severe type of ACS). The proportion of patients with AMI who experienced bleeding following invasive therapy (coronary angiography or percutaneous coronary intervention) was low, at 1.4 per cent. The proportion of patients with AMI who died in hospital was 4.5 per cent.

Figure 16

Proportion of patients with acute coronary syndrome who experienced a serious adverse event* during their hospital stay



NSTEMI = non-ST-segment-elevation myocardial infarction; STEMI = ST-segment-elevation myocardial infarction; UA = unstable angina * No attempt was made to distinguish between adverse events that may have been 'preventable' and those deemed 'non-preventable'.

(a) Percentage of patients who experienced bleeding while undergoing invasive therapy for acute myocardial infarction (AMI) (n = 777). (Denominator restricted to AMI patients receiving coronary angiography.)

(b) Percentage of patients in whom acute renal failure was diagnosed following admission to hospital (n = 322755756).

(c) Percentage of patients who incurred a repeat myocardial infarction in hospital or in-hospital death (n = 322755756).

(d) Percentage of in-hospital deaths following AMI (CHBOI-3) (n = 1077).

Source: ACS SNAPSHOT Audit, 2012.

In 2009, the National Heart Foundation ACS Implementation and Advocacy Working Group published the results of a literature review aimed at identifying gaps between guidelines and practice, including evidence for the most effective systems of ACS management. The Working Group provided information on ACS patients' access to rehabilitation and secondary prevention programs in Australia, and on equity of access to appropriate care for geographically isolated and vulnerable communities.

The review found that only about 30 per cent of ACS patients in Australia who are eligible to access cardiac rehabilitation programs do so. This percentage is comparable with findings from overseas, and has not improved significantly during the past 10 years.⁷³ The yearly CHD-related death rate increases with remoteness, from 71.1 per 100 000 patients in metropolitan areas to 85.5 per 100 000 in remote areas of Australia.⁷³

Aboriginal and Torres Strait Islander peoples experience higher mortality rates from CHD than other Australians. Additionally, disparities exist between Aboriginal and non-Aboriginal people in revascularisation rates after AMI. A study using New South Wales data collected from July 2000 to December 2008 shows that Aboriginal Australians are less likely than non-Aboriginal Australians to have revascularisation procedures after AMI.⁸⁰ One-third (32.9 per cent) of Aboriginal AMI patients had revascularisation procedures within 30 days of an ACS incident, compared with 39.7 per cent of non-Aboriginal patients.80 Moreover, Aboriginal patients had a revascularisation rate 37 per cent lower than non-Aboriginal patients of the same age, sex, year of admission and AMI type.

Hospitals included in the study varied markedly in procedure rates, a variation that was associated with hospital size, remoteness and the presence of catheterisation laboratory facilities.⁸⁰

The study's authors concluded that the disparities in treatment and mortality between Aboriginal and Torres Strait Islander and non-Aboriginal ACS patients could be explained, for the most part, by lower revascularisation rates at the hospital of first admission for all patients admitted to smaller regional and rural hospitals, and a higher co-morbidity burden for Aboriginal people. Higher rates of substance abuse and lower private health insurance among Aboriginal people further explained the disparity.⁸⁰

Death rates from ACS in Australia remain higher than those in many other developed countries

Implications

There has been considerable effort across Australia to improve the quality of ACS care. This effort has led to improved outcomes for some patients with ACS. Recommendations from the National Heart Foundation ACS Implementation and Advocacy Working Group⁷³ highlighted priority strategies for translating evidence into practice. The recommendations included advice on medical and procedural management, rehabilitation and secondary prevention, and equity of access.

There is an opportunity to elevate these strategies to a national focus to ensure that all patients with ACS receive appropriate evidence-based care. Under the National Health Reform Agreement 2011, the Commission is working with clinicians and consumers to develop national clinical standards for ACS to:

- improve patient outcomes
- ensure the clinical care provided is appropriate
- improve the patient experience, and
- promote shared decision making between patients and clinicians.

Further information about the development of these clinical care standards is available at www.safetyandquality.gov.au/ our-work/clinical-care-standards-2.

What we do not know

To date, insufficient information has been collected to enable us to measure how ACS patients are doing, and relate this to the appropriateness and effectiveness of care received by patients around Australia. Further efforts to develop routine national data collection on ACS care would aid in monitoring healthcare quality, and in turn inform clinical practice and service provision.

Acknowledgement

Information presented on the management of ACS relies on analyses of Australian data collected through the SNAPSHOT ACS study and published in the *Medical Journal of Australia*.⁶⁸

The Commission gratefully acknowledges the Cardiac Society of Australia and New Zealand, jurisdictional cardiac care networks, and the SNAPSHOT study authors for providing the data and reviewing this chapter.

End-stage kidney disease

The number of people receiving kidney replacement therapy has almost tripled

6,643

2009 18,267

End-stage kidney disease (ESKD) is the most severe form of chronic kidney disease. It is characterised by a slowly progressive and permanent loss of kidney function – the ability of the kidneys to filter and remove waste and extra fluid from the blood – that is severe enough to be fatal in the absence of kidney replacement therapy (KRT).⁸¹⁻⁸² KRT involves either dialysis or kidney transplantation.

Kidney transplant

A kidney transplant, also known as a renal allograft, is the removal of a healthy kidney from a donor body followed by its implantation into a patient with ESKD to replace the recipient's own damaged or absent organ. Kidney transplantation is classified as either 'deceased donor' or 'living donor'. Living-donor transplants are further characterised as genetically related ('living-related') or non-related ('living-unrelated').

A kidney transplant is the preferred option for an individual with ESKD. Transplantation has the potential to improve the ESKD patient's quality of life and/or long-term survival significantly.⁸³ Advantages of transplantation compared to dialysis include a lower long-term mortality risk,⁸⁴ increased quality of life,⁸⁵ and lower costs⁸⁶ over the course of the patient's lifetime (greater cost-effectiveness).⁸³

The longer an ESKD patient stays on dialysis before receiving a kidney transplant, the higher their risk of dying. Prolonging dialysis (and the time to transplantation) also heightens the risk of failure of a transplanted organ.⁸³ However, kidney transplant may not be a cure for ESKD. Recipients live with the possibility of chronic rejection and loss of the donor kidney. This can mean a return to dialysis.

The Transplant Society of Australia and New Zealand consensus statement on eligibility and allocation protocols details criteria for allocating available deceased donor kidneys in Australia.⁸⁷ Factors that may prevent people from being placed on the waiting list for transplant include certain health conditions (particularly cancers and infections); other factors (such as age and comorbidities) are assessed in the context of an individual's expected outcome after transplantation.⁸⁷

Dialysis

Dialysis is an artificial method of removing waste substances from the blood and regulating levels of circulating chemicals, a function usually performed by the kidneys. There are two main types of dialysis:

- peritoneal dialysis, which occurs inside the body and can be performed almost anywhere
- haemodialysis, which occurs outside the body and is conducted in a hospital, satellite or home setting.

The type of dialysis deemed appropriate depends on the patient's health, age and lifestyle, and may also be influenced by the availability of local resources. Either type of dialysis involves a substantial time commitment from the patient.⁸⁸ During haemodialysis, blood is diverted from the body to a dialysis machine, where it is filtered before being returned to the body. With sophisticated machinery, this type of dialysis can be done at home, in hospital or in a satellite clinic. Establishing satellite dialysis centres away from the 'parent' hospital decreases the travel burden faced by people living in rural and remote areas who need to access certain dialysis services.

Typically, a haemodialysis patient is connected to the machine for around four to five hours, three times per week. In each session, all of the patient's blood passes through the machine about six times. If dialysis can be established in the home, the patient has the option of dialysing more frequently for shorter periods (five to seven times per week for about two hours per session) or nocturnally (six nights per week for about eight hours per session).⁸⁸ Access to the patient's blood vessels to enable blood removal, dialysis and replacement is essential for haemodialysis. There are three principal routes of access: native arteriovenous (AV) fistula, AV graft and central venous catheter (CVC).

The preferred method of access is the native AV fistula, a surgically created passageway between an artery and a vein. AV grafts are similar but, in this method, an artificial vessel is used to join the artery with the vein. Central venous catheters have multiple lumens and are inserted into a large vein via the internal jugular vein or the femoral vein. This allows large flows of blood to be withdrawn from one lumen, enter the dialysis circuit and be returned to the bloodstream via the other lumen.

Sometimes the catheter is tunnelled under the skin from the point of insertion (usually the jugular vein) to an exit site (usually on the chest wall), acting as a barrier to invading microbes. However, the blood flow through catheters is less than that achieved by a well-functioning fistula or graft. Surgically created AV fistulas work effectively because they use native blood vessels, which are less likely to develop stenosis (narrowing) and infection than synthetic grafts and catheters. Patients on long-term haemodialysis can literally 'run out' of access, which can be a fatal problem.

Peritoneal dialysis

In peritoneal dialysis, the abdomen is filled with sterile solution, allowing dialysis via the peritoneal membrane, which covers the abdominal cavity organs such as the stomach, liver and intestines. The dialysis solution contains a type of sugar (usually glucose or dextrose), which draws waste products and extra fluid out of the blood, through the peritoneal membrane and into the solution. After a few hours, the used solution, now containing the wastes and extra fluid, is drained out of the body and replaced with fresh solution. This process is called an exchange, and takes about 30-45 minutes. In between exchanges, the patient is free to continue his or her usual activities.

Peritoneal dialysis can be performed either by the patient, usually three or four times during the day (continuous ambulatory peritoneal dialysis), or automatically by a machine at night for about eight to ten hours, while the patient sleeps (automated peritoneal dialysis).⁸⁸

Dialysis treatment replaces only some kidney functions. Medications are required to substitute for the hormonal and other functions of the kidneys. Common physical complaints identified by dialysis patients include:⁸⁶

- muscle, bone and joint aches
- sleep disturbances
- itchy/dry skin
- stomach upsets
- poor concentration
- coughing
- shortness of breath
- headaches
- decreased sexual function
- cramps
- dizziness.

The combination of the time demands and physiological effects of dialysis can lead to major changes in patients' ability to participate in life, socially and economically, and can cause significant disruption to home life.⁸⁸ When deciding on KRT options, the patient's prognosis, anticipated quality of life (with or without dialysis), treatment burden (if dialysis is undertaken) and personal preferences all play a part.⁸⁹

Some patients with ESKD – particularly older people, who may suffer from other medical conditions (comorbidities) – have a poor prognosis on KRT and may prefer a conservative (non-dialysis) approach to the management of their condition.⁹⁰ This entails a shift away from efforts to prolong life towards focusing on patient care, quality of life and control of symptoms.⁹⁰

Why is it important?

ESKD is a serious health problem. Its high prevalence in Australia constitutes a substantial national burden of disease, and its treatment imposes a considerable cost on the Australian healthcare system.

The Australian Institute of Health and Welfare reports that, during 1991–2009, the rate of new cases of treated ESKD increased by 80 per cent. This increase is attributed largely to an increase in diabetes-related cases.⁸⁸ Actual numbers of people receiving KRT almost tripled during the same period, from 6643 to 18 267, with males receiving therapy at 1.6 times the rate of females. Rates of treated EKSD increased with age, peaking in patients 75-79 years old.⁸⁸ At the end of 2011, there were 19 751 people receiving kidney replacement therapy in Australia.91 Of these, 8753 people had a functioning kidney transplant and 10 998 people were receiving dialysis treatment. Between 1991 and 2009, the number of transplants performed per year increased from 470 to 772, due largely to a rise in donations from living donors.⁸⁸ In 2011, 825 transplant operations were performed, a decrease from 846 in 2010.91 This decrease was primarily due to a decrease of 14 per cent in the number of living donor transplants performed.

Between 1991 and 2009, the number of people receiving dialysis tripled, from 3138 people to 10 431.^{88,92} The rise in the number of dialysis patients has resulted in an average increase of nearly 60 000 hospitalisations per year for dialysis between 2000–01 and 2009–10.⁸⁸ By 2009, dialysis had become more common than transplantation, with 57 per cent of KRT patients receiving dialysis, up from 47 per cent in 1991. Maintenance dialysis is the number one reason for hospitalisation in Australia, accounting for more than 13 per cent of all hospitalisations in 2009–10.⁸⁸

During the period 1991 to 2009 all states and territories had similar rates of ESKD, with the exception of the Northern Territory, where the treated ESKD rate for males was 2.6 times the Australian male rate and 4.4 times the female Australian rate. Aboriginal and Torres Strait Islander peoples and those living in remote areas had higher-than-average rates of ESKD.88 At the end of 2009, about 40 per cent of treated ESKD patients living in non-remote areas had functioning kidney transplants. This compares to just 9 per cent of patients in remote areas and 26 per cent in very remote areas.88

The rate of organ donation in Australia is low compared with those of other developed countries.⁸⁸ In January 2012, there were 1135 people waiting for kidney transplants in Australia – the longest organ-transplant waiting list in the country.^{88,92} Once a person gets on the kidney transplant waiting list, the average wait time for a transplanted kidney from a deceased donor is three to four years.⁹³

Kidney Health Australia projects that, by 2020, between 3335 and 4472 Australians of all ages will commence KRT. This represents an increase of between 35 per cent and 81 per cent above 2008 figures in the number of new patients commencing KRT.⁸⁶ The total number of patients receiving treatment for ESKD in Australia in 2020 is projected to be between 27 013 and 30 293, an increase of between 54 per cent and 72 per cent above 2008 figures in the number of all patients receiving KRT.⁸⁶ The cumulative cost of treating all current and new cases of ESKD from 2009 to 2020 is estimated to be between approximately \$11.3 billion and \$12.3 billion.⁸⁶ It is estimated that increasing the use of home-based dialysis (home haemodialysis and peritoneal dialysis) during this period could lead to estimated net savings of between \$378 million and \$430 million.⁸⁶

After factoring in additional costs associated with increasing organ donation, boosting the rate of kidney transplantation by 50 per cent to match rates currently reported by the United States and numerous European countries would save costs and provide greater health benefits.⁸⁶ In short, performing more kidney transplants would be less expensive and more effective than current practice.⁸⁶ An increase in kidney transplants would be less expensive than current practice but organ donation in Australia is low

Australia and New Zealand Dialysis and Transplant (ANZDATA) Registry

The ANZDATA Registry is a bi-national data collection, a compilation of patient data, and information on the incidence and prevalence of treated ESKD.

All relevant hospitals and related dialysis units in Australia and New Zealand contribute data to the ANZDATA Registry. Demographic, disease, treatment and outcome data for all patients with ESKD is held in the ANZDATA Registry, with the exception of a small number of patients who have opted out.

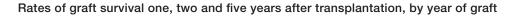
All data presented in this chapter have been provided by the ANZDATA Registry.

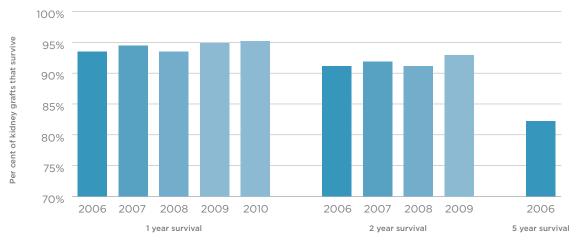
Case studies



Figure 17 shows that the rates of survival of grafted (transplanted) kidneys trended higher from 2006 to 2010. In 2009, the rate of survival of transplanted kidneys was approximately 95 per cent after one year and 93 per cent after two years. In 2006, 82 per cent of transplanted kidneys had survived after five years.

Figure 17





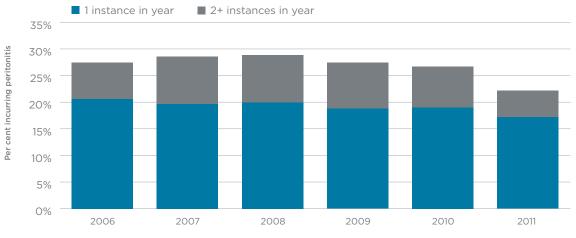
Notes: The most recent year for which data are available is 2011, thus one-year survival rates are calculable only up to 2010, two-year survival rates up to 2009 and five-year survival rates for 2006 only.

Source: ANZDATA Registry, 2012.

Peritonitis is inflammation of the peritoneum, the thin tissue that lines the inner wall of the abdomen and covers most of the abdominal organs. Figure 18 shows that the rates of peritonitis among peritoneal dialysis patients decreased from 2006 to 2011. The percentage of patients who experienced a single instance of peritonitis in one year fell from 20 per cent in 2006 to 17 per cent in 2011.

Figure 18

Annual rates of peritonitis among patients undergoing peritoneal dialysis, 2006-2011



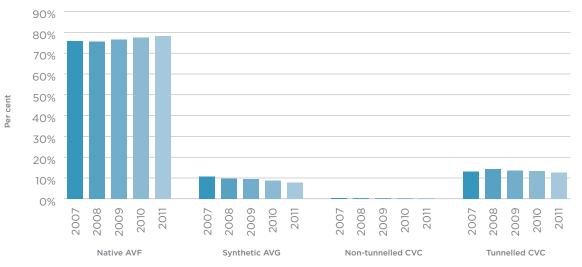
Source: ANZDATA Registry 2012.

Case studies

Figure 19 shows that the annual prevalence of the preferred type of access (native AV fistula) increased steadily, from 76 per cent in 2007 to 78 per cent in 2011. The prevalence of the synthetic AV graft and tunnelled central venous catheter methods of access decreased during the same period. Use of the non-tunnelled central venous catheter method of access is negligible.

Figure 19

Annual prevalence of haemodialysis access type, 2007-2011



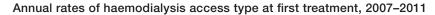
AVF = arteriovenous fistula; AVG = arteriovenous graft; CVC = central venous catheter

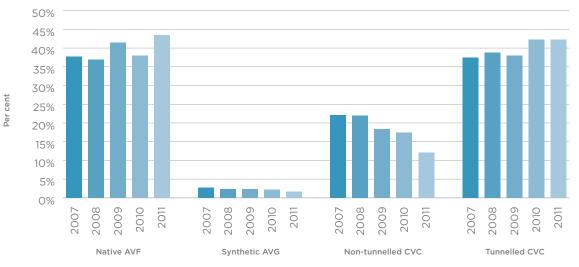
Source: ANZDATA Registry, 2012.

Case studies ••••

Figure 20 shows that rates of the preferred access type (native AV fistula) increased from 37 per cent in 2007 to 43 per cent in 2011. During the same period, rates of tunnelled central venous catheter access also increased, from 37 per cent in 2006 to 42 per cent in 2011. Rates of synthetic AV graft and non-tunnelled central venous catheter access decreased from 2007 to 2011.

Figure 20





AVF = arteriovenous fistula; AVG = arteriovenous graft; CVC = central venous catheter Source: ANZDATA Registry, 2012.

Case studies

Figure 21

Figure 21 shows that, after a rise in 2008, the number of kidney donations from living donors progressively decreased from 2008 to 2011. Further, the number of organ donations from deceased donors trended upwards from 2006 to 2011. These data suggest that the reliance on kidney donations from living donors in Australia is decreasing over time.

600 500 Number of donated kidneys 400 300 200 100 0 2006 2007 2009 2008 2010 2011 2006 2008 2009 2007 2010 2011 Living donor Deceased donor

Annual number of kidneys donated by living and deceased donors

Source: ANZDATA Registry, 2012.

Implications

The increasing prevalence of ESKD in Australia has serious implications on the overall burden of disease, on the ageing Australian population and on the nation's healthcare system. Nevertheless, opportunities exist to reduce the impact of ESKD, via disease prevention measures and through informed planning of health services delivery.

Chronic kidney disease usually develops over a number of years and, with early identification through routine laboratory measurements⁸¹ and management, the disease can be slowed and progression to ESKD significantly delayed or prevented.⁸⁶ Primary prevention that targets the principal modifiable risk factors for CKD – diabetes and hypertension – is critical.⁸⁶ Renal service planning prioritises strategies to overcome financial and structural barriers that limit the nation's ability to shift dialysis treatment progressively from the hospital sector to the home-based care sector. Planning can also increase the availability of organs for transplantation.⁸⁶

Projected growth in the burden of ESKD necessitates a whole-of-government approach to chronic disease prevention, and early identification and intervention for ESKD patients. An overarching national chronic disease strategy would address social, behavioural and biological determinants of kidney health in a bid to reduce the human and systemic costs of kidney disease.⁸⁶

Acknowledgement

The report on the management and outcome of renal disease has been provided by the Australia and New Zealand Dialysis and Transplant (ANZDATA) Registry. The Commission gratefully acknowledges Associate Professor Stephen McDonald and the ANZDATA team for providing data, analyses and reviewing the chapter.

Intensive care in Australia

Introduction

Intensive care services provide health care for patients who have life-threatening conditions. They require technology and medical management as well as a high level of staffing and other resources. An intensive care unit (ICU) is a 'specially staffed and equipped, separate and self-contained area of a hospital dedicated to the management of patients with life-threatening illnesses, injuries and complications, and monitoring of potentially life-threatening conditions'.94 Depending upon the type of the hospital and the region it serves, ICUs range in capacity from four to more than 50 beds.94

ICUs deliver a range of critical care services in five hospital groups: paediatric, private, rural/regional, metropolitan, and tertiary (larger teaching hospitals). Few smaller rural and urban hospitals have ICUs, while larger metropolitan hospitals may have a number of specialised ICUs, such as neurosurgical units for intensive brain and spinal-cord care, and cardiothoracic units for intensive heart and lung care. ICUs may include general and specialty units, combined intensive care/coronary care/high-dependency units, paediatric intensive care units or a combination of these.

ICUs have a high ratio of doctors and nurses to patients.⁹⁵ Each ICU has a medical director who takes overall responsibility for the operation of the unit. At least one other registered medical practitioner with an appropriate level of experience is rostered to the ICU at all times.⁹⁴ Nurse to patient ratios of 1:1 are generally in place for every ventilated or other critically ill patient.⁹⁴ For patients with 'lower acuity' conditions (requiring intensive care, but clinically determined to be less seriously critical), there is generally a nurse to patient ratio of 1:2.⁹⁴ Other staff, including physiotherapists, radiographers, dieticians, social workers, occupational therapists and interpreters are also on ICU teams.⁹⁴

Patients are admitted to ICUs for a range of diagnoses, conditions and procedures. The more common of these include admissions following heart bypass surgery, cancer surgery, major musculoskeletal and heart valve surgery, and drug overdose.⁹⁶ ICUs also care for patients following severe trauma.

For each ICU patient, a television-like screen shows monitoring of the patient's heart rate and rhythm, blood pressure, temperature, breathing and other physiological measures.⁹⁵ Most patients are administered drugs and fluids continuously through an intravenous infusion line ('IV drip').⁹⁵ A patient's breathing may also be assisted using a ventilator machine from which a tube is inserted into the patient's trachea (windpipe).⁹⁵

Research has shown a number of clinical practices that optimise outcomes for ICU patients. These are summarised by using the mnemonic 'FAST HUG', which is a pattern of letters that helps ICU staff to recall a checklist that aids them in providing timely, appropriate care to the critically ill.⁹⁷ The FAST HUG mnemonic specifies the following practices:

- Feeding (providing nutrition via the stomach rather than intravenously)
- Analgesia (pain relief)
- Sedation (reducing patient irritability or agitation by administering sedative drugs)
- Thromboembolic prophylaxis (measures taken to reduce the likelihood that blood clots will form in the patient's veins)
- Head of bed elevation
- stress Ulcer prophylaxis (measures taken to minimise the development of pressure ulcers)
- Glycaemic control (measures taken to control glucose concentrations in the blood).⁹⁷

In addition to these patient-centred practices, the Australian and New Zealand Intensive Care Society (ANZICS) specifies a number of management processes and structures as best practice ICU care.^{96,98} These include:

- minimisation of patient discharges from an ICU outside regular business hours (before 6 am or after 6 pm)
- ICU rounds by an infectious disease specialist or microbiologist
- pharmacist rounds
- antibiotic stewardship program (to measure and improve the appropriate use of antimicrobial agents so as to optimise clinical outcomes and minimise microbial resistance to antibiotics)
- routine production and review of antibiograms to monitor the sensitivity and resistance of isolated bacterial strains to specific antibiotics

- monitor and review of critical incidents
- routine administration of surveys to determine ICU patients' or relatives' satisfaction with care, and
- competency standards for patient airway management.

In many hospitals, ICU staff are also required to provide critical care services across the hospital as part of Medical Emergency Teams (METs) or Rapid Response Teams.⁹⁴ METs provide rapid response services to hospital patients requiring critical care who are not necessarily located in an ICU.⁹⁹ METs are responsible for early recognition and intervention in patients experiencing life-threatening situations prompted by certain 'call-out' criteria. They enable early mobilisation of critical care resources to critically ill and deteriorating patients. The presence of MFTs has been shown to decrease unplanned admissions to ICU and improve patient outcomes.¹⁰⁰

Patient selection for ICU admission

ICU resources are limited, and intensive care staff are aware of the resource implications when assessing patients for admission to ICU and making clinical management decisions.¹⁰¹ In arriving at these decisions, intensivists must consider ethical principles including the balance between potential good and potential harm to the patient, respect for the patient's and the family's needs and values, and equity of access to health resources.¹⁰¹ In general, intensivists admit patients who are most likely to benefit from ICU admission.

Patients are selected on the basis that those most likely to benefit from intensive care are those with potentially reversible life-threatening disorders of vital systems. These patients have a high risk of death or permanent disability without intensive therapy, and have a reasonable possibility of surviving with such care.¹⁰¹

udies 🖊

In deciding who is most likely to benefit from admission to intensive care, a list of factors is considered including:

- the severity of the presenting illness
- the patient's age
- the presence of comorbiditiesⁱ
- physiologic reserveⁱⁱ
- baseline functional status
- burden of treatment^{iv}
- likelihood of ICU and hospital survival
- anticipated long-term disability
- anticipated ICU length of stay (resources and costs required), and
- equity of access to available ICU resources.¹⁰¹

In addition, short, planned ICU admissions following certain types of major surgery improve patient outcomes, particularly when those ICUs have positive pressure ventilation and 1:1 nurse to patient ratios. Coronary artery grafts ('bypasses') and major oesophageal surgery are examples of such procedures.

End-of-life care

Good end-of-life care is regarded as an integral part of intensive care practice. For patients with poor prognosis, therapies that are not useful are discontinued.¹⁰¹ For these patients, removing invasive, high-technology and unpleasant therapies can be considered appropriate, humane end-of-life care.¹⁰¹ ANZICS and the College of Intensive Care Medicine of Australia and New Zealand have published the *Statement on Withholding and Withdrawing Treatment* (the Statement),¹⁰² which recognises that:

- medical intervention can cause suffering for patients and their families with little or no benefit
- predictions of benefit versus burden of treatment are based on probability rather than certainty, and
- there is no obligation to initiate therapy that is known to be ineffective or to continue therapy that has become ineffective.

The Statement affirms that the views of the patient, if they are known, should be taken into account. It does not, however, give the ethical principle of patient autonomy^v automatic precedence over other ethical considerations. The decision to withdraw or limit treatment requires the medical consensus of those caring for the patient, and the burden of end-of-life decision making for the patient does not rest solely with the next of kin. The Statement specifies that an alternative care plan (comfort care) should be implemented, with the focus on dignity and comfort, including the use of medication for symptom control even though this may shorten the patient's life.¹⁰²

Donation of organs for transplantation is sometimes possible after the death of a patient in the ICU. ANZICS advises that intensive care must 'ensure that organ and tissue donation processes are carried out to an exemplary standard and in a way that respects the patient and is sensitive to the needs of the family and everyone else involved. This requires expertise in donation, good communication and a strong professional commitment to the quality of the process'.¹⁰³

i Comorbidities = concurrent health conditions.

- ii Physiologic reserve = remaining capacity of vital organs to function effectively.
- iii Baseline functional status = an underlying measure of the body's capacity to perform physically.
- iv Burden of treatment = risk of side effects and other consequences associated with treatment.

v Patient autonomy is defined as the 'personal rule of the self that is free from both controlling interferences by others and from personal limitations that prevent meaningful choice' (University of California San Francisco School of Medicine website at http://missinglink.ucsf.edu/lm/ethics/content%20pages/fast_fact_auton_bene.htm).

Why is it important?

The provision of high-quality intensive care services is important because ICUs provide care to patients whose condition is life-threatening, and where the margin for clinical error is narrow.¹⁰⁴ It is therefore important that the quality of intensive care is monitored closely and reported routinely.

Intensive care is also expensive. In 2009–10, the average daily cost of an ICU bed in New South Wales was approximately \$4427.¹⁰⁵ The demand for intensive care services in Australia's public hospitals has grown during the past decade.¹⁰⁶⁻¹⁰⁷ Hospitals now have to balance competing demand for ICU beds from emergency and elective surgery to ensure the equitable use of intensive care resources.¹⁰⁶ For this reason, ANZICS operates several registries that ensure ICU units are accountable against multiple quality-of-care indicators.



Average daily cost of an ICU bed in NSW

The ANZICS established the Centre for Outcome Resource and Evaluation (CORE), which operates three registries:

- Adult Patient Database
- Paediatric Intensive Care Registry
- Critical Care Resources Registry (infrastructure survey).

The ANZICS CORE registries collect de-identified data from participating ICUs around Australia and New Zealand. The data collected are used to compare, monitor and benchmark intensive care performance across institutions, and are reported back to ICUs and jurisdictional health departments for review. To assist units that have below-average performance, CORE provides a step-by-step process on how to investigate care so that patient outcomes can be improved.

This section reports principally on data collected by the ANZICS CORE Adult Patient Database and the Critical Care Resources Registry Survey, conducted in 2008, 2010 and 2011. 96

Case studies



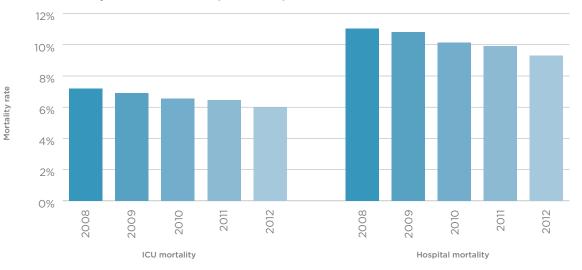
Figure 22

In 2010–11, there were 156 adult ICUs and eight paediatric ICUs in Australia, comprising a total of 1883 ICU beds, an average of 8.75 beds per 100 000 people.⁹⁶ The occupancy rate for ICU beds across Australia was 74.9 per cent.⁹⁶

Of the 156 adult ICUs, 86 per cent contributed data to the ANZICS CORE Adult Patient Database (APD) in 2010–11. The findings detailed in this section have been drawn from the data collected by the APD in 2010–11 on admissions to ICUs in Australia.

During the five-year period 2008 to 2012, rates of patient mortality in Australian public and private ICUs have progressively decreased (Figure 22). In 2012, 5.9 per cent of patients admitted to ICU died within the ICU during their first admission to the unit and 9.4 per cent of all patients admitted to ICUs in Australian died before discharge from hospital.

Trends in mortality rates in Australian public and private intensive care units, 2008–2012



Notes: Number of hospitals included (*n*) = 136, which accounts for approximately 85% of all Australian intensive care units (ICUs), including 35 rural, 29 metro, 31 tertiary and 41 private units.

Patients with more than one ICU admission during a single episode of care were excluded from this analysis.

ICU mortality = death that occurred in an ICU.

Hospital mortality = death that occurred either in an ICU or in another part of the hospital following an ICU admission.

Source: CORE APD central database for Australian ICU admissions.

Patient mortality rates in ICUs have progressively decreased from 9.4% to 5.9% over a five-year period

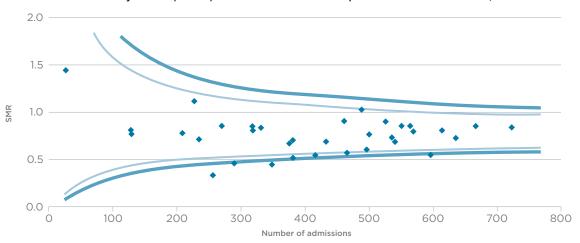
Between 1 July 2011 and 30 June 2012, risk-adjusted ANZICS-calculated standardised mortality ratios (SMRs) were compiled for de-identified Australian ICUs for four hospital peer groups: rural, metropolitan, tertiary and private.⁹⁶ The SMR is the ratio of an ICU's actual number of deaths compared to the predicted number of deaths. An SMR of 1.0 means the number of observed deaths equals the number of expected deaths. The predicted number of deaths is calculated from the APACHE III-j prognostic scoring system. APACHE combines assessments of Acute Physiology, Age and Chronic Health Evaluation to predict a given patient's risk of death.¹⁰⁸ SMRs allow fair comparison of ICU mortality rates, accounting for variances in the severity of illness of each ICU's patient population.

In Figure 23, 2011–12 SMRs calculated by ANZICS are shown as dots within 'funnel plots' for each hospital peer group.¹⁰⁹ Most Australian ICUs have SMRs that are lower than 1.0, suggesting the observed number of deaths is less than predicted by the APACHE III-j scoring system. Curved lines called control limits are drawn around the mean SMR of the group. A dot (representing an ICU) appearing below the lower control limited indicates that an ICU's mortality rate is unusually low (that is, better than the rest of the group) and that the probability of this finding being due to chance is less than 0.5 per cent.

When an ICU has a SMR that appears to be higher (worse) than its peer group, ANZICS CORE provides further analyses to see if this finding can be explained by data quality issues, case mix or any other factors. The results of these investigations are fed back directly to the hospitals and the department of health in each state and territory.

Figure 23 shows that two ICUs had SMRs that were significant lower than the other rural ICUs in Australia.

Figure 23



Standardised mortality ratios (SMRs) for Australian rural hospital intensive care units, 2011-12

Figure 24 shows one metropolitan ICU that had a lower SMR than the rest of the group and one that was on the borderline of having an SMR higher than the rest of the group.

Figure 24

Standardised mortality ratios (SMRs) for Australian metropolitan hospital intensive care units, 2011–12

.....

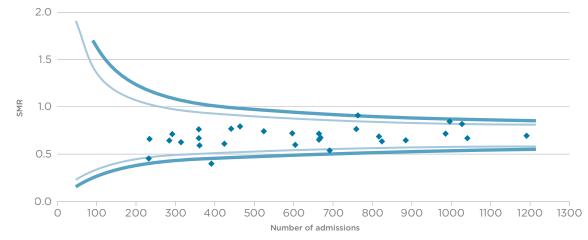


Figure 25 shows that three ICUs in tertiary hospitals had SMRs that were higher than the rest of the group and two had SMRs that were lower than the rest of the group.

Figure 25

Standardised mortality ratios (SMRs) for Australian tertiary hospital intensive care units, 2011–12

.....

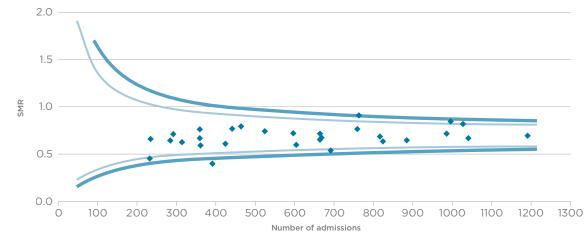
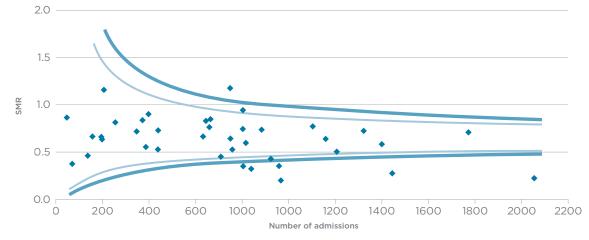


Figure 26 shows that most ICUs in private hospitals in Australia had lower-than-expected SMRs.

Figure 26

Standardised mortality ratios (SMRs) for Australian private hospital intensive care units, 2011–12

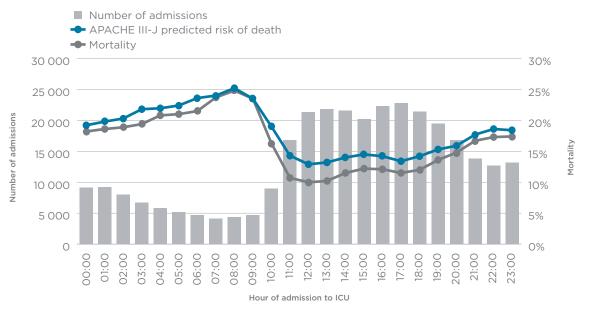


Source: CORE APD central database for Australian ICU admissions.

Using ANZICS data, a 2011 study conducted from 2000 to 2008 confirmed that patients admitted after hours had a significantly higher hospital mortality rates (16.5 per cent) compared to patients admitted during regular working hours (14.0 per cent) (Figure 27).¹¹⁰ Similarly, SMRs were significantly higher for patients admitted after hours (0.95 per cent) than for patients admitted during regular working hours (0.92 per cent) (Figure 28).¹¹⁰ Patients admitted to ICUs on weekends had a 19.9 per cent hospital mortality rate compared to a rate of 14.0 per cent among those admitted on weekdays.110

Figure 27

Admissions to intensive care units per hour of the day, with hospital mortality and APACHE III-j predicted risk of death, 2000-08



APACHE III-j = Acute Physiology and Chronic Health Evaluation III, 10th iteration; ICU = intensive care unit

Source: Bhonagiri et al., Increased mortality associated with after-hours and weekend admission to the intensive care unit: A retrospective analysis. *Medical Journal of Australia* 2011;194:287–292.

tudies

Figure 28

 Standardised mortality ratio - 95% CI 1.2 0.9 Number of admissions 0.6 0.3 0.0 00:00 01:00 11:00 13:00 02:00 03:00 04:00 05:00 06:00 07:00 08:00 00:60 10:00 12:00 14:00 15:00 16:00 17:00 18:00 19:00 20:00 21:00 22:00 23:00

Standardised mortality ratios (APACHE III-j) per hour of the day for all admissions to the intensive care unit (ICU), 2000-08

APACHE III-j = Acute Physiology and Chronic Health Evaluation III, 10th iteration; ICU = intensive care unit

Source: Bhonagiri et al., Increased mortality associated with after-hours and weekend admission to the intensive care unit: A retrospective analysis. *Medical Journal of Australia* 2011;194:287–292.

Hour of admission to ICU

The organisational and staffing structure of an ICU influences patient outcomes. ICU staffing structures can change after hours and on weekends. Several studies show that patients admitted to ICUs in Australia after hours and on weekends have a higher mortality rate than patients admitted at other times.¹¹⁰⁻¹¹¹ This is due, in part, to a smaller proportion of 'low-risk' elective surgical admissions at these times.

Certain factors have been associated with increased risk of readmission to intensive care during a single hospital stay. These include:

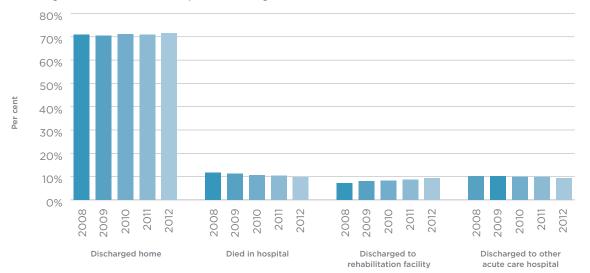
- admission to ICU for reasons other than elective surgery
- the presence of chronic illness
- admission to a tertiary hospital ICU, and
- being discharged from ICU between the hours of 6 pm and 6 am.¹¹²

The ANZICS CORE registry monitors whether patients are discharged back to their normal place of residence, as a marker of the effectiveness of ICU care in that hospital. It is important to note, however, that ICU patients are rarely discharged home from intensive care. Rather, they are discharged from intensive care to a ward, and from a ward to home. The quality of care provided to ICU patients in other hospital wards also influences this outcome.

Discharge to the patient's home following ICU and general hospital care reflects a better outcome than does discharge to a rehabilitation facility or to another hospital. Figure 29 shows that the percentage of patients discharged to their homes, without risk adjustment, remained relatively constant during the five-year period 2008–2012, at approximately 72 per cent. During the same period, the percentage of patients discharged to rehabilitation facilities increased slightly, to 9 per cent, and there was a slight decline, to 9 per cent, in discharges to another acute hospital. The remaining patients (10 per cent) died in hospital.

Figure 29

Discharge destination from hospital following intensive care unit admission, 2008–12



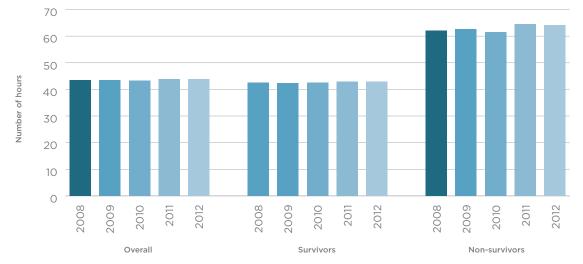
Case studies

4

Another patient outcome measured by ANZICS is length of stay in an ICU. Figure 30 shows that the median length of stay in Australian ICUs remained constant from 2008 to 2012 for both survivors and non-survivors.

Figure 30

Median length of patient stay in an intensive care unit, 2008-12

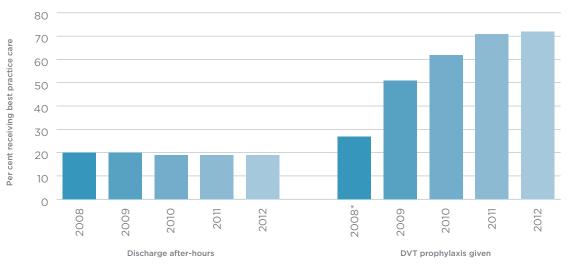


Source: CORE APD central database for Australian ICU admissions.

The ANZICS CORE adult patient database reported on clinical management practices that constitute best practice ICU care in Australia for the same period (2008–12). ANZICS reported the rates at which patients were discharged from ICUs after hours, and rates of care to prevent the formation of blood clots ('deep vein thrombosis [DVT] prophylaxis'). Figure 31 shows that rates of after-hours discharges remained relatively constant, at around 19 per cent, between 2008 and 2012. Rates of DVT prophylaxis, however, increased during the five-year period, from 27 per cent of patients in 2008 to 72 per cent in 2012.

Figure 31

Trends in best practice care – after-hours discharges and administration of DVT prophylaxis in Australian public and private intensive care units, 2008–12



DVT = deep vein thrombosis

Notes: Only discharges to ward are included.

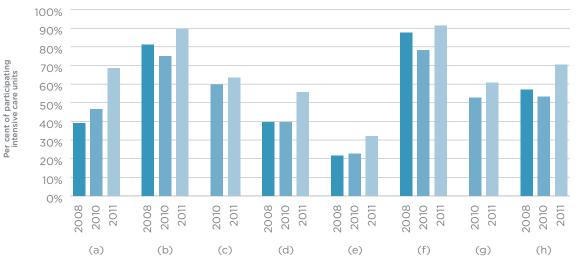
The DVT prophylaxis administration indicator was introduced to the adult patient database minimum dataset in 2007. The years 2007 and 2008 contain missing/incomplete data.

Case studies

ANZICS CORE conducted Critical Care Resources Registry Surveys in 2008, 2010 and 2011. These surveys (Figure 32) show an increasing number of ICUs in Australia using the FAST HUG checklist approach to improving their quality of care. Other indicators, also shown in Figure 32, suggest improvements in the provision of evidence-based care in Australian ICUs.

Figure 32

Measures of best practice care in Australian ICUs; 2008, 2010 and 2011



ICU = intensive care unit

Notes:

(a) Process-oriented checklists (e.g. FAST HUG) used (n = 105).

(b) Rounds conducted with an infectious disease specialist/microbiologist (n = 48, metropolitan and tertiary units only).

(c) Rounds conducted with a pharmacist (n = 112).

(d) Antibiotic stewardship program in place (n = 106).

(e) Antibiograms specific to the ICU in place (n = 106).

(f) Critical incident monitoring program in place (n = 106).

(g) Routine ICU patient satisfaction surveys conducted (n = 112).

(h) Competency standards for airway management adopted (n = 105).

Source: CORE Critical Care Resources Surveys conducted in 2008, 2010 and 2011.

Implications

There has been a considerable effort to improve the quality of intensive care in Australia. Holley and Ziegenfuss (2011) contend that the high standard of care of the critically ill in Australia results from the evolution of an independent College of Intensive Care Medicine, along with the strong and complementary ANZICS and a rigorous specialist training program.¹¹³

Data provided for this chapter by the ANZICS CORE demonstrate that intensive care patient mortality is decreasing, while the use of evidence-based care is increasing over time. In 2009, Victoria identified priority areas for future directions in intensive care at a jurisdictional level,¹⁰⁶ many of which are relevant at the national level. These include:

- addressing critical care
 workforce shortages
- routine reviews of ICU funding policy to reflect changes in clinical practice.
- support for the development of medical equipment asset management plans
- exploration of opportunities for identifying and evaluating new intensive care technology and clinical practice
- development of intensive care service planning frameworks to aid in the organisation and distribution of appropriately accessible intensive care services
- development of best practice protocols for assessing patients before admission to ICUs that include advance care planning
- development of ICU discharge planning policies that reinforce evidence-based practice, patient-centred care and care pathway management

- review of ICU data on an annual basis to inform future growth
- continual monitoring and strengthening of retrieval services
- support for the development of clinical information systems to inform improvements in the quality and safety of patient care
- support for redesign projects in health services that interface with intensive care services
- support for the development of intensive care research, and
- continuing exploration of, and support for, innovative and flexible critical care service models, including MET teams.

The successes of MET teams in improving patient outcomes may lead to an expansion of their roles in the early mobilisation of critical care resources to critically ill and deteriorating patients. It has been suggested that the role of the intensive care physician may change to include additional outreach initiatives.¹¹³ As the people that hospitals care for are less well over time, such changes may shift the roles and responsibilities of an intensivists closer to those of an 'acute hospitalist'.¹¹³ Such a role transition would have to be managed in conjunction with critical care workforce shortages. A limited critical care workforce is one of the factors constraining ICU capacity in Australia.¹⁰⁶ In rural and remote regions of the country, workforce shortages are likely to continue into the future, though they may be mitigated to some extent by the implementation and expansion of new technologies such as telemedicine.113

Serious challenges remain for the delivery of high-quality, sustainable intensive care services in Australia into the future. The demand for intensive care services in Australia's public hospitals is growing, along with the competing demands of emergency and elective surgery for a limited number of ICU beds. The resource implications of ICU patient selection (appropriate admission to ICUs), end-of-life decision making and clinical management are therefore likely to come under increased scrutiny over time.

Increased transparency and accountability, with the help of high-quality information provided by the ANZICS CORE registries, will aid decision making and resource allocation that will maximise the quality and sustainability of intensive care services in Australia.

What we do not know

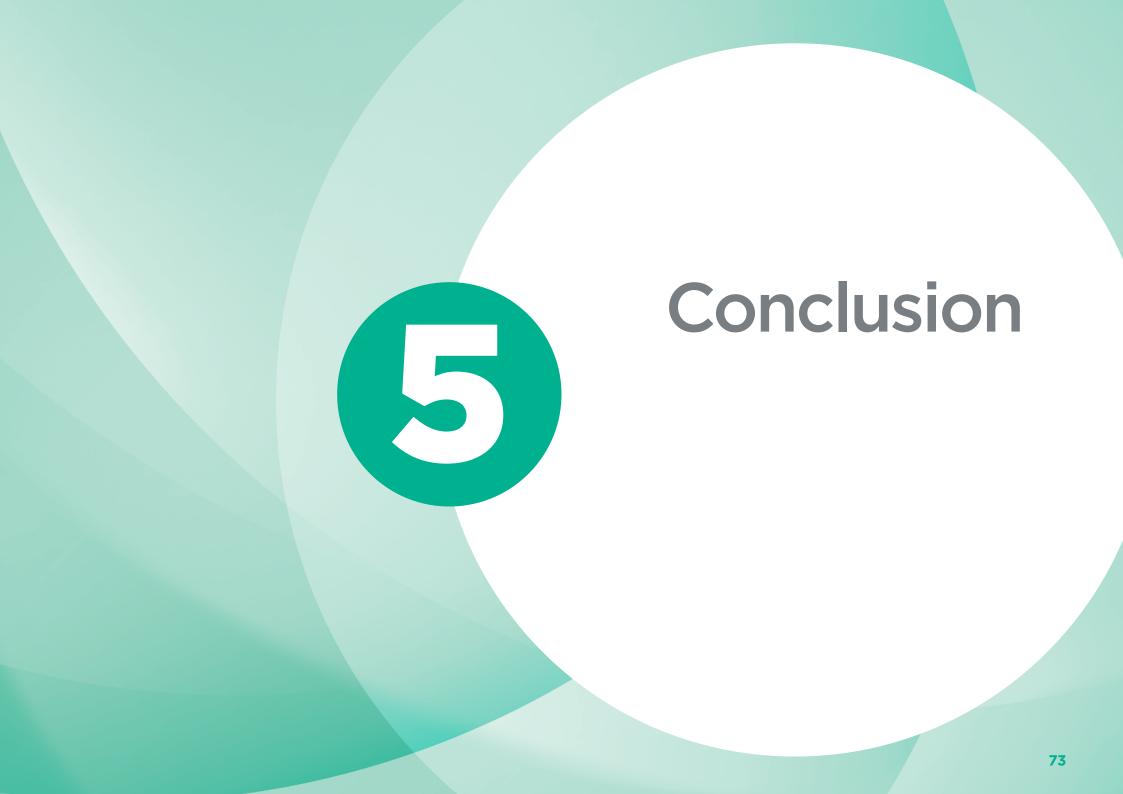
Approximately 15 per cent of ICUs do not participate in the CORE registries.⁹⁶ These ICUs are located mainly in rural and remote areas of Australia. Additionally, some ICUs located in private hospitals do not submit data to ANZICS CORE. The quality of care in, and patient outcomes from, these units is unknown.

One limitation of national health data collections in Australia is the difficulty of obtaining longitudinal patient information after hospital discharge. Another is in establishing the routine linkage of healthcare data to monitor outcomes over time. Indicators such as readmission to ICU after hospital discharge, death within 7 or 30 days of hospital discharge, and readmission to a different ICU require linked datasets to be created. It would also be useful to learn the extent to which ICU patients return to pre-admission levels of activity and independence. Measures – such as the indicators mentioned previously, as well as disability-adjusted or potential life years gained - would provide better information on the effectiveness of different ICU interventions on patient outcomes; however, the resources required to elicit such follow-up information are beyond the current capacity of many ICUs in Australia. Moreover, under current health information arrangements for secondary uses of health data in Australia, we are unable to generate and report such outcomes.

Acknowledgement

ANZICS operates CORE, which is funded by jurisdictional Departments of Health as well as the Ministry of Health in New Zealand. ANZICS provided all data and analyses in this chapter, and reviewed the text. The Commission gratefully acknowledges the contribution and effort of the Associate Professor David Pilcher and the CORE team.





CONCLUSION

Our knowledge about the safety and quality of health care in Australia has grown since the first major study of safety in Australia was published in 1995.¹¹⁴ Governments, health services, healthcare providers, and not-for-profit and consumer organisations have since invested substantial time and effort to improve the safety and quality of care, with the aim of improving people's outcomes and experiences.

We now know more about how this investment is paying off. This first State of Safety and Quality in Australian Health Care report provides a snapshot of 14 important areas of safety and quality where investments have been made.

One thing that is clear is that improving safety and quality is now seen as part of the normal business of health care. More and more systems are in place to standardise routines and processes, making it easier for doctors, nurses and others to deliver the care they would like to deliver to the standard they would like to deliver it. The National Safety and Quality Health Service (NSQHS) Standards and the associated mandatory accreditation scheme are an important step in this direction. They will help ensure that, during the next four years, all hospitals and day procedure centres have the fundamental systems required for safe and high quality care. We are looking more closely at whether people are receiving the care that research shows to be effective. We know that many people do not receive the right care – some have unnecessary (and potentially harmful) tests or treatments, and some miss out on tests or treatments that would be helpful. Working with healthcare providers to understand why this happens and to address it is a priority for the Australian Commission on Safety and Quality in Health Care (the Commission).

There is an increasing recognition that if patients, carers and consumers play a greater role in the healthcare system, then its quality and safety will improve. The Commission will continue to promote the role of consumers in safety and quality at a national level.

Measuring the safety and quality of care is a challenge. We have national information about the diagnoses people receive and the procedures people have. We know how many people die, and how many are readmitted to hospital soon after discharge. However, there is too little information routinely available about whether care is safe, whether people receive the right care and extent to which people are partners in their care. Registries can help to provide some of this information, and the Commission is working to increase the focus on safety and quality in national data collections, which will allow more detailed reporting on safety and quality in future years. There is more work to be done. Priorities include:

- embedding the NSQHS Standards throughout the health system to ensure a consistent approach to safety and quality in Australia

 the Commission will also look at how they can be used to improve the care of people with particular conditions, such as cognitive impairment
- coordinating a new national surveillance network that tracks the resistance of infections to antibiotics and the usage of antibiotics, which will allow these issues to be addressed more effectively
- examining the extent to which people are receiving the right care, which is the first step towards ensuring that more people receive the care that they need and not the care that they do not need
- developing a national approach to health literacy as a first step to ensuring that health services make it easier for everyone

 irrespective of their level of health literacy – to understand health information
- improving the measurement of safety and quality of care.

The Commission will continue to work with its partners – consumers, healthcare providers, managers, executives and policy makers – to improve the care, experiences and outcomes for people in the health system in Australia. It is only through such partnerships that we will achieve sustainable change and better care.

References

- 1. Australian Commission on Safety and Quality in Health Care. *Windows into Safety and Quality in Health Care 2008*. Sydney: ACSQHC, 2008.
- 2. Roughead EE, Lexchin J. Adverse drug events: Counting is not enough, action is needed. *Medical Journal of Australia 2006*;184(7):315–316.
- Roughead EE, Semple S. Literature Review: Medication Safety in Acute Care in Australia. Sydney. ACSQHC, 2008.
- National Inpatient Medication Chart – Medication Chart and Other Standardisations. 2009. (Accessed 8 April, 2009, at http://www.safetyandquality.gov.au/ internet/safety/publishing.nsf/Content/ NIMC_001)
- Australian Commission on Safety and Quality in Health Care. *Electronic Medication Management Systems: A Guide to Safe Implementation*. 2nd ed. Sydney: ACSQHC, 2012.
- Australian Commission on Safety and Quality in Health Care. Standards for Terminology, Abbreviations and Symbols used in the Prescribing and Administering of Medicines in Australian Hospitals. Sydney. ACSQHC, 2008.

- National Health and Medical Research Council. Australian Guidelines for the Prevention and Control of Infection in Healthcare. Canberra. NHMRC, 2010:260.
- Hand Hygiene Australia. 2013. (Accessed 31 July 2013, at http://www.hha.org.au/home.aspx)
- 9. Australian Commission on Safety and Quality in Health Care. Antimicrobial Stewardship in Australian Hospitals. Sydney. ACSQHC, 2011.
- 10. Runciman WB, Hunt TD, Hannaford NA, Hibbert PD, Westbrook JI, Coiera EW, et al. CareTrack: Assessing the appropriateness of health care delivery in Australia. *Medical Journal of Australia* 2012;197(2):100–150.
- 11. Deloitte Access Economics. The Economic Impact of Stroke in Australia. Melbourne. National Stroke Foundation, 2013.
- 12. National Stroke Foundation. Clinical Guidelines for Stroke Management. Melbourne. National Stroke Foundation, 2010.
- 13. Stroke Unit Trialists' Collaboration. Collaborative systematic review of the randomised trials of organised inpatient (stroke unit) care after stroke. *BMJ* 1997;314:1151–1159.

- National Stroke Foundation. National Stroke Audit – Acute Services Clinical Audit Report 2011. Melbourne. National Stroke Foundation, 2011.
- Australian Institute of Health and Welfare. Dementia in Australia. Canberra. AIHW, 2012.
- 16. Travers C, Byrne G, Pachana N, Klein K, Gray L. Prospective observational study of dementia and delirium in the acute hospital setting. *Internal Medicine Journal* 2013;43(3):262–269.
- Australian Institute of Health and Welfare. Dementia Care in Hospitals: Costs and Strategies. Canberra. AIHW, 2013.
- Draper B, Karmel R, Gibson D, Peut A, Anderson P. The Hospital Dementia Services Project: Age differences in hospital stays for older people with and without dementia. *International Psychogeriatric* 2011;23(10):1649–1658.
- NSW Clinical Excellence Commission. Quality Systems Assessment Supplementary Report – Delirium. Sydney. CEC, 2011.

- 20. Inouye S, Schlesinger M, Lyndon T. Delirium: A symptom of how hospital care is failing older persons and a window to improve quality of hospital care. *American Journal of Medicine* 1999;106:565–573.
- 21. Detering KM, Hancock AD, Reade MC, Silvester W. The impact of advance care planning on end of life care in elderly patients: Randomised controlled trial. *British Medical Journal* 2010;340(1345).
- 22. Dy S, Shugarman L, Lorenz K, Mularski R, Lynn J, RAND-Southern California Evidence-Based Practice Center. A systematic review of satisfaction with care at the end of life. *Journal of the American Geriatrics Society* 2008;56(1):124–129.
- 23. Gore J, Brophy C, Greenstone M. How well do we care for patients with end stage chronic obstructive pulmonary disease (COPD)? A comparison of palliative care and quality of life in COPD and lung cancer. *Thorax* 2000;55:1000–1006.
- 24. Temel J, Greer J, Muzikansky A, Gallagher E, Admane S, Jackson V, et al. Early palliative care for patients with metastatic non-small-cell lung cancer. *New England Journal of Medicine* 2010;363:733–742.

- 25. Australian Commission on Safety and Quality in Health Care. Safety and Quality of End-of-life Care in Acute Hospitals: A Background Paper. Sydney. ACSQHC, 2013.
- 1301.0 Year Book Australia Population Deaths. Australian Bureau of Statistics, 2012. (Accessed May 13, 2013, at www.abs.gov.au/ ausstats/abs@.nsf/Lookup/by%20 Subject/1301.0~2012~Main%20 Features~Deaths~52)
- 3303.0 Causes of Death, Australia, 2011. Australian Bureau of Statistics, 2012. (Accessed May 13, 2013, at http://www. abs.gov.au/ausstats/abs@.nsf/ Lookup/3303.0Chapter42011)
- 28. Lunney J, Lynn J, Hogan C. Profiles of older Medicare decedents. *Journal* of the American Geriatrics Society 2002;50:1108–1112.
- 29. To T, Greene A, Agar M, Currow D. A point prevalence survey of hospital inpatients to define the proportion with palliation as the primary goal of care and the need for specialist palliative care. *Internal Medicine Journal* 2011;41(5):430–433.

- Menec V, Lix L, Steinbach C, Ekuma O, Sirski M, Dahl M, et al. Patterns of Health Care Use and Cost at the End of Life. Winnipeg, MB. Manitoba Centre for Health Policy, 2004.
- 31. AIHW. Australia's Health 2012. Canberra. AIHW, 2012.
- Bloomer M, Moss C, Cross W. End-of-life care in acute hospitals: An integrative literature review. Journal of Nursing and Healthcare of Chronic Illness 2011;3(3):165–173.
- Crawford G, Brooksbank M, Brown M, Burgess T, Young M. Unmet needs of people with end-stage chronic obstructive pulmonary disease: recommendations for change in Australia. *Internal Medicine Journal* 2013;43(2):183–190.
- 34. Palliative Care Australia. End of Life Care is Everyone's Affair – Tackling the Challenge of 'End of Life'. Submission to the National Health and Hospitals Reform Commission. Canberra. Palliative Care Australia, 2012.
- 35. Australian Commission on Safety and Quality in Health Care. Patient-centred Care: Improving Safety and Quality Through Partnerships with Patients and Consumers. Sydney. ACSQHC, 2011.

- Da Silva D. Helping People Share Decision Making: A Review of Evidence Considering Whether Shared Decision Making is Worthwhile. London. The Health Foundation, 2012.
- 37. Berkman ND, Sheridan SL, Donahue KE, Halpern DJ, Viera A, Crotty K, et al. Health Literacy Interventions and Outcomes: An Updated Systematic Review. Evidence Report/Technology Assesment No. 199. Prepared by RTI International–University of North Carolina Evidence-based Practice Center under contract No. 290-2007-10056-I AHRQ Rockville, MD. Agency for Healthcare Research and Quality, 2011.
- Australian Bureau of Statistics.
 Health Literacy, Australia. Canberra.
 Australian Bureau of Statistics, 2008.
- Institute of Medicine. Health Literacy: A Prescription to End Confusion. Washington, DC: The National Academies Press, 2004.
- Rudd RE, Moeykens BA, Colton TC. Health and literacy: A review of medical and public health literature. In: Comings JP, Garner B, Smith C, editors. *The Annual Review of Adult Learning and Literacy*. San Francisco: Jossey-Bass, 2000.

- 41. Taggart J, Williams A, Dennis S, Newall A, Shortus T, Zwar N, et al. A systematic review of interventions in primary care to improve health literacy for chronic disease behavioral risk factors. *BMC Family Practice* 2012;13(1):1–12.
- 42. Paasche-Orlow MK, Wolf MS. The causal pathways linking health literacy to health outcomes. *American Journal of Health Behavior* 2007;31(Suppl 1):S19–S26.
- 43. DeWalt D, Berkman N, Sheridan S, Lohr K, Pigone M. Literacy and health outcomes: Systematic review of the literature. *Journal of General Internal Medicine* 2004;19:1228–1239.
- 44. Davis TC, Wolf MS, Bass IIIPF, Thompson JA, Tilson HH, Neuberger M, et al. Literacy and misunderstanding prescription drug labels. *Annals of Internal Medicine* 2006;145(12):887–894.
- 45. Davis TC, Wolf MS, Bass PF, Middlebrooks M, Kennen E, Baker DW, et al. Low literacy impairs comprehension of prescription drug warning labels. *Journal of General Internal Medicine* 2006;21(8):847–851.
- 46. Australian Commission on Safety and Quality in Health Care. National Safety and Quality Health Service Standards. Sydney. ACSQHC, 2011.

- 47. Stacy D, Bennett C, Barry M, Col N, Eden K, Holmes-Rovner M, et al. Decision aids for people facing health treatment or screening decisions (Review). *Cochrane Database of Systematic Reviews* 2011;10(CD001431).
- Leatherman S, Warrick L. Effectiveness of decision aids: A review of the evidence. *Medical Care Research and Review* 2008;65(Suppl 6):79S–116S.
- Invest in Engagement Choosing Treatment. Picker Institute Europe. (Accessed 5 July 2013, at http:// www.investinengagement.info/ ChoosingTreatmentWhyIsItImportant)
- 50. Joosten EAG, DeFuentes-Merillas L, de Weert GH, Sensky T, van der Staak CPF, de Jong CAJ. Systematic review of the effects of shared decision-making on patient satisfaction, treatment adherence and health status. *Psychotherapy and Psychosomatics* 2008;77(4):219–226.
- 51. Wilson SR, Strub P, Buist AS, Knowles SB, Lavori PW, Lapidus J, et al. Shared treatment decision making improves adherence and outcomes in poorly controlled asthma. *American Journal of Respiratory and Critical Care Medicine* 2010;181(6):566–577.

- Schoen C, Osborn R, Squires D, Doty M, Pierson R, Applebaum
 New 2011 survey of patients with complex care needs in eleven countries finds that care is often poorly coordinated. *Health Affairs* 2011;30(12):2437–2448.
- 53. Jha AK, Orav EJ, Zheng J, Epstein AM. Patients' perception of hospital care in the United States. *New England Journal of Medicine* 2008;359(18):1921–1931.
- 54. Arbuthnott A, Sharpe D. The effect of physician-patient collaboration on patient adherence in non-psychiatric medicine. *Patient Education and Counseling* 2009;77(1):60–67.
- 55. Epstein RM, Franks P, Shields CG, Meldrum SC, Miller KN, Campbell TL, et al. Patient-centered communication and diagnostic testing. *Annals of Family Medicine* 2005;3(5):415–421.
- 56. Schneider J, Kaplan SH, Greenfield S, Li W, Wilson IB. Better physicianpatient relationships are associated with higher reported adherence to antiretroviral therapy in patients with HIV infection. *Journal of General Internal Medicine* 2004;19(11): 1096–1103.

- 57. Stewart M, Brown J, Donner A, McWhinney I, Oates J, Weston W, et al. The impact of patient-centered care on outcomes. *Journal of Family Practice* 2000;49(9):796–804.
- Australian Bureau of Statistics. Patient Experiences in Australia: Summary of Findings 2011–12 Canberra. ABS, 2012.
- 59. Health Quality and Complaints Commission. Positive Change: Annual Report 2011–12. Brisbane. HQCC, 2012.
- 60. NSW Health Care Complaints Commission. Protecting the Health and Safety of the Public: Annual Report 2011–12. Sydney. NSW HCCC, 2012.
- 61. Office of the Health Services Commissioner. Annual Report 2012. Melbourne. OHSC, 2012.
- 62. Australian Commission on Safety and Quality in Health Care. Open Disclosure Standard Review Report. Sydney. ACSQHC, 2012.
- 63. ledema R, Allen S, Britton K, Gallagher TH. What do patients and relatives know about problems and failures in care? *BMJ Quality and Safety* 2012;21:198–205.

- 64. ledema R, Mallock N, Sorensen R, Manias E, Tuckett A, Williams A, et al. Final Report: Evaluation of the National Open Disclosure Pilot Program. Sydney. Australian Commission on Safety and Quality in Health Care, 2008.
- 65. Australian Commission on Safety and Quality in Health Care. Open Disclosure Standard: A National Standard for Open Communication in Public and Private Hospitals Following an Adverse Event in Health Care. Sydney. ACSQHC, 2003.
- 66. Australian Commission on Safety and Quality in Health Care. Australian Open Disclosure Framework. Sydney. ACSQHC, 2013.
- 67. Australian Commission on Safety and Quality in Health Care. Independent Research into Patient and Provider Views and Experiences with Open Disclosure. Sydney. University of Technology, 2011.
- Chew DP, French J, Briffa TG, Hammett CJ, Ellis CJ, Ranasinghe I, et al. Acute coronary syndrome care across Australia and New Zealand: The SNAPSHOT ACS study. *Medical Journal of Australia* 2013;199:1–7.
- 69. Leatherman S, McCarthy D. Quality of Health Care in the United States: A Chartbook. New York. The Commonwealth Fund, 2002.

- Australian Institute of Health and Welfare. Monitoring Acute Coronary Syndrome Using National Hospital Data: An Information Paper on Trends and Issues. Cat. no. CVD 57. Canberra. AIHW, 2011.
- 71. Know the Risks. 2012. (Accessed 20 May 2012, at http://www. heartfoundation.org.au/your-heart/ know-the-risks/Pages/default.aspx)
- 72. Aroney CN, Aylward P, Kelly AM, Chew DPB, Clune E, Acute Coronary Syndrome Guidelines. National Heart Foundation of Australia Cardiac Society of Australia and New Zealand Guidelines for the Management of Acute Coronary Syndromes 2006. *Medical Journal of Australia* 2006;184(8):1–32.
- Brieger D, Kelly AM, Aroney C, Tideman P, Freedman SB, Chew D, et al. Acute coronary syndromes: Consensus recommendations for translating knowledge into action. *Medical Journal of Australia* 2009;191(6):334–338.
- 74. Aliprandi-Costa B, Ranasinghe I, Chow V, Kapila S, Juergens C, Devlin G, et al. Management and outcomes of patients with acute coronary syndromes in Australia and New Zealand, 2000–2007. *Medical Journal* of Australia 2011;195(3):116–121.

- 75. Chew DP, Amerena JV, Coverdale SG, Rankin JM, Astley CM, Soman A, et al. Invasive management and late clinical outcomes in contemporary Australian management of acute coronary syndromes: Observations from the ACACIA registry. *Medical Journal of Australia* 2008;188(12):691–697.
- 76. Huynh LT, Rankin JM, Tideman P, Brieger DB, Erickson M, Markwick AJ, et al. Reperfusion therapy in the acute management of ST-segment-elevation myocardial infarction in Australia: Findings from the ACACIA registry. *Medical Journal of Australia* 2010;193(9):496–501.
- 77. Australian Bureau of Statistics. Causes of Death, Australia. Canberra, 2010.
- 78. Australian Institute of Health and Welfare. Cardiovascular disease mortality: Trends at different ages. *Cardiovascular series no. 31. Cat. no.47.* Canberra. AIHW, 2010.
- 79. Access Economics. The Economic Costs of Heart Attack and Chest Pain (Acute Coronary Syndrome). Melbourne. Baker IDI, 2009.

- Randall D, Jorm L, Lujic S, O'Loughlin A, Eades S, Leyland A. Disparities in revascularization rates after acute myocardial infarction between Aboriginal and non-Aboriginal people in Australia. *Circulation* 2013;127:811–819.
- National Kidney Foundation. Clinical Practice Guidelines K/DOQI For Chronic Kidney Disease: Evaluation, Classification and Stratification. *American Journal of Kidney Diseases* 2002;39:S1–S266.
- National Kidney Foundation. Clinical Practice Guidelines K/ DOQI For Chronic Kidney Disease: Evaluation, Classification and Stratification. Am J Kidney Dis 2002;39:S1-S266.
- Kanellis J. Justification for living donor transplantation. *Nephrology* 2010;15:S72–S79.
- McDonald SP, Russ GR. Survival of recipients of cadaveric kidney transplants compared with those receiving dialysis treatment in Australia and New Zealand, 1991-2001. Nephrology Dialysis Transplantation 2002;17(12): 2212–2219.

- Cameron JI, Whiteside C, Katz J, Devins GM. Differences in quality of life across renal replacement therapies: A meta-analytic comparison. *American Journal* of Kidney Diseases 2000;35(4): 629–637.
- Cass A, Chadban S, Gallagher M, Howard K, Jones A, McDonald S, et al. The Economic Impact of End-stage Kidney Disease in Australia: Projections to 2020. Melbourne. Kidney Health Australia, 2010.
- 87. Transplant Society of Australia and New Zealand. Organ Transplantation from Deceased Donors: Consensus Statement on Eligibility and Allocation Protocols. Sydney. TSANZ, 2011.
- Australian Institute of Health and Welfare. Dialysis and Kidney Transplantation in Australia: 1991-2010 Cat. no. PHE 162. Canberra. AIHW, 2012.
- Murtagh FEM, Marsh JE, Donohoe P, Ekbal NJ, Sheerin NS, Harris FE. Dialysis or not? A comparative survival study of patients over 75 years with chronic kidney disease stage 5. Nephrology Dialysis Transplantation 2007;22(7):1955–1962.

ANZDATA Registry, 2012.
92. Australian Institute of Health and Welfare. Dialysis and kidney transplantation in Australia: 1991-2010. Cat. no. PHE 162. Canberra: AIHW., 2012.
93. Excell L, Hee K, Russ G, editors.

90. Chandna SM, Da Silva-Gane M,

RN, Farrington K. Survival of

elderly patients with stage 5

therapy. Nephrology Dialysis

Transplantation 2011;26(5):

91. McDonald S, Clayton P, Hurst K,

1608-1614.

Marshall C. Warwicker P. Greenwood

CKD: Comparison of conservative

management and renal replacement

editors. Australia and New Zealand

Thirty Fifth Annual Report. Adelaide:

Dialysis and Transplant Registry:

- ANZOD Registry Report 2011.
 Adelaide: ANZOD (Australian and New Zealand Organ Donation)
 Registry, 2012.
- 94. College of Intensive Care Medicine of Australia and New Zealand. Minimum Standards for Intensive Care Units. Melbourne. CICM, 2011.
- Intensive Care Coordination and Monitoring Unit (ICCMU). 2013. (Accessed at http://intensivecare. hsnet.nsw.gov.au/)

- ANZICS Centre for Outcome and Resource Evaluation. Annual Report 2010–11. Melbourne. Australian and New Zealand Intensive Care Society, 2011.
- 97. Armahizer MJ, Benedict NJ. FAST HUG: ICU Prophylaxis. *New Practitioners Forum*. Bethesda. American Society of Health System Pharmacists, 2011.
- ANZICS Centre for Outcome and Resource Evaluation. Annual Report 2010-11, 2011.
- 99. Jones D, George C, Hart GK, Bellomo R, Martin J. Introduction of medical emergency teams in Australia and New Zealand: A multi-centre study. *Critical Care* 2008;12(2):R46.
- Jones D, Bellomo R, DeVita MA. Effectiveness of the medical emergency team: The importance of dose. *Critical Care* 2009;13(5):313.
- 101. Judson JA, Fisher MM. Intensive care in Australia and New Zealand. *Critical Care Clinics* 2006;22(3):407–423.
- 102. Australian and New Zealand Intensive Care Society, Zealand ColCMoAaN. Statement on Withholding and Withdrawing Treatment. Melbourne. CICM, 2010.

- 103. Australian and New Zealand Intensive Care Society. The ANZICS Statement on Death and Organ Donation (Edition 3.2). Melbourne. ANZICS, 2013.
- 104. Benner PE, Hooper-Kyriakidis PL, Stannard D. Clinical Wisdom and Interventions in Acute and Critical Care: A Thinking-in-Action Approach. 2nd ed. New York: Springer Publishing Company, 2011.
- 105. NSW Ministry of Health. Costs of Care Standards 2009–10. Sydney. NSW Ministry of Health, 2011.
- 106. Victorian Government. Victoria's Intensive Care Services – Future Directions. Melbourne. Department of Human Services, 2009.
- 107. Victorian Government. Victoria's intensive care services - Future directions. Department of Human Services, Melbourne, Victoria, Australia, 2009.
- 108. Knaus WA, Wagner DP, Draper EA, Zimmerman JE, Bergner M, Bastos PG, et al. The APACHE III prognostic system: Risk prediction of hospital mortality for critically III hospitalized adults. *Chest* 1991;100(6): 1619–1636.

- 109. Kasza J, Moran JL, Solomona PJ. Evaluating the performance of Australian and New Zealand intensive care units in 2009 and 2010. *Statistics in Medicine* 2013.
- 110. Bhonagiri D, Pilcher DV, Bailey MJ. Increased mortality associated with after-hours and weekend admission to the intensive care unit: A retrospective analysis. *Medical Journal of Australia* 2011;194(6):287–292.
- 111. Cavallazzi R, Marik PE, Hirani A, Pachinburavan M, Vasu TS, Leiby BE. Association between time of admission to the ICU and mortality: A systematic review and metaanalysis. *Chest* 2010;138(1):68–75.
- 112. Renton J, Pilcher DV, Santamaria JD, Stow P, Bailey M, Hart G, et al. Factors associated with increased risk of readmission to intensive care in Australia. *Intensive Care Medicine* 2011;37(11):1800–1808.
- 113. Australian Intensive Care An Exciting Success Story. 2011. (Accessed 15 May 2013, at http:// www.aprs.com.au/australian-healthnews/australian-intensive-care)
- 114. Wilson RM, Runciman WB, Gibberd RW, Harrison BT, Newby L, Hamilton JD. The Quality in Australian Health Care Study. *Medical Journal of Australia* 1995;163:458–471.

AUSTRALIAN COMMISSION ON SAFETY AND QUALITY IN HEALTH CARE

Level 7, 1 Oxford Street, DARLINGHURST NSW 2010 GPO Box 5480, SYDNEY NSW 2001 Telephone: (02) 9126 3600 Fax: (02) 9126 3613 mail@safetyandquality.gov.au www.safetyandquality.gov.au