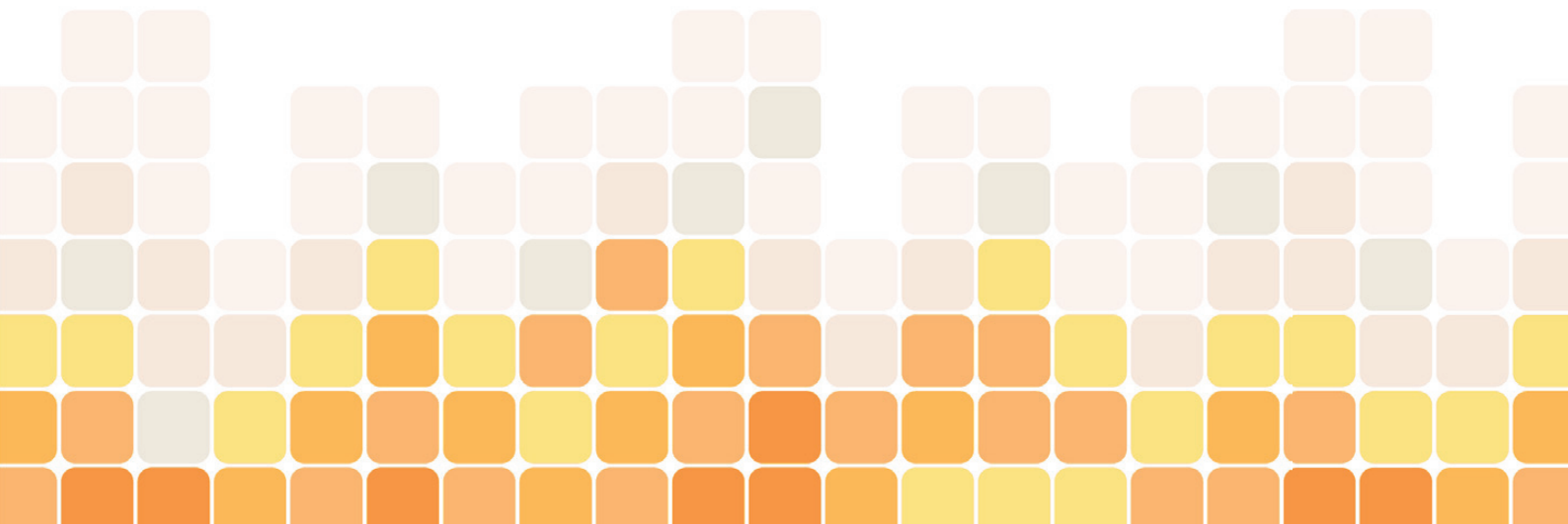


# Spotlight on measurement

Describing and assessing performance  
in healthcare: an integrated framework

April 2014



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# Foreword

The science of measuring and reporting on the performance of healthcare systems is rapidly evolving. In the past decade, across many jurisdictions, organisations tasked with monitoring progress towards reform targets have broadened their scope to take a more comprehensive performance measurement perspective. This comes from the realisation that while reporting on limited sets of indicators has an impact, it can only provide a partial view, and risks crowding out assessment of other important functions not covered by reform objectives.

Healthcare systems are complex and multifaceted so providing an assessment that covers the most important dimensions that shape performance, and also brings these dimensions together in an integrated way, is crucial. In health, a multitude of very specific objectives matter and they cannot all be addressed in policies at any one time. Performance evaluation needs to take a system-wide perspective to capture changes in performance that affect how the system works overall.

The Bureau of Health Information was established to conduct ongoing and comprehensive assessments of the performance of the NSW public health system. This mandate goes beyond the monitoring of routine data and contemporary reforms to provide sound and impartial assessments of the performance of the state's healthcare system. Such assessments, if they are to be balanced and fair, must encompass areas that are not currently the subject of explicit policies.

This issue of *Spotlight on Measurement* details the Bureau's framework to assess healthcare performance. Following a synthesis of frameworks found in the scientific literature and among performance reporting agencies in various countries, the report highlights essential dimensions of performance.

It incorporates different perspectives on performance. First, from the patients' point of view, it gauges how well the system achieves its objectives of providing care when and where needed; delivering the right healthcare, in the right way; and ensuring that healthcare makes a difference for patients. Second, from a system perspective, the framework assesses whether the system provides good value for money; if it provides health for all and fair healthcare services and how the system ensures that there is capacity to provide healthcare services into the future. These important aspects relate to the dimensions of accessibility, appropriateness, effectiveness, efficiency, equity and sustainability.

The framework further highlights that performance, ultimately, is about optimising achievements on these various dimensions that at times reinforce each other and at other times can be in conflict. We feel this report provides a blueprint to increase the usefulness of performance reporting into the future.

**Dr Jean-Frédéric Lévesque** MD, PhD  
Chief Executive

# Introducing the report and the integrated framework

Assessing performance in healthcare is a critically important and challenging task. It is important because it forms the basis for providing accountability for healthcare services; and informs and catalyses quality improvement efforts. It is challenging because of several inherent difficulties: in developing a meaningful picture of performance where tasks and functions are highly complex, numerous and interdependent; in attributing fairly the outcomes, achievements and shortfalls in performance; and in allowing for the large differences in time horizons that may exist between interventions and results that are a feature of healthcare service delivery.

Such challenges demand a systematic and rigorous approach to performance assessment – guided by a clear conceptual framework. Over the past 40 years, a number of frameworks have been developed. Many constructs and themes resonate across multiple models – an indication of conceptual integrity, relevance and utility. Yet to date there has been no consensus on a universally applicable performance assessment framework.

This diversity in conceptual frameworks may be a reflection of the different roles that data, information and performance measurement play in healthcare systems (Figure 1).

For some data users, performance measurement is a transactional process to manage contracts and monitor achievements against tightly defined deliverables. For others, it is a means to gauge progress towards socially and politically defined goals (such as improving health); or a means to track the allocation of resources.

While existing frameworks are often suitable for one of these performance measurement goals, they are unable to capture the true complexity of performance. Even when populated with exhaustive sets of indicators, existing frameworks often fail to discern the consequences of the inevitable trade-offs, compromises and choices that must be made between different aspects of performance in healthcare organisations and systems.

This report introduces a refinement of existing approaches, one which continues a conceptual movement towards accounting for interconnections, dynamism and complexity in cause and effect relationships in the delivery of healthcare. It aims to bring clarity to performance assessment, using relevant and robust concepts – and avoiding reductionist measures – to build a whole-of-system perspective on performance.

The integrated performance assessment framework introduced here takes as its starting point, well-established elements of performance measurement such as resources, staff, activity, and results. However, it acknowledges the limitations of these standard constructs of inputs, outputs and outcomes – recognising that increases or decreases do not necessarily correspond to an improvement or deterioration in performance. It emphasises the importance of moving beyond measurement of static concepts to a focus on functional, relational and dynamic constructs.

Figure 1: Data, information and performance

Good quality data and information are essential for the functioning of any healthcare system. Healthcare providers, managers and patients need reliable and accessible information to make informed decisions and choices. Good use of data is fundamental to achieving a safe and patient-centred healthcare system.

**Performance data plays two key roles:**

Performance management (data for improved health decisions)	a. Defining and monitoring organisational objectives
	b. Quantifying outcomes and processes
	c. Mobilising improvement efforts
	d. Informing and guiding efforts to improve clinical care, efficient use of resources and value for money
	e. Allocating rewards and sanctions
Public reporting (data for accountability)	a. Accountability to the public / funders of the system on safety, quality and value for money
	b. Fostering public confidence in the health system
	c. Mobilising improvement efforts
	d. Informing expectations and choices for patients

**Two main types of indicators used to measure performance**

Descriptive	a. Relatively straightforward
	b. Often comprise counts of activity inputs or outputs
	c. Risk of providing a partial, piecemeal picture of performance
	d. Valuable in providing context; describing a system / organisation
	e. Allocating rewards and sanctions
Analytic	a. More difficult / complex to calculate but potentially more insightful
	b. Often developed through combinations of two or more descriptive indicators
	c. Can include composite measures – although care must be taken not to be too reductionist (so often need support from more detailed sub-indicators)
	d. Requires value judgements and weighting of different aspects of performance

## Why do we need a new framework?

There are thousands of performance indicators available for use.<sup>1</sup> Given the complexity of performance in healthcare with its multiple decisions, interactions, and mix of short- and long-term time horizons, any meaningful assessment requires a conceptual framework to guide indicator selection, implementation and interpretation.

There are many existing frameworks – encompassing three distinct approaches:

- Goal achievement – focused on targets and specifically chosen indicators – measuring progress.
- Logic models – focused on attributing performance in terms of logical relations between inputs, outputs and outcomes – quantifying who is doing what; and how much they are doing.
- Functional models – focused on roles and mandates – striking a balance between internal and external functions.

## Moving forward with performance assessment

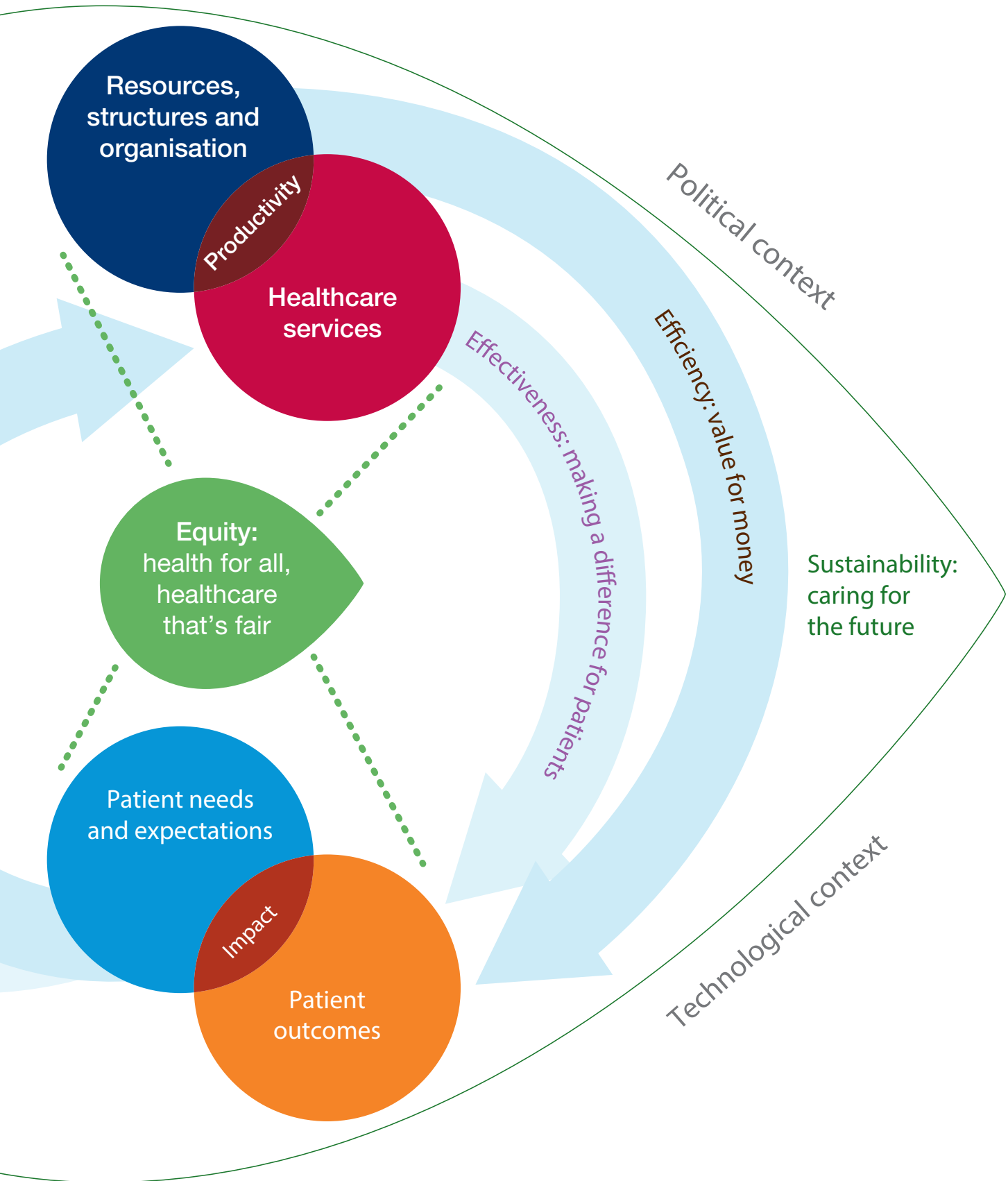
Measuring progress is important – focusing finite measurement efforts on those indicators which, in specific political contexts, are relevant to performance is prudent. Equally, in order to attribute and manage performance it is sensible to count throughputs and enumerate activities of different providers of healthcare services. However, using descriptive indicators alone can lead to a partial picture – or misplaced accountabilities – resulting in unintended consequences or little meaningful change in performance.

The integrated framework draws on analytic indicators to provide a more meaningful assessment; a balanced picture that is sensitive to complexity. It enables performance measurement to capture important elements that may not be the current focus of policies; and provides a better understanding of trade-offs in achievements (Figure 2).





Figure 2: Bureau of Health Information's Integrated Healthcare Performance Assessment Framework



# What is performance?

Performance (n): the action or process of performing a task or function

Performance involves the production, enactment, or delivery of goods or services. Actors perform on stage. Athletes perform in competitions. Surgeons perform in operating theatres.

## Performance is action

### Action can be measured by counts

There are many ways to look at how healthcare systems and organisations work. Counts can describe and quantify the actions taken to answer four key questions in the delivery of healthcare (see Figure 3):

1. What is needed? Determining patient needs and expectations
2. How to meet needs? Investing and allocating resources
3. What to provide? Delivering healthcare services
4. What are the results? Monitoring patient outcomes

A wide range of indicators is available to measure the needs and expectations of the people that health systems and organisations serve; the amount of resources invested; the way services and organisations are structured and put in place; the volume and quality of the services produced; and the outcomes achieved (see Figure 4). While these indicators enumerate actions, describing what is delivered and where it is delivered, they do not, on their own, provide an understanding of performance.

### Healthcare performance: measuring what matters

Measuring what matters requires a systematic approach, one that captures how care is delivered for patients in real life, reflecting the performance of healthcare workers, organisations and systems. One way to focus on such real-life delivery of care is to try to answer questions that patients and their advocates might ask about the system:

- Are patients' and populations' needs assessed, measured and met? Are different groups benefiting from healthcare?
- Are healthcare services evidence-based? Are they delivered skilfully and competently? Are they respectful, responsive to expectations, and patient centred?
- Are healthcare services addressing patients' problems and improving their health?
- Are healthcare services providing good health value for the resources invested?
- Are the benefits of care provided according to need; distributed equitably between subgroups in the population, without discrimination and unequal treatment of equals?
- Is the system adapting itself to changing needs and expectations of patients; to changing circumstances? Is it ensuring its future performance?

Counts are not performance

Performance in healthcare is intricate, multifaceted and influenced by context. A well-built system is more likely to perform strongly. However, measuring competencies or the ways

in which care is organised and resourced, cannot on its own provide a meaningful basis to assess whether a system or organisation is doing well. True performance measurement focuses on what the system actually achieves, rather than how well it is built.

Figure 3: Four key questions that drive action in healthcare delivery.

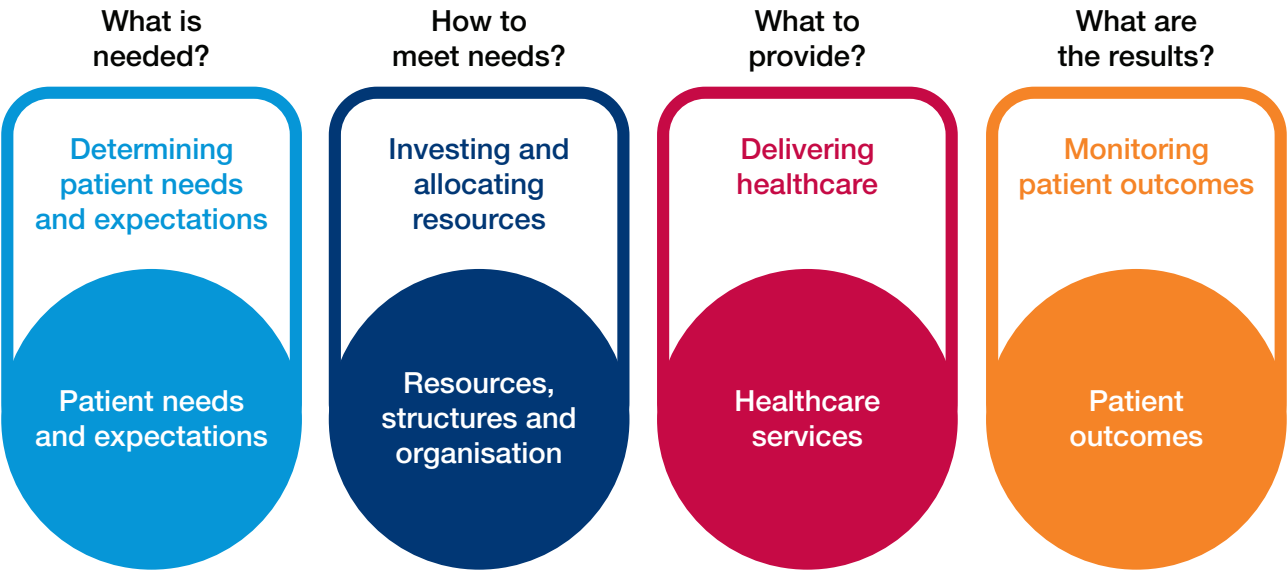


Figure 4: Examples of measures describing healthcare delivery

Patient needs and expectations	<ul style="list-style-type: none"><li>• Number of people in poor health</li><li>• Number of people with diabetes</li><li>• Health literacy</li></ul>
Resources structures and organisations	<ul style="list-style-type: none"><li>• Number of doctors, nurses</li><li>• Dollars invested</li></ul>
Healthcare services	<ul style="list-style-type: none"><li>• Number of surgical procedures</li><li>• Number of emergency department visits</li></ul>
Patient outcomes	<ul style="list-style-type: none"><li>• Number of deaths per 100,000 population</li><li>• Number of healthcare associated infections</li></ul>

# Towards an integrated assessment of performance

## Layers of performance assessment

Elements of healthcare delivery – determining patient needs; investing and allocating resources; delivering healthcare services; and monitoring patient outcomes – while important, are just one layer of performance.

Meaningful performance assessment relates descriptive counts to each other. Insights into performance are highlighted when we look at, for example, the volume of services produced for each unit of resource invested, or the appropriateness of the care provided given the needs of population, or the results achieved in relation to the services and the resources invested.

At the same time, it is crucial that performance assessments are made in the light of broader context. The framework addresses context in two ways:

- System context is captured in overarching notions of equity and sustainability. These constructs represent critically important features of healthcare systems, examining whether systems are fair and if the future delivery of healthcare is secure. These issues are generally less directly relevant to the day to day clinical interactions that are at the heart of healthcare.
- Broader external influences are captured in the constructs of social context, technological context, economic context and political context. Healthcare is an open complex system and these broader influences have an important effect on performance, of which any assessment should be cognisant.

Real performance – adding value, balancing priorities, responding to context – is best captured in constructs that link actions and allow for assessment of trade-offs and unintended consequences.

The framework therefore consists of four different layers:

### Layer 1

Descriptive counts of what was delivered. These data can be aggregated at different levels of analysis (e.g. unit, hospital, Local Health District, system). Two of the constructs centre upon patients: their needs and expectations; and outcomes. The other two constructs centre on organisations: resources and structures; and the services that they produce (see Figure 5)

### Layer 2

Relational constructs that measure how well care was delivered. These data can be aggregated at different levels of analysis (e.g. unit, hospital, Local Health District, system) and expressed in terms of rates, and dynamic measures of performance. Four of the constructs, accessibility, appropriateness, effectiveness, and efficiency focus on the interplay between a patient oriented measure and an organisational-oriented measure from layer one. The other two relational constructs, productivity and impact, are concerned with the interplay within the patient and organisational-level measures from layer 1.

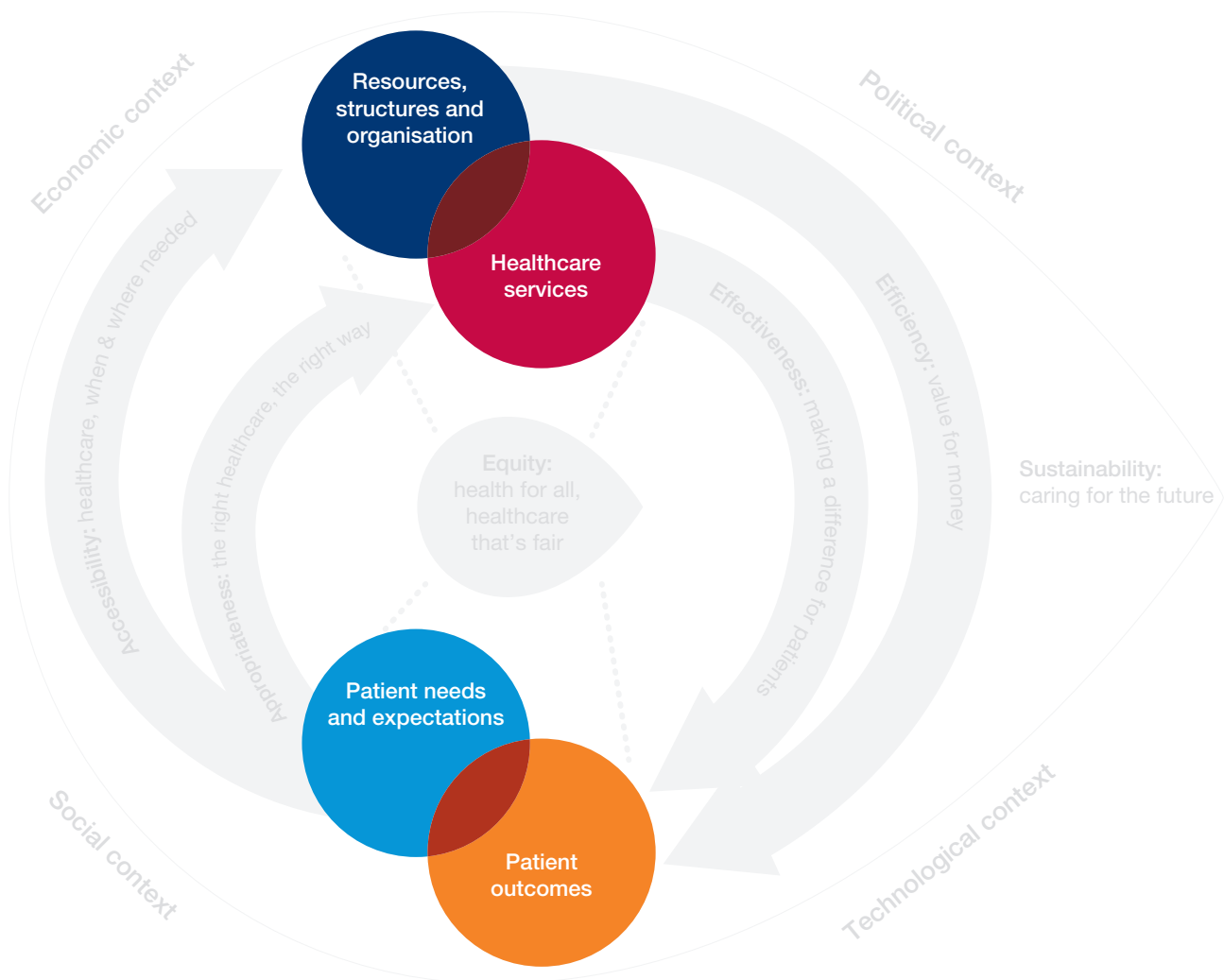
### Layer 3

Overarching constructs that consider system performance. These take a distributive (equity) and longitudinal (sustainability) perspective on performance, both reflecting system performance and informing judgements in layers 1 and 2.

### Layer 4

Wider contextual constructs that acknowledge the importance of actions and events outside of the healthcare system. Social, technological, economic, and political context act as potential confounders of any comparison and as drivers and barriers for change in healthcare organisations and systems.

Figure 5: Building the framework – Layer 1, descriptive aspects of healthcare delivery



# Building the integrated framework

## Layers 1 and 2

The first layer of the framework established descriptive measures centred upon patient needs, expectations and outcomes; and organisational structures, resources and activity (Figure 5).

The second layer of the framework focuses on six dynamic dimensions that link measures of actions to build a more rounded assessment of performance in healthcare (Figure 6).

These dimensions are well established in the scientific literature and are in use in many reporting organisations internationally (see Appendix 1).

The six constructs are:

- Accessibility: Care when and where needed
- Appropriateness: The right care, the right way
- Effectiveness: Healthcare that makes a difference
- Efficiency: Value for money
- Productivity: Being organised, doing more
- Impact: Better health; better lives

Each construct encapsulates a number of sub-constructs. Figure 7 illustrates the construct, sub-construct and example indicators.

Figure 6: Building the framework – Layer 2 – relational measures

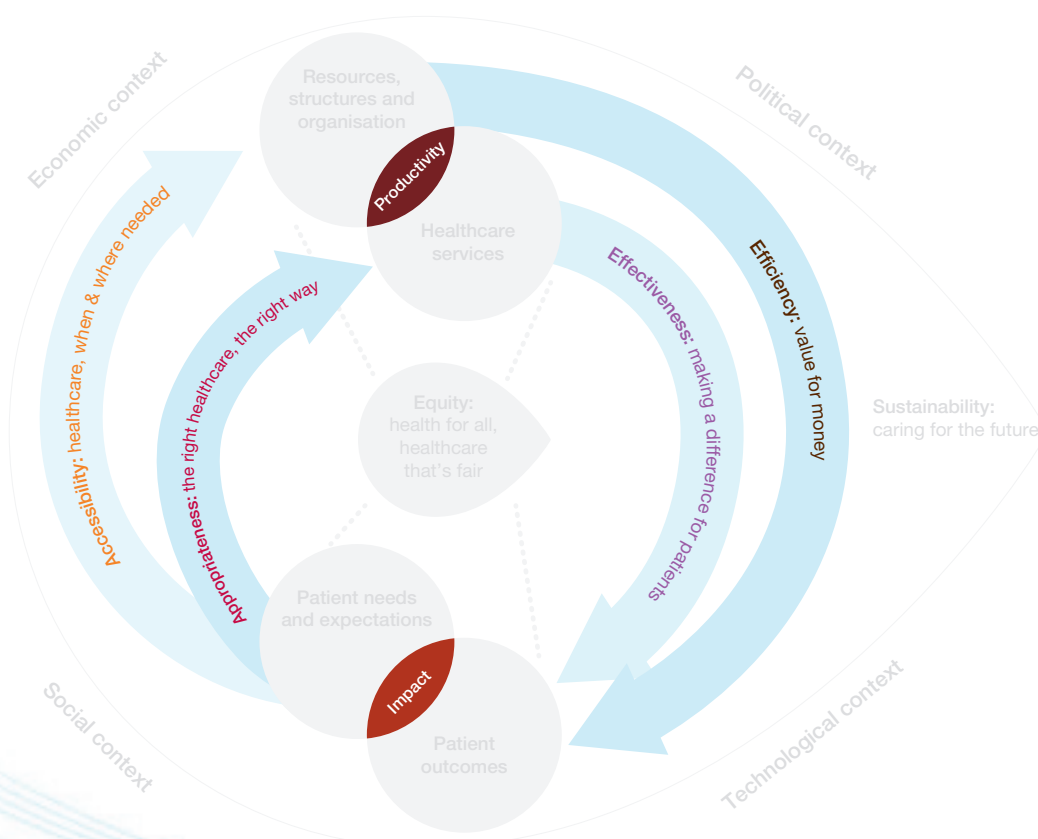


Figure 7: Dynamic dimensions of the performance framework

Construct	Sub-constructs	Example indicators
Accessibility	Financial coverage* and affordability Geographic coverage and availability Timeliness Unmet needs Organisational accommodation Social and cultural acceptability	<ul style="list-style-type: none"> <li>• Out-of-pocket costs</li> <li>• Number of visits (e.g. ophthalmology) versus number of expected visits (based on known need e.g. diabetes prevalence)</li> <li>• Patient survey reported barriers to care</li> <li>• Waiting times</li> </ul>
Appropriateness	Evidence-based care Responsiveness Continuity Coordination Patient centredness Technical competence Safety processes Respectfulness Comprehensiveness Patient engagement and participation	<ul style="list-style-type: none"> <li>• Compliance with recommended care (e.g. proportion of acute myocardial infarction (AMI) patients discharged on secondary prevention medications)</li> <li>• Patient survey data on respect</li> </ul>
Effectiveness	Health gain Freedom from undue harm	<ul style="list-style-type: none"> <li>• Patient reported outcome measures</li> <li>• Relative survival</li> <li>• Post-operative sepsis rates</li> </ul>
Efficiency	Value for money Integration Waste	<ul style="list-style-type: none"> <li>• Unnecessary duplication of tests</li> <li>• Number of consultations per doctor</li> <li>• Relative stay index</li> </ul>
Productivity	Yield	<ul style="list-style-type: none"> <li>• Consultations per physician</li> <li>• Scans per CT unit</li> <li>• Cost per bed day</li> </ul>
Impact	Health gain Health literacy	<ul style="list-style-type: none"> <li>• Changes over time in health status</li> </ul>

(\*) Financial coverage means that people can obtain the healthcare services they need without suffering financial hardship.

# Building the integrated framework

## Layers 3 and 4

The third layer of the framework operates at the system level.

Layers 1 and 2 can be applied equally to the day to day clinical interactions that are the cornerstone of healthcare and to more aggregated unit, organisation and system perspectives. For example, it is equally valid and valuable to assess the appropriateness of care provided by a single provider; by a clinical unit; by a hospital; by hospitals in a Local Health District (LHD); or by all within the system.

In contrast, layer 3 is primarily concerned with overarching, system-level constructs – equity and sustainability – that are most meaningfully applied at a high level of aggregation. That is:

- Is the system working to provide equitable care for those with the same needs? Is it working in a way to address fundamental inequalities in health status and opportunities for health across sub-populations?

- Is the system operating in a way that assures its operational capacity and ability to respond to changing circumstances in the future? (Figures 8 and 9)

The fourth layer of the model encapsulates forces that influence performance but are external to the healthcare system – referred to as political, economic, social and technological context.

Examples include the availability of funds, technological developments, political decisions, pandemics, and the ageing population. These factors can have a profound effect on performance but are beyond the control of the system itself (Figure 10).

Figure 8: Layer 3 – System level constructs

Construct	Sub-constructs	Example indicators
Equity	Horizontal equity ** Vertical equity #	<ul style="list-style-type: none"><li>• Disparities in access to care for the same need</li><li>• Infant mortality by Aboriginality</li></ul>
Sustainability	Adaptability Financial and organisational viability	<ul style="list-style-type: none"><li>• Investment in research and development</li><li>• Utilisation rates of hospital in the home</li></ul>

(\*\*) Horizontal equity refers to the provision of equal healthcare to those who have the same need, regardless of other personal or social characteristics.

(#) Vertical equity involves treating population sub-groups differently, according to their differential need.



Figure 9: Layer 3 – overarching constructs

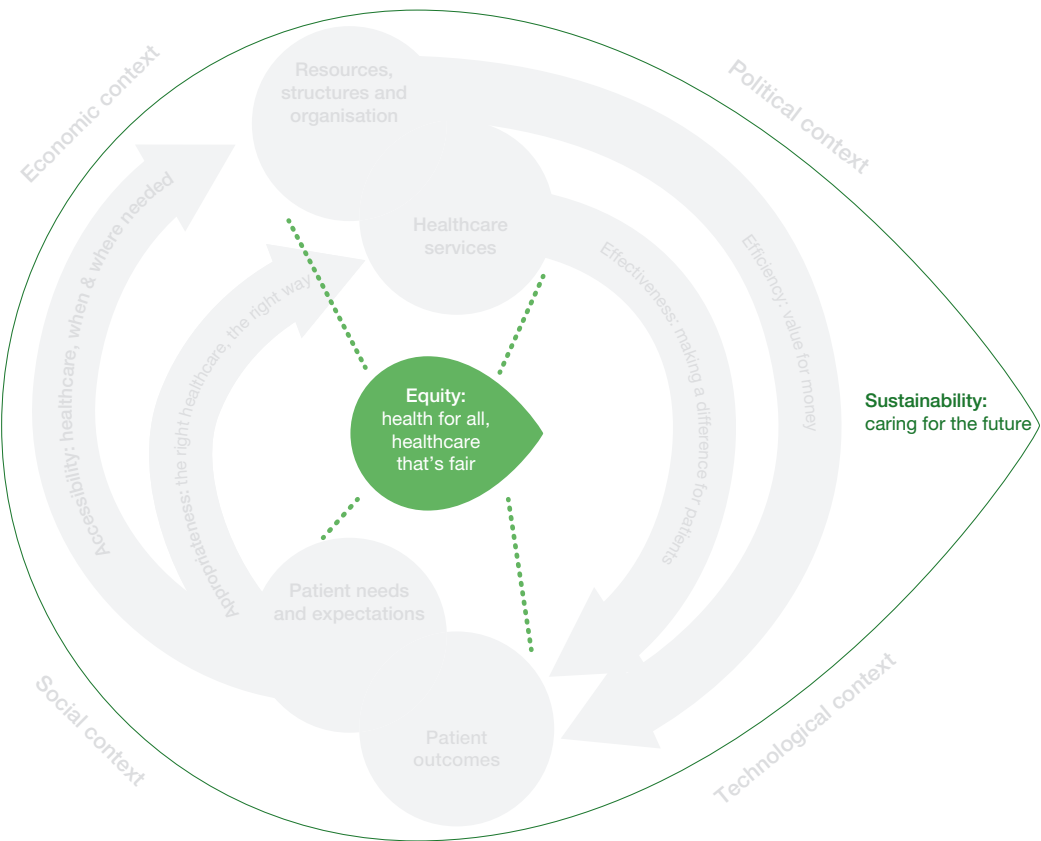
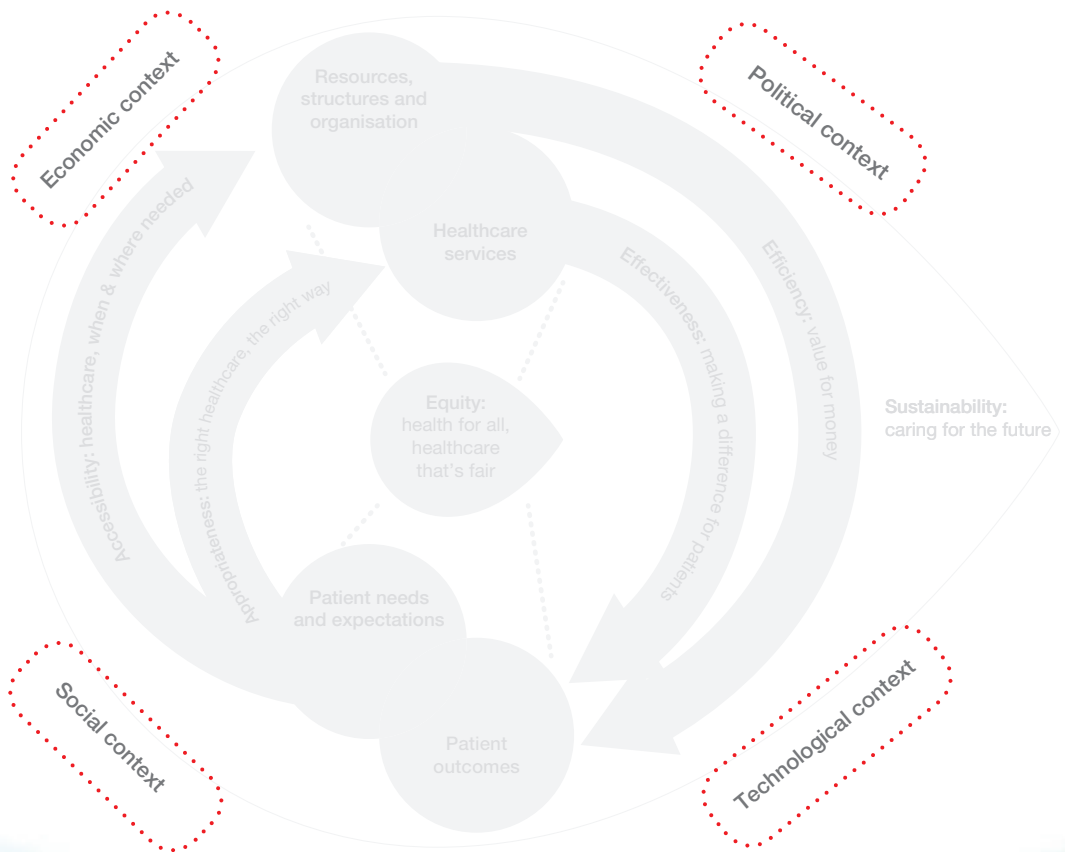


Figure 10: Layer 4 – wider contextual elements



# Methods and concept mapping

## Drawing on the evidence base

Theoretical foundations for the integrated framework are drawn from a body of research that has developed and evolved over several decades<sup>2,3,4,5,6,7</sup>. A conceptual mapping exercise was used to identify core themes and constructs in the research literature; as well as those used by performance reporting organisations internationally.<sup>8,9,10,11,12,13</sup> An interpretive review was undertaken with the aim of synthesising existing approaches to develop core common constructs and concepts that integrate them.<sup>14</sup>

### Antecedent frameworks

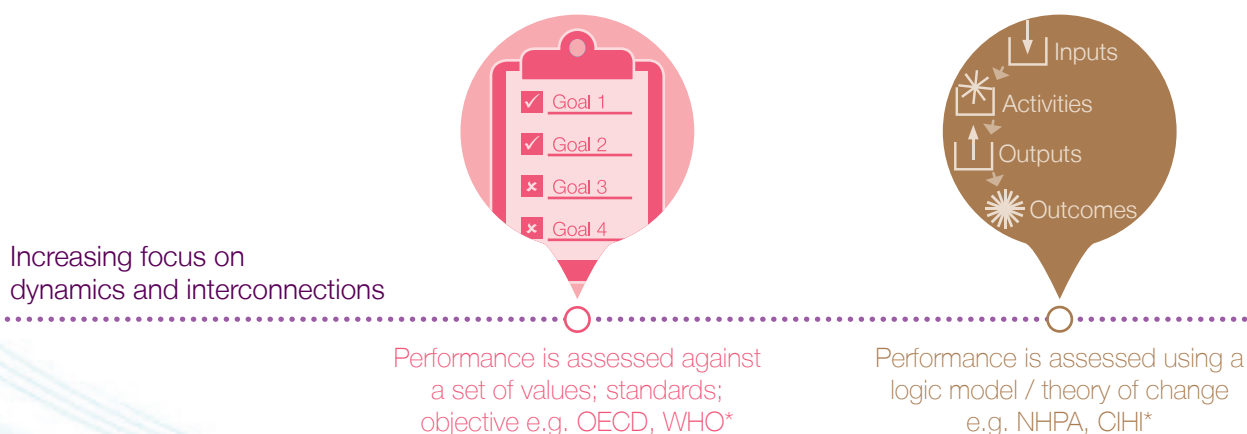
The development of performance frameworks can be considered in terms of three complementary approaches, each with different criteria against which performance is judged (see Figure 11).

The first approach assesses performance in terms of goal achievement. This approach depends on the definition and codification of a set of values, standards or objectives against which to judge performance.<sup>10</sup> Grounded in the organisational literature on Taylor's scientific management, goal setting<sup>15,16</sup> and management

by objectives<sup>17</sup> these models place goals at the heart of performance – directing attention, mobilising effort, securing persistence and motivating strategy development. Assessment of performance in this paradigm is focused on gauging the extent to which goals are realised or achieved. Targets and reliance on single measure indicators are often developed under this perspective.

The second approach conceptualises performance in terms of the transformation of inputs to activities, outputs and outcomes. Centred in economic literature on production function<sup>18</sup> and logic models,<sup>19,20</sup> the approach is concerned with flows. Assessment in this paradigm often adopts a Donabedian approach – focused on structures, processes and outcomes of healthcare.<sup>21</sup> Here, structure refers to the settings in which care occurs and the resources needed (e.g. facilities, human resources, money, organisation); process refers to what is done in giving and receiving care (e.g. patient and practitioner activities); and outcome refers to the effects of care (e.g. changes in health status, patient's knowledge and/or behaviour, and patient satisfaction).

Figure 11: Conceptual models and performance frameworks: an evolution

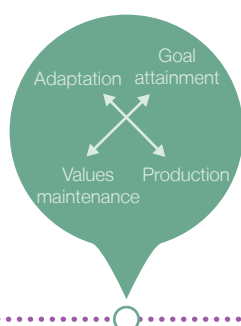


The third approach conceptualises performance in terms of functions or roles within systems.<sup>22</sup> Drawing on Parson's theory of social action,<sup>23</sup> performance is shaped by the extent to which four functional needs are met – adaptation, goal attainment, production and values maintenance.<sup>24</sup> Rather than a primary concern with endpoints or flows, performance assessment in this paradigm focuses on organisational operations and the extent to which they are aligned and balanced. Adaptation here refers to the ability to secure sufficient resources, shaping structure, systems and processes and adapting them to community needs. Goal attainment relates to the achievement of goals or targets (incorporating health status as well as equity goals); production relates to the quantity and quality of services provided; and value maintenance refers to processes that maintain capacity and continual development (often captured by measures of absenteeism and staff turnover).

Some existing frameworks bridge multiple approaches. For example, the Canadian Institute for Health Information (CIHI) model incorporates both a goal-based and a logic model approach,

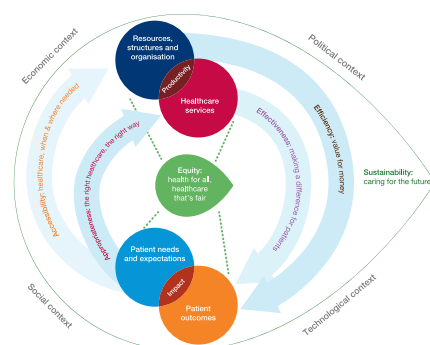
depicting the healthcare system as operating within a wider economic, political, demographic and cultural context.<sup>8</sup>

Our proposed framework goes further, adopting elements from each of the existing approaches, and further integrating them with concepts drawn from systems thinking<sup>25</sup> and complexity theory.<sup>26,27</sup> The resulting framework uses concepts such as dynamic complexity – characterised by the presence of feedback loops; variable time lags between the cause and effect of an action, and non-linear relationships between a system's elements – to capture the transformative and contingent nature of performance. While there have been some efforts to consider healthcare performance in terms of systems thinking,<sup>6</sup> the approach has not previously been fully developed in the literature.



Performance is assessed in terms of discrete functions of roles e.g. EGIPSS\*

Performance is assessed primarily in terms of interconnected dynamic constructs. Bureau's integrated performance assessment framework



\* See Appendix

# The constructs – assessing accessibility

## Healthcare, when and where needed

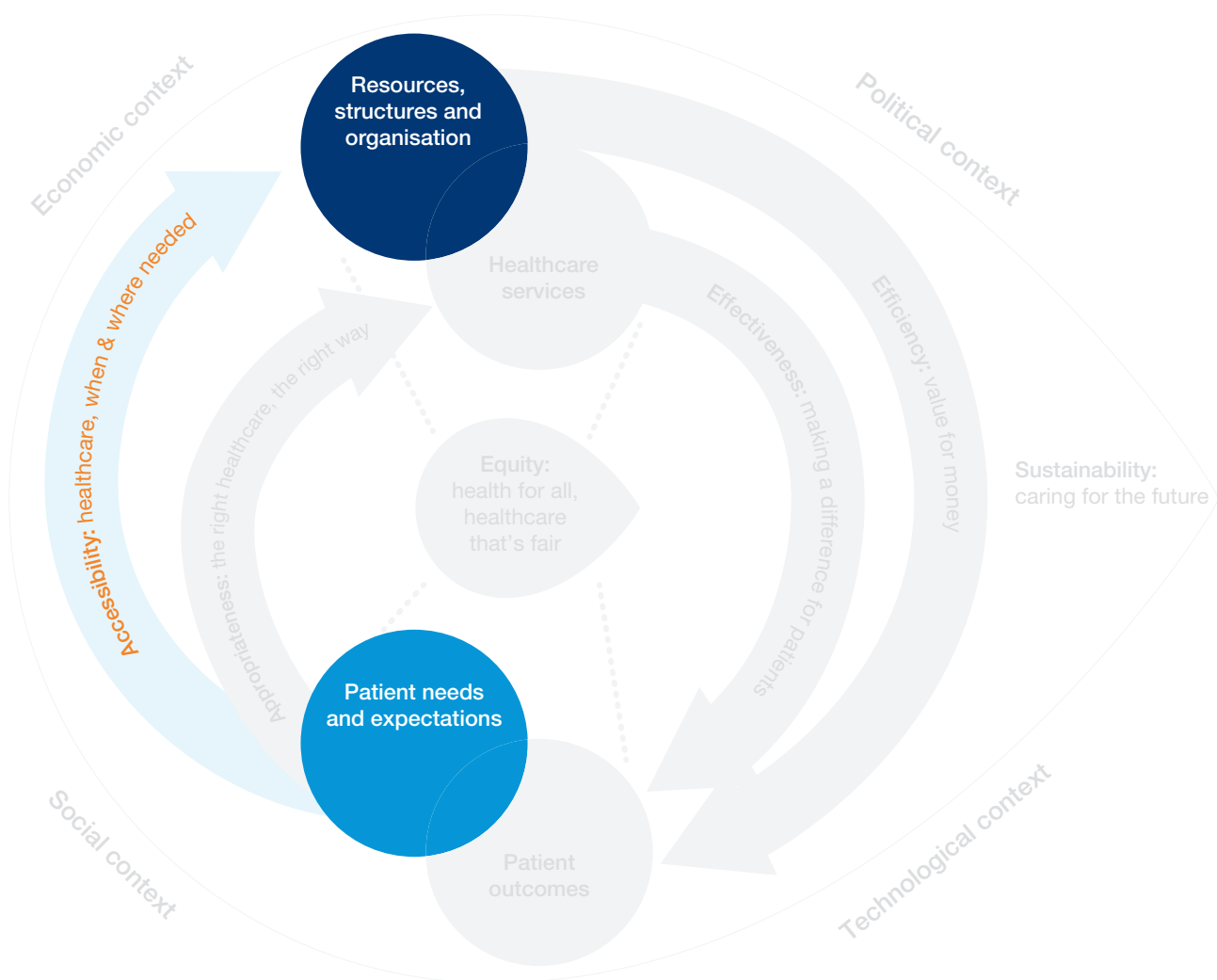
Measures of accessibility seek to assess the ease with which patients can obtain care. Based on the premise that healthcare organisations and systems should adapt their offer of services to respond to the abilities of people to ensure access, accessibility considers the pathway taken by patients: from identifying their needs, seeking care, reaching providers, paying for care, to receiving appropriate care to their needs.<sup>28</sup>

Accessibility therefore encompasses: financial coverage and affordability, geographic coverage and availability, timeliness, unmet needs, organisational accommodation, social and cultural acceptability. Measurement of accessibility can, in some cases, only be achieved when it is lacking. Poor accessibility may reflect cognitive, cultural, social, organisational and economic barriers to receiving good care.

While **access** refers to the actual use of services, timeliness refers to the extent to which care is provided promptly after a need is recognised. Measures of **timeliness** include the interval between identifying a need for healthcare and actually receiving services; as well as time spent waiting, for example in General Practitioner (GP) surgeries or hospital emergency departments.

For patients, the first step in obtaining quality healthcare can occur before needs are apparent. **Coverage** provides an assessment of whether healthcare services could potentially be obtained by patients should they be needed. It encapsulates both financial and geographic coverage – that is, are services obtainable with no resulting financial hardship? Are they physically obtainable?

Aspects of accessibility	Example indicators
Access	Proportion of population visiting a General Practitioner
	Proportion of emergency department visits that could have been handled by a General Practitioner, if they had been available
Timeliness	Median waiting times
Unmet needs	Number of visits (e.g. ophthalmology) vs number of expected visits (based on known need e.g. diabetes prevalence)
	Patient survey reports of barriers to care (physical, cognitive, cultural, social, organisational and economic barriers)
Financial coverage and affordability	Out-of-pocket healthcare costs
Geographic coverage and availability	Services per head of population by region or by distance from service source



## Performance hypotheticals – a patient perspective

A view of lack of accessibility: physical barriers to care.

Mark is a 34-year-old paraplegic who lives on his own, with some community services support. He requires regular physiotherapy but struggles to get to his appointments because of difficulties parking.

A view of lack of coverage.

Jane is 47-year-old morbidly obese woman with a body mass index of 45. She has been diagnosed with type 2 diabetes and has hypertension. She works in a school office, has no private health insurance, and is a single mother of two children aged 15 years and 12 years. She is a suitable candidate for, and would be expected to benefit from, bariatric surgery but availability of the procedure in public hospitals is very limited.

# The constructs – assessing appropriateness

## The right healthcare, the right way

Appropriateness measures relate firstly to what was delivered – whether services were tailored to the clinical needs of patients and conformed to recognised best clinical practice. Secondly, it relates to how services were delivered. Whether they were delivered competently and in a way that was, sensitive to patient's expectations and preferences. People expect to be involved in decisions about their care, for their care providers to be respectful and sensitive to their cultural and religious values, for their dignity and privacy to be protected, for communication to be clear, and for care to be delivered without undue disruption.

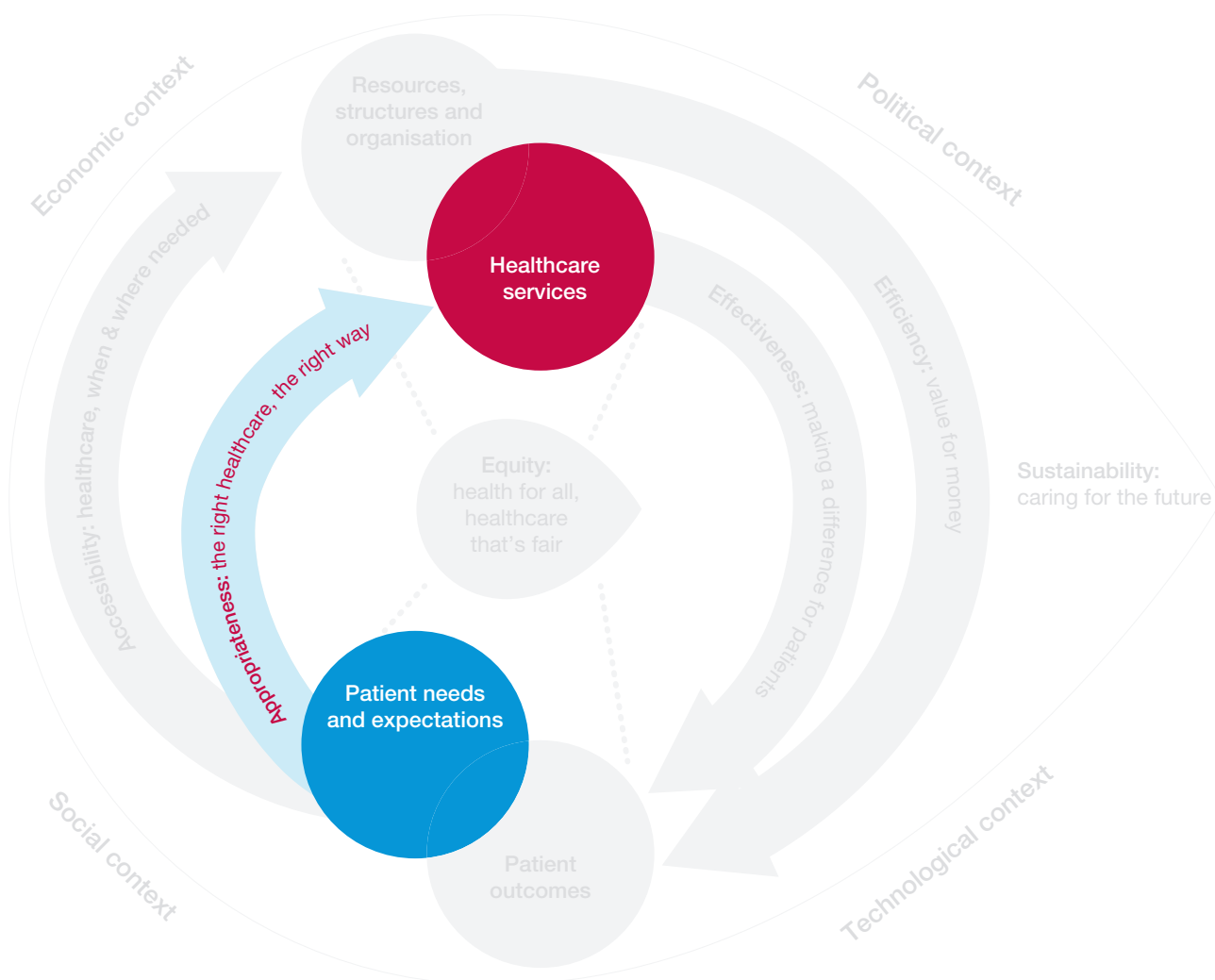
Appropriateness encapsulates questions of whether the 'right' services were provided – right in terms of clinically indicated, evidence-based and relevant; and in the 'right way' – with sufficient technical competence and matched to patient preferences, values and needs. It is quantified primarily through the use of process measures, but crucially focuses on whether the processes that were delivered matched patients' needs and were delivered according to their reasonable expectations.

Appropriateness measures include:

- Assessments of whether services are evidence-based or in line with current best practice. They include notions of underuse (care not provided despite being medically necessary or of proven benefit to patients); overuse (care provided when it is not medically necessary); and misuse (care not provided correctly)
- Assessments of responsiveness which focus on how people are treated when seeking healthcare, the environment in which they are treated and the extent to which services are tailored to patient circumstances, values and expectations
- Continuity measures which assess whether care was uninterrupted, integrated and coordinated across practitioners, services and organisations
- Assessments of patient engagement, in terms of the extent to which patients and their carers participate in their own health, care and treatment.

### Aspects of appropriateness

Evidence-based	Compliance with recommended care (e.g. proportion of AMI patients discharged on secondary prevention medications) Instances of inappropriate care such as excessive use of benzodiazepines in elderly patients
Responsiveness	Patient survey data on respectfulness, communication The use of mixed sex wards (where they may discomfit patients)
Continuity	Patient survey data on coordination of care and care transitions Relational, informational and therapeutic continuity
Patient engagement	Patient survey data on extent of involvement in decisions about care



## Performance hypotheticals – a patient perspective

A view of a potential lack of cultural sensitivity (services did not fully match patient needs and expectations).

Mal is a 40-year-old Aboriginal man with chronic obstructive pulmonary disease (COPD). One Saturday evening, he presents to the local hospital emergency department with shortness of breath. He is seen promptly by the triage nurse and in line with recommendations is assigned to triage category 4. Following triage he returns to the waiting room. After a wait of 45 minutes, with no further staff contact, he leaves the emergency department.



# The constructs – assessing effectiveness

## Healthcare that makes a difference

Patients expect that the care given to them will improve their health, quality of life and functionality. This relates to how effective healthcare is at addressing health problems, maximising health and quality of life and whether it is delivered without undue harm.

Effectiveness assesses the extent to which services provided reduced the incidence, duration, intensity or consequences of health problems. It includes:

- Measures that assess whether the healthcare services provided made a discernible change to patients' health and functional status
- Assessments of safety outcomes – whether there were any adverse events

- Measures of public trust and confidence in healthcare professionals, organisations and systems

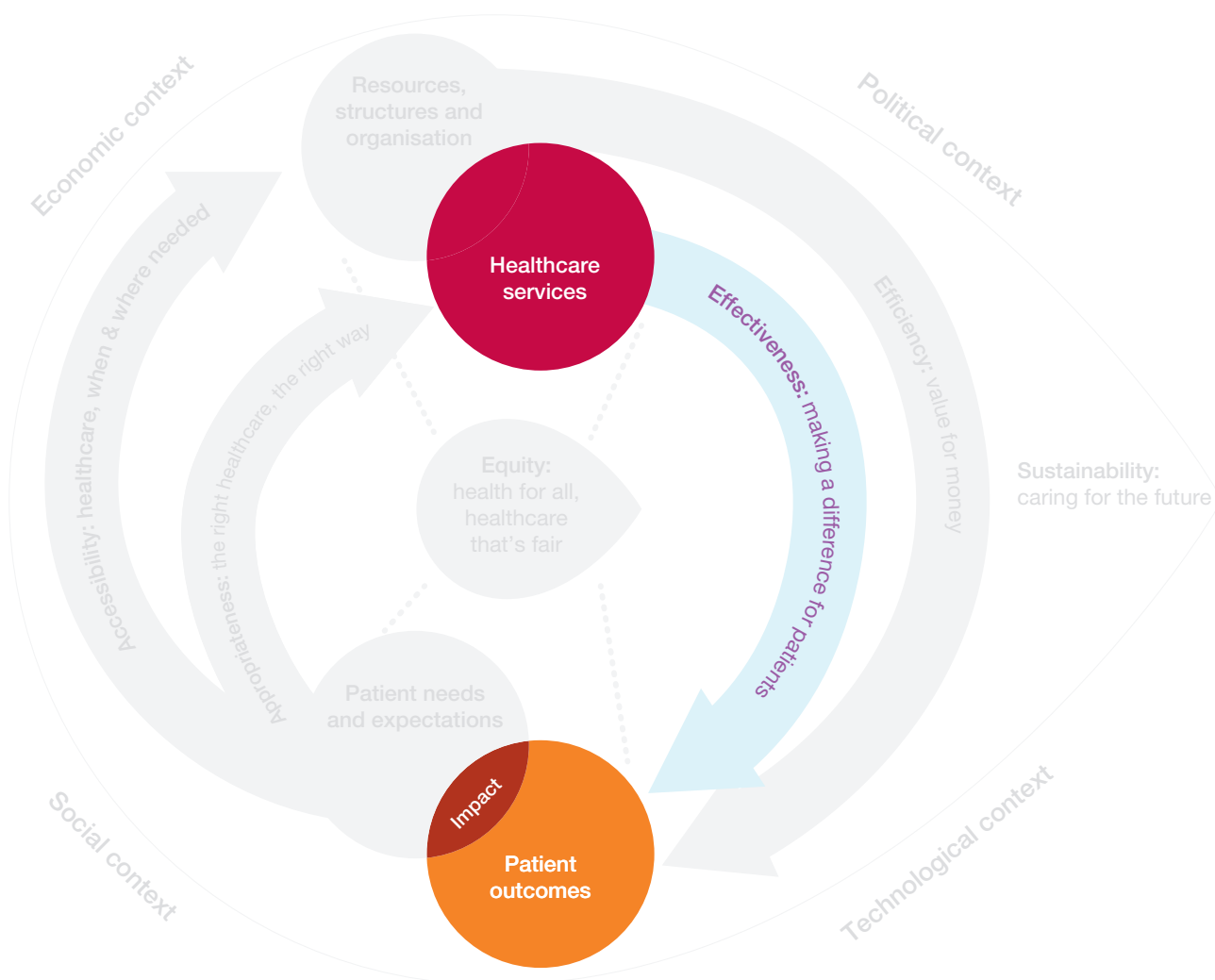
**Impact** is an extension of effectiveness. It encompasses the ultimate goal or objective of healthcare systems, organisations and interventions. It seeks to assess changes in overall health and functioning. At a collective level, it includes measures of any impact on societal or health trends in terms of changing trajectories (say in mortality rates) or evolving health problems.

Impact measures can often be 'composite' in that they reflect other relational constructs. For example, a patient may receive appropriate care for a knee replacement that is effective, but falls and contracts an infection with devastating consequences – the impact of the healthcare intervention overall then is negative.

### Aspects of effectiveness

Aspects of effectiveness	Example indicators
Health change	Patient reported outcome measures
	Health-related behavioural change
	30-day mortality following hospitalisation
Adverse events	Deep-vein thrombosis following surgery
	Hospital-acquired infections
	Patient survey data on unintended or unwanted harm occurring to them in hospital
Trust and confidence	Patient survey data on quality of care and confidence in the healthcare system





## Performance hypotheticals – a patient perspective

### A view of effective healthcare

Olivia is a 62-year-old woman with osteoarthritis of both knees. She is otherwise fit and well. She played state level netball for 20 years. Degenerative changes to her knees are severely limiting her mobility and quality of life – she requires the help of a full-time carer. Following a full assessment, she has a bilateral knee replacement. Recovery following the surgery is unremarkable. Rehabilitation services provide post-discharge support. Three months post-surgery, Olivia has regained much of her mobility and independence.

### A view of a 'gap' in effectiveness: an adverse event

Stephen is a 54-year-old male smoker who presented to the emergency department with a two-week history of shortness of breath, cough, purulent sputum, pleuritic chest pain. A chest x-ray suggested left lower lobe consolidation with pleural effusion. Stephen's consent to an aspiration procedure for diagnostic purposes was sought and granted. Following the procedure, which failed to recover any fluid, Stephen complained of right sided chest pain. A subsequent chest x-ray revealed that the wrong side of the chest had been tapped, resulting in an apical pneumothorax. The originally intended procedure was done successfully.

# The constructs – assessing efficiency

## Value for money

Performance encompasses value for money, acknowledging that a system or organisation that achieves more valued outcomes for each dollar or human resource invested is performing better.

Efficiency is often cast in terms of output efficiency – or the relationship between inputs (resources invested in healthcare) and outputs (volumes of services produced). Output efficiency (sometimes referred to as productivity) means using resources to maximise the production of goods or services. As such, productivity is an instrumental component of efficiency, a prerequisite to transforming resources to maximise or optimise outcomes.

In a healthcare context however, it is important to go beyond this focus on throughputs to develop the more meaningful concept of outcome efficiency. Acknowledging that ‘more

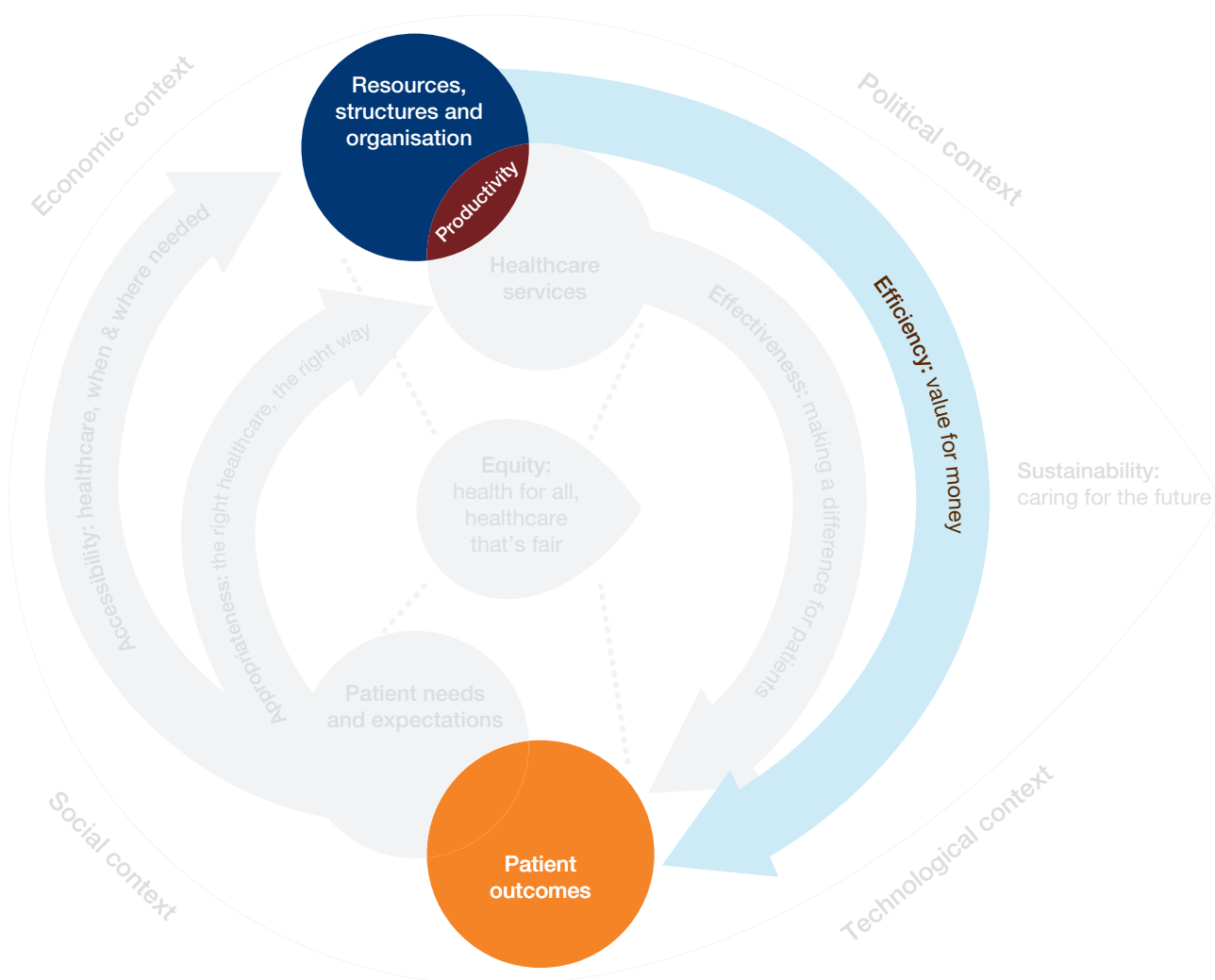
is not necessarily better’, outcome efficiency incorporates the idea of an optimal production of *health* for the investments put into the system.<sup>29</sup>

In moving beyond a focus on simple counts of outputs, other constructs become an important consideration. For example, a system with fewer hospitalisations for ambulatory care sensitive conditions (such as congestive heart failure and chronic obstructive pulmonary disease ) has fewer ‘outputs’ but is generally regarded to represent more efficient care with lower cost and lower personal costs for patients.

Measurement of efficiency can in some cases only be achieved when it is lacking. Waste and inefficiency can include poor integration of care, unnecessary bureaucracy and administration and duplication of services.

### Aspects of efficiency

Output efficiency or productivity	Number of consultations per doctor per day
Outcome efficiency	Unplanned readmissions
	Cost per quality adjusted life year gained (QALY)
	Length of stay
Waste and inefficiency	Unnecessary duplication of services
	Expensive inputs used instead of more economical alternatives that achieve the same health outcome



## Performance hypotheticals – a patient perspective

A view of efficiency: resources were not used to maximise health benefits.

Hui is a 78-year-old man diagnosed with prostate cancer. He smokes 10 cigarettes per day and lives in a nursing home. He has been referred to a surgeon at the local hospital. Prior to his appointment, he has a suite of diagnostic tests performed. On the day of his appointment, his notes cannot be located and the test results are unavailable. Hui is sent to pathology for repeat tests. Several weeks later, following his surgery, he is ready for discharge however problems arranging transport and signing release forms result in an additional night's stay in hospital.

# The constructs – assessing equity

## Health for all, healthcare that's fair

Equity is a system-level concept that relates to how fairly services and their benefits are distributed in society.

Equity can be captured in measures of:

- accessibility of care (equitable care does not discriminate against any group)
- the reception of care (whether people receive care in the same amount and way)
- the effectiveness of care (if people glean equal benefit from care)
- the extent to which prior disadvantage has been corrected (that is, healthcare is used to overcome other inequalities).

These measures are often grouped into horizontal and vertical equity. Horizontal equity refers to the provision of equal healthcare to those who have the same need, regardless of other personal or social characteristics. That is, healthcare should be provided on the basis of clinical need, regardless of age, sex, race, etc.

This concept relates non-discrimination with regards to the appropriateness of care provided.

Vertical equity involves treating population sub-groups differently, according to their differential need. It is underpinned by four principles:

- There are some groups in society (e.g. socio-economically disadvantaged groups, Aboriginal people, homeless people, those with mental illness) with poorer overall health status compared with the rest of the population
- Groups with the poorest health have fewer opportunities to achieve and maintain good health and the lack of opportunity is, in essence, unfair
- Across society there are differentials in terms of health status and in the level of personal resources to deal with health problems
- It is important to respond to people differently in order to work towards equal outcomes.

### Aspects of Equity

Aspects of Equity	Example indicators
Horizontal equity	Measures of disparity based on rurality: e.g. rates of revascularisation procedures (angioplasty or coronary artery bypass graft) following hospitalisations for coronary heart disease by rural or urban residence Measures of disparity based on socioeconomic status, e.g. access to post-discharge community support services, by socioeconomic status of areas
Vertical equity	Rates and range of services accessed by patient groups, by differential needs, assessed in relation to changes in health status



## Performance insights – a population perspective

A view of horizontal inequity – disparity in outcomes

The child mortality rate for Aboriginal children aged less than five years is 2.5 times the rate for non-Aboriginal children.<sup>30</sup>

A view of horizontal inequity – disparity in appropriateness

Around 11% of Aboriginal and Torres Strait Islander people aged over 55 years report a history of cataracts, compared with 7% for non-Indigenous people.<sup>31</sup> The cataract procedure rate for NSW in 2010–11 was 561 per 100 000 for Aboriginal people and 817 for non-Aboriginal people – meaning that Aboriginal people received cataract procedures at 0.67 the rate of non-Aboriginal people.<sup>30</sup>

Striving for vertical equity

The level of investment and provision of services in disadvantaged communities is higher than in less disadvantaged areas, in order to try and redress intractable health problems.

# The constructs – assessing sustainability

## Healthcare for now and for the future

Healthcare systems are dynamic entities. Clinical and managerial actions – from the simplest to the most complex – affect how the system works. At the same time, the way the system is organised has an effect on the actions of providers and clinicians.

Performance is influenced by the capacity of organisations and managers to be sensitive and responsive to different contexts and changing circumstances. Performing well today is important, but current performance must be considered in terms of impact on the ability to perform tomorrow. For example, at a system level, demographic trends should be factored into long-term planning, technological developments should be considered in terms of costs and benefits into the future; human resources have to be developed, nurtured and protected from burnout.

Meaningful assessment therefore should consider whether performance is sustainable and whether there is organisational capacity to adapt to changes in circumstances.

**Stability in funding** assesses future proofing and the extent to which funding flows are secure.

**Stability and health of staff** assesses the ability to care for staff and maintain workforce and their requisite skills to meet the demand for healthcare services in the future.

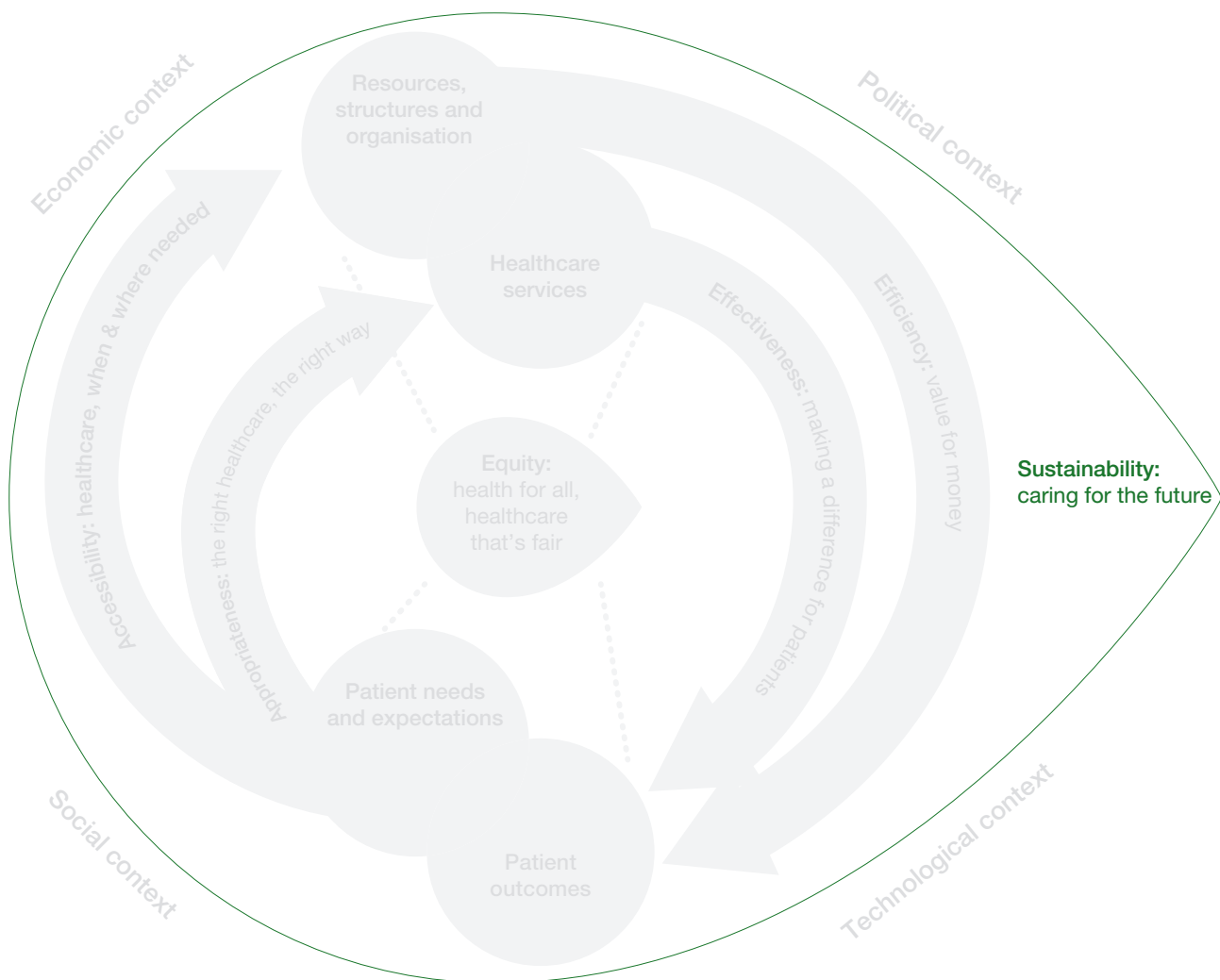
**Adaptability** assesses the capacity of the system to:

- adjust to meet changing health needs – for example through innovation, learning and investment
- develop and adopt improvements in clinical processes
- adopt innovations and technological development.

### Aspects of sustainability

Financial security and stability	Funding flows in relation to demand projections
Staffing security and stability	Staff turnover Absenteeism
Adaptability	Investment in research and development Utilisation rates of hospital in the home Adoption of innovative clinical and technological developments Sunsetting of obsolete technologies

### Example indicators



## Performance hypotheticals – a system perspective

A view of sustainability: key personnel risk to stability

The Medical Clinic in rural NSW is a cherished asset to the local community. The clinic is run single-handedly by Dr Reynolds with the help of a team of mostly part-time, clerical nursing and allied health professionals. Dr Reynolds has been involved in a serious car accident and will be unable to work for at least six months. The practice has been unable to attract a locum to cover Dr Reynold's absence and the practice will have to close.

A view of sustainability: human resource management and organisational stability

The radiology department of an inner city hospital is under strain. It has a longstanding problem with staff absenteeism, high levels of staff turnover, and relies heavily on agency staff to deliver essential cover. Appointments never seem to run to time and the waiting area is invariably full by 10am. Today a manager has tendered her resignation – the second manager to do so this year.

# How do the constructs interact?

Performance is a dynamic phenomenon, occurring in a complex environment

The dimensions of performance featured in the framework – accessibility; appropriateness; effectiveness; efficiency; productivity, impact, equity and sustainability – are interlinked. A high performing healthcare system optimises the blend of achievements across these different dimensions.

There can be reinforcing and antagonistic influences between the constructs. Strong performance in one domain can provide opportunities for improved performance in another. For example:

- increasing efficiency by reducing waste will permit greater coverage
- providing more appropriate care is likely to increase effectiveness
- increasing coverage and access will enable achievement of more equitable healthcare

Weak performance can have a dampening effect on other domains. For example:

- low efficiency equals fewer available resources, fewer activities, less coverage
- ineffectiveness leads to inefficiency
- lack of coverage reduces equity and effectiveness

Strong performance in one domain, however, can sometimes have an antagonistic or detrimental effect on another. For example:

- over-emphasis on effectiveness can come at a heavy cost as procedural and therapeutic innovation often entails high costs for small incremental benefits and can reduce efficiency (see Figure 12)
- efficiency might be achieved at the expense of reduced access for population groups that are hard to reach, therefore reducing the equity of the system (see Figure 13)
- increasing appropriateness through increasing responsiveness might reduce the system's coverage.

Maximising the results in any single dimension is difficult to achieve. Given their interdependencies, maximising one construct may well have unintended consequences on others. In a complex dynamic system such as health, all constructs cannot be maximised simultaneously. Measuring and reporting regularly on all of them is therefore important.<sup>32</sup>



Figure 12: Examples of interactions between constructs — effectiveness and efficiency

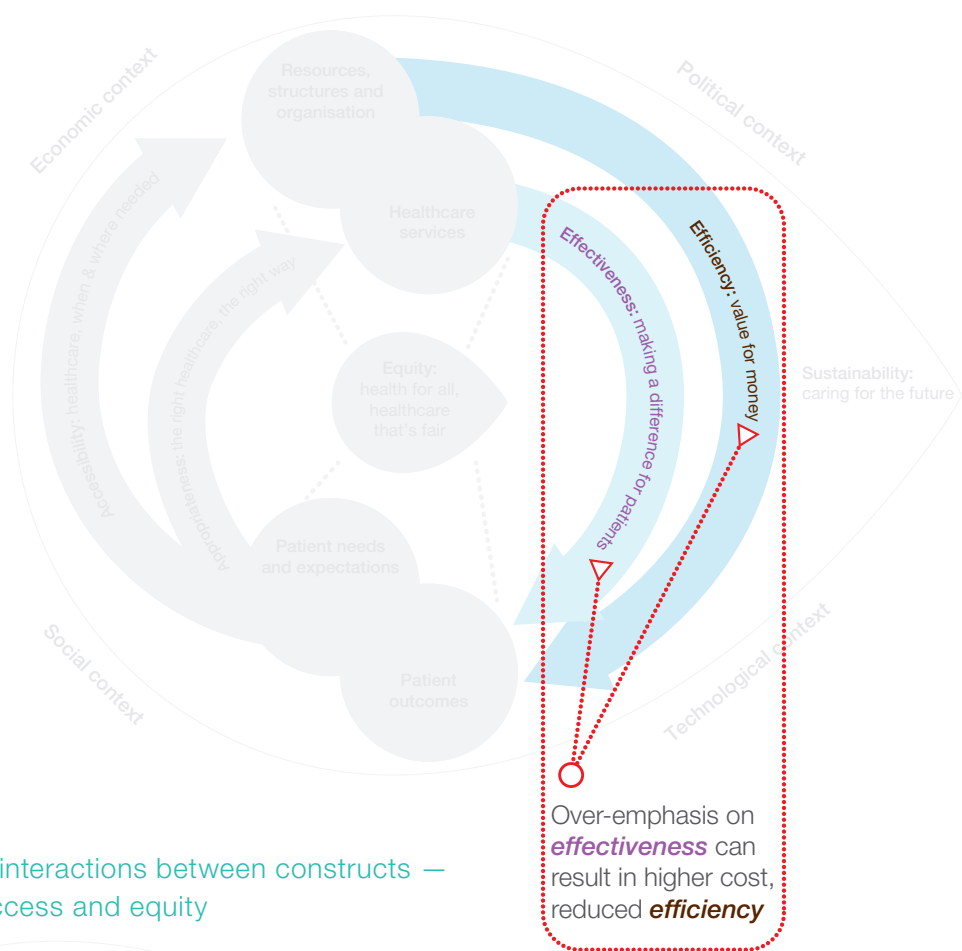
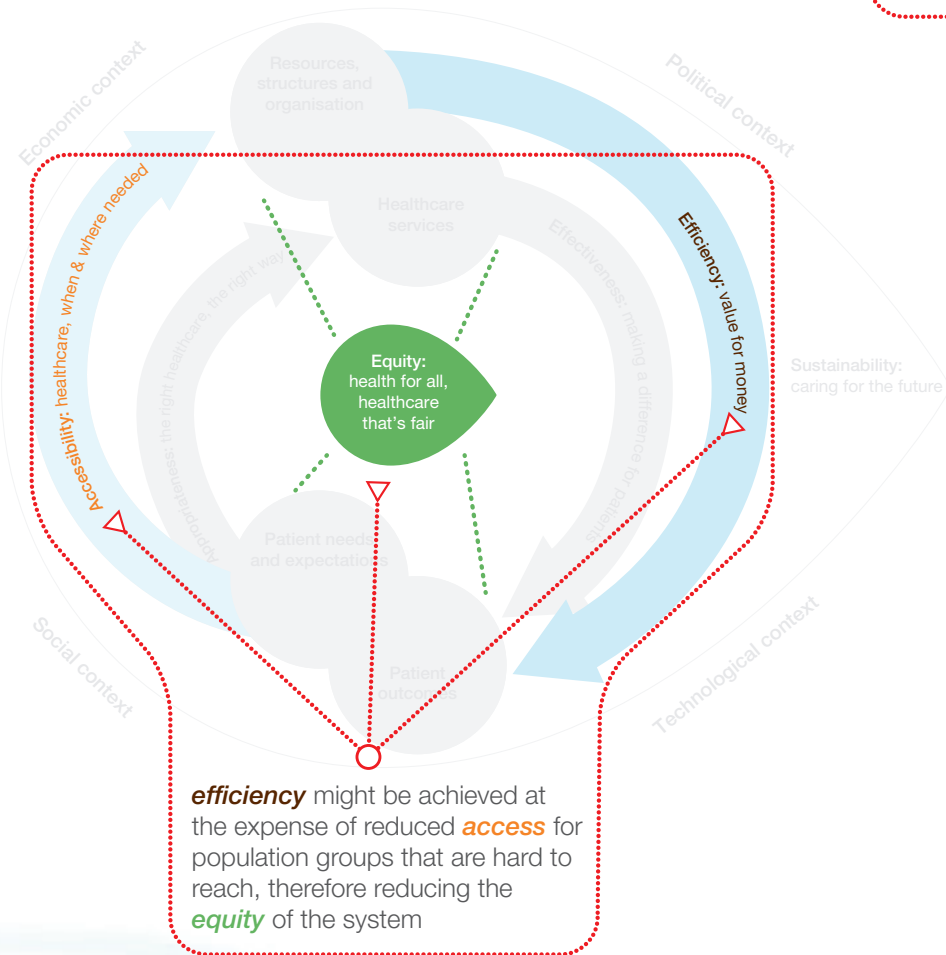


Figure 13: Examples of interactions between constructs — efficiency, access and equity



# How to judge performance

## Performance is relational, contested, dynamic

Frameworks can guide the selection of performance indicators but this is not sufficient to build a meaningful picture of performance. The crucial final step is to establish criteria that place performance in some sort of context. Performance is, at its core, a relational construct.

With so much complexity, clear criteria are necessary. Such criteria provide the capacity to make judgements about performance, was it good or bad, rather than just describe it.

Criteria can be considered as either absolute or relative.

Absolute criteria are based on pre-defined levels of expected performance. These levels can be based on goals or objectives for the organisation or system; or on evidence-based gold standards or definitions of best practice. Actual performance is judged in the light of these expectations. Absolute criteria are amenable to traffic light type measurement – either expectations were met (green), partially met (amber), or not met (red).

In absolute terms, all units could be well performing; or all units could be performing poorly.

Relative criteria are based on comparisons of performance among units of healthcare delivery (hospitals, Local Health Districts, states and territories, countries) or comparisons of a single unit with itself over time. The former are usually made among similar organisations or systems – using the performance of some units as benchmarks against which to judge the results of others. When using relative criteria, it is important to ensure that comparisons are fair; that measurements in different units are comparable and that potentially important confounding factors are controlled.

In relative terms, there are almost always some units that are performing better than others, even in a high performing system.

Each of these approaches can offer insight into performance. Comprehensive indicator sets contain a judicious mix.

# Absolute performance criteria using goals and standards as a comparator

Many performance frameworks assess healthcare performance in light of over-arching system objectives or goals.<sup>4,10</sup>

## Strengths

The objectives of a system or organisation are obvious criteria against which to assess performance. Goals represent the justification and reasons for an organisation's existence – and the extent to which goals are achieved is clearly a relevant aspect of performance. Goal-based criteria have been shown to focus attention, motivate effort and catalyse strategies to improve.<sup>16</sup>

Similarly, performance can be assessed against normative standards, based either on evidence, expert consensus or on ideological norms of acceptability.

There are a number of approaches suitable for reporting performance against goals and standards. Most are based on simple 'yes / no' or 'goals met / partially met / not met' criteria, for example 'traffic lights' and 'checkerboards'.

## Limitations

By their nature, predefined high-level goals and objectives' tend to be static rather than dynamic – performance is cast in terms of goal achievement – objectives are met or not met.

While goal-based criteria are useful in broad-brush terms, they are limited in the number of goals that can be accommodated. Healthcare systems are complex, with multiple stakeholders who differ in terms of perspectives and therefore goals. Focusing performance assessment solely upon defined goals and objectives can reduce the capacity to understand and assess areas not explicitly covered – despite their importance to wider functioning and outcomes.

Assessing performance against standards can also be problematic in that it can result in lists of disparate measures that do not come together to build a coherent picture of performance. Further, it can be difficult to translate high-level goals such as 'improve the health of the population' into measurable and attributable indicators of performance at a unit or organisational level of analysis.

When absolute criteria are set as the basis for judging performance, assessments are often made in terms of target achievement. Targets are powerful levers for change but must be used with care. Targets can have unintended consequences, including gaming and tunnel-vision – focusing efforts in areas that have targets and neglecting performance elsewhere.<sup>33</sup> In addition, the level at which targets are set can be based on political expedience rather than performance optimisation.

# Relative performance criteria – benchmarking

## Using other systems or organisations as a comparator

Widely used internationally,<sup>34,35,36</sup> approaches that benchmark performance across systems or organisations can provide valuable information – highlighting gaps and potential for improvement; and catalysing efforts to change.

Benchmarking has to be handled with care, however. To generate meaningful information about the comparative performance of a particular system or organisation, it is important to compare with peers that share core characteristics or constraints; or to control for the effects of these contextual differences using statistical techniques. It is only then that differences in the core constructs of accessibility, appropriateness, effectiveness, efficiency, equity or sustainability are reflective of system, organisational or clinical performance.

### Comparing healthcare systems

In terms of comparing healthcare systems, the Organisation for Economic Cooperation and Development (OECD) has published a classification based on policy principles, funding and governance arrangements, clustering similar jurisdictions together.<sup>29</sup> Clusters can also be based on criteria such as regulatory, funding and structural features; or similar social, demographic and political contexts.

### Comparing healthcare organisations

At an organisational level of analysis, many jurisdictions use peer groupings or clusters of hospitals to make benchmarking more relevant and meaningful.\*

Figure 14 illustrates three popular approaches to comparative performance reporting. In the first example, units are ranked. That is, the units to be compared are ordered, according to their results for a particular indicator, from first to last. While popular in a range of different contexts, ranking is often controversial because it generates a range from ‘best’ to ‘worst’ – regardless of whether there are meaningful differences in performance – and can therefore lead to unfair conclusions. In the second example, the average (mean) or median of all units being examined (and the standard deviation) is calculated and reported upon – allowing individual units to compare their results with the average performance. This approach, although less easy to interpret, provides the entire distribution of units and their relative position. In the third example, units are assigned a grade or a ‘traffic light’ symbol based on a predefined rating system performance levels and cut-offs. Although easy to communicate to non-expert audiences, this approach requires particular care in establishing rating criteria or targets.

These three approaches are often complementary since they take a different perspective on performance and are sometimes amalgamated into a performance dashboard. All are subject to difficulties in controlling adequately for contextual confounders (see page 39).

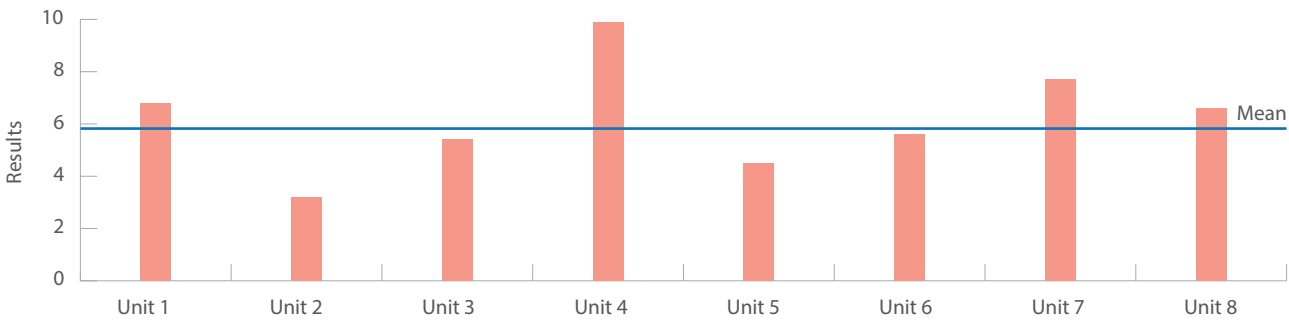
(\*) In NSW Peer group A hospitals include principal referral and paediatric specialist, and ungrouped acute-tertiary referral hospitals, peer group B includes major metropolitan hospitals, and peer group C includes district groups 1 and 2 hospitals that conduct elective surgery.

Figure 14: Benchmarking and reporting approaches

1. Ranking

	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7	Unit 8
Accessibility	1	7	2	6	3	5	4	8
Appropriateness	3	5	4	1	8	2	6	7
Efficiency	6	8	2	7	5	3	4	1

2. Bar chart



3. Traffic lights

	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7	Unit 8
Accessibility	●	●	●	●	●	●	●	●
Appropriateness	●	●	●	●	●	●	●	●
Efficiency	●	●	●	●	●	●	●	●

# Longitudinal performance – considering time

## Performance and time: short–and long–time horizons

To provide a meaningful assessment of performance, longitudinal measurement must be sensitive to variable time lags between the cause and effect of an action.

In healthcare, long time lags between action and impact are widespread. It is important therefore to include short- and long-term measures in performance assessment efforts.

For example, in the care of diabetes, poor control of blood sugar levels, cholesterol, blood pressure and weight can lead, over many years, to serious ill-health, disability and premature death. Long-term complications for diabetic patients include renal, circulatory, neurological and ophthalmic diseases. Measures of the prevalence of such complications today often reflects performance decades in the past. To better assess current performance it is important, where possible, to also measure short-term outcomes, for example the adequacy of diabetes control (HbA1c measurements in population samples) and the prevalence of acute diabetic complications such as ketoacidosis and diabetic coma – which indicate recent poor diabetic control.

In many cases, outcomes take so long to become apparent that it is difficult to attribute them to specific services, treatments and the professionals delivering them – limiting the scope of meaningful effectiveness measures. In these cases, it is often necessary to rely on appropriateness measures – judging performance on the basis of concordance with the evidence base.

There are, of course, acute episodes of healthcare that do allow for timely measurement of both appropriateness and effectiveness of care – such as trauma.

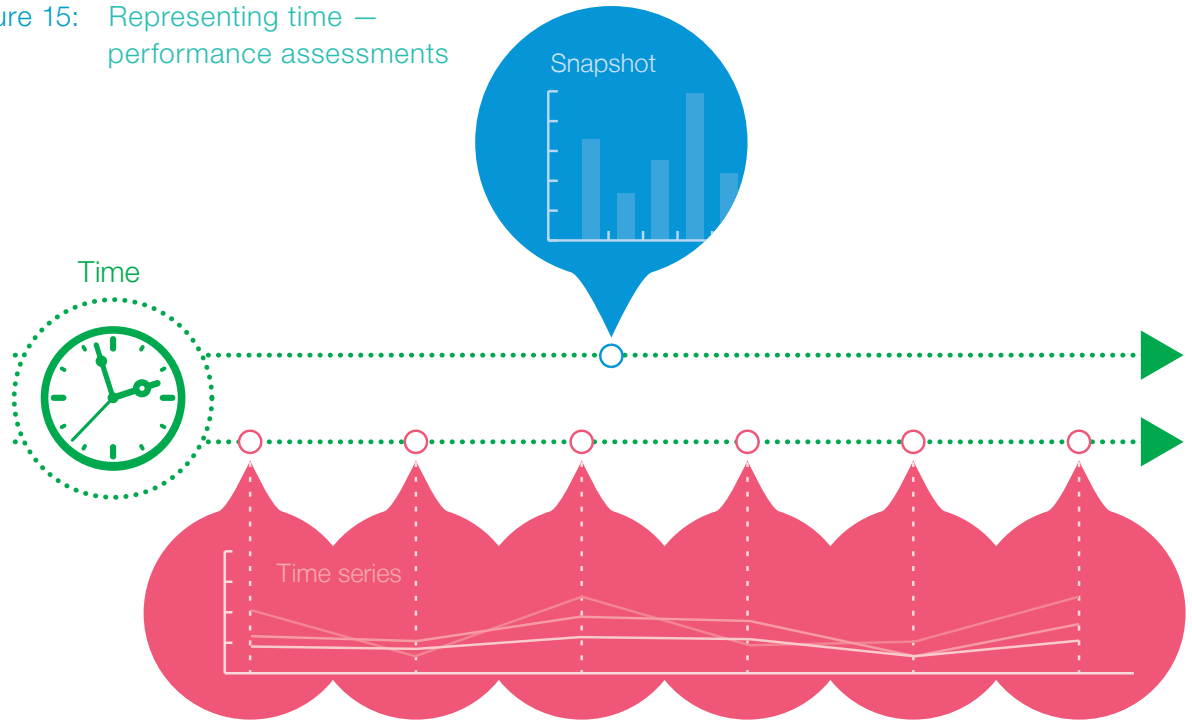
The inclusion of short- and long-term measures is particularly important in the domain of effectiveness. Outcomes such as mortality often reflect inputs and activities of previous years. A naïve comparison of current performance might ignore the trajectory of the system or organisation.

Time is not only an important issue to consider in terms of time lags between action and outcome – it is a crucial dimension in assessing performance in complex systems. Snapshot measures – using a single time point – can give some insight but are limited in the information they can provide as they are unable to capture dynamism.<sup>37</sup> More meaningful are time series data that provide information about relative improvement or deterioration over time (see Figure 15).

Even more informative is the presentation of a measure of current performance together with an indication of trajectory.

A final layer of complexity, in terms of time, is added when the notion of potential performance is added to the model. Measuring potential (say in terms of whether an organisation or system is sustainable into the future) involves assessing organisation or system trajectory – e.g. through measures of protection of, and investment in, physical and human capital; investment in disease prevention and health promotion, research and development; ensuring financial security; and sensitivity to changes in population risk factors.

Figure 15: Representing time — performance assessments



# Attributing performance

## Whose performance is it anyway?

Healthcare is a multi-layered system. At its most fundamental, it centres on an individual professional interacting with a patient. However, most patients interact with a range of professionals and services and so unpicking individual performance is difficult.

### There is a multiplicity of providers interacting with and caring for patients

At the same time, each patient–professional interaction can be considered to be 'nested' within increasing layers of complexity through teams, units, hospitals, regional clusters, and ultimately the entire healthcare system.

### Multiple organisations or units affected outcomes for patients

The integrated performance assessment framework can be applied at any of these levels – using the same core questions and performance dimensions.

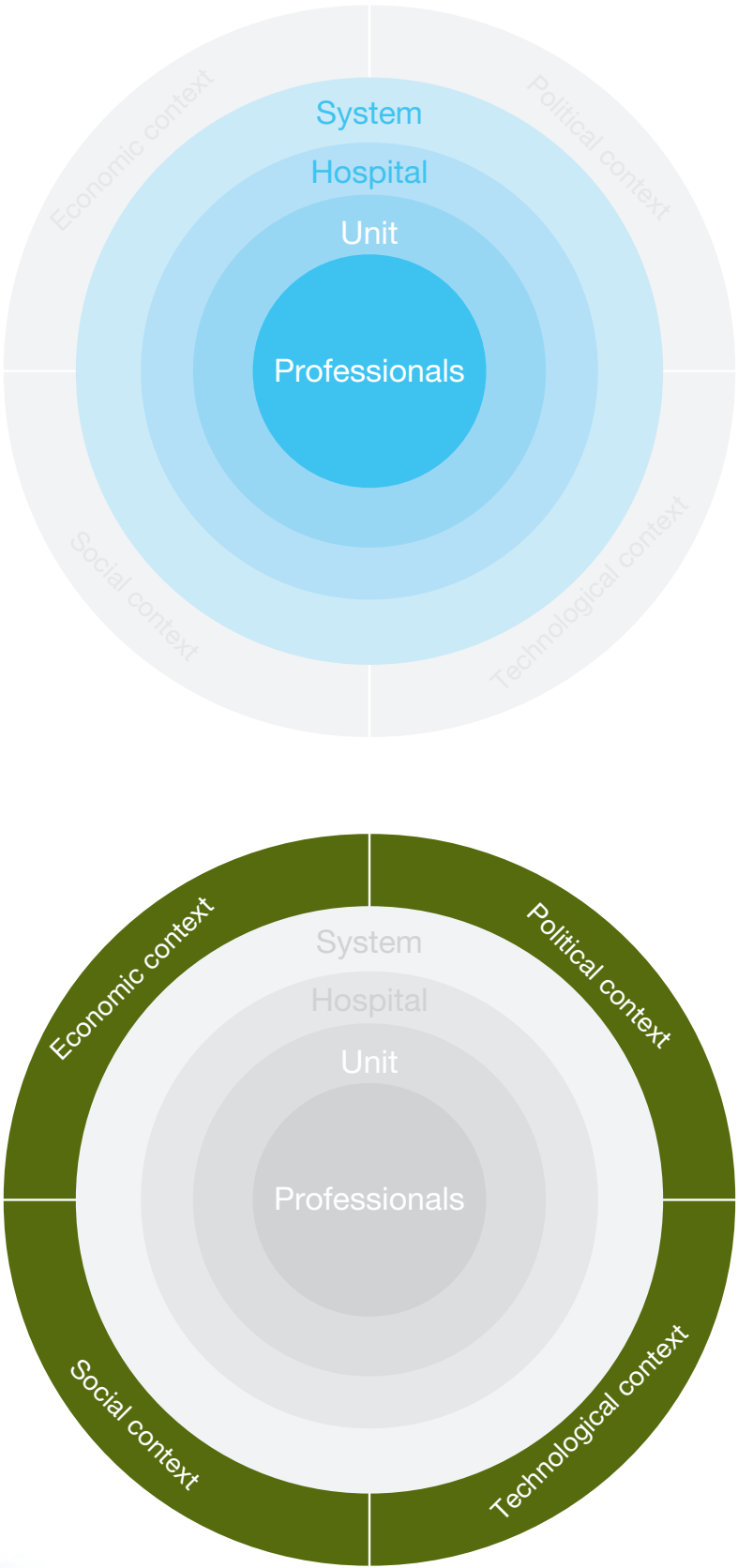
### Performance is contextual

Complexity is inherent in healthcare organisations and systems consist of individuals and elements that have freedom to act in ways that are not always predictable and whose actions are interconnected. What one does shapes the context for others.<sup>21</sup>

Given the nested structure of organisations in health, particular attention is needed to attribute performance fairly and appropriately. Understanding context and measuring performance at various levels is therefore key to appropriately understanding variations in performance (see Figure 16).



Figure 16: Healthcare is a multi-layered and contextual system



# Assessing performance in context

## Handling contextual confounders

Assessing performance in context often requires making comparisons between similar organisational units ([see page 33](#)).

Any characteristics that both differ between the units to be compared and are associated with performance will act as confounders. Confounding factors 'get in the way' of the comparison between groups and, if they are not recognised, can lead to wrong conclusions.

Confounders can mask true associations or create spurious ones. Unaddressed, they compromise the fairness and validity of any comparisons.

There are well-established techniques for handling confounders. Most suitable for performance assessment are those that use analytical approaches such as stratified analysis and standardisation.<sup>38</sup>

Of these, stratification is the most transparent, highlighting differences and grouping similar units together in order to compare 'apples with apples'. Widely used in health to cluster similar hospitals together in peer groups, stratification allows for performance assessment around the question: Given your circumstances, how well did you perform?

An alternative approach is to standardise confounders analytically. This entails using statistical techniques to 'level the playing field'. The more accurately the confounders are measured, the more fairly units can be compared. Predominantly used in performance measures that focus on patient outcomes, standardisation allows assessment around the question: After controlling for differences in context, such as case-mix of patients, how well did you perform?

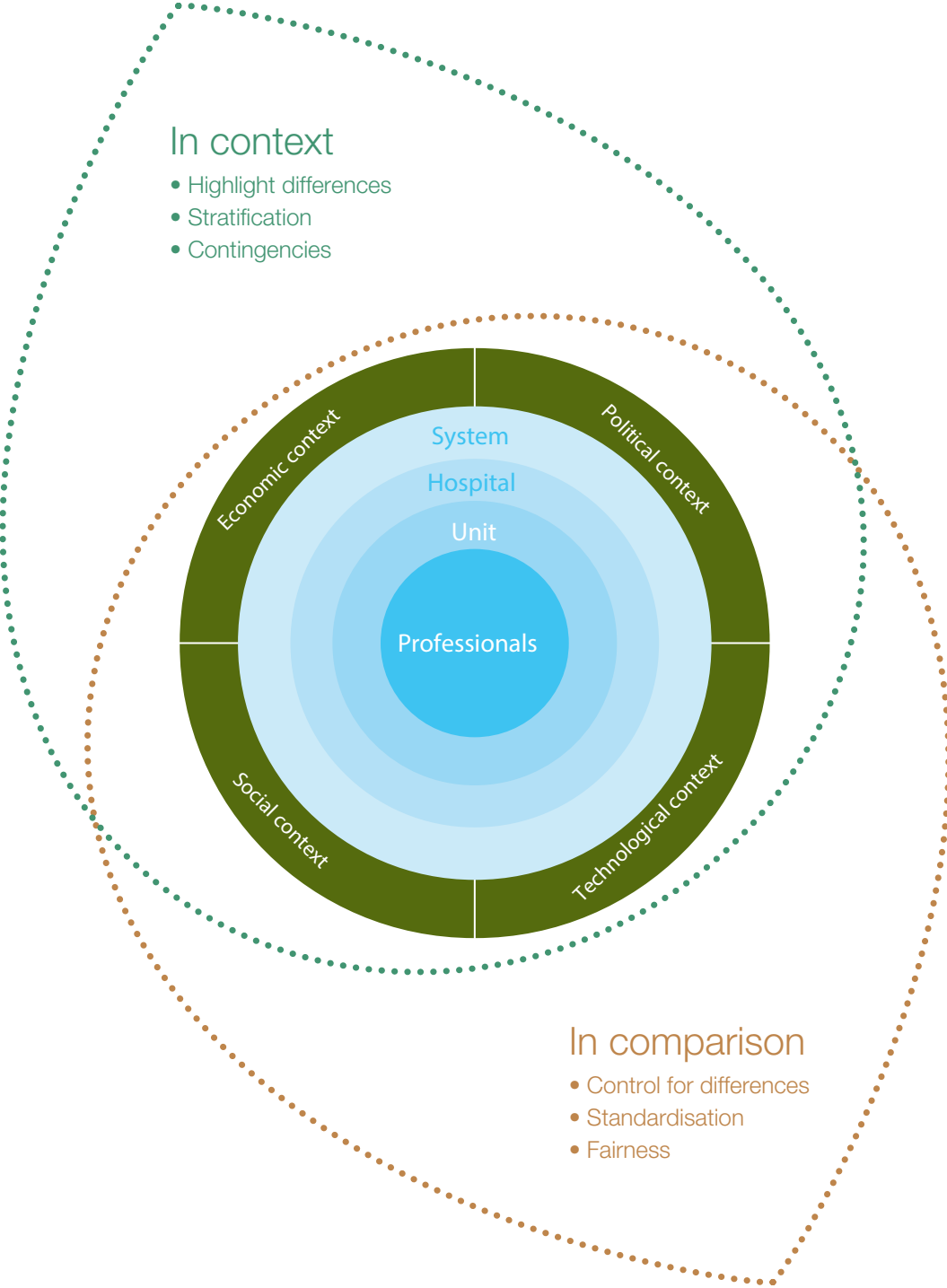
### Some confounders may be external to the healthcare system

Healthcare is an open system – shaped by a multitude of factors. Management literature has a number of well-established models of external influences, most notably the PEST model that addresses political, economic, social and technological factors. More recently, in the literature on systems thinking and its application to healthcare, this list has been expanded to DEPLESET which includes demographic, economic, political, legal, regulatory, epidemiological, socio-demographic, environmental and technological context.<sup>6</sup>

Any meaningful assessment of performance of healthcare organisations should consider the role of such external confounders ([see Figure 17](#)).

Figure 17: Assessing healthcare performance: in context and in comparison

Given your context,  
how did you perform?



After controlling for  
differences in context,  
how did you perform?

# The integrated framework – 10 key points

1. Performance is action. Action can be measured in counts. Counts are not sufficient to measure performance.
2. Assessment of performance should go beyond describing 'what was done' to providing systematic and rigorous information about 'how well things were done'.
3. Eight constructs guide meaningful performance assessment of how well things were done: accessibility; appropriateness; effectiveness; efficiency; productivity; impact; equity and sustainability.
4. Performance is multi-faceted, shaped by patients, professionals, organisations, systems, policies, and the broader social, political, economic and technological context.
5. What is deemed good performance is often contested and may differ across stakeholders and perspectives.
6. Fair performance assessment should control for confounders either:
  - a. Capturing performance in context (how did you do, given your circumstances)
  - b. Capturing performance controlling the context (how did you do, all other things being equal).
7. Healthcare performance should be assessed:
  - a. Retrospectively with short- and long-time perspectives
  - b. Prospectively, anticipating future needs.
8. Performance is sometimes measurable only when it is deficient (inefficiencies, unmet needs).
9. The dynamic constructs are themselves interconnected – sometimes reinforcing, sometimes antagonistic.
10. In a complex, dynamic system such as health, it is not possible to maximise all constructs simultaneously. Providing a balanced assessment looking simultaneously at multiple dimensions is therefore important.

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# Appendix

## Mapping of concepts in the literature: concordance; implicit inclusion; not included in integrated performance assessment framework

Source	Explicitly mentioned in integrated performance assessment framework (concordance)	Not mentioned explicitly in framework but referenced in <i>Spotlight on Measurement</i> (implicit inclusion)	Concept not included in framework
Vrijens F, Renard F, Jonckheer P, et al. The Belgian Health System Performance Report 2012: snapshot of results and recommendations to policy makers. Health Policy 2013; 112: 133-40.	<ul style="list-style-type: none"> <li>Effectiveness</li> <li>Appropriateness</li> <li>Accessibility</li> <li>Efficiency</li> <li>Sustainability</li> <li>Equity</li> </ul>	<ul style="list-style-type: none"> <li><i>Safety</i> (for outcomes / adverse events, Effectiveness and for processes, appropriateness)</li> <li><i>Continuity</i>, included in Appropriateness</li> <li><i>Patient centredness</i>, included in Appropriateness</li> </ul>	Quality
Agency for Healthcare Research and Quality. National Healthcare Quality Report. Rockville MD; US Department of Health and Human Services; 2013.	<ul style="list-style-type: none"> <li>Effectiveness</li> <li>Equity</li> </ul>	<ul style="list-style-type: none"> <li><i>Safety</i> (for outcomes / adverse events, Effectiveness and for processes, appropriateness)</li> <li><i>Timeliness</i>, included in Accessibility</li> <li><i>Patient centredness</i>, included in Appropriateness</li> </ul>	
Department of Health [England]. The NHS Performance Assessment Framework. London: DoH. 2000.	<ul style="list-style-type: none"> <li>Effective delivery of appropriate care</li> <li>Efficiency</li> <li>Fair access</li> </ul>	<ul style="list-style-type: none"> <li><i>Health improvement</i>, included in Patient needs and in Patient outcomes</li> <li><i>Health outcomes of NHS care</i>, included in Patient outcomes</li> <li><i>Patient / carer experience</i>, included in Appropriateness</li> </ul>	
Commonwealth Fund. Framework for a high performance health system for the United States. New York: Commonwealth Fund; 2006.	<ul style="list-style-type: none"> <li>Access</li> <li>Efficiency</li> <li>Equity</li> </ul>	<ul style="list-style-type: none"> <li><i>System and workforce innovation and improvement included in Sustainability</i></li> <li><i>Healthy Lives</i> included in Patient needs and in Patient outcomes</li> </ul>	Quality
National Health Performance Framework (National Health Information Standards and Statistics Committee (NHISSC); 2009.	<ul style="list-style-type: none"> <li>Effectiveness</li> <li>Accessibility</li> <li>Efficiency</li> <li>Sustainability</li> </ul>	<ul style="list-style-type: none"> <li><i>Safety (for outcomes / adverse events, Effectiveness and for processes, appropriateness)</i></li> <li><i>Responsiveness included in Appropriateness</i></li> <li><i>Continuity of care, included in Appropriateness</i></li> </ul>	Quality

# Appendix

## Mapping of concepts in the literature: concordance; implicit inclusion; not included in integrated performance assessment framework

Source	Explicitly mentioned in integrated performance assessment framework (concordance)	Not mentioned explicitly in framework but referenced in <i>Spotlight on Measurement</i> (implicit inclusion)	Concept not included in framework
Atun R and Menadbe N. Health systems and systems thinking. IN: Coker R, Atun r and McKee M [eds], Health systems and the challenge of communicable diseases: experiences from Europe and Latin America. Buckingham: Open University Press, 2008.	<ul style="list-style-type: none"> <li>Effectiveness</li> <li>Efficiency</li> <li>Equity</li> </ul>	<ul style="list-style-type: none"> <li>Health, included in Patient needs and in Patient outcomes</li> <li>Financial risk protection, included in Accessibility</li> <li>Consumer satisfaction, included in Appropriateness</li> </ul>	Choice
Organization for Economic Cooperation and Development (OECD) Arah O. A conceptual framework for the OECD Health Care Quality Indicators Project. International Journal for Quality in Health Care. 18 (suppl 1): 5-13, 2006.	<ul style="list-style-type: none"> <li>Effectiveness</li> <li>Accessibility</li> <li>Efficiency</li> <li>Equity</li> </ul>	<ul style="list-style-type: none"> <li>Safety (for outcomes / adverse events, Effectiveness and for processes, appropriateness)</li> <li>Responsiveness / Patient centredness included in Appropriateness</li> <li>Cost / expenditure included in Resources, structure and organisation</li> <li>Healthcare needs included in patient needs and expectations</li> </ul>	
World Health Organization. Everybody's business: strengthening health systems to improve health outcomes. Geneva: WHO; 2007.	<ul style="list-style-type: none"> <li>Access</li> <li>Equity</li> <li>Improved efficiency</li> </ul>	<ul style="list-style-type: none"> <li>Coverage included in accessibility</li> <li>Safety (for outcomes / adverse events, Effectiveness and for processes, appropriateness)</li> <li>Improved health (level and equity) included in Patient needs, Patient outcomes and Equity</li> <li>Social and financial risk protection included in Accessibility</li> <li>Responsiveness included in Appropriateness</li> <li>System building blocks included in Resources, structures and organisation</li> </ul>	Quality



Source	Explicitly mentioned in integrated performance assessment framework (concordance)	Not mentioned explicitly in framework but referenced in <i>Spotlight on Measurement</i> (implicit inclusion)	Concept not included in framework
International Health Partnership [IHP]. Monitoring performance and evaluating progress in the scale-up for better health: a proposed common framework. IHP; 2008.	<ul style="list-style-type: none"> <li>• Efficiency</li> </ul>	<ul style="list-style-type: none"> <li>• Intervention access and services readiness included in Accessibility</li> <li>• Safety (outputs) included in Effectiveness</li> <li>• Coverage of interventions included in Accessibility</li> <li>• Prevalence risk behaviours and factors included in Patient needs</li> <li>• Responsiveness included in Appropriateness</li> <li>• Infrastructure; ICT; health workforce; supply chain; information; financing; governance all included in Resources, structures and organisation</li> </ul>	Intervention quality
Canadian Institute for Health Information. A performance measurement framework for the Canadian health system. Ottawa: CIHI; 2012.	<ul style="list-style-type: none"> <li>• Appropriateness</li> <li>• Equity</li> <li>• Efficiency</li> <li>• Effectiveness</li> </ul>	<ul style="list-style-type: none"> <li>• Access to comprehensive integrated health services included in accessibility</li> <li>• Improve value for money included in Efficiency</li> <li>• Improve health system responsiveness included in Appropriateness</li> <li>• Improve health status included in Patient needs and in Patient outcomes Patient experience with health services included in appropriateness</li> <li>• Safety (for outcomes / adverse events, Effectiveness and for processes, appropriateness)</li> <li>• Health protection, health promotion and disease prevention included in patient needs and expectations and in sustainability</li> <li>• Health system innovation and learning capacity included in sustainability</li> <li>• Leadership and governance; health system resources; efficient allocation of resources; adjustment to population health needs all included in Resources, structures and organisation</li> </ul>	Quality

Source	Explicitly mentioned in integrated performance assessment framework (concordance)	Not mentioned explicitly in framework but referenced in <i>Spotlight on Measurement</i> (implicit inclusion)	Concept not included in framework
National Health Performance Authority Performance and accountability framework; 2012. <a href="http://www.nhpa.gov.au/internet/nhpa/publishing.nsf/Content/PAF~PAF-Section-4">www.nhpa.gov.au/internet/nhpa/publishing.nsf/Content/PAF~PAF-Section-4</a> .	<ul style="list-style-type: none"> <li>• Equity</li> <li>• Effectiveness</li> <li>• Efficiency</li> <li>• Access</li> <li>• Appropriateness</li> </ul>		Quality
Integrated performance model for the health care system [EGIPSS] Sicotte C et al. A conceptual framework for the analysis of health care organisations performance. Health Services Management Research 1998, 11: 24-48.	<ul style="list-style-type: none"> <li>• Effectiveness</li> <li>• Efficiency</li> <li>• Equity</li> </ul>	<ul style="list-style-type: none"> <li>• Satisfaction of clients and partners included in effectiveness</li> <li>• Quantity of care and services included in Healthcare services</li> <li>• Productivity included in Efficiency</li> <li>• Continuity, included in Appropriateness</li> <li>• Ability to adapt and meet client's needs; Ability to adapt to requirement and tendencies; ability to innovate and transform; capacity to acquire resources all included in sustainability</li> </ul>	Quality  Capacity to attract the clientele  Consensus with fundamental values  Collaborative climate
Profit J, Typpo K, Hysong S, et al. Improving benchmarking by using an explicit framework for the development of composite indicators: an example using pediatric quality of care. Implementation Science 2010; 5: 13.	<ul style="list-style-type: none"> <li>• Effective</li> <li>• Efficient</li> <li>• Equitable</li> </ul>	<ul style="list-style-type: none"> <li>• Safe (for outcomes / adverse events, Effectiveness and for processes, appropriateness)</li> <li>• Patient centred included in Appropriateness</li> <li>• Timely included in Accessibility</li> <li>• Health status included in patient needs and expectations</li> <li>• Health system (organisation, financing, payment, regulation, persuasion) included in Resources, structures and organisation</li> </ul>	

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# About the Bureau

The Bureau of Health Information provides the community, healthcare professionals and the NSW Parliament with timely, accurate and comparable information on the performance of the NSW public health system in ways that enhance the system's accountability and inform efforts to increase its beneficial impact on the health and wellbeing of the people of NSW.

The Bureau is an independent, board-governed statutory health corporation. The conclusions in this report are those of the Bureau and no official endorsement by the NSW Minister for Health, the NSW Ministry of Health or any other NSW statutory health corporation is intended or should be inferred.

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