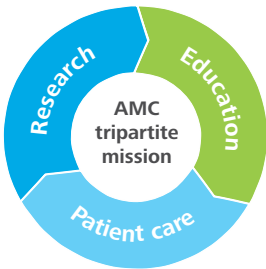


## Academic Health Sciences Centres

### The tipping point. Building sustainable strategies for the future

#### At the tipping point

Academic Health Sciences Centres (AHSCs) are at a tipping point. While serving their tripartite mission of teaching, research and patient care, they are susceptible to pressures that endanger their long-term viability.



Each of Canada’s AHSCs faces different challenges and opportunities, while they work to improve health care and the health system in parallel. There are, however, common issues that require strategic reflection to enable transformative actions. While much has been written about the state of AHSCs across North America, and well-documented by organizations like ACAHO and CAHO in Canada<sup>1</sup>, we offer a strategic framework to guide AHSCs and their stakeholders in the drive toward long-term sustainability.

#### One of the most complex entities in health care

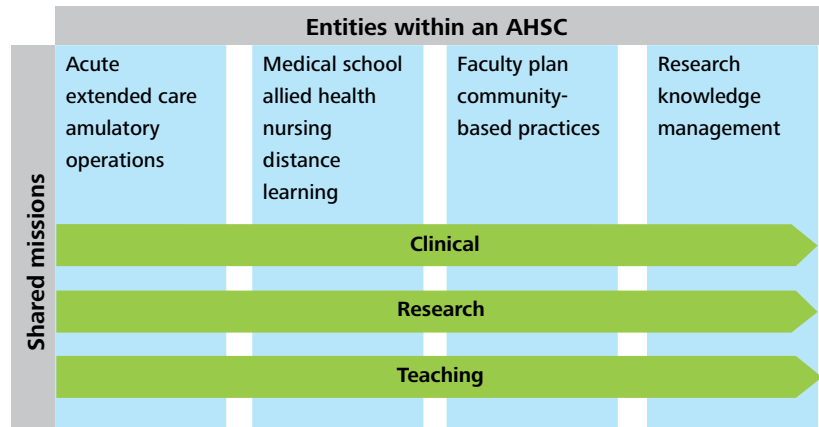
In addition to supporting a community’s need for patient care, AHSCs train medical professionals and investigate new diagnostic and therapeutic innovations to improve care. These complex organizations are mission-driven, significant in operating budget and size, labour and capital intense and subject to every positive and challenging trend in health care. Each AHSC is unique. In some, major components – teaching hospitals, acute and ambulatory patient care activity, medical and allied health professional schools, research enterprises and faculty practices plans – are tightly

integrated to achieve common goals. In others, they are loosely configured and sometimes misaligned. Often, a disease or population-based centre of clinical excellence and research (e.g. children’s hospital or cancer centre) is also part of the AHSC umbrella entity. Across Canada, AHSC models have evolved to include a mix of:

- Regional and local governance and management which drives different approaches to clinical prioritization
- Different strategic emphases across the AHSC missions
- Varied configurations of leadership authority and accountability
- Different levels of integration with universities, communities and the private sector

The multifaceted interrelationships AHSCs maintain help them deliver their tripartite mission, but make them one of the most complex entities in the health care system. This complexity compounds traditional strategic and operational hurdles, and can make the AHSC value proposition difficult to articulate.

Figure 1: The complex interrelationships within an AHSC



## What makes the clinical enterprise of AHSCs different?

An AHSC clinical enterprise is frequently more costly than its community hospital counterparts.

The major distinctions between community-based providers and AHSCs explain why:

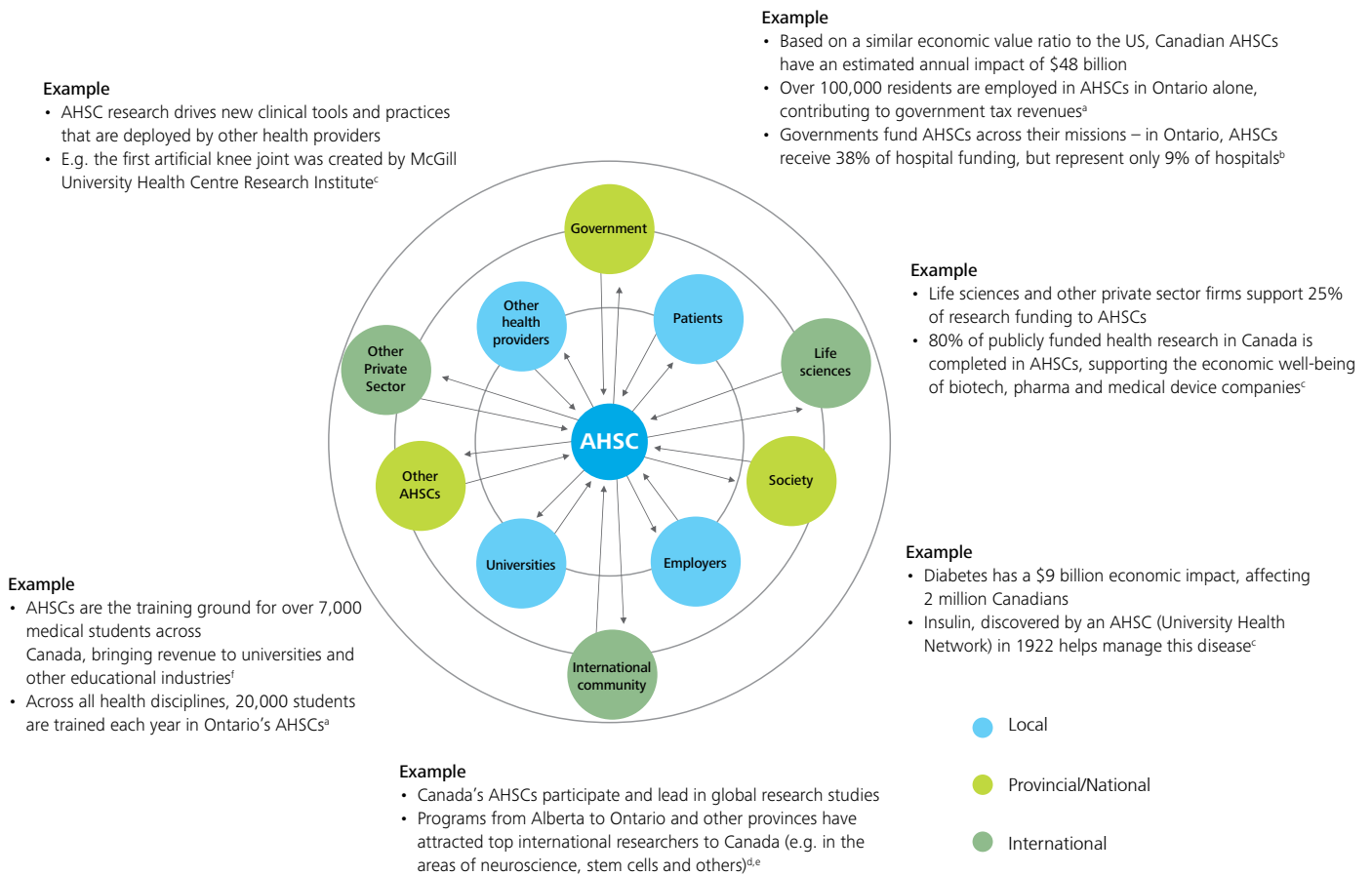
Operating focus	AHSC	Community-based provider organization
<b>Physician relationships</b>	<ul style="list-style-type: none"> <li>The majority of physicians are engaged in an alternative funding plan</li> <li>Compensation is based on teaching, research and patient care</li> <li>Budget and staffing controls are primarily in clinical departments</li> <li>Patient care productivity is a major but not singular factor in compensation, and several additional factors contribute to informal power, advancement or recognition</li> <li>AHSCs need greater administrative overhead than community hospital departments to support academic faculty plans</li> </ul>	<ul style="list-style-type: none"> <li>The majority of physicians operate independently of the institution</li> <li>Overhead decisions to manage practices, information technologies, etc. are made, and financial responsibility assumed, by the physicians</li> <li>Compensation is primarily based on productivity in patient care</li> <li>Advancement to leadership roles is based on a combination of formal leadership applications through the hospital, and informal relationships among peers, resulting in board appointments or medical staff election to office</li> </ul>
<b>Clinical program portfolio</b>	<p>AHSCs provide services across a wide range of programs, sometimes to:</p> <ul style="list-style-type: none"> <li>Support faculty research interests or reputational pursuits</li> <li>Accommodate small populations of patients with complex conditions/needs</li> <li>Facilitate teaching programs with medical and other health professional students and residents</li> </ul>	<ul style="list-style-type: none"> <li>Local provider organizations select clinical programs based on community need, mission and prospect for financial viability</li> <li>Highly specialized programs with strong profit margins are frequently pursued</li> <li>Lacking the potential for significant ROI or financial self-sufficiency, specialty programs are often not developed, or are developed and maintained only where additional government funding is available</li> </ul>
<b>Clinical residencies</b>	<ul style="list-style-type: none"> <li>Clinical residencies provide additional staffing for clinic and acute patient care, but an administrative infrastructure to monitor student performance, assess risk and oversee patient care is also required – estimated at an average of 1% of total operating costs<sup>2</sup></li> <li>Medical residents tend to use a higher level of diagnostic tests for learning purposes, driving costs higher</li> </ul>	<ul style="list-style-type: none"> <li>Residency program investments are a means to an end of supporting the institution's clinical staff development (recruitment) efforts</li> <li>Residents are typically used in a few targeted clinical programs, and the infrastructure (costs) to manage residency programs is significantly less</li> <li>Residents are given a community-based learning experience typically not available in the AHSC setting</li> </ul>
<b>Patient acuity</b>	<ul style="list-style-type: none"> <li>AHSCs typically have higher acuity due to higher severity of patient mix and unique tertiary/quaternary programs (trauma, burn units, NICU, organ transplantation, etc.)</li> <li>Despite their heavy base of primary and secondary activity, they provide most high-end tertiary and quaternary care – in Ontario, it is estimated that AHSCs deliver 51% of tertiary and 82% of quaternary patient days<sup>3</sup></li> </ul>	<ul style="list-style-type: none"> <li>Community-based organizations generally have lower acuity levels and provide a range of primary, secondary and typically lower-end tertiary care services</li> </ul>
<b>Reputation</b>	<ul style="list-style-type: none"> <li>Consumers perceive AHSCs more favourably than community hospitals for quality of care, specialization, technology and complex care</li> <li>AHSC brands are often differentiated by the specialty services they offer (e.g. high-end cancer, neonatal, cardiac, etc.) and typically stretch beyond their local geography</li> </ul>	<ul style="list-style-type: none"> <li>Enjoy favourable reputations in local settings for provision of care for all but the most complex of conditions</li> <li>Have a reputation of being more accessible than AHSCs, though not as specialized</li> </ul>
<b>Costs and infrastructure</b>	<ul style="list-style-type: none"> <li>Typically have a higher cost base due to higher acuity case mix, added staffing costs for trainees, faculty compensation plans (salaried except for small portion that's productivity based), clinical program mix (requires latest technologies and facilities) and the need to maintain standby capacity for specialized services (e.g. burn units)</li> <li>Typically have more advanced clinical IT systems cutting across multiple ambulatory and acute applications, and sometimes bio-medical informatics capabilities for data management across the clinical and research enterprises that add costs</li> </ul>	<ul style="list-style-type: none"> <li>Cost structures for community hospitals are typically leaner than AHSCs, given the comparably limited education and research infrastructure required</li> <li>This enables lower-cost delivery of similar services for primary, secondary and low-end tertiary services compared to the AHSCs</li> </ul>

## The economic impact of AHSCs

AHSCs invest in innovations that they spread into the health system in different ways<sup>4</sup>. The value they bring through these innovations, however, is not always well profiled in Canada’s health system or with the broader public.

A study in the United States estimated that the 126 US AHSCs have a \$451 billion economic impact annually<sup>5</sup>. Assuming a similar economic value ratio in Canada, Canadian AHSCs have an estimated \$48 billion economic impact, in addition to the quality of life improvements and other health benefits they bring to our society. The examples outlined in figures 2 and 3 demonstrate some of the breadth of this impact:

Figure 2: AHSCs extend value across geographic and industry lines<sup>6</sup>



## Examples of economic contribution of AHSCs

AHSC	Innovation
<b>University Health Network Toronto</b>  <b>Capital Health/ University of Alberta</b>	<ul style="list-style-type: none"> <li>Diabetes has a \$9 billion economic impact, currently affecting over 2 million Canadians.</li> <li>Over time, poorly controlled diabetes can lead to a variety of serious health conditions, including heart disease, stroke, blindness, amputations, kidney disease, and nerve damage, which have a severe impact on health care costs in Canada.</li> <li>The discovery of insulin by an AHSC (University Health Network) in 1922 helps to manage this disease.</li> <li>Over 240,000 Canadians live with Type 1 diabetes; the incidence rate of Type 1 diabetes is rising by three to five per cent in Canada; the greatest rise occurs in five to nine year olds.</li> <li>First islet transplant under the Edmonton protocol for Type I diabetes was undertaken at a Canadian AHSC. The Edmonton protocol has produced levels of success that are unprecedented in the field of islet transplantation advancing the treatment of Type 1 diabetes.</li> </ul>
<b>Calgary Health Region / University of Calgary</b>	<ul style="list-style-type: none"> <li>Launched in 2007, Calgary Health Region and University of Calgary introduced NeuroArm, the world's first MRI compatible surgical robot. This has provided surgeons with unprecedented detail and control, enabling them to manipulate tools at a microscopic scale<sup>7</sup>.</li> <li>Developed over the past six years, this landmark achievement will revolutionize the field of neurosurgery and medical research for communities in Canada and across the world.</li> </ul>
<b>Lawson Health Research Institute — London , Ontario</b>	<ul style="list-style-type: none"> <li>Over 30,000 Canadians suffer from kidney failure and require dialysis or a transplant to stay alive. Millions more have related conditions such as diabetes and high blood pressure, which are the leading causes of kidney failure.</li> <li>The development of the first artificial kidney machine at the Lawson Institute in 1948 has led to many advances in the treatment of kidney disease, maximizing the quality of life for affected individuals.</li> </ul>
<b>The Ottawa Hospital Research Institute</b>	<ul style="list-style-type: none"> <li>In 2009, an estimated 22,000 Canadians will be diagnosed with colorectal cancer and 9,100 will die from it.</li> <li>Treatment costs are estimated at \$66,000,000 annually in Canada<sup>8</sup>.</li> <li>Researchers from OHRI played a key role in an international team that identified four new genes for colorectal cancer; these genes could predict up to a six-fold increase in the lifetime risk of developing colorectal cancer.</li> <li>Regular screening can prevent death from colorectal cancer, with patients having an estimated 90% chance of being cured if the cancer is detected early, compared with only 10% if it is detected at an advanced stage.</li> </ul>
<b>McGill University Health Centre Research Institute</b>	<ul style="list-style-type: none"> <li>In 2005-2006 the Canadian Joint Replacement Registry reported over 125,000 knee replacements which increased patients' quality of life and their economic contribution.</li> <li>Without the creation of the first artificial knee joint by the McGill University Health Centre, the success of these interventions would not be possible.</li> </ul>

Despite the important economic (and other) roles AHSCs play in local and global communities, the AHSC entity itself has been criticized for an inflexible hierarchical structure, complex incentives and cumbersome organizational culture, which impair the basic underpinnings of its economic health. Such criticism suggests a static business environment where AHSCs are slow to adapt, less efficient than competing community hospital providers and prone to operate less effectively than typical businesses. While these perceptions do not always hold true, they point to an intrinsic conflict between an AHSC's academic and business cultures, which often cannot be easily reconciled, and this limits the integration of strategy and planning across the tripartite mandate.

### The transformation imperative

To better integrate strategy with planning, AHSCs must do more than manage the intrinsic challenges of their complex operating models; they must also redefine their role in the 21<sup>st</sup> century. This is especially true in light of the changes sweeping through Canada's health care system, which mandate AHSCs to:

- **Clarify their value proposition** in the face of provincial regional delivery models that often remove independent AHSC governance
- **Contemplate new structures, opportunities and challenges** created by evolving regional governance models that are driving a transformation agenda in Alberta and New Brunswick

- **Better define their role and future sustainability** in response to province-wide reviews in Nova Scotia, Prince Edward Island, Saskatchewan, Manitoba and Alberta
- **Navigate budgetary pressures** as high-end clinical services that were once the domain of AHSCs become widespread in community hospitals
- **Leverage their skills** in care, research and translation as the push to primary care and chronic disease management focuses public policy on community-related challenges, such as the shortage of family physicians in Canada
- **Meet new education and training needs**, and introduce interprofessional models of care, to accommodate changes to clinical scope of practice (e.g. pharmacists) and the continued evolution of roles such as Nurse Practitioners and physician assistants
- Limited funding to support institutional research boards and the indirect cost of research mean AHSCs must cover these funds through clinical operations, endowments or other mechanisms
- Private sector research funding comprised 25% of total funding in 2006, but is declining – an issue that will become more apparent in the current economic downturn
- Public policy and investment in research commercialization is emerging as a new source of support to AHSCs in the pre-commercial stages, but brings with it a risk of overlooking discovery research
- Recruitment and retention of top researchers and faculty continue to challenge AHSCs, particularly when the availability of research funding per capita in the U.S. is four times that of Canada's funding levels

In making these changes, AHSCs must also balance a range of competing priorities. On the one hand, the quality and quantity of the health care workforce is central to the AHSC mission as AHSCs provide the majority of medical training and a higher proportion of nurse training than community hospitals<sup>9</sup>. On the other hand, shortages persist among physicians, nurses and allied health professionals. Against this backdrop, AHSCs are still expected to teach health care workers how to use technologies for clinical training and shared decision-making with patients, while reaching out to diverse student populations and focusing on patient-centred and team-based care.

And educational mandates are not the only function under pressure. Research faces public and private funding challenges, limited administrative infrastructure and support, difficulty recruiting top talent and an emerging focus on commercialization. For example:

- The number of applications for health research continues to outpace demand, despite the increase in public research funding heralded by the introduction of the Canadian Institutes of Health Research (CIHR). In fact, due to some funding reductions in public research dollars, in 2006 Canada dropped to 7<sup>th</sup> place globally in annual health research output
- Governments need AHSCs to serve as national and provincial resources that provide specialized acute services and to lead in reducing unwarranted variation, avoidable errors and ineffective treatments

## Beyond the tipping point

Despite the pressures AHSCs face, ongoing innovation can help to improve the sustainability of their academic mission. For instance, in the face of compounding research pressures, AHSCs are exploring industry partnerships, seeking initial seed funding for investigational research and employing other innovative strategies to support and expand their research mandates. Further, most AHSCs are transforming their clinical, research and educational operations to improve quality and reduce costs.

These are critical activities given the AHSC's simultaneous role as a lab for scientific breakthroughs, a path for workforce development and a safety net provider of community care. Truly, the viability of academic health sciences centres is relevant to every stakeholder in Canada:

- Policymakers need AHSCs to fill vital roles in preparing tomorrow’s health care workforce to support economic development in communities, provinces and regions
- Companies that produce medical devices, pharmaceuticals, biotechnologies and information technologies need AHSCs to equip tomorrow’s health professionals to use their innovations
- And consumers need AHSCs to lead in the discovery of newer, better ways to care for themselves and loved ones

Although the role of the AHSC is central to Canada’s health system, a renewed focus on strategies that drive transformational change is needed. Internal politics and complex structures remain a challenge, yet they pale in comparison to the environmental trends that threaten AHSC viability. To sustain their “three-in-one” model, and manage the risks they face, AHSCs must engage in careful planning and strategic execution. This is not “new news” to AHSCs. As national health reform plays out, reform of academic medicine must follow suit.

So how do AHSCs move beyond the tipping point they face? Fresh thinking, savvy leadership, strategically-attuned boards and institutional leaders, procedures that limit conflict and effective execution are required.

### It starts with strategy

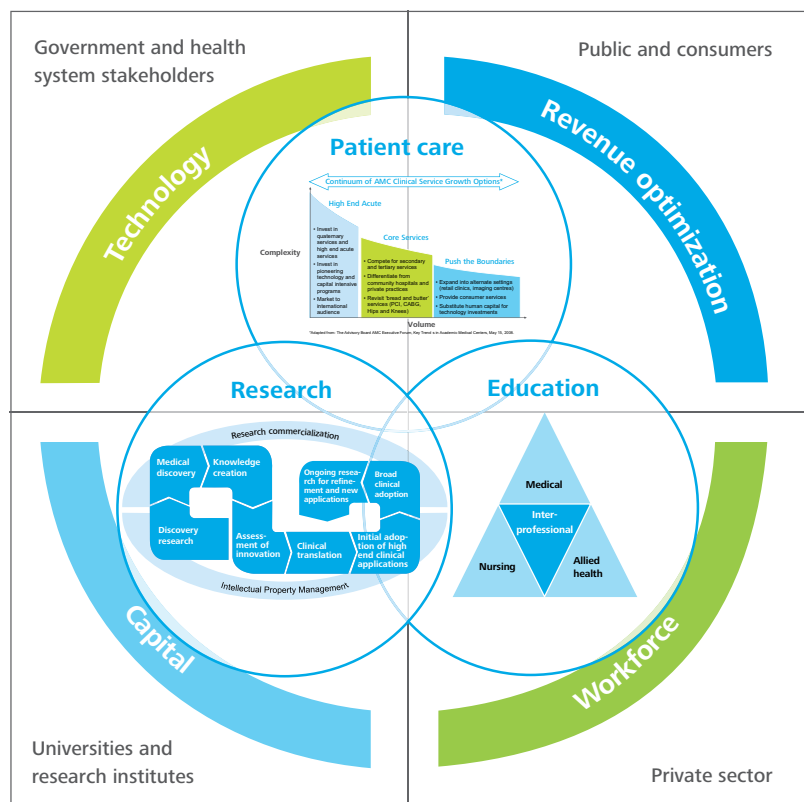
Ultimately, AHSC transformation needs to start with a renewed perspective on strategy, and the translation of that strategy into action. AHSCs must ask – and answer – a series of strategic questions to focus their efforts:

- What’s our future? Where should we be in 10 years?
- What is the value proposition of academic medicine in our community? Is it sustainable? Realistic? Objective?
- Do we operate as 3-in-1 or as 3-1’s? Should we change?
- How should we focus our capital and human resources for priorities in infrastructure, technology and programs and services to accelerate our transformation? And what do we say ‘NO’ to?

- How can we better prepare tomorrow’s health care workforce to be professionals who deliver appropriate services, using technologies and processes that work better than the status quo?
- How can we support health care professionals in their quest to be well-trained, lifelong learners who use technology appropriately?
- Do we have the right leadership and structure to implement the plan?
- How will federal, provincial and territorial governments and consumers relate to us as a result of the plan?

In pursuing strategy renewal, the following framework can help to focus efforts across four zones of action affecting all three dimensions of the academic mission. To achieve long-term sustainability, it is critical to define and align strategy within and across these zones.

Figure 3: A proposed AHSC transformation strategy framework



While the components of this framework appear straightforward, working through each zone of action and exploring their inter-connections can help AHSC leaders and their stakeholders make tough but important decisions related to organizational transformation. In support of this framework, the following strategic questions are offered as a useful 'checklist' – a launch point for AHSC leaders to use to help refocus discussion in their organization:

✓ **Patient care**

**What will clinical growth focus on over the next 5-10 years?** How can we align our clinical, research and education activities? How do the evolving clinical capabilities of non-teaching hospitals affect our clinical, research and education programs?

✓ **Research**

**What is our focus along the research value chain?** How do we enhance the operation and supporting informatics of our research enterprise to access funding from industry and government sources, produce valid and reliable studies in a more timely manner, translate research into education and patient care, enhance awareness of research among graduates and community-based providers, and participate in research-related commercialization efforts?

✓ **Education**

**How will we manage inter-professional training to meet the distinct training needs of each health faculty?** Is our clinical and research training adequate? How do we train our workforce toward continuous improvement of processes and individual lifelong learning? How can we recognize faculty education contributions?

✓ **Revenue optimization**

**How can we optimize revenues in the near term to fund future investments and maintain targeted programs for growth and sustainability across our missions?** Is there sufficient organizational resolve to divest non-core programs or underperforming assets?

✓ **Workforce**

**How do we recruit, retain, recognize and compensate the people who can help us achieve our vision and strategy?** What supports are in place for mass career customization? How are we encouraging a service culture for patient care?

✓ **Information technology**

**How can we optimize efficiency, effectiveness and decision-making?** How are infrastructure and technology planning, deployment and utilization aligned across the three missions?

✓ **Capital**

**How much capital do we need, and what sources should we pursue?** Are we exploring strategic partnerships for new capital across our missions? How is the organization cultivating donors?

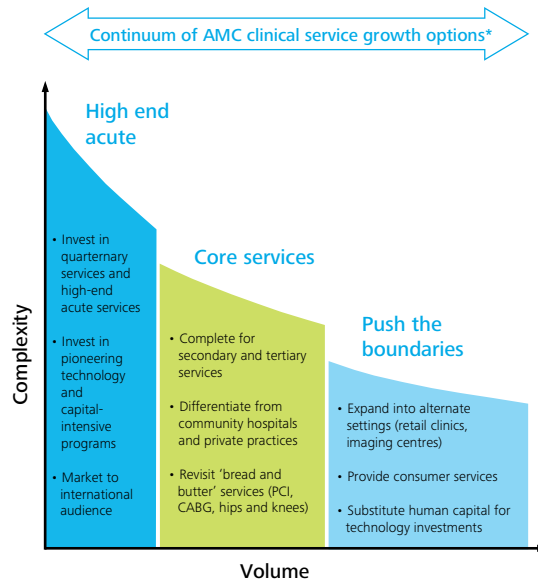
## Three missions; limitless options

### Patient care

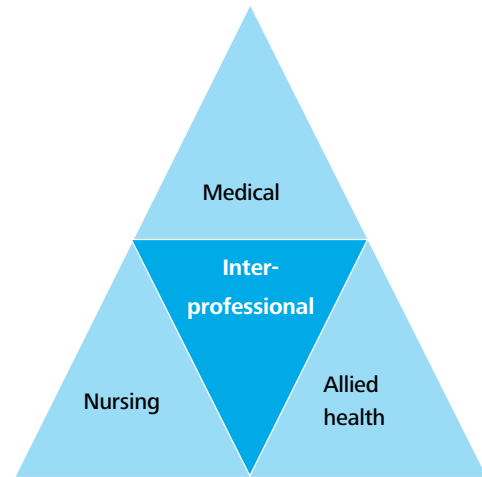
Going forward, AHSCs must identify a growth path for their clinical enterprise amid growing complexity, volume and population need.

### Education

Evolving interprofessional care education will remain relevant in the current models, and be an important driver in clinical and research integration

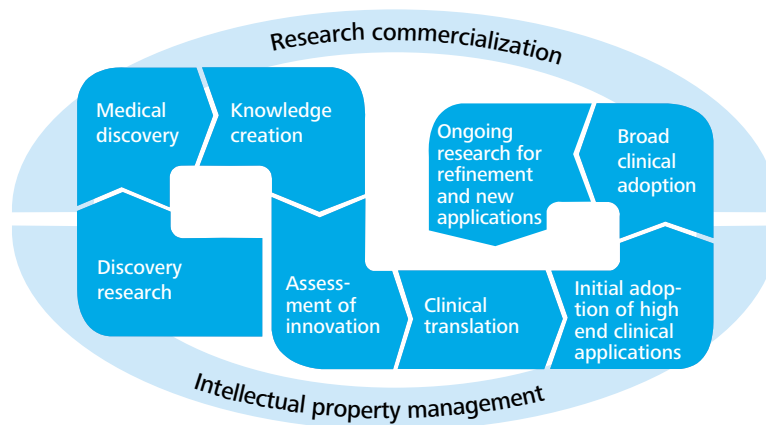


\*Adapted from: The Advisory Board AMC Executive Forum, Key Trends in Academic Medical Centers, May 15, 2008.



### Research enterprise re-design

Understanding the strengths and current focus along the research value chain helps define the future research enterprise.





## Putting strategy into action

The potential for change and success is clearly demonstrated by these examples of how AHSCs across North America have put the strategic questions raised into action.

Zones of action: Sustainable strategies for the future	Patient Care	Research	Education
Alignment strategy	<p><b>Strategic question:</b> How can we better align activities across patient care, clinical research, and education mandates?</p> <p><b>Strategy:</b> Single governance model and systematic and transparent methods to evaluate and direct fund flows across tripartite mission</p> <p><b>Case:</b> University of Pennsylvania, Penn Medicine – Resulted in organization-wide agreement to annual budgets and increased funding to teaching and research mandates over a three-year period, while maintaining clinical service budgets</p>		
Revenue optimization	<p><b>Strategic question:</b> How should we manage growth over the next 5-10 years?</p> <p><b>Strategy:</b> Divestiture of operations and financial responsibilities of specific service lines</p> <p><b>Case:</b> Georgetown University Medical Center – Partnered with Medstar Health to assume ownership, operations, and financial responsibility of Georgetown’s clinical enterprise. While GUMC maintains ownership of research and education mandates, it continued to have a stake in the leadership of the clinical enterprise. It also receives net revenue contributions from the clinical enterprise if financial targets are reached. While this model is not directly applicable to the Canadian AHSC landscape, it shows a unique example of ‘out-of-the-box’ thinking to push current strategies.</p>		
Workforce	<p><b>Strategic question:</b> How do we equip the organization to evaluate, optimize, and reward workforce?</p> <p><b>Strategy:</b> Implementation of relative value units (RVU) to accurately credit faculty activity within and beyond clinical activity across the academic mission</p> <p><b>Case:</b> Duke University Medical Center – Implemented a Faculty Practice Plan which used RVUs instead of dollar assignments to score faculty assignments across the tripartite mission. This methodology helped determine faculty member total compensation in an alternative funding plan model.</p>		<p><b>Strategic question:</b> How can we enhance our training in the clinical and research disciplines?</p> <p><b>Strategy:</b> Expand focus on education and training of health professionals to non-traditional settings</p> <p><b>Case:</b> Northern Ontario School of Medicine – Implemented a distributed teaching model into rural communities outside of the traditional AHSC. Technological advances enabled medical learners to train and provide services in non-traditional settings</p>
Information technology	<p><b>Strategic question:</b> How can technological advances enable patients and families to be integrated in the “care team”?</p> <p><b>Strategy:</b> Access to web-based portal which includes personal and family health information and is equipped with features such as e-messaging, medication refills, and scheduling</p> <p><b>Case:</b> Sunnybrook Health Science Centre’s Mychart™ (now owned by Telus)– Enables patients and families to set up, manage, and access their own personal health record populated from the electronic patient record</p>	<p><b>Strategic question:</b> How can technological advances enhance research practices?</p> <p><b>Strategy:</b> Expand informatics capabilities and create new commercialization opportunities through partnership with health care information technology vendors</p> <p><b>Case:</b> University of Pittsburgh Medical Center (UPMC) – Entered into a three-year joint initiative with Cerner Corp. to create and commercialize innovative health care information technology solutions (i.e. new oncology information system)</p>	
Capital	<p><b>Strategic Question:</b> How should we focus our capital for priorities in infrastructure, technology, programs and services to accelerate our transformation?</p> <p><b>Strategy:</b> Partnership with other organizations along the value chain to solidify research relationships and focus financial investments and research initiatives</p> <p><b>Case:</b> Yale University – Agreed to let Pfizer invest \$5M in a research centre in exchange for guaranteed future research business. Pfizer contributed to state-of-the-art PET scan center and agreed to give the center an additional \$2M worth of business a year over the next decade</p>		

## Towards a sustainable future

Transformation of the AHSC model along seven strategic zones of action will support the long-term sustainability of academic medicine and refine the value proposition AHSCs bring – which is vital to the Canadian health system, economy and society as a whole. While AHSCs face many challenges, there are strategic choices they can make with their stakeholders to ensure long-term viability. We hope the questions and implications raised in this paper push current thinking and stimulate discussion about reframing the strategic perspectives that can be used to advance the future of academic health sciences centres in Canada.

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We would like to recognize the individuals who contributed their insights and support to this research.

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