



2017 HARC SCHOLARSHIP REPORT

Developing patient safety measures to assess hospital performance

Lilian Daly BN (UTS), MPH (UNSW), MClInEpi (UON in progress)

Lead Researcher

Bureau of Health Information



2017 HARC SCHOLARSHIP REPORT

Developing patient safety measures to assess hospital performance

Executive summary

This report provides the findings from a number of international visits, conferences and interviews undertaken in October 2017 as part of a Hospital Alliance Research Collaborative (HARC) Scholarship project, supported by a literature review.

The aim of the project was to learn about contemporary approaches to developing and reporting valid measures of patient safety and harm-free care, especially those that provide a useful level of detail and accuracy for public reporting. For BHI specifically, the aim of the project was to help inform our thinking about aspects of patient safety measurement and reporting.

The HARC scholarship facilitated travel to the UK and Canada to connect with national and international experts in health services research, to learn about various aspects of patient safety measurement and reporting. These included generic and specific indicators, levels of reporting condition onset flags, risk-adjusted measures, and patient reported measures. The scholarship also facilitated attendance at the *34th International Society for Quality in Healthcare (ISQua) Conference* in London, the Canadian Patient Safety Institute's 5th National Patient Safety Consortium meeting in Toronto and a two-day workshop for international visitors at Health Improvement Scotland in Edinburgh (Appendix 1). These gatherings were excellent opportunities to interact with key academics and leaders in performance reporting from around the globe.

The HARC Scholarship agreement requires recipients to submit a final report to the funding agency. The purpose of this paper is to share key knowledge, information and insights gained from international colleagues about patient safety measurement and successful approaches to engaging clinicians and patients.

The report's findings are organised around key themes that emerged during the project. These include: standardised, systematic measurement of adverse events as a key component of safety measurement systems; integrated safety reporting for accountability and improvement; the power of the patient voice; creating systems for safety; and the importance of stakeholder engagement.

A summary of findings is presented below. More details can be found in the body of the report.

Standardised, systematic measurement of adverse events as a key component of safety measurement systems

There is no single measure of patient safety and no single data source to measure it with.

Standardised and systematic measurement is necessary for the collection of accurate and reliable information for monitoring and reporting.

Establishing safety measurement and reporting in a broader policy framework helps to ensure appropriate governance mechanisms are in place to support robust measurement and management of adverse events.

Integrated safety reporting for accountability and improvement

Patient safety reporting supports accountability and improvement through sharing the learnings from adverse events to inform future actions.

Measurement must be underpinned by a policy framework that supports reporting of key metrics to relevant stakeholders (policy makers, clinicians and patients) to build on learnings and drive improvements.

Reporting is an important lever for improvement at all levels of the system. Public reporting has a role in driving accountability and improvement alongside internal (within the system) reporting.

The power of the patient voice

Patients have a unique and valuable perspective on the processes and outcomes of health care.

Patient feedback reported via tailored websites and social media channels is emerging as a major disruptor in health care safety, and provokes rapid responses from health care managers and clinicians.

Alongside other data, systematically collected patient survey data is emerging as an important source of information about patient safety.

Creating systems for safety

There is a shift in thinking from reporting past 'harms' to reporting 'safety' and encouraging staff to have a clear stake in identifying and mitigating risk, ensuring the safest possible care for patients at all times, by helping them ask: 'How safe is our care today?'

Key components of safety systems include incorporating common safety principles such as standardising components of care, where appropriate, and safety measurement and reporting systems that support learning and improvement.

There is a growing recognition of the importance of nurturing a culture of safety where healthcare workers are encouraged to report errors, incidents of harm or near-miss incidents without fear of sanctions or disciplinary action.

Leadership and deliberate attention to safety at an executive level is essential in nurturing a culture of safety and delivering safer care.

The importance of stakeholder engagement

Stakeholder engagement is essential at every stage of patient safety measurement and reporting, and for effective action at all levels of the health system.

Clinician leadership is crucial for creating and sustaining strong culture of safety in organisations.

Introduction to the topic including purpose and aims of project

HARC is a collaboration between the Sax Institute, Clinical Excellence Commission, the Agency for Clinical Innovation, Cancer Institute NSW and BHI, which aims to build capacity in the NSW health system to close evidence-practice gaps by fostering the use of research evidence in programs and policies.

The HARC scholarship program gives employees of HARC partner organisations the opportunity to develop skills in applying research in policy and program development. The aims of the scholarship are to:

- build skills in future leaders who will have expertise in using research in policy and practice and be connected with national and international experts in health services research
- contribute to strategies to close evidence practice gaps in NSW.

Developing, monitoring and reporting patient safety measures is key to the Patient Safety First strategic priority for NSW Health. An important goal of this work is to help hospitals and health services reflect on their performance, identify and address areas of concern, and ultimately drive transparency and accountability to improve service delivery and patient outcomes.

The aim of my 2017 HARC Scholarship was to learn from international colleagues about measuring patient safety and successful approaches to engaging clinicians and patients around it. For BHI, the project aimed to inform future thinking around public reporting, particularly by ensuring we better understand meaningful measures that provide a useful level of detail and accuracy for public reporting.

Scholarship activities

England, Scotland and Canada were identified as countries where government and/or other organisations had extensive experience in patient safety measurement and reporting. The primary method of data collection was conducting interviews with key staff in selected organisations that focus on measuring and reporting on the quality and safety of hospital care (Table 1).

The focus of the visits and interviews was to learn about relevant aspects of patient safety measurement and reporting, including generic and specific indicators, levels of reporting condition onset flags, risk-adjusted measures, and patient reported measures.

Table 1 Organisations visited

Country	Organisation	Organisation visited
England	Care Quality Commission	An independent regulator of health and social care in England that: <ul style="list-style-type: none">• monitors, inspects and regulates health and social care services• publishes information about the quality of individual services, including reports and ratings, to help people choose their care• aims to ensure health and social care services provide people with safe, effective, compassionate, high-quality care and encourage care services to improve.
	The King's Fund	The Care Quality Commission was established as a result of the Francis enquiry. It has an inspection, regulatory and improvement role with some overlap with NHS Improvement, and they conduct some joint inspections. CQC uses inpatient, emergency department and survey data, sourced through NHS Digital, to initially assess the quality and safety of patient care and ascertain whether there are areas of concern.
		An independent charity ('think-tank') organisation that has produced multiple publications on the quality and safety of patient care.

Scotland	Health Improvement Scotland (Edinburgh)	<p>An NHS Scotland organisation with a range of roles:</p> <ul style="list-style-type: none"> • monitors, inspects and regulates independent hospitals and clinics • provides health and social care providers with information and support to design and deliver better services • provides advice on the clinical and cost effectiveness of healthcare technologies • develops evidence-based clinical practice guidelines • accepts for use those newly-licensed medicines that clearly represent good value for money • improves the safety and reliability of healthcare and reduces harm, whenever care is delivered.
Canada	Canadian Patient Safety Institute	A Pan-Canadian not-for-profit organisation that works with governments, health organisations, leaders, and healthcare providers to support improvements in patient safety through a range of safety programs. Funded by Health Canada.
	Canadian Institute for Health Information	An independent not-for-profit organisation that provides comparable information on health care, health system performance and population health across Canada.
	Institute for Clinical Evaluative Sciences	An independent, not-for-profit research institute embracing a community of research, health informatics, data and clinical experts and a secure, accessible collection of health-related data obtained through routinely collected administrative and other public health care data.
	Cancer Care Ontario	Cancer Care Ontario is the Ontario government's principal cancer advisor.
	Ontario Ministry of Health and Long-term Care	<p>The Government of Ontario ministry that is responsible for administering the health care system and providing services to the province of Ontario.</p> <p>It collects various data from reporting hospitals through the self-reporting initiative.</p>
	Health Quality Ontario	<p>Health Quality Ontario (HQP) is a provincial advisor on quality in healthcare. HQO reports to the public on the quality of the healthcare system and evaluates the performance of Ontario's health system including via an annual <i>Measuring Up</i> report.</p> <p>HQP reports publicly and at hospital level on the following measures: handwashing compliance, surgical safety checklist compliance, clostridium difficile Infection, and antibiotic resistant blood stream infections.</p>
	Accreditation Canada	Safety is part of Accreditation Canada's criteria, for example Required Organisational Practices for infection control, medication use, risk assessment and safety culture.
	BC Patient and Safety Council, Vancouver	The BC Health Quality Matrix is a tool designed to be used at all levels of the BC health system for planning, improvement and measurement. Patient safety is a key dimension of quality, defined in terms of avoiding harm resulting from care.

Why patient safety matters

Patient safety and the burden harm

Patient safety is a growing concern in Australia and internationally. It is estimated that around 10% of hospital admissions worldwide are associated with an adverse event resulting in prolonged hospitalisation, disability or death.¹ There is increasing recognition of the impact of avoidable harm due to unsafe care for patients and families in terms of morbidity and mortality. Avoidable patient harm leads to needless patient suffering, adds to healthcare expenditure and exerts a significant economic and social burden on individuals, communities and health systems worldwide. It is estimated that around 15% of hospital expenditure and activity in Organisation for Economic Cooperation and Development (OECD) countries can be attributed to treating patient harms due to failures in patient safety.^{2,3}

According to a recent Grattan Institute report, one in every nine patients who go into hospital in Australia suffers a complication. For patients who stay overnight, that number increases to one in four. Each year in Australia, complications are estimated to cost more than \$4 billion for public hospitals, and more than \$1 billion for private hospitals.⁴

The impact of unsafe care is so great that, globally, over the last few years there has been a shift away from fixed fee-for-service funding models in healthcare and towards value-based reimbursement payment that rewards safety and quality patient outcomes. Key drivers for this change are incentivising higher value and safer patient care while curbing the rising costs of healthcare.³ In Australia, pricing and funding arrangements for hospitals have recently been adjusted to incentivise reduction of preventable complications to achieve better outcomes.⁵

Measuring patient safety

Promoting patient safety to prevent patient harm is receiving increasing policy attention in Australia and internationally. Measurement is considered a starting point for improving safety because it allows services and systems to quantify the incidence and impact of patient harm. It also enables the monitoring of safety performance over time and across providers and care settings. Measurement also supports learning and evaluation of the effectiveness of interventions aimed at reducing harm.

Multiple approaches and multiple data sources

There is no single measure of patient safety and no single data source with which to measure it. Patient safety measurement relies on a suite of measures and data sources. It must be valid and reliable, particularly if the data are intended for benchmarking and public reporting. The reliability of the data source must be established and the type of harm being measured must be defined. Measures also need to be clearly defined, and consistent measurement, reporting and diagnostic coding practices are required when comparing across services or systems.^{2,3}

A variety of methodologies have been developed for measuring adverse events including those by the Australian Commission on Safety and Quality in Health Care (ACSQHC), the Independent Hospital Pricing Authority, the US Agency for Healthcare Research and Quality, the OECD and the Canadian Institute for Health Information (CIHI). In recent years, there has been a concerted effort internationally to systematise, standardise and harmonise methodologies.^{2,3} There are increasing efforts to codify datasets to allow for comparisons of clearly defined measures across services and over time, and for national and international benchmarking. The OECD collects and reports internationally comparable data on sentinel events, and adverse events including rates of: retained surgical device or fragment; post-operative wound dehiscence; post-operative pulmonary embolism or deep vein thrombosis; post-operative sepsis; and obstetric trauma.⁶

Hospitals are increasingly required to routinely collect data about patients and processes of care in standardised ways so they can be used for a variety of purposes, including monitoring and reporting on the quality and safety of care. Key components of patient safety measurement systems include:

- adverse events reporting, including incident information management systems (IIMS) and compliance audits
- routinely collected data
- patient reported measures.²

Reporting

Patient safety reporting to relevant stakeholders, especially policy makers, managers and clinicians, is critical for holding systems, services and providers accountable for the quality of care they provide. It is also needed to drive learning and improvement across the system in timely, effective and efficient ways.² Public reporting and benchmarking at local national and international levels can provide an important lever for learning and action for improvement.

In many areas, patient safety measurement and reporting has been integrated into a broader policy framework. In Australia, for example, appropriate governance mechanisms are in place to ensure measures are accurately collected and reported to relevant stakeholders, such as policy makers, health services managers and clinicians.

Adverse events

Patient safety is commonly measured in terms of patient harm. Measurement has traditionally focused on retrospectively capturing the number and type of harmful incidents (adverse and sentinel events) potentially harmful incidents (events that could have but didn't cause harm), and 'near misses' (events that could have led to a death or serious injury were it not for timely intervention from a health professional). Adverse events are unintended, potentially harmful events arising from healthcare. They can have profound consequences for patients and families, prolonging hospital stays and affecting long-term health outcomes.⁷⁻¹⁰

According to a recent OECD report, most of the burden of adverse events is imposed by healthcare-associated infections (HAI), venous thromboembolism (VTE), pressure ulcers, medication error and wrong or delayed diagnosis.³

Overview of patient safety measures reporting in Australia

Australian Commission on Safety and Quality in Health Care

The Australian Commission on Safety and Quality in Health Care (ACSQHC) has developed an agreed list of 16 high priority Hospital-Acquired Complications (HACs) measures for monitoring and reporting, and a national algorithm for measuring them. This list is used to monitor and report safety across the hospital system, for reporting and funding purposes (Table 2). A clinician-led process was used to develop the list which comprises complications regarded as potentially preventable, or that may be reduced through clinical risk mitigation strategies. The Commission also provides specifications for the HACs' list including the codes, inclusions and exclusions required to calculate HACs rates.⁷⁻⁸

NSW Health uses HACs for performance management and improvement purposes. It has included eight ACSQHC HACs as key performance indicators in its 2018-19 Service Performance Agreement with local health districts and several as patient safety indicators for improvement measures.

Table 2 Hospital-Acquired Complications, ACSQHC⁷

Complication	Diagnosis
Pressure injury	Stage III ulcer Stage IV ulcer Unspecified decubitus ulcer and pressure area
Falls resulting in fracture or intracranial injury	Intracranial injury Fractured neck of femur Other fractures
Healthcare-associated infection	Urinary tract infection Surgical site infection Pneumonia Blood stream infection Central line and peripheral line associated bloodstream infection Multi-resistant organism Infection associated with prosthetics/implantable devices Gastrointestinal infections
Surgical complications requiring unplanned return to theatre	Post-operative haemorrhage/haematoma requiring transfusion and/or return to theatre Surgical wound dehiscence Anastomotic leak Vascular graft failure Other surgical complications requiring unplanned return to theatre
Unplanned intensive care unit admission	Unplanned admission to intensive care unit
Respiratory complications	Respiratory failure including acute respiratory distress syndrome requiring ventilation Aspiration pneumonia
Venous thromboembolism	Pulmonary embolism Deep vein thrombosis
Renal failure	Renal failure requiring haemodialysis or continuous veno-venous haemodialysis
Gastrointestinal bleeding	Gastrointestinal bleeding
Medication complications	Drug related respiratory complications/depression Haemorrhagic disorder due to circulating anticoagulants Hypoglycaemia
Delirium	Delirium
Persistent incontinence	Urinary incontinence
Malnutrition	Malnutrition
Cardiac complications	Heart failure and pulmonary oedema Arrhythmias Cardiac arrest Acute coronary syndrome including unstable angina, STEMI and NSTEMI
Third and fourth degree perineal laceration during delivery	Third and fourth degree perineal laceration during delivery
Neonatal birth trauma	Neonatal birth trauma

Safety performance measurement and reporting

Performance measurement and reporting is one of the cornerstones of Australian health system reform. Patient safety is reported as part of the Australian public hospitals' performance indicator framework. The Australian Government Productivity Commission's report on government services provides detailed state and territory level reporting on the following measures:

- selected healthcare-associated infections (number of *Staphylococcus aureus* (including Methicillin-resistant *Staphylococcus aureus* [MRSA]) bacteraemia (SAB) patient episodes associated with public hospitals (admitted and non-admitted patients)
- adverse events treated in hospitals (number of incidents where a person was harmed during hospitalisation), measured by separations that had an adverse event, such as infections, falls resulting in injuries and problems with medication and medical devices
- falls resulting in patient harm in hospitals (number of separations with an external cause code for fall and in a health service area, expressed as a rate per 1000 hospital separations).¹¹

Sentinel or 'never' events are also reported. These are a subset of adverse events that result in death or very serious harm to the patient. Examples of sentinel events include procedures involving the wrong patient or body part resulting in death or major permanent loss of function, suicide of a patient in an inpatient unit, and retained instruments or other material after surgery requiring re-operation or further surgical procedure.¹¹

The Australian Institute of Health and Welfare's biennial report *Australia's Health* covers routinely reported national indicators of safety and quality of care for admitted patients in Australian hospitals. These include adverse events in hospital, sentinel events, unplanned readmissions, and adverse events that have a hospital-acquired diagnosis (condition onset flag) which identifies them as hospital-acquired and having happened after admission to hospital.⁸ The Australian hospital statistics and the *MyHospitals* website provide public information on selected safety and quality measures at the national, state and territory and hospital level, on an annual basis.

The Victorian Agency for Health Information provides quarterly reports to health service boards and clinicians across Victoria. These include select healthcare associated infections (e.g. central line and SAB), death in low mortality diagnosis-related groups and sentinel events.¹²

Incident information management systems

Incident information management systems (IIMS) capture information about harmful or potentially harmful clinical events. An example is the NSW IIMS which is managed by the Clinical Excellence Commission. This state-wide IIMS is one of the largest clinical incident reporting systems in the world, reporting over 140,000 incidents and completing 600 root-cause analyses each year.¹³ NSW Health staff members are required to report all identified clinical incidents, near misses and complaints in the IIMS. While these are mandatory, they rely on staff cooperation. State-wide data are publicly reported.

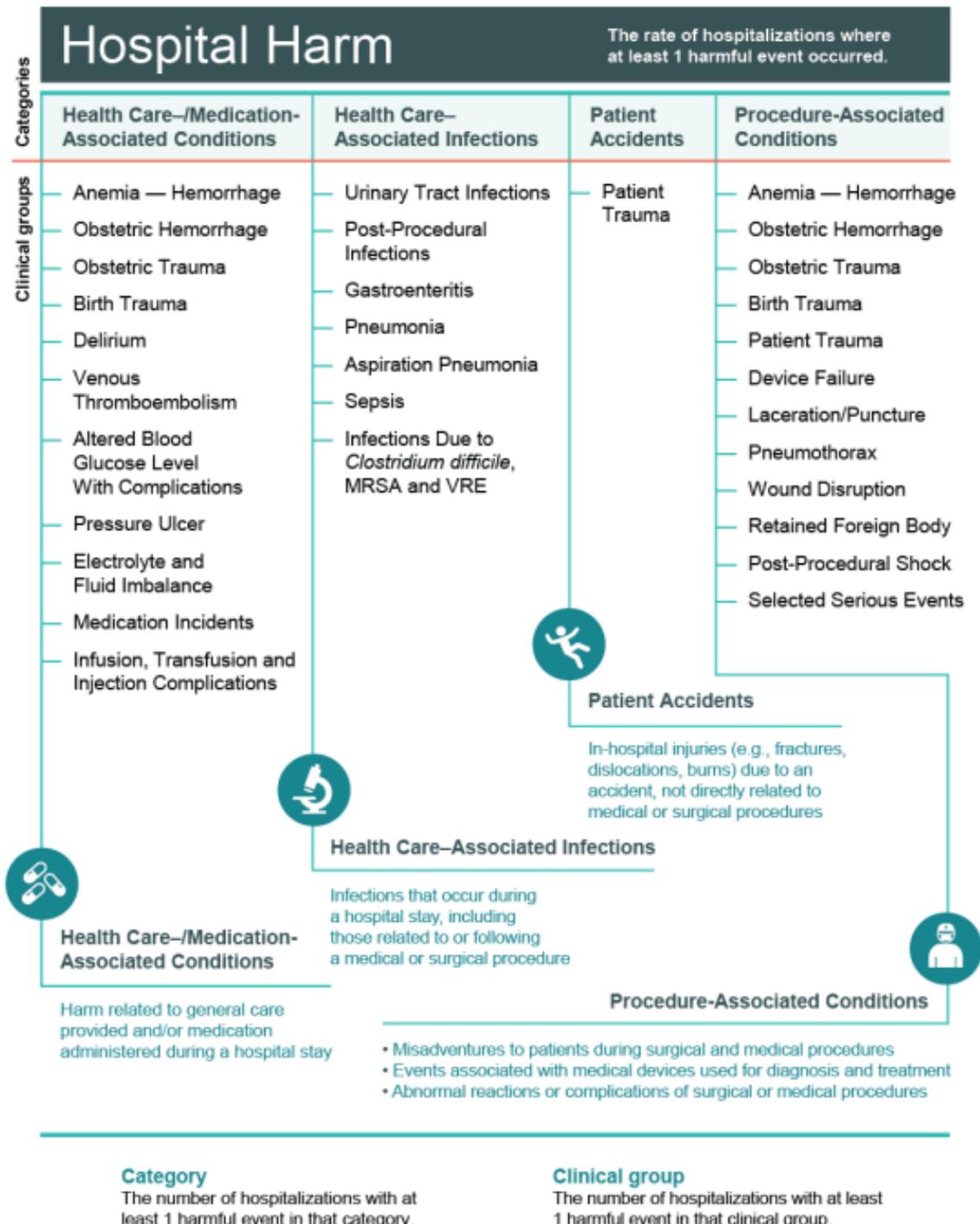
Standardised, systematic measurement of adverse events

Most of the organisations I visited have a structured program for measuring, monitoring and reporting patient safety and adverse events which is integrated into a broader government policy framework. All the organisations I visited considered reporting essential to learning from adverse events and improving safe delivery of care. In the case of public reporting, a prudent approach was recommended. This approach involved clearly articulating the purpose of reporting, active engagement from clinicians and other stakeholders and consideration of internal and state-wide reporting to proceed reporting at hospital or provider level.

Canadian Institute for Health Information

The Canadian Institute for Health Information (CIHI), in partnership with the Canadian Patient Safety Institute (CPSI), developed a new method for measuring hospital harm. The new measure called the hospital harm indicator was linked to improvement resources led by CIHI and CSPI. The hospital harm indicator measures harms that occur in Canadian hospitals after admission and require treatment within the same hospital stay. Administrative data is used to measure the rate of hospitalizations when at least one potentially preventable harmful event occurred across four categories and 31 possible clinical groups (Figure 1). CIHI has also developed an improvement resource that links each type of harm to practices that can help reduce their occurrence.¹⁴

Figure 1 CIHI Hospital Harm Framework¹⁴



The promise of data linkage

The Institute for Clinical Evaluative Sciences in Ontario leads cutting edge studies that evaluate healthcare delivery and outcomes in Ontario. ICES holds a vast array of de-identified health-related data including population-based health surveys, anonymous patient records, and clinical and administrative databases. In Ontario, an encrypted number is applied to individual person-level data that stays with the patient through all points of access to the health system and across hundreds of datasets, with the exception of prescription records. Following adherence to strict privacy and security protocols, ICES scientists can link de-identified data to better understand the patient journey and outcomes of care. Their research and reports help to inform and influence the design, implementation and evaluation of health policy and the delivery of care in the Canadian province and beyond.

Care Quality Commission

Comprehensive public reporting on hospital and health system performance is more established in the UK than in other countries I visited. The UK Care Quality Commission (CQC) collects and uses a variety of information to assess safety across NHS services. It also carries out detailed inspections of health facilities and reports publicly on its findings. Hospitals receive an overall rating, based on the extent to which they are found to be safe, effective, caring, responsive and well-led. These ratings are publically reported alongside a detailed CQC detailed Inspection report (Figure 2).

Figure 2 Example public report CQC inspection¹⁵

Liverpool Women's Hospital Good [Sign up for alerts](#) [Share your experience](#)

Some of the ratings of services provided at Liverpool Women's Hospital shown on this page are no longer relevant. Our latest ratings of specific services offered at the hospital are:

- End of life care: Good ●
- Neonatal services: Good ●
- Gynaecology: Requires Improvement ●
- Maternity: Good ●

The other service ratings are from areas we now inspect as part of these. We will update this page to reflect this soon.

[Read the latest inspection report for Liverpool Women's Hospital.](#)

Overview | Inspection Summary | Reports | Registration Info | Contact

Overview and CQC Inspections

Click for key ✓ ✕ ⚠ ☆ ● ● ● ● ● ●

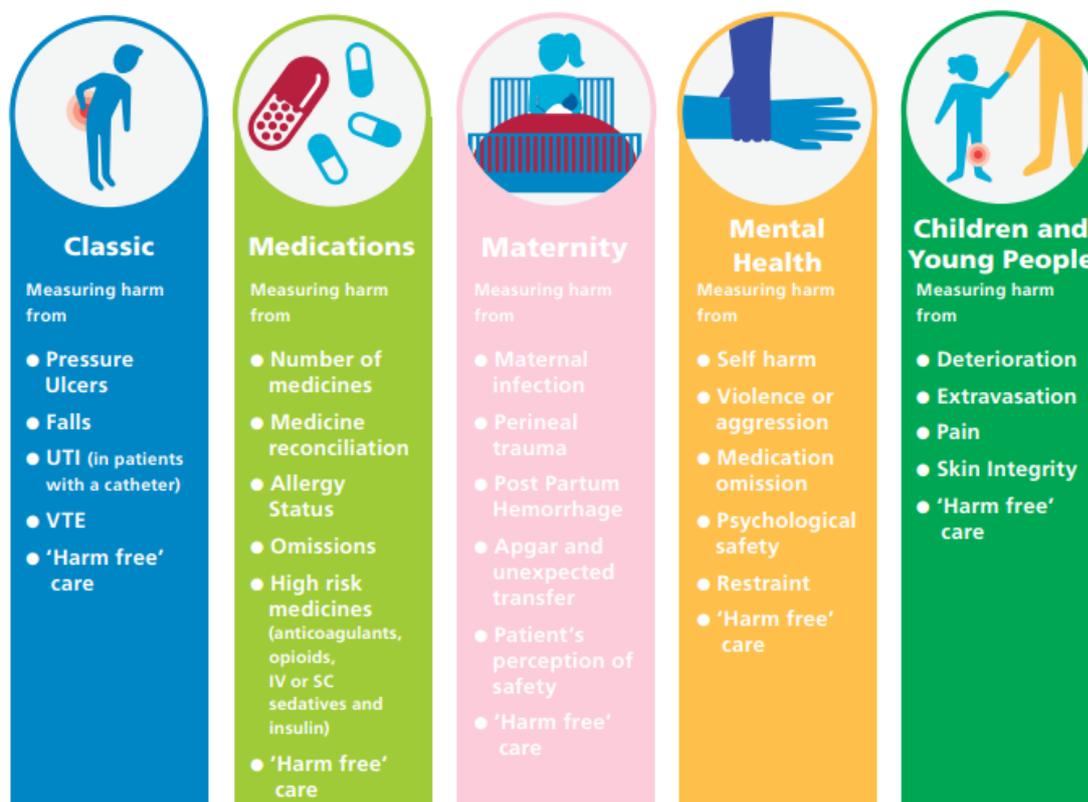
Overall Good Read overall summary	Safe	Good ●	CQC inspections & ratings of specific services	
	Effective	Good ●	Outpatients and diagnostic imaging	Good ●
	Caring	Good ●	Maternity	Good ●
	Responsive	Good ●	Gynaecology	Requires improvement ●
	Well-led	Good ●	Maternity (community services)	Requires improvement ●
+ Our inspector's description of this service			Maternity (inpatient services)	Good ●
Latest inspection: 29 Jan to 28 Feb 2018 Report published: 8 August 2018			Surgery (gynaecology)	Good ●
Download CQC inspection report PDF 329.75 KB (opens in a new tab) All reports			Termination of pregnancy	Good ●
			Neonatal services	Good ●

NHS safety thermometer – taking a ‘temperature check’ on safety

The NHS Safety Thermometer is a point-of-care survey used to measure the proportion of patients affected by harm (Figure 3). The goal is to support local improvement through measurement and by agreeing baselines, setting improvement goals and detecting change over time at a local, regional or national level. Collecting data at the point of care raises awareness of common safety risks and helps identify opportunities for direct improvements to patient care, ‘empowering frontline teams with data and calling them to action’ (NHS).¹⁶ Results are reported publically, at ward level, via interactive dashboards which are updated regularly.

Figure 3 NHS Safety thermometers¹⁷

What Safety Thermometers are available and what do they measure?



Each Safety Thermometer includes basic demographics: age, sex, setting and specialty.

NHS Scotland

There is a national approach to data collection and analyses in the Scottish NHS, including an agreement for national records to routinely link death data on a monthly basis. Hospital standardised mortality ratios, adjusted for a range of factors including age, gender, comorbidity (using Charleston index), prior morbidity, number of previous admissions, and specialty are published publically on a quarterly basis. Other data, for example, condition-level data, are not publically reported but are provided to board trusts.

Integrating patient safety reporting for accountability and improvement

Several organisations I visited hold parallel regulatory, monitoring and improvement roles. Patient safety data are collected at national and jurisdictional levels for multiple purposes including accountability, accreditation and quality improvement. The work of the CQC and Health Improvement Scotland provide good case studies of such organisations.

The CQC monitors, inspects and regulates registered hospitals, care homes, dental and primary care services across England to make sure they meet fundamental standards of quality and safety. Sites that are registered with CQC are monitored continuously using a vast array of data sources and measures. These are included in the internal CQC *Insights* reporting platform. CQC periodically inspects the sites and publishes detailed reports with overall ratings of care across the dimensions of safety, effectiveness, responsiveness, caring, and well-led. NHS Digital supplies a mandated minimum dataset which includes mental health and general practice (GP) data and social care data.¹⁵

Health Improvement Scotland

Interviewees at Health Improvement Scotland described the organisation as providing a 'wrap around service' which involves data collection, analyses and reporting for the purposes of accountability and improvement. Boards are held accountable for their performance data, and they are also encouraged to engage with the data and Health Improvement Scotland staff who assist them with targeted quality improvement initiatives. Organisations are supported through a structured approach to learning from adverse events and taking practical steps towards improving care.

The power of the patient voice

Patients have a unique and valuable perspective on the processes and outcomes of health care. Collected systematically and at scale, patient reported measures can provide important information about the safety of care that can be used for improvements, learning and accountability.¹⁷⁻¹⁸ Health services can also use these measures for accreditation purposes, and assessing adherence to relevant safety-related policy directives and guidelines, for example, whether patients' identify is checked prior to a procedure or dispensing medication.

Enhancing the use of patient experience data to improve the quality and safety of healthcare was a recurring theme of the ISQUA 34th International Conference (1-4 October 2017) I attended in London. Of particular relevance was the increasing use of platforms such as *Patient Opinion*, and other digital and social media platforms in driving real-time attention to patient concerns, complaints and compliments. The 'patient voice' was heralded as a major disruptor and source of important information about safety. This was seen as largely arising as a response to an increasing shift towards self-management, care delivered in the community and an increasing desire among patients to be involved in decisions about their own care.

In the UK, there is a range of social media sites that encourage patients to ask questions and share stories about their experiences of healthcare and to fast-track investigations and public responses from service managers. These include *Patient Opinion*, *Patient Voices*, and *DigitalMe*. In Canada, the involvement of patients and carers in the co-design of safer patient care is evident in the work of the CPSI, a coalition of key stakeholders in patient safety including health system leaders, representatives from CIHI, CPSI, clinicians and patient groups.

Systematically collected patient survey data is an important source of information about safety

Patient experience and outcomes' measures are used across a number of the sites I visited. They are seen as an essential component of measuring the quality and effectiveness of healthcare services, for informing improvement and, in some cases, performance management. CQCs *Insights* tool includes patient experience data alongside routinely collected clinical data to provide a fuller picture of the quality of care. Cancer Care Ontario (CCO) uses a range of tools to collect and report patient

experience and outcomes across cancer services in Ontario, including multiple PROMs tool (Figure 4).¹⁹

Figure 4 Patient reported outcomes tool, Cancer Care Ontario¹⁹

The image displays several patient-reported outcome (PRO) tools from Cancer Care Ontario. The tools are:

- Your Symptoms Matter – Prostate Cancer**: A questionnaire for prostate cancer patients, including sections for 'Expanded Prostate Cancer Index Composite for Clinical Practice (EPIC-CPI)' and 'Prostate Cancer Quality of Life (PCQL)'. It asks about urinary, sexual, and bowel problems.
- Your Symptoms Matter – General Symptoms**: A 'Cancer Care Ontario Action Cancer Ontario' tool for 'General Symptoms' using the 'Edmonton Symptom Assessment System (ESAS-R)'. It includes scales for Pain, Tiredness, Nausea, Lack of Appetite, Shortness of Breath, Depression, and Anxiety.
- Your Symptoms Matter – Daily Activities**: A tool for 'Daily Activities'.
- Patient Reported Functional Status (PRFS) Tool**: A tool for 'Patient Reported Functional Status (PRFS)'. It asks about functional status over the past month, with scales for 'Normal', 'Fairly Normal', 'Fairly Impaired', and 'Very Impaired'.

Accompanying photos show:

- A patient using a kiosk labeled **a.k.a EPIC**.
- A computer monitor displaying a survey labeled **a.k.a PRFS**.

Patient-reported survey questionnaire

The *OECD Survey for Selecting Core Questions* identified three domains of patient safety as the basis for nine core questions that could be included in patient-reported safety questionnaires to monitor and benchmark across systems. These were: *Incident prevention* (for example, information sharing and management), *Patient-reported incidents* (for example, complications), and *Incident management* (incident reporting and handling).²

The NSW Patient Survey Program includes similar questions across all of its nine surveys (example provided in Table 3).²⁰

Table 3 Questions to measure patient safety comparison OECD core questions and Adult Admitted Patient Survey, NSW 2018 ^{2,20}

OECD Survey for Selecting Core Questions, 2018	Adult Admitted Patient Survey 2018, NSW Patient Survey program
1. Did the health professional you consulted know important information about your medical history?	In your opinion, did the doctors who treated you know enough about your medical history?
2. Did a member of staff confirm your identity prior to administering your medication?	Did nurses ask your name or check your identification band before giving you any medications, treatments or tests?
3. Did a member of staff confirm your identity prior to your procedure/operation/surgery?	Did nurses ask your name or check your identification band before giving you any medications, treatments or tests?
4. Before you left the clinic/hospital, were you given any written or printed information about what you should or should not do after leaving the clinic/hospital?	Thinking about when you left hospital, were you given enough information about how to manage your care at home?
5. Did a member of staff explain the purpose of the medications you were to take at home in a way you could understand?	Did a health professional in the hospital explain the purpose of this medication in a way you could understand?
6. Did a member of staff explain to you how and when to take the medications?	
7. Did you experience a medication-related error (e.g. wrong prescription, wrong dose, wrong time, dispensing error in pharmacy, wrong administration route, reported allergic reaction, omitted by mistake)?	
8. Did you see, or were you given, any information explaining how to provide feedback or complain to the clinic/hospital about the care you received?	
9. If you experienced mistakes or unnecessary problems in connection with your clinic visit/hospital stay, did the staff handle the mistake or problem in a satisfactory way?	In your opinion, were the health professionals open with you about this complication or problem?

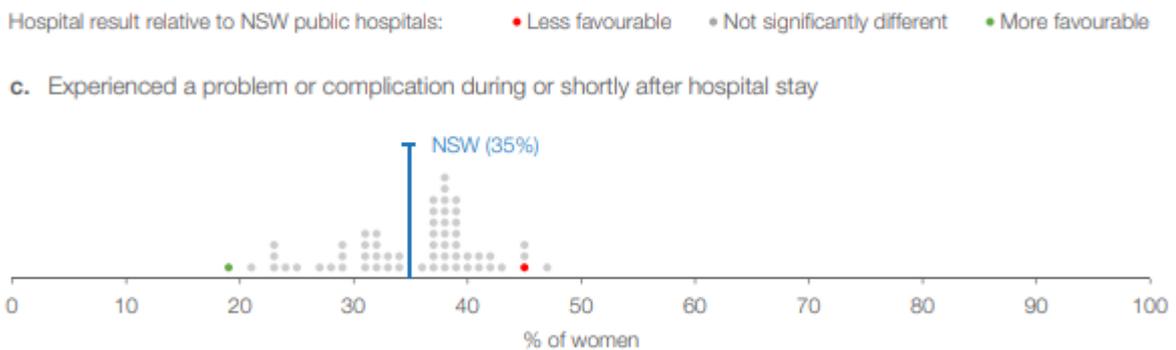
Patient reported complications of care

Many surveys include questions that relate directly or indirectly to patient safety. For example, the NSW Patient Survey Program, managed by BHI, includes specific questions about any problems or complications patients may have experienced during or after their hospital stay. Results are publicly reported at state, local health district, hospital peer group and individual hospital level, providing important information for targeting improvements and for benchmarking and making comparisons across services and over time.

In the recent NSW Maternity Care Survey 2017, more than one in three women (35%) said they experienced a problem or complication (Figure 5). Almost two-thirds of those women (63%) rated its seriousness as either 'not at all serious' (19%) or 'not very serious' (44%).¹⁶ The percentage of women who said they experienced a problem or complication ranged from less than 20% to over 45% across individual NSW public hospitals (Figure 5).²¹

Clinical definitions of adverse events and complications of care may not correspond with patients' self-reported experiences, leading to different results for administrative and survey data. However, this survey data can be used in conjunction with administrative data to inform healthcare improvement efforts.

Figure 5 Percentage of women in each hospital who said they experienced a complication, during or shortly after their hospital care, BHI, Maternity Care Survey 2017²¹



Linking data on patient reported experiences and outcomes of care, patient incidents and complaints to routinely collected administrative data can provide an important window into processes of care and cultures in hospitals and health services, unveiling risks and potential areas from further investigation.²²

Creating systems for safety

According to Duckett et al (2018) hospitals should move away from a focus on errors in healthcare delivery towards reducing all complications to the 'best rate achievable'. This requires a more comprehensive picture that includes patient outcomes, and an understanding of how some hospitals and clinical teams reduce all complications and achieve excellent outcomes.²³ Healthcare systems have historically monitored the incidence of past error and harm to assess the safety of health services. Several interviewees stressed the importance of designing systems for safety – proactively putting systems in place to ensure safety, rather than responding when things go wrong.

A recurring topic of the ISQua 34th International Conference was shifting from a 'rear-view mirror' approach to safety management to finding practical solutions to common risks to patient safety by measuring reliability, anticipation and preparedness on a daily basis. The evolution of safety thinking in other complex adaptive systems such as health was explored with lessons from the aviation industry and the handling of other major disasters. High-profile instances of hospital harms were described as arising from multiple and systematic failures of care. The importance of prospectively identifying and mitigating factors commonly associated with major events was discussed; recognising that these factors were a concern in themselves.

Charles Vincent and colleagues argue for a more rounded approach to safety measurement and monitoring that goes beyond measuring past harms. They developed a framework for measuring and monitoring safety in terms of the *Reliability of the system*, its *Sensitivity to operations*, the level of *Anticipation and Preparedness* within the system, the degree of *Integration and Learning* and the level of *Past harm* (Figure 6).²⁴ This includes clinicians and managers adopting a positive and proactive approach to patient safety, involving communication, leadership and standardising processes and procedures, where appropriate.

Other key components for such systems include attention to safety at an executive level and a culture of safety where healthcare workers are encouraged to report errors, incidents of harm or near-miss incidents without fear of sanctions or disciplinary action. Importantly, they are encouraged to ask 'How safe is our care today?' Staff are supported to take responsibility for identifying and mitigating risk, ensuring the safest possible care for patients at all times.²⁴ Staff experience in the workplace is emerging as an important source of data on patient safety. The potential direct and indirect adverse consequences of poor workplace cultures on patient safety and care is highlighted in a number of areas including the UK Francis report.²⁵⁻²⁷ According to CQC interviewees, four measures of staff

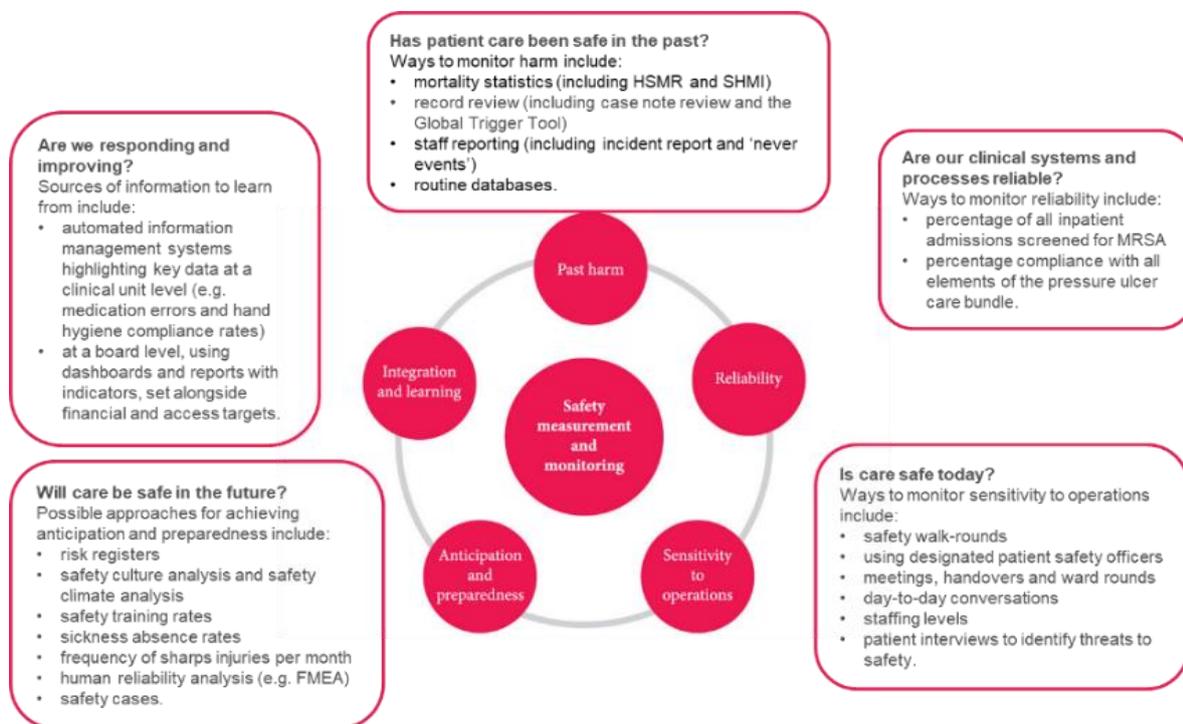
survey have a strong correlation with patient survey results. These are: overall engagement, whether staff report their organisation as a good place to work, ratings of communication and extent of bullying.

Measuring harm-free care

Healthcare Improvement Scotland is working with the Health Foundation and three other regional improvement bodies – Advancing Quality Alliance (AQuA), Haelo and Yorkshire and Humber Improvement Academy – on implementing the framework with five key elements for measuring and monitoring safety in a healthcare system, developed by Charles Vincent and colleagues from Imperial College London (Figure 6).

At the time of my scholarship, the framework was being tested in two Scottish sites and involved everyone including cleaners. The project was designed to improve mental health medication safety. The sites went for 57 weeks without missing doses, allowing staff to look at the whole system using weekly dashboards, used as a template for reporting to Boards with consistent language around safety.

Figure 6 A framework for the measurement and monitoring of safety, the Health Foundation²⁴



The importance of stakeholder engagement

Several interviewees emphasised the importance of engaging stakeholders with performance data, including patient safety data, as essential to effecting change. Accessible, timely reporting of summary information was regarded by many as an important element of effective engagement. While many of the organisations I visited were responsible for collecting, analysing and reporting data, deriving and communicating intelligence from the data was explored as an ongoing challenge.

CQC 'Insights'

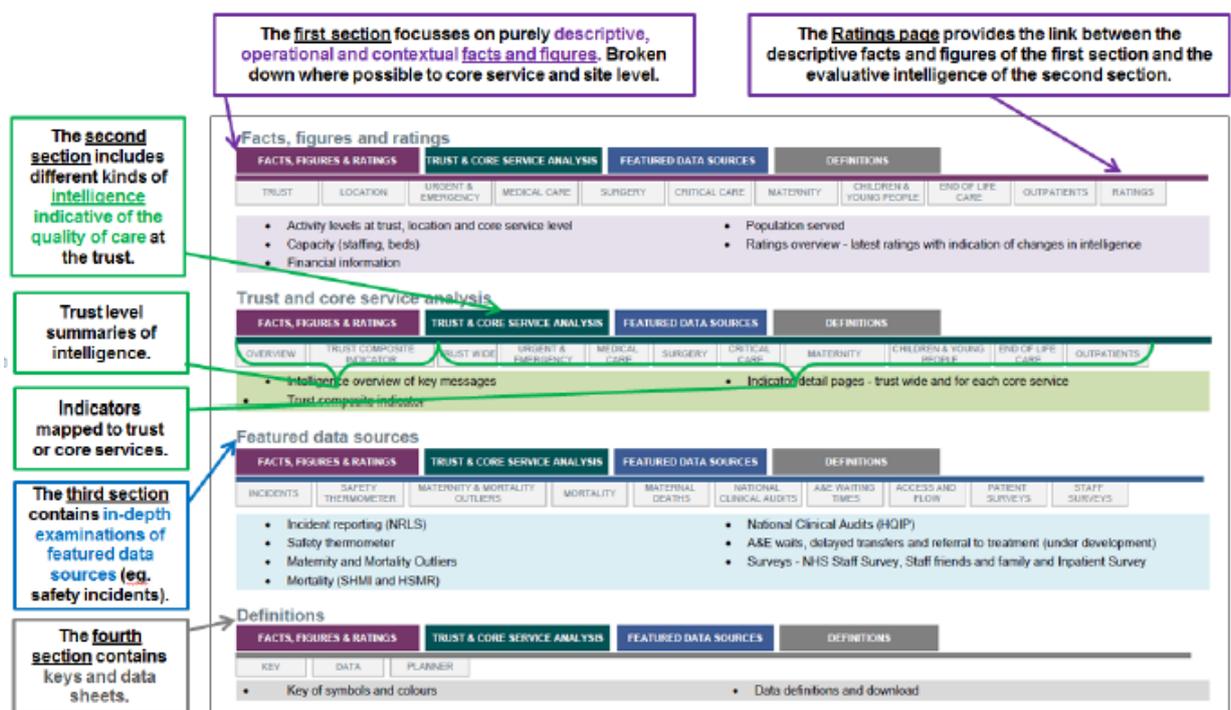
The CQC's interactive *Insights* tool was developed to enable more intelligence-driven measurement and monitoring of the performance of services. *Insights* comprises a live dashboard (refreshed overnight) of around 260 indicators. CQC staff use the *Insights* dashboards for monitoring and for informing engagement. *Insights* receives periodic updates depending on availability of data – some are monthly. Point-in-time extracts can be generated from any part of *Insights* and can be used to inform conversations with trusts at any stage, including between regular releases. Trusts have access

to their own data and can see how they compare on specific indicators with other trusts and the national average. They cannot however view other trusts data unless they collaborate to do so.

The overall structure of the *Insights* tool is illustrated in the tool's interactive table of contents (Figure 7), which has quick links to each of the subsequent pages listed on it, including links to the databases underpinning these results.²⁸ The featured data sources section includes in-depth trend information, sometimes at ward level, dealing in greater depth with particularly important intelligence streams such as safety incidents and staff and patient surveys. For example, the *NHS Safety Thermometer* provides the latest and trend information about pressure ulcers, falls with harm, catheter acquired urinary tract infections and venous thromboembolism across core service areas. Ward-level outliers are identified. Annual Hospital Standardised Mortality Ratio (HSMR) and Summary Hospital-level Mortality indicator (SHMI) are included.

Figure 7 Structure of CQC Insights

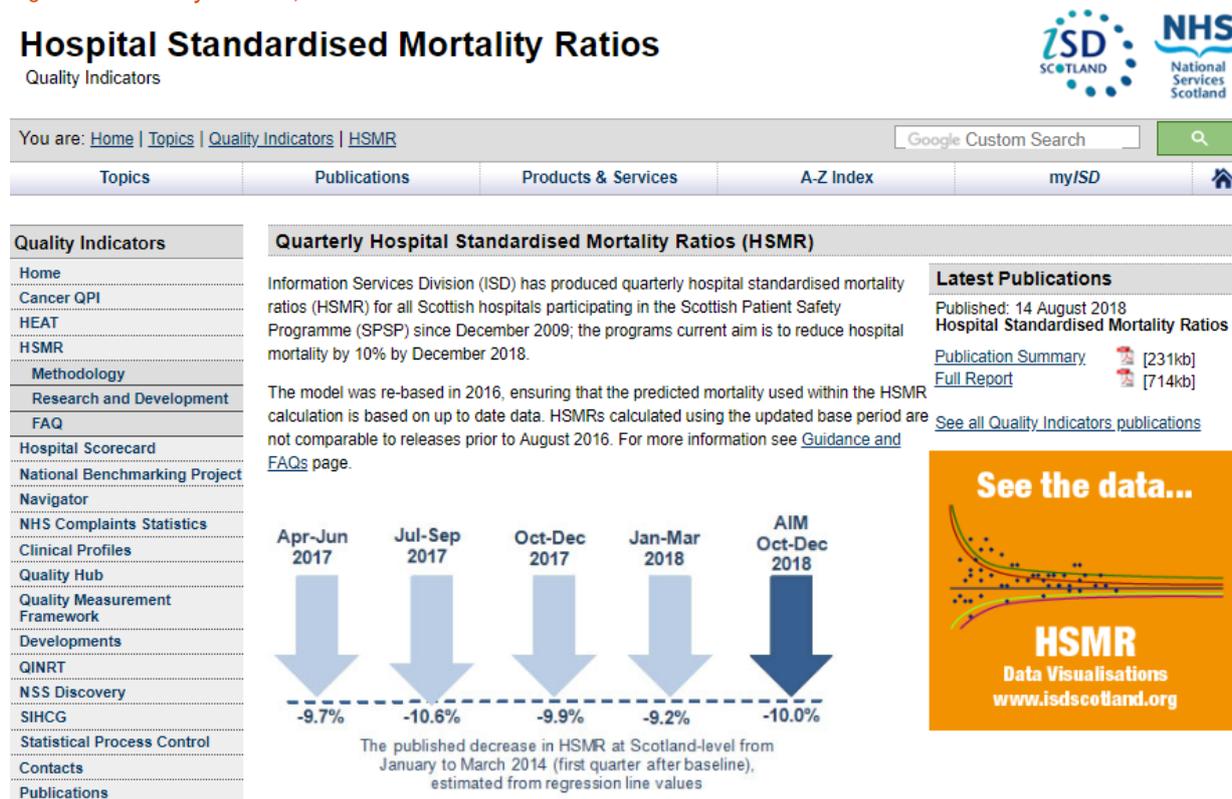
Figure 1: The structure of the Acute Insight document



NHS National Services Scotland – Discovery

In Scotland, national health and social care data are collected and analysed by NHS National Services Scotland. These data are analysed and reported in the interactive *Discovery* tool. *Discovery* provides limited public access to the information system, specifically quarterly hospital standardised mortality ratios (HSMR) for all Scottish hospitals participating in the Scottish Patient Safety Programme (SPSP) (Figure 8).

Figure 8 Quarterly HSMR, NHS Scotland²⁹



An agreement exists providing access for the Scottish Information Services Division to national records to routinely link death data monthly. HSMRs are published on a quarterly (publically) 30-day post admission mortality data at hospital level. Condition-level HRMRs (using 140 primary diagnosis codes) are not publically available. HSMRs are adjusted for a range of factors including age, gender, comorbidity (using Charleston index), prior morbidity, number of previous admissions, specialty, etc. Control charts and run charts are used to identify outlier hospitals which trigger a chain of responses, including formal engagement with boards of trusts and the provision of targeted review and support.

Approved users are provided with various levels of secure access to a range of comparative healthcare information to support performance and quality improvement in Health Boards across Scotland. It is an ongoing collaboration between NHS Boards, the Scottish Government, and NHS National Services Scotland.²⁹

Health Quality Ontario

HQO reports at province and individual hospital level on a range of patient safety indicators, some of which are included in hospital quality improvement plans. Interviewees at HQO emphasised the importance of stakeholder engagement in the 2016 review of safety indicators. Indicators were selected based on a comprehensive review which included hospital administrators, measurement experts, patient councils, data providers, and other hospital safety experts in Ontario and Canada, who also made recommendations for public reporting.³⁰ The following are reported via the HQO public website at province and individual hospital level: handwashing compliance among health care, surgical safety checklist compliance, clostridium difficile infection and antibiotic resistant blood stream infections.

The tension between blame and accountability and the importance of leadership

Reporting is an important lever for improvement and one that must be balanced with a culture that supports transparency and open disclosure.^{1,2} This requires a shift from a 'blame culture', which discourages reporting and encourages fear and cover-up, to a 'just' culture that harnesses learning and improvement efforts so that harms are avoided in the future.²

According to a recent OCED report, the true extent of harm and patient safety across health care settings and systems is still unknown due to fear among health professionals about the negative consequences of disclosure and a lack of the necessary systems and structures for measurement and reporting.²

Key areas of work in the King's Fund focus on the importance of effective leadership and staff engagement for creating a 'safe' safety culture within organisations where incidents are reported. This is evidenced by the publication of a range of reports and blogs related to this topic in recent years, including *Embedding a culture of quality improvement (2017)*, *Quality improvement in mental health (2017)* and *Tackling variations in clinical care Assessing the Getting It Right First Time (GIRFT) programme (2017)*.

Duckett argues for a more rigorous and transparent approach to measuring and reporting on patient safety in Australia, and for making data more relevant, accessible and understandable for a variety of audiences. He argues that clinicians should have greater access to their data so they can see how they are performing compared with their peers and identify opportunities for improvement. Duckett calls for clinical registries to share information more widely, capture a greater proportion of the care given, and for timely delivery of data back to clinicians, including routine data and patient-experience data.⁴

Summary of analysis and implications for the agency

Developing and reporting patient safety measures is an increasing focus of our work at BHI. One of our important goals is supporting hospitals and health services to reflect on their performance, identify and address areas of concern, and ultimately drive transparency and accountability to improve service delivery and patient outcomes.

The importance of stakeholder engagement to ensure accurate and meaningful measurement and reporting is clear. Patient safety performance measurement and reporting at BHI is underpinned by a robust methodological approach to exploring measures for internal and external public reporting, and collaboration with key stakeholders and clinicians.

Conclusion

My HARC scholarship activities have helped inform BHI's thinking around patient safety measurement and reporting; in particular ensuring meaningful engagement with stakeholders, accessible reporting, and being responsive to and aligning with system needs and priorities.

The benefits of my scholarship go beyond information gathering. They have enabled development of enduring and productive professional relationships with international researchers to enable cross-jurisdictional sharing of ideas and expertise, and future collaborations.

Appendix 1 Description of any other activities undertaken as part of the HARC Scholarship, 2017

International Society for Quality in Health Care (ISQua) 34th International Conference

I attended a variety of presentations and a panel discussion over a four-day International Society for Quality in Health Care (ISQua) 34th International Conference (1-4 October 2017) that contributed to the overall 2017 conference theme '*Learning at the system level to improve health care quality and safety*'.

The event brought together key experts from Australia and other countries to explore a range of issues relating to improving safety and quality in healthcare. It also provided a valuable networking opportunity and set the stage for further engagement with representatives of organisations I visited during my scholarship.

The presentations and panel discussion focused on how we can reduce the rate of harms by creating learning systems which look at things that are going well in a complex adaptive system, rather than focusing excessively on harm. While incident analysis provides a window into safety, it also provides limited 'rear-vision' information. We heard that 'teams create safety' and about the importance of listening to staff, communication, leadership, mutual support in organisations, and the nurturing of positive deviance where people plan for safety day-to-day and what's happening frequently.

The concept of necessary versus unnecessary resilience in healthcare was discussed, and the potential dangers of people 'working around' and becoming adaptive to dangerous situations, for example using faulty equipment.

The increasing demand to improve quality of care and outcomes in mental health was also discussed alongside the need for better data and metrics to support benchmarking and improvement.

Health Improvement Scotland two-day International Visitor's Session

I participated in a two-day Healthcare Improvement Scotland International Visitor's Session in Edinburgh (4-5 October). The first day involved a series of presentations on wide ranging topics including the integration of health and social care, changing models of care delivery and the interaction between poverty and health. The increasing shift in thinking about safety culture in Scotland was discussed, including examples of how the Health Foundation framework (Figure 6) was being piloted across a number of areas.

The second day involved meetings with analysts, researchers and other Healthcare Improvement Scotland staff where I had the opportunity to ask how they get intelligence from the data they collect and analyse, how they visualise data to make the message understandable and which data to provide in dashboard to different stakeholders.

Canadian Patient Safety Institute 5th National Patient Safety Consortium meeting

I attended the CPSI 5th National Patient Safety Consortium meeting in Toronto. This all-day meeting brought together a coalition of key stakeholders in patient safety including health system leaders, representatives from CIHI, CPSI, clinicians and patient groups.

References

1. Rafter N, Hickey A, Condell S, Conroy R, O'Connor P, Vaughan D, Williams D. Adverse events in healthcare: learning from mistakes. *QJM*. 2015 Apr;108(4):273-7.
2. Organisation for Economic Cooperation and Development (OECD). Measuring Patient Safety Opening the Black Box, Policy Brief prepared for the 3rd Global Ministerial Summit on Patient Safety in Tokyo, April 2018.
3. Slawomirski L, Aaraaen A, and Klazinga N. 2018 The economics of patient safety. Strengthening a value-based approach to reducing patient harm at national level. OECD March 2017.
4. Duckett S, Jorm C, and Danks L. Strengthening safety statistics: how to make hospital safety data more useful. Grattan Institute 2017.
5. Independent Hospital Pricing Authority. Pricing Framework for Australian Public Hospital Services 2019–20 — December 2018.
6. Organisation for Economic Cooperation and Development (OECD). Health at a Glance 2017
7. Australian Commission on Safety and Quality in Health Care. Hospital-acquired complications. Sydney: ACSQHC; 2018.
8. Australian Commission on Safety and Quality in Health Care. Hospital-Acquired Complications Information Kit. Sydney: ACSQHC; 2018.
9. Australian Institute of Health and Welfare. Australia's health 2018. Australia's health series no. 16. AUS 221. Canberra: AIHW.
10. Australian Government Therapeutic Goods Administration. Reporting adverse events. Canberra 2018.
11. Victorian Agency for Health Information. Performance information and reporting. Melbourne, 2018.
12. Australian Government Productivity Commission Report on Government Services. Public hospitals 2018.
13. Clinical Excellence Commission. Clinical incident management in the NSW public health system. 2018
14. Canadian Institute for Health Information, Canadian Patient Safety Institute. Measuring Patient Harm in Canadian Hospitals. What can be done to improve patient safety? Ottawa, ON: CIHI; 2016.
15. NHS Improvement. Patient Safety Thermometer 2018
16. UK Care Quality Commission.
17. Walton MM, Harrison R, Kelly P, et al Patients' reports of adverse events: a data linkage study of Australian adults aged 45 years and over *BMJ Qual Saf* 2017;26:743-750.
18. O'Hara JK, Reynolds C, Moore S, et al What can patients tell us about the quality and safety of hospital care? Findings from a UK multicentre survey study *BMJ Qual Saf* 2018;27:673-682.
19. Cancer Care Ontario PROs and Symptom Management Program (Presentation) October 2017.
20. Bureau of Health Information. Adult Admitted Patient Survey Questionnaire, 2018.

21. Bureau of Health Information. Snapshot Report - Maternity Care Survey 2017. Sydney (NSW); BHI; 31 October 2018.
22. de Vos MS, Hamming JF, Chua-Hendriks JJC, et al. Connecting perspectives on quality and safety: patient-level linkage of incident, adverse event and complaint data *BMJ Qual Saf* June 2018.
23. Duckett S., Jorm C, Danks, L, and Moran G. All complications should count: Using our data to make hospitals safer. Grattan Institute. 2018.
24. The Health Foundation. A framework for measuring and monitoring safety: A practical guide to using a new framework for measuring and monitoring safety in the NHS. January 2016.
25. Armstrong N, Brewster L, Tarrant C, et al. Taking the heat or taking the temperature? A qualitative study of a large-scale exercise in seeking to measure for improvement, not blame. *Soc Sci Med*. 2018;198:157-164.
26. Francis R. Freedom to Speak Up: An Independent Review into Creating an Open and Honest Reporting Culture in the NHS 2015.
27. Kline R, and Lewis D. The price of fear: estimating the financial cost of bullying and harassment to the NHS in England, *Public Money & Management*. Informa UK LTD 2018.
28. CQC Insight: NHS acute hospitals (Indicators and methodology guidance v1.08). 2018.
29. Scottish Hospital Standardised Mortality Ratio (HSMR) Methodology & Specification Document 2016.
30. Health Quality Ontario Patient Safety Indicator Review: Summary Report 2016.