Health System Performance Frameworks: Aligning Frameworks for Sectors and Organizations to Health Systems

Health System Performance

Canadian Institute for Health Information
Institut canadien d'information sur la santé

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Healthier Canadians.

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Our Values

Respect, Integrity, Collaboration, Excellence, Innovation

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- A Generic Performance Measurement Framework Aligned With the CIHI Health System Performance Measurement Framework;
- A Performance Measurement Framework for Canadian Hospitals; and
- A Canadian Long-Term Care Performance Measurement Framework Aligned With the CIHI Health System Performance Measurement Framework.

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Introduction

A health system can be assessed by examining whether it is achieving a set of desired objectives, such as better population health and more responsive and efficient services. Performance measurement activities support this assessment by collecting, analyzing and reporting information on those objectives and on the factors that influence the system.

In turn, that information plays a central role in the system's ability to meet its goals. Performance information can be used to identify potential improvements, facilitate transparency and accountability, and improve decision-making at various levels. Patients can use performance information to make choices between providers; physicians require performance information to make decisions about clinical treatment; citizens demand performance information to hold politicians to account; and governments need performance information to decide how best to allocate resources.

These diverse stakeholders share a common need to know how the health system is performing, but the nature of the information they require — its timeliness, level of detail and the particular health services it pertains to — is inherently different. A fundamental challenge, then, is to structure these complex information needs around a common set of concepts so that the users and stewards of performance measurement are able to relate the information that is being collected (or needs to be collected) to the key processes and objectives of the health system as a whole.

To help provide a common understanding of the different performance assessment efforts being undertaken across Canada, the Canadian Institute for Health Information (CIHI) recently proposed a new tool: the Health System Performance (HSP) Measurement Framework. The objective of this framework is to coordinate and align the reporting of performance information across Canadian jurisdictions (provinces, territories and regional health authorities) in a way that supports their quality improvement priorities and helps address the needs of multiple audiences.

As a starting point in thinking about the complexity of health systems, it is useful to consider that while some overarching principles of a Canadian health system are defined by the *Canada Health Act*, "Canada's health system" actually comprises a number of provincial and territorial health care systems, which are responsible for structuring and organizing the delivery of health care within their jurisdictions. In many jurisdictions, these are further divided into regional health systems with various defined levels of control over services. Additionally, provinces and territories are responsible for the delivery of many services, such as education and social services, that contribute significantly to the health of their populations. Indeed, determining the boundaries — related, for example, to geography, services or populations — around the health system being assessed is one of the key challenges of developing a framework to represent the health system.

This new framework provides a system-level overview that allows the stakeholders to assess the collective contribution of all parts of the health system. But it is equally important that people are able to see how each of the system's distinct components (such as hospitals or long-term care facilities) connects to overall system performance. To support this deeper, more specific understanding, we can build on the HSP Measurement Framework and design complementary frameworks that demonstrate how the inputs, processes and outcomes of any one health service relate to the larger whole. These complementary — or cascading — frameworks can help to build a common language across and within sectors to articulate how they each contribute to, and are influenced by, the performance of the wider health system.

About this report

To stimulate and streamline the creation of cascading performance frameworks, this report explores this work from three perspectives. Section 1 discusses the key common issues or principles that should be considered in developing a performance framework for any specific sector or organization. In essence, this requires drawing boundaries around a specific sector to clarify its place within the larger system and studying what services the sector provides, how those services perform, and how they contribute to system wide objectives. Section 2 then demonstrates these steps and shows how to apply the larger framework to the hospital sector or to individual hospitals. Section 3 applies the framework to the long-term care sector.

The two sectors used in the examples (hospital and long-term care) illustrate the broad potential of the HSP Measurement Framework to be useful at a number of levels across the system. These sectors address very different needs, reflecting different social goals and values: hospitals generally have a "care and repair" focus on treating acute health problems, whereas long-term care focuses on maximizing quality of life for people whose health conditions are unlikely to improve. The challenges of drawing boundaries for hospital care can also be quite different than for long-term care, where there is a wider range of services, providers and care settings. In addition, the report takes different approaches to developing cascading frameworks for the two sectors. The hospital discussion applies the system-wide framework to that sector and then validates the result by showing how the cascaded framework can be aligned with other, widely used performance assessment systems. In contrast, Section 3 starts with existing performance frameworks used in the long-term care sector and then shows how they can be mapped to CIHI's HSP Measurement Framework. Both approaches are valid; choosing the appropriate one will depend on the context and sector being examined.

A renewed Health System Performance Measurement Framework for Canada

Given the complex organization of health systems and all the factors that influence inputs and outputs, there are different ways to conceptualize the objectives and boundaries of a health system. For performance assessments to be effective, stakeholders across the system need to have a common starting point — a basis for collecting performance information and relating it to health system performance.

In 1999, CIHI and Statistics Canada launched the Canadian Health Information Roadmap Initiative Indicators Framework to develop this common starting point.[1, 2] The framework was constructed with two questions in mind: "How healthy are Canadians?" and "How are health systems in Canada performing?" While this framework was well accepted nationally and recognized internationally, in 2012 CIHI saw a need to update it for two reasons:

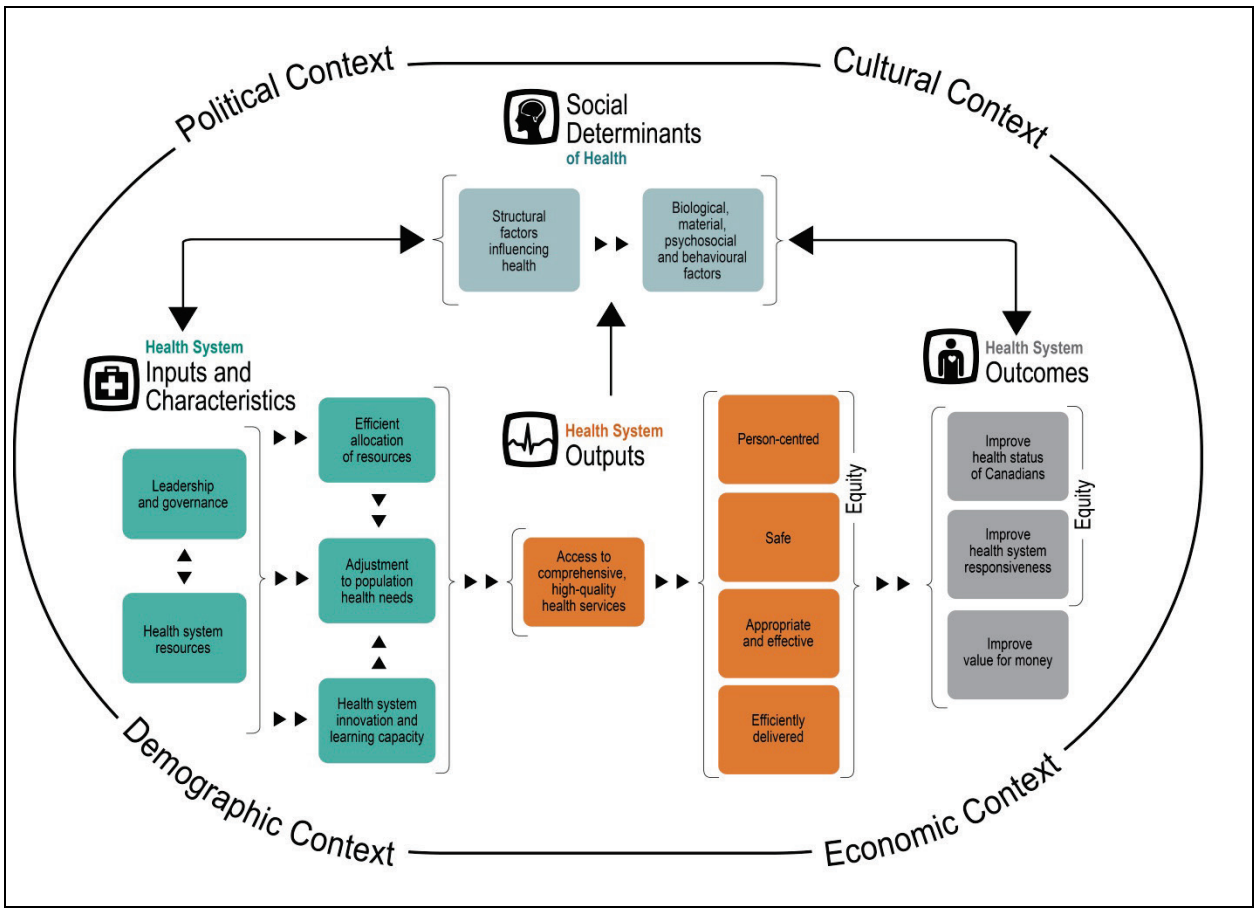
- To illustrate how the relationships among the various dimensions of performance support the achievement of the system's ultimate goals, and
- To reflect recent developments in health policy and performance measurement, such as the emphasis on value for money, patient safety and patient-centredness.

CIHI's HSP Measurement Framework (Figure 1), released in 2013, represents four quadrants:

- Social determinants of health;
- Health system inputs and characteristics (e.g., what resources are used and how services are organized);
- Health system outputs (the quality of services); and
- Health system objectives or desired outcomes.

Together these illustrate the key dimensions of performance that must be studied when assessing the achievement of health system goals for individuals and for the general population. The framework also captures the dynamic relationships among the four dimensions or quadrants (the arrows in the figure) and the variety of key contexts or external forces that shape the system, also in dynamic ways. For more detail on the development of the framework, please see CIHI's 2013 report *A Performance Measurement Framework for the Canadian Health System*.[3]

Figure 1: CIHI's Health System Performance Measurement Framework

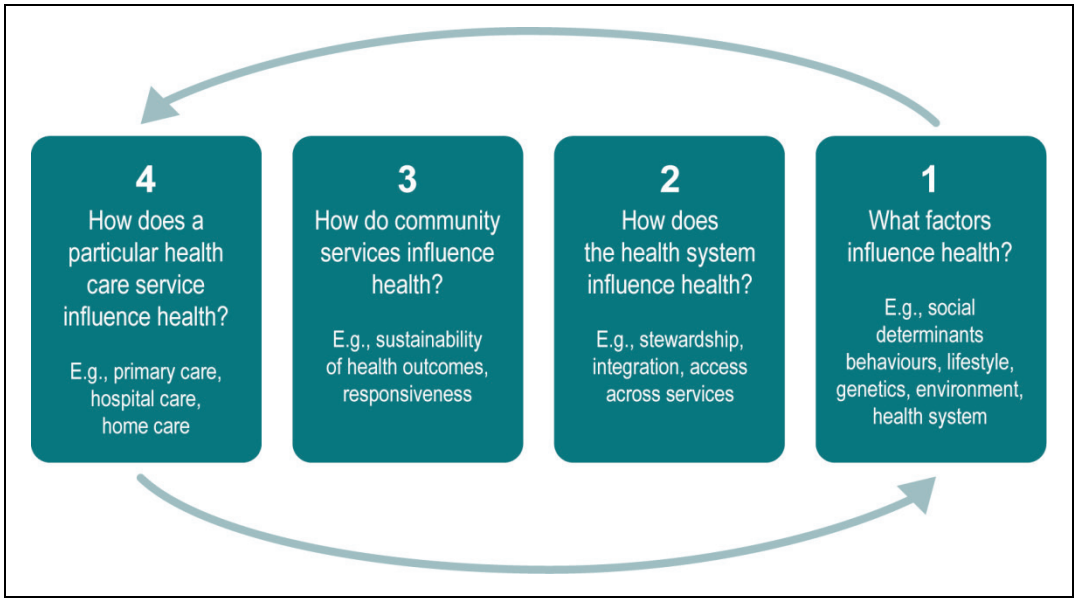


Source
Canadian Institute for Health Information. *A Performance Measurement Framework for the Canadian Health System*. Ottawa, ON: CIHI; 2013.

Cascading the system framework to sectors and services

Cascading frameworks provide more detailed depictions of particular components of the health system, while clearly relating them to the overarching framework. Figure 2 represents the idea of these complementary frameworks by taking one of the key objectives of health systems — to improve the population health status — and showing how it can be modelled at different levels of analysis.

Figure 2: Cascading frameworks — Modelling different representations



Source
Canadian Institute for Health Information, 2015.

In Figure 2, each panel represents a different framework, with its perspective listed on the panel. Each framework models a representation of how it influences health. Starting from panel 1 and working toward panel 4, the frameworks become more focused. Panel 1 is the broadest and considers the wider determinants of health, of which the health system is only one. This allows users of the framework to place the health system in context and to keep in mind the wide variety of other determinants that influence health.

Panel 2 focuses on how actions within the health system itself (actions that affect the accessibility and integration of services, for example) affect the system's ability to improve health. While the remaining panels consider services within the health system that may influence health, panel 3 looks broadly at community services while panel 4 examines particular health care services. The arrows connecting the panels indicate that actions in any one panel will influence and be influenced by actions in all the others.

As the following pages describe, cascading frameworks for specific sectors and services can be created by exploring a similar set of questions for each of the other quadrants (inputs and characteristics, outputs, and social determinants of health) in the system-wide framework. The overarching framework was developed to support this work. It provides a common foundation for understanding and measuring health system performance across Canada, and it does so in ways that allow users to consider the dynamic relationships among actions, policies and external contexts that influence the ability of health systems and their component parts to achieve their goals.

1. Common ground: Key considerations in developing a cascaded framework

This section explores some of the key steps and common issues to consider in developing a cascaded framework that relates the work of a specific health sector or service to CIHI's HSP Measurement Framework.

In summary, the key steps in developing a cascaded framework are as follows:

- Allocate health service boundaries in relation to the health system boundary;
- Determine health service inputs and characteristics and their relationships to health system inputs and external influences;
- Determine health service outputs and their relationships to health service processes and health system outputs; and
- Define health service outcomes and consider how they contribute to health system outcomes.

Drawing boundaries

One of the most important steps in developing a conceptual framework for performance measurement involves drawing boundaries to determine what responsibilities lie within the jurisdiction of the health system, sector or service being assessed. In an evaluation of performance, it is crucial that the achievements being assessed represent the contribution to performance that can be attributed to those particular entities given those boundaries.

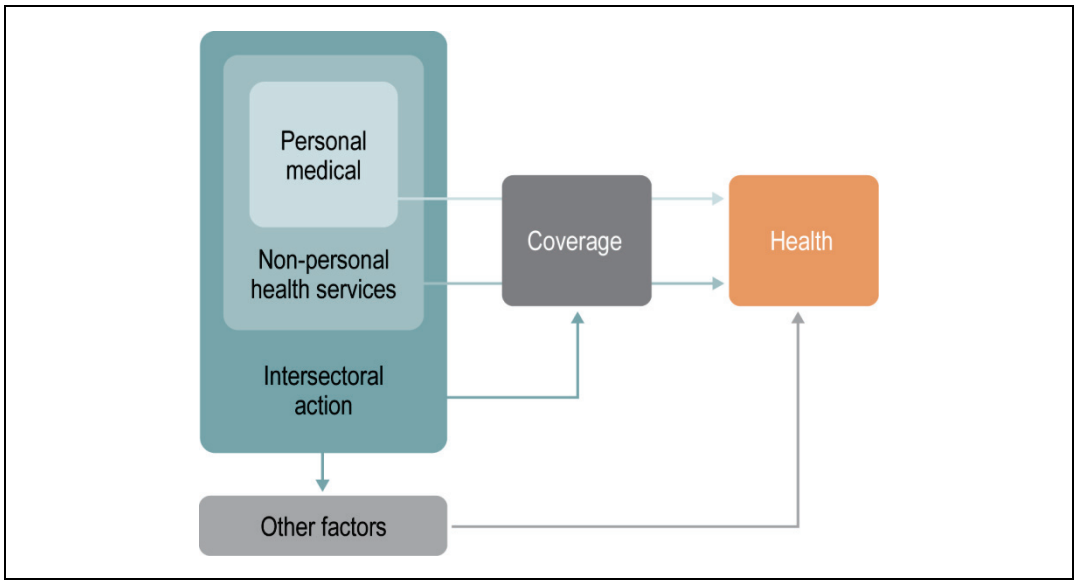
In the creation of cascading frameworks for health services, it is important to ensure that the health system boundaries are reflected in the service- or sector-specific boundaries. It is equally important to consider the boundaries between, for example, the hospital sector and other services such as primary care, home care and long-term care. This can be particularly challenging, as boundaries between these sectors and services are blurry, as are the mandates of specific organizations within the sector. For example, in the performance assessment of a hospital, it is crucial to focus on the contribution of medical care to health improvement, while considering the contribution of other activities such as public health, health promotion and contextual factors such as the economy, politics and demographics.

The task of drawing boundaries must also consider the range of services that falls within the hospital "production process," how these services contribute to outcomes and how that contribution can be assessed considering the other factors. Yet, a clear definition of the boundaries in any sector may be difficult to describe given the differences in responsibilities within and across systems and organizations.

A related aim in providing conceptual clarity with regard to the boundaries and performance objectives is to identify the external factors that may influence the achievement of those objectives. For example, the HSP Measurement Framework recognizes that social determinants of health — particularly health status — will play an important role in influencing outcomes, so it highlights that these factors must also be accounted for and, where possible, addressed. It is important for a cascading framework to build on this idea. Continuing with the hospital example, the hospital must not only recognize the role that social determinants play in its performance but also consider how the performance of other health services — such as primary care or community care — will influence its performance objectives.

The challenge of defining boundaries for health systems and their component parts has been the subject of considerable debate. In practice, different boundaries reflect different understandings of what responsibilities lie within the mandate of particular services (and thus particular stakeholders). This debate is probably most well documented at the health system level, where numerous international and national frameworks identify different conceptualizations of what activities lie within the health system.[4] As Murray and Evans outline, a health system can be defined differently or can be conceptualized as having different boundaries (as illustrated in Figure 3).[5, 6] The narrowest definition considers only those health activities directly under the control of a regional health authority or health care service providers. This often includes curative care services and may exclude activities such as public health or health promotion. The broadest definition would be one which considers all factors that influence health; this could include factors such as education and housing, for example.

Figure 3: Conceptualization of health system boundaries



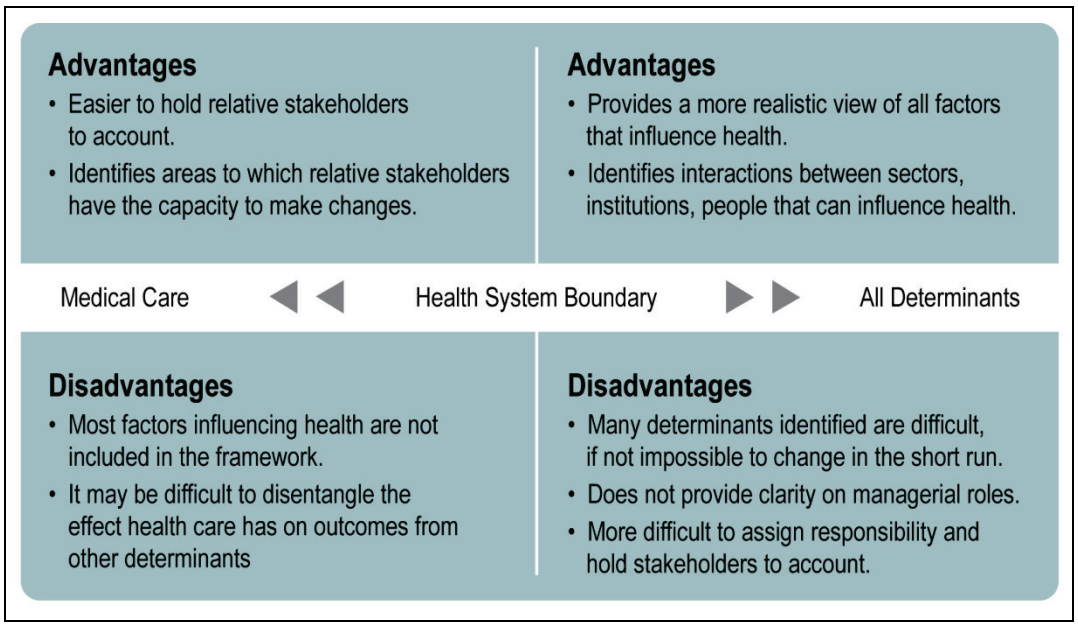
Source

Adapted with permission from Murray C, Evans B. *Health Systems Performance Assessment: Debates, Methods and Empiricism*. Geneva, Switzerland: World Health Organization; 2003.

The central point of discussion arises from the recognition that health outcomes are the result of many determinants, many of which lie outside the realm that jurisdictional policy-makers can affect. Different frameworks make reference to a wider or narrower set of these determinants. Authors generally agree that there is an important distinction between the "health system" and the "health care system." The *health system* is often considered as encompassing wider determinants of health, while the *health care system* is limited to personal health care services. Although most frameworks focus on the health care system, they often refer to or even include elements of the wider set of determinants and processes as being within the boundaries of what they are considering. In addition to this, there is uncertainty as to where services such as public health and health promotion lie.

Depending on how narrowly or broadly boundaries are set, the responsibility for achieving improvement in health system performance can be assigned to different factors, thus affecting how the framework can be used as an assessment tool.[5] A wider boundary will not provide the focus on how key health system players influence performance, potentially limiting the framework's ability to hold them accountable. It is commonly accepted that health is the product of a number of determinants, some that can be influenced in the short term (e.g., safety of care services), some that can be influenced directly by actors in the health care system (e.g., improving medical care) and others that require longer-term action by actors not directly associated with health (e.g., environmental policy). By reducing the health system to health care alone, actions that have a great impact on health are excluded (such as education or employment). However, including all possible actions is also problematic, as it obscures who is responsible for taking action that can drive change (Figure 4).

Figure 4: Performance measurement implications of setting health system boundaries



Source
Canadian Institute for Health Information, 2015.

CIHI's HSP Measurement Framework clearly states the boundaries it considers and adopts the World Health Organization (WHO) definition of the health system as consisting of "all organizations, people and actions whose primary intent is to promote, restore or maintain health."[3, 7 (p. 3)] This includes efforts to "influence determinants of health as well as more direct health-improving activities."[8] This definition indicates an inclusive approach of the health system that encompasses public health activities, health promotion and intersectoral action. Furthermore, the report describes health care services as including "preventive, diagnostic, therapeutic, rehabilitative and palliative care services targeted to individuals or specific population groups" as well as "public health activities consist[ing] of health surveillance and protection, health promotion and disease prevention activities that focus on health determinants that apply to the entire population."[3] However, social determinants of health are also recognized as an important influence on population health and inequalities in health and as something that needs to be addressed. This is represented in the framework by including social determinants of health as another quadrant that influences and is influenced by the health system (Figure 1).

While much of the literature on the definition of boundaries of performance frameworks focuses on the health system, it is also an issue of importance for organizational and health service frameworks. Considerations and conceptual challenges commonly debated at the system level — such as determining how narrowly to set boundaries and how to represent social determinants of health — will equally apply to health service boundaries. However, some additional challenges will also arise:

- Capturing the variation of commonly applied definitions for particular health services (e.g., variations in understanding of what constitutes primary care);
- Representing the differences of organization, structure and design of health services across geographical regions and/or provinces (e.g., variation in the organization of primary care delivery across provinces in Canada);
- Recognizing that a boundary may apply differently to different organizations being assessed under the same framework (e.g., community health care centres and family health teams provide a different range of services); and
- Including or excluding actions that are common across different health services.

The first of these challenges relates to the difficulty in defining any one health service. While the challenge is likely to be more or less pronounced depending on the health service, the difficulty in this area has to do with the number of different definitions that exist for the same health service. The diversity in conceptual understanding of any one health service is in part related to the variation of organizational structures across health systems, where stakeholders assign different activities to different sectors, but is also related to the interrelationships of care. The patient journey is characterized by interactions with many different service providers and treatment activities, often crossing different health services. These linkages make it difficult to draw boundaries across any set of activities.

The diversity of definitions for any one health service is aptly captured in the quote from the Institute of Medicine publication *Primary Care: America's Health in a New Era*: "Ask for a definition of primary care, and you are likely to hear as many answers as there are health care professionals in your survey."[9] This idea is illustrated in Table 1, where for primary care alone there are many different definitions, as well as a distinction between the terminologies applied to **primary care** and **primary health care**, which relate to a similar set of services but differ with regard to the boundaries applied to them.

Table 1: Selected definitions of primary (health) care

Source	Definition
Saskatchewan Ministry of Health, *Patient Centred. Community Designed. Team Delivered. Highlights from Saskatchewan's new framework for primary health care*, 2012	"**Primary health care** is the day-to-day care needed to protect, maintain or restore our health. For most people, it is both the first point of contact with the health care system and the most frequently used. Visiting a family physician, discussing a prescription with a pharmacist, or speaking with a registered nurse via a telephone health line — all are examples of how Saskatchewan residents access primary health care every day. In fact, these types of exchanges account for 80 per cent of all interactions in our health care system, making the delivery of effective primary health care critical to the success of our health care system as a whole."[10]
Ontario Health Services Restructuring Commission, Primary Health Care Strategy, 1999	"The first level of care and usually the first point of contact that people have with the health care system. **Primary health care** supports individuals and families to make the best decisions for their health. It includes advice on health promotion and disease prevention, health assessments, diagnosis and treatment of episodic and chronic conditions and supportive and rehabilitative care. Services are co-ordinated, accessible to all consumers and are provided by health care professionals who have the right skills to meet the needs of individuals and the communities being served. These professionals work in partnership with consumers and facilitate their use of other health related services when needed."[11]
Northwest Territories Health and Social Services, Integrated Service Delivery Model for the NWT Health and Social Services, 2003	The term **primary health care** is used interchangeably with the term primary community care to reflect the health and social services environment. "Primary health care is the first point of entry for individuals to the health care system. This is where health services (including mental health services) are mobilized and coordinated to promote wellness, prevent trauma and illness, build capacity, provide support and care for common health issues, and manage ongoing problems to sustain functional independence at an optimal level."[12]
Health Canada Website, About Primary Health Care, 2004	"**Primary health care** refers to an approach to health and a spectrum of services beyond the traditional health care system. It includes all services that play a part in health, such as income, housing, education, and environment. Primary care is the element within primary health care that focuses on health care services, including health promotion, illness and injury prevention, and the diagnosis and treatment of illness and injury."[13]

(cont'd on next page)

Table 1: Selected definitions of primary (health) care (cont'd)

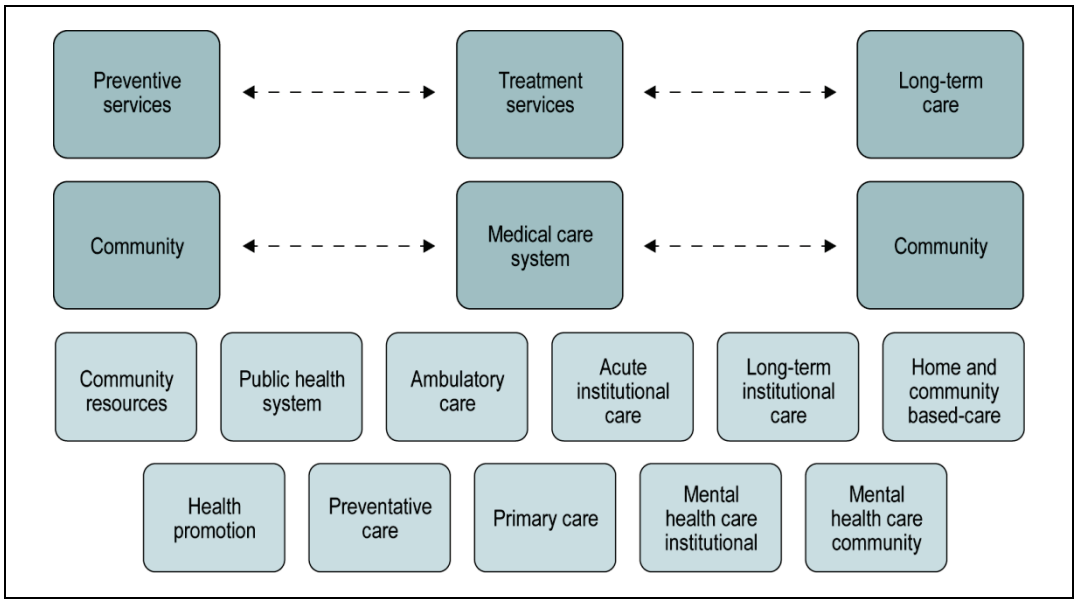
Source	Definition
Aggarwal M., Hutchison B. *Toward a Primary Care Strategy for Canada*. Canadian Foundation for Healthcare Improvement, 2012	"Within Canada and internationally, emerging models of **primary care** increasingly combine a population orientation with person-centred care and partner with others to promote and protect health, strengthen health literacy and address the social determinants of health — *primary care* informed by the principles of a primary health care. To acknowledge and support this trend, and in the spirit of community-based primary health care, we use primary care in this paper as an inclusive term to cover the spectrum of first-contact healthcare models from those whose focus is comprehensive, person-centred care, sustained over time, to those that also incorporate health promotion, community development and inter-sectoral action to address the social determinants of health."[14]
Starfield B. *Primary Care: Balancing Health Needs, Services and Technology,* 1998	**Primary care** is the "level of a health service system that provides entry into the system for all new needs and problems, provides person-focused (not disease-oriented) care over time, provides care for all but very uncommon or unusual conditions, and co-ordinates or integrates care provided elsewhere by others."[15]
Molla S, Donaldson K, Yordy D, Lohr KN, Vanselow NA, eds. *Primary Care: America's Health in a New Era.* Report of a Study by a Committee of the Institute of Medicine, 1996	"[**Primary care** is t]he provision of integrated, accessible health care services by clinicians who are accountable for addressing a large majority of personal health care needs, developing a sustained partnership with patients, and practicing in the context of the family and the community."[16]
World Health Organization, Declaration of Alma-Ata, International Conference on Primary Health Care,1978	**"Primary health care** is essential health care based on practical, scientifically sound and socially acceptable methods and technology made universally accessible to individuals and families in the community through their full participation and at a cost that the community and country can afford to maintain (. . .) It is the first level of contact of individuals, the family and community with the national health system bringing health care as close as possible to where people live and work, and constitutes the first element of a continuing health care process."[17]

Source
Canadian Institute for Health Information, 2015.

The second and third challenges relate to defining health service boundaries that are applicable not only across different health system and geographical settings but also to diverse organizations within the health care setting. In the case of defining cascading frameworks for different health services, it is important that boundaries take into account the differences in the organization, structure and design of health services that may exist across the provinces and even within provinces. Within Ontario, for example, primary health care may be delivered by multidisciplinary family health teams, by community health centres, or by group or solo family physician practices. These all have different governance models, organizational structures and mandates. However, care should be taken to ensure that different organizations within the health service can be assessed within the boundaries being set. For example, a service like long-term care is delivered in many different settings, from community and medical care service settings to residential facilities. In developing a framework for long-term care, it is important to consider how the boundaries can be drawn to capture this variation, while still being able to adequately represent accountability relationships.

The final challenge relates to the difficulty in setting clear boundaries that distinguish one health care service from another. It will be inherently difficult to clearly outline where one health service ends and the other begins. For example, the contribution of one service will influence the performance of others (e.g., good community or home care is likely to minimize the severity of hospital patients). But also it may not be clear entirely where one institution or service belongs. Figure 5 illustrates these points with a continuum of the programs and health services that make up a health system.

Figure 5: Continuum of health care services



Source
Reprinted with permission from Aday LA. *At Risk in America: The Health and Health Care Needs of Vulnerable Populations in the United States*, 2nd Edition. Figure 5.1. John Wiley & Sons; 2001:118.

The continuum implies continuity and integration over time and across components, while also illustrating the array of medical and non-medical programs and services directed toward promoting, protecting or maintaining the health of people receiving the services. The boundaries of any one of these services will be difficult to draw given the continuum of services and the effect that one has on others. Moreover, services are provided across community and institutional settings, something that frameworks will need to represent in their allocation of boundaries. While boundaries need to be set to facilitate health service performance assessment, they should remain invisible to patients and clients, whose pathways are likely to move across boundaries for any one particular episode or treatment.

Thus a key challenge to be addressed in the development of a performance framework for health services is outlining the mandate of each particular service. As discussed above, this entails clearly defining or conceptualizing the boundaries of the service, and establishing how they can be represented in a way that allows the performance of different organizations within the service to be conceptualized and assessed. However, a key part of the framework will involve how we think about factors that lie outside the boundaries being set, as these are likely to influence the inputs and outputs of the health service. It is critical that clear connections are made across the areas being assessed in order to understand all the influences on health service performance. The next section discusses how to consider inputs, outputs and desired outcomes in any framework, taking into account influences from other areas.

Inputs, outputs and outcomes

The next consideration is to identify the resource inputs and characteristics that correspond to the health service being assessed, as well as to ensure that the valued outcomes being assessed in the framework can be closely tied to the contribution of those particular inputs. These inputs and outputs are likely to be only a subset of those considered in the system-level framework.

Cascading inputs

Within the HSP Measurement Framework (Figure 1), the health system inputs and characteristics refer to "the relatively stable characteristics of [the health system providers of services], of the tools and resources they have at their disposal and of the physical and organizational setting in which they work."[3 (p. 7)] These characteristics are

- Health system leadership and governance;
- Health system resources;
- Efficient allocation of resources;
- Adjustment to population health needs; and
- Health system innovation and learning capacity.

A cascading framework needs to identify how these inputs map onto the health inputs and characteristics of the service or sector being assessed (i.e., what aspect of these inputs exists in the health care service). In particular, the framework should capture the leadership and governance role within each health service, and what in particular this entails; some aspect of resource allocation and how it is influenced by other sectors (such as social determinants or community care); as well as what opportunities and capacities exist around innovation and learning capacity. Table 2 illustrates how the dimensions within health system inputs could be cascaded to hospital and long-term care (LTC) inputs.

Table 2: Inputs across cascaded frameworks

Health system inputs	Hospital inputs	Long-term care inputs
Health system leadership and governance This refers to ensuring that strategic policy frameworks exist and are combined with effective oversight, coalition-building, appropriate regulations and incentives, and attention to system design and accountability. It also refers to the capacity of the health system to lead and to coordinate strategies across sectors that can contribute significantly to the health of individuals and populations.	**Hospital leadership and governance** This refers to the degree to which a hospital is responsive to community needs, ensures care continuity and coordination, promotes health, is innovative and provides care to all citizens.	**Long-term care leadership and governance** This refers to the degree to which the system is responsive to community needs, ensures care continuity and coordination, promotes health, is innovative and provides care to all citizens.
Health system resources This refers to the level of availability of the following resources: financial, human, physical (facilities), technical and information (including high-quality data).	**Quantity and quality of hospital resources** This refers to the quantity and quality of physical, human and information resources that are used to deliver patient care in a hospital. Quality of human resources includes the degree to which hospital staff are appropriately qualified to deliver required patient care, have the opportunity for continued learning and training, work in a positive environment, and are satisfied with their work.	**Support for formal and informal caregivers** This includes providing training, allowing informal caregivers to combine care with labour market participation and helping them to maintain their own well-being.
Efficient allocation of resources This captures how the resources available to the health system are allocated to produce the various health services that reflect the population-based demands and needs within a society and that enable the health system to achieve better outcomes.	**Efficient allocation of hospital resources** This measures how the resources available to the hospital are allocated to produce health services that best meet the needs of the community served by the hospital.	**Balance between long-term care and societal needs** This refers to the degree to which the system provides necessary long-term care for users or potential users and the extent to which other individuals in society (e.g., carers, families, taxpayers) provide these services.
Innovation and learning capacity This refers to the implementation of internally generated or borrowed ideas — whether pertaining to a product, device, system, process, policy, program or service — that were new to the organization at the time of adoption. A learning system is one that is "skilled at creating, acquiring, and transferring knowledge, and at modifying its behaviour to reflect knowledge and insights."[3 (p. vii)]	**Hospital innovation and learning capacity** This represents the implementation of an internally generated or borrowed idea — whether pertaining to a product, device, system, process, policy, program or service — that was new to the organization at the time of adoption.	**Simplicity of system, information, patient choice** Users and potential users of long-term care services need to be able to find information and advice to help them navigate the care and support system. Information about supply and quality of care is particularly important in a consumer-driven system. Information about payment and rights is also important.

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Table 2: Inputs across cascaded frameworks (cont'd)

Health system inputs	Hospital inputs	Long-term care inputs
Adjusting to population health needs This refers to the capacity of the health system to adapt and adjust to best meet the changing health needs of the population. Knowledge of the epidemiological profile of the population is required to understand its health needs (including disease, disability, injuries and other health problems) in order to adjust the allocation of resources to meet those needs. It reflects the capacity of the health system to adapt to a changing environment of population needs.	**Adjustment to community and local needs** This refers to the capacity of the hospital to continually adapt to meet the health needs of the community it serves through innovation and learning and also by adjusting the allocation of resources across hospital services.	**Integration and coordination with health and social care** A high-performing long-term care system requires proper coordination within the long-term care system and between the long-term care system, health care and social services.

Source
Canadian Institute for Health Information, 2015.

The differences in the types of inputs used across services — particularly if the setting of these services is different (i.e., community versus institution) — should be reflected in the cascaded frameworks. Thus while the health system inputs serve as a starting point from which to derive the inputs and characteristics of the health service, the cascaded inputs will change to best represent the health service. Table 2 shows how this can lead to differences, as seen in the cascaded inputs identified for hospitals and long-term care. In both cases, these inputs were cascaded from the health system inputs, yet they seem quite different from one another. In part, this reflects the different types of inputs used within long-term care but also the need to more clearly account for the overlap between long-term care and other health and social services.

Cascading outputs and outcomes

The Health System Performance Measurement Framework (Figure 1) considers health system outputs or services as intermediate outcomes that correspond to the capacity of the health system to provide access to timely, continuous and effective health services. The framework recognizes three health system outcomes as the perceived ultimate goals of the health system for individuals and for the general population:[3]

- Improvement of the level and distribution of health in the population;
- Responsiveness to the needs and demands of Canadians; and
- Value for money to ensure health system sustainability.

For the first two outcomes, it is important to consider not only their absolute attainment but also their distribution across the population. Taking into account these two perspectives will give stakeholders an understanding of both the quality and the equity in the system.

A cascading framework for specific services within the system should use these system outcomes as a guide, with the outcomes for the sector or organization clearly articulated to show how they contribute to the health system outcomes. While different health services are able to contribute to the attainment of each of the system-wide goals, their performance alone is not sufficient to influence any of these outcomes. Rather, the health system outcomes will be influenced by the contributions of each health service. Thus at the system level, the outcomes produced by any health care service can reflect only a part of the desired outputs, or intermediate outcomes, of the health system.

As with the cascading of inputs, it is necessary for the qualities of the outputs and outcomes of the health service to remain consistent with those defined for the health system outputs (access, safety, patient-centredness, appropriateness and effectiveness, and efficient delivery) and health system outcomes. The cascaded hospital and long-term care frameworks (see sections 2 and 3) represent hospital and long-term care outputs that are a subset of health system outputs. These service outputs thus indicate the extent to which quality services are delivered, taking into consideration both patient and community needs. Attainment of these outputs signifies a good likelihood that service outcomes, and in turn health system outputs and outcomes, will be achieved.

Conclusions

This section has discussed the major challenges that must be considered when developing performance frameworks cascaded to health services. First, the boundaries of the particular health sector or service must be defined. Next, the inputs, outputs and outcomes specific to the sector or service need to be clearly expressed in ways that represent their contribution to the goals of the larger health system. Clarifying these relationships will provide the foundation for creating a set of conceptually similar health service frameworks to assess performance at various levels in the system. Stakeholders can use these principles to develop their own cascading frameworks and to better understand how the performance of distinct health care services, such as primary health care or community mental health care, contributes to health system outputs and outcomes.

2. A performance measurement framework for hospitals

Introduction

This section discusses how the health system performance quadrants — social determinants of health, health system outcomes, health system inputs and characteristics, and health system outputs — are relevant for the hospital sector and can be refined to create a tool to measure performance at a more focused level. A cascaded hospital performance framework describes sector-specific performance dimensions and their relationships using these quadrants.

It is important to ensure that a cascaded hospital performance framework is conceptually aligned with commonly accepted and validated tools built specifically for hospitals. This section examines the alignment between the proposed new framework and two others: the validated Performance Assessment Tool for Quality Improvement in Hospitals (PATH) developed by the WHO Regional Office for Europe; and the Hospital Balanced Scorecard used by the Hospital Report Research Collaborative for reporting on the performance of hospitals in Ontario.[18, 19]

Considering performance boundaries for hospitals

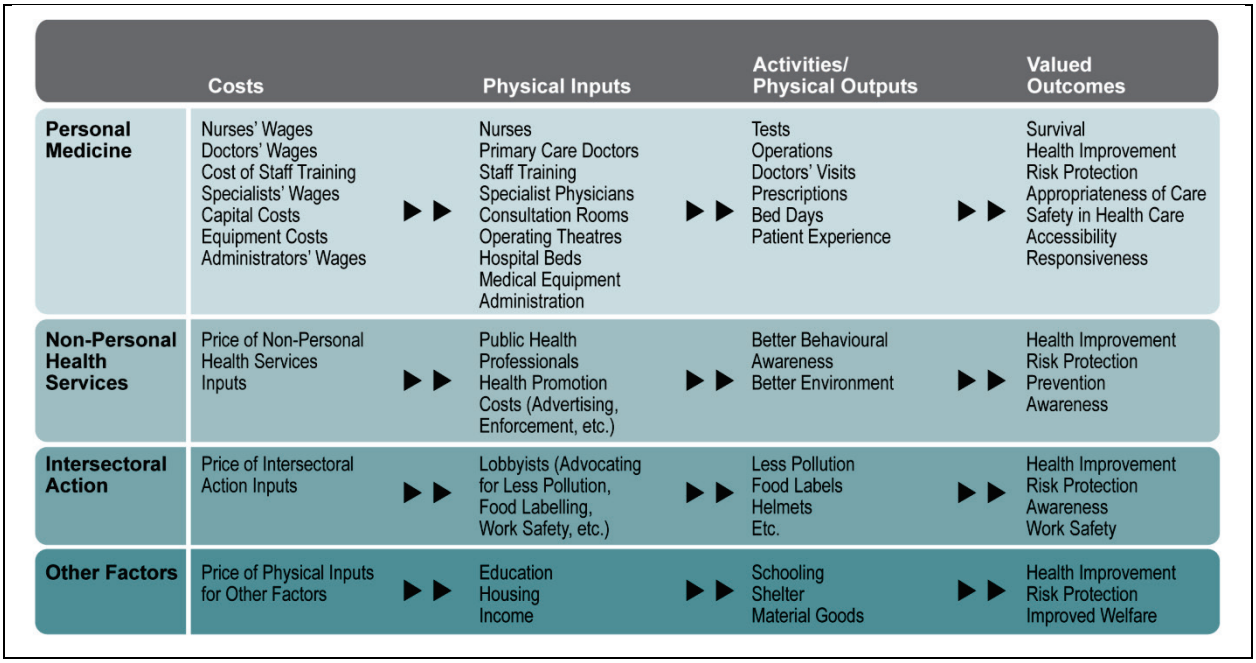
As noted in the previous section, a key consideration when cascading the HSP Measurement Framework to a related hospital performance framework is how to reconcile the performance boundaries that apply to a health care service with those that apply to the health system. Section 1 describes four challenges in defining performance boundaries for a health service sector:

- Capturing the variation in definitions of the service;
- Considering the differences in organization and structure (particularly in the Canadian context where hospital organizations and mandates vary across provinces);
- Recognizing that the boundaries may apply differently to different organizations being assessed under the same framework (e.g., some hospitals may have formal community partnerships to address social determinants of health); and
- Including or excluding actions that are common across different health services.

With respect to hospitals, it is clear that the emphasis on defining boundaries should be on particular areas of the framework, as many of the areas included in the wide scope of the health system are not directly relevant to the hospital production process.

We can understand the importance of boundaries by considering the role that boundary-setting plays in the health system framework. Figure 6 illustrates the production process of a health system, with examples of spending and physical inputs (resources) that go into the system and a selection of outputs and valued outcomes that are produced by the system. The shading in the figure represents different boundaries of the health system, starting with the consideration of medical care only and extending gradually to consider all factors that influence health. Across these boundaries, many of the valued outcomes of the system do not change; for example, health improvement and risk protection are valued outcomes for medical care, public health and health promotion and intersectoral action. However, the physical inputs and organizational characteristics that contribute to the attainment of these valued outcomes will differ depending on the choice of boundaries.[11]

Figure 6: Health system production process within different health system boundaries



Source

Reprinted with permission. Papanicolas I, Smith PC; Tsuchiya A, ed. Theory of system level efficiency in health care. In: Culyer T, ed. *Encyclopedia of Health Economics*. 2014.

In developing a framework for assessing hospital performance, it is important to consider both the inputs available (financial, human, information and physical resources) to a hospital, as well as the mandated governance, structure and role within the health system that will place boundaries around (or constrain) a hospital's scope of action. To the extent possible, the hospital outcomes being assessed should represent only the contributions of those inputs and structure. For example, when assessing a hospital's performance, it is crucial to isolate the contribution of medical care to health improvement and to adjust where possible for the contribution of other activities (e.g., public health, health promotion) and contextual factors (e.g., economic, political and demographic contexts).

It is important to recognize that the boundaries may need to be adapted to meet the needs of a specific organization. The following factors can be considered in determining how to define the performance boundaries:

1. **Objectives of the performance assessment.** Section 1 discusses advantages and disadvantages of defining narrower and broader boundaries for health services. Narrow performance boundaries that focus primarily on the outcomes that can be directly linked to the inputs and structural characteristics are more appropriate when the objectives of assessment are accountability and identification of areas where hospitals have the capacity to make change; wider boundaries that include the impact of factors and inputs outside of a hospital's control are more appropriate for identifying the crucial interactions between sectors and organizations that promote broad health system outcomes.

2. **Scope for leadership and governance.** The organization and governance of hospitals differs across provinces, leading to variation in scope for strategic planning, resource allocation and capacity to form partnerships with organizations, among others.

3. **The community being served by the hospital.** While the health system outcomes are directed to a population, hospitals commonly serve a specific community. A community served by a hospital is most often geographically based (i.e., individuals living within a geographic catchment area). But the community served could be defined in other ways, including demographically (e.g., pediatric hospitals) or by disease or treatment (e.g., cardiac or orthopedic hospitals). With respect to performance outcomes, a hospital will be primarily concerned about the outcomes related to the community it serves.

4. **Resources available to the hospital.** The inputs or resources (e.g., financial, human, information, physical) available to a hospital are fairly standard, particularly in the short term. However, depending on governance and structure, there may be some capacity for hospitals to acquire additional resources. It might not be appropriate in all cases to have a boundary that assumes that resources are fixed.

Finally, the discussion about performance boundaries implies putting a box around hospital performance that is more restricted than the box for the health system framework. The boundary represents limitations on a hospital's inputs and consequently limitations on the outcomes that can be achieved given those inputs. However, the existence of this box means that coordination and integration with other health care providers and sectors outside of the box become critical to achieving system outcomes and must be considered when assessing hospital performance. Additionally, the outcomes and effectiveness of services provided by other sectors — for example, health promotion and disease prevention, community services and long-term care — will have an impact on the demand for hospital services and on the severity of the condition of a hospital's patients.

Cascading the health system framework to hospitals

For a cascading hospital performance framework to be created and aligned with the HSP Measurement Framework, it is necessary to consider which are the valued outcomes, or goals, of the hospital production process — and how those valued outputs contribute to the broader production process of the health system itself. In addition, it is necessary to consider which of the factors located *inside* the health system boundaries may lie outside the boundaries of hospital services (i.e., inputs and processes that are undertaken in other areas of the health system that do not fall directly in the remit of hospitals). A related challenge is to create a framework that can be used by the different organizational designs of hospitals across jurisdictions. This section discusses how hospital outcomes, outputs and inputs cascade from the HSP Measurement Framework — taking into account these different boundary considerations.

As stated previously, the HSP Measurement Framework outlines three key outcome objectives of the health system (Figure 1):

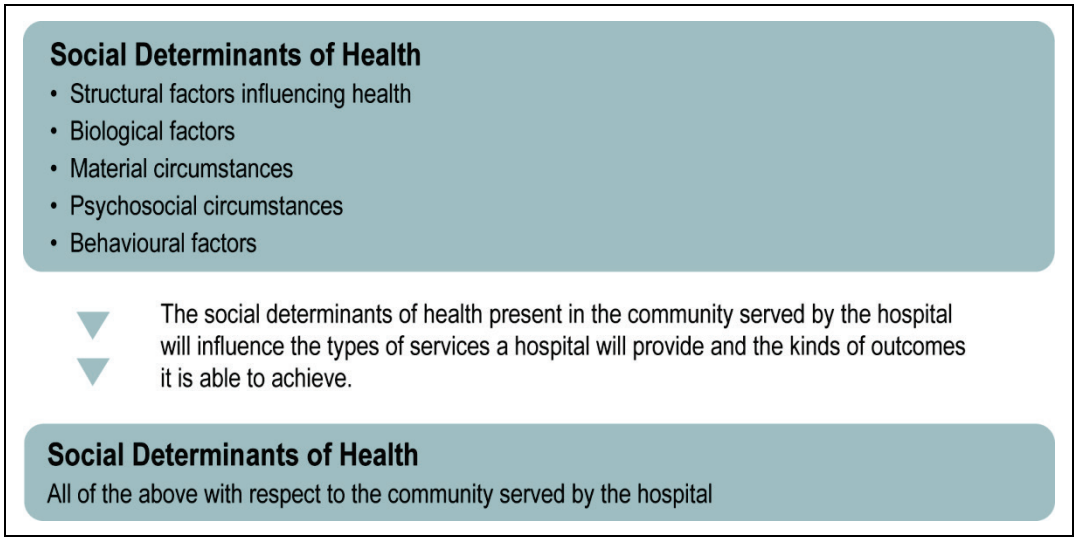
- Improve the level and distribution (equity) of health in the population;
- Improve responsiveness to the needs and demands of all Canadians; and
- Improve value for money to ensure health system sustainability.

Hospitals are able to contribute to the attainment of each of these goals; however, their performance alone is not sufficient to influence any of these outcomes. The attainment of health system outcomes will entail effective coordination and integration with providers outside hospital services. This can be done by considering the areas where integration and coordination play an instrumental role and where information can be collected to assess the performance of these functions. When considering how the outcomes produced by hospitals contribute to health system outcomes, it is important to reflect on their contribution to the objectives of the health system as “intermediate” outcomes of the health system.

In the discussion that follows, we review the four quadrants of the HSP Measurement Framework and examine how the dimensions in these quadrants apply to hospitals, given the differences in performance boundaries and the impact those boundaries have on aspects of performance, such as resources available, scope for governance, quality of hospital outputs and contribution to health system outcomes. We also consider how linkages with other health services can be represented in a cascaded hospital framework.

Social determinants of health

Figure 7: Cascading social determinants of health to the hospital framework



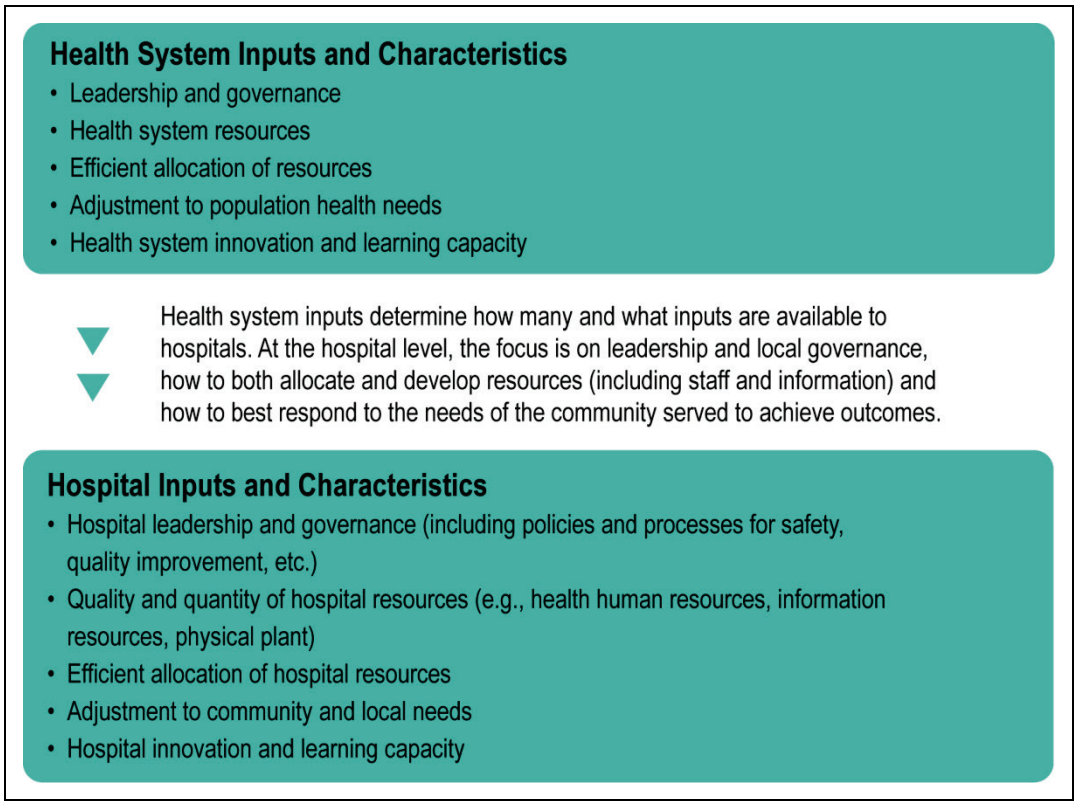
Source
Canadian Institute for Health Information, 2015.

The first quadrant in the HSP Measurement Framework relates to the social determinants of health, representing the factors outside the health system that influence the health of a population. These include structural factors such as income and social status, education and literacy, and gender and ethnicity, as well as intermediary factors including material and psychosocial circumstances and behavioural and biological factors (defined in Appendix B). They are external to the production processes of both the health system and hospitals. However, these factors need to be considered when assessing the production processes, as they will influence what inputs are necessary to attain the valued outcomes of both the health system and the hospitals within it.

In addition, the cascaded hospital framework needs to consider the effectiveness of coordination and integration with other health and non-health services — such as community services and public health activities — in mitigating the impact of these factors, as the outcomes and effectiveness of these will have an impact on hospital performance. These factors can influence the demand for hospital services along with the severity and conditions of the patients treated in hospital settings. For example, lack of coordination of services may result in higher hospital admissions of particular populations — such as the homeless or mentally ill — which would be more appropriately and cost effectively treated in other settings.

Inputs and characteristics

Figure 8: Cascading health system inputs and characteristics to the hospital framework



Source
Canadian Institute for Health Information, 2015.

The second quadrant relates to the inputs of production as well as to the characteristics of the health system or hospitals. At the health system level, the inputs refer to the resources available to be used as well as to the distribution and allocation of these resources. This quadrant also includes the relatively stable characteristics of the health system, such as its governance and leadership capacities, innovation and learning, and the use of information and evidence, as well as how the system adjusts and adapts to reflect the population's health needs as influenced by the social determinants.

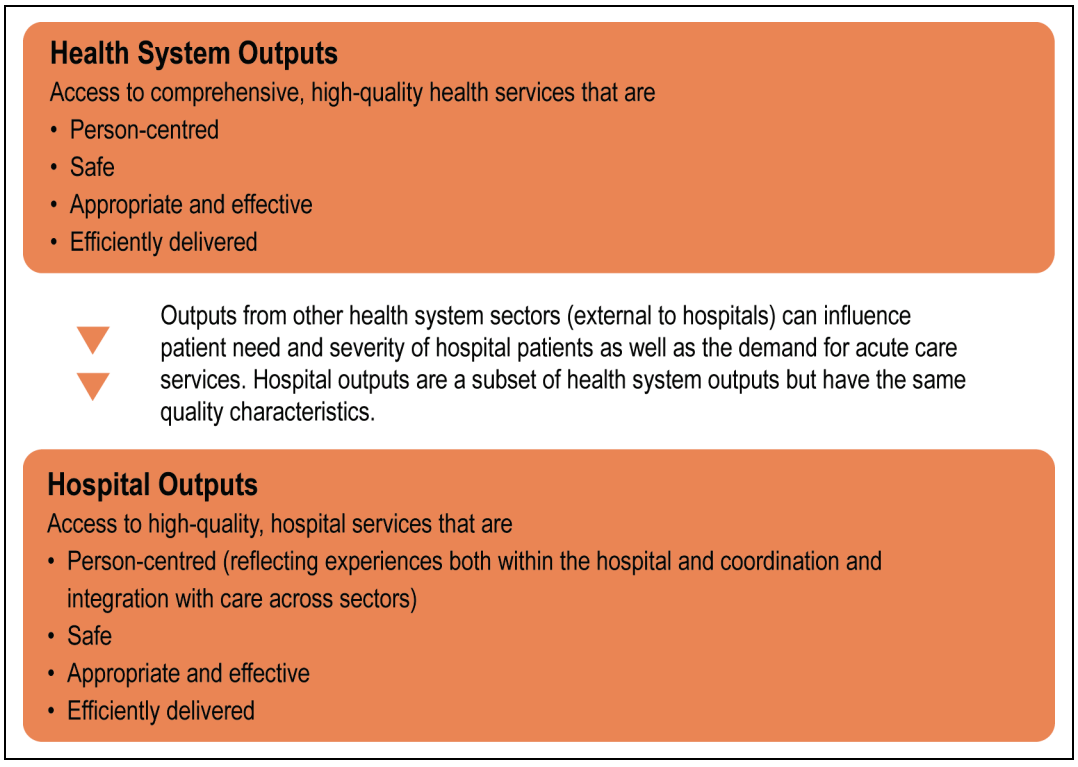
At the hospital level, the emphasis in this quadrant is on how the leadership and local governance[i] of the hospital use its given resources to meet the health needs of the community it serves, recognizing that these needs are influenced by the social determinants. Performance in this quadrant also addresses organizational policies and processes for areas such as

- Safety and quality improvement;
- Investing in the improvement and development of resources (e.g., human, information);
- Fostering organizational innovation and learning capacity; and
- Working with local and community partners within the health system and across other sectors to address issues related to the coordination and integration of care and the social determinants of health in the community.

Finally, this quadrant also addresses how hospitals allocate the resources available to them within the hospital and across their health care processes to maximize hospital outcomes.

Outputs

Figure 9: Cascading health system outputs to the hospital framework



Source
Canadian Institute for Health Information, 2015.

i. Models of governance for hospitals vary considerably across Canada and thus opportunities for exercising governance decisions need to be considered in assessing how hospitals perform in this area.

At the health system level, the third quadrant describes the characteristics of high-quality health services (outputs) — regardless of the area of the health system (hospitals, primary care, home care, etc.) that produces them. At the hospital level as with inputs, the outputs reflect only a subset of the health system's outputs, specifically only those services delivered through the hospital sector. However, the important attributes that characterize the quality of health system outputs apply equally to hospital outputs. These attributes are focused on *accessible*, high-quality hospital services that are

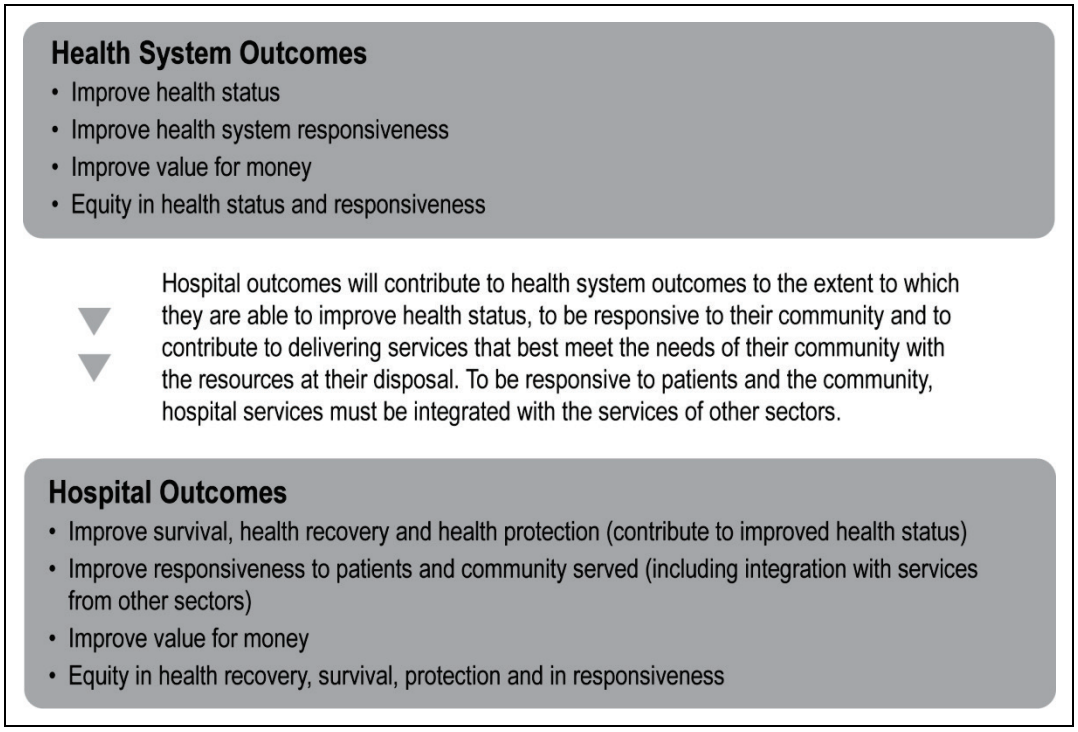
- **Person-centred** (respecting and responding to the preferences, needs and values of individuals and putting the individual at the centre of delivery);
- **Safe** (avoiding injuries to individuals from care that is intended to help them);
- **Appropriate and effective** (based on scientific knowledge about expected benefit to the patient and reducing the intensity, duration and consequences of health problems); and
- **Efficiently delivered** (avoiding waste of equipment, supplies, ideas and energy; maximizing services delivered for a given level of resources).

As is the case with the health system, access to hospital services includes the aspects of access without undue time delay or financial or other obstacles to the individuals in the community served by the hospital.

The quality characteristic of person-centredness requires particular focus in a cascaded performance framework. Person-centredness at the system level reflects the experiences of individuals with care services from the health system as a whole. But as described earlier, the consideration of performance boundaries suggests there is a "box" around hospital services. This makes it all the more crucial to acknowledge the importance of coordinating and integrating care across the different boxes as a key component of quality and performance within the hospital sector (or for any service provider).

Outcomes

Figure 10: Cascading health system outcomes to the hospital framework



Source
Canadian Institute for Health Information, 2015.

The fourth quadrant in the health system framework reflects the key outcomes or objectives of the health system — improvement in health status, improvement in health system responsiveness and value for money, with a fourth outcome being improvement in equity across health status and health system responsiveness. Hospital outcomes correspond to the contributions that high-quality hospital services make to the health system outcomes. As discussed in Section 1 on performance boundaries, hospital performance and outcomes can *contribute* to the attainment of each of the health system outcomes; however, their performance alone is not sufficient to *determine* any of these outcomes. In this sense, hospital outcomes are akin to *intermediate* health system outcomes. Hospital outcomes move the health system part way to achieving its goals, but they do not represent the ultimate outcomes.

The outcomes of hospital services that relate to health status are to improve health recovery, survival and protection. Protection is an aspect of post-hospital care that requires coordinating and integrating care with other sectors to protect the health of individuals after they have left the hospital. By delivering services that are person-centred and appropriate and effective, hospitals create outcomes that are responsive to their patients and the community served and, through integrating with services delivered by other sectors, they contribute to overall health system responsiveness. Finally, to the extent that hospitals deliver maximum services at minimal cost and allocate the inputs and resources that they control in a way that best meets the needs of the community served, they contribute to health system value for money.

A cascaded hospital performance framework

Based on the performance boundaries described earlier and the discussion above on how the dimensions of the health system framework apply to hospitals given those performance boundaries, we can develop a picture of a hospital performance framework that supports and is aligned with the health system framework.

The cascaded framework (Figure 11) illustrates how the first quadrant — the social determinants of the community served by the hospital — must be factored into the inputs and characteristics used in the production process of the hospitals. In particular, these determinants link to the responsive governance function of the hospital, which reflects the degree to which a hospital is responsive to the needs of the community it serves. As outlined in the discussion above, this can be done by ensuring that appropriate processes are enforced within each hospital and that resources are allocated such that they reflect the needs of the community.

In Figure 11, the teal boxes relate to the second quadrant of the cascaded framework: hospital inputs and characteristics. These dimensions represent factors relating to responsive hospital leadership and/or governance (as appropriate) within the hospital performance boundaries with respect to

- Coordinating the use of resources and inputs across the organization and working with other health and non-health community partners to respond to the social determinants of health (adjustment to community and local needs);
- Investing in and developing the human, information, physical and other resources available to the hospital (quantity and quality of hospital resources);
- Allocating hospital resources and inputs in a way that best meets the needs of the community served by the hospital (efficient allocation of hospital resources); and
- Supporting use of evidence in decision-making, quality improvement practices and policies (hospital innovation and learning capacity).

The orange boxes represent the third quadrant of the cascaded framework: health system outputs. Hospital outputs are a subset of health system outputs that can be produced within the hospital, but the key attributes of quality apply similarly to hospital outputs. Hospital care services should be

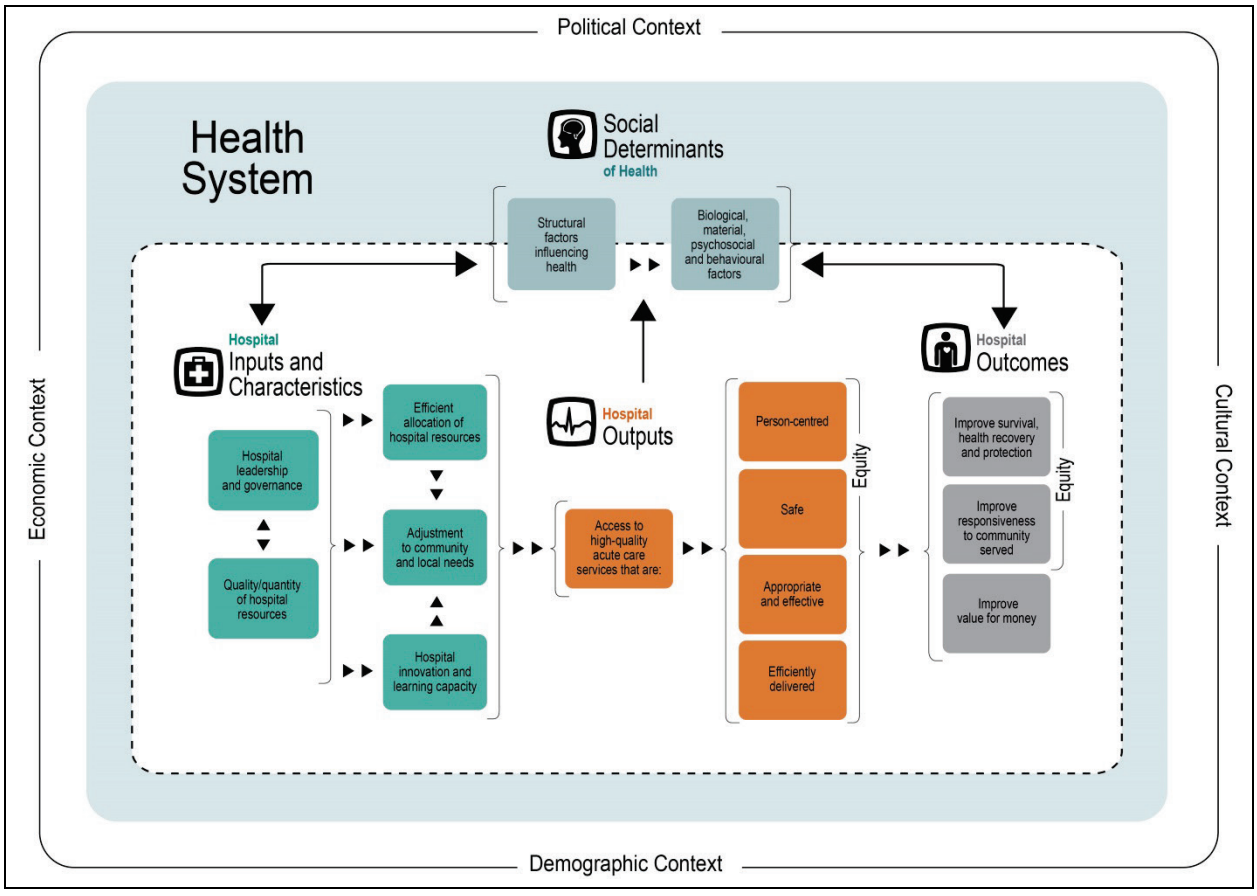
- Accessible to the community served by the hospital without undue time delay or financial or other obstacles;
- Person-centred, considering how well the hospital integrates and coordinates hospital care with services delivered by other health system and social care providers in the community in addition to care within the hospital that respects and responds to the preferences, needs and values of individuals and their caregivers;
- Safe, avoiding injuries to individuals from the care that is intended to help them;
- Appropriate and effective, based on scientific knowledge about who could benefit from the service and reducing the incidence, duration, intensity and consequences of health problems; and

- Efficiently delivered, avoiding waste, including waste of equipment, supplies, ideas and energy, and maximizing the services delivered for a given level of resources used, or minimizing the resources required to deliver a given level of outputs.

Finally, the grey boxes represent the hospital outcomes that result from high-quality outputs and that directly contribute to the attainment of the key health system outcomes. At the hospital level, these represent

- Improving the level of health survival, recovery and protection resulting from hospital services, where protection reflects the contribution of coordinated post-hospital care from non-hospital service providers;
- Improving the responsiveness of the hospital and its services to the community it serves, whether that community is based on geography, demographics or disease/treatment; and
- Improving the contribution to health system value for money by maximizing the levels of achievement of the first two outcomes while minimizing the inputs and resources used.

Figure 11: Hospital Performance Framework



Source
Canadian Institute for Health Information, 2015.

A dynamic performance framework

The Health System Performance Measurement Framework is a dynamic, action-oriented framework that reflects relationships among the various performance dimensions. The hospital framework, cascaded from the health system framework, reflects those same relationships. These are illustrated in Figure 11.

The framework represents the hospital production process (the white area defined by the dotted line) that lies within the health system (the blue-shaded area) and within the wider demographic, economic, cultural and political contexts. This representation suggests that hospital performance is influenced by actions in other areas of the health system, as well as by the social determinants of health and the extent to which these are addressed. For example, survival rates of a hospital may be lower if there is inadequate primary care in the health system and/or if there are unhealthy behaviours among the population. The coloured boxes within the dotted lines represent the production process within a hospital; that is, they identify the inputs of hospital production as well as the outputs and outcomes they are intended to produce.

On the input side, given the wider context of the health system, hospitals use responsive governance and the resources available to them to make resource allocation decisions and to adopt the latest innovations. These actions allow hospitals to ensure that the appropriate processes of care (both non-clinical and clinical processes) are being carried out within the hospital and enforced. Ensuring these inputs are in place should allow quality services (outputs) to be delivered: access to high-quality hospital services that are person-centred, safe, appropriate and effective, and efficiently delivered. All of these outputs refer to the degree to which successful transactions are achieved among patients and providers in the course of actual care delivery, taking into consideration patient and community needs. Attaining these aspects of quality in outputs increases the likelihood that hospital outcomes, and in turn health system outcomes, will be achieved.

Three hospital outcomes are identified and described below. They represent intermediate health system outcomes necessary for achieving the three health system goals. As a hospital makes up only one entity in the health system, its outcomes contribute to and support the attainment of health system goals, but the full attainment of health system goals will depend on the contribution of all parts of the health system as well as their interaction.

Drawing on Michael Porter's framework in "What Is Value in Health Care," and considering that different outcomes may be more meaningful for different patients, hospitals — through improving survival, health recovery and protection — contribute to the health system goal of improved health status in three ways.[20] The first is through improving patient survival. This aspect is of overriding importance to most patients within a hospital and can be measured over various periods appropriate to the medical condition (e.g., 30-day mortality rates). The second way — improving the degree of health or recovery achieved or retained at the peak or steady state — may be more meaningful for older patients who weigh other outcomes more heavily. According to Porter, this area includes dimensions such as freedom from disease and relevant aspects of functional status.[12] Finally, the third way — health protection — refers to ensuring that a patient's health will be protected upon discharge through continuing integrated and coordinated care, as well as patient behaviours. This third aspect is important as it refers to the sustainability of the previous two outcomes and the degree to which this can be achieved through integration of the system across different health service providers.

The second hospital outcome identified by the framework is hospital responsiveness to the needs of the community it serves. This outcome encompasses two factors:

- The extent that hospitals coordinate and integrate care with providers and sectors beyond their performance boundaries, ensuring that patients can be supported within the broader health system following discharge from hospital; and
- The extent to which the hospital provides acute care services that address the needs of its community.

This hospital outcome contributes to the health system goal of improving health system responsiveness.

Finally, the third hospital outcome relates to efficiency of hospital care. This outcome assesses the degree to which the previous two goals have been met given the resources used by the hospital. Any deviation from the maximum health improvement or positive patient experience that could have been produced with the same level of resources indicates inefficiency. Attaining this outcome contributes to the wider health system objective of value for money. There are two dimensions within other quadrants that are closely related to this hospital outcome. The first is to provide services that are efficiently delivered (technical efficiency), maximizing services delivered for a given level of resources used (or minimizing resources used for a given level of services). The second is to allocate the resources available to the hospital to provide the mix of services that best supports the achievement of the first two outcomes (allocative efficiency). While the first aspect of contributing to value for money is within the hospital performance boundaries, the second aspect may be constrained given governance and organization structures imposed by the health system that could limit the capacity of hospitals to make decisions regarding which services to provide or how to allocate resources. It may or may not be meaningful to assess a hospital's allocative efficiency and therefore the extent to which it can contribute to the health system outcome of improving value for money.

Hospital performance dimensions and examples of performance indicators

Table 3 sets out and formally defines the key dimensions of the hospital performance framework described above. It also includes examples of indicators that could be appropriate for examining performance in each of the dimensions. These include a number of indicators reported in Your Health System: In Depth, showing how they could be mapped to the hospital framework presented here. For dimensions where there are no current indicators that might be appropriate, examples and illustrations of what could be measured have been included.

Table 3: Dimensions of the Hospital Performance Framework

Dimension	Definition	Examples of indicators
Exogenous Factors		
Social Determinants of Health	Social determinants of health represent the factors outside the health system that influence the health of a population. In this framework, these include structural factors such as income and social status, education and literacy, and gender and ethnicity. The structural factors shape and operate through intermediary factors including material and psychosocial circumstances and behavioural and biological factors.	• Indicators on income, age, environment, education, behaviours and lifestyles should be used to provide context for hospital outcome indicators.
Health System	All organizations, people and actions whose primary intent is to promote, restore or maintain health.[7 (p. 3)]	• Indicators on the use of other services in the health system (primary care, public health, rehabilitation, etc.) should be used to provide context for hospital outcome indicators.
Hospital Inputs		
Hospital Leadership and Governance	The degree to which a hospital is responsive to community needs, ensures care continuity and coordination, promotes health, is innovative and provides care to the community it serves.	• Indicators are needed on hospital/ primary care/public health integration and consideration of patient needs when making resource allocation decisions.
Quality and Quantity of Hospital Resources	Hospital resources refer to the information, physical and human resources used to deliver patient care in hospital. Leadership and governance is responsible for policies and procedures that ensure that hospital staff are appropriately qualified to deliver the required patient care, have the opportunity for continued learning and training, work in positively enabling conditions and are satisfied with their work. Physical resources include physical structures and facilities among other things, while information resources include use of information technology and development of systems that provide information to support decision-making and delivery of care.	• Total beds staffed and in operation • Total budget or expenditures
Efficient Allocation of Hospital Resources	Efficient allocation of resources measures how the resources available to the hospital are combined to produce health services to meet the population-based demands and needs of the community served by the hospital.	• Nursing inpatient services total worked hours per weighted case • Diagnostic services total worked hours per weighted case • Clinical laboratory total worked hours per weighted case • Pharmacy total worked hours per weighted case
Adjustment to Community and Local Needs	This refers to the capacity of the hospital to continually adapt to meet the health needs of the community it serves through understanding those needs as well as working with external agencies in the community to address and adjust to the impact of social determinants of health.	• Indicators are needed on the extent to which hospitals work with community organizations and respond to local needs

(cont'd on next page)

Table 3: Dimensions of the Hospital Performance Framework (cont'd)

Dimension	Definition	Examples of indicators
Hospital Innovation and Learning Capacity	Hospital innovation represents the implementation of an internally generated or borrowed idea — whether pertaining to a product, device, system, process, policy, program or service — that was new to the organization at the time of adoption. Learning capacity in the health system refers to the extent to which the system is "skilled at creating, acquiring, and transferring knowledge, and at modifying its behaviour to reflect knowledge and insights."[1]	• Indicators are needed on information technology implementation in hospitals, knowledge transfer activities, quality improvement activities, performance measurement activities, etc. • Indicators are needed on the time taken to adopt best practice processes in hospitals (development of clinical guidelines, monitoring of processes, etc.).
Hospital Outputs		
Access to High-Quality Hospital Services	Access to comprehensive hospital services corresponds to the range of hospital services available and the hospital's ability to meet the needs of the community served or a particular patient without financial, organizational or geographical obstacles standing in the way of seeking or obtaining these services.	• Emergency department (ED) wait time for physician assessment • Total ED length of stay • Hip fracture surgical procedures performed within 48 hours across facilities • Number of days the ED was closed/number of days the ED was over capacity
Appropriate and Effective	When a hospital, in line with the current state of knowledge, appropriately and competently delivers clinical care or services to, and achieves the desired outcomes for, all patients likely to benefit most.	• Use of coronary angiography following acute myocardial infarction (AMI) • 30-day overall readmission • 30-day obstetric readmission • 30-day readmission — patients age 19 and younger • 30-day surgical readmission • 30-day medical readmission
Safe	When a hospital has the appropriate structure and uses care delivery processes that measurably prevent or reduce harm or risk to the patient's health care providers and the environment.	• In-hospital hip fracture in elderly (65+) patients • Nursing-sensitive adverse events for medical patients • Nursing-sensitive adverse events for surgical patients • Obstetric trauma — vaginal delivery with instrument • Obstetric trauma — vaginal delivery without instrument • Hospital-acquired infections (rates of sepsis, etc.)

(cont'd on next page)

Table 3: Dimensions of the Hospital Performance Framework (cont'd)

Dimension	Definition	Examples of indicators
Person-Centred	When a hospital places patients at the centre of care and service delivery by paying particular attention to patients' and their families' needs, expectations, autonomy, access to hospital support networks, communication, confidentiality, dignity, choice of provider and desire for prompt, timely care. The degree to which a hospital ensures that patients and clinicians have access to, and take into consideration, all required information on a patient's conditions and treatments to ensure that the patient receives appropriate health care services. Patient experience with hospital services is related to providing hospital care that is respectful of and responsive to individual patients' preferences, needs and values, and the assurance that patient values guide all clinical decisions. The degree to which patients and the community served by the hospital perceive hospital services as being part of a seamless (coordinated and integrated) experience with the health system.	• Restraint use for mental illness, as a measure of being treated humanely • Rate of transfers to another facility • Patient experience indicators • Indicators are needed in the responsiveness domains, particularly those that address coordination and integration of hospital care with services from other providers.
Efficiently Delivered	The extent to which a hospital maximizes the volume of health care services delivered for the minimal amount of resources used.	• Administrative expense as a percentage of total expense • Cost of a standard hospital stay • Number of inpatient cases (separations) • Average Resource Intensity Weight • Average length of stay • Percentage of alternate level of care days • Percentage of alternate level of care cases • Total beds staffed and in operation
Hospital Outcomes		
Patient Survival and Degree of Health Recovery and Health Protection	Patient survival is of overriding importance to most patients and can be measured over various periods appropriate to the medical condition. Degree of health or recovery achieved or retained at the peak or steady state normally includes dimensions such as freedom from disease and relevant aspects of functional status. Health protection refers to ensuring that a patient's health will be protected upon discharge through continuing integrated care and patient behaviours.	• Hospital standardized mortality ratio • Hospital deaths following major surgery • Patient reported outcome measures
Responsiveness to Community Served	The degree to which the hospital ensures that the continued needs of its patients are met upon discharge, including referral to community resources or partnership with other health care professionals. Also the extent to which the hospital is able to provide services that address the needs within its community for acute care.	• Indicators of hospital coordination and integration with other health service provides • Indicators of how the hospital has been addressing community needs over time

(cont'd on next page)

Table 3: Dimensions of the Hospital Performance Framework (cont'd)

Dimension	Definition	Examples of indicators
Hospital Value for Money	Hospital contribution to health system value for money measures the level of achievement of health protection, patient survival and responsiveness given the resources used and compares this with the maximum attainable level.	• Indicators relating the extent to which the previous two outcomes have been achieved to the resources used

Source
Canadian Institute for Health Information, 2015.

Alignment with existing hospital performance frameworks

As a final step in developing a hospital performance framework that is cascaded from the HSP Measurement Framework, we can assess the extent to which the framework described above aligns with concepts that have been used in other validated hospital frameworks. Two hospital frameworks are used in this review:

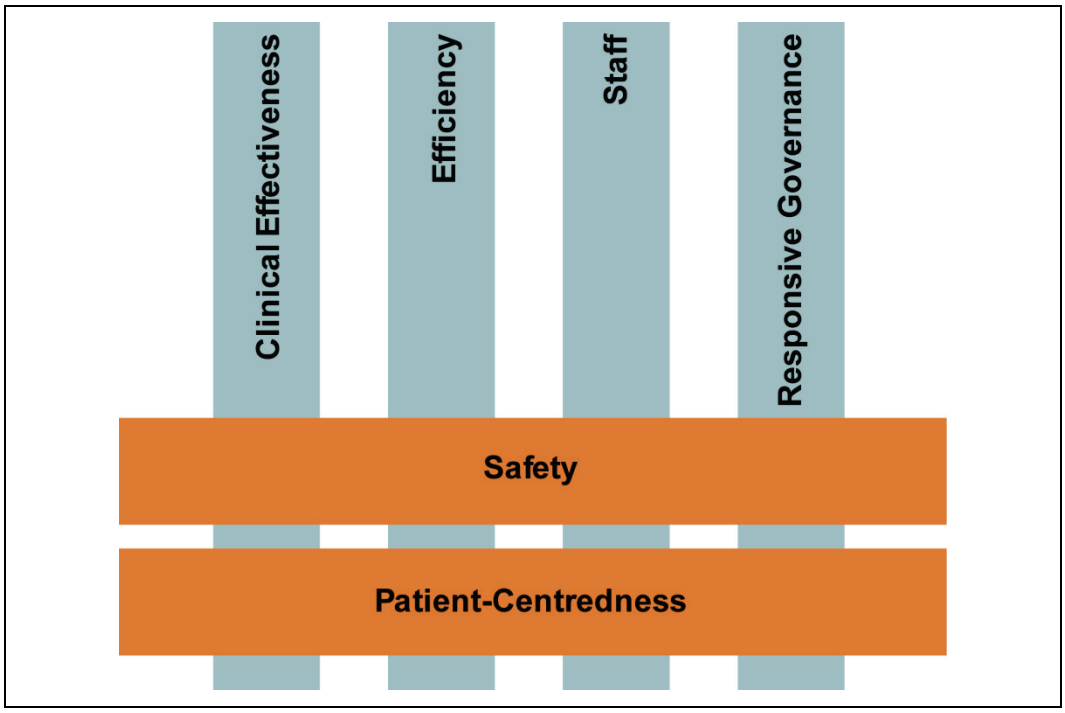
- The Performance Assessment Tool for Quality Improvement in Hospitals (PATH), which was developed by the WHO and has been applied internationally; and
- The Hospital Balanced Scorecard, which was used in Ontario to measure and report on the performance of hospitals.

The Performance Assessment Tool for Quality Improvement in Hospitals (PATH)

PATH is a framework that can be used to assess hospital performance. Its development was informed by international experts and a thorough review of academic literature across countries. In particular, the framework was developed through a series of four workshops of experts in the area of hospital performance assessment, a review of the literature on hospital performance and a survey carried out in 20 European countries. Finally, PATH benefited from external scrutiny, as it was piloted in eight countries and implemented in another eight countries in Europe.[18, 21]

The conceptual model that serves as the basis for the PATH framework (Figure 12) is made up of six interrelated dimensions: clinical effectiveness, safety, patient-centredness, responsive governance, staff orientation and efficiency. These dimensions were selected as a synthesis of different organizational performance theories.[22, 23]

Figure 12: The PATH theoretical model for hospital performance



Source
Adapted from Veillard J, Champagne F, Klazinga N, et al. A performance assessment framework for hospitals: the WHO Regional Office for Europe PATH project. *Int J for Quality in Health Care*. 2005;17(6):487-496.

The dimensions of the PATH framework represent areas of hospital performance that are important both in themselves and in how they interact with each other. Two of the dimensions (safety and patient-centredness) cut across the other four dimensions of hospital performance (clinical effectiveness, staff orientation, efficiency and responsive governance), indicating that the performance of these two dimensions reflects aspects of performance across the other four dimensions. Finally, each dimension is made up of different subdimensions. These subdimensions represent a synthesis of different organizational performance theories and were informed by the review of other conceptual models of performance and expert opinion.[21] The six dimensions are described briefly in Table 4 below. The definitions and related subdimensions are described in more detail in Appendix C.

Table 4 indicates how each of the dimensions in the PATH framework corresponds to each of the key areas identified in the cascaded hospital performance framework. This illustrates that the performance dimensions outlined by the PATH framework are similar to those in both the health system and cascaded hospital frameworks.

Table 4: PATH dimensions mapped onto CIHI's cascaded framework

PATH dimension	PATH definition[13]	Subdimensions related to CIHI's cascaded framework
Clinical Effectiveness	When a hospital, in line with the current state of knowledge, appropriately and competently delivers clinical care or services to, and achieves desired outcomes for, all patients likely to benefit most	• Conformity to processes of care (governance and leadership) • Outcomes of processes of care • Appropriateness and effectiveness of care
Efficiency	A hospital's optimal use of inputs to yield maximal outputs, given its available resources	• Allocating resources to produce an appropriate mix of services given the needs of patients • Producing maximum outputs for given inputs
Staff Orientation	The degree to which hospital staff are appropriately qualified to deliver required patient care, have the opportunity for continued learning and training, work in a positive environment and are satisfied with their work	• Hospital innovation and learning capacity • Improving quality of hospital human resources
Responsive Governance	The degree to which a hospital is responsive to community needs, ensures care continuity and coordination, promotes health, is innovative and provides care to all citizens	• Responsive governance and leadership • Ensuring appropriate coordination of services with other care providers on discharge • Ensuring appropriate processes are enforced
Safety	When a hospital has the appropriate structure and uses care delivery processes that measurably prevent or reduce harm or risk to the patient's health care providers and the environment	• Care that is safe • Supporting hospital human resources • Responsive governance that respects the environment of the community
Patient-Centredness	When a hospital places patients at the centre of care and service delivery by paying particular attention to patients' and their families' needs, expectations, autonomy, access to hospital support networks, communication, confidentiality, dignity, choice of provider and desire for prompt, timely care	• Access to care that is timely and without barriers • Person-centred care

Source
Canadian Institute for Health Information, 2015.

The Hospital Balanced Scorecard

In the mid-1990s, a balanced scorecard approach to measuring performance in Canadian hospitals was proposed.[19] The Hospital Balanced Scorecard was used by the Hospital Report Research Collaborative as the framework for a series of 30 reports on the performance of hospitals in Ontario between 1999 and 2008 designed to identify and promote excellence in the delivery of hospital care.[24] It considered the four quadrants of the balanced scorecard developed by Kaplan and Norton from the perspective of Ontario hospitals.[25, 26] The four quadrants and their application to Ontario hospitals are outlined in Appendix D. CIHI used the principles of the balanced scorecard framework in the Canadian Hospital Reporting Project (CHRP) — a web-based tool for exploring performance indicator results for hospitals across Canada, first released in 2012.

Similar to the health system and hospital frameworks, an important aspect of the balanced scorecard is the relationships among the perspectives and the way performance in one perspective supports performance in the others. For example, high performance in the innovation and learning perspective can support the delivery of more effective services (internal business perspective) and will help to drive improvement in the financial perspective.

Table 5: Cascaded hospital framework dimensions mapped onto the Hospital Balanced Scorecard perspectives

Balanced Scorecard perspective[11]	**Hospital framework quadrant***		
	Hospital Inputs and Characteristics	Hospital Outputs	Hospital Outcomes
Customer		• Access to high-quality acute care services that are – Person-centred – Safe – Appropriate and effective	• Health recovery, survival and health protection • Responsiveness to patients and community served
Internal Business	• Hospital leadership and governance • Quality and quantity of hospital resources • Hospital innovation and learning capacity • Adjustment/responsiveness to community and local needs • Effective allocation of hospital resources.		
Innovation and Learning	• Adjustment/responsiveness to community and local needs • Hospital innovation and learning capacity		
Financial	• Effective allocation of hospital resources	• Services that are efficiently delivered	• Value for money

Note

* The Social Determinants of Health quadrant is excluded as it is not considered within the performance boundaries for the Hospital Balanced Scorecard.

Source

Canadian Institute for Health Information, 2015.

As noted in Table 5, the performance dimensions in the hospital inputs and characteristics quadrant of the cascaded framework correspond closely to the internal business perspective in the balanced scorecard. These dimensions also align with concepts in the innovation and learning perspective as well as in the financial perspective through the way in which the hospital allocates its resources.

The hospital framework quadrant of hospital outputs reflects primarily the quality of hospital services provided as well as enabling timely access to those services. These aspects of service quality are particularly related to the balanced scorecard customer perspective. As well, the "efficiently delivered" dimension of hospital outputs is captured in the financial perspective of the balanced scorecard.

Finally, hospital outcomes represent the results or impact of hospital services that directly contribute to the attainment of the key health system outcomes. At the hospital level, these represent

- Improving health recovery, and survival as well as longer-term health protection through the coordination and integration of care with other health resources and services;
- Contributing to health system responsiveness through responding to community and local needs and ensuring that hospital services are delivered as part of an integrated system; and
- Contributing to attaining health system value for money.

These key outcomes are found in both the customer and financial perspectives of the balanced scorecard. As shown in tables 4 and 5, the concepts outlined in this hospital performance framework are well aligned with both of the hospital performance frameworks reviewed. They identify similar inputs, processes and outcomes as being important for health system performance. However, the objective of developing a cascaded hospital framework is to provide a clear alignment between the health system and hospital performance frameworks that illustrates how hospital performance contributes to achieving health system objectives. These concepts were applied in a new framework, illustrating to the relevant stakeholders the contribution of hospitals to health system performance.

Conclusions

Over the past decade, many performance frameworks have been developed to assess hospital performance. While these frameworks have varied purposes, they all aim to provide a better understanding of the underlying structure of a hospital and how that relates to factors that drive its performance. However, for a hospital performance assessment tool to be of maximum use to all health system stakeholders, it must be able to reflect the complexity and dynamic nature of hospital processes, and to consider the role of the hospital within the setting of the health system itself.

To address these concerns, CIHI has developed a cascading hospital performance framework, derived from the HSP Measurement Framework. This development draws on a process for cascading a health system framework to organizations or subsystems of the health system (as described in Section 1) and illustrates how these concepts can be applied for hospitals. The cascading nature of the hospital performance framework illustrates the interdependencies between the health system dimensions and the hospital production process. This depiction may be useful for stakeholders, as it identifies areas where hospital performance can contribute to health system goals and also where allocation decisions at the system level can influence the hospital production process.

While the cascaded hospital performance framework shows how hospital inputs, outputs and outcomes are derived from and support the health system, it is also important that the hospital framework aligns with existing hospital frameworks that have been validated and used previously. This ensures that concepts and dimensions that are important to performance in frameworks such as the PATH framework or the Hospital Balanced Scorecard are properly reflected in the framework cascaded from the health system. The new framework described in this section attempts to clarify areas where there are differences in matters of understanding and focus across the health system and hospital performance frameworks, resulting largely from the consideration of multiple levels of analysis.

The cascaded framework links the performance goals and production process identified in the HSP Measurement Framework to hospital outcomes and to examples of existing hospital indicators. This mapping exercise allows the construction of the separate hospital performance framework, which supports the performance assessment of hospitals while maintaining strong links with the health system framework, identifying how these two levels of analysis are connected. Thus the hospital performance framework supports policy-makers, health system and hospital managers and leaders to better interpret the actions and indicators relating to hospital performance within the broader health system context.

3. A performance measurement framework for long-term care

Introduction

In this section, we propose a performance measurement framework for long-term care in Canada that is aligned with CIHI's HSP Measurement Framework. The aim is to clearly outline the functional components of the long-term care system and to place them within the broader health system. The proposed model draws heavily on previous published work in this area, particularly the European ANCIEN project,[20, 27] which describes the functional components of long-term care. We show how an existing framework and its indicators can be aligned with system-wide performance goals to create a cascaded framework that allows assessment of the long-term care sector or specific services or organizations within it.

Long-term care in Canada

As noted by the Organisation for Economic Co-operation and Development (OECD), "The term 'long-term care services' refers to the organisation and delivery of a broad range of services and assistance to people who are limited in their ability to function independently on a daily basis over an extended period of time".[28 (p. 1)] There are two complementary components of this definition: the care continues over a long time period, and the care is usually provided as an integrated program across service components. The services may be provided in a variety of settings including institutional, residential or home care. Most of the recipients of this type of care are Canada's seniors, but it is important to note that many organizations providing similar care also support younger Canadians with complex needs. For the purposes of this work, the focus is on long-term care for seniors.

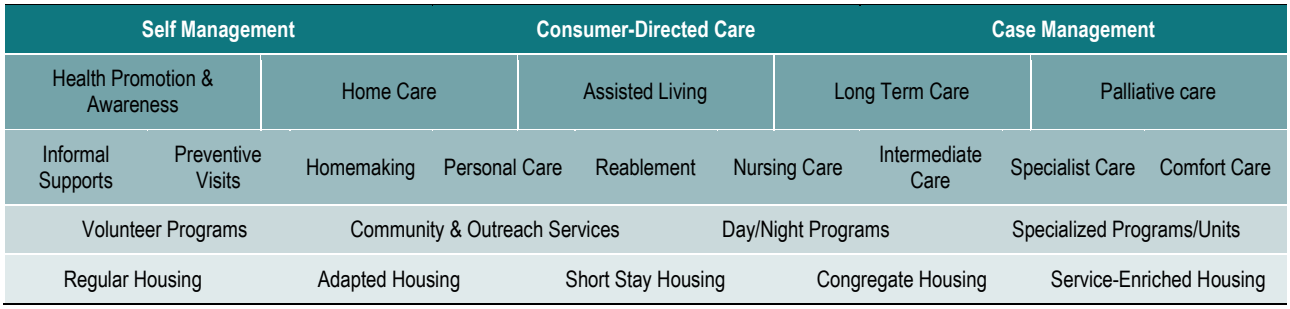
The Ontario government publication *Living Longer, Living Well* outlines three core competencies of long-term care:[29]

- Long-term care successfully integrates medical and social models of care, offering a flexible, holistic option for adults with very high physical, social, psychological and personal needs, many of whom are at the end of life or can no longer live independently in the community.
- Long-term care has extensive experience and expertise in interdisciplinary team delivery of chronic care for seniors based on a restorative philosophy that maximizes function and dignity.
- Long-term care provides services at a guaranteed price and knows how to maximize limited resources.

These competencies highlight the spectrum of different services encompassed in long-term care and outline the importance of coordination and integration of other areas of health and social care. When planning for and monitoring long-term care services, it is important to distinguish the different needs seniors will face in order to best provide appropriate services. Unlike in more traditional medical care, where need is often diagnosis- or disease-based, the need for long-term care is defined by a person's functional ability.

To ensure high functional ability, capacity-planning must take into account daily living needs as well as acute needs, thus combining different aspects of the health system, including primary care, prevention, residential care, hospital care and acute care. As Figure 13 indicates, this continuum of care relates to a number of different services that cover the range of needs pertaining to this population group. These services include providing a range of health promotion activities, creating age-friendly communities, providing a range of supportive housing and retirement living options, developing new models of care and ensuring that high-quality residential long-term care is accessible to those who need it.[22]

Figure 13: The continuum of care for older adults



Source

Reproduced from the Long Term Care Innovation Expert Panel. *Why Not Now? A Bold, Five-Year Strategy for Innovating Ontario's System of Care for Older Adults*. March 2012.

While long-term care services encompass residential care, other services are also key to supporting seniors. In Canada, rates of institutionalization of those age 75 and older have declined since the 1980s; however, rates still remain high for these older seniors, and residential care remains an important aspect of long-term care.[30] Indeed, in most OECD countries, 50% to 75% of all formal long-term care is provided in home care settings.[31]

Thus long-term care services in Canada include a broad range of services aimed at providing the most appropriate care to cater to the different needs of this population. In addition, many seniors using long-term care services are likely also accessing other types of services and may have multiple points of interaction with the broader health care system.

According to a CIHI report on aging, most seniors (95%) have a regular family doctor, although some seniors experienced challenges when accessing their doctor.[32] Seniors with multiple chronic conditions are more likely to visit their family doctor more frequently than seniors with one or no chronic conditions, and more than half of the seniors on public drug programs regularly use prescription drugs to treat two or more chronic conditions.[24]

When becoming acutely ill, seniors may require care in hospital, often accessed through the emergency department (ED). CIHI reports that seniors are more likely to stay in EDs longer than non-senior adults.[32] Patients outside the ED who have completed the acute phase of their care but remain in an acute care bed because they cannot be discharged to another setting that will provide ongoing care they need are considered alternate level of care (ALC) patients. Of these patients, nearly 85% are older than 65 and about 35% are older than 85. The CIHI report notes that many hospitals are working toward addressing patient flow and appropriateness of hospital care, particularly with regard to end-of-life care in hospitals.[32]

Most seniors prefer to maintain their independence, and the report estimates that about 93% of all seniors live in private households.[32] A variety of formal and informal services can help seniors remain in their communities as long as possible, including home care (involving a combination of home health and support services provided by trained personnel), informal care (unpaid care usually provided by a spouse or family members) and community support programs.

Informal caregiver support is another key factor that enables many seniors to remain in their communities safely and independently as they age.[32] Informal care comes mostly from unpaid family members, friends and neighbours. It has been estimated that there are more than 2 million informal caregivers age 45 and older in Canada, and that approximately 97% of all home care recipients have an informal caregiver.[33] Nearly one-third of these are spouses; almost half are children or their children's spouses.[25]

A variety of community services that offer intermediate levels of care exist to meet the needs of seniors. These services include supportive housing (also referred to as assisted living). While the details of what supportive housing provides vary across providers, they tend to encompass a combination of permanent housing and access to supportive services.

As stated earlier, seniors typically prefer to stay in their own homes for as long as possible, but residential care facilities can provide care to those who have higher needs for care and support. Indeed, recent decades have seen a decline in institutionalization rates among seniors, possibly related to increased access to home care and community support services, improvements in overall health and developments in technology. Not surprisingly, then, residents in long-term care facilities today are typically receiving more intensive care than in the past.[32]

Given the rising population of seniors in Canada, the differences in organization of long-term care services across the country and the range of services (across multiple sectors) available to the population, it is increasingly important that policy-makers monitor the performance of long-term care organizations and their contribution to the overall performance of the health system.

Existing performance frameworks for long-term care

The EU-funded project Assessing Needs of Care in European Nations (ANCIEN) recently conducted a review of the literature related to the performance of long-term care systems,[27] with the aim of identifying existing performance frameworks in this area and constructing one for their purposes. Given the recent publication of this review, it has been used here as the basis for examining existing frameworks for long-term care. Other frameworks/performance measurement efforts that were identified as potentially useful were added to the review. In total, the following seven frameworks or performance measurement initiatives were studied to determine which inputs, outputs and outcomes are commonly measured and how these are grouped together and organized:

- WHO 2003 Framework[34]
- OECD's Conceptual Framework and Methods for Analysis of Data Sources for Long-Term Care Expenditure[28]
- American Association for Retired Persons State Scorecard on Long-Term Services and Supports for Older Adults, People With Physical Disabilities, and Family Caregivers[35]

- Resident Assessment Instrument–Minimum Data Set[36]
- ANCIEN performance framework[27]
- INTERLINKS Framework[37]
- Centers for Medicare and Medicaid Services Five-Star Quality Rating System[38]

Interestingly, compared with many frameworks for other health care services, long-term care frameworks did not analyze the functional system components in much detail. Rather, they were more focused on outlining the dimensions of interest in order to group indicators into separate categories. Table 6 summarizes the main objectives and/or dimensions identified in each of the frameworks or initiatives. Some of the frameworks included in the review, such as the OECD's framework or the INTERLINKS Framework, were not constructed for performance assessment per se but due to their detailed breakdown of the long-term care system, provide an interesting description of the different components of the system.

As noted previously, the ANCIEN performance framework was developed based on a review of some of the frameworks identified above (and outlined in Table 6). This framework was used as the main starting point for applying CIHI's health system framework to the long-term care sector. The key characteristic of the ANCIEN performance framework is that it distinguishes between three different levels of goals:[27]

- Ultimate goals (Outcomes for Individuals and Society): The desired outcomes of long-term care systems for users, caregivers and society;
- Intermediate goals (Outcomes at the System Level): The outcomes at the level of the long-term care system that are instrumental in promoting the desired final outcomes for individuals and society; and
- System Characteristics and Inputs: Characteristics of the system that are expected to make the system work and assist in achieving the outcomes.

Table 6: Main objectives/dimensions of long-term care identified in frameworks reviewed

Framework	Main objectives/dimensions of LTC framework
WHO[26]	"The goal of LTC is to ensure that an individual who is not fully capable of long-term self-care can maintain the best possible quality of life, with the greatest possible degree of independence, autonomy, participation, personal fulfilment and human dignity."[26 (p. 228)] **Health dimension** (functional ability, other health status measures specific to major conditions, health-related quality of life) **Responsiveness dimension** (dignity and human rights, autonomy, confidentiality, quality of basic amenities, access to social support networks, choice of provider)
AARP[27]	Affordability and access, choice of setting and provider, quality of life and quality of care, support for family caregivers, coordination of LTC with medical services

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Table 6: Main objectives/dimensions of long-term care identified in frameworks reviewed (cont'd)

Framework	Main objectives/dimensions of LTC framework
RAI-MDS[28]	Main objective is the improvement of quality of care, through recording needs and strengths and providing evidence-based support for those who care for older people.
ANCIEN[19]	**Outcomes for users and society** (quality of life and appropriate balance between LTC and societal needs). **Outcome at system level** (quality of care, accessibility of care, total burden of LTC, equity, improving functional ability and minimizing the need for LTC). **System characteristic** (support for informal caregivers, choice of setting and providers, integration with health care and social services and coordination, simplicity of the system and information).
INTERLINKS[29]	Identity of LTC, Policy & Governance, Pathways & Processes, Management & Leadership, Organisational Structures, Means & Resources.

Source
Canadian Institute for Health Information, 2015.

Cascading systems and a long-term care framework for Canada

As described earlier, the aim of CIHI's HSP Measurement Framework is to provide policy-makers and managers with a tool geared toward health system performance improvement. The purpose of the cascading systems framework for long-term care is in turn to align the functional components in the long-term care system with the components identified in the health system framework so that system managers can apply the concepts. To be able to carry out this task, the system framework must include all the factors that encompass the health and long-term care systems, as well as the factors that will influence the attainment of key goals. This can be challenging, as the boundaries of the long-term care system are not always clearly defined. As noted previously, long-term care encompasses a range of care settings and care providers, including health care, social care and informal care. It is crucial that these diverse inputs are recognized within the framework to ensure transparency and accountability.

CIHI's HSP Measurement Framework defines the health system using the WHO definition: A health system consists of "all organizations, people and actions whose primary intent is to promote, restore or maintain health."[7 (p. 3)] This includes efforts to influence determinants of health as well as more direct health-improving activities." This definition is broad and thus indicates an inclusive approach of public health activities and health promotion, as well as coordination and integration with other sectors such as social care. Moreover, its explicit recognition also of the "people . . . whose primary intent is to promote, restore or maintain health" extends beyond formal carers to informal carers, who are particularly important in the context of long-term care.

Another issue is that in cascading the system framework to a long-term care framework, many different types of care will be represented. As noted in Section 2, long-term care in Canada is made up of a range of different services which operate in various settings, including nursing homes, personal residences and the community. Given that the underlying purposes of the performance measurement framework are to outline the key objectives of the long-term care system and to identify areas for improvement, it is important that the cascaded systems framework can be applied across these services.

In the development of the cascading long-term care framework, several factors need to be considered to address how the quadrants of the systems framework relate to the functional components of long-term care, and how these functional components differ across delivery settings. Using the review of the frameworks described above, and largely following the ANCIEN performance framework, Table 7 outlines the key long-term care dimensions identified, classified into three tiers:

- Outcomes for individuals and society;
- Outcomes at the system level; and
- System characteristics.[27]

Table 7: Functional components of a long-term care framework, by tier

Long-term care dimension	Definition	Subdimensions mapped onto CIHI's cascaded framework
Outcomes for Individuals and Society		
Quality of life	This represents the health status of the population.	• Health status • Health function • Well-being • Health system responsiveness
Balance between long-term care and societal needs	As long-term care affects not only users or potential users but also other individuals in society (e.g., caregivers, families, taxpayers), this aspects represents the consideration of those individuals.	• Value for money • Health system responsiveness
Outcomes at the System Level		
Quality of care	This reflects maximizing the long-term care–related or social care–related quality of life, which includes aspects such as personal cleanliness and comfort, food and nutrition, safety, accommodation cleanliness and comfort, occupation, social participation and involvement, and control over daily life and dignity.	• Quality health system outputs that are – Person-centred – Safe – Appropriate and effective – Accessible

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Table 7: Functional components of a long-term care framework, by tier (cont'd)

Long-term care dimension	Definition	Subdimensions mapped onto CIHI's cascaded framework
Accessibility of care	This refers to ensuring that those in need of care have access to timely services without facing the risk of impoverishment.	• Access to comprehensive, high-quality health services
Total burden of long-term care	• The financial burden of public and private expenditures on long-term care • The burden of informal care (the time spent and efforts made by informal caregivers)	• Value for money • Efficiently delivered services • Efficient allocation of resources
Improving functional ability and minimizing need for long-term care	The system ensures that the need for long-term care is minimized through lifestyle, promotion, prevention and performance of the health care system.	• Health protection, health promotion and disease prevention outputs and services that are – Person-centred – Safe – Appropriate and effective
System Characteristics and Inputs		
Support for formal and informal caregivers	This includes providing training, allowing caregivers to combine care with labour market participation and helping them to maintain their own well-being.	• Health system resources • Health system inputs and characteristics
Choice of setting and providers	This refers to ensuring that long-term care users have choices in the organization of the long-term care so that it reflects their wants and needs.	• Health system innovation and learning capacity • Health system responsiveness
Integration/coordination with health care and social services	This refers to ensuring high performance of the long-term care system through proper coordination within the long-term care system and between the long-term care system, health care services and social services.	• Learning capacity • Adjustment to population health needs • Person-centred health services
Simplicity of the system and information	Long-term care users and potential long-term care users need to be able to find information and advice to help them navigate the care and support system. Information about supply and quality of care is important, particularly in a consumer-driven system. Information about funding and rights is also important.	• Learning capacity • Efficient allocation of resources • Adjustment to population needs

Source
Canadian Institute for Health Information, 2015.

The first tier, Outcomes for Individuals and Society, considers the ultimate goals of long-term care. As outlined by Mot, et al., outcomes should be considered with regard not only to the users and potential users of services but also to others in society who will be directly influenced (e.g., families, formal or informal caregivers, taxpayers).[27] To some extent, long-term care systems will influence most people in society — through public financing, through the care it provides to an individual or family member, or because of their own future interests in care. For this reason, the two goals identified in this area are quality of life and an appropriate balance between long-term care needs and other societal needs. The first goal encompasses the impact the long-term care system can have on individuals themselves, while the second specifically considers the impact it will have on other users in society though the mechanisms identified above. These in turn can be aligned to the three health system outcomes identified in CIHI's HSP Measurement Framework: improving health status, improving health system responsiveness and improving value for money.

The first dimension in this tier — quality of life — aligns with the goal of improving/maintaining health status and functional status, while also encompassing notions of person-centred, responsive care. While the goal identified in this tier is to maximize quality of life, this does not necessarily equate with "getting better" as in a more traditional health care setting. Maximizing quality of life is rather more likely to be associated with maintaining or improving functional status, ensuring safety and security, and maximizing autonomy, among other things.[39]

Of course, the treatments provided to individuals during the time they are receiving long-term care services, or the security the existence of a long-term care system provides them during their life, will impact the quality of life of users and potential users of the system. The second goal in this tier — the balance between long-term care and societal needs — also impacts health system responsiveness, as it will play a large role in determining the type of care users and potential users receive, in what setting, and how the system respects all individuals' needs. Achieving this goal also encompasses the decisions around allocating an individual to a particular care model and deciding if and when it is appropriate for that person to receive services from a different model of care. For example, at what point does home care become necessary and when is the right time for individuals to move to a care setting that offers more support, such as supported home care or a residential care home? Thus the balance between long-term care and societal needs will influence the value for money of this system (i.e., how well the system achieves the attainment of the other two goals given the money it puts into the system). For example, a lack of provision of essential services — the responsibility of which then falls to families or informal caregivers, thus preventing them from using that time in other activities — may equate to poor value for money, given the opportunity cost of caregivers' time.

The second dimension — Outcomes at the System Level — considers long-term care outputs. This dimension can be aligned with CIHI's HSP Measurement Framework outputs, as long-term care outputs will reflect a subset of the outputs of the full health system. The goals at this level relate to quality of care (person-centred, appropriate, effective and safe), accessibility of care and efficient delivery of services. The first output identified is quality of care. Quality of care encompasses a range of dimensions that are challenging to measure and, in the context of long-term care, often to even conceptualize. The main challenge is that good quality care in the long-term care sector is not related only to improvements in health status. As outlined by Malley

and Fernandez,[39] quality of care in this context refers to "[a]spects of quality of life associated with services include the extent to which they help to improve users' health and physical functioning, they meet basic physical needs with activities of daily living, they guarantee personal safety and security, ensure a clean and tidy environment, help users stay alert and active, provide access to social contact, ensure users are in control of their life, maximize autonomy, skills, morale and self-confidence, and assist users coming to terms with their impairment."[31 (p. 561)] Malley and Fernandez refer to this as "social care related quality of life."[39] This objective corresponds directly to the high-quality services that are person-centred, safe and appropriate and effective outputs outlined in CIHI's HSP Measurement Framework.

The second output identified in this tier of the framework is improving functional ability and maximizing independence. This is modified from the ANCIEN framework dimension "improving functional ability and minimizing the need for LTC." This output is related to quality of care, as it considers how all the services in the health and social system come together to improve functional ability of the population and delay the need for long-term care services. However, the latter part of the output has been changed from "minimizing the need for long-term care" to "maximizing independence" to represent a shift in the types of services that seniors are making use of that allow them to remain in their own homes. Thus this output reflects not only the delivery of higher-quality services across the entire system to improve health status but also the flexibility of the system to provide forms of care that allow people to retain their independence for as long as possible. This output is related to the health system framework output "access to comprehensive, high-quality health services," particularly as it highlights the *comprehensive* element of service delivery across the life-cycle and the spectrum of population needs.

The third output identified in this tier of the long-term care framework is accessibility of care, and also relates to the health system framework output "access to comprehensive, high-quality health services." This output refers to the notion of accessibility — that is, ensuring that "access to comprehensive health services corresponds to the range of health services available and the ability to meet the needs of the population or a particular patient without financial, organizational or geographical obstacles standing in the way of seeking or obtaining health services."[3] In long-term care, it is important to ensure that access to all aspects of services is available and that they are coordinated to provide the best pathways of care for the users, particularly as it appears that a major burden of illness in seniors is chronic illness.[32]

The fourth goal identified in this tier of the long-term care framework is the total burden of long-term care. This is taken from the ANCIEN framework[27] and consists of two parts: the first considers the financial burden of public and private expenditure, while the second considers the time spent and efforts made by informal caregivers as well as caregiver distress. The objective of the system is to minimize the total burden by providing efficient delivery of services. It follows that to minimize the total burden of long-term care, actions beyond adjusting long-term care services must also be taken. Factors such as lifestyle, prevention, health promotion and health care will influence the extent of services needed by individuals, specifically seniors. Thus it is crucial that the system operates in a way that is coordinated and integrated. These two outputs are thus related to the quality (person-centred, safe, appropriate and effective) of the health protection, health promotion and disease prevention services identified in the health system framework, as well as to efficiently delivered and effective long-term care services.

The third tier of the long-term care framework is System Characteristics and Inputs. It corresponds to the Inputs and Characteristics quadrant of the health system framework. Four characteristics are outlined, as identified by the ANCIEN framework.[27] These characteristics are often mentioned as features necessary for a long-term care system to perform well:

- Support for formal and informal caregivers;
- Choice of setting and provider;
- Integration with health care and social services and coordination; and
- Simplicity of the system and information.

These characteristics are well aligned with the inputs quadrant of the health system framework; however, crucial inputs identified in the health system framework need to be added, such as leadership and governance and efficient allocation of resources.

Based on features of the two frameworks, and the alignment of the functional components as discussed, Table 8 relates the four quadrants of the health system framework to the inputs, outputs and outcomes of the long-term care framework. The fourth quadrant identified in the health system framework is not explicitly addressed in the long-term care framework: Social Determinants of Health. However, components of this dimension present themselves in long-term care and thus are added in Table 8.

Table 8: Cascading systems and long-term care dimensions

	Social Determinants of Health	Health System Inputs and Characteristics	Health System Outputs	Health System Outcomes
Health System	• Structural factors influencing health • Biological factors • Material circumstances • Psychosocial circumstances • Behavioural factors	• Leadership and governance • Health system resources • Efficient allocation of resources • Adjustment to population health needs • Health system innovation and learning capacity	• Access to comprehensive, high-quality health services that are – Person-centred – Safe – Appropriate and effective – Efficiently delivered	• Improve health status • Improve health system responsiveness • Improve value for money
Relationship Between Health System and Long-Term Care	Social determinants of health present in the health system will influence the functional ability of the population and in turn the types of services required.	Health system inputs determine how many and what inputs are available for long-term care and to what extent long-term care is provided formally or informally. Long-term care inputs are a subset of health system inputs.	Health system outputs will influence patient need and severity of hospital patients, and setting of care. LTC outputs are a subset of health system outputs.*	Long-term care outcomes will contribute to health system outcomes to the extent to which they are able to improve quality of life, responsiveness of the health and social care system and value for money.

(cont'd on next page)

Table 8: Cascading systems and long-term care dimensions (cont'd)

	Social Determinants of Health	Long-Term Care Inputs and System Characteristics	Long-Term Care Outputs	Long-Term Care Outcomes for Individuals and Society
Long-Term Care System	• All of the above applied to population of long-term care users and potential users.	• Support for formal and informal caregivers • Choice of setting and providers • Integration with health care and social services and coordination • Simplicity of the system and information • Leadership and governance • Adjusting for population needs	• Quality of care (social care–related quality of life, and appropriateness and effectiveness of care) • Accessibility of care • Setting of care • Total burden of long-term care • Improving functional ability and minimizing the need for long-term care	• Quality of life • Appropriate balance between long-term care and societal needs • Responsiveness

Note

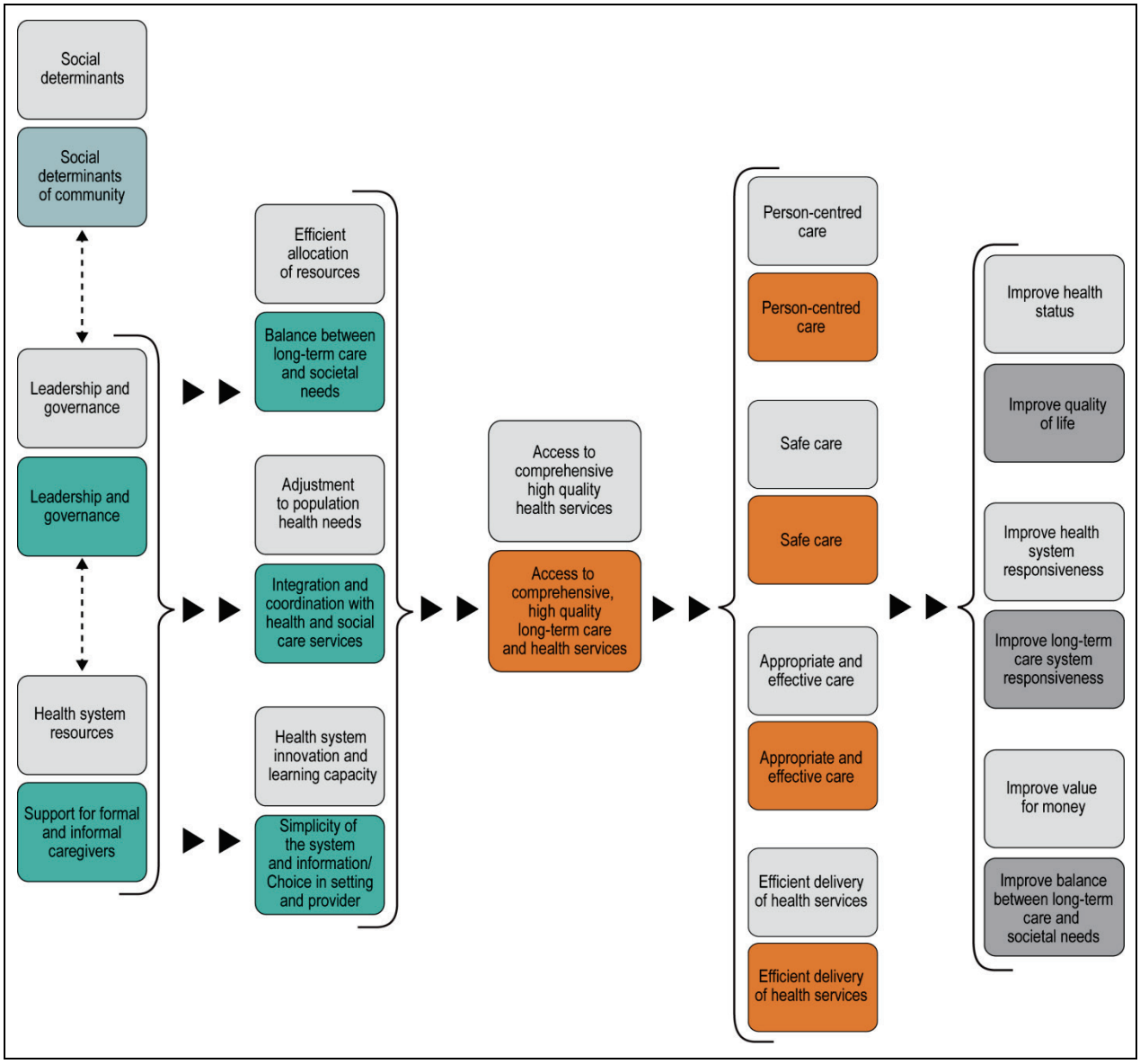
* Long-term care outputs will influence patient need: for example, more money invested in promotion and prevention may lead to fewer long-term care residents and/or those with less severe conditions.

Source

Canadian Institute for Health Information, 2015.

To produce a final cascaded hospital framework relating the health system performance framework to the long-term care performance dimensions, the cascaded systems outlined in Table 8 are mapped onto the four quadrants of the health system framework (Figure 14). The grey-shaded boxes indicate the key components of the health system framework, while the coloured boxes correspond to the long-term care performance framework, with each colour indicating which of the four quadrants it corresponds to.

Figure 14: Cascading the framework from the health system to long-term care



Source
Canadian Institute for Health Information, 2015.

The cascaded framework illustrates how the first quadrant (social determinants of the community served by long-term care) must be factored into the inputs and characteristics of long-term care, as it will influence the needs and demands of society. These factors include genetic endowment, social position, life conditions and the physical environment (as defined in Appendix B), and are external to the production processes of the health and social care system. However, these factors need to be considered in assessment of the production processes, as they will influence the magnitude, health status and needs of the population as well as the inputs that are necessary to attain the valued outputs of the health and long-term care systems.

The assessment of societal needs, as well as the inputs and outputs of the system, is directly linked to the leadership and governance function of the long-term care framework (and the health system framework), as the health system will be required to adjust the provision of care to be responsive to the needs, preferences and values of society. Three main issues pertaining to the provision of long-term care will be as follows:

- The integration and coordination of services across health and social care to ensure that appropriate and effective care is available to seniors across the continuum of need they experience;
- The provision of these services across a range of care settings, enabling seniors to live independently for as long as possible while ensuring that their clinical and social needs are met; and
- Support for formal and informal care givers in the system.

The extent to which these areas are considered in long-term care service delivery and design is a key aspect of governance, but in turn this fundamental structural feature of the system will play an important role in how the system is governed. These two inputs (leadership and governance and support for formal and informal caregivers) will then influence the other three inputs identified in this quadrant:

- The balance between long-term care and societal needs (which reflects how efficiently resources are allocated across the health system);
- The integration and coordination of long-term care services with health and social care services; and
- The organization of the long-term care system — in particular, the extent to which it is simple, and information is available to facilitate choice of provider and care setting to the population.

Together, these inputs will be used to produce the outcomes at the system level and ultimately to produce the outcomes for individuals and society, as indicated by the orange boxes. The outcomes at the system level, taken from the health system framework, map almost completely onto the long-term care framework, with only a few modifications. The aspects of quality highlighted in the health system framework — namely appropriateness, effectiveness and safety — are also important in long-term care, regardless of the setting in which services are provided. In particular, appropriateness also considers the setting of care (e.g., is the hospital setting appropriate for end-of-life care, given the preference of many patients to die at home?).[32] The system level outcome of access also translates almost completely to the long-term care framework, as it emphasizes accessibility to high-quality, integrated care. The main difference in this output would be the range of services included in the framework: social care, home care and community care. Finally, the last difference relates to the health system output of efficient delivery. In the health system framework, this refers to “services which minimize the use of resources — supplies, equipment, time, energy — in delivering services and [is] related to the concept of technical efficiency.”[3 (p. 17)]

Finally, in the last quadrant, Outcomes for Individuals and Society, the health system outcomes are considered in relation to the long-term care outcomes. As discussed previously, health status is mapped onto the wider concept of quality of life, which considers functional ability together with other factors such as access to social contact; ensuring users are in control of their life; maximizing autonomy, skills, morale and self-confidence. Responsiveness remains a final goal in both frameworks, while value for money is modified slightly to encompass the broader boundaries of long-term care, and also to consider how this reflects societal values and preferences. For example, value for money should also consider seniors' preference for remaining at home in their assessment of the value of care.

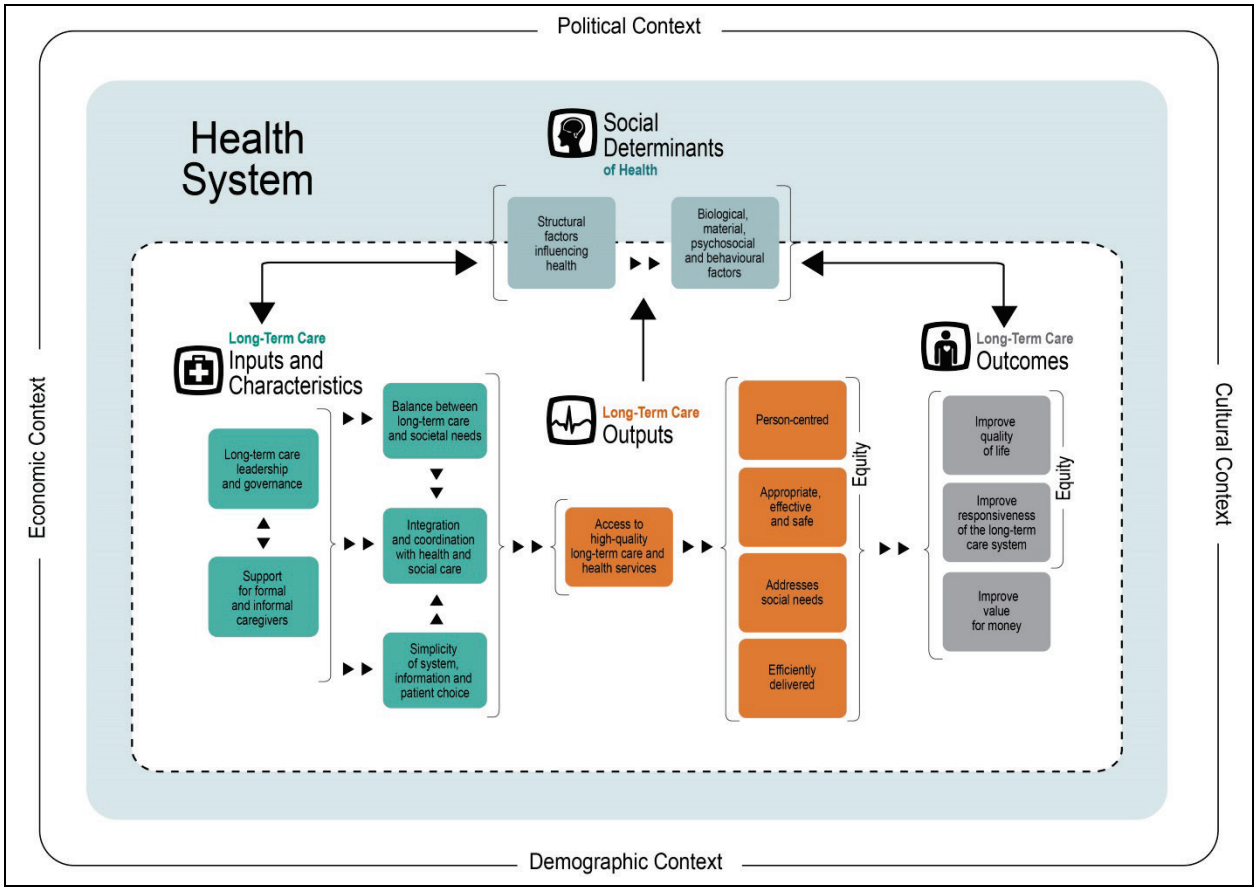
Long-term care performance framework

As a final step, the cascaded framework can be used as a basis to produce a diagram of the long-term care performance framework. The long-term care performance framework represented in Figure 15 considers the functional components of long-term care discussed above in relation to the health system. The long-term care performance framework represents the long-term care sector in the middle, outlined by the dotted line. The sector sits within the boundaries of the health system (represented by the shaded area) and the wider demographic, economic, cultural and political contexts. This representation suggests that performance will be influenced by actions in other areas of the health system, as well as the social determinants of health and the extent to which these are addressed. The boxes included within the dotted line represent the functional components that make up long-term care and clearly indicate where they identify the system characteristics and inputs, the system-level outputs and the outcomes for individuals and society. Within the long-term care performance framework, the colours selected match those of the health system framework, indicating that the long-term care system characteristics and inputs are a subset of health system inputs, long-term care system-level outputs are a subset of health system outputs, and long-term care outcomes for individuals and society correspond to the health system outcomes.

A few changes are made from the cascading framework illustrated in Figure 14 so that the long-term care performance framework can convey the same messages as a standalone framework. Most of these changes lie in the system-level output area, where the dimensions have been renamed to more clearly represent the fundamental concepts and more clearly align to the health system framework. For example, "quality of care" has been changed to "maximize social care–related quality of life," while "total burden of long-term care" has been renamed "efficient delivery" to capture specifically the aspects that relate to long-term care outputs. Each dimension of the framework is explicitly outlined and defined in Table 9, including the introduction of a new tier, Exogenous Factors, which includes the social determinants of health and the definition of health system.

The long-term care performance framework can be considered from a person-centred perspective as well as an organizational perspective. The person-centred perspective, possibly of more interest to a policy-maker, considers the extent to which existing services are able to address the needs of the population requiring long-term care. The organizational perspective, possibly of more interest to managers or providers, considers the extent to which organizations are performing well or identifying areas of potential improvement. The description of the framework so far has focused on the person-centred perspective, taking into account the performance of long-term care overall (encompassing all care provided in the longer term, regardless of care setting). However, it is important to also outline how the framework can be applied to facilities, such as nursing homes and home care, despite the different organization across these models of care provision. This section reviews the long-term care framework from both perspectives.

Figure 15: Long-Term Care Performance Framework



Source
Canadian Institute for Health Information, 2015.

The person-centred framework itself considers the provision of services to long-term care residents across different institutional settings. As the capacity building for long-term care needs to be considered across all services, it is important that the inputs side of the framework consider all the structures in place to provide long-term care services ranging from prevention and primary care to residential and end of life care. The leadership and governance input in particular is meant to assess how well long-term care services are planned across settings to ensure coordination and integration across the system and multiple settings of care.

The framework can also be considered from the perspective of a long-term care facility, as the key objectives, inputs and outputs remain the same across the system. What is important to consider, however, is how the different delivery structure may influence the interpretation of the different dimensions included in the framework. As with the person-centred perspective, the system characteristics and inputs section of the framework need to consider the structures in place to provide care. Some of these inputs, such as leadership and governance, and integration and coordination, will consider the linkages between the organizations and the long-term care system. For example, with respect to the leadership and governance input, to what extent does the system provide guidance and support to determine the type of care setting that is most appropriate for individuals?

The inputs “support for formal and informal caregivers” and “balance between long-term care and societal needs,” while important across delivery settings, are likely to take different forms. For example, the role of support for informal care is likely to be related to different issues in a home care setting, such as allowing caregivers to combine care with labour market participation and helping them to maintain their own well-being. In residential care, however, while support for caregivers is still an important issue, it is likely to be related to different factors, such as training, and staff motivation and guidance. The final input, “simplicity of the system, information and patient choice,” is important across provider settings. As an input, choice relates to the extent to which the system allows patients to make choices regarding different providers and settings of care (i.e., long-term care homes) and different treatments. This relates to the information and awareness individuals and families have about the services available to them and their ability to make choices regarding both the type of service they would like and the provider of that service (e.g., choosing between different long-term care homes).

These inputs map onto the five system-level outputs which again apply across facilities but may be considered separately for each setting of care. All outputs identified are important in the provision of care, but indicators will differ according to the setting of care provided. These five outputs reflect not only important outputs of the long-term care system but also important outputs that should be attained by individual facilities. Across home care, residential care and other delivery settings, the key objectives are to improve social care–related quality of life and to provide patient-centred care. Improving social care–related quality of life, as discussed earlier, is not exclusively related to improving or maintaining functioning but also includes aspects such as personal cleanliness and comfort, food and nutrition, safety, accommodation cleanliness and comfort, occupation, social participation and involvement, control over daily life and dignity. Similarly, person-centred care is meant to ensure that the patients, or residents and their families, are at the centre of care. As the delivery of home care is quite different from that of residential care, particularly in relation to the caregivers’ roles, in practice this may translate into different metrics.

Quality of care is represented by the output "effectiveness, safety and appropriateness," all of which relate to particular aspects of quality. Effectiveness refers to ensuring that people receive care that works and is based on the best available scientific information, so that the care provided reflects accepted best practices and aims to maximize resident independence to the fullest extent possible. Safety considers the role that accidents or mistakes can play when people receive care. A safe care environment should be free from any kind of abuse, neglect and avoidable injury or harm. Appropriateness considers the degree to which individuals receive the care they need in the setting that is most appropriate for their clinical needs but also matches their client preferences.

However, it is important to consider the appropriateness output together with the fifth output, access. Taking these two outputs together provides more information as to the distribution of the long-term care population across care settings, and assessing how this can be improved. At any point in time, individuals in the population will have different needs; for some people, these needs may require residential care while others may be better suited to a home care or supported housing setting. However, it is likely that for a part of the population the distinction is not clear (i.e., their needs may be accommodated in more than one setting), so a combination of data and clinical expertise, as well as client preference, must determine which setting is best at a given time. The access output assesses the degree to which individuals are able to receive the care they need in the setting that is most appropriate for their clinical needs but also matches their client preferences. Access guarantees that the population has some input on choice of provider and treatment, while appropriateness considers the balance between needs, resources and preferences. A system that does not provide adequate access to its population is also unlikely to achieve appropriateness.

The final output is efficient delivery. This relates to all other outputs, in that efficient delivery will be engaged in actively improving the other outputs in a way that reduces inefficiencies while maximizing quality. The aim for efficient delivery is to be able to maximize the outputs the long-term care system achieves relative to the resources it invests.

Ultimately, the way in which the system is able to achieve the five outputs across the system will influence the degree to which they are able to best achieve the three main goals of improving quality of life, responsiveness and total burden of long-term care.

Table 9 considers the different dimensions identified in the long-term care framework and lists examples of indicators that could be appropriate for measuring performance in this area. In particular, it considers indicators and outcome scales listed in CIHI's information sheets on RAI-HC (home care) and RAI-MDS (continuing care) Decision-Support Tools for Clinicians and Managers.[28, 40, 41]

Table 9: Dimensions of the Long-Term Care Performance Framework

Long-term care dimension	Definition	Examples of indicators
Exogenous Factors		
Social Determinants of Health	Social determinants of health represent the factors outside the health system that influence the health of a population. In this framework, these include genetic endowment, social position, life conditions and physical environment.	
Health System	"[A]ll organizations, people and actions whose primary intent is to promote, restore or maintain health."[7 (p. 3)]	
Outcomes for Individuals and Society		
Quality of Life	Functioning and well-being of residents	RAI-MDS quality indicators • Organization-level measures of quality across key domains, including physical and cognitive function, safety and quality of life (e.g., Facility-Level Quality Indicator Rates for Maintaining Independence or Achieving Improvements in Residents' Ability to Transfer, Walk or Wheel, Facility-Level Quality Indicator Rates for Residents Whose Bladder Incontinence Worsened) • Person-level reports summarizing the health of residents RAI-HC outcome scales • Clinical and functioning scales, such as Depression Rating Scale (DRS), Pain Scale, Activities of Daily Living (ADLs), Cognitive Performance Scale (CPS), Index of Social Engagement (ISE), Changes in Health, End-Stage Disease and Signs and Symptoms (CHESS)
Improve Responsiveness of the Long-Term Care System	Patient experience with long-term care services is related to the provision and receipt of care that is respectful of and responsive to individual residents' and carers' preferences, needs and values.	
Balance Between Long-Term Care and Societal Needs	As long-term care affects not only users or potential users but also other individuals in society (e.g., carers, families, taxpayers), this aspects represents the consideration of those individuals.	

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Table 9: Dimensions of the Long-Term Care Performance Framework (cont'd)

Long-term care dimension	Definition	Examples of indicators
Outcomes at the System Level		
Maximize Social Care–Related Quality of Life	This reflects maximizing the long-term care–related or social care–related quality of life (SCRQL), which includes aspects such as personal cleanliness and comfort, food and nutrition, safety, accommodation cleanliness and comfort, occupation, social participation and involvement, control over daily life and dignity.	RAI-MDS quality indicators • Activities of Daily Living (ADLs), Mobility, Behaviour, Cognitive Function, Communication, Delirium, Mood, Continence, Nutrition/Weight, Pain
Access to Long-Term Care and Health Services	This relates to ensuring that those in need of care have access to timely services without facing the risk of impoverishment.	RAI-HC quality indicators • Prevalence of not receiving a medication review by a physician • Prevalence of ADL/rehabilitation potential and no therapies • Prevalence of social isolation • Prevalence of not receiving influenza vaccination • Prevalence of hospitalization Also: • Time to admission to long-term care from application • Median distance from home to long-term care • Percentage of residents who get their first choice of a nursing home • Measures of access to primary care (percentage of seniors with regular family doctor) • Measures of emergency admission of seniors to emergency hospital departments
Patient-Centredness	This means that residents are placed at the centre of care and service delivery by paying particular attention to their needs and expectations as well as those of their families (including access to hospital support networks and communication), and respecting their right and desire for autonomy, confidentiality, dignity, choice of provider, and prompt, timely care.	RAI-HC Quality Indicators • Prevalence of social isolation • Failure to improve/incidence of cognitive decline • Prevalence of delirium • Prevalence of negative mood • Failure to improve/incidence of difficulty in communication

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Table 9: Dimensions of the Long-Term Care Performance Framework (cont'd)

Long-term care dimension	Definition	Examples of indicators
Appropriate, Effective and Safe Care	*Appropriateness* is related to safety in that delivering care services that patients would not benefit from may expose patients to unnecessary risk; it is a key component of what makes health services *effective*, and it has been included in a separate dimension with effectiveness.	RAI-HC Quality Indicators • Prevalence of inadequate meals • Prevalence of weight loss • Prevalence of dehydration • Prevalence of not receiving a medication review by a physician • Prevalence of ADL/rehabilitation potential and no therapies • Prevalence of social isolation • Prevalence of disruptive or intense daily pain • Prevalence of inadequate pain control among those with pain • Prevalence of neglect/abuse • Prevalence of any injuries From interRAI version 2.0 tools for managers and clinicians • Prevalence of falls, infections, pressure ulcers, etc. • Rate of transfers out to emergency department/hospital for ambulatory care sensitive conditions
Efficient Delivery	• Homes should be actively engaged in continuous quality improvement in order to reduce inefficiencies while maximizing quality. • Services provided should meet residents' needs and improve outcomes while making the best use of resources. Only people who need long-term care should be living in long-term care homes; alternative modes of care should be considered for individuals who do not need the full range of long-term care services.	RAI-MDS Resource Utilization Groups • For different clinical categories including special rehabilitation, extensive care, special care, impaired cognition, behavioural problems, reduced physical function and clinically complex
System Characteristics and Inputs		
Leadership and Governance	This pertains to the degree to which the system is responsive to community needs, ensures care continuity and coordination, promotes health, is innovative and provides care to all citizens.	

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Table 9: Dimensions of the Long-Term Care Performance Framework (cont'd)

Long-term care dimension	Definition	Examples of indicators
Balance Between Long-Term Care and Societal Needs	This relates to the degree to which the system provides necessary long-term care for users or potential users and the extent to which other individuals in society (e.g., carers, families, taxpayers) provide these services.	
Support for Formal and Informal Caregivers	This includes providing training, allowing caregivers to combine care with labour market participation and helping them maintain their own well-being.	
Choice of Setting and Providers	This means ensuring that long-term care users have choices in the organization of long-term care so that it reflects their wants and needs.	
Integration/Coordination with Health Care and Social Services	This refers to ensuring high performance of the long-term care system through proper coordination within the long-term care system, as well as between the long-term system, and health care and social services.	
Simplicity of the System and Information	Long-term care users and potential users need to be able to find information and advice to help them navigate the care and support system. Information about supply and quality of care is important, particularly in a consumer-driven system. Information about funding and rights is also important.	

Sources

Canadian Institute for Health Information. *Home and Continuing Care RAI-HC Decision-Support Tools for Clinicians and Managers*. Ottawa, ON: CIHI; 2012.

Canadian Institute for Health Information. *Home and Continuing Care RAI-MDS 2.0 Decision-Support Tools for Clinicians and Managers*. Ottawa, ON: CIHI; 2012.

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Conclusions

In addition to CIHI's Health System Performance Measurement Framework, which supports health system performance improvement priorities, it is important to introduce tools that can relate system-wide priorities to distinct components of the health system.[3] This section has proposed a framework for assessing performance of long-term care that is aligned with the HSP Measurement Framework with the aim of clearly outlining the functional components of the long-term care system and placing them within the broader health care system.

The European ANCIEN model provided a useful foundation to develop the proposed framework for the long-term care framework. We were able to map the functional components and dimensions in the ANCIEN model to the health system outputs and performance goals in the health system framework. The resulting new long-term care framework can be used by policy-makers to better understand how the actions and indicators relating to long-term care can drive performance improvement, not only within this sector but also in the broader health system.

Next steps

Performance measurement can offer a powerful resource for identifying variations in strengths and weaknesses across the health system and for identifying potential for reform and improvement. Performance frameworks provide a foundation for these efforts by creating a clear, common understanding of the system's goals and boundaries, how the different components of the system fit together, and what needs to be measured.

Much work has gone into developing CIHI's HSP Measurement Framework to ensure that it represents the perspectives of stakeholders and reflects the dynamic relationships among the various dimensions of the system and the external forces or contexts at play. The next step is to build on this experience and create cascading frameworks for the various health care services that make up the system. Producing conceptual tools at a more refined level will allow service providers, managers and policy-makers concerned with a particular area of service delivery to better understand how performance in that sector or organization contributes to the performance of the larger health system.

This report has illustrated how some key principles can be applied when developing a health service framework that cascades from the system-wide tool. We have demonstrated different approaches to developing frameworks for the hospital and long-term care sectors, and we hope that leaders in primary care, mental health, rehabilitation and other sectors will find these examples useful and be encouraged to follow suit. Cascaded frameworks can support improvement activities at many levels — sector, services and organization — and will, ideally, give stakeholders a common language for a common purpose: improving our health systems.

Appendix A: Information requirements for stakeholders in health care systems

Stakeholder	Examples of needs	Data requirements
Government	• To monitor population health • To set health policy goals and priorities • To be assured that regulatory procedures are working properly • To be assured that government finances are used as intended • To ensure that appropriate information and research functions are undertaken • To monitor regulatory effectiveness and efficiency	• Information on performance at national and international levels • Information on access and equity of care • Information on service use and wait times • Population health data
Regulators	• To protect patient safety and welfare • To assure broader consumer protection • To ensure that the market is functioning efficiently	• Timely, reliable and continuous information on health system performance at aggregate and provider levels • Information on probity and efficiency of financial flows
Payers (taxpayers and members of insurance funds)	• To ensure that money is being spent effectively and in line with expectations	• Aggregate, comparative performance measures • Information on productivity and cost-effectiveness • Information on access and equity of care
Purchaser organizations	• To ensure that the contracted providers deliver appropriate and cost-effective health services	• Information on health needs and unmet needs • Information on patient experiences and patient satisfaction • Information on provider performance • Information on the cost-effectiveness of treatments • Information on health outcomes
Provider organizations	• To monitor and improve existing services • To assess local needs	• Aggregate clinical performance data • Information on patient experiences and patient satisfaction • Information on access and equity of care • Information on service use and wait times
Physicians	• To provide high-quality patient care • To maintain and improve knowledge and skills	• Information on individual clinical performance • State-of-the-art medical knowledge • Benchmarking performance information
Patients	• To have a choice of provider when in need • To have information on alternative treatments	• Information on available health care services • Information on treatment options • Information on health outcomes
Citizens	• To be assured that appropriate services will be available when needed • To hold government and other elected officials to account	• Broad trends in and comparisons of system performance at national and local levels across multiple domains of performance: access, effectiveness, safety and responsiveness

Source

Reprinted with permission from Smith PC, Mossialos E, Papanicolas I, Leatherman S. *Performance Measurement for Health System Improvement*. Cambridge, US: Cambridge University Press; 2010.

Appendix B: Key concepts and definitions from CIHI's Health System Performance Measurement Framework

Key concept	Definition
Health system outcomes	Health system outcomes correspond to the intrinsic goals of the health system. These outcomes are the improvement of the level and distribution of health in the population, the health system's responsiveness to the needs and demands of Canadians and value for money to ensure health system sustainability.
Health status	Health status of individuals and the population covers three components: health conditions, health function and well-being.
Health conditions	Health conditions reflect the health problems and alterations of an individual that may lead to distress, interference with daily activities or contact with health services. They may be a disease (acute or chronic), disorder, injury or trauma, or they may reflect other health-related states such as pregnancy, aging, stress, a congenital anomaly or a genetic predisposition that can lead to death.
Health function	Health function corresponds to the general health status and functions of the population and is associated with the consequences of diseases, disorders, injuries and other health conditions. Health functions include body functions/structures (impairments), activities (activity limitations), participation (restrictions in participation) and life expectancy.
Well-being	Well-being reflects the level of physical, mental and social well-being of individuals and of populations as it relates to material conditions, quality of life and sustainability of well-being over time.
Health system responsiveness	Health system responsiveness corresponds to the capacity of the health system to respond to the needs and expectations of the population. It also includes the element of trust in the health system, corresponding to the population's confidence in the health system: that the system will be there for them and will respond to their needs.
Equity (in health status and system responsiveness)	Equity (in health status and system responsiveness) is an overarching health system outcome that encompasses the equitable distribution of health status and system responsiveness across socio-economic groups — the equity of the health system. This implies that "everyone should have a fair opportunity to attain their full health potential and, more pragmatically, that no one should be disadvantaged from achieving this potential, if it can be avoided."[13]
Value for money	Value for money is related to the system outcomes of health status, system responsiveness and equity of the health system. It is a measure of the level of achievement of these three goals compared with the resources used.
Social determinants of health	Social determinants of health are represented in two levels: the structural and intermediary (biological, material, psychosocial and behavioural) factors that influence the health of a population and inequalities in health.
Structural factors influencing health	Structural factors influencing health are those that shape individuals' and families' socio-economic position, such as income and social status, education and literacy, and gender and ethnicity. Taken together, the structural factors can expose individuals to and make them more vulnerable to unhealthy conditions.

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Key concept	Definition
Biological, material, psychosocial and behavioural factors	Biological, material, psychosocial and behavioural factors are collectively referred to as "intermediary determinants of health." Biological factors include genes, aging processes and sex-linked biology. Material circumstances include characteristics of neighbourhoods, housing, working conditions and the physical environment. Psychosocial circumstances include stress, an individual's sense of control and social support networks. Behavioural factors include such things as smoking, physical exercise, diet and nutrition. There are interrelationships among these intermediary factors, as there are between intermediary and structural factors influencing health.
Health system outputs	Health system outputs are services delivered that result from activities undertaken by the organizations and individuals that are a part of the health system. The dimensions within the Health System Outputs quadrant describe the characteristics that contribute to the quality of the services. These characteristics apply to all services delivered by the health system, including public health and health promotion and disease prevention services delivered to populations, as well as services delivered to individuals (e.g., hospital, physician, mental health or long-term care health services).
Access to comprehensive, high-quality health services	Access to comprehensive, high-quality health services corresponds to the range of health services available, including public health, health promotion and disease prevention services, and the ability to meet the needs of the population or an individual without time delay, financial, organizational or geographical obstacles standing in the way of seeking or obtaining health services. The attributes of "high-quality" health services are defined by the other dimensions in this quadrant and encompass the definition of quality developed by the Institute of Medicine.
Person-centred	Person-centred health services are respectful of and responsive to the preferences, needs and values of individuals and ensure that their preferences guide all clinical decisions. This also refers to the integration of and connections across health system structures, functions, sectors and professionals that put the individual receiving services and his or her informal caregivers at the centre of delivery and that support continuity of care.
Safe	Safe health services are those that avoid injuries to individuals from the care that is intended to help them.
Appropriate and effective	Appropriate and effective health services are provided based on scientific knowledge about who could benefit from the service, reducing the incidence, duration, intensity and consequences of health problems. Services are appropriate and effective when they are provided to all who could benefit and when person-centred decisions are made to refrain from providing services to those not likely to benefit.
Efficiently delivered	Efficiently delivered health services avoid waste, including waste of equipment, supplies, ideas and energy. This corresponds to the technical efficiency of the health system and refers to maximizing outputs (services) for a given level and mix of inputs (resources), or minimizing the inputs used to deliver a given level and mix of outputs.
Equity (in health system outputs)	Equity (in health system outputs) refers to the capacity of the health system to deliver comprehensive, high-quality outputs (services) to individuals and populations in an equitable way, without the imposition of financial or other barriers to receiving care that is person-centred, safe, appropriate and effective, and efficiently delivered.
Health system inputs and characteristics	Health system inputs and characteristics refer to the relatively stable characteristics of the health system, including the governance and leadership capacities in the system, the resources available for use, the distribution and allocation of those resources, the capacity to adjust and adapt to meet population health needs, and the innovation and learning capacities of the system.
Leadership and governance	Leadership and governance involve ensuring that strategic policy frameworks exist and are combined with effective oversight, coalition-building, the provision of appropriate regulations and incentives, attention to system design and accountability.
Health system resources	Health system resources are the financial, human, physical, technical and information (including evidence and high-quality data) resources that are available to the health system.

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Key concept	Definition
Innovation	Innovation represents the implementation of an internally generated or borrowed idea — whether pertaining to a product, device, system, process, policy, program or service — that was new to the organization at the time of adoption.
Learning capacity	Learning capacity in the health system refers to the extent to which the system is "skilled at creating, acquiring, and transferring knowledge, and at modifying its behaviour to reflect knowledge and insights."[1 (p. vii)]
Efficient allocation of resources	Efficient allocation of resources measures how resources are combined to produce health services to meet the population-based demands and needs of a society.
Adjustment to population health needs	Adjustment to population health needs refers to the capacity of the health system to continually adapt itself to meet the health needs of the population through innovation and learning and also by adjusting the allocation of resources.

Source

Canadian Institute for Health Information, 2013.

Appendix C: Key concepts and definitions from the PATH framework

Dimension	Definition	Subdimensions
Clinical Effectiveness	Clinical effectiveness is a performance dimension, wherein a hospital, in line with the current state of knowledge, appropriately and competently delivers clinical care or services to, and achieves desired outcomes for, all patients likely to benefit most	Conformity to processes of care, outcomes of processes of care, appropriateness of care
Efficiency	Efficiency is a hospital's optimal use of inputs to yield maximal outputs, given its available resources	Appropriateness of services, inputs related to outputs of care, use of available technology for best possible care
Staff Orientation	Staff orientation is the degree to which hospital staff are appropriately qualified to deliver required patient care, have the opportunity for continued learning and training, work in positively enabling conditions and are satisfied with their work	Practice environment, perspectives and recognition of individual needs, health promotion activities and safety initiatives, behavioural responses and health status
Responsive Governance	Responsive governance is the degree to which a hospital is responsive to community needs, ensures care continuity and coordination, promotes health, is innovative and provides care to all citizens irrespective of racial, physical, cultural, social, demographic or economic characteristics	System/community integration, public health orientation
Safety	Safety is the dimension of performance, wherein a hospital has the appropriate structure and uses care delivery processes that measurably prevent or reduce harm or risk to patients, health care providers and the environment, and which also promote the notion	Patient safety, staff safety, environment safety
Patient-Centredness	Patient-centredness is a dimension of performance wherein a hospital places patients at the centre of care and service delivery by paying particular attention to patients' and their families' needs, expectations, autonomy, access to hospital support networks, communication, confidentiality, dignity, choice of provider and desire for prompt, timely care	Client orientation, respect for patients

Source

Reprinted with permission from Veillard J, Champagne F, Klazinga N, et al. A performance assessment framework for hospitals: the WHO Regional Office for Europe PATH project. *Int J for Quality in Health Care*. 2005;17(6):487-496.

Appendix D: Hospital Balanced Scorecard

Financial perspective **How do we look to funders?** How a hospital's strategy, implementation and execution contribute to the bottom line		**Customer perspective** **How do customers see us?** Primary hospital customers are patients and their families. Their concerns include time, process quality, service, outcome and cost.	
Goals	**Example measures**	**Goals**	**Example measures**
Survive	Operating margin	Patient satisfaction	Complaints Referrals Patient survey
Succeed	Average cost per weighted case	Community satisfaction	Community survey
Prosper	Foundation revenue		
Internal business perspective **What must we excel at?** The clinical and business processes that have the greatest impact on patient outcomes, health and satisfaction with care		**Innovation and learning perspective** **Can we continue to improve?** Assessing organizational capacity for improvement and change	
Goals	**Example measures**	**Goals**	**Example measures**
Technology capability	MRI referrals	Clinical learning	Adoption of new techniques
Quality of care	Hospital-acquired infections	Organization learning	Quality improvement projects
Patient outcomes	Patient reported outcomes	Employee satisfaction	Measure of engagement
Productivity	Nursing hours per weighted case	Physician satisfaction	Measure of engagement
Resource utilization	Average length of stay	Skill development	Budget support for training and development
Cycle time	Lab test turnaround time		
Population health	Key health status indicators		

Source

Adapted from Baker RG, Pink GH. A balanced scorecard for Canadian hospitals. *Health Manage Forum*. 1995;8(4):7-21.

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