

Evidence Check

Healthcare performance reporting bodies

An **Evidence Check** rapid review brokered by the Sax Institute for the Bureau of Health Information. April 2015.

This report was prepared by:

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Healthcare performance reporting bodies: an Evidence Check review

An **Evidence Check** rapid review brokered by the Sax Institute for the Bureau of Health Information. April 2015.

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University

AIHI

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1 Executive summary

This review addresses the following questions:

1. Across developed economies, what organisations have a key role in healthcare performance measurement and public reporting? For each of these organisations, what are:
 - Their mandates and governance arrangements
 - Functions and roles
 - Structure and staffing
 - Stakeholder engagement processes
 - Outputs and publications, and
 - The key performance indicators for which these organisations are held to account.

What are their associated evaluation frameworks?

2. What approaches are currently in use that measure and report on:
 - (i) Unwarranted clinical variation and
 - (ii) Adverse events and patient safetywithin each organisation's jurisdiction?

Overview of healthcare performance reporting organisations

There are 34 organisations from 12 countries included in the analysis. These include 27 arms-length bodies, or bodies directly funded by national governments whilst seven are private organisations.

The 'government bodies' can be broadly characterised as:

- Health departments whose primary role is to provide health services to their citizens
- Independent government bodies whose primary purpose is performance monitoring and data collection. These can be focussed primarily on healthcare system performance or have a broader remit that includes population health
- Independent government organisations which have a part-monitoring role within a broader remit
- Independent institutes including university centres funded by government to provide performance reports.

The non-government organisations in England and the United States primarily use administrative data which have been collected at hospitals and collated by government bodies. These non-government organisations present data in their own style depending on their target audiences. Dr Foster pioneered this model of repackaging hospital administrative data in 2002 in England. Australia currently does not have any similar private organisations publishing data.

Dr Foster and Healthgrades (US) are the only for-profit organisations profiled in this report. The remaining non-government organisations were non-profit or held charity status.

Key lessons

Key lessons include:

- **Frameworks:** Several organisations publish visual representations of indicator frameworks. These extend the notion of delivering safe and high quality healthcare services by linking these with desirable population health outcomes or health status
- **Independence:** These organisations have some level of independence from the organisation delivering the majority of healthcare services. This structure may provide them with greater freedom to publish healthcare performance data that hospitals may be reluctant to publish
- **Quality statements:** Some organisations use quality statements which indicate the level of assurance that policy makers and the public can have in the indicator structure and its underlying data
- **Data availability:** Several organisations allow extraction and downloading of data so that researchers and policy makers can interrogate and present information according to their needs.

Clinical variation findings

- The most common clinical variation indicator type relates to effective or necessary care.
- Cancer, stroke and cardiovascular disease are the most commonly reported clinical topics, with maternity and surgery also well represented.
- Preference-sensitive data are increasingly reported (although not always) using interactive maps in the style of Dartmouth.
- Supply-sensitive clinical variation indicators are less common.
- Interesting developments in reporting of clinical variation data include: clinical variation by socioeconomic status and the use of patient reported outcome measures (PROMs).

Safety findings

- Safety data have two main sources: incident systems and data derived from routinely collected administrative data from hospitals. The use of administrative data is much more common.
- Healthcare associated infections, mortality and re-admissions are the most common safety topics.
- Reporting generally occurs at the level of the hospital not the country; except for organisations with an explicit national remit such as the Australian Institute of Health and Welfare (AIHW).
- Hand hygiene data are reported by three organisations and sepsis by two.
- An interesting new development is that some organisations are now publishing patient reported experiences of patient safety and adverse events.

Presentation styles and data timing

Data presentation varies between organisations. In most cases, their websites are likely to be focussed on professional audiences such as policy makers, healthcare administrators, and clinicians, and not the public. This is evidenced by the complexity of the graphs and tables.

A lesson from this review is that organisations need to be clear about their intended audience as this dictates the design of the website. Examples of different styles include:

- Static reports
- Interactive websites
- Indicator level spreadsheets
- Organisational level reports
- Whole dataset availability
- Colour coding, and
- Consumer-focused websites.

In most cases, timeliness of data release was quite slow, at months to years, with agencies needing to receive, cleanse, and analyse data and write reports. The Public Health Observatory in Wales (PHWO) is a major exception with its healthcare acquired infection data published monthly on a provisional basis less than three weeks after the month's end.

2 Introduction

The purpose of this review is to undertake a systematic scanning and scoping of health performance reporting organisations in order to identify trends in terms of mandates; functions; structure and staffing; analytic frameworks or indicator sets; and outputs and dissemination.

The review will inform a comparative organisational mapping process that the Bureau of Health Information (BHI) plans to undertake, positioning itself in an international context. More specifically, it will provide important context for upcoming projects in the areas of measuring and reporting on unwarranted clinical variation, adverse events and patient safety.

Review questions

The review addresses the following four questions:

1. Across developed economies, what organisations have a key role in healthcare performance measurement and public reporting?
2. For each of these organisations, what are: their mandates and governance arrangements; functions and roles; structure and staffing; stakeholder engagement processes; outputs and publications; and the key performance indicators for which these organisations are held to account? What are their associated evaluation frameworks?
3. What approaches are currently in use that measure and report on unwarranted clinical variation within the organisation's jurisdiction?
4. What approaches are currently in use that measure and report on adverse events and patient safety within each organisation's jurisdiction?

3 Method of searching for relevant agencies

Searches were conducted of websites and peer reviewed literature for relevant agencies. Key word searches of clinical variation, patient safety, and adverse events were conducted via Google and Medline.

Searches were limited to English speaking developed countries (Australia, Canada, the four countries of the United Kingdom (UK), New Zealand (NZ), the United States of America (USA), and the Republic of Ireland.

The list of initially identified agencies was shared with The Bureau of Health Information (BHI), whose staff added more to create a final list (see Table 1). The Royal College of Physicians (UK) was removed because no substantial data could be found on their website.

Within each organisation's websites relevant information was extracted by interrogating their webpages, reports, and interactive data platforms. The data on organisations' mandates and governance are presented in tabular form, outlining whether the information is available (Table 1) with a narrative summary in the text by organisation (Section 5).

Extensive web links have been embedded in the report associated with the text, rather than as a reference list at the end of the report. This is to allow BHI easy access to the underlying information being summarised and because the data sources have been mainly organisation's websites rather than peer reviewed literature.

The summary results are presented in Section 4. Each organisation's characteristics are shown in a concise narrative description in Section 5. A glossary is presented in Section 6.

4 Results

There are 34 organisations from 12 countries included in the analysis. These include 27 arms-length bodies or bodies directly funded by national governments and seven are private organisations.

The 'government bodies' can be broadly characterised as:

- Health departments whose primary role is to provide health services to their citizens - Alberta Health Services, and the Australian health departments e.g. Department of Health South Australia, Department of Health Western Australia, Queensland Health
- Independent government bodies set up with the primary purpose of performance monitoring and data reporting. These organisations can be either primarily focussed on healthcare system performance or have a broader remit that includes population health. For example:
 - Canada: the Canadian Institute of Health Information (CIHI); Cancer Quality Council of Ontario (CQCO); Health Quality Ontario (HQO); Saskatchewan Health Quality Council; New Brunswick Health Council
 - England: The Health and Social Care Information Centre (HSCIC)
 - Northern Ireland: the Northern Ireland Statistics and Research Agency (NISRA)
 - Scotland: the Information Services Division of NHS Scotland (ISD Scotland)
 - Wales: the Public Health Wales Observatory (PHWO)
 - United States of America: Medicare Hospital Compare
 - Sweden: the National Board of Health and Welfare
 - Finland: the National Institute for Health and Welfare
 - Australia: the National Health Performance Authority (NHPA) and the Australian Institute of Health and Welfare (AIHW).
- Independent government organisations which have a part monitoring role within a broader remit such as:
 - Safety and quality e.g. the National Patient Safety Agency (NPSA, England), the Health Quality and Safety Commission (HQSC, NZ), the Agency for Healthcare Research and Quality (AHRQ, USA), the former Victorian Quality Council
 - Accreditation e.g. the Health Information and Quality Agency (HIQA, Ireland)
 - Commissioning e.g. NHS England.
- Independent institutes including university centres funded by government to provide performance reports or services. These include the Netherlands National Institute for Public Health and the Environment (RIVM), and in Canada, the Manitoba Centre for Health Policy (MCHP), L'institut national de santé publique du Québec (INSPQ) and the Institute for Clinical Evaluative Services (ICES).

Organisations within the first three points above have a broad population health mandate, whilst those in the fourth are focused on healthcare safety and quality.

The non-government organisations in England (The Kings Fund, Nuffield Trust, QualityWatch and Dr Foster (partly owned by the Department of Health but considered a private, for profit vehicle)), and the United States (the Commonwealth Fund and Healthgrades) primarily use administrative data which have been collected at hospitals and collated by government bodies such as statistical agencies.

These non-government organisations present data in their own style depending on their target audiences. Dr Foster pioneered this model of repackaging hospital administrative data in 2002. Australia currently does not have any similar private organisations publishing data.

Dr Foster and Healthgrades are the only for-profit organisations profiled in this report. The remaining non-government organisations were non-profit or held charity status.

Five organisations are presented in more detail in Section 4 as these were considered to have salient lessons for this report. These are:

- Manitoba Centre for Health Policy (MCHP) (Canada)
- Health and Social Care Information Centre (HSCIC) (England)
- Information Services Division of NHS Scotland (ISD Scotland)
- Health Quality and Safety Commission (HQSC) (NZ)
- Agency for Healthcare Research and Quality (AHRQ) (USA).

Key lessons

The key lessons derived from our analysis were:

Frameworks:

US Institute of Medicine: The original definition of a high quality healthcare system from the US Institute of Medicine comprised six aims for the healthcare system: safe; effective; equitable; patient-centered; timely; and efficient.

OECD: Three of the five organisations presented in Section 4, the HSCIC, the HQSC and ISD Scotland, as well as others such as the CIHI and the Netherlands RIVM, publish visual representations of indicator frameworks. These extend the notion of delivering safe and high quality healthcare services by linking these with desirable population health outcomes or health status (see Figures 1-6). The frameworks are based on conceptual frameworks of healthcare system performance from the Organisation for Economic Co-operation and Development (OECD)[\(1\)](#).

Independence: a feature of these organisations is a level of independence from the organisation delivering the majority of healthcare services. This structure may provide them with greater freedom to publish healthcare performance data that hospitals may be reluctant to publish for reputational reasons.

Quality statements: The HSCIC and the HQSC use quality statements which are designed to provide key information based on criteria underpinning an indicator. Quality statements indicate the level of assurance that policy makers and the public can have in the indicator structure and its underlying data. They may signify the actions that could be necessary to improve indicator data reliability and validity. For example, the criteria used by the HSCIC are:

- Relevance

- Accuracy and Reliability
- Timeliness and Punctuality
- Accessibility and Clarity
- Coherence and Comparability
- Trade-offs between Output Quality Components
- Assessment of User Needs and Perceptions
- Performance, Cost and Respondent Burden
- Confidentiality, Transparency and Security.

Data availability: the HSCIC produces highly granular and accessible data with each indicator reported via an Excel spreadsheet. Likewise, a US government organisation related to the AHRQ, Medicare Hospital Compare, allows extraction and downloading of all hospital level performance data to a Microsoft Access database. The availability of these data allows further innovation in presenting the data. It provides researchers and policy makers with freedom to interrogate the data and present information according to their needs. For instance, local or district commissioning groups or the press may extract the relevant data for their region and publish in their local fora.

This explains why in England and the USA, private organisations such as the Nuffield Trust and the Commonwealth Fund are publishing healthcare performance data. These organisations are stimulating innovations in data presentations and interactive websites aimed at appealing to their audiences.

Two of the five organizations presented in Section 4, ISD Scotland and Dr Foster, change the indicators that they report on every year. This is thought to reduce the phenomena of measurement fixation (2), where publishing particular indicators skews investment and improvement efforts to those which are published, while other clinical areas may receive less attention. On the other hand, this may not provide healthcare organisations with sufficient time or incentive to invest in ensuring high quality data is collected.

Clinical variation

Table 3 summarises the type of clinical variation data available by the organisations that were reviewed. The most common clinical variation indicator type relates to effective or necessary care, as defined by the Center for the Evaluative Clinical Sciences (3). Effective care refers to clinical activities such as tests, investigations or interventions which generally have a good evidence basis and should be routinely provided to a patient at a point in their pathway. Indicators relating to cancer, stroke and cardiovascular disease are the most frequently reported, with maternity and surgery also well represented. Other interesting modifications or data presentations include:

- Reporting indicators by socioeconomic status — the MCHP and the National Board of Health and Welfare Sweden
- Reporting outcomes data only — Healthgrades in the United States
- Using the OECD dataset(4) as the basis of their reporting framework — the National Institute for Health and Welfare, Finland and the AIHW
- Using standardised patient assessment i.e. data collected during the point of care delivery as the basis of a dataset. This includes data of functional status and activities — the ICES in Ontario

- Use of Patient Reported Outcomes Measures (PROMs) in England (NHS England and the HSCIC) for four types of surgery — hip and knee replacements, varicose vein, and inguinal hernias
- The widespread use of sets of hospital indicators as ‘ambulatory care sensitive’ or preventable hospitalisations, “these are conditions for which hospitalisation should be able to be avoided because the disease or condition has been prevented from occurring, or because individuals have had access to timely and effective primary care”.¹⁰

Maps of preference-sensitive clinical variation indicators⁵ in the style first developed at the Dartmouth Institute^{6,8} are being published by organisations representing countries or jurisdictions including the PHWO and the HQSC. These organisations are mainly publishing data on rates of preference-sensitive surgical procedures. The Nuffield Trust publishes preference-sensitive surgical rate data at the level of countries comparing the four countries of the United Kingdom. Other organisations are publishing this type of data in a tabular format. These include the MCHP, the CIHI, Saskatchewan Health Quality Council and New Brunswick Health Council.

The Dartmouth Institute publishes supply-sensitive clinical variation indicators.⁹ Although some organisations are publishing the number of available hospital beds and doctors; this information tends to be framed in terms of healthcare access not supply-sensitive variation. One other modification of this concept is an indicator reported on by QualityWatch which is “the hospitals that undertake the minimum number of recommended volume of cardiac procedures”.

Although data related to access and timeliness are not strictly clinical variation data, we have indicated if these data have been published by organisations without outlining the detail. Access and timeliness comprises a significant proportion of data published by healthcare performance agencies, as it tends to be routinely collected at hospital level and is therefore readily available. Patient experience data are also related but these are not classified as clinical variation. We have highlighted organisations where this information has been published.

Safety

Table 3 summarises the type of safety data that are available from the reviewed organisations. From these, safety data have two main sources: incident systems and data derived from routinely collected administrative data from hospitals. Other safety data sources also exist such as review of mortality data, e.g. by the Royal Australasian College of Surgeons Audit of Surgical Mortality <http://www.surgeons.org/for-health-professionals/audits-and-surgical-research/anzasm/>. However, these were not identified within the reviewed organisations.

We identified only two organisations publishing substantial proportions of data contained within incident reporting systems: the NHS National Patient Safety Agency (NPSA) and the Department of Health South Australia. To our knowledge, the NPSA is the only organisation in the world reporting incident data at the level of hospitals, that is the number of incidents reported and profile by type and severity. Other organisations such as the Swedish National Board of Health and Welfare, the CIHI and Queensland Health publish limited incident data related to specific adverse events such as falls and pressure ulcers.

Given the paucity of incident data reported, information on the system characteristics were not actively sought. Related activities identified include an annual national Serious Adverse Events report published by New Zealand’s HQSC and the Department of Health Western Australia using coroner’s data to create narratives of adverse events and lessons learnt.

The most common types of adverse events data sourced from hospital administrative data are hospital acquired infection and mortality, followed by re-admission. It was more common than not to report data at the level of hospitals, rather than at national or state level. The exceptions were agencies with an explicit national remit such as the AIHW and The Kings Fund.

A relatively new development is that a number of organisations (Saskatchewan Health Quality Council and New Brunswick Health Council in Canada, QualityWatch in England, and the National Institute for Public Health and the Environment in The Netherlands) are now publishing patient reported experiences of patient safety and adverse events.

Other interesting findings with regards to safety data include:

- Hand hygiene data are reported by three organisations: New Zealand's HQSC, Health Quality Ontario (HQP), and Australia's NHPA. These data are generally derived from observational surveys
- Sepsis is reported by two organisations: the CIHI and the AHRQ in the United States.

Presentation styles

There was a variety of presentation styles among the organisations. In most cases, their websites are likely to be focussed on professional audiences such as policy makers, healthcare administrators, and clinicians, and not the public — as evidenced by the complexity of the graphs and tables. A lesson from this scan is for organisations to be clear on who their intended audience is as this influences the design of the website.

Examples of different styles include:

- Static reports: The Netherlands National Institute for Public Health and the Environment and Sweden's National Board of Health and Welfare favoured static, lengthy, comprehensive reports
- Interactive websites: These websites allow variables such as hospitals or regions, indicators and time-points to be queried to produce tables and graphs. QualityWatch, The Kings Fund, and the Nuffield Trust in England, the Commonwealth Fund in the United States, and the AIHW data cubes provide examples
- Indicator level spreadsheets: England's National HSCIC Indicator Portal and the NPSA Quarterly Data Summary present data in downloadable spreadsheets. These are constructed by indicator with all the organisation's relevant data represented allowing researchers to sort and filter
- Organisational level reports: Australia's NHPA presents performance data by organisation which can be searched via name or postcode
- Combined indicator level spreadsheets and organisational level reports: The NPSA's Organisational Patient Safety Incident Reports are published in both forms with reports by individual organisation and with spreadsheets containing all organisations
- Whole data set availability: Medicare Hospital Compare allows their whole data set to be downloaded in either Access or CSV file format
- Dashboard: The Kings Fund uses a dashboard approach aimed at time poor executives. The dashboard data homepage contains a short quote and five key statistics from England's National Health Service <http://qmr.kingsfund.org.uk/2014/13/>
- Colour Coding: the New Zealand HQSC uses a colour coding (Red-Amber-Green: RAG) to supplement reporting of quantitative safety data

- Consumer-focussed websites: Medicare Hospital Compare, QualityWatch and The Commonwealth Fund each provide interfaces that are more consumer-focussed. They use infographics to present information, are less complex and have less dense information. NHS Choices is not profiled in this report but provides an excellent example of a dedicated consumer-focussed website <http://www.nhs.uk/Pages/HomePage.aspx>
- Related to the consumer-focussed style, QualityWatch provides a comments section at the bottom of its data pages, for use by any readers.

Data timing

In the majority of cases, timeliness of data release was quite slow, at months to years, with agencies needing to receive, cleanse, and analyse data and write reports. The PHWO is a major exception with its healthcare acquired infection data published monthly on a provisional basis less than three weeks after the month's end.

Table 1: Summary of Characteristics available on each organisation's website

	Mandates and governance	Functions and roles	Structure and staffing	Analytical frameworks or indicator sets	Levels of reporting	Stakeholder engagement processes	Outputs and publications	Key performance indicators for which these organisations are held to account and associated evaluative frameworks
CANADA								
Canadian Institute of Health Information (CIHI)	x	x	x	x	x	x	x	x
Institute for Clinical Evaluative Sciences (ICES)	x	x	x		x	x	x	
Cancer Quality Council of Ontario (CQCO)	x	x	x	x	x	x	x	
Health Quality Ontario (HQO)	x	x		x	x	x	x	
Manitoba Centre for Health Policy (MCHP)	x	x		x	x		x	
Alberta Health Services	x	x	x	x	x			x
Saskatchewan Health Quality Council	x	x			x		x	
New Brunswick Health Council	x			x	x	x	x	
Le Commissaire à la santé et au bien-être	x	x			x		x	
L'Institut national de santé publique du Québec (INSPQ)	x	x			x		x	
ENGLAND								
NHS England	x	x	x				x	

	Mandates and governance	Functions and roles	Structure and staffing	Analytical frameworks or indicator sets	Levels of reporting	Stakeholder engagement processes	Outputs and publications	Key performance indicators for which these organisations are held to account and associated evaluative frameworks
The Health and Social Care Information Centre (HSCIS)	x	x	x	x	x	x	x	x
National Patient Safety Agency (NPSA)	x	x	x		x			
QualityWatch	x	x		x				
Dr Foster		x		x	x			X
The Kings Fund	x	x		x				
The Nuffield Trust	x	x		x				
NORTHERN IRELAND								
Northern Ireland Statistics and Research Agency (NISRA)	x	x						
SCOTLAND								
Information Services Division Scotland (ISD Scotland)	x	x	x	x	x	x		x
WALES								
Public Health Wales Observatory (PHWO)	x	x	x	x	x			
UNITED STATES of AMERICA								
Agency for Healthcare Research and Quality (AHRQ)	x	x	x	x	x	x		x
The Commonwealth Fund	x	x	x	x		x		

	Mandates and governance	Functions and roles	Structure and staffing	Analytical frameworks or indicator sets	Levels of reporting	Stakeholder engagement processes	Outputs and publications	Key performance indicators for which these organisations are held to account and associated evaluative frameworks
Medicare Hospital Compare	x	x		x				
The Dartmouth Institute for Health Policy and Clinical Practice	x	x	x	x				
Healthgrades	x	x		x				
IRELAND								
Health Information and Quality Agency (HIQA)	x	x	x	x	x	x	x	
NEW ZEALAND								
Health Quality and Safety Commission (HQSC)	x	x	x	x	x	x		x
FINLAND								
National Institute for Health and Welfare (THL)	x	x	x	x		x	x	
THE NETHERLANDS								
National Institute for Public Health and the Environment (RIVM)	x	x		x				
SWEDEN								
National Board of Health and Welfare	x	x	x		x			

	Mandates and governance	Functions and roles	Structure and staffing	Analytical frameworks or indicator sets	Levels of reporting	Stakeholder engagement processes	Outputs and publications	Key performance indicators for which these organisations are held to account and associated evaluative frameworks
AUSTRALIA								
National Health Performance Authority (NHPA)	x	x	x	x	x	x		x
Australian Institute for Health and Welfare (AIHW)	x	x	x	x	x	x		x
Victorian Quality Council	Not assessed							
Queensland Health	Not assessed							
Department of Health, Western Australia	Not assessed							
Department of Health, South Australia	Not assessed							

Table 2: Type of clinical variation data by organisation

x – indicators reported at national level; xx – reported at the level of hospital or equivalent to local health district

	Cancer	Surgery	Stroke / CV disease	Maternity	Other	Patient experience	Access	Effective	Preference	Supply
Canada										
Canadian Institute for Health Information (CIHI)		xx		xx		xx	xx	xx	xx	
Institute for Clinical Evaluative Sciences (ICES)	Functional outcomes data mainly associated with nursing practices									
Cancer Quality Council of Ontario (CQCO)	xx					xx	xx	xx		
Health Quality Ontario (HQO)						x	x			
Manitoba Centre for Health Policy (MCHP)	xx	xx				xx	xx	xx	xx	
Alberta Health Services	xx					xx	xx	xx		
Saskatchewan Health Quality Council		xx				xx			xx	
New Brunswick Health Council		xx		xx		xx			xx	
Le Commissaire à la santé et au bien-être	Data in French									
L'Institut national de santé publique du Québec (INSPQ)										
England										
NHS England	Not reported for hospitals									

	Cancer	Surgery	Stroke / CV disease	Maternity	Other	Patient experience	Access	Effective	Preference	Supply
The Health and Social Care Information Centre (HSCIC)	xx	xx	xx	xx	Over 1,000 indicators reported	xx	xx	xx		
National Patient Safety Agency (NSPA)	Not reported for hospitals									
QualityWatch		x	x	x		x	x	x	x	
Dr Foster	Indicators change every year									
The Kings Fund							x			
The Nuffield Trust		x					x		x	
Northern Ireland										
Northern Ireland Statistics and Research Agency (NISRA)	Not reported for hospitals									
Scotland										
Information Services Division Scotland (ISD Scotland)	Indicators change every year					xx	xx	xx		
Wales										
Public Health Wales Observatory (PHWO)		xx		xx		?			xx	
United States of America										
Agency for Healthcare Research and Quality (AHRQ)		x	x	x			x	x		
The Commonwealth Fund		xx	xx		Pneumonia	xx		xx		
Medicare Hospital Compare		xx	xx		Pneumonia, asthma	Xx	xx	xx		

	Cancer	Surgery	Stroke / CV disease	Maternity	Other	Patient experience	Access	Effective	Preference	Supply
The Dartmouth Institute for Health Policy and Clinical Practice	xx	xx	xx		Prescription drug use, medical discharges, post-acute care	xx	xx	xx	xx	xx
HealthGrades		xx		xx	Emergency	xx				
Ireland										
Health Information and Quality Agency (HIQA)	xx							xx		
New Zealand										
Health Quality and Safety Commission (HQSC)		xx	xx	xx	Gout, polypharmacy			xx	xx	
Finland										
National Institute of Health and Welfare (THL)	xx		xx					xx		
The Netherlands										
National Institute for Public Health and the Environment (RIVM)							x			
Sweden										
National Board of Health and Welfare	xx	xx	xx	xx	Intensive care, neonatal, psychiatric, kidney		xx	xx		
Australia										

	Cancer	Surgery	Stroke / CV disease	Maternity	Other	Patient experience	Access	Effective	Preference	Supply
National Health Performance Authority (NHPA)							x			
Australian Institute of Health and Welfare (AIHW)							x			
Victoria Quality Council										
Queensland Health						xx	xx			
Department of Health, Western Australia							xx			
Department of Health, South Australia										

Table 3: Type of safety data by organisation

x – indicators reported at national level; xx – reported at the level of hospital or equivalent to local health district

	Incident data	Infection rates	VTE	Mortality	Re-admission	Other
Canada						
Canadian Institute for Health Information (CIHI)	xx		xx	xx	xx	Sepsis, admission of full-term babies to neonatal care, harm to children due to failure to monitor, medication incidents causing serious harm, pressure ulcers
Institute for Clinical Evaluative Sciences (ICES)	Not reported for hospitals					
Cancer Quality Council of Ontario (CQCO)				xx (after stem cell transplant)		Colonoscopy perforation rates Unplanned visits to hospital after adjuvant chemotherapy, systemic treatment safety (best practice drug ordering), unplanned hospital visits after radiation
Health Quality Ontario (HQO)		xx		xx		Hand hygiene compliance Adverse events – pressure ulcers, fractures
Manitoba Centre for Health Policy (MCHP)				xx		
Alberta Health Services		xx		xx		Early detection of cancer, mental health readmissions, surgery readmissions, hospital acquired infections, hand hygiene
Saskatchewan Health Quality Council				xx		Patient reported: compliance with surgical safety checklists, medical error suffered, staff hand hygiene, staff checking of medical wrist band identification, staff informing patients about patient safety.

	Incident data	Infection rates	VTE	Mortality	Re-admission	Other
New Brunswick Health Council		xx		xx		Patient reported: error rate (% of the community who believe they have suffered harm or error during their stay at an acute care hospital), score on the care transitions measure (coordination of hospital discharge care), hand hygiene (% compliance before patient contact), percentage of patient who believed that the hospital takes their safety seriously, inpatient fall rate, in-hospital hip fracture in elderly (aged 65 years or over), nursing sensitive adverse events (surgical and medical patients), staff perception of patient safety at the unit level (% very good or excellent).
Le Commissaire à la santé et au bien-être	Data in French					
L'Institut national de santé publique du Québec (INSPQ)		x				
England						
NHS England			xx			
The Health and Social Care Information Centre (HSCIC)		xx	xx	xx	xx	
National Patient Safety Agency (NPSA)	xx					
QualityWatch		x	x			Cleanliness Survey Pressure ulcer xxx
Dr Foster	Indicators change every year					
The Kings Fund		x				

	Incident data	Infection rates	VTE	Mortality	Re-admission	Other
The Nuffield Trust		x		x		
Northern Ireland						
Northern Ireland Statistics and Research Agency (NISRA)	Not reported for hospitals					
Scotland						
Information Services Division Scotland (ISD Scotland)		xx		xx		
Wales						
Public Health Wales Observatory (PHWO)		xx				
United States of America						
Agency for Healthcare Research and Quality (AHRQ)		xx		xx		Sepsis, obstetric trauma, mechanical trauma associated with CVCs
The Commonwealth Fund				xx	xx	
Medicare Hospital Compare		xx		xx	xx	Complications, hospital-acquired conditions
The Dartmouth Institute for Health Policy and Clinical Practice	Not reported for hospitals					
Healthgrades				xx		Complications
Ireland						
Health Information and Quality Agency	Not reported for hospitals					
New Zealand						

	Incident data	Infection rates	VTE	Mortality	Re-admission	Other
Health Quality and Safety Commission (HQSC)		xx				Falls risk assessment, hand hygiene, WHO surgical checklist completion
Finland						
National Institute of Health and Welfare (THL)		xx	xx			See OECD patient safety indicators ⁽⁴⁾
The Netherlands						
National Institute for Public Health and the Environment (RIVM)	xx	xx	xx	xx		Pressure ulcer, volume of high-risk surgery, medication-related hospital admissions.
Sweden						
National Board of Health and Welfare	xx	xx		xx	xx	Stroke, re-operation
Australia						
National Health Performance Authority (NHPA)		xx		xx	xx	Hand hygiene
Australian Institute of Health and Welfare (AIHW)		x		x	x	OECD patient safety indicators ⁽⁴⁾
Victoria Quality Council						
Queensland Health	x					
Department of Health, Western Australia						Coroners data
Department of Health, South Australia	x	x				

5 Results by organisation

Canada

Canadian Institute for Health Information

The Canadian Institute for Health Information's (CIHI) mandate is to inform public policy, support healthcare management, and build public awareness about the factors that affect health. CIHI collects and analyses information on health and healthcare in Canada and makes it publicly available.

Canada's federal, provincial and territorial government created CIHI as a not-for-profit, independent organisation dedicated to forging a common approach to Canadian health information. CIHI's goal is to provide timely, accurate and comparable health information. Its data and reports inform health policies, support the effective delivery of health services and raise awareness about the factors that contribute to good health and healthcare.

The 15 member Board of Directors is proportionately constituted to create a balance among health sectors and regions of Canada. It links federal, provincial and territorial governments with non-governmental health-related groups. It serves as a national coordinating council for health information in Canada and in so doing fulfils four key roles: stewardship, advisory, fiduciary, and monitoring. Further information can be obtained from the website www.cihi.ca. The Board of Directors Governance Handbook 2014 is a useful source of information as to the organisation's role and structure.

CIHI reports data from across all provinces and territories, and presents it at national, Province/territory, regional, and neighbourhood income quintile levels. The Health Indicators Interactive Tool allows customised data (i.e. for specified provinces, indicators) to be queried and viewed in numeric and graphical formats. Indicators choice is driven by the Canadian Health Indicator Framework (Figure 1) and the more recently published CIHI—Statistics Canada Health Indicators Framework (Figure 2). The relationship between the two frameworks can be found in Appendix B of

https://secure.cihi.ca/free_products/HSP_Framework_Technical_Report_EN.pdf

Figure 1: The Canadian Health Indicator Framework

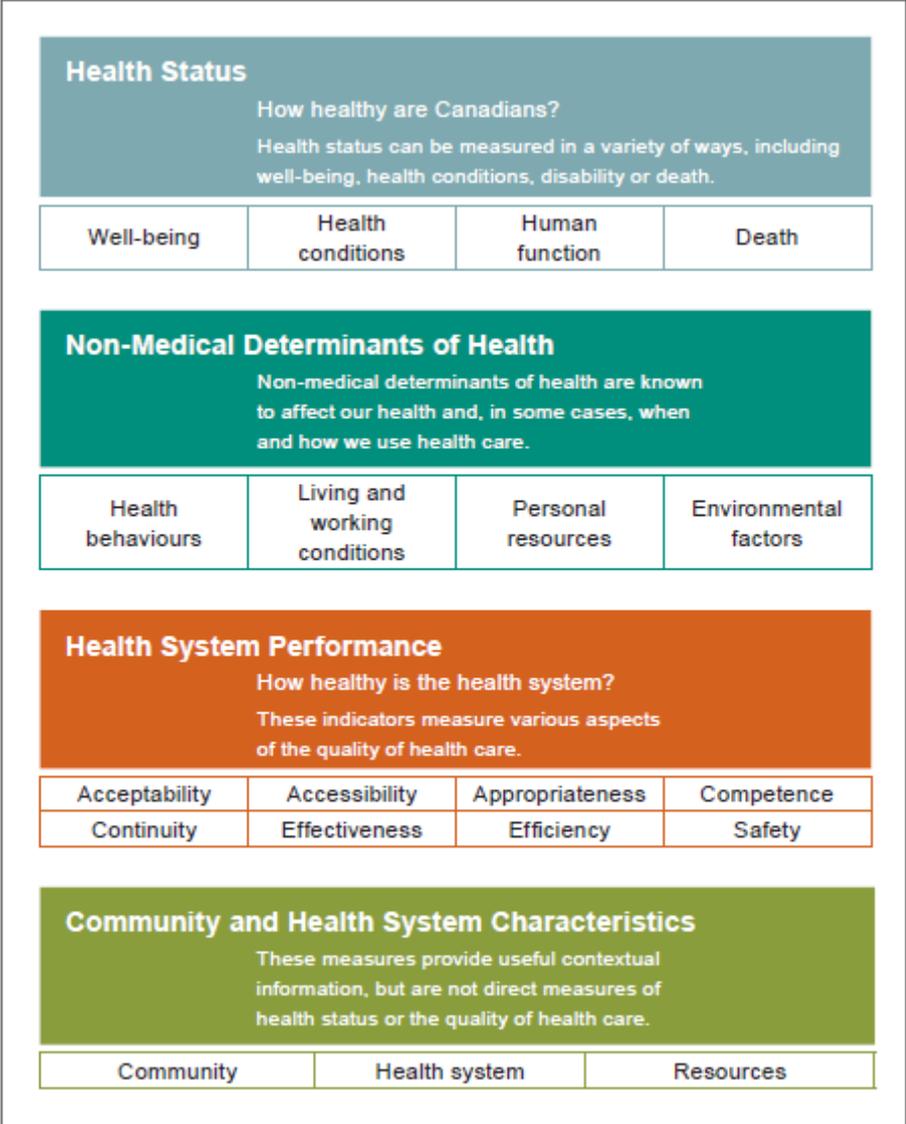
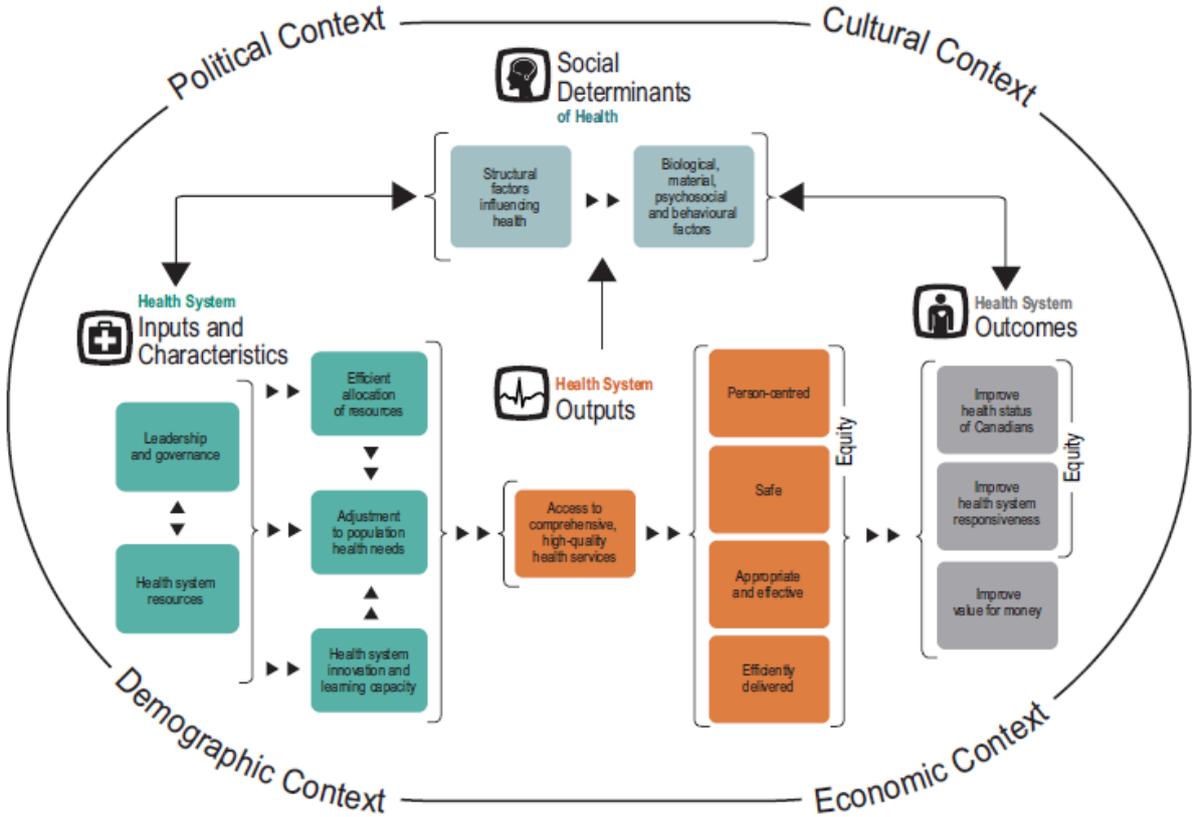


Figure 2: The CIHI — Statistics Canada Health System Performance Measurement Framework



Clinical variation data

The following indicators are reported on CIHI’s interactive tool:

Preference-sensitive indicators

- Age-standardised rates for procedures (e.g. hip/knee replacements)
- Assisted delivery rates (e.g. vaginal deliveries, Caesarean section).

Effectiveness/necessary indicators

- Ambulatory care sensitive conditions (e.g. grand mal status and other epileptic convulsions, chronic obstructive pulmonary disease, asthma, heart failure and pulmonary oedema, hypertension, angina and diabetes)
- Breastfeeding initiation
- Epidural rate for vaginal deliveries.

Wait times for surgery, radiation treatment, and CT scans are also reported.

Safety data

CIHI publish safety data related to mortality, re-admissions, and condition-specific indicators for both hospital patients and residents of aged care facilities. It does not publish incident reporting data as a separate data source, although falls and pressure ulcers may be derived from incident reporting systems.

The following indicators (sorted by category) are published by CIHI:

Mortality

- Avoidable death data (e.g. Preventable causes, treatable causes)
- 30-day acute myocardial infarction in-hospital mortality
- 30-day stroke in-hospital mortality
- Avoidable deaths
- Hospital deaths following major surgery
- Hospital deaths

Hospitalisation / re-admission

- Injury hospitalisation
- All patients readmitted to hospital
- 30-day readmission for mental illness
- Medical patients readmitted to hospital
- Obstetric patients readmitted to hospital
- Patients 19 and younger readmitted to hospital
- Surgical patients readmitted to hospital
- Hospitalized heart attacks
- Hospitalized hip fracture event
- Hospitalized strokes
- Repeat hospital stays for mental illness

Other

- In-hospital sepsis
- Obstetric trauma (with instrument)
- Admission of full-term babies to neonatal care
- Harm to children due to failure to monitor
- Percentage of residents who fell in the last 30 days
- Percentage of residents who had a newly occurring stage 2 to 4 pressure ulcer
- Percentage of residents whose stage 2 to 4 pressure ulcer worsened
- Medication incidents causing serious harm

Institute for Clinical Evaluative Sciences

The Institute for Clinical Evaluative Sciences (ICES) is an independent, non-profit research organisation that aims to produce knowledge to enhance the effectiveness of healthcare in the Province of Ontario. Their research aims to provide measures of health system performance, a clearer understanding of the shifting healthcare needs of Ontarians, and a stimulus for discussion of practical solutions to optimize scarce resources.

The ICES is a not-for-profit research institute encompassing a community of research, data and clinical experts, and a secure and accessible array of Ontario's health related data. ICES research results aim to create an evidence base that is published as atlases, investigative reports and peer reviewed papers, designed to guide decision making and inform changes in healthcare policy and delivery. Many ICES reports are undertaken to answer specific questions (known as Applied Health Research Questions) posed by health system stakeholders and policy makers. ICES research and reports influence the design, implementation and evaluation of health policy and the delivery of healthcare. <http://www.ices.on.ca/About-ICES>

The ICES is an independent corporation governed by a Board of Directors. It has numerous strategic partnerships, including Federal and Provincial governments, national, provincial and local organisations. The Ontario Ministry of Health and Long-Term Care has been a major funder of ICES for over 21 years. The ICES has a number of satellite sites on the campuses of universities.

A substantial number of atlases and reports, as well journal articles are published each year (> 350). It identifies ten categories of data sets that it holds and has special designation from government to access and exchange personal health information.

Atlases and Reports

ICES research atlases provide relevant information to providers, planners and policy makers on the effectiveness of the Ontario healthcare system. Covering a range of system-related and disease-specific topics, the atlases feature geographical breakdowns of regional patterns in healthcare delivery. Findings, implications and policy recommendations are designed to help guide quality improvement and decision-making in the dynamic climate of healthcare. <http://www.ices.on.ca/Publications/Atlases-and-Reports>

ICES reports provide an in-depth examination of various aspects of healthcare delivery in Ontario such as access, outcomes, utilization patterns, screening and treatment modalities, and technology. Topics range from drugs and diagnostic technologies to human resources and waiting lists.

Although it may not be strictly considered as clinical variation, collections of standardised clinical information (Health Outcomes for Better Information and Care (HOBIC)) that reflect patient care in the following settings across Ontario are presented: acute, complex continuing, home, and long-term care. While the initial focus of HOBIC is on the outcomes that are reflective of nursing care, work is underway for the disciplines of pharmacy, occupational therapy and physical therapy, as well as for the areas of primary care, mental health and rehabilitation.

HOBIC measures include the following patient assessments:

- Functional status/activities of daily living (e.g. eating; bathing; personal hygiene; walking; transfer to toilet; toilet use; bed mobility; bladder continence)
- Symptom status (e.g. pain, fatigue, dyspnoea, nausea)
- Safety outcomes (e.g. falls, pressure ulcers)
- Therapeutic self-care/readiness for discharge (e.g. ability to manage medications; an understanding of their symptoms and how to treat them; general ability for self-care; knowing who to contact for help; ability to handle or adjust activities of daily living).

The 2014 annual report's findings are presented in the following sections:

- Hospital coverage (presents provincial overview of representativeness of site specific HOBIC data since the start of data collection)
- Assessment completeness

- Score changes
- Decline in activities of daily living
- Therapeutic self-care.

For acute care, comparisons are provided, where possible, for small and large hospital sites. While individual hospitals are able to view and use their own HOBIC data, this report adds linkages with other databases, such as the Canadian Institute for Health Information's Discharge Abstract Database (CIHI-DAD), to aggregate benchmarking across participating HOBIC sites.

Cancer Quality Council of Ontario

The Cancer Quality Council of Ontario (CQCO) is an advisory group established in 2002 by the Ministry of Health and Long-Term Care (MOHLTC). The CQCO has a mandate to monitor and report publicly on the performance of the Ontario cancer system and to motivate improvement through national and international benchmarking <http://www.cqco.ca>

It is an arm's-length advisory group to Cancer Care Ontario (CCO), set up to provide advice to CCO and the MOHLTC in their efforts to improve the quality of cancer care in the province. The CQCO also monitors and publicly reports on the performance of the cancer system annually via the Cancer System Quality Index (see below) and provides international comparisons and benchmarking to allow Ontario to learn from other jurisdictions.

This organisation is interesting and appears to exist to provide a high level window of opportunity for engagement by health service consumers. Council members are a multidisciplinary group of volunteers who are healthcare providers, cancer survivors, family members, caregivers, and experts in the areas of oncology, health system policy and administration, governance, performance measurement and health services research. The CQCO is supported by a Secretariat housed at CCO. The Council reports it has 15 members.

Initiatives include:

- Special studies that examine selected aspects of quality of cancer care in Ontario
- The Cancer System Quality Index, a web-based report published in partnership with CCO, that tracks Ontario's progress towards better outcomes in cancer care and highlights where cancer service providers can advance the quality and performance of care <http://www.csqi.on.ca/>

Technical information about cancer in Ontario is presented in addition to jurisdictional comparisons regarding survival and mortality, cancer screening and modifiable risk factors

<http://www.csqi.on.ca/comparisons/>

All data are reported according to the following http://www.csqi.on.ca/all_indicators/:

- Local Health Integration Network (LHIN) — health authorities responsible for regional administration of public healthcare services in Ontario
- Type of cancer — breast, central nervous system, cervical, colorectal, head and neck, lung, prostate
- Patient journey — prevention, screening, diagnosis, treatment, recovery, end-of-life care
- Quality dimension — safe, effective, accessible, responsive, equitable, integrated, efficient.

Clinical variation data

The types of indicators reported are:

- Screening participation, retention and follow-up for breast, cervical, colorectal cancer

- Reporting of cancer stage at diagnosis
- Team-oriented care for the patient (Multidisciplinary Cancer Conferences (MCCs)). These are regularly scheduled meetings or videoconferences in which healthcare providers from different disciplines and backgrounds (e.g. doctors, nurses) discuss and make recommendations on the best way to handle the care of individual cancer patients. Nine criteria must be met to satisfy the minimum standards for an MCC. These include: prospective review of patient cases; held weekly or bi-weekly (an MCC must occur at least five times every three months); assignment of an MCC Coordinator; assignment of an MCC Chair; attendance 75% of the time by a surgeon, medical oncologist, pathologist, radiation oncologist and radiologist (nursing attendance is preferred but not required, participation of specific disciplines may vary according to cancer type)
- Treating non-small cell lung cancer by guidelines
- Radiation treatment and equipment utilisation
- IMRT utilisation
- Implementation of end-of-life care measures
- Quality of breast cancer screening
- Appropriate peer review (radiation).

Various wait times are reported also as well as patient experience.

Safety data

The following safety indicators are reported by CQCO:

- Colonoscopy perforation rates
- Unplanned visits to hospital after adjuvant chemotherapy
- Systemic treatment safety (best practice drug ordering)
- Unplanned hospital visits after radiation
- Mortality after stem cell transplant.

Health Quality Ontario

Health Quality Ontario's (HQO) aims are to: evaluate the effectiveness of new healthcare technologies and services; report to the public on the quality of the healthcare system; support quality improvement activities; and make evidence-based recommendations on healthcare funding. These aims are derived from their legislated mandate under the Excellent Care for All Act, 2010. HQO is an arms-length agency of the Ontario government <http://www.hqontario.ca/about-us/>

Measuring Up is the yearly report from HQO which details information about healthcare quality in Ontario. The report covers a range of health topics and spans all healthcare sectors from primary care to hospital care, home care and long-term care.

The report also weaves in real stories from patients, caregivers and providers. Measuring Up marks the first time HQO has used the Common Quality Agenda, a set of about 40 indicators, to monitor the quality of healthcare in Ontario. The Common Quality Agenda was created by HQO in consultation with health partners and system leaders and covers a wide variety of indicators from the proportion of Ontarians who smoke to the proportion of patients who wait too long for surgery.

Data are reported according to: accessibility; effectiveness; safety; patient-centredness; efficiency; integration; focussed on population health; equitability and LHIN specific analyses
<http://www.hqontario.ca/portals/0/Documents/pr/qmonitor-full-report-2012-en.pdf>

Most data are not related to clinical variation but to access and wait times, cost of service delivery, and information technology and healthy work environments.

Safety

Safety data are reported for hospital infections, adverse events and mortality in acute care hospitals. Specific indicators include:

- Hand hygiene compliance
- Hospital acquired C. Difficile Infections
- Ventilator associated pneumonia
- Central line infections
- Adverse events — pressure ulcers, fractures
- Mortality in hospitals — risk-adjusted rate of death within 30 days per 100 patients admitted for heart attack and stroke, percentage of reportable hospitals whose hospital-standardised mortality rate decreased compared to the previous year.

Manitoba Centre for Health Policy

The Manitoba Centre for Health Policy (MCHP) is a research unit in the University of Manitoba's College of Medicine (Faculty of Health Sciences, Bannatyne Campus). The MCHP researches the health of Manitobans, with the primary aim of investigating the effect of healthcare, health programs and policies, income, education, employment and social circumstances.

The MCHP has five-year contracts with the Province of Manitoba (since 1991) to provide six major research projects annually. Topics are jointly decided upon by the MCHP's Director and the Deputy Minister of Health. These major government reports are central to the organisation's accountabilities. This agreement provides roughly half of the Centre's funding. The other half comes from organisations (provincial, national or international) created to fund research. Researchers must compete for these funds
http://umanitoba.ca/faculties/medicine/units/community_health_sciences/departamental_units/mchp/about.html

The MCHP has a significant publication focus with approximately 40 peer reviewed papers produced per year for the last five years <http://mchp-appserv.cpe.umanitoba.ca/journalPublicationsList.html>

The MCHP has an Advisory Board comprising representatives from research, healthcare, business and government. About 60 people work at MCHP, including university researchers and graduate students, systems analysts and support staff.

The Population Health Research Data Repository is a collection of administrative, registry, survey, and other data primarily relating to residents of Manitoba. This database was developed to describe and explain patterns of healthcare and profiles of health and illness, facilitating inter-sectoral research in areas such as healthcare, education, and social services. This database contains de-identified information about how Manitobans' use health services such as physicians, hospitals, home care, nursing homes and prescriptions. The Repository is a keystone data holding. A brief scan of the 'data descriptions' points to the specific

nature of the information held (in comparison with that of CIHI) and their relevance to a wide range of health and social perspectives in the Province. This may be useful in an Australian state context.

The 2013 Regional Health Authorities Indicators Atlas

The 2013 Regional Health Authorities (RHA) Indicators Atlas measured the health of Manitobans and their use of healthcare services, using more than 70 indicators of health status and healthcare use to compare results from previous studies. Information such as: rate of improvement or prevalence among chronic disease indicators; how many people are in nursing homes; how many people were hospitalised; how many visited a doctor; and how many filled prescriptions are also available in this report. Together with similar reports published in 2009 and 2003, the data provides a picture of the province's health trends spanning almost 20 years http://mchp-appserv.cpe.umanitoba.ca/reference//RHA_2013_web_version.pdf

This report provides data at multiple levels. Every indicator provides results for the five new health regions as well as the 11 former Regional Health Authorities (RHAs) in Manitoba. This report also provides information for two levels of geography within each new region. For most indicators, there is a district-level graph, showing results for the 70 districts into which the rural regions are sub-divided. Each rural region also has a smaller number of planning zones (groupings of districts), and results for these zones are provided online at the MCHP website as data extras of this report

http://umanitoba.ca/faculties/health_sciences/medicine/units/community_health_sciences/departamental_units/mchp/projects/8470.html

The results for all indicators at all levels (i.e., district, zone, and region) are also available on the MCHP website, where the data are posted for viewing or downloading in spreadsheet form. In addition, for most indicators, results are provided by socioeconomic status.

Safety

Adverse health event rates are reported for three key conditions: acute myocardial infarction, stroke and lower limb amputation among residents with diabetes. These data are presented as rates per 1000 residents per year. However, all data are reported using a population based approach meaning that prevalence rates are based on all persons living in Manitoba (i.e. not specific to hospitalisations).

Alberta Health Services

Alberta Health Services (AHS) is a very large organisation that employs more than 95,000 and serves a population of 4 million. There is limited information available in relation to publications on the website, although the annual and performance reports are relevant. There were various reports available on the website covering a range of service delivery issues. <http://www.albertahealthservices.ca>

AHS has developed 16 performance measures which reflect key areas within the health system that are important to Albertans. They are also held as standards within healthcare. Many of the new measures are aligned with national or regional benchmarks, so that Albertans can see how their health system is performing compared to the rest of Canada. The targets associated with each measure represent a goal and standard to be achieved over time. Material presented on this agency website is based on data and information provided by the CIHI, and national averages are shown where available.

Clinical variation data

The 16 performance measures are reported at individual hospital level and are organised into 6 domains <http://www.albertahealthservices.ca/performance.asp>. Appropriateness is the most relevant domain to clinical variation with indicators. Specifically, continuing care placement (the percentage of clients admitted to a continuing care space [supportive living or long-term care] within 30 days of the date they are assessed

and approved for placement; this includes those assessed and approved and waiting in hospital or community) <http://www.albertahealthservices.ca/assets/about/publications/ahs-pub-pr-2013-14-detail-continuing-care-placement.pdf>

Other domains of less relevance include:

- Acceptability — satisfaction with hospital care, satisfaction with long term care
- Accessibility — emergency department wait to see a physician; emergency department length of stay for admitted patients; emergency department length of stay for discharged patients; access to radiation therapy
- Efficiency — actual length of hospital stay compared to expected stay.

Safety

Two domains and indicators related to safety include:

- Effectiveness — early detection of cancer; mental health readmissions; surgery readmissions; heart attack mortality; stroke mortality)
- Safety — hospital acquired infections, hand hygiene, hospital mortality.

Other data include:

- Emergency Department wait times (updated every 2 minutes) <http://www.albertahealthservices.ca/4770.asp>
- Emergency department length of stay (updated weekly) <http://www.albertahealthservices.ca/about/Page3166.aspx>
- Emergency Medical Services (updated monthly): response times, medical control protocols, patient satisfaction survey results <http://www.albertahealthservices.ca/ems/ems.aspx>

Saskatchewan Health Quality Council

The primary role of the Saskatchewan Health Quality Council is to provide report cards on healthcare in Saskatchewan. Health system performance information is presented on an interactive website Quality Insight™ which reports numerical and graphically displayed data <http://www.qualityinsight.ca/indicators>

There are a range of clinical variation indicators reported for:

- Health of the individual (147 indicators predominantly related to patient ratings of their hospital)
- Providers (two indicators: sick time, wage-driven premium overtime hours).

Clinical variation

These are grouped under the sustainability domain and include indicators of preference based variation: rates of hysterectomy; caesarean section; cardiac revascularisation; coronary artery bypass procedures (CABG) surgery; percutaneous coronary intervention; and hip replacement.

Safety

The safety domain includes patient reported indicators of compliance with surgical safety checklists: medical error suffered; staff hand hygiene; staff checking of medical wrist band identification; staff informing patients about patient safety. <http://www.qualityinsight.ca/indicators/sk/pes-patient-safety-comm/month>

New Brunswick Health Council

The New Brunswick Health Council has a dual mandate of engaging citizens and reporting on health system performance. The New Brunswick Health Council aims to: engage citizens in a meaningful dialogue; measure, monitor, and evaluate population health and health service quality; inform citizens on the health system's performance; and to make recommendations for improvement to the Minister of Health.

The New Brunswick Health Council provides: Community Profiles; Population Health Snapshots; Children and Youth Snapshots; and a Health System Report Card. In addition, over the last few years, surveys have been undertaken of Acute Care (2013), Home Care (2012), and Primary Health Care (2011)

<http://www.nbhc.ca/surveys#.VkUn-XYrKUK>

The New Brunswick Health System Report Card contains indicators of performance organised by sectors of care to highlight the importance of integrating programs and services. It also contains additional indicators to better reflect these programs and services that are being accessed by the citizens of New Brunswick. This is an effort to ensure that the citizen or patient remains the focus for improvement in health service quality as they must navigate through this healthcare system for effective management of their health

<http://www.nbhc.ca/publications/reports#.VkUoonYrKUJ>

Indicators were compiled from international, national and provincial bodies responsible for reporting on healthcare quality such as the World Health Organization (WHO), the United Kingdom, Australia, the USA, Canada, Ontario, Saskatchewan and New Brunswick. Over 400 indicators were originally identified, however this number was distilled down to 137 indicators which were based mainly on outcome- and system-level indicators.

Data are reported according to the following quality dimensions:

- Accessibility — wait times for surgery (hip replacement, cataract, CABG surgery, radiation therapy)
- Efficiency — percentage of alternate level of care days to total inpatient days; age standardised average length of stay; cost per weight case labour rate adjusted; nursing inpatient services total personnel worked hours per weighed case; administrative service expense as a percentage of total expense.

Clinical Variation

- Appropriateness — these are a combination of preference-sensitive and effectiveness indicators. These include: hysterectomy age-standardised rate; proportion of women delivering babies in acute care hospitals by Caesarean section; universal newborn and infant hearing screening; use of coronary angiography following acute myocardial infarction; age-standardised mental illness hospitalisation rate (age standardised per 100,000)
- Effectiveness — these are a combination of effectiveness and safety indicators. These include: low weight babies; risk adjusted risk of acute myocardial infarction readmission; risk-adjusted rate of 30 day acute myocardial infarction in-hospital mortality; risk-adjusted rate of 30 day stroke in-hospital mortality; 5-day-in-hospital mortality following major surgery; 30-day readmission (patients aged 19 years and younger); 30-day readmissions (surgical, obstetric, medical, mental illness); 90 day readmissions (post hip and knee replacements); five year relative survival ratios (prostate, breast, colorectal and lung cancer)

Safety

These include: hospital standardised mortality ratio; error rate (% of the community who believe they have suffered harm or error during their stay at an acute care hospital); score on the care transitions measure

(coordination of hospital discharge care); hand hygiene (% compliance before patient contact); percentage of patient who believed that the hospital takes their safety seriously; inpatient fall rate; in-hospital hip fracture in elderly (aged 65 years or over); nursing sensitive adverse events (surgical and medical patients); staff perception of patient safety at the unit level (% very good or excellent); C. Difficile associated disease rate (per 1000 patient days); Methicillin-resistant staphylococcus aureus (MRSA) infection rate or MRSA specific infection rate (per 1000 patient days); VRE infection rate (rate per 1000 patient days).

Le Commissaire à la santé et au bien-être du Québec (Health and Welfare Commissioner of Quebec)

The mission of the Health and Welfare Commissioner is to provide perspective for public debate and government decision-making to contribute to enhance the health and welfare of the women and men of Quebec. Its functions include publishing data on healthcare outcomes. The Commissioner publishes yearly reports on the performance of the healthcare system and the website has an interactive atlas of 200 performance indicators, however, asides from summary reports, these are all in French.

L'Institut National de santé publique du Québec (National Institute of Public Health of Quebec)

The goal of the National Institute of Public Health of Quebec is to advance knowledge and propose cross-sectoral strategies and endeavours that will improve the health and wellbeing of the people of Quebec. The scope of the organisation is wide, including infectious diseases; environmental toxicology; occupational health; and community development. The only publication of relevance was healthcare associated infection surveillance reports

http://www.inspq.qc.ca/pdf/publications/1907_Highlights_Discussions_Recommendations.pdf

England

NHS England

The main aim of NHS England is to improve the health outcomes for people in England. The NHS Commissioning Board (NHS CB) was established on 1 October 2012 as an executive non-departmental public body. In April 2013, the NHS CB was converted to NHS England. This body has taken on many of the functions of the former local commissioning bodies (Primary Care Trusts) as well as some nationally based functions previously undertaken by the Department of Health.

NHS England publishes statistics on a range of health and care subjects. These statistics are used to inform debate, decision making and research both within government and by the wider community. NHS England's National Statistics are required to comply with the Code of Practice for Official Statistics, while NHS England's Official statistics follow the Code as best practice.

Data are collected across a number of statistical work areas and presented in a range of formats. Weekly data and quarterly aggregates are reported at provider organisation levels, from NHS Trusts, NHS Foundation Trusts and Independent Sector Organisations <http://www.england.nhs.uk/statistics/statistical-work-areas/>

Clinical variation data

The only data item that could be considered as clinical variation is child immunisation rates; however this is more primary care, rather than hospital focussed. The statistical work area Integrated Performance Measures Monitoring produces a Report on Primary Care Trust and NHS Trust performance against plans to address selected health priorities relating to the NHS Operating Framework. The health priorities reported on include: stroke; diabetes; maternity; NHS Health Checks; delayed transfers of care; child and adolescent mental health services; and Rapid Access Chest Pain Clinic.

The other data types reported are mainly related to access, patient experience (overall scores and Patient Reported Outcomes Measures (PROMs)). Data sets include diagnostic imaging; dental commissioning; hospital activity; Winter Daily Situation Reports and the NHS 111 Minimum Dataset (the 111 number provides a new, easy to remember route into the NHS for all those who are unclear about which service is best placed to meet their needs).

Safety data

The only safety data published is the Venous Thromboembolism (VTE) Risk Assessment i.e. the percentage of eligible patients risk assessed when admitted to hospital. This data item is reported at Trust level, and also for Independent Sector Providers.

NHS England does not publish incident reporting data.

The Health and Social Care Information Centre

The Health and Social Care Information Centre (HSCIC) was set up as an executive non-departmental public body in April 2013. Its role encompasses:

- Collecting, analysing and presenting national health and social care data
- Publishing a register of all the information we collect and produce
- Setting up and managing national IT systems that handle and produce this information
- Setting standards and guidelines in the field of data collection and reporting
- Publishing a set of rules on how the personal confidential information of patients should be looked after
- Creating indicators that can be used to measure the quality of health and care services
- Helping health and care organisations improve the quality of the data they collect.

The HSCIC is an amalgamation of a number of previously separate entities and functions and is governed by a Board of Directors comprising 14 members 8 of whom are ex-officio. It publishes its agenda and minutes of Board meetings. The Board is supported by a Data Access Advisory Committee that considers external requests for access to the data held. It reports annually to the Parliament.

The HSCIC employs 2500 staff (full-time equivalent), mostly IT specialists, programme and project managers, statisticians, analysts and information security experts. They have offices around England and work closely with the Department of Health and other health and social care organisations.

<https://www.gov.uk/government/organisations/health-and-social-care-information-centre>

It not only holds an array of data sets (cancer, maternal and child health, diabetes, diagnostic imaging), but also supports the technology systems collection and transmission of the data. This includes the extraction of certain data from general practices.

Its functions include the Clinical Audit Management Service that delivers all elements of the full clinical audit lifecycle, from the development of the audit's questions and scope, to local and national feedback and reporting, supporting the National Casemix Office, providing assistance to external parties wishing to develop a new national indicator and an electronic prescribing service from general practitioners to dispensers.

Apart from the obvious differences in scale of the operation there are strong similarities between this organisation and BHI, notwithstanding the former's broader remit.

Clinical variation

The HSCIC has an Indicator Portal (<http://www.hscic.gov.uk/indicatorportal>) which publishes 1679 indicators at the level of healthcare provider. The indicators that make up the two hospital focussed performance frameworks in use in England (NHS Outcomes Framework and Clinical Commissioning Group (CCG) Framework) are published here (Figures 3 and 4).

The two frameworks use five domains which map to the three pillars of quality (effectiveness, experience, and safety). For each domain, there are a small number of overarching indicators. These are followed by a number of improvement areas with the intention to focus on improving health and reducing health inequalities.



Figure 3: NHS Outcomes Framework

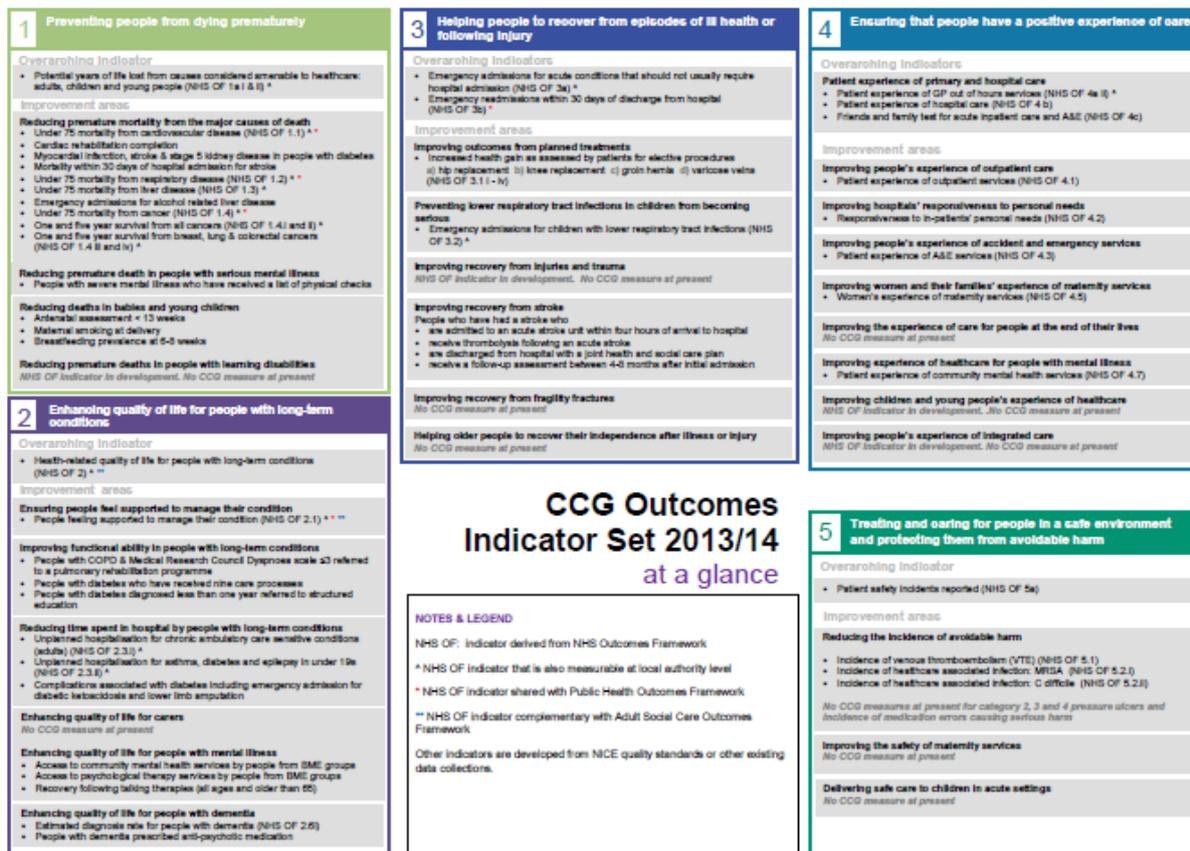


Figure 4: NHS Clinical Commissioning Group Framework

The full list of 1679 indicators on the Indicator Portal can be found here:

<https://indicators.ic.nhs.uk/webview/>

The format of the data is generally an excel spreadsheet with an accompanying indicator specification and a quality statement (see Section 3 for more detail).

The other categories of indicators published include:

- Compendium of Population Health Indicators: A wide ranging collection of over 1000 indicators designed to provide a comprehensive overview of population health at a national, regional and local level
- Local Basket of Inequalities Indicators (LBOI): This collection of 60 indicators helps organisations to measure health and other factors which influence health inequalities such as unemployment, poverty, crime and education
- GP Practice data: This is a collection of practice level data and is designed to support patients in making better, informed choices about the practice they choose to register with
- Social Care: Includes data for 18 measures which are designed to enable users to compare the effectiveness of care delivered by councils responsible for adult social care services.

Safety

The Indicator Portal publishes the following safety indicators:

- Summary Hospital-level Mortality Indicator data (SHMI). The SHMI is the new hospital level indicator which uses a standard and transparent methodology for reporting mortality at hospital trust level across the NHS in England
- Incidence of healthcare associated MRSA infection
- Incidence of healthcare associated C. Difficile infection
- Patients admitted to hospital who were risk assessed for venous thromboembolism
- Patient safety incidents per 1000 total provider bed days
- Patient safety incidents involving severe harm or death.

National Patient Safety Agency

The role of this organisation (<http://www.npsa.nhs.uk/>) has changed substantially since its establishment in 2001. Most noticeably in 2012 when its key functions were transferred to NHS England and vested in the NHS Commissioning Board Special Health Authority (now NHS England). However, data from the National Reporting and Learning System (NRLS) is still reported on the National Patient Safety Agency (NPSA) website <https://report.nrls.nhs.uk/nrlsreporting/>

The NRLS is the world's most comprehensive database of patient safety information with over one million incidents reported each year. Incidents from healthcare organisations from England and Wales are uploaded into the NRLS. The NPSA website continues to issue regular reports on comparative performance for Trusts in England and Wales. It also issues key information, patient safety alerts and provides a number of patient safety related tools. The worthwhile aspect from this entity is how it makes information accessible in a useful format to a broad constituency.

Safety

Two sets of reports are produced:

- Quarterly Data Summary (QDS) reports set out the number of patient safety incidents reported to the NRLS and describe their patterns and trends
<http://www.nrls.npsa.nhs.uk/resources/collections/quarterly-data-summaries/>
Two sets of data and analysis are presented in each QDS:
 - The number of incidents collected by the NRLS by quarter, by the date that the incident report was received
 - An overview of patterns and trends in incident reports based on the date that the incidents occurred.
- Organisational Patient Safety Incident Reports report on the rate of incidents (against peer hospitals), level of harm and incident type. They are in the form of individual reports per hospital as pdfs and excel spreadsheets with all data points from all hospitals included.
<http://www.nrls.npsa.nhs.uk/patient-safety-data/organisation-patient-safety-incident-reports/directory/>

Patient safety alerts are produced from the data and published on the NHS England site. Alerts have three levels of the acuity. Patient safety alerts are issued via the [Central Alerting System \(CAS\)](#), a web-based cascading system for issuing alerts, important public health messages and other safety critical information and guidance to the NHS and other organisations, including independent providers of health and social

care.

<http://www.england.nhs.uk/ourwork/patientsafety/psa/>

QualityWatch

This is an independent agency with both a health and social care focus. It is a joint initiative of the Nuffield Trust (<http://www.nuffieldtrust.org.uk>) and the Health Foundation (www.health.org.uk) and the annual statement notes that it relies on 'more than 200 quality metrics'. It is of comparatively recent origin and its homepage refers to the need for such an independent agency in the wake of the Francis Inquiry.

The website (www.qualitywatch.org.uk) is easy to navigate and there are a substantial number of indicator sets identified and accessible. The governance arrangements are not detailed but an advisory group of external experts to influence and guide activities is in place.

QualityWatch maps a range of existing indicators to a broad framework as the first step in a process of concentrating on those that might add most value. The information may be structured in different ways but will examine one of the following categories:

- Change over time at national level
- Change at national level with respect to other benchmarks (for example other countries)
- Change over time at provider/area level within England
- Change in mean across areas/providers
- Change in achievement of threshold (for example fewer extremes)
- Change in relationship to other variables (for example versus deprivation, unemployment or other social factors).

Indicators are arranged via domains: access; capacity; effectiveness; equity; person-centred care and experience; and safety. Data are arranged via sector: mental health; population and commissioning; primary and community care; secondary care; and social care. Indicators can be filtered via both domains and sector. The data is published at national level.

This site publishes data from existing data sources. It packages up information from existing sites such as the hospital regulator (Care Quality Commission); inpatient surveys; the OECD; and the NHS Information Centre. The data is presented graphically and seems to be more targeted at consumers rather than policy makers. A comment section is available on each page, a unique feature to all the agencies that we have analysed.

A QualityWatch annual statement is published in the form of a pdf. This highlights trends in quality in key areas of healthcare, and identifies some important areas of debate for the coming year.

Interesting access and patient reported indicators are reported:

- A set of access indicators relating to distance to emergency admissions (presented in a map format) and various waiting times
- Patient reported outcomes for four types of surgery: inguinal hernia, varicose veins, and hip and knee replacements are reported by time.

Clinical Variation

The clinical variation indicators relevant for hospitals are:

- Preference-based indicators: Rates of surgical procedures (cardiac, joint replacements, and caesarian sections) are compared across time and between the UK and other comparable countries. Note that these data are at national level, not regional
- Preference-based indicators: Rates of surgical procedures (hip and knee replacements, cataracts, and inguinal hernia repairs) are compared between rates of deprivation using deciles as the comparator
- An interesting statistic is the number of Trusts by year, which are undertaking at least the minimum recommended volume of percutaneous transluminal coronary angioplasty (PTCAs) and CABGs
- Hip fracture rates, the rate of surgery within 24 and 48 hours of admission, mortality, and re-admission are reported nationally and by year (clinical variation and safety)
- Nine key stroke indicators and access to stroke unit beds are reported nationally by year.

Safety indicators

The safety indicators include the percentage of venous thromboembolism assessment, healthcare associated infections and patient reported:

- Level of harm-free care NHS patients receive
- Whether inpatients were warned of danger signs when they went home
- Whether inpatients feel threatened during their stay in hospital
- Cleanliness in acute settings
- Two indicators related to NHS staff safety are also published:
 - NHS staff experiencing violence
 - NHS staff experiencing violence from patients or relatives.

Dr Foster

Dr Foster Intelligence (www.drfooster.com) is a provider of healthcare information in the United Kingdom, monitoring the performance of the NHS and providing information to the public. It is a joint-venture with the [Department of Health](#) and was launched in February 2006. It aims to improve the quality and efficiency of health and social care. It monitors the performance of the NHS and provides information to the public.

Dr Foster publish a Hospital Guide every year. The Hospital Guide aims 'to publish an independent and authoritative analysis of the variations that exist in acute hospital care in a way that is meaningful for clinicians and managers and understandable to patients and the public'. The Guide focusses on different metrics every year. In 2013, they reviewed hospital care at weekends and looked at a wide range of measures: mortality rates, readmission rates, access to diagnostic tests and the length of time that urgent patients wait for surgery.

Dr Foster also publishes methodological outputs discussing issues such as using mortality as an outcome indicator and palliative care coding on their website and in the peer reviewed literature

<http://www.drfooster.com/updates/recent-publications/>

<http://www.journalslibrary.nihr.ac.uk/hsdr/volume-2/issue-40#abstract>

<http://www.drfooster.com/updates/recent-publications/dr-foster-unit-at-imperial-college/>

The Kings Fund

The Kings Fund (<http://www.kingsfund.org.uk/>) is an independent charity working to improve health and healthcare in England. They attempt to shape policy and practice through research and analysis; develop individuals, teams and organisations; promote understanding of the health and social care system; and bring people together to learn, share knowledge and debate.

The focus is NHS financial data as well as key performance data. The data is sourced from NHS England and the NHS Information Centre, and a quarterly survey undertaken with finance directors. England-wide time-series graphs are presented together with commentary. The graphs are interactive allowing data series to be added to each graph.

In regards to performance, access and waiting times feature prominently, with graphs for cancer treatment times, surgery, accident and emergency waiting times, and delayed treatment times.

The only safety data is infection rates. These are presented as separate data series for C. Difficile, MRSA, MSSA, and e-coli.

The Nuffield Trust

The Nuffield Trust (<http://www.nuffieldtrust.org.uk>) is an independent source of evidence-based research and policy analysis for improving healthcare in the UK. They aim to help provide the evidence base for better healthcare through four key activities: conducting cutting edge research and influential analysis, informing and generating debate, supporting leaders, and examining international best practice.

The Nuffield Trust uses a series of interactive sections, infographics, interactive charts, maps, and performance statistics. The interactive charts are the most relevant section. Most of the charts relate to access and waiting times, workforce statistics, finance, and satisfaction. The only clinical variation data is the rate of difference in certain surgical procedures between the four UK countries. Nuffield publish two safety indicators: mortality associated with MRSA and mortality amenable to healthcare management.

Northern Ireland

Northern Ireland Statistics and Research Agency

The Northern Ireland Statistics and Research Agency (NISRA) (www.nisra.gov.uk) is the principal source of official statistics and social research on Northern Ireland. These statistics and research inform public policy and associated debate in the wider society. Their mission is to provide a high quality and cost effective registration, statistics and research service. The Agency reports on a very broad range of government activities. There was only limited and general information found in relation to healthcare.

Scotland

Information Services Division Scotland

The Information Services Division (ISD) (www.isdscotland.org) is a division of National Services Scotland, part of NHS Scotland. ISD Scotland provides health information, health intelligence, statistical services and advice that support the NHS in progressing quality improvement in health and care and facilitates robust planning and decision making. There is a very substantial body of information readily accessible on this website that would be worth a more detailed study. It includes details of the strategic framework outlining how the information is collected.

Of particular interest is the National Information and Intelligence Framework for Health and Social Care for Scotland: 2012-17 within which information is collected (Figure 5). It is an easily understood and seemingly

comprehensive description of how the framework was developed, the guiding principles it embraces and the outcomes it is targeting. It details the data sources used to collect information.

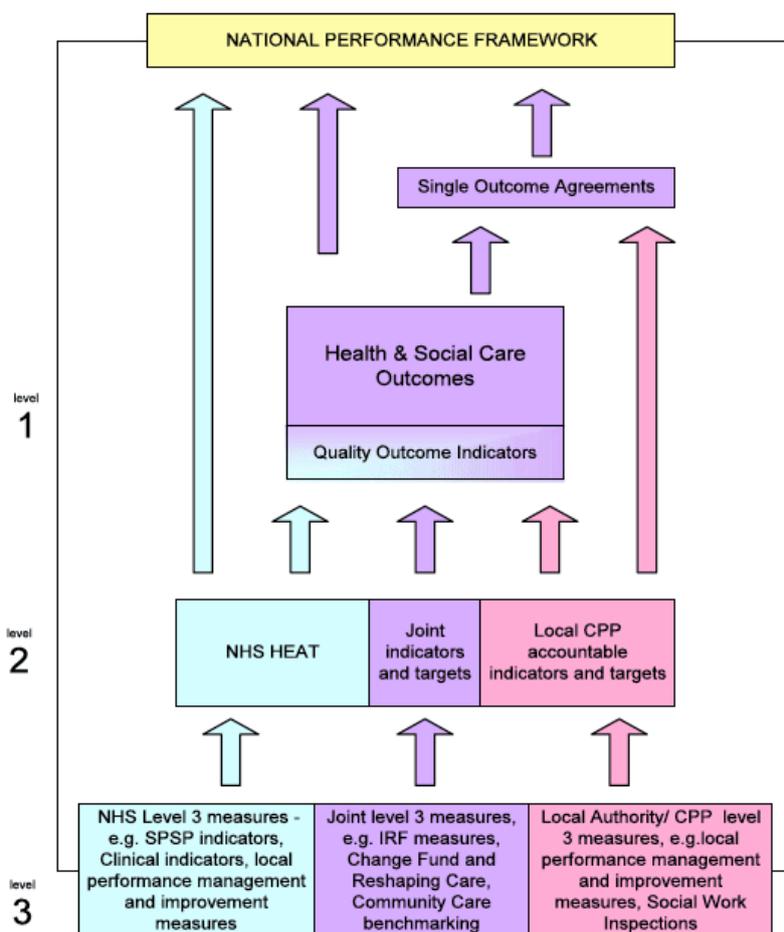


Figure 5: Health and Social Care Quality Measurement Framework

Figure 5 illustrates how various sets of outcomes and indicators/measures relate to each other. It does not represent a governance structure. The three levels of measurement are defined as follows:

- Level 1: high-level outcomes used to drive health and social care quality nationally over time, where progress is reported nationally by a small set of selected national indicators
- Level 2: publicly accountable indicators and targets for Health Boards, Community Planning Partnerships and Health and Social Care Partnerships used to drive short to medium term improvement and agreed to impact significantly and positively on the level 1 outcomes
- Level 3: extensive range of indicators/measures used for local improvement and performance management, including core sets of specific indicators for national programmes.

Twelve Quality Outcome Indicators (QOIs) are used for national reporting on longer-term progress towards the Quality Ambitions and the Quality Outcomes. These relate to population health indicators (e.g. birthweight, premature mortality); end of life care; patient experience; self-assessed general health; emergency admission rates; and safety data. These are intended as indicators of quality, and do not have associated targets. The QOIs are reported on quarterly, annually or biennially. There is a summary of the

reporting timetable and data sources. <http://www.isdscotland.org/Health-Topics/Quality-Measurement-Framework/Indicator-Information/#care>

HEAT targets describe the specific and short-term priority areas for focused action in support of the Quality Outcomes.

<http://www.scotland.gov.uk/About/Performance/scotPerforms/partnerstories/NHSScotlandperformance>

These are grouped into four priorities:

- **Health Improvement** for the people of Scotland — improving life expectancy and healthy life expectancy
- **Efficiency and Governance Improvements** — continually improve the efficiency and effectiveness of the NHS
- **Access to Services** — recognising patients' need for quicker and easier use of NHS services and
- **Treatment Appropriate to Individuals** — ensure patients receive high quality services that meet their needs.

The indicators within the targets change every year. For example the T targets related to 2012-13 were stroke patients admitted to a stroke unit, MRSA infections, C. Difficile infections, and timely discharge from hospital.

Safety

Health associated infections and hospital standardised mortality ratios are published yearly. There is no reporting on incident data.

Wales

Public Health Wales Observatory

The Observatory is within Public Health Wales and has skills in public health data analysis, evidence finding and knowledge management. The Observatory is the place where decision makers and the public can obtain useful public health information about the people of Wales. The Public Health Wales Observatory (PHWO) (<http://www.wales.nhs.uk/sitesplus/922/home>) is one of the 12 members of the UK and Ireland [Association of Public Health Observatories \(APHO\)](#)

The Observatory has access to a number of data repositories and makes these available together with online tools. Many reports are published and they seem more appropriate for consumption by health professionals than consumers. This organisation mainly publishes population health data around burden of disease, obesity levels, smoking and alcohol usage, and all-cause mortality.

Clinical Variation

The Observatory published the Atlas of Variation in Elective Surgical Procedures in 2014 and 2010. This is the rate of preference-sensitive procedures by region. It is presented in a similar interactive and visual style as the Dartmouth Atlas. Excel files with the annual average, rates and upper and lower confidence intervals by local authority for each indicator are also published.

<http://www2.nphs.wales.nhs.uk/instantatlas/VESP2014/atlas.html>

The following procedure rates are reported: tonsillectomy; drainage of middle ear and grommet insertion; varicose vein procedures; surgical intervention for haemorrhoids; apicectomy; removal of wisdom teeth; cholecystectomy; removal of skin lesions; orthodontic procedures; surgical removal of ganglia; lumbar spine

procedures; blepharoplasty; rhinoplasty; pinnaplasty and excision of hallux valgus; dilation and curettage; hysterectomy; caesarean section; and circumcision.

Safety

Highly detailed information is available on healthcare associated infections by Health Board (broadly equivalent to a local health district). Blood stream infections, critical care infections, surgical site infections (orthopaedic and caesarian sections), C. Difficile, and hospital outbreaks are reported separately. Detailed reports are published by financial year. Additionally, all Wales and Health Board level data are published on a monthly provisional basis <http://www.wales.nhs.uk/sites3/page.cfm?orgid=379&pid=67899>

These are very timely e.g. they were accessed on 18 November 2014 and the October 2014 data were available.

Incident reporting system data are not published.

United States of America

Agency for Healthcare Research and Quality

This is a highly recognised organisation in the healthcare quality arena. The Agency for Healthcare Research and Quality's (AHRQ) mission is to produce evidence to make healthcare safer, higher quality, more accessible, equitable, and affordable, and to work within the U.S. Department of Health and Human Services and with other partners to make sure that the evidence is understood and used. The website (www.ahrq.gov) contains a great deal of information segmented for consumers, provider organisations, clinicians and policy makers. The information available includes research tools and data, clinical guidelines, research publications and quality indicators. Data sources available from AHRQ:

<http://www.ahrq.gov/research/data/dataresources/index.html>

The scale of its activities reflects the size of the US health system; not all aspects would be relevant for New South Wales but there are potential benefits from a more detailed review. The scale and scope of AHRQ's activities in safety and quality are illustrated by the number of web sub-sites that it operates, which are listed below:

- [Academy for Integrating Behavioral Health and Primary Care](#)
- [AHRQ Podcasts](#)
- [AHRQuality Indicators™](#)
- [Consumer Assessment of Healthcare Providers and Systems](#)
- [Effective Health Care](#)
- [Electronic Preventive Services Selector](#)
- [Grants On-Line Database](#)
- [Healthcare Cost and Utilization Project \(HCUP\) User Support \(HCUP-US\)](#)
- [Health Information Technology](#)
- [Health Care Innovations Exchange](#)
- [Medical Expenditure Panel Survey](#)
- [Morbidity & Mortality Rounds on the Web](#)
- [National Guideline Clearinghouse™](#)

- [National Healthcare Quality and Disparities Reports \(NHQR/DR\)](#)
- [National Quality Measures Clearinghouse™](#)
- [Patient-Centered Medical Home](#)
- [Patient Safety Network](#)
- [Patient Safety Organizations](#)
- [Patient Safety Organizations Privacy Protection Center](#)
- [Practice-Based Research Networks \(PBRNs\)](#)
- [Systematic Review Data Repository](#)
- [TalkingQuality](#)
- [TeamSTEPPS®](#)
- [U.S. Health Information Knowledgebase](#)

AHRQ pursues its mission through six research portfolios:

- “Patient-Centered Health Research: improves healthcare quality by providing patients and physicians with state-of-the-science information on which medical treatments work best for a given condition.
- Prevention/Care Management Research: focuses on improving the quality, safety, efficiency, and effectiveness of the delivery of evidence-based preventive services and chronic care management in ambulatory care settings.
- Value Research: focuses on finding a way to achieve greater value in healthcare — reducing unnecessary costs and waste while maintaining or improving quality.
- Health Information Technology: develops and disseminates evidence and evidence-based tools to inform policy and practice on how health IT can improve the quality of American healthcare.
- Patient Safety: identifies risks and hazards that lead to medical errors and finding ways to prevent patient injury associated with delivery of healthcare.
- Crosscutting Activities Related to Quality, Effectiveness, and Efficiency: includes investigator-initiated and targeted research grants and contracts that focus on health services research in the areas of quality, effectiveness, and efficiency. Crosscutting Activities also includes additional research activities that support all of our research portfolios including data collection, measurement, dissemination and translation, and program evaluation.”

AHRQ has designed a set of Inpatient Quality Indicators (IQIs). These are 28 provider-level indicators that can be used by hospitals on their inpatient discharge data to provide a perspective on quality. They are grouped into the following four sets:

- “Volume indicators are proxy, or indirect, measures of quality based on counts of admissions during which certain intensive, high-technology, or highly complex procedures were performed. They are based on evidence suggesting that hospitals performing more of these procedures may have better outcomes.

- Mortality indicators for inpatient procedures include procedures for which mortality has been shown to vary across institutions and for which there is evidence that high mortality may be associated with poorer quality of care.
- Mortality indicators for inpatient conditions include conditions for which mortality has been shown to vary substantially across institutions and for which evidence suggests that high mortality may be associated with deficiencies in the quality of care.
- Utilization indicators examine procedures whose use varies significantly across hospitals and for which questions have been raised about overuse, underuse, or misuse.”

The AHRQ contains the largest collection of longitudinal hospital care data in the United States of America. National and State databases on inpatient, emergency department and ambulatory surgery visits are housed by the AHRQ, as well as information from reports and tools which are used to facilitate research on a broad range of health policy issues.

The AHRQ measures health performance across five dimensions of quality of care: effectiveness; patient safety; timeliness; patient-centredness and efficiency of care. It presents an overview of the quality of care provided at the national level.

Clinical variation data

Effectiveness of care data are presented for eight common clinical conditions: cancer; cardiovascular disease; chronic kidney disease; diabetes; HIV disease; mental health and substance abuse; musculoskeletal diseases; and respiratory diseases <http://www.ahrq.gov/research/findings/nhqrdr/nhqr13/chap2.html>

Reports are presented as web pages with numerical and graphical data, and active links to allow further queries.

Safety data

A number of key patient safety measures are organised around major healthcare settings: hospital; nursing home (e.g. pressure ulcers, use of restraints, urinary tract infection); home health (improvement in surgical site wound healing, ability to take medications orally); ambulatory care (ambulatory visits due to adverse effects of medical care, receipt of potentially inappropriate prescription medications, hospital readmissions); infrastructure (diagnosis-related errors, patient safety event reporting in Pennsylvania, patient safety culture, root cause analysis and risk mitigation — Veterans Health Administration).

The Patient Safety Indicators (PSIs) are a set of indicators providing information on potential in-hospital complications and adverse events following surgeries, procedures, and childbirth. The PSIs were developed after a comprehensive literature review, analysis of ICD-9-CM codes, review by a clinician panel, implementation of risk adjustment, and empirical analyses.

The PSIs are designed to:

- help hospitals identify potential adverse events that might need further study
- provide the opportunity to assess the incidence of adverse events and in-hospital complications using administrative data found in the typical discharge record
- include indicators for complications occurring in hospital that may represent patient safety events.

The indicators also have area level analogs designed to detect patient safety events on a regional level.

The following data relate to healthcare that is delivered in the hospital setting <http://www.ahrq.gov/research/findings/nhqrdr/nhqr13/chap4.html>:

- Hospital-acquired conditions overall
- Postoperative sepsis
- Catheter-associated UTIs
- Central line-associated bloodstream infections (CLABSIs)
- Surgical site infections (SSIs)
- Mechanical adverse events associated with central venous catheters
- Obstetric trauma.

The Commonwealth Fund

The Commonwealth Fund (www.commonwealthfund.org) is a private foundation with a substantial reputation. Its mission is to promote a high performing healthcare system that achieves better access, improved quality, and greater efficiency, particularly for society's most vulnerable, including low-income people, the uninsured, minority Americans, young children, and elderly adults. The Fund carries out this mandate by supporting independent research on healthcare issues and making grants to improve healthcare practice and policy.

The Commonwealth Fund presents a Scorecard on State Health System Performance which assesses states on 42 indicators. The infographics provided at the Health System Data Center tab might be useful guidance in considering local versions. The 2014 report presents data over the 2007-2012 period <http://www.commonwealthfund.org/publications/fund-reports/2014/apr/2014-state-scorecard>

Key indicators are grouped into four dimensions:

- Access and Affordability (6 indicators) includes rates of insurance coverage for children and adults, as well as individuals' out-of-pocket expenses for medical care and cost-related barriers to receiving care
- Prevention and Treatment (16 indicators) includes measures of receiving preventive care and the quality of care in ambulatory, hospital, and long-term care and post-acute settings
- Potentially Avoidable Hospital Use and Cost (9 indicators) includes indicators of hospital use that might have been reduced with timely and effective care and follow-up care, as well as estimates of per-person spending among Medicare beneficiaries and the cost of employer-sponsored insurance. It should be noted that in this dimension, one indicator (hospital admissions for ambulatory care-sensitive conditions) is reported separately for two distinct age groups
- Healthy Lives (11 indicators) includes indicators that measure premature death and health risk behaviours.

Interactive data are reported at both hospital level (region, health system, size, ownership, type) and regional level (US counties, hospital referral regions, states), with international comparisons also reported <http://www.whynotthebest.org/>

Clinical variation data

Examples of indicators include:

- Overall recommended care
- Recommended heart attack care

- Recommended heart failure care
- Recommended pneumonia care
- Surgical care improvement
- Emergency care.

Patient Experience is also collected.

Safety data

Readmission and mortality rates are collected.

Medicare Hospital Compare

This is a Government provided service and arose from a collaboration across government, consumers and providers of care in Medicare/Medicare registered organisations. It aims to provide assistance to consumers seeking information on the quality of care provided, to encourage providers to improve the quality of their services and to assist others seeking data for research purposes www.medicare.gov/hospitalcompare

The information is generated from data collected by Medicare and Medicaid provider organisations in the US; the data is sourced from multiple locations. Clinical information is sourced from the Clinical Management System Abstraction & Reporting Tool (CART), which is available free of charge from this organisation for use on multiple data platforms. This data source also supports the QualityNet website (www.qualitynet.org). QualityNet provides healthcare quality improvement news, resources and data reporting tools and applications used by healthcare providers and others.

QualityNet is the only Centers for Medicare & Medicaid Services (CMS) approved website for secure communications and healthcare quality data exchange between: quality improvement organizations (QIOs); hospitals; physician offices; nursing homes; end stage renal disease (ESRD) networks and facilities; and data vendors. This linkage between different organisations and services may be of interest in the context of this project.

Hospital Compare is the Official US Government Site for Medicare and is a consumer oriented website that provides information on how well hospitals provide recommended care to patients <https://data.medicare.gov/data/hospital-compare>

CMS currently maintains the Hospital Compare Website. While there is some variation in reporting cycles, Hospital Compare data are typically reported annually and updated, or refreshed each quarter in April, July, October, and December.

The measures displayed on Hospital Compare are organised by:

- General information (6 indicators)
- Linking quality to payment (10 indicators)
- Payment and value of care (10 indicators)
- Number of medicare patients (1 indicator)
- Patient survey results (3 indicators)
- Readmissions and deaths (4 indicators)
- Complications (6 indicators)
- Timely and effective care (10 indicators)

- Use of medical imaging (3 indicators).

Clinical Variation

- Timely and Effective Care — 36 indicators across 7 clinical conditions: acute myocardial infarctions; emergency department throughput; heart failure; pneumonia; preventive care; surgical improvement project; and children’s asthma care

Safety

Readmissions, complications and deaths comprise 27 indicators across four topics: 30-day mortality and readmission rates, surgical complications, hospital acquired conditions and healthcare associated infections.

The Dartmouth Institute for Health Policy and Clinical Practice

The Dartmouth Institute (<http://tdi.dartmouth.edu/>) was established in 1988 originally as the Center for the Evaluative Clinical Sciences. The Institute is housed within the Department of Community and Family Medicine at [Geisel School of Medicine at Dartmouth](#). It was reorganized as an independent entity, The Dartmouth Institute for Health Policy & Clinical Practice, in 2007. It is affiliated with [Dartmouth College](#), [Geisel School of Medicine at Dartmouth](#), [Dartmouth-Hitchcock Medical Center](#) and [Veterans Administration Medical Center](#).

It is governed by an Executive Council of 11 members, comprising Center leaders, faculty colleagues and executive staff. It reports to the Vice President for Health Affairs, Dartmouth College and is guided by an Advisory Council made up of the leadership of College, Medical School and Medical Center. It is well known internationally for its tracking of the performance of the US healthcare system and publication of The Dartmouth Atlas of Health Care.

The Dartmouth Atlas Project reports on how medical resources are distributed and used in the United States. Medicare data are used to provide information and analyse national, regional, and local markets, as well as hospitals and their affiliated physicians. Data are presented graphically by region, hospital and topic <http://www.dartmouthatlas.org/>

Clinical variation data

A wide range of indicators are used to describe preference- and supply-sensitive clinical variation across the US (<http://www.dartmouthatlas.org/data/topic/all.aspx>) including:

- Medicare reimbursements (age, gender, race, price-adjusted)
- Surgical conditions (obesity, cerebral aneurysms, diabetes and PAD, spinal stenosis)
- Children’s Health Care (ambulatory care, demographics, effective care, hospitalisation, imaging, physician workforce, prescription drug use, surgery)
- Prescription drug use in Medicare (overall utilisation, effective medications, high-risk medications, Medicare spending)
- Care of chronic illness in last two years of life (cancer care, co-payments, home health agency utilisation, hospice utilisation, hospital care intensity, hospital utilisation, Medicare spending, physician utilisation, resource inputs, terminal care)
- Hospital use (discharges and inpatient days by gender/race/type of admission)
- Medical discharges (all, non-ambulatory care sensitive condition, Non-ACS Medical discharges)
- Surgical procedures

- Post-acute care
- Quality / Effective Care (ambulatory care quality, patient satisfaction (HCAHPS survey, technical quality))
- Hospital and Physician capacity
- End-of-life care.

No patient safety data are reported.

Healthgrades

Healthgrades is a commercial organisation that is currently owned by a private equity group. Its website is designed to assist people to locate appropriate healthcare, including doctors, dentists and hospitals. Established in 1998, Healthgrades (<http://www.healthgrades.com/>) is a consumer-targeted website aimed at assisting people find, compare, select and connect with a doctor or hospital, and use information about clinical outcomes, patient satisfaction, patient safety, and health conditions to make more informed healthcare decisions.

Healthgrades uses data to publish annual reports on hospital quality and performance across some of the most common clinical conditions and procedures (such as knee replacement, stroke, and heart attack) and adjusts for risk factors, such as, age, gender, and medical condition. Unlike other hospital quality analyses, Healthgrades evaluates hospitals solely on clinical outcomes: risk-adjusted mortality and in-hospital complications. Analyses are based on more than 45 million Medicare medical claims records for the most recent three-year time period available <http://www.healthgrades.com/quality/archived-reports>

Examples of different types of data and indicators reported are provided below.

Clinical variation data

Note that the clinical data is reported as outcome data only:

- Bariatric surgery
- Maternity care and gynaecologic surgery
- Women's Health
- Outstanding patient experience
- America's best hospitals
- Hospital quality and clinical excellence.

Healthgrades no longer reports the following:

- Emergency medicine care
- Transplant awards: hospitals are identified that, for each of four organs, have a statistically higher three-year patient survival rate than expected, and statistically lower (or not statistically different) waitlist mortality rate than expected
- Transplant outcomes (e.g. transplant rates, patient and graft survival outcomes, waitlist mortality).

Safety data

- Mortality and complications outcomes (reported for each of 33 conditions and procedures)
- Patient safety in American Hospitals based on the 14 AHRQ defined patient safety indicators:

- Death following a serious complication after surgery
- Death in procedures where mortality is usually very low
- Pressure sores or bed sores acquired in the hospital
- Collapsed lung due to a procedure or surgery in or around the chest
- Catheter-related bloodstream infections acquired at the hospital
- Hip fracture following surgery
- Excessive bruising or bleeding as a consequence of a procedure or surgery
- Electrolyte and fluid imbalance following surgery
- Respiratory failure following surgery
- Deep blood clots in the lungs or legs following surgery
- Bloodstream infection following surgery
- Breakdown of abdominal incision site
- Accidental cut, puncture, perforation or haemorrhage during medical care
- Foreign objects left in body during a surgery or procedure (reported as number of events).
- Paediatric patient safety was last evaluated in 2010 from 2006-2008 data using the AHRQ Patient Safety Indicators (eight paediatric indicators):
 - Accidental puncture or laceration
 - Pressure ulcer
 - Iatrogenic pneumothorax
 - Postoperative haemorrhage or hematoma
 - Postoperative respiratory failure
 - Postoperative sepsis
 - Postoperative wound dehiscence
 - Selected infections due to medical care (also known as: central venous catheter related bloodstream infections).

Using statistical algorithms, an overall Healthgrades paediatric safety score was calculated for each hospital to predict the number of likely paediatric patient safety incidences at a hospital based on the types of patients treated.

Ireland

Health Information and Quality Agency

The Health Information and Quality Agency (HIQA) (<http://www.hiqa.ie/>) is a standards setting and monitoring agency. Most of the standards are service standards not clinical standards so they have more in common with the [National Safety and Quality Health Service Standards](#) (NSQHS) which are used in Australia. Service standards refer mainly to organisational activities not indicators at the level of care of patients.

Clinical Variation

HIQA publish three sets of standards and collect clinical variation from one set: [National Quality Assurance Standards for Symptomatic Breast Disease Services](http://hiqa.ie/standards/health/symptomatic-breast-disease) across two domains (<http://hiqa.ie/standards/health/symptomatic-breast-disease>). Sixteen hospitals with specialist cancer services report against these standards.

The two domains used are:

- Access (whether patients receive treatment at the right time and in the right place). Access indicators focus on timeliness of management for newly diagnosed breast cancer patients: time to been seen, imaged, and surgical intervention
- Clinical Effectiveness (whether important clinical factors are delivered properly and whether the right facilities are in place). These indicators relate to: achieving a non-operative diagnosis; undertaking ultrasound and mammography appropriately; recording histological status and tumour size; recording oestrogen receptor status; recording immunohistochemistry; and recording DCIS grade.

Indicators based on these two domains are collected via a 13 week clinical audit and are process-based. Data are presented numerically and are compared to target levels (e.g. 90% compliance). HIQA published an Ireland wide aggregate report every year [http://www.hiqa.ie/system/files/Symptomatic Breast Disease Services National report 2010%20.pdf](http://www.hiqa.ie/system/files/Symptomatic_Breast_Disease_Services_National_report_2010%20.pdf) and hospital level reports. However, the last reports are from 2011.

Safety

HIQA do not publish any data related to safety.

New Zealand

Health Quality and Safety Commission

Established by legislation in 2010 the Health Quality and Safety Commission (HQSC) is focused on optimising both health and disability care. It has a significant amount of publications on a variety of topics including a national patient survey. The website (www.hqsc.govt.nz) contains data on quality and safety indicators, an atlas of geographical variation, quality and safety markers and a relatively new reporting innovation of a quality account. All the information is easy to access.

The organisation is governed by an eight person Board with broad representation across the industry and the community at large. Apart from the Executive Management Team there are designated clinical leads for specific programs including:

- Medication safety
- Infection prevention and control
- Reducing harm from falls
- Reportable events
- Health quality evaluation
- Consumer engagement
- Reducing peri-operative harm.

The HQSC is also responsible for the conduct of several statutory committees concerned with the review of deaths. There is a targeted body of activity focused on consumer engagement.

This site is worth further study. The HQSC has close links with the Australian Commission for Safety and Quality in Health Care (ACSQHC).

Clinical Variation

The Atlas of Healthcare Variation shows preference-sensitive variation in the healthcare received by people in different geographical regions based on the Dartmouth Atlas. The New Zealand Atlas aims to stimulate debate by highlighting variation, rather than making judgements about why variation exists or whether it is appropriate, leading to improvements in healthcare services.

The Atlas is organised by domains, which cover specific clinical areas:

- Maternity: variation in medical procedures and complications associated with birth
- Demography: life expectancy and other basic demographic data around age structure, ethnicity and deprivation
- Cardiovascular Disease: the use of secondary prevention medicines in New Zealand residents hospitalised with an ischaemic cardiovascular disease event between 2000 and 2010
- Gout: variation in the prevalence and treatment of gout, the most common form of inflammatory arthritis
- Polypharmacy in older people: rates of dispensing of medicines in people aged 65 and over
- Surgical procedures: surgical intervention rates for tonsillectomy and ventilation tube (grommet) insertion.

Safety

The HQSC commenced a national patient safety campaign, Open for Better Care, in 2013. Quality and safety markers (QSMs) are being used to evaluate the success of the campaign and determine whether the desired changes in practice, and reductions in harm and cost, have occurred. Data are published quarterly at the level of District Health Board (DHB) numerically and using a colour coding system (like a dashboard) to indicate level of compliance. <http://www.hqsc.govt.nz/our-programmes/health-quality-evaluation/projects/quality-and-safety-markers/>

The QSMs are sets of related indicators (with targets) concentrating on the four areas of harm covered by the campaign:

1. Falls: 90% of older patients are given a falls risk assessment
2. Healthcare associated infections:
 - a. Hand hygiene: 75% compliance with good hand hygiene practice
 - b. Central line associated bacteraemia: 90% compliance with procedures for inserting central line catheters
 - c. Surgical site infection: All three parts of the WHO surgical safety checklist used in 90% of operations.
3. Perioperative harm
4. Medication safety

The HQSC reports incident data on a yearly basis via a Serious Adverse Events report (<http://www.hqsc.govt.nz/assets/Reportable-Events/Publications/Making-health-and-disability-services-safer-Serious-Adverse-Events-Nov-2013.pdf>). The report uses aggregated data from DHB incident reporting systems; one table outlines the number of incidents by DHB. The definition of serious is not defined and is noted as problematic. The incidents are reported as incident types, very close to the classification used by the International Classification of Patient Safety (ICPS). A more granular classification is provided for the incident types falls, medication, infections, and clinical management.

Finland

National Institute for Health and Welfare

The Finnish National Institute of Health and Welfare (Terveyden ja Hyvinvoinnin Laitos (THL)) (<http://www.thl.fi/en/web/thlfi-en>) is a research and development institute under the Finnish Ministry of Social Affairs and Health. THL seeks to serve the broader society in addition to the scientific community, actors in the field and decision makers in central government and municipalities. The aim is to promote health and welfare in Finland.

The statistical report OECD Health Care Quality Indicators (HCQI) in Finland (<https://www.thl.fi/en/web/thlfi-en/statistics/information-on-statistics/description-of-statistics/oecd-health-care-quality-indicators-in-finland>) contains rates for HCQI developed within the OECD HCQI Project in 2002–2013. The report includes international data obtained from OECD's statistical publications, and these are compared to similar figures from Finland. The Finnish data also includes changes over time. In addition, the indicator data suitable for regional analyses are presented at the level of hospital districts. These data are not published elsewhere.

The statistical report covers indicators for infectious diseases control, chronic diseases, mental health problems, patient safety, and cancers. The indicators are mostly based on data retrieved from the HILMO Care Register for Health Care. Data on cancers have been retrieved from the Cancer Registry and its sub-register the Mass Screening Registry. Data for indicators describing mortality have been retrieved from Statistics Finland's causes of death statistics.

The OECD publishes data on HCQI every two years. The report OECD HCQI in Finland will be published every two years as soon as possible after the OECD publication⁽⁴⁾.

It was not possible to access the site for the Centre for Health and Social Economics (CHESS) which is shown as an operational unit within the Division of Social and Health Policy and Economics. It appears to have been renamed The Policy Monitoring and Impact Research Unit (CHESS), which studies the developments and effects of national and international welfare-related social policies.

The Netherlands

National Institute for Public Health and the Environment

The National Institute for Public Health and Environment (Rijksinstituut voor Volksgezondheid en Milieu (RIVM)) "is a Dutch research institute that is an independent agency of the Dutch Ministry of Health, Welfare and Sport" (www.rivm.nl/en). There was a substantial body of publications including reports and some scientific papers. Further study may be useful.

The Netherlands Ministry of Health (MoH) commissions RIVM to report on the performance of the healthcare system. The MoH has identified three themes: quality, accessibility and affordability of care to compare performance in other years and countries, with policy and procedure and where possible between healthcare providers.

RIVM produces a comprehensive report detailing results for 125 indicators. As of 2011 the information is updated via a website twice a year. The indicators are reported at the national level. Regional reporting of indicators occurs via the Dutch Hospital Database, however translation of this information is difficult. Where possible, the report compares the Dutch results to other countries. The choice of indicators is driven by the Dutch health performance framework (Figure 6).

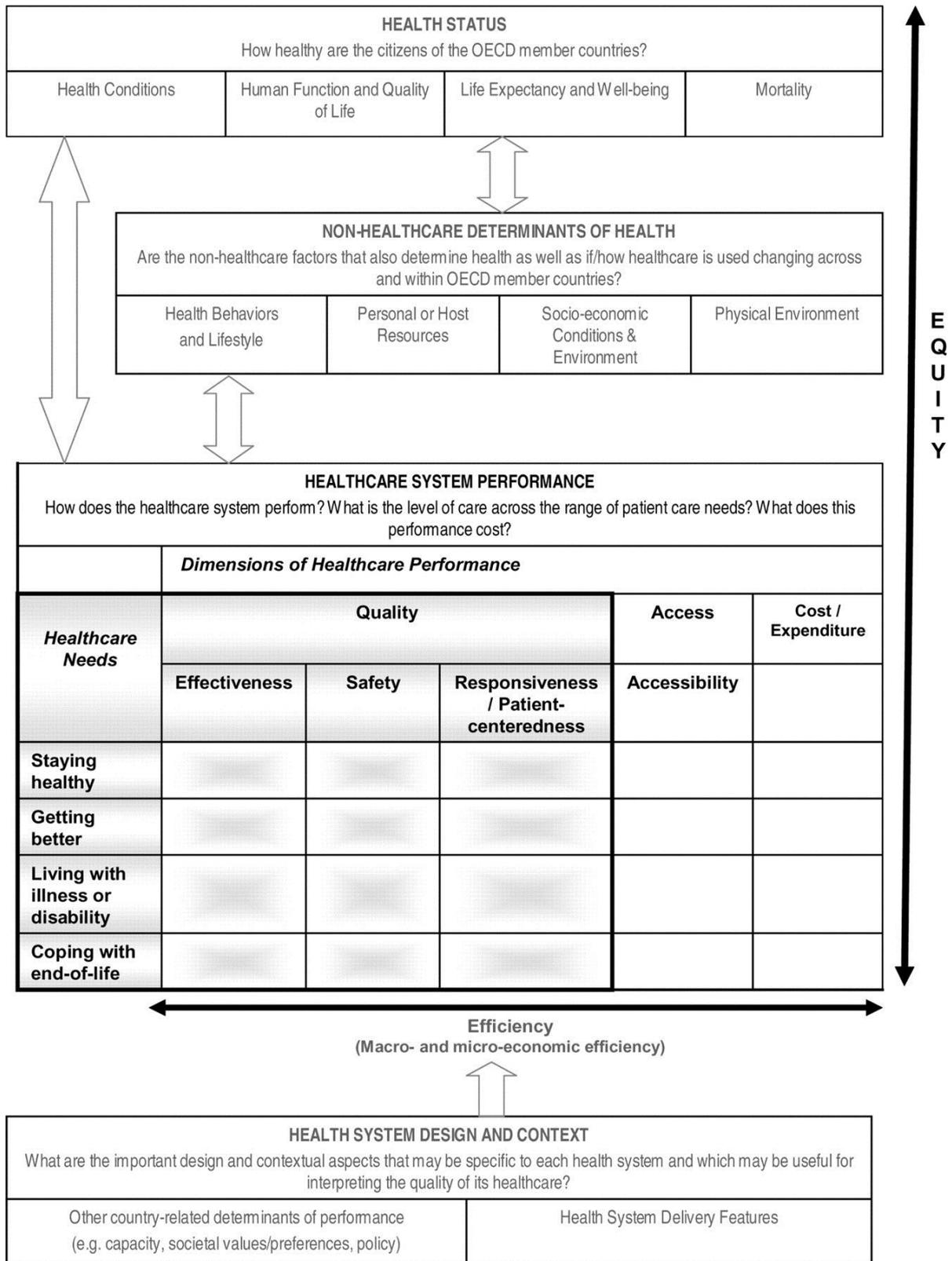


Figure 6: Performance indicator framework for the Dutch healthcare system

The Netherlands also has two dedicated websites that provide consumers with information about the quality of a service and provide ratings for their service. These are:

- Independer <http://www.independer.nl>
- Kiesbeter (Choose Better) <http://www.kiesbeter.nl>

Clinical Variation

All the clinical variation indicators are mainly related to community care not hospital care. The only hospital indicator was hip fractures operated on within 48 hours.

Safety

The Netherlands report on patient safety using the following indicators:

- Patient experiences with:
 - Medication errors
 - Medical errors
 - Laboratory or diagnostic test errors.
- Hospital standardized mortality rate
- Percentage of patients that sustained medical injury during hospitalization
- Prevalence of hospital-acquired pressure sores
- Prevalence of hospital-acquired infections (captured by a prevalence survey)
- Incidence of transfusion related adverse events
- Percentage of hospitals where information on medication prescribed in hospital and elsewhere is electronically accessible at hospital wards and elsewhere
- Volume of high risk surgery in hospitals
- Prevalence of medication related hospital admissions
- Percentage of Pharmacotherapeutic Consultations that function at levels 3 or 4.

A Pharmacotherapeutic Consultation (FTO) is a local consultation between pharmacists and GPs with the aim of promoting the quality and safety of medication dispensing. FTO groups are classified by level of functioning, with level 4 being highest (involving 4 regular consultations and evaluation of agreements) and level 1 being lowest. Important subjects of FTOs are medication for a wide variety of disorders, polypharmacy, new medicines and patient compliance.

Sweden

National Board of Health and Welfare

The National Board of Health and Welfare (Socialstyrelsen) (<http://www.socialstyrelsen.se/english/>) is a government agency in Sweden under the Ministry of Health and Social Affairs. It collaborates with the Swedish Association of Local Authorities and Regions in developing national indicators for quality measurement in health and social care.

The National Board of Health and Welfare in Sweden produces an annual report, Quality and Efficiency in Swedish Health Care — Regional Comparisons. Each report covers a wide range of healthcare areas and presents a large number of indicators and comparisons, generally between the various counties of Sweden.

The last report presents results for 169 different indicators. The report focuses on national trends for a number of those indicators. Data is reported at regional level with graphs and extensive commentary. 19 indicators are presented at hospital level. Data is organised into domains: medical results, patient experience, time-related availability, and cost. The medical results domain contains (63) indicators of interest to our purpose; clinical variation and safety.

An interesting variant is that the following eight indicators are also analysed by socioeconomic status:

- Policy-related avoidable mortality and country of origin
- Healthcare-related avoidable mortality and country of origin
- Avoidable hospitalisations and education
- Breast cancer — relative five-year survival rates and education
- Percentage of newborns with Apgar <7, education and smoking
- Diabetic patients receiving antihypertensive therapy, and education
- Myocardial infarction — 28-day case fatality rate, and education
- Lipid lowering drug therapy after myocardial infarction and country of origin.

Clinical Variation

The medical results data is sub-divided into categories: mortality; hospitalisation; vaccination; drug therapy; intensive care; cancer survival rate; maternal and neonatal care; diabetes care; psychiatric care; stroke care; cardiac care; orthopaedic care; kidney care; and other treatment methods.

Safety

The following safety indicators are published:

Health-associated infection

- Occurrence of MRSA

Intensive care

- Mortality after treatment at intensive care units
- Readmission to intensive care units

Stroke

- First-time stroke — 28-day case fatality rate
- Hospitalised first-time stroke — 28-day case fatality rate
- Patients treated at a special stroke unit
- Stroke — readmission within 365 days

Cardiac

- Myocardial infarction — 28-day case fatality rate
- Myocardial infarction — 28-day case fatality rate (hospitalised patients)
- Readmission after heart failure

Other

- Adverse events after knee and total hip replacement arthroplasty
- Mortality in dialysis or kidney transplant
- Reoperation for inguinal hernia

One cancer report has also been published in 2011 which reviews regional comparisons on various process and outcome metrics for palliative cancer care and for specific cancers: breast; ovarian; kidney; bladder; prostate; colon; rectal; lung; head and neck cancer; and malignant melanoma. The 67 metrics published include clinical specific indicators for each cancer type, waiting times, re-operations, survival times, and length of stay post-surgery.

One stroke report has also been published in 2011 which reviews regional comparisons. The 55 indicators are divided into five categories:

- Acute care
- Secondary prevention
- Outcome of stroke care
- Patient satisfaction
- Carotid surgery.

Relevant hospital-based indicators include:

- Acute care
- Time from symptom onset to arrival at hospital
- Thrombolysis alerts for suspected stroke cases
- Median time to administration of thrombolytic therapy
- Door-to-needle time for thrombolysis
- Acute thrombolytic therapy (tPA)
- Brain haemorrhage after acute thrombolytic therapy
- Admission to designated stroke unit
- Admission directly to designated stroke unit
- Documented swallowing assessment
- Home-based rehabilitation provided by county council
- Anti-hypertensive treatment at discharge
- ARB as anti-hypertensive treatment at discharge
- Patients with atrial fibrillation prescribed warfarin at discharge
- Patients without atrial fibrillation prescribed warfarin at discharge
- Lipid-lowering treatment at discharge
- Prescription of generic-lipid-lowering treatment at discharge.

Carotid Surgery

- Number of carotid surgery procedures performed
- Median waiting time to carotid surgery for patients with symptomatic carotid stenosis

Australia

National Health Performance Authority

The National Health Performance Authority (NHPA) is an independent agency established under the National Health Reform Act 2011 to report regularly on the comparable performance of Local Hospital Networks, public and private hospitals, primary healthcare organisations and other bodies that provide healthcare services. The NHPA began operating in 2012. There is substantial information available from the Agency's website (<http://www.nhpa.gov.au>) especially the recently published annual report.

The NHPA publishes hospital data in two forms: reports and an interactive database, MyHospitals (<http://www.myhospitals.gov.au/>). In both forms, data are reported at the level of hospitals. Reports subjects include cancer surgery waiting times, time spent in emergency departments, length of stay, and healthcare associated Staphylococcus aureus bloodstream infections. The MyHospitals website allows searching and comparing of hospital level data from 1000 public and private hospitals. The site contains demographic and profile data such as types of services offered and a limited set of quality indicators. Note that NHPA also hosts a similar site for community based health data: <http://www.myhealthycommunities.gov.au/>

The following indicators are planned to be reported on My Hospitals but require development and are not currently published

<http://www.myhospitals.gov.au/about-myhospitals/overview#performance-indicator-reporting>:

- Hospital Standardised Mortality Ratio
- Death in low-mortality Diagnostic Related Groups
- In hospital mortality rates for select conditions
- Unplanned hospital readmission rates for patients discharged following management of select conditions
- Healthcare-associated C. Difficile infections
- Rate of community follow up within the first seven days of discharge from a psychiatric admission.

The two indicators published on the My Hospitals website are both related to safety:

- Healthcare associated Staphylococcus aureus infections
- Hand hygiene rates.

The Australian Institute of Health and Welfare

The Australian Institute of Health and Welfare (AIHW) (<http://www.aihw.gov.au/>) is a major national agency set up by the Australian Government under the Australian Institute of Health and Welfare Act to provide reliable, regular and relevant information and statistics on Australia's health and welfare.

AIHW is an independent statutory authority established in 1987, governed by a management board, and accountable to the Australian Parliament through the Health portfolio. There is substantial information available from the Agency's website, especially the recently published annual report.

The AIHW publishes mainly hospital and emergency department activity data. It uses a variety of databases using standards and minimum data sets such as Diagnostic Related Groups and Procedure Codes. There are data related to waiting times in emergency departments <http://www.aihw.gov.au/hospitals-data/national-non-admitted-patient-emergency-department-care/> and for elective surgery <http://www.aihw.gov.au/hospitals-data/national-elective-surgery-waiting-times/>. All data are reported at the level of state and territory, not hospital. The AIHW publishes data using a variety of formats including static reports and interactive data cubes <https://reporting.aihw.gov.au/Reports/openRVUrl.do>

Clinical Variation

The AIHW summarises information Australia provided in 2013 to the OECD Health Care Quality Indicator (HCQI) 2012–13 data collection. The report for 2012-13 was released in May 2014. The OECD's HCQI project⁽⁴⁾ is an international project aimed at developing a common set of indicators about the quality of health-care delivered across OECD member countries, for reporting at a national level for international comparison. The HCQI project began in 2002 with the development of a conceptual framework for measuring HCQIs and associated research on international health performance frameworks.

Work since 2002 has seen the development and continued expansion of a set of indicators that support international comparisons of the quality of health-care. The indicators cover domains of health status, determinants of health, healthcare activities and health expenditure and financing.

<http://www.aihw.gov.au/WorkArea/DownloadAsset.aspx?id=60129547040>

Of the ten OECD acute care indicators, Australia reports only three on the AIHW website:

- Admission-based AMI 30 day in-hospital mortality
- Admission-based haemorrhagic stroke 30 day in-hospital mortality
- Admission-based ischemic stroke 30 day in-hospital mortality.

Of the 14 OECD mental health indicators, Australia reports only four:

- Same hospital readmissions within 30 days for patients discharged with schizophrenia
- Same hospital readmission within 30 days among patients discharged with schizophrenia
- Same hospital readmissions within 30 days for patients discharged with bipolar disorder
- Same hospital readmission within 30 days among patients discharged with bipolar disorder.

Safety

The AIHW reports all the OECD patient safety indicators:

- Retained surgical item or unretrieved device fragment
- Accidental puncture or laceration
- Postoperative haemorrhage or haematoma
- Postoperative wound dehiscence
- Postoperative pulmonary embolism or deep vein thrombosis — all surgical discharges
- Postoperative pulmonary embolism or deep vein thrombosis — hip and knee replacement discharges
- Postoperative sepsis — all surgical discharges

- Postoperative sepsis — abdominal surgery discharges
- Obstetric trauma vaginal delivery with instrument
- Obstetric trauma vaginal delivery without instrument.

A database of interest for patient safety is the National Staphylococcus aureus Bacteraemia Data Collection (NSABDC) <http://www.aihw.gov.au/hospitals-data/NSABDC/>. The NSABDC includes counts of cases of *Staphylococcus aureus* bacteraemia (SAB) for each public hospital covered by SAB surveillance arrangements, and for private hospitals that choose to provide data. An example of the public hospital report can be found here: <http://www.aihw.gov.au/WorkArea/DownloadAsset.aspx?id=60129545750>. Note that the data is published at the level of state and territory not hospital.

Victorian Quality Council

The Victorian Quality Council (VQC) finished its term on 30 June 2012. The VQC was the ministerial advisory committee that advised the Minister for Health and the Department of Health on actions to be taken to improve safety and quality of care in Victoria. The VQC operated for three terms from 1 July 2002 to June 2012. The Commission for Hospital Improvement has replaced the VQC and does not publish data.

Queensland Health

Queensland Health has a performance area but it reports a few activity indicators, access and patient satisfaction indicators with no clinical variation data

<http://www.performance.health.qld.gov.au/hospitalperformance/>

The Patient Safety Unit publishes thematic analyses of incident reports. The aim is to inform staff of the main patient safety risks and to improve the quality of incident reports

<http://www.health.qld.gov.au/psu/reports/>

Department of Health, Western Australia

The Department of Health Western Australia publish a quarterly performance report

http://www.health.wa.gov.au/publications/documents/WA_Health_Performance_Report.pdf

However, this is focussed on access and timeliness indicators such as waiting times to emergency departments, elective surgery, as well as activity (separations by specialty). It does not review clinical variation data.

The Department of Health Western Australia's Patient Safety Surveillance Unit has published an annual report From Death We Learn based on coroner's cases. The report comprises of short clinical summaries of inquest findings and de-identified summaries of other cases. Findings are outlined together with key messages for learning. http://www.safetyandquality.health.wa.gov.au/docs/mortality_review/death-we-learn-2012.pdf

Department of Health, South Australia

The South Australian Department of Health publishes an annual patient safety report

(<http://www.sahealth.sa.gov.au/wps/wcm/connect/public+content/sa+health+internet/clinical+resources/safety+and+quality/safety+and+quality+reports>) The report provides an overview of the number of incidents reported with their type and severity. The report then reviews the most incident types: healthcare associated infections; medication safety; patient identification and procedure matching; clinical handover; blood and blood products; pressure injuries; clinical deterioration; falls; and challenging behaviours. A thematic analysis of each of incident types is undertaken with the main data source being incident types, supplemented by medication audits, infection surveillance data, and observation data.

6 Glossary

AHRQ	Agency for Healthcare Research and Quality
AHS	Alberta Health Service
AIHW	Australian Institute of Health and Welfare
APHO	Association of Public health Observatories
CABGs	Coronary Artery Bypass procedures
CAS	Central Alerting System
CCG	Clinical Commissioning Group
CCO	Cancer Care Ontario
CHESS	Centre for Health and Social Economics
CIHI	Canadian Institute of Health Information
CIHI-DAD	Canadian Institute for Health Information's Discharge Abstract Database
CLABSIs	Central line-associated bloodstream infections
CMS	Clinical Management System, and in the US, Centers for Medicare & Medicaid Services
CQCO	Cancer Quality Council of Ontario
ESRD	End stage renal disease
HCQI	Healthcare Quality Indicators
HIQA	Health Information and Quality Agency
HOBIC	Health Outcomes for Better Information and Care
HQO	Health Quality Ontario
HQSC	Health and Quality Safety Commission
HSCIC	The Health and Social Care Information Centre
ICES	Institute of Evaluative and Clinical Sciences
INSPQ	L'institut national de santé publique du Québec
IQI	Inpatient Quality Indicator
ISD	Information Services Division
LBOI	Local Basket of Inequalities Indicators
LHIN	Local Health Integration Network
MCC	Multidisciplinary Cancer Conference
MCHP	Manitoba Centre for Health Policy
MoH	Ministry of Health

MOHLTC	Ministry of Health and Long-Term Care
MRSA	Methicillin-resistant Staphylococcus aureus
NHPA	National Health Performance Authority
NHS CB	NHS Commissioning Board
NIRSA	Northern Ireland Statistics and Research Agency
NPSA	National Patient Safety Agency
NRLS	National Reporting and Learning System
NSABDC	National Staphylococcus aureus Bacteraemia Data Collection
NSQHS	National Safety and Quality Health Service Standards
OECD	Organisation of Economic Co-operation and Development
PHWO	Public Health Wales Observatory
PROMs	Patient Reported Outcomes Measures
PSI	Patient Safety Indicator
PTCAs	Percutaneous Transluminal Coronary Angioplasty
QDS	Quarterly data summary
QIO	Quality Improvement Organisation
QOIs	Quality outcome indicators
QSM	Quality Safety Marker
RHA	Regional Health Authorities
RIVM	Rijksinstituut voor Volksgezondheid en Milieu (National Institute for Public Health and the Environment)
SHMI	Summary Hospital-level Mortality Indicator
SSI	Surgical Site Infection
THL	Terveyden ja Hyvinvoinnin Laitos (Finnish National Institute for Health and Welfare)
UTI	Urinary Tract Infection
VQC	Victorian Quality Council
VTE	Venous Thromboembolism
WHO	World Health Organization

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