AUDITOR GENERAL *Alberta*

Better Healthcare for Albertans

A Report by
The Office of the Auditor General of Alberta

May 2017

Mr. David Shepherd, MLA
Chair
Standing Committee on Legislative Offices

I am honoured to send my *Report of the Auditor General of Alberta—May 2017—Better Healthcare for Albertans* to Members of the Legislative Assembly of Alberta, as required by Section 20(1) of the *Auditor General Act*.

[Original Signed by Merwan N. Saher FCPA, FCA]
Auditor General

Edmonton, Alberta
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Overview of Alberta's health system — research material

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The research material presents information we have used in preparing this report. We believe there is value in providing the public this information. The purpose of this document is to relay basic facts about the healthcare system. The document also provides historical context that may be useful in understanding how the system has evolved.

1

Executive Summary

1.1 Introduction

Since the 1990s the Office of the Auditor General has conducted over 40 audits on aspects of the Alberta health system, such as seniors care, mental health and addictions, primary care and chronic disease management

Our findings covered many different subjects within healthcare. The Department of Health and Alberta Health Services have implemented many older recommendations and are working toward implementing newer ones.

However, we see an unfortunate pattern: weaknesses noted in our findings keep emerging, and re-emerging over time, because their root causes have not been resolved.

During our recent audits on primary care networks and chronic disease management, we noted common underlying causes behind many of our findings in those and in earlier reports.

The causes are:

- the fragmented structure of the health system
- the lack of integration of physician services and the services of other care providers
- the lack of sharing and use of clinical information

These pervasive barriers to change affect the entire health system. The result is that Albertans are not receiving the quality of care they could receive.

The good care that Albertans receive is too often because of the personal commitment and initiative of physicians, nurses and other frontline care providers. These frontline caregivers often work around the negative incentives and gaps in the health system. Alberta has some of the best healthcare professionals in the world. They could receive better support. They could be freed to deliver care without having to overcome obstacles.

Alberta Health Services has also undertaken significant initiatives to improve quality of care. The creation of strategic clinical networks has brought AHS and non-AHS care providers together to identify evidence-based best clinical practices and to design care pathways. The physician learning program works with interested physicians to analyze their practices and improve data quality. AHS and the Alberta Medical Association administer an access improvement measures program to improve work flows and team-based care, and to reduce delays for patients before and during visits. The Health Quality Council of Alberta reviews key aspects of health system performance, and works with several primary care networks to share data for planning and evaluation purposes.

These and other improvements have resulted in measurable quality gains in areas such as hip and knee surgery, heart and stroke care, and use of antipsychotics in seniors.

But they have not fundamentally changed how care is organized, overseen and funded.

Significantly better healthcare is within reach.

Achieving the highest quality healthcare available depends on moving purposefully toward what is known as integrated care. An integrated care system provides a continuum of preventive and curative services, according to patient needs over time and across different levels of the health system. This integration is accomplished by ensuring that funding methods, service delivery processes and provider accountabilities are aligned with care needs of the patient over time.

Experience in other jurisdictions has shown that integrated care establishes the path toward highest quality care. We review others' experience in this report.

This is not an audit. Rather, it is an analysis of what has frustrated a comprehensive shift toward best-quality care, and what can be done to overcome the challenges standing in the way.

In this report, we present information from successes elsewhere to show legislators and the public why integrated care is important.

We also identify opportunities for bringing about meaningful change.

Those who govern, operate and use the health system can pursue these opportunities —and will have to pursue them if effective movement toward integrated care in Alberta is to become a reality.

1.2 Redesign approved, not implemented

The goal is not new. Integrated care has been Alberta government policy since the 1990s. The health system has been moving in that direction and has taken further steps in recent months.

However, this office has observed that progress has been fitful. We have also noted that many of our earlier reports did not lead to effective action. The weaknesses behind some of these earlier findings (see Appendix A) have not been repaired.

After 27 years of health-related audits, we have concluded that it is necessary to examine why change has been slow and in some cases non-existent. This report is the result of our work.

Alberta health executives and frontline care providers have started several nationally significant initiatives. These include quality improvement initiatives in several clinical areas.

Our past audits have found many good practices and successful pilot projects. But we have not found processes to scale up successful initiatives and deploy them across the entire province.

We see opportunities to take the entire health system to a higher level—to make a quantum leap rather than continuing to make incremental change, reorganize, or move in circles.

Our province has untapped potential to improve individuals' health and to lead the country in delivery of care. Most of the building blocks exist; they have yet to be put together.

The government, health system managers, physicians and the public can deliver a new, integrated model of healthcare by making its construction a priority.

Our province has untapped potential to improve individuals' health and to lead the country in delivery of care. Most of the building blocks exist; they have yet to be put together.

Spending is not the solution. Albertans already pay for the most expensive health system of any province in Canada (2015 statistics, measured on a per capita basis and adjusted for age and gender). Yet they receive results that lag the results being achieved by the best-performing health systems in other jurisdictions.

Albertans are paying for the best. Why would they not demand the best?

1.3 A proven model

A proven way to achieve the highest-quality healthcare is to integrate delivery of health services.

Integrated care means a system centred on patients, not on administrative needs or traditional ways of doing things.

Patients would find that an integrated care system has essential features that our current health system does not.

In an integrated model, teams of providers in primary care, acute care and continuing care work on a single plan for each patient, designed to meet that patient's care goals. Each patient's health information flows to all of that person's care providers. Decision support tools bring the latest medical knowledge to bear wherever the patient receives care. Care is delivered in the most appropriate location, in a community setting rather than in a hospital whenever possible. Patients are engaged in their own care, receiving information and taking part in decisions. Constant measurement and benchmarking of care quality and patient outcomes keeps care at a high level.

Integrated care means a system centred on patients, not on administrative needs or traditional ways of doing things.

In meaningful ways, integrated care is synonymous with quality. Every step taken in care delivery emphasizes quality, and continued refinement of quality. Constant attention to quality requires everyone in the system to embrace constant measurement of the results their work achieves.

Our message to Albertans is simple: in our current health system, you are on your own when it comes to navigating the health system. No one has taken responsibility for helping individuals find the best paths through the care system. Care may continue to be organized around isolated treatment episodes, with no one responsible for managing overall quality and cost.

Integrated care and its benefits are not untried theory. We have consulted physicians and international health experts. We have studied other jurisdictions and seen the demonstrated results. A common theme among successful systems is not just the individual advances they made, but the frameworks that drove them. In every successful system, all the parts work together. Quality of care is paramount. By adopting a framework for integration, these organizations have spurred advances in every aspect of healthcare delivery.

Integration is effective and achievable. It is the framework used by the highest-performing health systems in the world. It avoids fragmented care based on isolated treatment episodes. It builds continuous quality improvement into all functions. It is the way to achieve the highest quality results available.

Higher quality also tends to generate lower costs by preventing or quickly identifying avoidable health complications and reducing waste.

We do not have fully integrated care in Alberta, but we can. The government and most participants in the health system have said they want to adopt it. This report explains what we see as the most important changes needed to break a logjam stopping movement toward this shared goal.

1.4 Three necessary elements

Effective change is possible. Three elements must be incorporated into the framework of the health system if Alberta is to achieve integrated care.

1.4.1 Structure

The structure of the health system is crucial. We are not talking about the internal organization of Alberta Health Services, or about what the "right" number of health authorities may be. By system structure, we mean the relationship between the Department of Health, AHS and the medical profession. We include internal frameworks for funding, responsibility for different patient populations, and accountability for results.

The formation of AHS offered important opportunities to integrate care. These opportunities have not been fully maximized.

The best structures we have seen emphasize accountability. And they link funding to results.

Alberta's health budget is only tenuously linked to health outcomes.

In an improved structure, evidence-based care would become central to decision making. Funding would be linked strongly to results. Accountability for results would become part of normal, accepted process. MLAs and cabinet ministers would respect operational boundaries and not make specific demands of the health system, often intervening in matters that are the responsibility of healthcare managers.

Why are these changes needed? Our findings in past reports revealed symptoms of what we now identify as an underlying problem—weaknesses in system structure. There is a lack of clear roles and responsibilities for major entities in the health system. There is a poor link between funding and results. It is not clear who is responsible for the overall cost and quality of care that individuals receive over time. Clear expectations, measures and targets for quality of care were lacking in the past and are still not in place.

Our findings in past audits outlined several areas for improvement. Among them: primary care networks did not have defined service delivery expectations or performance measures or targets for program objectives; Albertans were not informed about services that primary care networks offer; despite efforts to improve, weaknesses persisted in AHS systems for monitoring and managing performance of seniors' care facilities; the Department of Health and AHS did not have a process to identify individuals with chronic disease within physician practices or to determine the demand for chronic disease management across the province as a whole; the department had a five-year action plan on mental health but was not following it; hospital emergency departments did not have access to the community mental health information systems. These findings are only a sample from among many.

We have also considered the role of patients and their families. Leading organizations around the world recognize that engaging and empowering patients to take an active and responsible role in their own care is essential to sustainable healthcare systems. Informed patients are in the best position to set their healthcare goals and help achieve them day by day. To participate, patients need tools to access their healthcare information, learn about treatment options and communicate effectively with their care team.

1.4.2 Integration of physicians

Financial incentives for physicians would encourage more attention to health results in a redesigned system.

Physician payment models would promote and encourage accountability; they currently do not.

Payment models would also encourage closer integration of physician services with those of other healthcare providers. Modern medicine is moving toward team-based care and coordination across specialties and care settings.

Physicians as a group would take part in assessments of the effectiveness of their care. This monitoring would take place in a context of continuous improvement. Expectations for quality and monitoring would be set by physicians themselves, not by administrators or government officials.

Changing the pay model does not require having the money come from a different source. It does mean finding ways to pay based on results rather than on the volume of services performed.

Once again, our findings in past reports repeatedly showed weaknesses that, years later, have not been mitigated.

Every leading healthcare system we examined encourages physicians to provide care to a defined population of patients at reasonable cost, and holds physicians accountable for how they manage the health of that population. These systems give physicians the professional autonomy to make appropriate medical decisions, while requiring them to exercise self-regulation and to provide assurance that care quality is being maintained.

We found in past audits that the department does not set clear expectations for the money it spends on physician services. We found a lack of coordination between Alberta Health Services and physicians in frontline care. And we found that the fee-for-service payment model provides incentives for higher volumes of service rather than for higher quality and better care outcomes.

1.4.3 Clinical information systems

The third strategic opportunity is fuller development of clinical information systems. Ensuring that the right information is provided to the right people, in the right place and at the right time is crucial to integrating healthcare services.

Alberta Health Services has done a good job of managing administrative information. Improving the use of health information has proceeded more slowly.

The build-up of electronic health records in Alberta has been going on for several years and has absorbed hundreds of millions of dollars. The province recently committed hundreds of millions more to a new plan for clinical information management.

Sharing of patient records with all relevant staff, and with the patients themselves, is necessary for everyone to play an effective role in care.

Full and rapid access to information acts as a crucial tool for physicians and other professionals at the point of care. It helps providers make better treatment decisions through electronic support tools that provide recommendations for treatment and warnings about potential harm. And it helps managers know what programs and treatment approaches work best.

We have heard differing views on whether it is better to build one large information system or a set of interconnected systems. The choice of structure is less important than the decision of what to include.

An overarching principle in high functioning health systems is simple and quick accessibility to information. That means information generated at all levels is seamlessly available for use at all levels—patients, physicians, care teams, care programs and executive management.

Successful information systems are built on overall designs whose scope is determined in advance, with significant input from frontline providers and patients. These systems are viewed as key components of an overall healthcare system, not as IT projects. And they have a significant effect only when developed within an overall framework of integrated care; they cannot by themselves create a system of integrated care.

Our review of other jurisdictions suggests that an information system that includes family physicians and primary care data provides the best support for care. It will be important to ensure that primary care data and a flow of information to and from family physicians are part of the plans for electronic health information in Alberta.

Alberta has a chance to build what has been shown to work best. Our province is well positioned to lead the country. More key elements of a full information system are in place here than in any other province.

Why are changes needed? Information systems in Alberta are currently designed to serve administrative purposes more than healthcare purposes. Our past audits have found a lack of clear accountability for information technology; a lack of data on quality and cost of care; a lack of data on community services; and fragmentation of data geographically across the province and functionally between hospitals, community settings, physicians, AHS and the health department.

1.5 Who can act

Creating the highest-quality healthcare is a matter of looking at facts and accepting responsibility to deal with them.

Health is a complex field with many variables. Income, education, housing and other social factors all affect individuals' health. So do environmental factors such as air and water quality.

We have focused on the province's $21-billion-a-year public healthcare system because it falls within the mandate of our office and because the health ministry has direct control over it.

The government, legislators, healthcare providers and the general public can all contribute to realizing the vision. Real change would see them all taking specific action.

1.5.1 The government

The government would lead by talking with Albertans about what is possible, as well as determining what services individuals need. The government would make integrating care a priority and provide leadership in making integration happen. It would make difficult decisions on the funding and structure of the healthcare system.

1.5.2 Members of the legislature

Members of the legislature would refrain from the perspectives of short-term politics. Health services have often been influenced by isolated controversies, election cycles, and lobbying for local interests.

Any action should be taken quickly if it is to be effective.

1.5.3 Healthcare providers

Healthcare providers would consciously support the implementation of integrated care. Physicians in particular would embrace the notion that the quality of their care would be constantly measured and benchmarked. They would embrace new payment models that better link the funding they receive with the results they achieve. Alberta Health Services would integrate its services and align its data and funding flows with the care needs of patients. All parties would accept the need to trust each other's intentions, and work to build mutual trust.

1.5.4 Individual Albertans

Albertans would focus on quality as the main element of good care, and would expect their care providers to measure and report their results. Albertans would also accept the need for open debate on their responsibilities and rights in our public healthcare system. Healthcare integration cannot move forward without agreement on the role and responsibilities of its most important participant—the patient.

All involved parties can build a new future by acting together. No one part of the system can effect change on its own.

The challenge is for the government to accept responsibility for leadership, and for all participants in the health system, including individuals who receive healthcare, to accept responsibility to act.

1.6 The way forward

Integrated care and its benefits are known. It has been a stated goal in Alberta but not an object of shared action. Care that is falling below levels achieved elsewhere makes a pressing case for redesign of the health system. Ever-increasing costs add force to that case.

Any action should be taken quickly if it is to be effective.

We think that progress toward integrated care in Alberta depends on achieving a consensus, and on a willingness to move decisively and quickly. Doing so could make Alberta's health system a model for Canada.

The challenge is for the government to accept responsibility for leadership, and for all participants in the health system, including individuals who receive healthcare, to accept responsibility to act.

2

The case for integrated healthcare

"An overall working definition of integrated service delivery: 'The management and delivery of health services so that clients receive a continuum of preventive and curative services, according to their needs over time and across different levels of the health system.'"

World Health Organization

Integration of healthcare service delivery is the key to achieving economy, efficiency, high quality care, better results for patients, and long-term sustainability. As stated in the Ministry of Health's clinical information system business case: "Albertans are not getting the best value for their healthcare dollar. While the province invests more per person than many other jurisdictions in Canada and around the world, Albertans do not have better health outcomes or quality of care. Much of the inefficiency relates to the lack of service integration and information flow as people move through the system. This leads to duplication of work, errors, fragmented care and frustration for patients and providers."[1]

Integration has been a policy direction in Alberta since the 1990s.

Healthcare integration is not a theoretical construct—it is the direction in which the highest performing healthcare systems around the world, both private and public, are already moving. The benefits of integrated healthcare are not a matter of speculation or of untested theory (see Appendix B).

Experience in other jurisdictions shows that healthcare system integration cannot be achieved with a stroke of a pen. It will require hard work, strong leadership, long-term vision, stable direction, determination to make difficult decisions and unwavering support for key transformational initiatives.

It is the government's decision as to how to proceed. However, we want to leave no doubt in the minds of Albertans that integration of care delivery is not only necessary, but is entirely feasible in Alberta.

2.1 Key characteristics of a high performing integrated healthcare system

An integrated system brings together service providers, patients, clinical information and healthcare facilities across the continuum of care. An integrated healthcare system:

- is structured around the care needs of the patient
- provides coordinated team-based care across the entire continuum of services
- identifies the most effective and efficient treatments and clinical practices and brings them to the point of care, while eliminating practices that are harmful or waste healthcare resources
- combines each patient's clinical data into a unified healthcare record that is available to all of the patient's healthcare providers at the point of care
- provides patients with access to their own health data and engages them in decisions about their care and lifestyle
- aligns incentives of healthcare providers with the care needs of patients and the goals of the public healthcare system

1 "A Catalyst for Transformation – CIS Business Case," Alberta Health, July 2014.

- charts the best care path for patients and helps them to navigate the system and stay on the path
- takes responsibility for managing the health of individuals, and focuses on prevention of disease and proactive treatment of existing health conditionsmeasures the care quality and results of programs and service providers, and uses this information to inform patients and providers and to continuously improve performance

Integration occurs at multiple levels, including integration of:

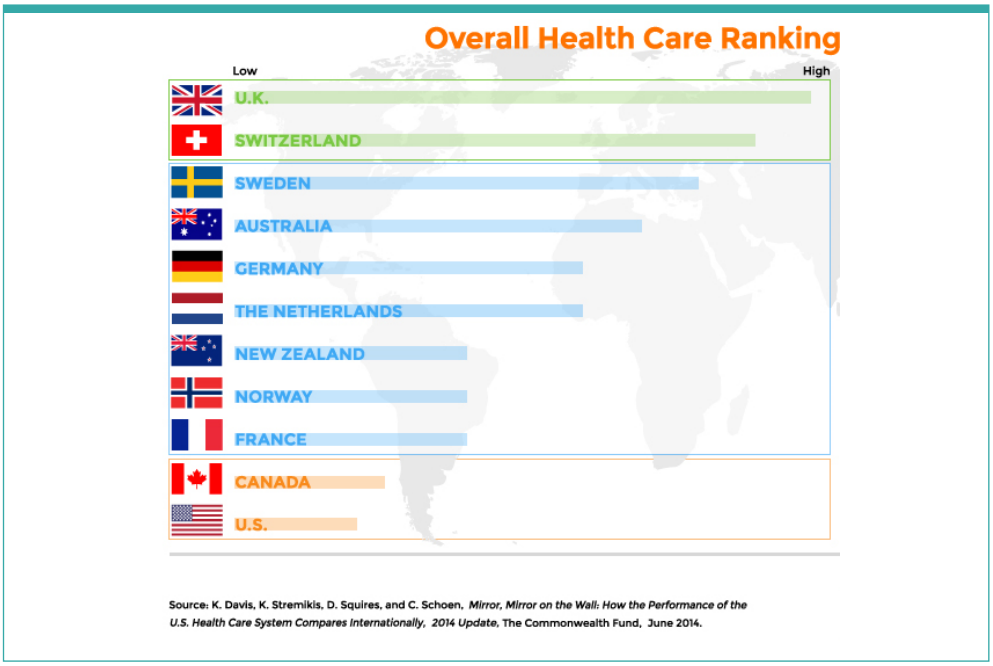
- primary care with acute care and continuing care
- physicians, nurses, pharmacists and other providers into interdisciplinary teams across primary care, acute care and continuing care
- program budgets and reporting of results with patients' care needs
- clinical programs across facilities, zones and the province to improve service quality and efficiency
- patients as active members of their care teams to achieve patient-centred care
- clinical and financial information systems throughout the care continuum and across the province

2.2 Why is change needed?

The findings presented in this section and the remainder of the report speak not to lack of professionalism and commitment from healthcare providers, but to the deep-seated structural challenges of our public healthcare system. The fact that the care needs of Albertans are met is a testament to the dedication of healthcare workers who succeed despite the obstacles posed by the fragmented model of care delivery.

Alberta has some of the best healthcare professionals in the world. However, the strength of a healthcare system does not lie solely in the competence of its healthcare providers—it depends on their ability to work together to manage results and cost of care for their patients. Key to improving quality and managing cost is the ability of a healthcare system to integrate the services of various providers into a seamless continuum of care.

Throughout our audits in the last decade, we repeatedly heard that healthcare in Alberta and Canada is among the best in the world. International healthcare quality comparisons tell a different story, as the following figure shows[2] (for additional information, see the reference material published with this report).



Source: K. Davis, K. Stremikis, D. Squires, and C. Schoen, *Mirror, Mirror on the Wall: How the Performance of the U.S. Health Care System Compares Internationally, 2014 Update*, The Commonwealth Fund, June 2014.

COUNTRY RANKINGS

Top 2*
Middle
Bottom 2*

	AUS	CAN	FRA	GER	NETH	NZ	NOR	SWE	SWIZ	UK	US
OVERALL RANKING (2013)	4	10	9	5	5	7	7	3	2	1	11
Quality Care	2	9	8	7	5	4	11	10	3	1	5
Effective Care	4	7	9	6	5	2	11	10	8	1	3
Safe Care	3	10	2	6	7	9	11	5	4	1	7
Coordinated Care	4	8	9	10	5	2	7	11	3	1	6
Patient-Centered Care	5	8	10	7	3	6	11	9	2	1	4
Access	8	9	11	2	4	7	6	4	2	1	9
Cost-Related Problem	9	5	10	4	8	6	3	1	7	1	11
Timeliness of Care	6	11	10	4	2	7	8	9	1	3	5
Efficiency	4	10	8	9	7	3	4	2	6	1	11
Equity	5	9	7	4	8	10	6	1	2	2	11
Healthy Lives	4	8	1	7	5	9	6	2	3	10	11
Health Expenditures/Capita, 2011**	$3,800	$4,522	$4,118	$4,495	$5,099	$3,182	$5,669	$3,925	$5,643	$3,405	$8,508

Notes: * Includes ties. ** Expenditures shown in $US PPP (purchasing power parity); Australian $ data are from 2010.
Source: Calculated by The Commonwealth Fund based on 2011 International Health Policy Survey of Sicker Adults; 2012 International Health Policy Survey of Primary Care Physicians; 2013 International Health Policy Survey; Commonwealth Fund *National Scorecard 2011*; World Health Organization; and Organization for Economic Cooperation and Development, *OECD Health Data, 2013* (Paris: OECD, Nov. 2013).

2 Mirror, Mirror on the Wall, 2014 Update: How the U.S. Healthcare System Compares Internationally, http://www.commonwealthfund.org/publications/fund-reports/2014/jun/mirror-mirror.

Alberta's health indicators are close to those in the rest of Canada—slightly below average in some areas and slightly above in others. However, they still do not compare favourably with those in other countries.

Healthcare in Alberta and the rest of Canada is not getting worse—other countries are improving much faster and with less money. They are improving by integrating their healthcare delivery (see Appendix B).

Challenges with ensuring quality of care are present throughout many elements of the healthcare system. These challenges are often related to an inefficient use of resources. For example, Choosing Wisely Canada, a quality improvement initiative led by physicians,[3] reports that:

- about half of all prescriptions for antibiotics are unnecessary in Canada, and there is major variation in antibiotic use in nursing homes
- 70 per cent of medical diagnoses can be determined from symptoms and medical history alone (one of the reasons why a single health record is so important)
- 30 per cent of CT scans report only incidental findings (unrelated to the condition and often benign); further:
  - one CT scan has as much radiation as 200 chest X-rays
  - children who had a CT scan before the age of five have a 35 per cent higher cancer risk
- guidelines recommend limiting medical tests before low-risk surgeries, yet they are still frequently performed
- about 25 per cent of Canadians say a doctor has recommended a test or treatment they considered unnecessary: 25 per cent went ahead with it anyway, 31 per cent ignored it and only 44 per cent asked their doctor why she or he thought it was necessary
- 68 per cent of Canadian family physicians agree that more tools are needed to help them make decisions about which services are inappropriate for their patients

Ineffective or inappropriate use of available tools not only harms the patient—it wastes resources. The World Health Organization estimates that waste due to avoidable health complications, treatment errors and unnecessary care constitutes about 20 to 40 per cent of all health expenditures.[4] Estimates from the United States are similar at 35 per cent.[5] As stated in AHS's business case for a central information system, "There is increasing evidence that Alberta has reached the limit of what can be achieved given the current design of its health system. Should this be the case, sustainability will remain a challenge until a decision is made to transform care delivery processes. In the meantime, funding requirements will continue to grow with little demonstrable value."

"Gentlemen, we have run out of money; now we have to think."
Winston Churchill

3 Choosing Wisely Canada is a physician-led national healthcare quality improvement initiative: http://www.choosingwiselycanada.org/.
4 World Health Organization, http://apps.who.int/iris/bitstream/10665/44371/1/9789241564021_eng.pdf.
5 Institute of Medicine, The Healthcare Imperative: Lowering Costs and Improving Outcomes, Washington, D.C.: National Academic Press, 2010.

Alberta's healthcare system consumes more than the province's personal and corporate income tax and renewable and non-renewable resource revenue combined.[6]

Contrary to views we have heard in recent years, the aging of the baby boomer generation will likely not be a key threat to the sustainability of public healthcare in Canada. The real challenge will be the rising burden of chronic diseases among younger Albertans (see the reference material published with this report).

Regardless of what the future holds or how much funding we can afford, it is clear that scarce healthcare resources cannot continue to be consumed in ways that do not add maximum value for every dollar invested.

2.3 Healthcare integration in Alberta

Alberta does not have a fully integrated public healthcare system. Consecutive provincial governments have repeatedly endorsed the concept of a patient-centred healthcare system in Alberta.

Efforts have been made to integrate various elements of healthcare delivery over the last two decades. Numerous initiatives have been launched, some placing Alberta ahead of other provinces on the path to integration.

- The formation of AHS in 2008 was a step forward and presented Alberta with significant opportunities to integrate public healthcare delivery. AHS has integrated administrative support functions such as human resources, payroll, procurement, etc. This work has produced real results: Alberta's annual per capita healthcare administration spending of $33 is the lowest in Canada and about 25 per cent below the national average.[7]
- Since its formation, AHS has developed a provincial quality management framework and has significantly increased deployment of quality improvement initiatives. For example, the formation of Strategic Clinical Networks was a crucial improvement. Measureable quality gains can already be seen in such areas as hip and knee surgery, heart and stroke, and use of antipsychotics in seniors.
- Formation of primary care networks was an important step toward better integration of primary care with the rest of the healthcare system.
- The deployment of Netcare[8]—a provincial electronic depository of lab and diagnostic imaging results, hospital discharge summaries and other information—in 2006 was and remains one of the significant achievements in Canadian healthcare.
- In 2001 the province started funding physicians to adopt an electronic medical record system (most still relied on paper records at the time). Today, Alberta is the national leader in EMR adoption among physicians.

6 Government of Alberta 2015–2016 budget, http://finance.alberta.ca/publications/budget/budget2016/fiscal-plan-complete.pdf.
7 See http://www.health.alberta.ca/health-info/health-economics-dashboard3.html.
8 See http://www.albertanetcare.ca/History.htm.

Below is only a partial list of key initiatives, entities and programs aimed at improving quality of healthcare delivery:

- **Strategic Clinical Networks**—The concept of the Strategic Clinical Networks is to bring AHS and non-AHS providers together to identify evidence-based best clinical practices and design care pathways. The SCNs comprise healthcare professionals, researchers and academic partners, patients and their families, community groups and government. According to AHS's website, there are currently 12 SCNs, each pursuing identification and promotion of good practices in its respective healthcare area.
- **Physician Learning Program**—Funded by the department under the AMA Agreement and administered by the AMA in collaboration with the Universities of Calgary and Alberta. The program works with interested physicians on an individual or group basis, analyzing information from provincial healthcare datasets and the physicians' own records to help assess the physicians' practice compared to accepted clinical practice guidelines, improve data quality, identify trends in care over time, and identify opportunities for continuing professional development.
- **Towards Optimized Practice**—This program is also funded by the department under the AMA Agreement and administered by the AMA. It currently has two main program areas:
  - Clinical Practice Guidelines—This program creates or endorses guidelines for treatment in major medical conditions (e.g., cancer, cardiovascular events, endocrinology)
  - Alberta Screening and Prevention initiative—This initiative supports physicians and care teams in offering a bundle of screening and prevention services to patients (e.g., blood pressure, flu vaccine, diabetes and colorectal screening).
- **Access Improvement Measures Program**—This is a widely recognized program developed in Alberta. The program is administered jointly by AHS and the Alberta Medical Association. It has been highly successful in helping family physicians and AHS chronic disease management programs measure demand, improve workflows and team-based care, reduce delays for patients before and during visits, and increase satisfaction for patients and providers.
- **AHS's Patient First Strategy—Reflects a patient- and family-centred care philosophy**. AHS states the strategy will enable it to advance healthcare in Alberta by empowering and enabling Albertans to be at the centre of their healthcare team, improving their own health and wellness. Key themes are to promote respect, enhance communication (between providers and between providers and patients), support a team-based approach to care and improve transitions in care.
- **CoACT**—This is an innovative model of care in which care provider teams collaborate more closely with patients. This provincial program designs tools and processes for collaborative care.
- **Health Quality Council of Alberta**—The HQCA reviews key aspects of healthcare system performance, recommends improvements, and works with several primary care networks to share healthcare data from the department and AHS for planning and evaluation.

As discussed elsewhere in this report, many of these efforts achieve measurable gains. Yet many fall short of their ultimate goal while others get stuck in the pilot phase. The overarching challenge with most quality improvement initiatives in Alberta is that they are add-ons—extra components added on to a healthcare system that is fragmented.

In summary, there is no shortage of innovative ideas or hard-working people committed to improving Alberta's public healthcare system. Our audit reports consistently highlight good practices that are often driven by the initiative of individual care providers and managers. We have focused on three fundamental challenges that hold Alberta's healthcare system back from achieving its full potential.

2.4 Key challenges to healthcare integration in Alberta

We identified the following underlying challenges to healthcare integration in Alberta:

- the fragmented structure of the public healthcare system
- the lack of integration of physician services and of services of other care providers
- the lack of sharing and use of clinical information

Our analysis was based on our audit findings in healthcare over the past 27 years (see Appendix A), our review of the current state of healthcare in Alberta (summarized in the reference material published with this report) and our review of integration experience in other jurisdictions (summarized in Appendix B).

3

Current structure of public healthcare in Alberta

Alberta's public healthcare does not operate as one system. It is like an orchestra without a conductor—a collection of independently acting healthcare providers and professional groups that offer treatment through a series of isolated treatment episodes, each within its own scope of practice.

The structure reflects the legacy of the past century, a model organized around episodic, hospital-based care, not centred around preventive care in the community. Physicians work independently with little connection to other healthcare providers. No part of the system is clearly responsible for coordinating the care of individual Albertans as they move from one provider to another.

The healthcare system is not designed to manage the cost of care for individual Albertans over time. The system has evolved around accountabilities for isolated program budgets. No part of the system is clearly accountable for overall care outcomes for individuals or groups of patients. The healthcare system has not evolved to help providers form life-long relationships with patients.

"A goal without a plan is just a wish."

Attributed to Antoine de Saint-Exupery

While most providers would argue strongly that they are accountable for the care they provide, it is as if their accountability stops when the patient walks out the door. Consequently, there is a lack of accountability to Albertans, who fund the system, for the combined results of healthcare delivery.

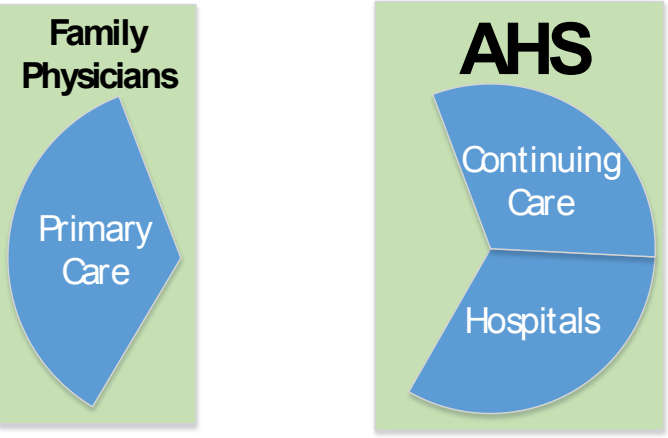
The objective of building a patient-centred system features prominently in provincial health strategies. But progress toward the goal of integrated care has been elusive. In reality, healthcare delivery in Alberta has been shaped over the last several decades by the funding needs and negotiating efforts of healthcare providers, the administrative needs of the health bureaucracy, and frequently shifting priorities of the four-year political cycle.

3.1 Incentives to focus on patients' needs and care quality

At its core, public healthcare in Alberta is split into two disconnected budgets:

- the $4.6 billion physician budget administered by the Department of Health[9]
- the $14.3 billion budget of AHS (hospitals, nursing homes, home care and community programs)[10]

The physician budget and the AHS budget are not linked and are not designed to manage their combined impact on the quality and overall cost of care. Even physicians who work at AHS's hospitals, continuing care programs and community programs are not linked to AHS by mutual quality and cost management incentives.



Primary care (provided mainly by family physicians) is a gateway into the healthcare system, but it is disconnected from the rest of that system. At the patient care level, linkages between individual family physicians and AHS programs can be improved, and in many areas do not exist (e.g., lack of clinical data sharing, lack of coordinated care planning). This disconnect is a fundamental obstacle to integrating public healthcare in Alberta. Meaningful improvement in quality and cost in hospitals and in continuing care would be difficult without integrating primary care with the rest of the healthcare system. The formation of primary care networks in 2007 and a recent agreement reached by the government and the medical profession in the fall of 2016 have placed Alberta on the right path, but they alone do not achieve what is needed to make AHS and physician budgets mutually dependent on meeting healthcare needs of their patients.

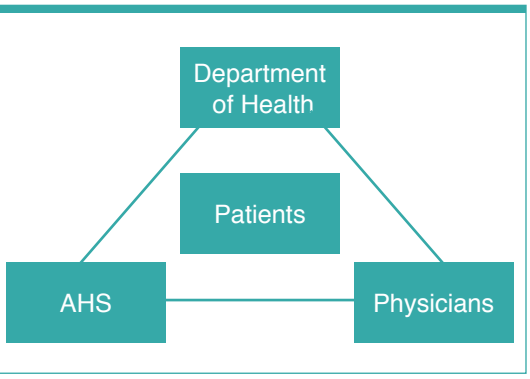
There is also fragmentation in other parts of the system, including AHS. Aside from its successes in integrating administrative functions, AHS faces challenges in integrating its own clinical processes and frontline care. Progress has been slow, despite significant effort from AHS management.

9 http://www.health.alberta.ca/documents/Funding-Health-2016-17-Q2-Allocation.pdf. AHS has a direct employment or contractual relationship with a relatively small number of physicians (amounting to about $360 million annually).
10 http://www.health.alberta.ca/about/health-funding.html. The total provincial healthcare budget is $21 billion.

3.2 Leadership

When everyone is responsible, nobody is accountable.

Progress toward integration has been hampered by fragmented oversight, overlap of responsibilities and diffused accountability for results between the Department of Health, Alberta Health Services, physicians, and other care providers—with patients caught in the middle. Each party cites reasonable limitations to its ability to act and points to the others for the lack of progress. Albertans (the only reason this $21 billion system exists) have largely not been engaged in the delivery of their healthcare services.



Over the last two decades, the public healthcare system has launched multiple transformational initiatives and produced constant reshuffling of portfolios within the health bureaucracy. However, without anyone clearly assuming responsibility for changing the system, the department, AHS and the medical profession have not achieved a fundamental shift toward a patient-centred, community-based model of healthcare delivery.

3.2.1 A cascade of health strategies

Historically, efforts to integrate public healthcare delivery have been limited to piecemeal aspirational strategies that created a temporary perception of progress, without meaningful follow-through and change at the front line.

Strategy	Year	Detailed action plan?	Progress reported?	Status
Advancing the Mental Health Agenda: A Provincial Mental Health Plan for Alberta[11]	2004	✗	✗	Replaced before implemented[12]
Alberta Infection Prevention and Control 10-Year Strategy[13]	2008	✗[14]	✗[15]	Replaced before implemented[16]
Becoming the Best: Alberta's 5-Year Health Action Plan 2010–2015[17]	2010	✗	✓[18]	Not followed through
Alberta's 5-year Health System IT Plan 2011–2016[19]	2011	✗	✗	Not followed through
Creating Connections: Alberta's Addiction and Mental Health Strategy[20]	2011	✓[21]	✗[22]	Active
140 Family Care Clinics	2012	✗	✗	Discontinued
Alberta's Primary Health Care Strategy[23]	2014	✗	✗	Active

11 Advancing the Mental Health Agenda: A Provincial Mental Health Plan for Alberta—April 2004, http://www.assembly.ab.ca/lao/library/egovdocs/2004/alhw/149611.pdf.

12 Replaced by the 2011 Creating Connections: Alberta's Addiction and Mental Health Strategy.

13 This document is no longer available on the government website. See instead the Alberta Legislature Library: http://www.assembly.ab.ca/lao/library/egovdocs/2008/alhw/166203.pdf.

14 During our 2013 IPC audit the department provided us with a strategy implementation plan dated 2011. This was described to us as a rolling 3-year (2011–2013) implementation plan—the first for the 2008 IPC strategy. The plan discusses general activities but does not outline who will do what, by when and with what resources.

15 In 2012 the department engaged a consultant to conduct an implementation evaluation five years after this 10-year strategy was introduced. In our 2013 IPC audit report we concluded that this evaluation did not "constitute an adequate system to monitor and report progress on strategy implementation."

16 Replaced by the 2015 Alberta Infection and Prevention Strategy Update, http://www.health.alberta.ca/documents/IPC-Alberta-Strategy-2015.pdf.

17 Becoming the Best: Alberta's 5-year Health Action Plan—http://www.health.alberta.ca/documents/Becoming-the-Best-2010.pdf.

18 The Department of Health has provided two brief high level updates (the last one in early 2013). In our view, these updates do not provide a comprehensive assessment of implementation progress and do not reflect the significant transformation envisioned under the Strategy. See http://www.health.alberta.ca/initiatives/5-year-plan-progress.html.

19 We are no longer able to find a public link to this document on the government's websites.

20 Creating Connections: Alberta's Addiction and Mental Health Strategy—September 2011, http://www.health.alberta.ca/documents/Creating-Connections-2011-Strategy.pdf.

21 As we reported in our July 2015 report, an implementation plan has been prepared but has not been followed.

22 On page 65 of *Report of the Auditor General of Alberta—July 2015* we noted: "In April 2015, the department released its only interim report on implementing the 2011 strategy. We do not view this document as an example of adequate assessment and reporting of implementation progress. It offers no detail on what was completed and what measurable impact it had at the front line, what remains to be done, by whom and by when."

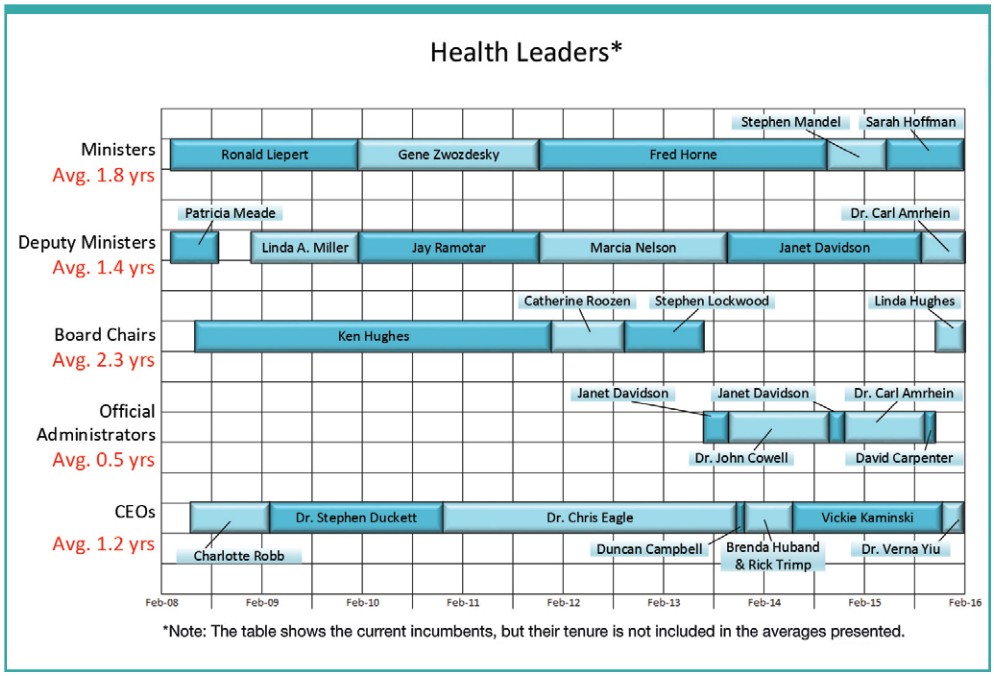
23 Alberta's Primary Health Care Strategy—January 2014, http://www.health.alberta.ca/documents/Primary-Health-Care-Strategy-2014.pdf.

Strategy execution has failed because:

- the strategies were largely top driven and did not have the full buy-in of providers
- leadership changed and initiated another shift in strategic focus

3.2.2 Stability and business continuity

While leadership changes at the political level are a normal part of the democratic process, operational stability and focus at the management level are essential to move forward on long-term integration initiatives. Such stability and focus have been lacking in the public healthcare system.



The lack of continuity at the senior management level has prevented the public healthcare system from building and maintaining strong momentum for integration. For example, the average tenure of a hospital CEO in the United States is 5.6 years.[24] By contrast, the average tenure of an AHS CEO, who oversees over 100 hospitals and a broad network of residential and community services, is a little over one year.

Operational stability and long-term strategic focus are needed to insulate the public healthcare system from the influence of the four-year political cycle and keep the care needs of patients independent from politics. The key is to have a long-term strategic plan that updates rather than starts from zero when leadership changes. Without a shared vision and a long-term action plan, senior management's focus and operational horizon are limited by the immediate political priorities of the day.

3.2.3 Parallel management of the healthcare system

The government's operational involvement through the Department of Health creates confusion among providers, prevents clear accountability for results and contributes significantly to action paralysis within the healthcare system. It also undermines and erodes the authority of AHS and creates significant duplication of effort.

24 As reported in the 2005 study done for the American College of Healthcare Executives: https://www.ache.org/pubs/research/pdf/hospital_ceo_turnover_06.pdf.

The current nature of the existing roles and relationships is deeply rooted in the history of public healthcare in Alberta over the last several decades. In the late 1980s, the department filled an important role as a central agency, coordinating the services of more than 200 health boards and operating a number of provincial programs in such areas as physician services and clinical information management.

From the mid-1990s, these health boards were reduced to 17 regional health authorities, then to nine, and finally to a single provincial health authority in 2008. While Alberta's healthcare system has evolved over the last 30 years, the department has not.

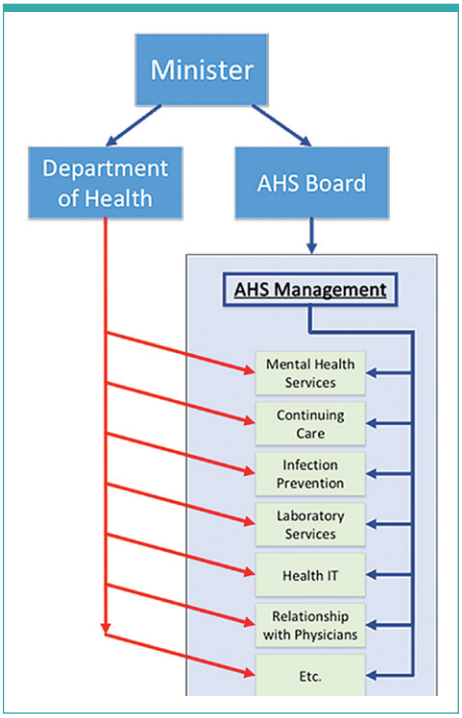
We are not taking a position on whether any of the previous decisions by the government or AHS were right or wrong. We are pointing out that the government regularly stepped into operational matters where AHS is supposed to have "final authority" under Section 5 of the *Regional Health Authorities Act*. While the Act also clearly provides the minister with the power to intervene, such instances have not been the exception.

Whether justified or not, constant intervention in management matters by those charged with oversight is just another symptom of a problem with the structure of the public healthcare system. It is not a matter of whether government's operational intervention is right or wrong. We are simply pointing out that this practice amounts to parallel management of the healthcare system and appears to contradict the reason the board of AHS was put in place. AHS's administrative structure has been created but is not being used as intended.

The government's ongoing operational involvement also raises an important question regarding responsibility: Can AHS's board and senior management be held accountable if they do not make the key decisions or if the decisions they make are routinely overturned?

We provide some examples of the department's involvement in the operational matters of AHS:

- For every clinical area within AHS, the Department of Health has its own parallel management function. While the department's stated role is strategic direction and oversight, our recent audits show that significant change in AHS operations cannot proceed without the department's close involvement and approval (infection prevention and control audit,[25] seniors care audit[26], mental health audit[27]).
- AHS relies heavily on clinical information systems to organize services and deliver care to individual patients. Ideally, clinical data flow would be aligned with the care flow. However, the department continues to maintain operational control over Netcare and the Pharmaceutical Information Network. AHS cannot make changes to the design or operation of these systems without the department's approval.



25 *Report of the Auditor General of Alberta* – October 2013, pages 22–23.
26 *Report of the Auditor General of Alberta* – October 2014, pages 90–94
27 *Report of the Auditor General of Alberta* – July 2015, pages 63–74.

CASE IN POINT—GOVERNANCE

If ATB Financial operated like the health system...

ATB operates with a legislated board-governed structure similar to that of AHS but does not experience the same interventions in its authority. If it did:

- the government would signal the desired direction of ATB but would also routinely intervene in its operations whenever the minister and finance ministry officials saw fit
- the minister would direct the ATB board to make or cancel loans to specific businesses
- the minister would tell the CEO what financial software ATB should use—but ATB would still be left with computer Systems unable to talk to one another

"Culture eats strategy for breakfast."

Peter Drucker

CASE IN POINT—CARE PLANS

$200 million spent on CDM patient care plans

The Department of Health pays physicians $200 million each year to prepare and annually update care plans for patients with chronic diseases such as diabetes.

In 2014 we recommended that the department set expectations for care of these patients. Physicians would provide care plans, interdisciplinary teams and continuity of care between acute episodes.

We noted that care plans were not available outside the physician's office.

The official response from the department indicated that it has limited ability to manage how physicians consume public resources.

- Half of all physicians in the province (mainly specialists) work at AHS facilities and direct the use of AHS resources, yet most of these physicians are paid by the department. AHS does not know how much physicians are paid and for which patients. With few exceptions, AHS has no way to link compensation of physicians to the results they achieve.
- When the government announced in 2012 its intention to establish 140 family care clinics across the province, AHS management learned about it not long before the general public did. The first three family care clinics were established as part of AHS. When AHS was working to deploy these first three clinics, the department continued its operational involvement by stipulating what clinical information system AHS had to adopt for its clinics (this software happens to be incompatible with AHS's internal clinical information systems).

3.2.4 Impact on organizational culture and morale among healthcare workers

Constant change of direction and lack of action are demoralizing to the front line of healthcare delivery. Healthcare workers and managers repeatedly see that by the time the ink dries on a new strategy, their leadership will likely change and the focus will begin to shift elsewhere. As healthcare strategies disappear from government websites to be replaced by new documents, it is difficult for healthcare providers to take these strategies seriously.

3.3 Department of Health as the funder of the system

While the department's stated role is to provide strategic direction and oversight, as the funder of the system, it has not driven integration as a business priority, complete with expectations and incentives for the recipients of funding. The department administers the Alberta Health Care Insurance Plan, but it does not actively manage the results that payments from the plan achieve in terms of health outcomes for Albertans.

- The department pays physicians by service volume. It pays health insurance claims submitted by individual physicians and provides block funding to AHS for delivery of insured health services (hospitals, long-term care, home care, mental health, etc.).
- Funding to programs and providers is not based on ongoing evaluation and benchmarking of quality and cost effectiveness.
- The department relies largely on healthcare providers to organize and integrate themselves. As the payer, the department has not established:
  - a structure that requires providers to integrate their services and deliver continuity of care to Albertans
  - expectations and processes to monitor the results achieved by providers (e.g., for groups of patients with similar conditions). For example, the department spends $4.6 billion[28] on physician services each year (close to 10 per cent of the entire provincial government budget) but does not actively manage the results achieved in exchange for this money. The department accounts for these funds as grants paid to over 9,000 individual physicians.[29]

28 http://www.health.alberta.ca/documents/Funding-Health-2016-17-Q2-Allocation.pdf.

29 There are over 10,000 physicians registered with the College of Physicians and Surgeons of Alberta, but not all of them receive payments from the Department of Health.

- The department leaves it to Albertans to assess the quality of their care and to change providers if they are not happy with service. At the same time, it does not provide Albertans with the tools to evaluate the quality of the care they receive.

See Appendix B for examples of both public and private healthcare organizations that succeed by actively managing the quality and cost of healthcare services they pay for.

3.4 Role of Alberta Health Services

Under the law, AHS is responsible for organizing and integrating healthcare delivery in the province. It receives over $14 billion per year to do so. In reality, AHS manages only two-thirds of the publicly funded healthcare system (acute care and continuing care) and is only partially involved in primary care, having no operational linkages to family physicians. Family physicians are gatekeepers of the healthcare system, and their referral decisions, treatment choices and ability to deliver timely preventive care in the community drive a large portion of AHS's operational costs. Each family physician practice functions as an isolated microsystem, without an operational connection to AHS at the patient care level.[30] In effect, despite its broad provincial mandate, AHS is not linked to the one part of the healthcare system that is supposed to be the foundation of an integrated, community-based model of care.

"It's less a question of who runs the health system than of whether anyone is in charge and knows what they're doing. The health authority stands caught between a Health Department making slow and opaque decisions and doctors intensely worried that they are being left out of decisions."

Edmonton Journal, July 28, 1995

Responsibilities of Alberta Health Services Under the Regional Health Authorities Act

Section 5 Subject to this Act and the regulations, a regional health authority

(a) shall

(i) promote and protect the health of the population in the health region and work toward the prevention of disease and injury,

(ii) assess on an ongoing basis the health needs of the health region,

(iii) determine priorities in the provision of health services in the health region and allocate resources accordingly,

(iv) ensure that reasonable access to quality health services is provided in and through the health region, and

(v) promote the provision of health services in a manner that is responsive to the needs of individuals and communities and supports the integration of services and facilities in the health region,

and

(b) has final authority in the health region in respect of the matters referred to in clause (a).

1994 cR-9.07 s5

30 Many family physicians operate as part of a primary care network, in which AHS shares governance with the family physicians. However, this does not provide AHS direct operational connection to primary care. *Report of the Auditor General of Alberta – July 2012*, pages 40–42.

Aside from its success in integrating administrative functions, AHS faces challenges in integrating its own clinical processes. Many programs and services that have been amalgamated under AHS since 2008 have historically evolved separately around the funding and administrative needs of organizations and healthcare providers, not around care needs and results for patients. In this way, AHS is not a fully integrated system: simply bringing organizations and providers under one management umbrella has not automatically integrated patient care.

The fundamental problem remains unsolved—Alberta (and the rest of Canada) still does not have a business model for organizing integrated care delivery at the front line. The public healthcare system has not reorganized people, infrastructure and funding to align with patients' care paths through the system. For example:

- Healthcare services are organized in disconnected silos.
- The role of a case manager or a system navigator does not exist in a broader healthcare system to manage patient care over time and across services. While some family physician offices and staff at AHS programs try to do this, their reach outside their individual program or clinic is limited. Their separation from the rest of the healthcare system and lack of alignment of incentives prevent providers from fulfilling this role.
- Program and facility budgets are based largely on historical service volumes (e.g., annual patient flow adjusted for population growth and inflation), not on their impact on patient care results or the cost to other parts of the system.
- The existing funding model does not provide financial incentives for quality improvement and cost management.

3.5 Role of physicians

More than any other healthcare provider group, physicians have a unique central role as stewards of the public healthcare system. However, collectively they have not been a strong force driving healthcare integration in Alberta (see Section 4 of this report and the reference material for more information).

The *Canada Health Act* and provincial healthcare insurance plan legislation establish physicians as gatekeepers of the public healthcare system. Under legislation, most medical treatment decisions must be made by a physician—even if the cost of treatment is paid for by other parts of the healthcare system. For example, AHS pays for all diagnostic imaging done in hospitals and lab work done in the province, as well as the cost of all other services and medications in hospitals. However, physicians direct the use of those services.

No major change or quality improvement initiative within or outside AHS can succeed without leadership and full commitment from the medical profession. Quality improvement is difficult in the current model because physicians are organizationally outside the rest of the public healthcare system, even though they are paid by it.

Expectations for measurement and benchmarking of care quality and cost have largely been absent from service agreements between the Alberta Medical Association and the provincial government. The department relies on physicians as professionals to integrate themselves with the rest of the healthcare system, as well as to set and deliver on quality expectations. While establishing a meaningful framework for integrated service delivery is the department's job, physicians have not come forward with proposals to help design or establish such a framework. Their central role in the system makes them well placed to suggest new ideas and long-term solutions. We noted earlier that physicians led the quality improvement initiative known as Choosing Wisely Canada. Physicians have a significant opportunity to expand on such action by suggesting methods to measure and benchmark care quality and costs.

3.6 Role of the patient

The current model of care is heavily influenced by a century-old approach in which patients were passive recipients of care. The model of integrated, patient-centred care calls for patients and their families to be well-informed, active members of their own care team.

In Alberta, there has been no meaningful public debate on the role and responsibilities of the patient in the public healthcare system. A discussion about patients' responsibilities can easily be misconstrued as the system's attempt to ration healthcare, or to blame patients for making unreasonable demands on the system and for misusing healthcare resources. Unhealthy patient behaviours are a challenge that can be solved by engaging individuals and groups of patients in health promotion and disease prevention activities. The reality is that healthcare system integration cannot move forward without agreement on the role and responsibilities of its most important participant—the patient.

In the past, the department has indicated to us that consumer demand will drive quality and accountability for results. We ask: how can the consumers of health services drive quality and accountability for results if they do not know what to demand?

First, all that most Albertans know is the fragmented system they have had for decades. They have not been shown what integrated care can do for them. Without knowing about integrated care, they are not in a position even to consider demanding it from their care providers.

Second, Albertans and their care providers have significantly different levels of information about the health system, and apply significantly different tests when measuring its effectiveness.[31]Aside from some high level experiences like "how long did I have to wait?" or "was my provider friendly?", most patients do not have the knowledge to assess the quality of care they receive. Most Albertans are not in a position to answer such questions as:

- Was I properly and fully assessed?
- Were the X-rays / CT scans / lab tests I went for really necessary?
- Should I have been referred to a specialist? When?
- Did I need the prescription for my condition? Did I receive the right one?
- Am I on the right care path?
- Is this the best way to manage my condition?

CASE IN POINT—PATIENT CARE

Provider-centred vs. patient-centred care

Patients currently are not engaged in major aspects of their own care. By 2014–2015, the Department of Health had assigned about 3.2 million Albertans (75 per cent of the population) to specific primary care network physicians. Yet at the time of this report, Albertans have still not been officially informed which physician they have been assigned to, what they and their physician are responsible for, and what services are available through the PCN.

31 Health policy sometimes refers to this different level of knowledge as "information disparity.

- Should I expect more from my providers?
- How does my provider compare with other providers?

Various patient activist initiatives such as RateMDs.com attempt to provide quality measurement in the healthcare system. Such initiatives are mostly done from outside the system and lack access to quantitative data on care quality and results. More fundamentally, these initiatives are the public's attempt to fill the accountability void left by the government and the medical profession.

Third, even if Albertans could answer questions like those above, there is little they could do with this information. Patients have only the most basic accountability levers over their care providers. They can, for example, lodge formal complaints with the College of Physicians and Surgeons. But such complaints focus on specific actions or specific care episodes rather than on overall quality of care over time.

The department expects patients to switch providers if they are not happy with service. However, there are limitations to this approach. For example, patients may suffer damage to their health by the time they realize they are receiving poor care. They may face practical difficulties in switching providers, including long wait times and challenges in transferring complete medical records. Worse, because the system is not designed to learn from its mistakes, one patient switching does little to protect the next patient.

4

Integration of physician services

We have identified three key barriers to integrating physician services with the rest of the healthcare system:

- the disconnect between physicians and AHS
- the current physician compensation model
- gaps in the oversight of physicians

Several health professions provide healthcare services to Albertans. We focus on physicians because of their special role in the public healthcare system. We do so while keeping in mind that the system depends on many other vital participants, including nurses, pharmacists, other care providers, staff running clinical programs, and patients themselves. Meaningful engagement and empowerment of these providers is essential to a high performing healthcare system.

The department spends over $4.6 billion annually on physician services and support programs,[32] but physicians' impact on cost is much broader than the fees they charge. As gatekeepers, they direct patients' use of services across the healthcare system: through hospital admissions, lab tests, diagnostic images, prescriptions, and more. The system relies heavily on physicians not only to treat patients but to lead development of better and more efficient practices, and to be responsible stewards of healthcare resources.

Engaging physicians in the mission and goals of the broader healthcare system is challenging because they are members of a self-regulating profession that historically has enjoyed considerable autonomy. Physicians as a group have been described as fiercely independent and reluctant to accept externally imposed expectations and accountability for results, and external oversight of their practices. This independence springs from the traditional physician-patient relationship, in which physicians have held all the medical knowledge about the services their patients need, and have been advocates for their patients to see that these needs are met.

However, the era when individual physicians could know all the relevant information and make all the right decisions on their own is over. Modern medicine is moving toward team-based care, care coordination across specialties and care settings, electronic decision support tools at the point of care, and evidence-based improvement of care.

32 http://www.health.alberta.ca/documents/Funding-Health-2016-17-Q2-Allocation.pdf.

The integration of physicians with the rest of the healthcare system is a hallmark of high performing healthcare systems worldwide (see Appendix B). Arguably, physician integration is also the most challenging aspect of healthcare integration, because it requires the healthcare system to:

- define its goals and objectives in measurable terms
- engage with physicians to reach agreement on their roles and responsibilities in achieving the goals of the system
- align physician compensation with the healthcare system's expectations for care quality and results
- commit to preserving and enhancing physicians' professional careers
- create a structure that supports teams and individual physicians with training, resources and information systems
- design and implement systems for quality assurance, including evaluating and providing feedback to physicians to help them improve their performance

Integration requires physicians to:

- develop and use clinical practice guidelines and care pathways—for example, a care pathway for diabetes treatment that spans primary care, ambulatory care and acute care
- work with other providers in care teams—for example, an interdisciplinary team in primary care or a surgical team in a hospital
- measure and manage their own performance and share responsibility for the performance of their care teams and the healthcare system overall—to understand what is working and what is not, and to act on that information to achieve the best results at the lowest cost

Alberta has many highly skilled and dedicated physicians, but their services are not well integrated with the rest of the healthcare system. Significant weaknesses exist in:

- primary care—family physicians in the community have little interaction with AHS, which operates (or contracts for) community-based clinics, home care, labs, diagnostic imaging sites, hospitals and continuing care facilities
- care transitions—family physicians and specialists have not developed a formal referral system to manage the care of patients with complex needs. Transitions to and from primary care and acute care are not managed in a seamless way, and patients are typically left to navigate the system on their own
- chronic disease management—over half of Albertans have a chronic disease, but less than 25 per cent of these patients have a care plan that is actively managed by a primary care team (comprising, for example, a physician, a nurse, a pharmacist and a dietitian); where care plans exist, they are not shared with care providers outside the family physician's clinic
- lab testing and diagnostic imaging—progress has been slow in sharing information that would help physicians reduce unnecessary procedures
- acute care—hospitals and the physicians who practise in them have no direct relationship and no incentive (beyond the theoretical) to work together to understand whether hospital services are of high quality and are cost effective
- electronic medical records (EMRs)—Alberta has the highest rate of physician use of EMRs in Canada, but physicians have adopted various different systems that do not share information with other providers to improve care quality

"The core structure of medicine—how healthcare is organized and practiced—emerged in an era when doctors could hold all the key information in their heads. A physician needed only the ethic of hard work, a prescription pad, and a hospital willing to serve as a workshop. Physicians were craftsmen who could set the fracture, spin the blood, and administer the antiserum. The nature of the knowledge lent itself to prizing autonomy, independence and self-sufficiency as medicine's highest values, and to design the system accordingly. But physicians can't hold all the information in their head any longer, and they can't master all the skills...."

Atul Gawande MD, MPH

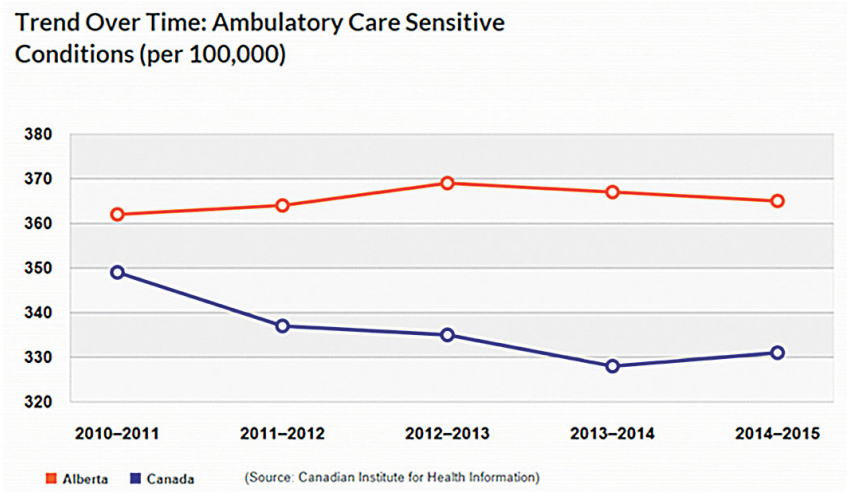
4.1 Integration with AHS

There is no formal agreement between AHS and physicians setting mutual expectations on healthcare delivery.[33]

High performing healthcare systems recognize that they need their physicians to buy in to the mission. Without respecting and valuing their contribution, they cannot get physicians' commitment to building a system centred on patients, rather than providers, with continuous quality improvement built into every aspect of care delivery. For example, Kaiser Permanente has made preservation and enhancement of physicians' professional careers its highest priority, because once physicians see their contributions are recognized, they are eager and able to align with the system's objectives to optimize care for all patients.

A more integrated relationship between AHS and physicians would allow for better partnership in coordinating patient care and achieving service quality standards.

For example, timely intervention and appropriate treatment by a family physician in primary care can prevent higher-cost emergency visits or hospital admissions in AHS's facilities, particularly for patients with one or more chronic diseases. Alberta's healthcare system is not optimizing the effectiveness of primary care in reducing patients' use of emergency and in-patient services. The opportunity for improvement in primary care is reflected in high rates of hospital admissions for ambulatory care sensitive conditions compared with the rest of Canada (see the following figure).[34]



Expecting primary care physicians, on their own, to reduce their patients' use of acute care has not been sufficiently successful. Primary care physicians have not been given information on their patients' use of acute care, and their compensation model provides no incentives to reduce it.

33 At present, AHS's primary connection to hospital physicians is through its privileging process, and its primary connection to family physicians is through its participation on the boards of primary care networks.

34 Ambulatory care sensitive condition (ACSC) admissions to hospital are a key indicator of healthcare system performance. The measure shows the acute care hospitalization rate (instances per 100,000 of population) for seven ACSCs among Canadians younger than 75. The seven conditions are angina, asthma, chronic obstructive pulmonary disease (COPD), diabetes, epilepsy, heart failure and pulmonary edema, and hypertension. Hospitalization for an ACSC is considered to be a measure of access to appropriate primary healthcare. While not all admissions for these conditions are avoidable, appropriate primary care can generally help to prevent the onset of this type of illness or condition, control an acute episodic illness or condition, or manage a chronic disease or condition.

4.1.1 Primary care physicians

There is a limited connection between AHS and primary care physicians who work independently of AHS. The lack of integration between primary care and AHS is a fundamental challenge because there is universal consensus that effective primary care is the foundation of a high performing healthcare system. An effective primary healthcare system treats patients' diseases early, improving health and reducing the need for expensive hospitalization.

Unlike specialists practising in hospitals, most primary care physicians are not privileged by AHS. Family physicians as a group do not have an agreement with AHS on mutual responsibilities for understanding the overall care needs of the population, integrated case management, clinical data sharing, or evaluation of quality and cost across services. Importantly, such an agreement would clearly recognize the mutual dependence of family physicians and AHS for achieving best possible outcomes for their patients, and would provide a clear mechanism for them to share risks and rewards in a more integrated model of care.

Family physicians have resisted sharing their data with AHS. Some physicians cite confidentiality rules as a barrier. AHS also does not share its data with family physicians—for the same reason. Other physicians worry the department and AHS may use physicians' data against them. Our audits on chronic disease management and primary care networks found many physicians were more open to sharing their clinical data with a third party, such as the Health Quality Council of Alberta, than with AHS or the department.

While PCNs have helped to bridge the gap between primary care physicians and AHS, the effectiveness of PCNs varies widely across the province and depends heavily on the initiative of individual physicians and local AHS managers.

4.1.2 Specialists

A slightly stronger connection exists between AHS and specialist physicians who work in AHS hospitals, emergency departments and clinics. These physicians have been granted hospital "privileges." The concept of "privileging" means AHS grants certain physicians the authority to admit patients to its hospitals and treat those patients using its facilities (e.g., operating rooms, nursing units, pharmacies and labs).[35]

The privileging process provides a foundation for engaging physicians more fully in results measurement and quality improvement initiatives. There may be an opportunity to do more in this area. As one emergency department physician recently asked, "I perform procedures and order various tests and treatments every day. How can I be an effective steward of public healthcare resources when no one can tell me what any of these services cost?"[36]

35 In larger hospitals, AHS privileges are almost exclusively granted to specialists, while primary care physicians work for the most part in the community. In smaller communities, primary care physicians often have hospital admitting privileges, largely because of a shortage of specialists.

36 Institute of Health Economics Forum, Physicians as Stewards of Public Resources Roles, Responsibilities and Remuneration, February 8, 2016.

4.2 Compensation

The way physicians are compensated in Alberta is not aligned with integration of frontline service delivery. The majority of the province's 10,000 physicians are compensated through fee-for-service, a model in which physicians are paid for each service they provide to a patient (e.g., a surgery or an examination). Fee-for-service pays physicians for the volume and complexity of services they provide, but ignores the quality of these services and their impact on total healthcare costs.

Fee-for-service's emphasis on activity provides incentive for providers to deliver more care, rather than better or more appropriate care. While the increased productivity that fee-for-service promotes may be appropriate for certain specialist services (e.g., cataract surgery), it is generally recognized that alternative compensation models such as capitation or salary can be more effective in promoting the continuity of care necessary for effective primary care, particularly for high-needs patients such as those with chronic disease.[37] See the reference material published with this report for more details on alternative compensation plans, and Appendix B for emerging good practices and innovations in other jurisdictions.

There are grounds for optimism stemming from recent changes. In October of 2016, physicians signed an agreement with the department to change the way they are compensated.[38] The parties intend to develop a list of fee rule changes to achieve $100 million in annualized savings. Among other features in the new arrangement, the most definitive is an agreement to have five primary care clinics in which 85 per cent of physician compensation will be based on blended capitation rather than fee-for-service. These clinics, collectively intended to serve as a pilot project, were to be in place by February 2017. Ten more are to be added in other areas of the province by spring 2018.

However, changing the form of payment would be only part of the solution. High performing healthcare systems set out clear expectations for quality assurance and improvement, irrespective of how payments are made. Care needs of the population are also a key consideration. For example, if a capitation model does not provide more compensation for patients with higher needs (e.g., chronic disease), this may create an incentive for physicians to accept only healthy patients into their practice.

4.2.1 Continuous quality improvement

The current payment model does not provide incentives for physicians to measure their performance and engage in continuous quality improvement.

Measuring quality and performance requires:

- advanced clinical information systems
- physicians trained in and compensated for reporting performance information
- an oversight process to evaluate performance information and take action to improve results

37 Capitation pays physicians a fixed sum for each patient enrolled in their practice. Salary pays physicians on an hourly or monthly basis to provide care to patients enrolled in their practice. For more information on the advantages and disadvantages of different compensation methods, see the reference material published with this report.

38 As the Minister of Health has stated, "most of us would agree that the model our province uses to pay doctors is expensive, outdated, and doesn't support the efforts of doctors to provide the best care possible.… Changing the way we pay doctors would have a ripple effect on the entire health system—it would help improve access to high-quality primary healthcare, which would reduce unnecessary hospitalizations and emergency room visits, and it would lead to more team-based care, which would increase patient satisfaction and allow for more timely access to care when it is needed." Hon. Sarah Hoffman, Forum on Physicians as Stewards of Resources, February 8, 2016.

The medical profession has not put forward a meaningful framework on how Alberta should structure and finance such a process, and how performance should be factored into compensation.

Existing professional guidelines for competence require physicians to, among other things: [39]

- develop a care plan for patients who need one and help the patient follow the plan
- share medical information in a secure way with patients and other providers
- manage the safe handover of patient care to other providers and care settings
- analyze healthcare data to improve care quality and safety
- be responsible stewards of healthcare resources by applying cost-appropriate care
- incorporate health promotion and disease prevention in encounters with patients, where appropriate

Historically, physician services agreements do not require physicians to demonstrate compliance with these guidelines as a condition of payment.

Linking physician compensation to performance in the areas of quality, patient outcomes and impact on healthcare system costs is not easy. It requires key stakeholders, including administrators, physicians, patients and legislators, to agree on how quality will be measured and how results and costs can be attributed to the performance of a physician or a care team. Despite these challenges, leading healthcare systems in other countries have made substantial progress in this area (see Appendix B).

4.2.2 Continuity of care

The current fee-for-service compensation model provides little incentive for physicians or other healthcare professionals to provide continuity of care to patients. As a result, most physicians do not monitor a patient's health status between visits or proactively contact patients to remind them when tests, procedures or medication reviews are due. We also know from our chronic disease management audit[40] that, while a physician may prepare a care plan for a patient with complex needs, the physician has no incentive or contractual requirement to help the patient actively manage that plan.

4.2.3 Interdisciplinary teams

Interdisciplinary care teams in primary care have been shown to produce better results for patients at a lower cost to the healthcare system.[41] However, the current fee-for-service model provides little incentive for physicians to support and participate in these teams, because it pays only physicians[42] and provides no funding for other healthcare providers in primary care.

Primary care teams in high performing healthcare systems typically employ three or four non-physicians for each physician. Alberta's model contrasts significantly.

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39 Royal College of Physicians and Surgeons of Canada, CanMEDS 2015 Physician Competency Framework. This framework is endorsed by the College of Physicians and Surgeons of Alberta (CPSA), which communicates its expectations to physicians through its CPSA Standards of Practice, Code of Conduct, Code of Ethics and Advice to Profession guidance.

40 *Report of the Auditor General of Alberta*—September 2014.

41 Journal of the American Medical Association, 2016, 316(8):826–834. Available from http://jamanetwork.com/journals/jama/fullarticle/2545685.

42 A small number of nurse practitioners in private practice are also paid through fee-for-service.

Even in the primary care network (PCN) program, where the province's biggest advances in team-based care have occurred, there is approximately one non-physician for every four physicians, rather than the other way around. The program funds around 1,000 non-physician care providers in PCN clinics at an annual cost of approximately $170 million. This amount is small in comparison with the $1.3 billion paid annually to the more than 4,000 primary care physicians through fee-for-service.

Our audit of mental health services in 2015[43] found that the 42 PCNs in Alberta had over 3,000 family physicians but employed only 74 full-time-equivalent mental health providers. Two-thirds of these providers were concentrated in four PCNs. Half of all PCNs had no mental health providers and seven others had less than one FTE. At the time of that audit, AHS had over 2,000 mental health and addictions providers in the community; they were largely disconnected from family physician practices.

4.2.4 Accountability for results

Integration requires physicians to be effective stewards of healthcare resources. Accountability for results and quality improvement require physicians to understand the costs of the goods and services they provide, consume, requisition and prescribe. Integration requires that all parts of the healthcare system understand and communicate their costs, as well as the costs or cost savings they generate in other parts of the system.

There is little information available on the quality of results being achieved in exchange for the $4.6 billion[44] of public money the government spends on physician services every year. For example, our 2012 primary care network program audit found that after spending close to $1 billion on the program, the department and physicians had not set clear expectations for physicians in relation to:

- providing continuity of care and helping patients navigate the system (e.g., eReferral)
- providing after-hours or 24/7 access to primary care in the community
- establishing interdisciplinary teams in primary care (e.g., a patient's medical home)
- securely sharing key clinical information with other providers and with researchers in a way that appropriately respects patient confidentiality
- applying evidence-based good practices in the delivery of care, and measuring care quality (e.g., clinical practice guidelines and care pathways)

Setting expectations and developing systems to capture performance information are prerequisites for establishing accountability for results in the healthcare system, including physician services. High performing public and private healthcare systems link robust accountability for results and ongoing quality improvement processes directly to the compensation of its physicians.[45] These processes have been developed through broad-based input and consensus among providers, funders and patients. Their objective is to use accountability for results to improve the quality of care, and help individual healthcare professionals deliver the best possible care.

43 *Report of the Auditor General of Alberta*—July 2015, pages 70–73.

44 http://www.health.alberta.ca/documents/Funding-Health-2016-17-Q2-Allocation.pdf.

45 In the United States, many insurers require that independent physicians or physician groups they engage to provide services to their members regularly report on performance metrics established by the National Committee for Quality Assurance (NCQA). The Healthcare Effectiveness Data and Information Set (HEDIS), established and maintained by the NCQA, is a tool used by more than 90 per cent of American health plans to measure performance on important dimensions of care and service. HEDIS consists of 71 measures across eight domains of care.

4.3 Physician oversight

Alberta does not have a framework to oversee and manage key aspects of care quality achieved by publicly funded physician services. Oversight of physician services is currently fragmented between the department, AHS and the College of Physicians and Surgeons of Alberta (the college). Each monitors some aspects of the inputs and outputs of physician services, but none assesses the care outcomes achieved by individual physicians or groups of physicians for their patients over time.

For example, a family physician in the community provides care to a panel of about 1,000 patients.[46] Neither the department, AHS nor the college monitors what happens to these patient panels over time. There is an opportunity to improve quality of care by agreeing on a process to monitor and benchmark family physician performance in relation to other family physician practices for the following:

- frequency of patient visits to emergency departments for conditions that could be treated in the community (e.g., colds and flus), or hospital admissions with complications that could potentially have been avoided with timely treatment by the family physician
- care management for groups of patients with chronic diseases (e.g., regular sugar testing and periodic follow-up for diabetics)
- medication prescription patterns (e.g., appropriate use of antibiotics in the community)
- use of publicly funded diagnostic imaging and lab services in the community (e.g., deviation from clinical practice guidelines and evidence-based best practices)

The department, AHS and the college have much of the information to evaluate the results achieved by physicians.[47] They generally do not use this information themselves. In many cases, none of the three entities shares its information with the other two for the purpose of physician oversight. Nor do they systematically share data to inform individual physicians about their performance over time to help them improve. There is an opportunity to agree on how key aspects of care quality will be monitored and managed.

Integration of physician services is perhaps the biggest opportunity facing Alberta's healthcare system. It requires aligning the objectives of physicians with those of the healthcare system, negotiating the respective rights and obligations of the parties, and implementing systems to monitor and improve physician performance. The last component—physician oversight—is particularly sensitive for a profession that has historically operated with considerable autonomy. A basic ingredient for successful physician engagement is trust, which can only be earned over time through demonstrated commitment to high quality, patient-centred care (the mutual interest) and to preservation and enhancement of physicians' professional careers.

46 Significant variation may exist in the size of patient panels.

47 For example, the department has all physician billing information and prescription data, while AHS has information on all lab tests and diagnostic imaging.

4.3.1 Role of the department

The department negotiates with the Alberta Medical Association to set the physician fee schedule and pays $4.6 billion[48] for physician services each year. A basic fiduciary responsibility of the department is to assess and report what value it is receiving for the public money it spends. It performs certain checks designed to ensure physician fee claims comply with billing rules and appear reasonable within broad limits. However, it does not have a process to demonstrate the overall accountability for the results physician services achieve. This is an area where physicians have an opportunity to make proposals on how to proceed. Further progress would likely require mutual agreement on methods of reporting, and on what information could prove beneficial.

4.3.2 Role of AHS

AHS has data on the use of its hospitals, emergency departments and diagnostic imaging and lab testing facilities. It does not use this information to identify where physician practices have an impact on its operations, such as prescribing patterns of physicians in hospitals, expanding after-hours care to reduce emergency room visits, or improving chronic disease management to reduce hospital stays.

As with the department, any effort to develop improved monitoring and assessment of physician practices would likely be frustrated without physician participation. Mutual agreement is especially important in this case, given that AHS, unlike the department, does not have a contract with physicians in the community. One option for both the department and AHS could be to collaborate closely on oversight with the physician-run professional body, the College of Physicians and Surgeons of Alberta.

4.3.3 Role of the College of Physicians and Surgeons of Alberta

The College of Physicians and Surgeons of Alberta[49] does not have access to information controlled by the department and AHS that could be valuable in assessing the quality of physician services and identifying services that do not add value for patients or that may even cause harm.

For example, the college told us it could do more to help physicians implement Choosing Wisely recommendations if it received more pharmacy data to identify physicians whose prescribing practices could be improved. Instead, physicians receive essentially no feedback on whether their practices for requisitioning tests and prescribing medications comply with the medical profession's most current evidence and advice. Without this option of providing targeted feedback to individual physicians, the college can drive change only through broad awareness campaigns. The consistent experience of high performing healthcare systems in other jurisdictions is that such campaigns are less effective than targeted feedback. In short, there is no process in Alberta to bring together all relevant information to help physicians improve their performance.

48 http://www.health.alberta.ca/documents/Funding-Health-2016-17-Q2-Allocation.pdf.

49 Under *Alberta's Health Professions Act*, the college:
a) must carry out its activities and govern its regulated members in a manner that protects and serves the public interest,
b) must provide direction to and regulate the practice of the regulated profession by its regulated members,
c) must establish, maintain and enforce standards for registration and of continuing competence and standards of practice of the regulated profession,
d) must establish, maintain and enforce a code of ethics …

Physicians are accountable directly to their patients in the sense that patients can leave, or in extreme cases take legal action if a physician is negligent. However, individual patients have limited ability to influence physician behaviour because patients are generally not aware of what leading medical practice is and have little or no way of comparing their physician's performance with that of others (i.e., there is no true transparency).

Some physician practices undertake quality improvement initiatives on their own. However, relying on individual effort to shift the practice patterns of an entire healthcare system would be slow and inefficient, and the system would still need to measure and assess whether the effort is effective. More importantly, the department and AHS already have much of the data needed to advance quality improvement.

5

Transforming care through information systems

Clinical information is at the heart of healthcare delivery and is critical to healthcare integration. Linking patient data across the entire continuum of care is of paramount importance: linked information allows providers to offer seamless care, connects patients with their data, and allows healthcare managers to monitor and benchmark cost and quality as patients move through the system.

The experiences of other jurisdictions show that major clinical information initiatives are not just IT projects—they are clinical ventures to transform and integrate frontline care delivery (see Appendix B).[50] Clinical information systems and electronic health records are a means to an end—tools to support change. However, they are insufficient in terms of transforming a system on their own. It is pointless to spend a fortune on electronic health records that don't get used to their full advantage because the structure of the system remains fragmented.

A comprehensive clinical information system is a core element of integrated healthcare, allowing the healthcare system to:

- share a patient's data across the continuum of care so that all providers understand the patient's condition and care plan—this data sharing improves care, reduces harm and saves the patient and the system time and money by reducing errors and avoiding needless repetition of tests and data input
- give a patient (and family) access to their own healthcare information to enable them to engage in their own care (history, care plan, medications, test results)
- provide clinical decision support tools at the point of care to improve care quality (e.g., clinical practice guidelines, care pathways, checklists, order sets, care planning tools)
- drive proactive patient care management with alerts and reminders for required tests and treatments
- build the base for research and evidence-based medicine, such as detailed data on diagnoses, treatments and results to determine efficacy
- monitor and evaluate the performance of providers and teams in terms of adherence to protocols (e.g., Choosing Wisely Canada, clinical practice guidelines, care pathways), clinical results, patient satisfaction, etc.
- identify good practices, poor practices (those that waste resources or do not add value) and unwarranted variation in cost, time and treatment results
- understand patients' care needs and allocate resources accordingly

In this section we will cover the following three key points:

- Clinical information management in Alberta is currently fragmented.
- Alberta is well positioned to be a national leader in clinical information management but is held back by the existing structure of the public healthcare system and a lack of provider agreement on how to share clinical information.
- The government's new CIS (Clinical Information System) project[51] excludes primary care data—a central element of a successful integration effort in high performing systems around the world.

50 The socio-economic impact of interoperable electronic health record (EHR) and ePrescribing systems in Europe and beyond, October 2009, page x, http://www.ehr-impact.eu/downloads/documents/EHRI_final_report_2009.pdf.
51 A Catalyst for Healthcare Transformation: The Provincial Clinical Information System Opportunity, July 2014

5.1 Fragmentation of clinical information

The current state of clinical information management in Alberta mirrors the existing fragmented model of care delivery and offers important opportunities for improvement:

- There is no single comprehensive health record for a patient, and information is severely fragmented:
  - AHS maintains over 1,300 clinical and administrative information systems
  - the department is responsible for two major systems[52]—Netcare and the Pharmaceutical Information Network—but these systems are predominantly used by AHS, physicians and other healthcare providers
  - each physician has their own information system (if they have one at all)
  - each physician's system is isolated from those of other providers
  - information does not flow as the patient moves from provider to provider
  - no system contains a patient's complete health record

This fragmentation of health information limits effective team-based care, coordination of care across services, and management of service quality and cost. Patients do not have access to their own health information.

To maintain all of these systems, Alberta spends over $600 million each year, not including what individual physicians and contracted service providers spend.

- The current systems do not offer functionality for multidisciplinary care planning, case management or team-based care, and they do not provide clinical decision support tools at the point of care. Examples from our recent audits include the fragmentation of mental health information and the isolation of electronic medical records in primary care. AHS's own analysis shows that Edmonton hospital admission systems are becoming unsupportable, and there is urgent need for change. Our audit findings since the 1990s have highlighted that clinical information could be better managed (see Appendix A).

Although most physicians now manage medical records electronically, the health data is still locked in individual physician offices and does not follow the patient through the health system. Only 19 per cent of doctors in Canada can electronically exchange patient summaries with doctors outside their practice, compared to 82 per cent in Norway. While a family physician in Alberta might prepare care plans for their chronic disease patients, they will not make these plans available to providers outside their office.[53]

52 For a number of years, the department has also been working on developing a Personal Health Portal.
53 *Report of the Auditor General of Alberta*—September 2014, pages 25–36.

- In Alberta, physicians currently use more than 12 different electronic medical record systems, and these systems were not designed to be compatible with each other or with any of AHS's systems. Care providers still share information with each other by mailing paper copies of records or sending them by fax.
- Advanced use of clinical information[54] beyond billing, scheduling and record keeping remains limited. In Canada, only 26 per cent of doctors routinely receive computerized reminders for guideline-based intervention or screening tests, compared to 77 per cent in the UK.
- In Canada, six per cent of hospitals/regions have moved beyond basic (mainly administrative) use of information technology. By comparison, in the United States 74 per cent of hospitals/regions make advanced use of their health information systems to coordinate care and actively manage service quality and cost.[55]
- While Netcare allows healthcare providers to view patient information such as lab results, diagnostic imaging reports, and hospital discharge summaries, it does not support case management: a healthcare provider cannot input and manage a patient's care plan or care history, and Netcare does not allow providers to securely communicate with each other via secure messaging.
- Netcare does not include patient information from health records in physicians' offices, and is missing other key information (e.g., hospital pharmacy data, AHS community services data).
- The Pharmaceutical Information Network was designed to allow physicians to prescribe medication electronically, eliminating the need for paper prescription slips and making prescriptions instantly available at any pharmacy in the province, greatly reducing the risk of medication errors. However, physicians continue to write prescriptions on paper slips, and patients cannot view and manage their own prescription data.

54 Examples of advanced use of clinical information include case management, decision support tools, electronic communication and data sharing with patients and other providers.

55 https://app.himssanalytics.org/emram/scoreTrends.aspx; see 2015 Q4.

CASE IN POINT—INFORMATION MANAGEMENT

If your bank operated like the Alberta healthcare system...

Banks handle huge amounts of information. They make this information almost instantly available to their customers. The customers appreciate the convenience. They also depend on knowing the current state of their finances for decision making.

- If your bank operated like the health system, this is what you would find:
- The bank would have more than 1,300 IT systems. Each branch would have its own IT system. That system would be incapable of communicating with the systems in most other branches.
- At some branches, IT systems would be so outdated they would be at imminent risk of failure. The fallback would be to use paper files.
- Tellers, mortgage officers and investment specialists at each branch would have no access to one another's information.
- Bank employees would rely heavily on fax to transmit your financial data.
- Every time you visited a branch to make a deposit or withdrawal, you would be asked to fill out the same form with your name, address, employment information and financial history.
- To withdraw money from a branch in another city, you would be asked to open an account there first. That branch would not know who you are.
- To apply for a mortgage, you would not be able to simply fill out one form at one office. You would have to take your application package to various local departments and see to its delivery to the bank's corporate office.
- Online banking would not exist.
- You would have no direct access to your financial data.
- To obtain an account balance, you would have to make a written request and wait a couple of weeks for the information to arrive in the mail.
- Bank managers would lack information to know how individual branches are performing.
- The bank would spend more than $600 million each year to maintain its IT systems, without a clear plan to standardize them and keep them up to date.

Healthcare provider organizations around the world have been working toward implementing electronic health record systems for several decades. Many of these organizations—for example, in Norway, New Zealand, Denmark, Spain, the Netherlands and the United States—have succeeded in making advanced use of information and related technology to significantly improve their healthcare delivery (see Appendix B). No single system has implemented the full possible spectrum of IT-enabled health services, but many are further ahead than Canada and Alberta.

This section has discussed several types of health information systems. Since the various terms can be confused with each other, it is important to give precise definitions. We reproduce (word for word) the definitions given by Canada Health Infoway:[56]

- **Electronic Medical Record**—a partial health record under the custodianship of a healthcare provider(s) that holds a portion of the relevant health information about a person over their lifetime. This is often described as a provider-centric or health organization-centric health record of a person.
- **Electronic Health Record**—a complete health record under the custodianship of a healthcare provider(s) that holds all relevant health information about a person over their lifetime. This is often described as a person-centric health record, which can be used by many approved healthcare providers or healthcare organizations.
- **Personal Health Record**—a complete or partial health record under the custodianship of a person(s) (e.g., a patient or family member) that holds all or a portion of the relevant health information about that person over their lifetime. This is a person-centric health record.

Health information systems used at physician offices in this province usually fall under the category of "electronic medical record." Alberta does not have a health information system that meets the definition of either "electronic health record" or "personal health record." The Clinical Information System, if it were to include primary care, would be an electronic health record.

5.2 Untapped potential

Alberta is well positioned to be a national leader in the integration of clinical data across the continuum of care, and is well ahead of most other provinces in the adoption of health information technology. Alberta has made very good progress in enabling physicians to transition from paper-based health records to electronic medical records. About 85 per cent of Alberta family doctors use electronic medical records in their practice, compared to 73 per cent nationally—a significant achievement. We have a provincial pharmacy system, and Netcare is recognized across Canada for making diagnostic images and lab results available across the continuum of care.

"The technology is there to improve health information and the care patients receive, whether it's new networks or other ways of sharing and tracking information. What's needed is leadership and coordination."

- The Department of Health (1996) Action on Health, p. 10. Alberta Legislature Library, CA2ALPH 1996 H28 c.1

56 Canada Health Infoway: https://www.infoway-inforoute.ca/en/what-we-do/blog/digital-health-records/6852-emr-ehr-and-phr-why-all-the-confusion.

However, the department, AHS and physicians could make better use of the digital health information they have access to, by using it to manage the delivery of care across the system and to help control the cost of delivering that care.

CASE IN POINT—INFORMATION SYSTEMS

Why Albertans need a fully integrated clinical information system

Here is what happens differently in the hypothetical case of an elderly diabetic woman who lives alone and has poorly managed diabetes. She begins falling because of inappropriate insulin dosage.

In the current system, her daughter alerts a family physician that her mother is falling frequently. It can take up to three months to establish a revised insulin regime. The daughter may have to take several days off work to drive her mother to appointments. They may make two or more trips to the family physician and another to a pharmacist. They will have to make at least one trip to see an endocrinologist. Meanwhile, the mother may fall several more times and need one or two brief hospitalizations to recover from injuries.

With a fully integrated information system, a new insulin regime could be applied in less than an hour. Instead of a call to a physician after several falls, a community health worker would visit the woman in response to an alarm from a biometric monitor. That worker would be supported by a virtual health team connected through a comprehensive electronic health record system.

5.2.1 Previous efforts

Attempts to integrate clinical information go back decades but have been consistently hampered by the structure of the healthcare system and lack of provider incentives to share and use clinical information. Previous efforts to integrate clinical information across the continuum of care have not reached their overarching objectives.

- **1997**—Wellnet. This initiative was Alberta's first attempt to integrate clinical data and deliver a province-wide EHR system. It was intended to provide every Albertan with a personal health record and make relevant health data available for individual providers at the point of care.[57] The implementation was to take six to 10 years and was to result in a fully integrated health information system across the province. By the early 2000s the initiative had gradually faded. Although Wellnet has been replaced by Netcare and the Pharmaceutical Information Network, two important developments, Alberta still does not have a system that meets the original objectives of Wellnet.
- **2011**—Interactive Continuity of Care Record. The ICCR was to be a foundational pillar of Alberta's Health IT strategy in 2011.[58] The ICCR was to provide patients access to their own online care plans and allow providers to collaboratively manage these shared care plans. For diabetics, this was to be in place by 2012, for cardiac patients and bone and joint patients by 2013, and for cancer and other chronic conditions by 2016. These initiatives have not been completed.

57 Alberta Wellnet: Better Information for better health. Issue #3, May 1998. Legislature library: CA2ALPH 448, #3.
58 Alberta's 5-Year Health System IT Plan, 2011-2016, pages 5, 16 and 42. This document is no longer on the Department of Health website.

- **2011**—Expanded use of Netcare. In 2011,[59] the department and AHS planned to:
  - by November 2012, link Netcare to the electronic medical record (EMR) systems of family physicians
  - by March 2014, enable EMR-to-EMR data transmission to support the electronic referral process
  - by March 2015, complete a system-to-system messaging mechanism to enable an interactive continuity of care record, including alerts between physician EMRs and Netcare

These initiatives have not been completed.

5.2.2 Developing information systems in collaboration with providers and patients

We have seen from healthcare organizations in other countries that health record initiatives succeed when they are treated not as IT projects but as projects to transform healthcare delivery (see Appendix B).

Electronic health record systems are tools that enable healthcare integration by aligning the flow of health data with the care needs of patients. However, the healthcare system itself must be designed to deliver integrated care—otherwise, even the most sophisticated health record system would not be fully utilized.

Successful healthcare systems in other countries did not design their health record system as an afterthought to overhauling their frontline care delivery, nor did they create their health record system first and then design their care delivery to match. Instead, they did both simultaneously: they were developing their electronic health record system as they were redesigning frontline care delivery, like laying tracks in front of a slowly moving train.

Organizations like Kaiser Permanente and Intermountain Health in the United States and Andalusian Health Services in Spain succeeded in integrating healthcare because they approached their electronic health record projects as clinical transformation initiatives managed by clinicians, not as software development projects managed by an IT department.

5.2.3 Privacy, confidentiality and sharing health information between providers

Sharing clinical information between providers to deliver superior, cost effective healthcare is an essential aspect of an integrated health system.

In Alberta, healthcare providers have not agreed on how they will share health data with each other, with their patients and with managers responsible for overseeing the public healthcare system.

During our audits in healthcare over the last decade we often pointed out the limited information sharing among healthcare providers. The most common explanation offered to us was that privacy and confidentiality rules under Alberta's

59 Same reference, page 42.

Health Information Act prevent providers from sharing patient information through a central information system. However:

- Providers do not share information even when there are no legal barriers to doing so. For example, during our 2007 mental health audit we heard that various community and hospital programs could not share relevant patient information because they were part of different organizations. In 2008, most community and hospital programs came under one organization and one management structure at AHS. Yet during our 2015 mental health follow-up audit we observed that health information was still not shared, hearing the same reasons as in 2007.
- The *Health Information Act* allows sharing of personal health data for treatment planning and program evaluation. In 2012 we verified with the Office of the Information and Privacy Commissioner of Alberta that the act permitted the sharing of health information among healthcare providers for the purpose of providing care and managing the cost and quality of healthcare.[60] Generally, some aspects of the *Health Information Act* could be clarified to make sharing of health information administratively simpler, while protecting privacy and confidentiality. However, even in its current form, the act offers mechanisms for sharing patient health data.

The privacy and confidentiality of patients are important. With proper design of security controls and monitoring of user activity, an electronic system can manage this risk better than a paper-based system. Paper records can be damaged and leave no audit trail when someone has viewed them. A secure electronic system allows faster and more secure sharing of information between providers. Access is granted only to certain portions of the health record, on a need-to-know basis. Viewing activity is monitored. Sharing of information is more effective and secure in an electronic system than with the current methods of transferring patient information via fax or mail.

5.3 A proposed clinical information system without primary care data

We have heard differing views on whether it is better to build one large information system or a set of interconnected systems. The choice of structure is less important than the decision of what to include.

Experience from high performing systems consistently shows that successful electronic health record systems are centred around primary care and primary care data.

5.3.1 About the Clinical Information System

In 2016 AHS released a request for proposals to procure a CIS to replace aging information systems in the Edmonton zone and to standardize the use of clinical information across AHS.

60 Report of the Auditor General of Alberta—July 2012, page 45.

The cost of implementing the RFP over a 10-year period is estimated at approximately $1.6 billion. In the April 2016 budget, Alberta committed $400 million over five years toward CIS implementation. AHS expects to cover the remaining $1.2 billion in savings achieved through better and more efficient use and by reallocation of costs when older systems are decommissioned.

The original business case for a provincial CIS cited the following among the benefits of deploying a single EHR across the entire continuum of care:[61]

- **Better management of chronic conditions**—CIS solutions enable care providers across the health system to develop unified care plans for people with chronic conditions and work together as a coordinated team to proactively maintain health and slow progression of the disease. Kaiser Permanente has seen a 50 per cent reduction in hospitalizations for patients with diabetes.[62]
- **Improved continuity of care**—Transitions between healthcare providers are more seamless in a comprehensive CIS environment, enabled by shared care plans, shared health records, standardized care paths and faster communications. Geisinger Health was able to reduce the number of hospital readmissions by 40 per cent by using a CIS that linked with community providers.[63]
- **Reduced hospital acquired conditions**—By helping clinicians adhere to evidence-informed practices, CIS solutions can help improve patient safety in hospitals. This has been shown in the literature to reduce central line infections by 73 per cent, pressure ulcers by 50 per cent, falls with injury by 50 per cent, deep vein thrombosis by 41 per cent, catheter associated urinary tract infections by 26 per cent, and infections from *C. difficile* by 19 per cent, as well as reducing sepsis, surgical site infections and ventilator associated pneumonia.[64]
- **Reduced adverse drug events**—CIS solutions can improve the safety of patients by decreasing the number of adverse drug events. Computerized provider order entry with bar-coded medication administration has reduced dispensing errors in CIS enabled hospitals. Literature shows that medication errors translates to a 55 per cent reduction in adverse drug events.[65]
- **Improved personal health**—A province-wide CIS can empower Albertans to manage their own care by providing electronic access to personal health plans, test results, visit history and home monitoring services through a comprehensive patient portal. Kaiser Permanente has received over 131 million visits to their member website and mobile phone application.[66]

61 We have reproduced the text verbatim from the CIS business case, except for minor editorial changes.

62 Kaiser Permanente Honors Quality and Patient Safety Solutions to Advance Care, 2015. http://share.kaiserpermanente.org/article/kaiser-permanente-honors-quality-and-patient-safety-solutions-to-advance-care

63 Silow-Carroll S, Edwards J, Lashbrook A. Reducing Hospital Readmissions: Lessons from Top-Performing Hospitals, 2015. http://www.commonwealthfund.org/~/media/Files/Publications/Case%20Study/2011/Apr/1473_SilowCarroll_readmissions_synthesis_web_version.pdf.

64 Becker's Hospital CIO, Stanford University Medicine, EHRs Can Help Reduce Hospital Infections.

65 Nir Menachemi, Robert G. Brooks, Reviewing the Benefits and Costs of Electronic Health Records and Associated Patient Safety Technologies, 2006; Bates DW, Leape LL, Cullen DJ, et al., Effect of Computerized Physician Order Entry and a Team Intervention on Prevention of Serious Medication Errors. JAMA, 1998, 280(15):1311–1316; Bates DW, Teich JM, Lee J, Seger D, Kuperman GJ, Ma'Luf N, Boyle D, Leape L, The Impact of Computerized Physician Order Entry on Medication Error Prevention. J Am Med Inform Assoc, 1999, 6:4 313–321; Poon EG, Keohane CA, Yoon CS, Ditmore M, Bane A, Levtzion-Korach O, Moniz T, Rothschild JM, Kachalia AB, Hayes J, Churchill WW, Lipsitz S, Whittemore AD, Bates DW, Gandhi TK, Effect of bar-code technology on the safety of medication administration. N Engl J Med, 2010, May 6, 362(18):1698–707.

66 Kaiser Permanente. Nearly 9 Million Kaiser Permanente Health Records Securely Available on Mobile Devices [Internet]. 2013 [cited 6 November 2015]. Available from http://share.kaiserpermanente.org/article/nearly-9-million-kaiser-permanente-health-records-securely-available-on-mobile-devices/.

- **Better health outcomes**—CIS solutions deliver evidence-based clinical content at the point of care to support clinicians in delivering effective treatment. Combined with more effective and efficient care practices, this can lead to better health outcomes for Albertans. Kaiser Permanente saw an eight per cent reduction in follow-up visits and a 73 per cent reduction in cardiac mortality.[67]

5.3.2 Integrating primary care data with the rest of the healthcare system

Initially, CIS was envisioned as a provincial system to connect providers across the entire continuum of care.[68] As of August 2016, the department no longer refers to CIS as a provincial system, but as an AHS system that will not include family physician offices. In effect, this excludes the majority of primary care data from CIS.[69] The change also means that family physicians will not have access to the clinical decision support tools, case management tools, and analytical functionality of CIS.[70]

The department is launching an initiative to identify and extract certain primary care data elements from physician EMRs, and upload them into Netcare. The department indicated to us that it intends to link these primary care data elements to CIS and that work is underway in this area. However, a documented plan to achieve this does not currently exist.

A limitation with Netcare is that it has no analytical capability. It allows viewing only one record at a time, and it has no care planning and case management functionality.

Better integration of primary care data with the rest of the system is critical for development of a single comprehensive care plan for patients with chronic diseases or real time access to information for quality assurance.

5.3.3 Sustainability of a partial CIS

Strong integration of clinical data across the system, including primary care, is key for achieving the cost savings envisioned under the CIS.

The initial idea behind CIS was that two-thirds of its deployment cost would be covered through gains in efficiency, higher service quality and reallocation of resources from other areas. The experiences of other healthcare systems show that these benefits come only when primary care data is linked to hospital data (see Appendix B).

The government's own initial business case for a provincial CIS listed potential benefits that would require close integration of primary care data with the rest of the health system. We have not seen an updated business case for an AHS-only CIS, nor any evaluation of the benefits and cost savings such a system would offer without the integration of family physician data.

67 McCarthy D, Mueller K, Wrenn J, Kaiser Permanente: Bridging the Quality Divide with Integrated Practice, Group Accountability, and Health Information Technology [Internet]. 2015 [cited 6 November 2015]. Available from http://www.commonwealthfund.org/~/media/Files/Publications/Case%20Study/2009/Jun/1278_McCarthy_Kaiser_case_study_624_update.pdf.

68 A Catalyst for Healthcare Transformation: The Provincial Clinical Information System Opportunity, July 2014.

69 Some enterprise-class CIS vendors offer an EMR module that primary physicians could acquire on their own. One PCN in Edmonton has currently invested in such a system.

70 AHS plans to make a significant investment in developing clinical decision support tools, care planning and case management functionality, and other clinical tools in CIS.

Appendix A

Relevant audit findings from 1990–2015

Relevant audit findings from 1990–2015

The audit findings presented here were reported in the context of specific audits and recommendations covering different subject matter areas within healthcare. Within the specific context of those audits, the department and AHS have implemented most of the older recommendations, and are working toward implementing newer ones. However, there is a clear similarity and pattern to these findings over time with persistent tendency to re-emerge, suggesting that their root causes have not been resolved.

2010 to 2015

Audit	Year	Findings
Systems to Manage the Delivery of Mental Health Services (follow-up from 2007–2008)	2015	• The 2011 Addiction and Mental Health Strategy, like the 2004 Provincial Mental Health Plan before it, identifies all the right things that need to be done. There is no need to drastically redesign the strategy. There is a need to deliver on the solid goals already set by following an existing action plan to make these concepts a reality. • The department has not followed its detailed five-year action plan. The department has not done detailed analysis or reporting of progress in implementing the 2011 strategy. • No integrated case management system for Albertans who are chronically mentally ill. AHS indicated that it does not have control over all key elements of the publicly funded healthcare system and lacks clear authority to deploy a provincial integrated case management mechanism, which would clearly define: – which patients need an integrated care plan – who prepares the plan and where – how the care teams are to be organized and managed – who is responsible for helping patients stay on an optimal care path – how patient outcomes are to be evaluated • Mental health information systems remain incompatible, are outdated and do not support integrated care delivery. Critical gaps in clinical information management: – emergency departments do not have access to patient information in the community mental health information systems – family physicians and AHS do not have access to each other's health information systems and separately develop and implement their own treatment plans for the same patient • We observed a number of successful pilots and good frontline operational practices at individual service locations across the province. It isn't clear who will evaluate and deploy them provincially under the current operating model. • No change in the frontline delivery of housing support services for people with mental illness, despite frameworks and coordination committees. Patients, their families, and individual care providers must navigate the system on their own to find the right housing placement and the right level of support.

2010 to 2015 Continued

Audit	Year	Findings
Contracted Surgical Facilities (follow-up from 2001)	2014	AHS does not have adequate systems to monitor performance of contracted non-hospital surgical facilities: • Responsibility for performance monitoring of the facilities is not clearly defined within AHS. • AHS has not defined a performance measurement mechanism, including service quality and patient outcomes for consistent analysis and benchmarking of quality across surgical facilities.
Seniors Care in Long-term Care Facilities (follow-up from 2005)	2014	• The department's current level of involvement in operational activities, particularly in facility inspections, goes beyond an oversight role. It overlaps with and erodes the authority of AHS, and creates confusion about who the facilities are accountable to for the care funding they receive from AHS. • There is significant duplication of effort between the department and AHS in the area of inspection activities. • A wealth of financial, service quality and compliance information is available now to the department and AHS, but the department does not ensure that this information is used to publicly report on the performance of the provincial long-term care system, including results achieved for the funds invested. • It is not clear which program area or function within AHS has the responsibility and the authority to manage the overall performance of individual facilities. • AHS does not have a formal process to review periodically all relevant facility data available from various functions within AHS and the department in order to assess each facility's overall performance and risk profile.
Chronic Disease Management	2014	• The department has not set expectations for the services that should be provided to individuals with chronic disease. • The department does not have assurance that physicians are providing services in accordance with good clinical practice. • There is no entity with the mandate to identify individuals with chronic disease within physician practices or the province as a whole. • The department and AHS have not taken responsibility for directing and coordinating CDM—this is currently left to PCNs or individual physicians. • AHS could coordinate its CDM services with family physicians more thoroughly. • CDM services are not assessed against intended results—work to improve care plans and assess CDM results must be led by a provincial body. • Insufficient communication/coordination of care plans among providers. • Primary care physicians use many different EMR systems and none communicate with the others. • The department, AHS and other physicians do not have access to information in physician EMRs.

2010 to 2015 Continued

Audit	Year	Findings
Infection Prevention and Control at Alberta Hospitals	2013	• Not clear who is responsible for implementing the provincial IPC strategy. • The department does not have adequate systems to monitor and report implementation progress. • No central oversight for medical device reprocessing (sterilization, disinfection) at AHS. • Disconnected hospital admission information systems increase the risk of spread of antibiotic resistant organisms. • No clear process to take action with service areas and healthcare providers that show poor compliance with hand hygiene requirements. • No formal system for an evidence-informed evaluation and alignment of existing legacy policies and procedures in hospitals to control the spread of antibiotic resistant organisms.
Primary Care Networks	2012	• Weaknesses in design and implementation of accountability systems. • No systems to evaluate PCN program. • Albertans don't know they've been assigned to a PCN, and PCNs also do not know which patients are assigned to them. • System weaknesses and poor compliance oversight.

2005 to 2009

Audit	Year	Findings
Implementation of Electronic Health Records for Albertans	2009	• Issues with accountability, project management, security, privacy, tracking cost and progress.
Mental Health Services—Provincial Oversight	2008	• Systems are not well designed to determine if the 2004 Provincial Mental Health Plan has progressed. • Unclear responsibility for implementation and monitoring. • The plan is not strong enough on action, accountability and timeframes.
Mental Health Services Delivery	2008	• Mental health plan could be implemented faster and more consistently. • Lack of standards for mental health services; no adult mental health standards. • Gaps in service, long wait times, poorly coordinated care. • Shortage of safe, affordable housing for people with mental illness. • Little evidence that integrated care takes place. • Lack of integrated IT systems between clinic and hospital. • No one collects rigorous data on aboriginal mental health issues.
Physician Billing—Systems to Monitor Compliance	2008	• Risk assessment to guide activities not completed. • Unfinalized draft audit plan. • No assessment of effectiveness of current compliance monitoring activities.

2005 to 2009 Continued

Audit	Year	Findings
Physician Billing—Systems to Ensure Accurate Payments	2005	• No trained resources or specialized data mining equipment to detect inappropriate payments. • Department did not analyze data for patients who see unusually high utilization volume or analyze health service codes for trends or transactions that may require follow-up, referrals between business partners, location of health service providers. • No system to ensure service providers don't bill both WCB and department for same service.
Systems to Protect IT Systems	2005	• IT disaster recovery plan not developed. • Comprehensive risk assessment has not been done.

2000 to 2004

Audit	Year	Findings
Seniors Care and Programs	2004	• Standards for nursing, personal care and housing services in long-term care facilities and standards for seniors' lodge programs are not current. • Standards needed in assisted living and other supportive living facilities. • Inadequate systems to monitor compliance with standards. • Information needed to assess effectiveness of services and programs.
Systems to Protect IT Systems	2003	• IT disaster recovery plan not developed. • Comprehensive risk assessment has not been done.
Health Region Accountability	2003	• Performance expectations not in place at start of the year they apply to. • Health regions did not sign multi-year performance agreements. • Performance measures and targets not established for all expectations. • Lack of provincial health plan. • Health regions find it difficult to exercise authority.
Health System Business Planning	2001	• Business plans were not in place at the beginning of the operating year.
Business Planning	2000	• Lack of timely approval of regional health authority business plans. • Parties cannot agree on funding levels, resulting in deficits.
Performance Measurement	2000	• Departmental activities have not advanced or are on hold related to improving performance reporting. • Service costs and full cost of services are yet to be used in planning and budgeting.
Province-wide Services	2000	• Information is not produced comparing budgeted activity and funds with actual services and costs. • Reporting differs in structure, terms and content—utility is uncertain. • Differences in case costs.
Physician Billing—Systems to Assess Risk of Physician Billings and Promote Cost Effectiveness	2000	• Risk assessment of physician payments was started but not finished. • Risk that fee rules do not match current medical practice. • Department does not systematically provide analytics from physician payment system to CPSA to support its processes and identify areas of risk to quality of care.
Information Management	2000	• Department has not assessed benefits and risks of the "common opportunity" process. • Unclear expectations of the health CIO and accountability.

1995 to 1999

Audit	Year	Findings
Accountability	1999	• Physicians receiving Alberta Health Care Insurance Plan payments do not report on results achieved. • Not clear who is accountable for explaining what drives payment patterns or communicating what is accomplished, or who assesses reliability of service event coding. • Fee-for-service has no incentives for improving cost effectiveness of health services. • Department investigates less than 10 per cent of medical claim payments that are flagged as questionable. • Department does not have authority to examine patient records in support of claim payments (almost all other provinces do). • Drug costs continue to increase significantly without agreement on strategies among stakeholders to influence drug utilization and improve information. Alberta Health Care Insurance Plan has no systems to ensure cost effective spending. • Department has limited information to systematically compare planned and actual drug use and costs over time.
Business Planning (1999)	1999	• Health authority budgets are not approved in timely manner. • Disconnect between expectation of business plans and corresponding budgets.
Performance Measurement	1999	• Timeliness of annual reporting needs to be addressed. • Little reporting on costs of outputs. • No consolidated financial reporting.
Business Planning for Health	1998	• Annual reports do not fully link results achieved with goals and strategies set out in business plans. • Risk of confusion as to what requires a performance target and when variation from it should be explained.
Physician Funding—Systems to Measure Budget Variances	1998	• No physician resource plan. • No methods or measurable benchmarks, thus not able to objectively determine how much a medical budget variance in future years can be attributed to change in physician numbers or utilization of services.
Clinical Practice Guidelines	1998	• Guidelines not derived in relation to set of essential health services, extent of illness among Albertans or degree to which clinical practice may vary, not based on assessment of potential cost effectiveness gains in the delivery of health services. • No evaluation on impact of clinical practice guidelines, extent of use, incentives to use, value in relation to other sources of guidance. • Timelines for producing clinical practice guidelines are not met.

1995 to 1999 Continued

Audit	Year	Findings
Health Business Plans and Funding System—Setting Strategic Direction and Accountability for Results	1997	• Department had not finalized and approved business plans of 13 health authorities. • More complete, accurate and timely information on population utilization of health services and health service costs is needed to allocate funding to regions. • MIS data quality is poor. • Lack of data on community rehabilitation services, laboratory services, health promotion and prevention. • Funding is slow to react to population and utilization changes. • Health regions do not include equipment amortization in determining a "balanced budget."
Health Workforce	1997	• Lack of information to manage health workforce and absence of a framework. • Department does not collect information on how many people are employed, where they are, what they do. • Unknown how many nurses there are, what will be needed next year, or five years from now, whether there are a sufficient number studying and graduating to meet service demands.
Health Performance Reporting	1997	• Missing or incomplete measurement of health outcomes, outputs and costs. • Lack of completeness and timeliness of data.
Information Management (Wellnet)	1997	• Health authorities may not have capacity to absorb change required by Wellnet.
Payment for Health Services	1997	• Risk of overpayments not being examined and/or recovered. • Department is investigating only 5 per cent of approximately 700 practitioners flagged as having a potential claim problem and has not determined the value of incorrect payments.
Accountability	1996	• More consideration needed in how department ought to monitor governance and accountability systems of health authorities. • Accountability of organizations such as Alberta Medical Association and health foundations is not described in the accountability framework.
Clinical Practice Guidelines	1996	• Clinical Practice Guideline Program was developed by the department and Alberta Medical Association. However, there are no priority areas for issuing guidelines, no level of program output targeted, no evaluation of use of guidelines among practitioners to know results achieved.
Physician Funding—Systems to Pay Medical Claims to Physicians and Systems to Set Fee-for-Service Rates	1996	• No comprehensive assessment of alternative payment methods. • Department hasn't assessed extent to which fee-for-service rates are reasonable compensation. • Systems emphasize funding and payment but not as much assuring that public money is allocated and spent with due regard for efficiency and effectiveness.

1995 to 1999 Continued

Audit	Year	Findings
Governance in Health	1995	• Health restructuring has created extraordinary challenges. • The department provides general guidance to boards of regional health authorities and needs to assess if system used for governance addresses critical issues related to governance.
Clinical Practice Guidelines	1995	• Not all health authorities are developing guidelines to improve quality of care. • Department has not encouraged development of province-wide framework to promote evidence-based decision making and can do more to promote use of best practice clinical guidelines.
Information Systems	1995	• Health system information requirements have not been defined, developed or consistently understood. • Fragmented information systems across the health system.
Physician Funding—Systems to Pay Medical Claims to Physicians and Systems to Set Fee-for-Service Rates (SOMB)	1995	• The system does not balance cost of preventive services against cost of treatment to take advantage of savings through prevention of illness. • Systems are based on physician/patient contact. • Alternative payment methods have not been developed. • Rules on pre- and post-operative care do not reflect current medical practices and thus result in excessive compensation. • The department gave up its right to make rate changes to the Schedule of Medical Benefits in an agreement with the Alberta Medical Association. • No consensus reached on how to implement the results of a study on the rates of services in the Schedule of Medical Benefits.

1990 to 1994

Audit	Year	Findings
Physician Funding	1994	• Health system is based on physician/patient contact, and fee-for-service does not promote more cost effective services or discourage unnecessary services, providing financial incentive for visits rather than improving health status of Albertans.
Health Services from Community, Voluntary and Private Organizations	1994	• Lack of reporting standards, performance expectations, standards for quality and cost benchmarks provided by regional health authorities to service delivery organizations they have contracts with.
Healthcare Costs	1992	• Costs reported by the province are done in a fragmented manner, and some are not identified as related to healthcare.
Hospital Costs	1992	• No useful definition of hospital programs and services, and department provides grants without fully understanding a hospital's programs. • Financial and statistical information is not accurate, relevant and timely. • Concerns about the quality of performance information. • Lack of information about whether funding for specific hospital programs has met expectations.
Community Mental Health Services	1990	• Lack of information on cost & benefits and performance. • Lack of information to make decisions and assess whether objectives are being met.

Appendix B

Integration experience in other jurisdictions

Integration experience in other jurisdictions

In this appendix we offer examples of integration success from other jurisdictions. Our objective is to demonstrate that integration is not only possible, but offers real benefits to both the patients and the funders. It is not our goal to do a full comparative analysis of Alberta in relation to other Canadian provinces or various publicly and privately funded healthcare systems in other countries. Alberta will likely have to find its own path to healthcare integration.

Successful healthcare systems around the world, irrespective of whether they are publicly or privately funded, share a number of important attributes:

- Funders, administrators and frontline providers each have a clear sense of their responsibility for quality and the overall cost of care for the population they serve. This responsibility is not just vaguely "shared" by the three groups. Each group clearly understands its role and specific accountability to the other two, and to the patients. All three groups understand their obligation to act together.
- Care quality goes up and costs go down when organizations use evidence-based care and deploy clinical care pathways. In successful organizations, this work is funded and supported centrally, but is driven by the local teams of frontline providers.
- Primary care, and community-based service delivery in general, is the focal point of the integration effort because investment in health promotion and disease prevention, with early intervention and treatment in the community, is better for patients and far more cost effective than caring for patients in hospital. In many respects, disease prevention is the ultimate goal of quality improvement in healthcare.
- Patients are engaged and are given the tools to be active members of their care team.
- Funding models for programs and providers are based on the quality of care they deliver, not solely the volume of procedures they perform:
  - physicians are typically paid through a blend of salary, capitation[71] and fee-for-service, depending on location and other circumstances
  - incentives or gain sharing may be paid to service providers individually or to the facilities where they work to encourage quality and value improvements
  - hospitals and other facilities/programs are funded based not only on the volume of service, but also on whether clear quality expectations are met within programs, as well as each program's impact on cost and quality in other parts of the system
- Health information is available online to patients and their healthcare providers via a single electronic health record.

Our research did not find that any one healthcare organization excels in every aspect of integration. Some organizations are further ahead than others in specific areas, and all of them face their unique challenges. What is common among these organizations is their relentless drive and unwavering commitment to integration of frontline care, their courage to fundamentally change their systems to meet the needs of their patients, and the compelling results they achieve.

71 Capitation is a payment model based on the size of the patient panel served by a physician, adjusted for demographics, prevalence of chronic disease, and other factors.

We offer a number of examples from North America, New Zealand and Europe. Among our examples, we refer to several leading healthcare organizations and best practices from the United States. It is important to note that the United States does not have a single system—it has a complex marketplace that includes numerous healthcare systems and provider organizations (both publicly and privately funded). Although as a whole the United States faces significant healthcare challenges, some healthcare provider organizations are much further ahead than others, and several are widely regarded as world leading. Much can be learned from Intermountain Healthcare's approach to efficient processes of care and Kaiser Permanente's strong orientation to inter-professional primary care teams and successful health promotion strategies.[72]

This appendix covers:

1. Clear sense of responsibility and purpose
2. Evidence-based care and care pathways
3. Shift to community-centred care, away from a hospital-centred model
4. Engaged patients with the tools to be active members of their care team
5. Alignment of provider funding with patient needs
6. One patient, one electronic health record

72 Unleashing Innovation: Excellent Healthcare for Canada, Report of the Advisory Panel on Healthcare Innovation, Health Canada, July 2015, page 7.

1. Clear sense of responsibility and purpose

A common theme across successful healthcare systems we reviewed is that at the heart of the transformation there tends to be a mindset shared by funders, managers and frontline providers where each recognizes their distinct responsibility for the quality and the overall cost of care for the population they serve. Each group knows it cannot change the system on its own, but realizes that together they have the power and the obligation to transform frontline care delivery for the benefit of their patients.

CASE IN POINT—ROLE OF THE FUNDER

How much you pay is important, but how you pay is what makes the real difference

"A recent Medicare demonstration program offers medical institutions an extra monthly payment to finance the coordination of care for their most chronically expensive beneficiaries. If total costs fall more than five per cent compared with those of a matched set of control patients, the program allows institutions to keep part of the savings. If costs fail to decline, the institutions have to return the monthly payments.

"Several hospitals took the deal when the program was offered, in 2006. One was the Massachusetts General Hospital, in Boston. The hospital had twenty-six hundred chronically high-cost patients, who together accounted for $60 million dollars in annual Medicare spending. They were in nineteen family physician practices, and the project team of care providers made sure that each patient had a nurse whose sole job was to improve the coordination of care. The doctors saw the patients as usual. In between, the nurses saw them for longer visits, made surveillance phone calls, and, in consultation with the doctors, tried to recognize and resolve problems before they resulted in a hospital visit. Three years later, hospital stays and trips to the emergency have dropped more than fifteen per cent.

"The hospital hit its five-per-cent cost-reduction target and the team is just getting the hang of what it can do."

The Hot Spotters, Atul Gawande,
The New Yorker, January 24, 2011

At the governance level, system funders as well as senior managers who allocate resources demonstrate a firm belief that they are responsible for setting clear expectations and are entitled to measurable results for the money they provide to programs and individual care providers. Funders and senior managers:

- carefully align funding incentives of providers with the care needs of the patients
- use these incentives to have providers develop and commit to a framework for continuous quality measurement and improvement
- remove systemic barriers and offer central support to the front line
- avoid operational involvement and let providers deliver the results they committed to
- keep a watchful eye on the results, use funding as a lever to encourage practices that produce better care, and discontinue those that show suboptimal quality and poor patient outcomes and that waste resources

At the front line, successful healthcare systems cultivate an organizational culture where:

- everyone from frontline providers to clinical program managers expects their service cost and quality to be continuously measured and benchmarked
- there is a common mindset and commitment between providers and managers that performance data is shared to help improve quality of care, and not used as a top-down instrument to administratively control clinicians
- responsibility of care providers and managers is not limited to what happens within their specific program area—it extends to how their care is coordinated with other providers and programs along the patient's care path, and how it impacts the overall outcomes and cost of care for individual patients or groups of patients with a similar medical condition

2. Evidence-based care and care pathways

Healthcare systems have historically been organized around physicians, hospitals and technologies like diagnostic imaging. In contrast, today's high performing healthcare systems organize care around patients by focusing on condition-specific care pathways.

As providers start to generate and share their clinical results data, they begin to identify steps in the treatment process that add no clinical value and may even be harmful to patients. At the same time, providers begin to identify types and sequences of interventions that work best for specific diseases and specific patient populations. When the right sequence of steps is done by the right providers at the right time for the right patient, it means that the patient is on the optimal care path through the healthcare system. Care pathways will vary significantly between different diseases and patient populations, and may change over time with shifts in patient demographics and advances in medical science.

Here are some examples of what happens when frontline providers are engaged in evidence-based care:

- Cardiac surgeons at the Geisinger Health System in the United States have collaborated to develop best practices for coronary artery bypass surgery (protocols, tools and reminders) and made sure staff members use them. As a result, instances of coronary artery bypass patients dying on the operating table fell by 67 per cent, and the average hospital stay for patients following surgery decreased by more than a day. When Geisinger improved its coronary artery bypass surgery process to save lives, it reduced the cost for treating each patient by almost 5 per cent.[73]
- When Andalusian Health Services (a provincial public healthcare system in Andalusia, Spain) implemented care pathways for complex chronic disease patients, it improved coordination between providers, reduced wait times and unnecessary referrals between providers, and improved the overall patient experience:[74]
  - 22 per cent reduction in family physician to specialist referrals
  - 24 per cent reduction in referrals between specialists
  - 28 per cent reduction in medical visits

73 Toby Cosgrove, The Cleveland Clinic Way: Lessons in Excellence from One of the World's Leading Health Care Organizations, 2014.
74 Presentation by Andalusian Health officials to the Calgary Health Region in 2006, http://www.longwoods.com/website/events/docs/BWTCTRiveroMay012008.pdf.

  - reduction in wait time between family physician referral and the first specialist visit from 30 days to only three days
  - higher patient satisfaction rates

- In 2009, Cleveland Clinic hospitals in the United States had eight central line infections[75] in intensive care for every 1,000 patient line days (i.e., day in which a single patient had a line inserted). Frontline providers used clinical data to redesign treatment practices. Just three years later, the rate fell to less than two infections per 1,000 line days. Cleveland Clinic has also revamped procedures for treating lung transplant patients—increasing the number of patients alive after 30 days by 3 per cent, while decreasing related costs by 6 per cent.[76]
- When Virginia Mason Hospital in Seattle analyzed its treatment of uncomplicated low-back pain, they discovered that virtually every step in the process was waste, and that only physical therapy provided any real value to the patient.[77]
- Obstetricians at Intermountain Healthcare in the United States realized that the practice of inducing labour early led to higher complication rates. They convened a team of specialists, who created a standard checklist for determining when doctors should induce labour and distributed it throughout the organization. Patients who met the criteria were induced; others who didn't could still be induced, but only with special approval from a senior specialist. As a result, the number of mothers who chose to induce fell, as did the number of babies admitted to newborn intensive care units. Only 21 per cent of deliveries now take place by Caesarean section, compared with 34 per cent nationwide. Less induction leads to fewer complications, resulting in better-quality care—all because providers were able to work together to improve what they were doing. By reducing the number of induced births at its facilities, and thereby lowering the number of Caesarean sections performed, Intermountain saved $50 million.[78]
- Physicians and other providers at the Cleveland Clinic in the United States inventoried all the supplies used in surgical prostate removal, reduced unnecessary items, and achieved a 15 per cent cost saving in the first year and 25 per cent after two years—without compromising patient outcomes.
- The provincial public healthcare system for Canterbury, New Zealand, has developed several hundred clinical pathways since 2008. Physicians use clinical pathways regularly with marked improvements in wait times and decreased use of hospital resources. By comparison, Alberta has fewer than a dozen.

It would be difficult, and likely impossible, to identify customized clinical process improvements and develop care pathways from a head office in a top-down driven organization. In successful healthcare systems this work happens as close to the front line as possible and is directed by clinicians, with strong central support.

75 These infections are associated with the insertion of an IV tube and needle into a large blood vessel of the neck, chest or groin. These infections are quite serious, and in the past as many as 25 per cent of patients who got them died.
76 Toby Cosgrove, The Cleveland Clinic Way: Lessons in Excellence from One of the World's Leading Health Care Organizations, 2014.
77 Jack Cochran, Charles Kenney, The Doctor Crisis: How Physicians Can, and Must, Lead the Way to Better Health Care, 2014.
78 Toby Cosgrove, The Cleveland Clinic Way: Lessons in Excellence from One of the World's Leading Health Care Organizations, 2014.

3. Shift to community-centred care, away from a hospital-centred model

A shift toward community-based care, and away from hospital-centred care delivery, is at the heart of integration initiatives in both publicly and privately funded healthcare systems. Successful healthcare organizations have aggressively expanded their primary care services and have centred their operations around community care settings, as close to a patient's home as possible:

- Kaiser Permanente[79] and Intermountain Healthcare[80] in the United States are integrated service delivery systems offering a full range of services from primary care to acute care hospitals and long-term care. Both are leaders in the patient medical home model of primary care, in which a patient's family physician and care team provide the core services, and direct patients to other areas in the system as their healthcare needs require.
- Between 1990 and 2009, a publicly funded healthcare system in the province of Andalusia, Spain, increased the number of primary care centres nine-fold from 165 to over 1,500,[81] with multidisciplinary care teams assigned to manage the health of specific groups of patients in the community.
- In 1990, Denmark had more than 150 hospitals for its five million people. The country then made changes to strengthen the quality and availability of outpatient primary care services (including payments to encourage physicians to provide email access, off-hours consultation, and nurse managers for complex care). The number of hospitals has shrunk to 71. Fewer than 40 were expected to be needed by 2016.[82]

4. Engaged patients with the tools to be active members of their care team

4.1 Proactive mindset—key to prevention and early treatment of disease

Effective healthcare systems proactively engage their patients to prevent disease, and they treat health problems as early as possible or prevent them in the first place. This requires a care philosophy where the organization proactively reaches out to its patients.

Orthopaedists at Kaiser Permanente in the United States have created a program to proactively identify and treat people who are more likely to have osteoporosis and hip fractures (e.g., increased testing, increased use of preventive medicines, and standard guidelines for managing osteoporosis). Over the course of five years, hip fractures in at-risk patients have declined by 50 per cent.[83]

Andalusian telehealth services receive about 1.5 million incoming phone calls from citizens every year.[84] At the same time, the service places 4.5 million outgoing calls, 89 per cent of which are for follow-up care. An organization that reaches out three times as much as its patients is really trying to prevent health complications. When was the last time your healthcare system proactively reached out to you?

79 Is the Kaiser Permanente model superior in terms of clinical integration? A comparative study of KaiserPermanente, Northern California and the Danish healthcare system, BMC Health Serv Res, 2010, 10:91

80 High Performing Healthcare Systems: Delivering Quality By Design, October 2008, 152–177, http://www.longwoods.com.

81 "Wide deployment of the Andalusian eHealth Strategy: Getting ready for scaling up," a presentation to the 2014 eHealth Forum in Athens, http://ehealth2014.org/wp-content/uploads/2014/06/Pres_Carriazo_A.pdf.

82 Atul Gawande, The Hot Spotters, The New Yorker, January 24, 2011.

83 The Cleveland Clinic Way: Lessons in Excellence from One of the World's Leading Health Care

84 "Wide deployment of the Andalusian eHealth Strategy: Getting ready for scaling up", a presentation at the 2014 eHealth Forum in Athens, http://ehealth2014.org/wp-content/uploads/2014/06/Pres_Carriazo_A.pdf. Organizations, Toby Cosgrove, 2013.

4.2 Patient access to information

High performing healthcare systems provide their patients with the tools to actively manage their own care as a member of their care team. In Andalusia, citizens have electronic access to their health information and can directly monitor their treatment progress.[85] They can access information on their:

- current health problems
- care plan
- allergies
- prescriptions and possible adverse medication interactions
- primary and specialized care appointments
- lab tests and diagnostic imaging reports
- emergency visits and hospital admissions

4.3 Patient input

The Cleveland Clinic in the United States has launched an initiative called the Knowledge Program that asks patients to electronically enter data about how they are feeling to round out the information in their EMR.[86] Patients who come in for an outpatient visit are handed a tablet and asked to answer a few questions about their illness and their quality of life. As their care proceeds, they are queried again at several points. All this data helps doctors understand patients' ongoing conditions. They can compare what patients report to what they themselves observe and know through the tests they have run. And they can use these results to adjust or modify treatments if necessary. They can also study the results for populations of patients to find useful patterns and trends, including which treatments are most effective and how they might best be administered.

A patient who is diagnosed with a serious illness today might research it by going online. They might find a journal article or two detailing the latest research. However, they will not find a website where they can plug in the test results and get back highly accurate information that says, "Here are your treatment options, and here's what the data says about how likely each of them is to work for someone with your exact profile (age, sex, family history, and so on)."[87]

5. Alignment of provider funding with patient needs

There is an ongoing debate in the medical community as to the efficacy of different models of provider compensation. The overarching lesson from successful healthcare systems is this: to be effective, a compensation model needs to include clear expectations for care quality and align the financial incentives of providers with the results they achieve for their patients. Effective public and private systems alike shift provider focus away from volume of service and toward quality by introducing robust mechanisms to continuously measure and benchmark quality and outcomes of care at the system-wide, program and provider levels.

85 See page 13 in http://www.faireavancerlasantenumerique.com/wp-content/uploads/2015/04/eHealth-Strategy-in-Andalucia-Jose-Daniel-Soto-Alba.pdf.
86 Toby Cosgrove, The Cleveland Clinic Way: Lessons in Excellence from One of the World's Leading Health Care Organizations, 2014.
87 Same reference.

Most healthcare systems we reviewed tend to reduce their reliance on fee-for-service models of compensation. Capitation and salary arrangements, coupled with specific quality and care outcomes expectations, offer providers the flexibility and the incentive to change how care is delivered. The most common formula for family physicians includes salary plus a capitation component (about 15 per cent of the total), which takes into account the nature of the population registered with them, its density and the percentage of the population over 65 years of age.[88]

- In both Kaiser Permanente[89] and Intermountain Healthcare[90] in the United States, the organization sets specific quality and outcome expectations and creates a structure where providers have an incentive to work together and help each other optimize the overall care for their patients.
- Canterbury in New Zealand has shifted away from its fee-for-service model for physician compensation. There are now salary arrangements for most specialists. Family physicians receive about half of their pay from the district health board based on the number of patients enrolled on their patient panels,[91] and the other half in the form of copays from patients (subsidized or free for some segments of the population).[92]
- In Andalusia, most physicians are salaried employees.

6. One patient, one electronic health record

A single electronic health record (EHR) system is at the heart of every effective healthcare system:

- Some jurisdictions have chosen to transition to a single information management system complete with eReferral/appointment and ePrescribing services (e.g., Kaiser Permanente in the United States,[93] Andalusia in Spain[94]).
- Others adopt interface solutions where various data elements are extracted from multiple separate systems and combined in a single view of the patient's medical history (e.g., Canterbury in New Zealand[95]).
- Intermountain Healthcare, one of the first healthcare organizations in the United States to use an EHR system, started with an interface solution but has since moved to a single health record system.[96]

88 Nicholas Timmins, Chris Hamm, The quest for integrated health and social care: A case study in Canterbury, New Zealand, The King's Fund, 2013, page 11.
89 Is the Kaiser Permanente model superior in terms of clinical integration? A comparative study of Kaiser Permanente, Northern California and the Danish healthcare system, BMC Health Serv Res, 2010, 10:91.
90 High Performing Healthcare Systems: Delivering Quality By Design, October 2008, pages 152–177, http://www.longwoods.com/content/20146.
91 See http://www.pegasus.health.nz/primary-healthcare-in-new-zealand.
92 See http://www.cdhb.health.nz/Hospitals-Services/Community-Rural-Health-Services/Family-Doctors/Pages/default.aspx.
93 Louise Lang (editor), Connected for Health: Using Electronic Health Records to Transform Care Delivery, Kaiser Permanente, 2010.
94 "Wide deployment of the Andalusian eHealth Strategy: Getting ready for scaling up," a presentation at the 2014 eHealth Forum in Athens, http://ehealth2014.org/wp-content/uploads/2014/06/Pres_Carriazo_A.pdf.
95 Nicholas Timmins, Chris Hamm, The quest for integrated health and social care: A case study in Canterbury, New Zealand, The King's Fund, 2013, page 29.
96 Intermountain Live with Cerner HER, Health IT News, March 19, 2015, http://www.healthcareitnews.com/news/intermountain-live-cerner-ehr.

- The National Health Service in the UK attempted to deploy an electronic health record system. The initiative was discontinued after a 12-year, £9.7 billion investment in development, with the following cited among key reasons for failure:[97]
  - hasty implementation—there was insufficient time for stakeholder engagement and testing in the field. A "big bang" versus staged site-by-site deployment was attempted, creating widespread chaos rather than letting later sites learn from early adopters.
  - top-driven design—a health information system needs to be designed by frontline healthcare workers and patients, who will actually use it
  - lack of clear leadership—the project suffered from a lack of consistent financial support and strategic focus
- In contrast to the NHS experience, Andalusia succeeded in deploying its universal health record system for 8 million people in part because it appears to have largely avoided the above mistakes.

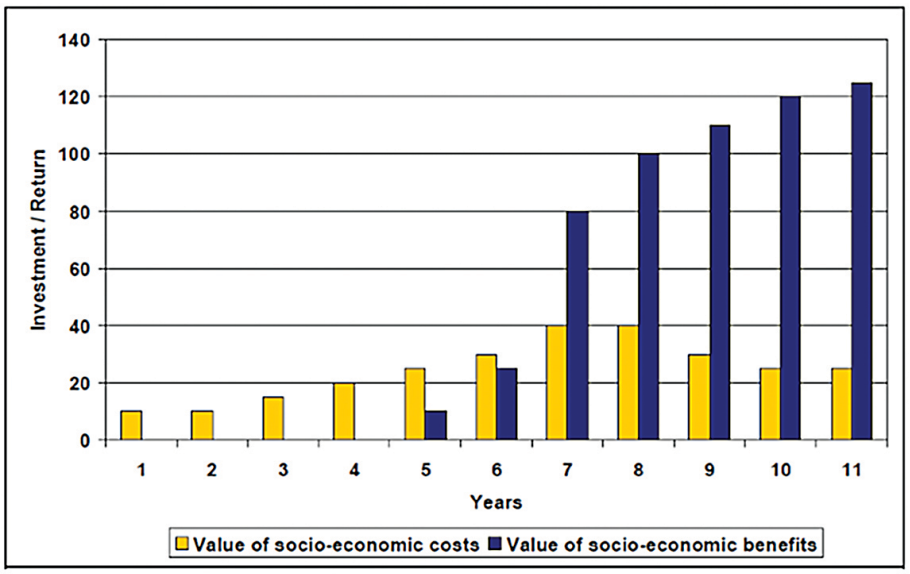
Electronic health record initiatives are expensive and difficult to implement, but evidence shows they are worth it. The European Commission has funded research into the economic impact of electronic health record and ePrescribing systems.[98] This included case studies of the following:

- The Emergency Care Summary of NHS Scotland, UK
- The Computerized Patient Record System at the University Hospitals of the Canton of Geneva, Switzerland
- The Hospital Information System at the National Heart Hospital, Sofia, Bulgaria
- The regional EHR and ePrescribing system Diraya in Andalusia, Spain
- The regional ePrescribing system Receta XXI in Andalusia, Spain
- The regional integrated EHR and ePrescribing system across Kronoberg County, Sweden
- The Kolín-Čáslav health data and exchange network, Czech Republic
- Dossier Patient Partagé Réparti (DPPR)—Shared and Distributed Patient Record platform in the Rhône-Alpes Region, France
- The regional Healthcare Information System in Lombardy, Italy
- A nationwide health information network in Israel
- Evanston Hospital, Northwestern Healthcare, United States

97 https://www.cl.cam.ac.uk/~rja14/Papers/npfit-mpp-2014-case-history.pdf, pages 3 and 36.
98 http://www.ehr-impact.eu/index.htm.

In all cases, the socio-economic gains to society from interoperable electronic health record and ePrescribing systems exceeded costs.[99] See the following chart.

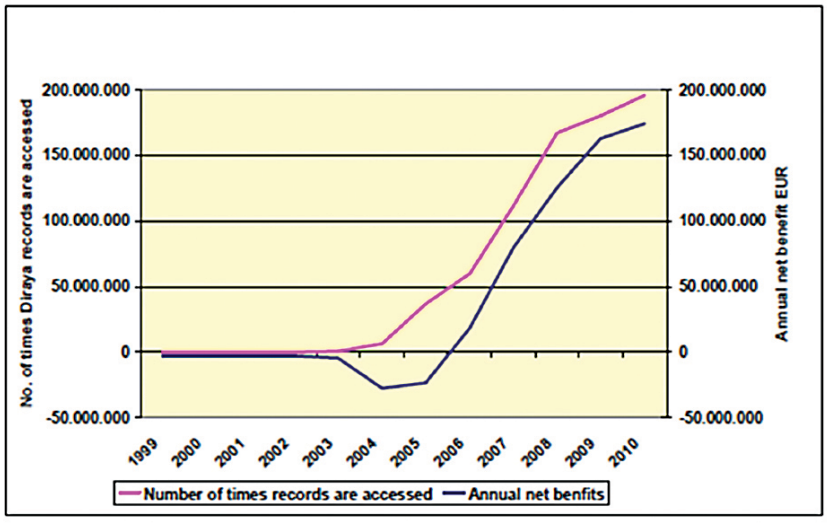
Socio-economic impact of EHR and ePrescribing[100]



Source: EHR IMPACT study (2009)

The specific example of Andalusia highlights an important point about the relationship between net benefits and utilization of electronic health record and ePrescribing systems:[101]

Link between net benefits and utilization



Source: EHR IMPACT study

99 The socio-economic impact of interoperable electronic health record (EHR) and ePrescribing systems in Europe and beyond. October 2009, pages vi–vii, http://www.ehr-impact.eu/downloads/documents/EHRI_final_report_2009.pdf.

100 Same reference, page 26.

101 The socio-economic impact of Diraya, the regional EHR and ePrescribing system of Andalusia's public health service. Final draft, July 2009, page 42.

Both funders and implementers should not expect positive net benefits during the first several years of implementation, even if the utilization of a new system is increasing rapidly. It is important to be patient and allow the initiative time to demonstrate the results.

The summary report provided to the European Commission also offers analysis of impact on different stakeholders.[102] Although healthcare provider organizations incur most of the cost of deploying electronic health records (80 per cent), the deployment also requires a significant contribution from individual providers, third parties and patients. Benefits occur mainly at the point of care in the form of higher quality and efficiency from better-informed decisions.

Deployment of electronic health record and ePrescribing systems should not be viewed just in terms of direct cash expenditures and savings.[103] From a financial view, the main positive impact of interoperable EHRs and ePrescribing is the opportunity to redeploy resources to improve performance, rather than generate extra cash.

About half of the entire cost will require extra financing over time. The cost of large-scale engagement of users during development and implementation is considerable. Most of this cost is in the form of resources redeployed from other activities. Only 13 per cent of benefits come in the form of cash savings. The main benefit will come from freeing up resources for redeployment to direct patient care.

In the Canadian context, an effective EHR offers another important advantage. The population in Canada is distributed between high density urban areas and vast areas of the country with low population density. Serving lower density areas has historically been a challenge, and virtual care through advanced use of technology is often discussed as a highly promising solution—precisely what an effective EHR system can offer.

102 The socio-economic impact of Diraya, the regional EHR and ePrescribing system of Andalusia's public health service. Final draft, July 2009, page 42..

103 The socio-economic impact of interoperable electronic health record (EHR) and ePrescribing systems in Europe and beyond. October 2009, page 30,

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