VHQA Conference - 26 May 2016

Using clinical data for safety and quality improvement

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AUSTRALIAN COMMISSION ON SAFETY AND QUALITY IN HEALTH CARE

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NSQHS STANDARDS

AUSTRALIAN COMMISSION ON SAFETY AND QUALITY IN HEALTH CARE

- Australian government agency
- Funded by the Australian and state and territory governments
- Aims:
  - achieve a sustainable, safe & high-quality health system
  - ensure that the health system is better informed, supported & organised to deliver safe & high quality care
- Works in partnership with patients, consumers, clinicians, managers, policy makers & health care organisations
- Leads & coordinates national improvements in safety & quality of health care based on best available evidence

Patient safety and quality

- Australia's health system generally performs well compared to other OECD countries
- A significant proportion of hospital admissions are associated with an adverse event
  - In 2011/12, 2% of public hospital separations had a hospital acquired complication[1]
  - Excluding hospital-acquired diagnoses from each patient's AR-DRG changes the AR-DRG in 3.1% of all patient episodes[2]
- Reduction in the rate of adverse events and unwarranted variation – potentially produces productivity savings, over and above benefits to patients
- But there is little routine, consistent reporting of safety and quality indicators at the national level

[1]Vital Signs (2015); [2]Health Policy Analysis (2013)

FACT FILE

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5 Facts on patient safety

1 2 3 4 5

Patient safety is a recognised serious global public health issue

Australia has more developed patient safety monitoring and response systems than other OECD countries.

Improvements in hospital safety hampered by lagging disparate data and reporting systems

Primary health care little measurement

FACT FILE

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5 Facts on patient safety

1 **2** 3 4 5

One in 10 patients are harmed while in hospital

Estimates show that in Australia as many as 1 in 10 patients is harmed while receiving hospital care. The harm can be caused by a range of errors or adverse events.

0.04% Serious harm – death (1,782)
0.149% Temporary (6,812)

It is estimated that 50% of these events are preventable.

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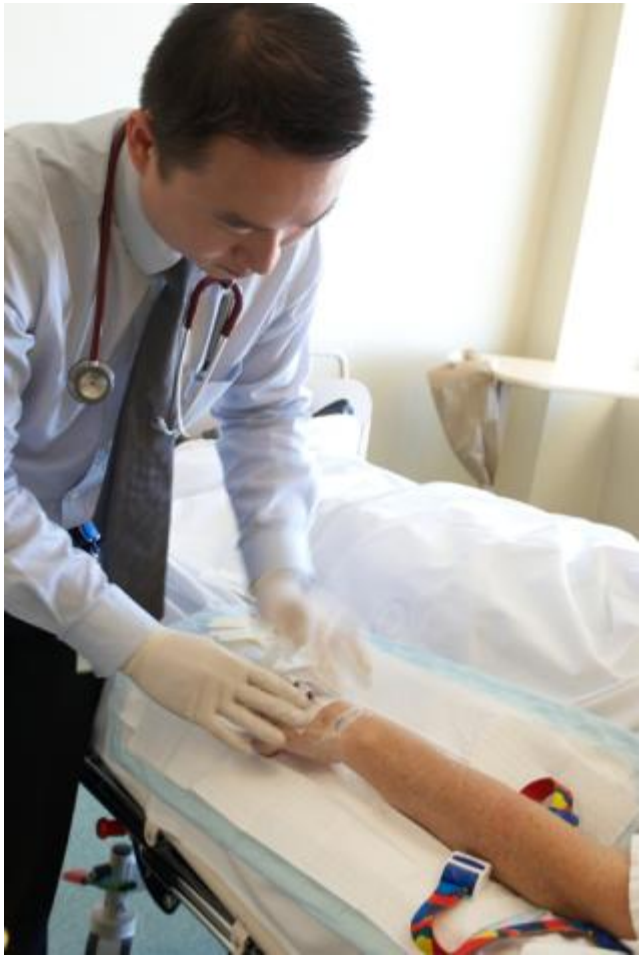
5 Facts on patient safety



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Most common preventable adverse events causing harm:

- medication errors
- patient falls
- hospital acquired infection
- deterioration and failure to respond
- inpatient suicide

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5 Facts on patient safety

1 2 3 **4** 5

Hospital infections affect 7 out of every 100 patients admitted

Of every 100 hospitalised patients at any given time, 7 will acquire health care-associated infections (HAIs).

Simple and low-cost infection prevention and control measures, such as appropriate hand hygiene, can reduce the frequency of HAIs by more than 30%.

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5 Facts on patient safety

1 2 3 4 **5**

Poor patient safety is very costly (2013 study by the Commission and IHPA)

- adverse events add $9,244 (5.3 days longer) to average cost (NEP $5,007)
- selected high volume conditions $2,000 - $6,000 more per episode.
- hospital acquired complications explain 12% - 16.5% of total episode cost.
- Incremental cost of adverse events $634M to $896M or 3.2% of total cost of admitted patients.

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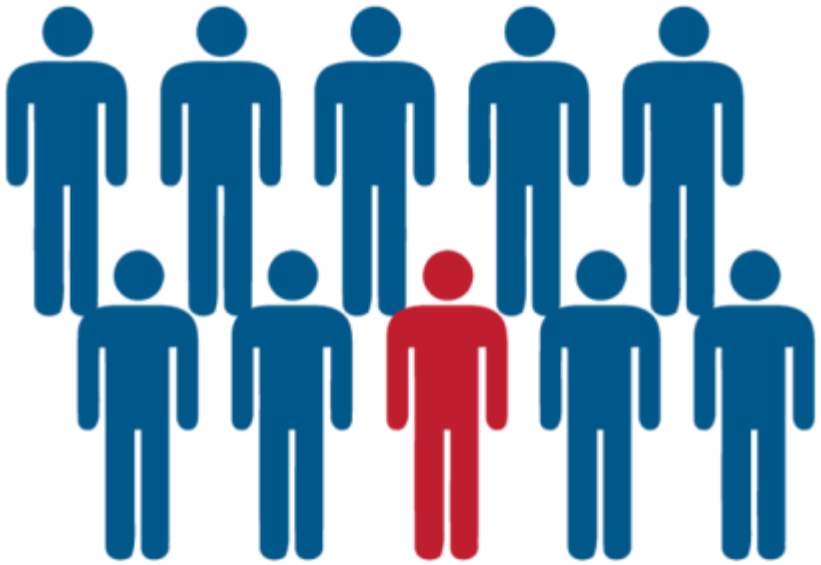
Patient safety & quality



Estimated about 10%-15% of all health spending is wasted due to poor-quality care

Safety studies show that additional hospitalisation, litigation costs, infections acquired in hospitals, disability, lost productivity, medical expenses and costs associated with low value health care and unwarranted variation significantly add to health spending.

The economic benefits of improving patient safety and value are compelling.

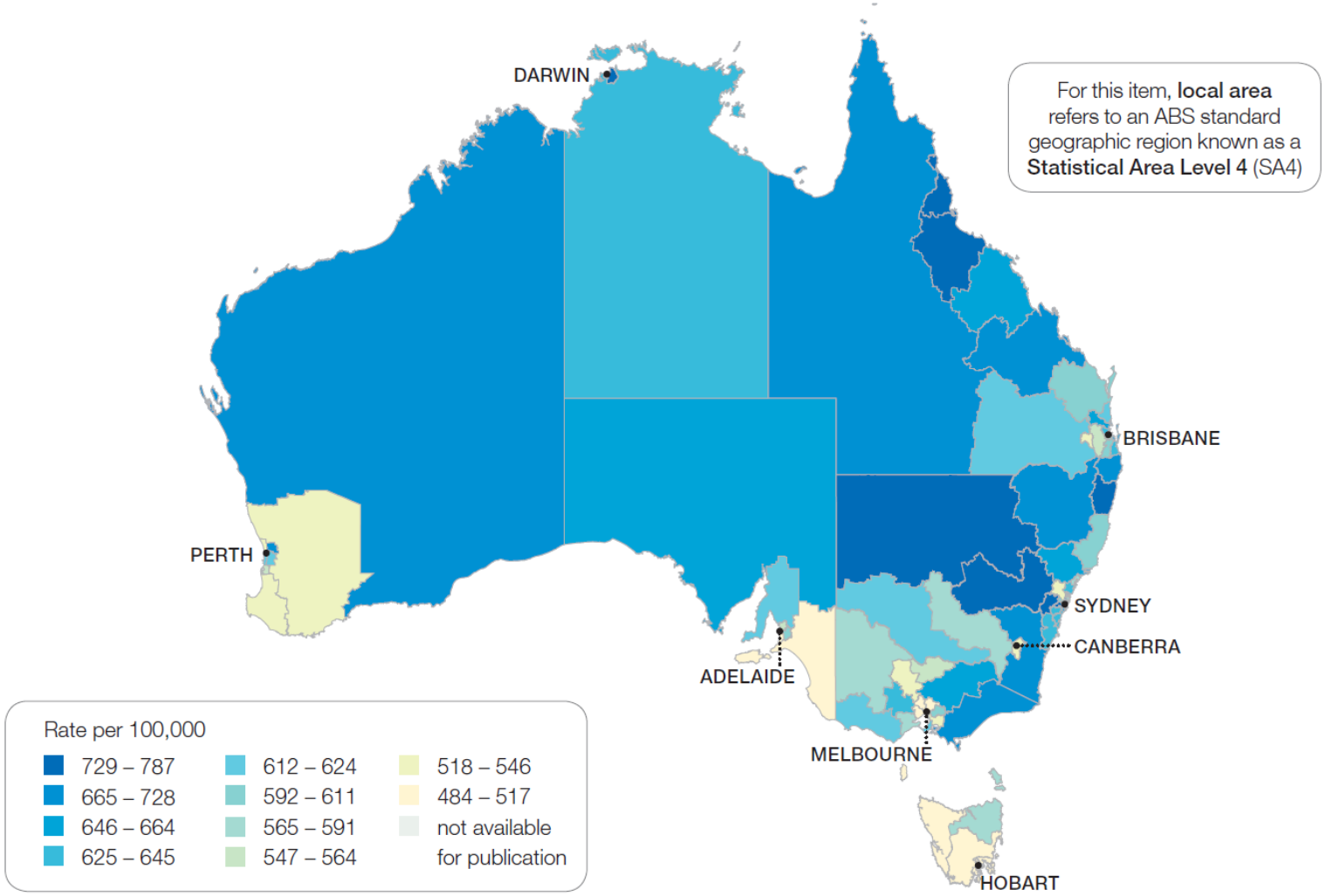
Variation in healthcare drives quality & cost

Is there:

- Overuse of care with uncertain marginal benefit?
- Overuse of lower value or supply-sensitive care?
- Underuse of effective care?

Hip fracture hospital admissions

Figure 57: Number of hip fracture admissions to hospital per 100,000 people aged 65 years and over, age standardised, by local area, 2012–13

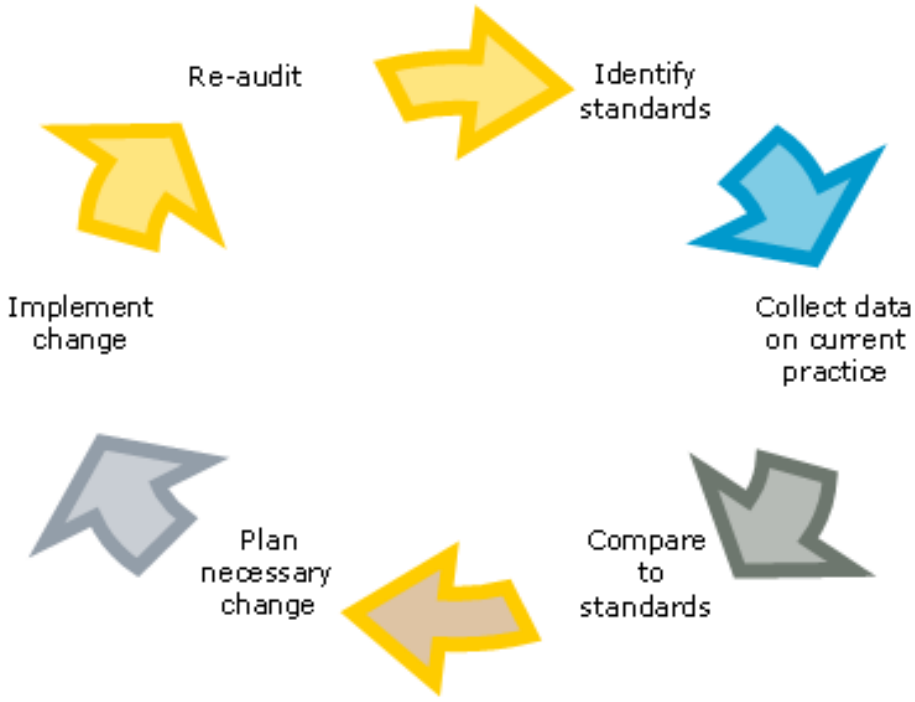


The national standards

- NSQHS Standard 1: requires organisations monitor regular reports on safety and quality indicators and other safety and quality performance data.

- The rationale for ongoing monitoring and review by hospitals of a set of outcome-based indicators is that significant variance can be a signal for issues of either data quality and consistency, resources, or quality of care.

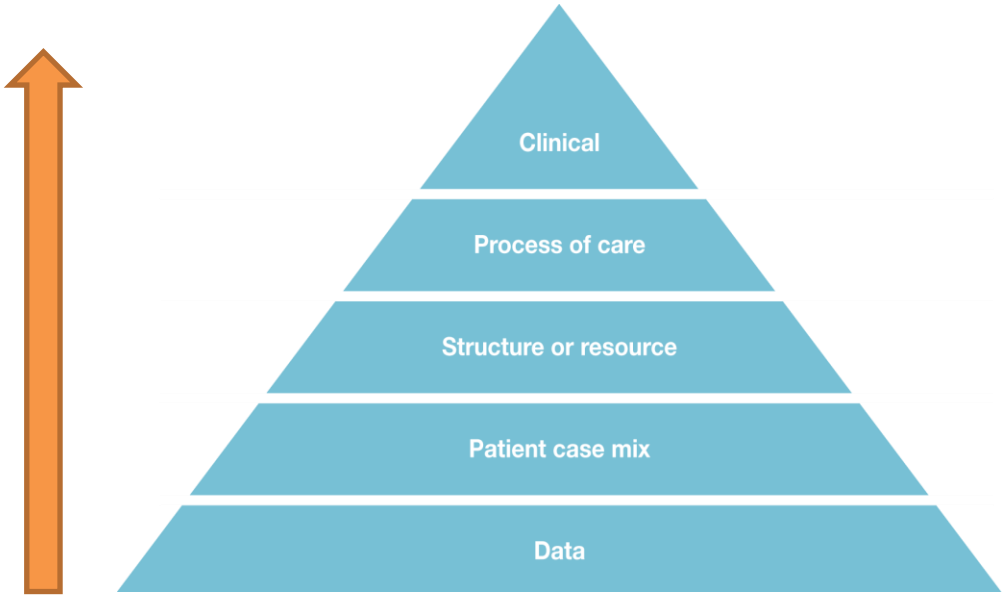
Quality improvement cycle



Source: http://www.hqsc.govt.nz/our-programmes/other-topics/news-and-events/news/522/

What can hospitals do with this information?

- monitoring indicators such as mortality rates and hospital acquired conditions allows significant variance to be detected
- results should not be immediately interpreted as good or bad performance
- work your way up the ‘Mohammed pyramid’ to identify causes of variation



Start by investigating the data

Aim to create a common set of safety metrics that reflect meaningful outcomes

- Measurement is essential to advancing improvement
- Need to establish standard metrics across the care continuum
- Develop methods to identify and measure risks and hazards proactively
- Encourage the development of organisational & clinical culture of learning and improvement
- Local monitoring and feedback through to national reporting

Using patient medical record data

- Routinely collected
- Useful for monitoring hospital safety and informing improvements in health care
- Dependent on accuracy of documentation by clinicians and accuracy of coding
- Should not be the only method used to assess safety and quality in health care

Tools to monitor patient safety and quality

A robust safety and quality monitoring system measures multiple elements of patient safety

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Sentinel events

National Sentinel Events - 2013 figures	
Procedures involving the wrong patient or body part resulting in death or major permanent loss of function	4
Suicide of a patient in an inpatient unit	37
Retained instruments or other material after surgery requiring re-operation or further surgical procedure	27
Intravascular gas embolism resulting in death or neurological damage	4
Haemolytic blood transfusion reaction resulting from ABO incompatibility	-
Medication error leading to the death of a patient reasonably believed to be due to incorrect administration of drugs	20
Maternal death associated with pregnancy, birth and the puerperium	8
Infant discharged to the wrong family	2
TOTAL	102
TOTAL as a percentage of total public hospital separations (5.705 million)	0.002%

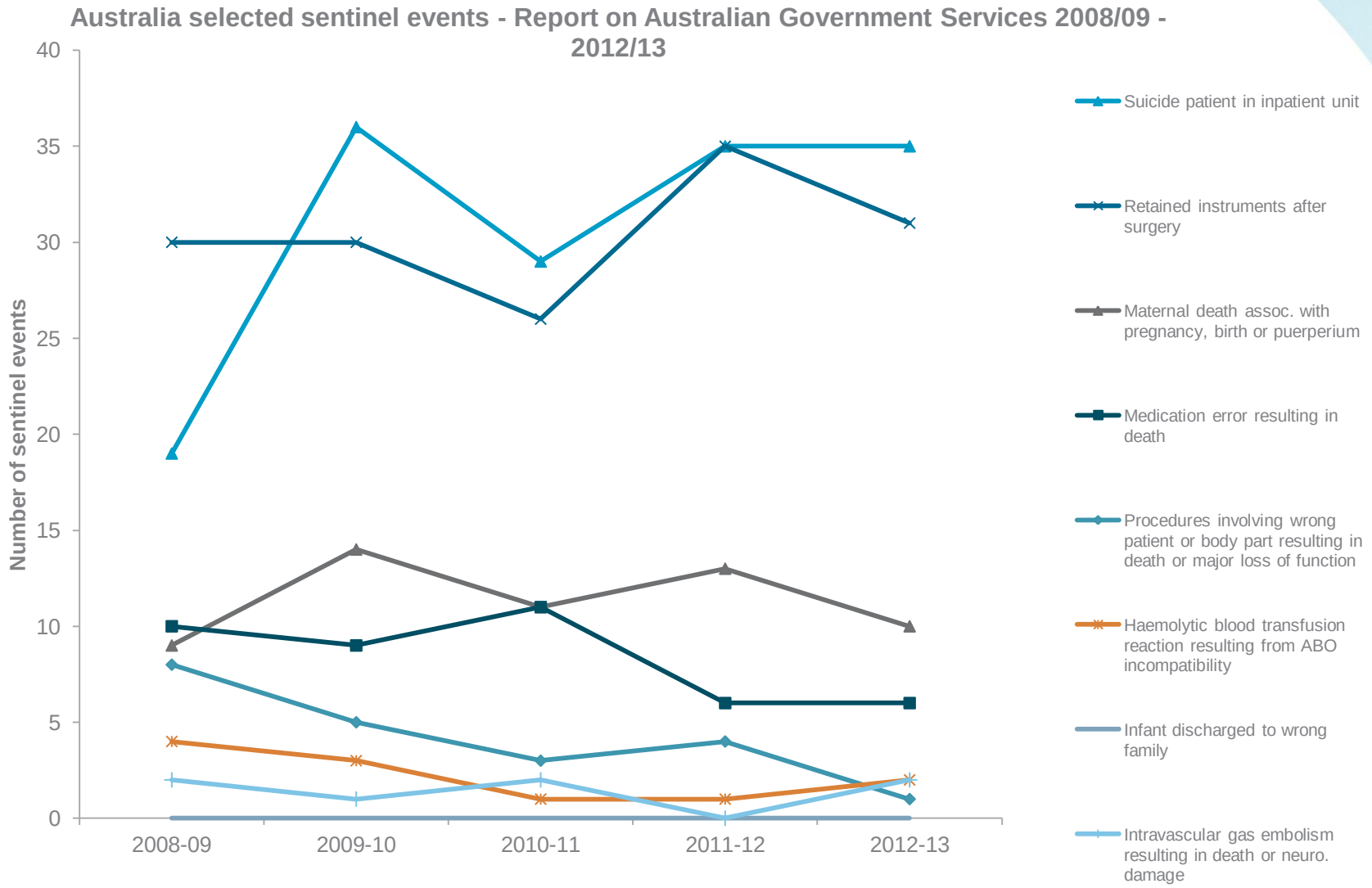
(a) Sentinel events definitions can vary across jurisdictions.

(b) The total includes sentinel events for the ACT which are not reported in the 8 sub categories of sentinel events due to confidentiality issues.

– Nil or rounded to zero.

Source: http://www.pc.gov.au/research/ongoing/report-on-government-services/2016/health/rogs-2016-volumee-health.pdf

Sentinel event national trends 2008-2013



Outcomes

The core hospital based outcome indicators include:

CHBOI 1- hospital-standardised mortality ratios

CHBOI 2- death in low mortality diagnosis related groups

CHBOI 3- in-hospital mortality for:

- acute myocardial infraction
- stroke
- fracture neck of femur
- Pneumonia

CHBOI 4- unplanned/ unexpected hospital readmission of patients discharged following management of specific conditions

CHBOI 5- Healthcare associated *Staphylococcus aureus* bacteremia

CHBOI 6- *Clostridium difficile* infection

- Piloting the new Australian Composite Model HSMR (CHBOI 1) and reviewing conditions specific mortality indicators (CHBOI 3)

Patient Experience

Patient experience is:

The sum of all interactions, shaped by an organization's culture, that influence patient perceptions across the continuum of care.

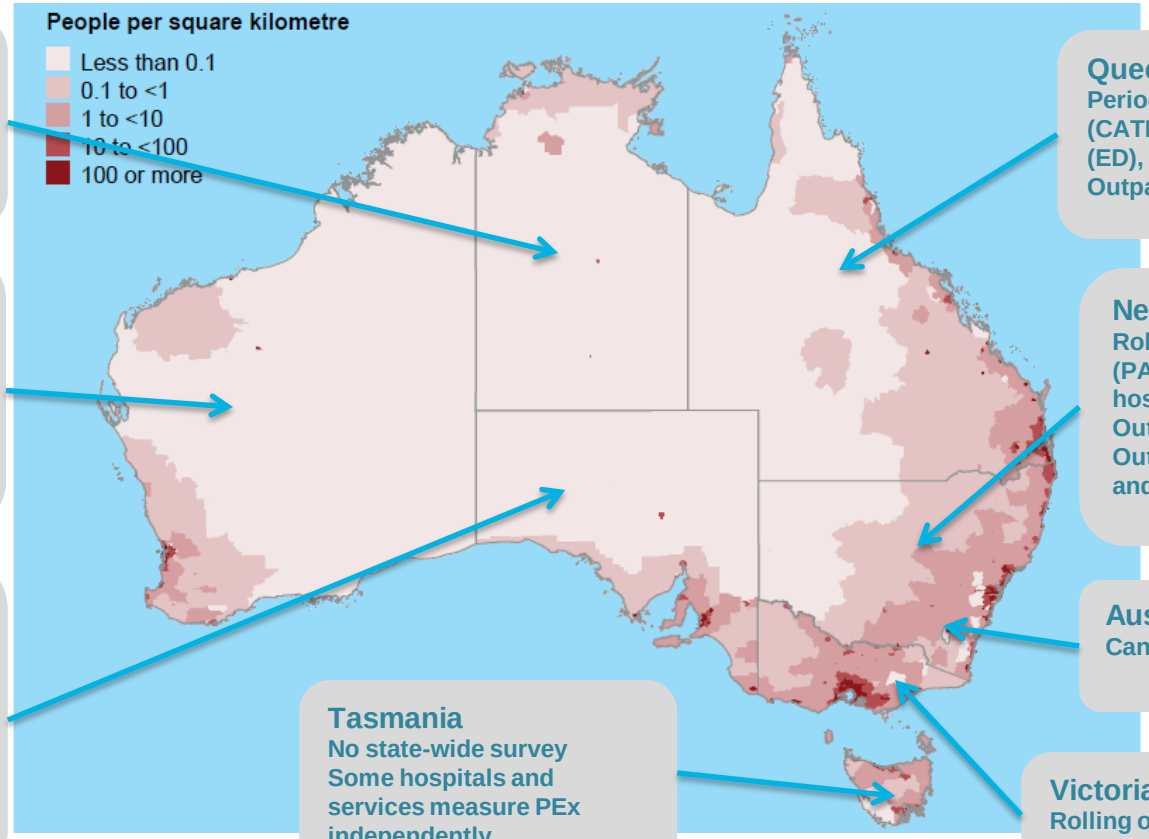
- The Beryl Institute

- Measurement ensures that patients' voices are routinely incorporated into quality and safety improvement efforts
- The Commission is developing two non-proprietary national question sets based on our own qualitative research with consumers, health professionals, administrators and policymakers across private and public sectors, in all states and territories, for hospital and day procedure patients

PEx in Australia: measurement activity by jurisdiction

Currently no national-level assessment of recent patients' experiences that can be used for quality improvement

- **Australian Bureau of Statistics** Patient Experience Survey
- **Private hospital groups a**nd insurance funds use their own measurement tools (principally HCAHPS)



Northern Territory
No territory-wide survey
Some hospitals and services measure PEx independently.

Western Australia
Pioneer of Australian PEx – established survey 15 years ago. Annual state-wide survey (CATI) for hospital inpatients and ED patients

South Australia
State-wide PEx survey (CATI; CAPI in development) for overnight hospital inpatients; developing CAPI survey for disadvantaged populations

Tasmania
No state-wide survey
Some hospitals and services measure PEx independently

Queensland
Periodic state-wide PEx surveys (CATI) for Emergency Department (ED), Small Hospitals, Maternity, Outpatient clinics

New South Wales
Rolling state-wide PEx surveys (PAPI and online) for overnight hospital inpatients, ED, children, Outpatients, Cancer Outpatients, Maternity, Small and Rural Hospitals

Australian Capital Territory
Canberra Hospital patient survey

Victoria
Rolling online survey one month post-discharge for ED patients, hospital inpatients, maternity, children and parents

Population density map (2012) source: AIHW analysis of ABS ASGS data 2010, 2013
Population figures source: Australian Bureau of Statistics, cat. no. 3101.0 - Australian Demographic Statistics, Mar 2015

Complications

- National maternity indicators
  - Severe adverse maternal morbidity events (new indicators, about to be considered by national standards committees)
  - Post partum haemorrhage (mostly collected, recommended to be included in a national minimum data set)

- Development of a Hospital Acquired Complications list

Using routinely collected hospital patient data to improve safety and quality

- AR-DRG system originally designed for gathering information on (for example) readmission rates, length of stay, complications of care
- Rich data source
  - Information for clinicians
  - peer review
  - benchmarking to improve safety and quality
- Condition Onset Flag identifies conditions that patients acquire while receiving treatment
- Very strong evidence in the literature to support clinical meaning and to change behaviour

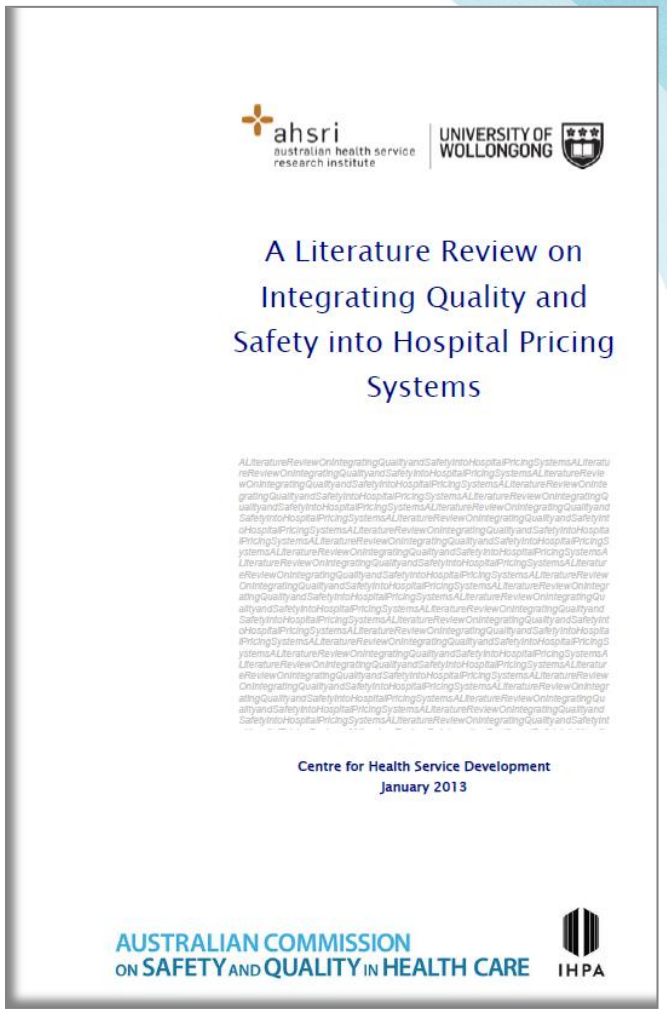
Gathering evidence

Literature review 2013

- Good evidence improvement in practices if data is provided to clinical teams
- Examination of coded data is a useful first step to indicate potential safety issues but should not be the only method used

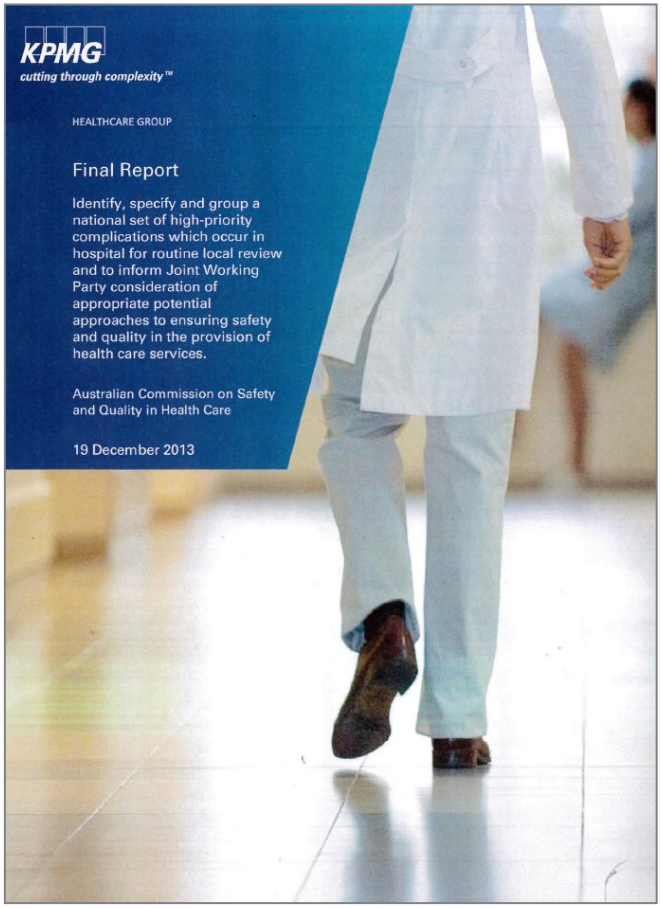
Environmental scan 2013

- Routinely coded inpatient data can be used as a screening tool to indicate areas of concern or in need of attention to improve safety



Developing a list of hospital acquired complications

- Work led by clinical reference group of senior clinicians
- Analysis of relevant information in the AR-DRG system
- 2013 KPMG report
  - Identification and specification of a national set of hospital acquired complications
  - Advise on appropriate potential approaches to ensuring safety and quality in the provision of health care services



Hospital acquired complications list

- Assessment criteria:
  - **Preventability**
  - **Patient impact (severity)**
  - **Health service impact**
  - **Clinical priority**

- 40 complication categories within 16 groups

- New data items for complications showing clinical deterioration
  - Unplanned return to operating theatre
  - Unplanned admission to intensive care unit
  - Rapid response team call

Complications

Hospital acquired complications

Complication Group (16)	Complication category (40)
1. Pressure injury	Unspecified decubitus ulcer and pressure area
	Stage I ulcer
	Stage II ulcer
	Stage III ulcer
	Stage IV ulcer
2. Falls resulting in fracture and intracranial injury	Intracranial injury
	Fractured neck of femur
	Other fractures
3. Healthcare associated infection	Urinary tract infection
	Surgical site infection
	Pneumonia
	Blood stream infection
	Central line and peripheral line associated blood stream infection
	Multi-resistant organism
	Prosthetic associated infection
	Gastrointestinal Infections
4. Surgical complications requiring unplanned return to theatre	Post-operative haemorrhage/haematoma requiring transfusion and/or return to theatre
	Surgical wound dehiscence
	Anastomotic leak
	Vascular graft failure
	Other surgical complications requiring unplanned return to theatre

Hospital acquired complications (cont.)

Complication Group (16)	Complication category (40)
5. Unplanned ICU admission	Unplanned ICU admission
6. Hospital rapid response team (RRT) call	Hospital rapid response team (RRT)
7. Respiratory complications	Respiratory failure including acute respiratory distress syndrome requiring ventilation (invasive and/or non-invasive)
	Aspiration pneumonia
8. Venous thromboembolism	Pulmonary embolism
	Deep vein thrombosis
9. Renal failure	Renal failure requiring haemodialysis or continuous veno-venous haemodialysis
10. Gastrointestinal Bleeding	Gastrointestinal Bleeding
11. Medication complications	Drug related respiratory complications/depression
	Haemorrhagic disorder due to circulating anticoagulants
	Hypoglycaemia
12. Delirium	Delirium
13. Persistent incontinence	Urinary incontinence
14. Malnutrition	Malnutrition
15. Cardiac complications	Heart failure and pulmonary oedema
	Arrhythmias
	Cardiac arrest
	Acute coronary syndrome including unstable angina, STEMI and NSTEMI
16. Iatrogenic pneumothorax requiring intercostal catheter	Iatrogenic pneumothorax requiring intercostal catheter

Tested through proof of concept study

Phases 1 (2014-15) and 2 (2015)

- Accuracy and completeness
  - Over 5,000 hospital records
  - 4 public hospitals and 5 private hospitals
- Utility for clinicians for local monitoring
  - Used an interactive reporting tool to monitor
  - 7 public hospitals and 3 private hospitals
- New data items (MET calls, return to theatre, unplanned ICU) not tested

Results of testing

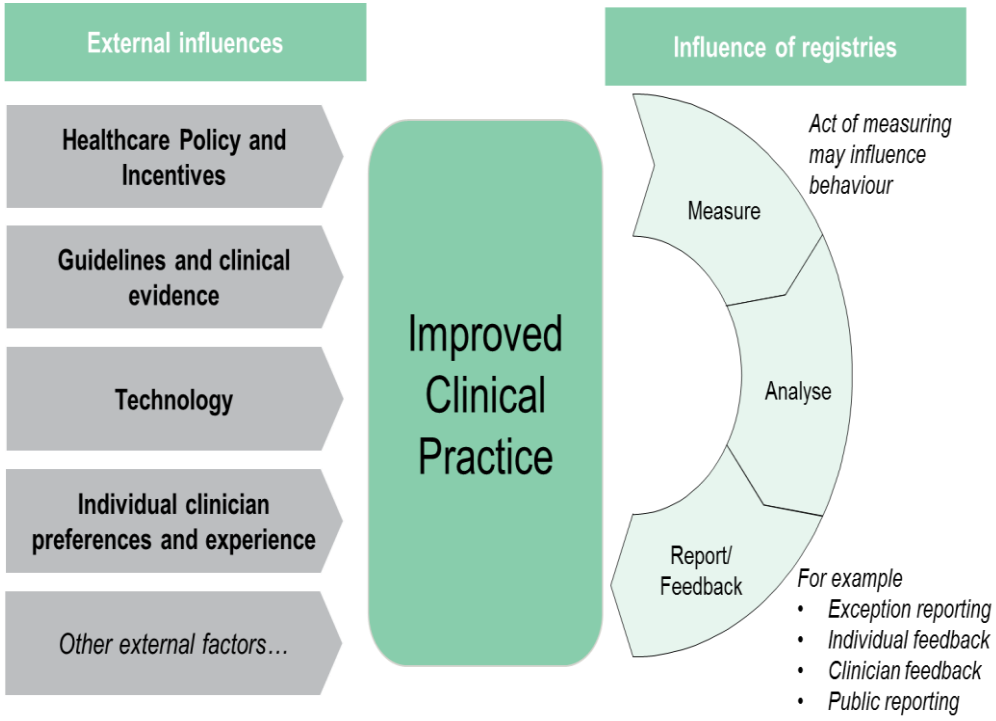
- The tool was seen as useful by clinicians
- Relevant for safety and quality improvement
- Useful as a screening tool to flag potential areas of concern for S&Q investigation and improvement
- High level of consistency between original codes and independent review of codes
- High importance of coding the condition onset flag
- Improvements in clinical documentation are needed

Next steps for complications work

- Refine the list – removals, code refinement, addition of maternal and neonate complications
- Resources to support improved medical documentation
- Development of a classification grouper
- An interactive tool for local monitoring of complications
- Mechanisms for benchmarking data

Registries – using data to improve clinical practice

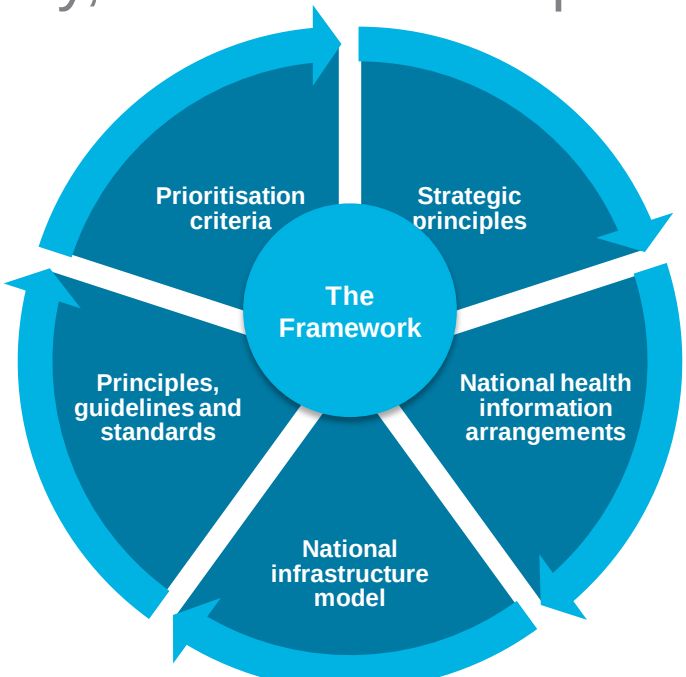
The position of registries within the broader clinical system



Source: http://www.clinicaltrialsalliance.org.au/wp content/uploads/2014/10/ACTA_Submission_Select_Committee_on_Health_20140926.pdf

Framework for Australian clinical quality registries

- Specifies national arrangements under which peak clinical groups and healthcare organisation can partner with governments to systematically monitor and report on healthcare quality
- Provides assurance that data systems, have satisfied minimum security, technical and operating standards

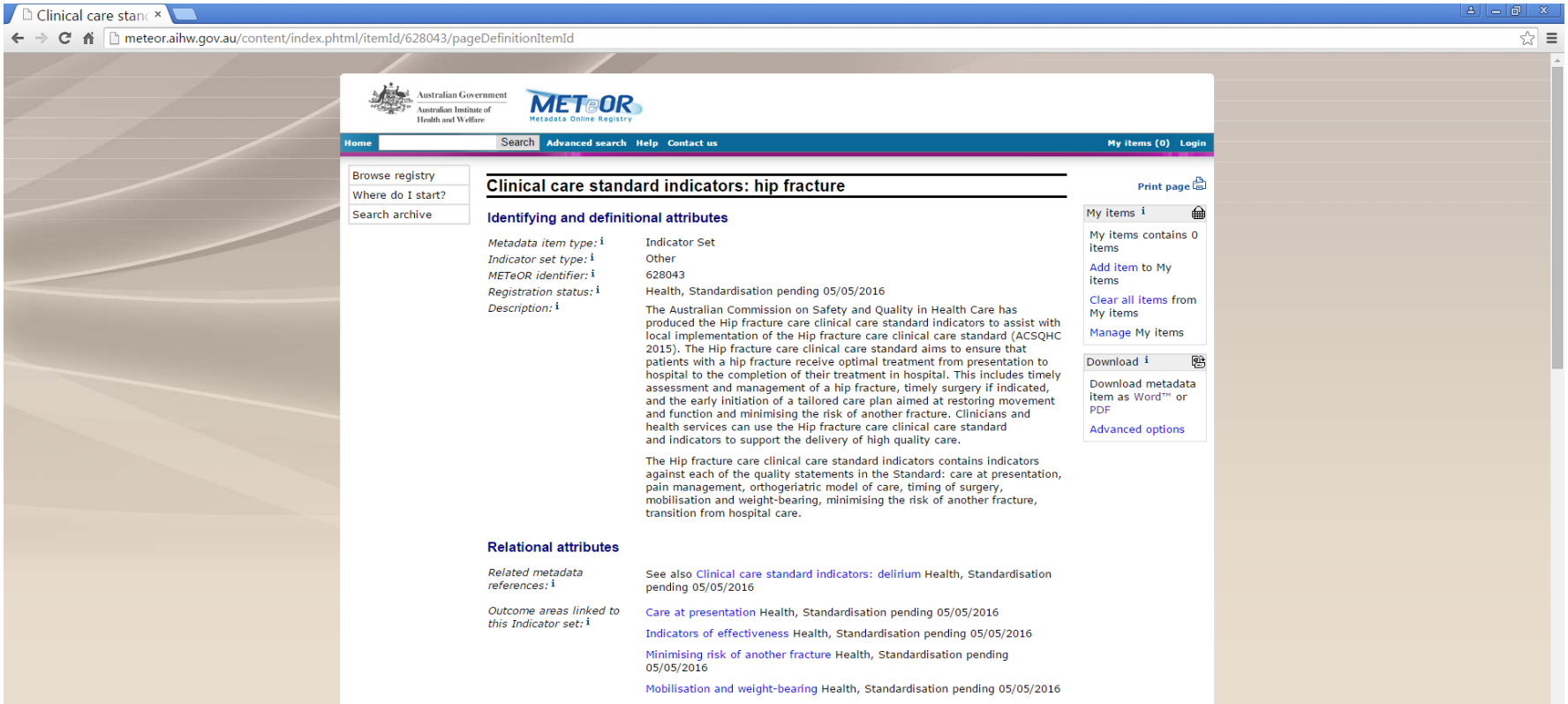


National economic evaluation on clinical registries

- Conservatively evaluated the economic impact of five clinical quality registries in Australia
- Preliminary findings:
  - Significant net positive returns on investments and a positive benefit to cost ratio
  - Substantial benefits measured reflecting improvements to clinical practice and outcomes over time
  - Showing that registries, when correctly implemented and sufficiently mature, deliver significant value for money
  - **Measured value is achieved through feedback of analysed data to clinicians, benchmarking of system performance and/or structured review of outlier hospitals or clinicians.**

Providing indicator data for improvement to measure best-practice

- Clinical care standards
  - E.g. Hip Fracture Care
- Indicators are now up on METeOR:



A national best-practice pricing approach for hip fracture care

- Use the clinical care standard as best-practice
  - Determine subset of indicators for pricing
  - Indicators to be incorporated into Australian and New Zealand Hip Fracture Registry
- Report published on Commission website & signalled in IHPA Pricing Framework
- Technical aspects
  - Determining the pricing adjustment

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IHPA

In conclusion…

- A robust safety and quality monitoring system measures multiple elements of patient safety
- Data comes from many sources
  - patient record data, registries, audits, surveys
- Regular monitoring of safety and quality indicators, and other safety and quality performance data
- Important to have a common set of safety metrics that reflect meaningful outcomes
  - local monitoring, national reporting, setting standards, pricing and everything in between
- Feedback to clinicians, service streams, wards and clinics is vitally important (especially outliers)
- Evaluation/feedback/checking improvements
  - Are the indicators relevant?
  - Is the collection and feedback working?