

# Rapid Synthesis

Examining the Intersections between Ontario  
Health Teams and Specialty Service Lines

28 March 2022



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**Rapid Synthesis:**  
**Examining the Intersections between Ontario Health Teams and Specialty Service Lines**  
**60-day response**

28 March 2022

#### McMaster Health Forum

The McMaster Health Forum's goal is to generate action on the pressing health-system issues of our time, based on the best available research evidence and systematically elicited citizen values and stakeholder insights. We aim to strengthen health systems – locally, nationally, and internationally – and get the right programs, services and drugs to the people who need them.

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#### Timeline

Rapid syntheses can be requested in a three-, 10-, 30-, 60- or 90-business-day timeframe. This synthesis was prepared over a 60-business-day timeframe. An overview of what can be provided and what cannot be provided in each of the different timelines is provided on McMaster Health Forum's Rapid Response program webpage ([www.mcmasterforum.org/find-evidence/rapid-response](http://www.mcmasterforum.org/find-evidence/rapid-response)).

#### Funding

The rapid-response program through which this synthesis was prepared is funded by the Ontario Ministry of Health through a Health System Research Fund grant entitled 'Harnessing Evidence and Values for Health System Excellence.' The McMaster Health Forum receives both financial and in-kind support from McMaster University. The views expressed in the rapid synthesis are the views of the authors and should not be taken to represent the views of the Ministry of Health.

#### Conflict of interest

The authors declare that they have no professional or commercial interests relevant to the rapid synthesis. The funder played no role in the identification, selection, assessment, synthesis or presentation of the research evidence profiled in the rapid synthesis.

#### Merit review

The rapid synthesis was reviewed by a small number of policymakers, stakeholders and researchers in order to ensure its scientific rigour and system relevance.

#### Acknowledgments

The authors wish to thank Graham Woodward for his insightful comments and suggestions.

#### Citation

Evans C, Bain T, Waddell K, Dion A, Lavis JN. Rapid synthesis: Examining the intersections between Ontario Health Teams and specialty service lines. Hamilton: McMaster Health Forum, 28 March 2022.

#### Product registration numbers

ISSN 2292-7999 (online)

## KEY MESSAGES

### Questions

- What can we learn from how initiatives similar to Ontario Health Teams (OHTs) have collaborated with specialized services to support access to and quality of specialized services for individuals at the peak of the population risk pyramid?
- How can specialized services support population-health management for specific population segments across the risk pyramid?
- How can specialized services collaborate with initiatives focused on population-health management in ways that are responsive to equity considerations (e.g., language, rural status)?

### Why the issue is important

- Ontario Health Teams are expected to provide a complete continuum of healthcare – with the exception of the most specialized services
- Fulfilling the objective of population-health management will require the engagement of specialty service lines, to directly deliver care for individuals with the most complex needs and to support robust care across the population-health management pyramid for specific populations

### What we found

- Based on the literature and key informant interviews, we identified models for how specialty service lines interact with health systems:
  - population-specific accountable care organizations
  - contractual arrangements
  - regional networks
  - provincial programs
- All four of the models above address the direct provision of care for individuals at the peak of the population risk pyramid
- When considering how these models may interact with OHTs to support care for individuals at the peak of the population pyramid, relevant factors include:
  - patient experiences of transitions in care
  - adequate patient volumes
  - financial stability for specialty service lines
  - variation in experience engaging in network care
  - variation in the services available within OHTs
  - interoperability of digital communication across services
- Two of the four models (regional networks and provincial programs) support population health management for specific population segments across the risk pyramid
- When considering how these models may interact with OHTs to support care for population segments along the risk pyramid, relevant factors include:
  - regional variation in health system infrastructure
  - sectoral variation in the breadth and nature of health services, and the maturity of existing regional and provincial collaborations
  - availability of data and information technology to drive planning
  - human-resource requirements of governance arrangements
- Addressing equity concerns in specialty service lines will require a balance of standardization to reduce unfair variation, and tailoring to meet unique needs

## **QUESTIONS**

- 1) What can we learn from how initiatives similar to Ontario Health Teams have collaborated with specialized services to support access to and quality of specialized services for individuals at the peak of the population risk pyramid?
- 2) How can specialized services support population-health management for specific population segments across the risk pyramid?
- 3) How can specialized services collaborate with initiatives focused on population-health management in ways that are responsive to equity considerations (e.g., language, rural status)?

## **WHY THE ISSUE IS IMPORTANT**

Ontario's health system is undergoing a transformation to enable population-health management at a local level through the creation of OHTs. First announced in February 2019, OHTs are cross-sectoral networks of healthcare organizations (and, in some cases, public health and social services) that at maturity will be held clinically and fiscally accountable for the health of their attributed population. OHTs are expected to provide a complete continuum of care to their populations, including primary, home and community, and hospital-based care. Specific services that are required or that are out of scope for OHTs have not been defined. At present, there is variation among OHTs in the services that are and are not included, arising from the nature of the voluntary partnerships that make up each team.

However, while variation exists, OHTs are not expected to provide the most specialized services. Fulfilling the objective of population-health management will require the engagement of specialty service lines, to directly deliver care for individuals with the most complex needs, and to support robust care down the population-health management pyramid for specific populations.

Specialty service lines have a number of unique characteristics. The Ontario Hospital Association defined these as services requiring:

- focused expertise and extensive resources;
- an adequate volume of patients to maintain quality and clinical competence;
- regional or jurisdictional planning to address economies of scale; and
- interdependencies with other services.(1)

Some specialty service lines may focus on conditions that are primarily acute and/or episodic, as is the case for complex cardiac and stroke care, cancer care, and transplant services. Others address complex or rare presentations of conditions requiring longitudinal care, as in for children and adults with severe

### **Box 1: Background to the rapid synthesis**

This rapid synthesis mobilizes both global and local research evidence about a question submitted to the McMaster Health Forum's Rapid Response program. Whenever possible, the rapid synthesis summarizes research evidence drawn from systematic reviews of the research literature and occasionally from single research studies. A systematic review is a summary of studies addressing a clearly formulated question that uses systematic and explicit methods to identify, select and appraise research studies, and to synthesize data from the included studies. The rapid synthesis does not contain recommendations, which would have required the authors to make judgments based on their personal values and preferences.

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This rapid synthesis was prepared over a 60-business-day timeframe and involved five steps:

- 1) submission of a question from a policymaker or stakeholder (in this case, the Ontario Ministry of Health);
- 2) identifying, selecting, appraising and synthesizing relevant research evidence about the question;
- 3) conducting key informant interviews
- 4) drafting the rapid synthesis in such a way as to present concisely and in accessible language the research evidence; and
- 5) finalizing the rapid synthesis based on the input of at least two merit reviewers.

neurodevelopmental conditions, people receiving dialysis, and some people with severe and persistent mental illness.

Here we use the phrase “specialty service lines” to highlight that these services are structured and coordinated programs of care (rather than a single intervention or the work of an individual specialist).

Some OHTs already include some specialty service lines, while others may only provide lower tiers of care. Because specialty service lines cannot effectively or efficiently be provided by each OHT, there is a need to consider how specialty service lines can work across and between OHTs to support comprehensive population-health management.

Specialty service lines have two important functions in a population-health management approach. The first is to directly provide care for individuals at the top of the population-health management risk pyramid (i.e., the small proportion of individuals facing the most complex health concerns).(2) These are the services that, as per the Ontario Hospital Association definition above, require extensive resources, focused expertise, and adequate patient volumes. Attention to the interface of OHTs and specialty service lines may help to prevent fragmentation of services for individuals receiving specialized services, and ensure equitable access across the province.

The second function of specialty service lines extends beyond direct care to individuals at the top of the population-health management pyramid. For example, the Ontario Hospital Association refers to the academic mandate of those involved in providing specialty service lines as a crucial component,(1) while a report from Mental Health Partners identifies three roles for “regional and specialized services,” which include regional integration and system support in addition to direct care.(3) These additional roles suggest that specialty service lines may provide important indirect supports for care across the population-health risk pyramid for specific population segments. For instance, specialty service lines may support the development and implementation of diagnosis-specific care pathways that span the continuum from preventive and primary care to highly specialized care. This synthesis explores both roles of specialty service lines (i.e., direct care for the top of the pyramid and support along a population segment) to optimize population-health management and achieve the quadruple aim.

**Figure 1: The role of specialty service lines in population-health management**

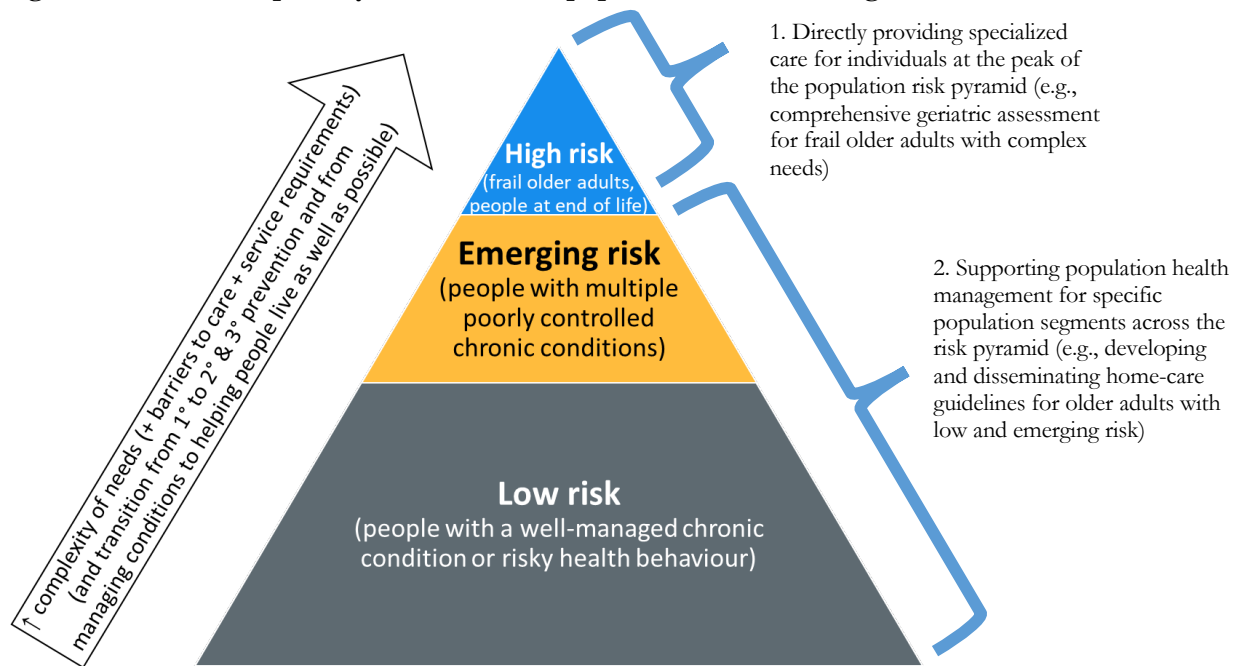


Image adapted from: Waddell K, Reid R, Lavis JN. RISE brief 6 (updated): Population-health management. Hamilton, Canada: McMaster Health Forum; 2020

## **WHAT WE FOUND**

We did not identify any systematic reviews addressing the subject of relationships between specialized services and the broader health system. We identified 15 single studies relevant to our topic through a structured database search. The literature largely addressed specialized services for specific conditions or populations (e.g., a national headache network, or a co-located clinic for children with medical complexity). Results from this structured search were mainly of low relevance and are included in the Appendix. Targeted database and internet searches were also conducted to identify how other health systems have approached this issue. This search included two systematic reviews, eight single studies, two evaluations, two policy briefs and two other documents, as well as review of relevant governmental and organizational websites.

We also conducted 12 key informant interviews involving a total of 19 individuals from Ontario, and three key informant interviews with individuals from the U.S.

We have provided a brief summary for each of the questions below. Following the summary, tables 1, 2 and 3 elaborate on the four models we found for how specialty service lines interact with local health systems. These models include:

- 1) population-specific accountable care organizations;
- 2) contractual arrangements;
- 3) regional networks; and
- 4) provincial programs.

Table 1 provides an overview of each of the four models. Table 2 addresses how the OHT building blocks are operationalized in these examples. Building blocks 1-4 are addressed in Table 2A and building blocks 5–8 in Table 2B. Table 3 summarizes what is known about effects and implementation considerations for each example, where data is available.

### **Question 1: What can we learn from how initiatives similar to OHTs have collaborated with specialized services to support access to and quality of specialized services for individuals at the peak of the population risk pyramid?**

All four of the models (population-specific accountable care organizations, contractual arrangements, regional networks, and provincial programs) address the direct provision of care for individuals at the peak of the population risk pyramid:

- 1) *Population-specific accountable care organizations* (ACO) directly provide a complete continuum of care to individuals with high-cost conditions or at risk of high-cost use, and include organizations able to provide specialty services and high-touch care management (e.g., end-stage renal disease ACOs, pediatric ACOs, ACOs for cancer care);
- 2) *Contractual arrangements* enable local health systems, like OHTs, to contract with specialty service lines for specific services in instances where partners are unable or do not provide these types of care;

### **Box 2: Identification, selection and synthesis of research evidence**

We identified research evidence (systematic reviews and primary studies) by searching (in January 2022) Health Systems Evidence ([www.healthsystemsevidence.org](http://www.healthsystemsevidence.org)) and PubMed. In Health Systems Evidence, we used filters for specialty care combined with [population\*health management]. In PubMed, we searched for [(specialty service lines OR specialty care) AND population\*health management].

The results from the searches were assessed by one reviewer for inclusion. A document was included if it fit within the scope of the questions posed for the rapid synthesis.

For each systematic review we included in the synthesis, we documented the focus of the review, key findings, last year the literature was searched (as an indicator of how recently it was conducted), methodological quality using the AMSTAR quality appraisal tool (see the Appendix for more detail), and the proportion of the included studies that were conducted in Canada. For primary research (if included), we documented the focus of the study, methods used, a description of the sample, the jurisdiction(s) studied, key features of the intervention, and key findings. We then used this extracted information to develop a synthesis of the key findings from the included reviews and primary studies.



- 3) *Regional networks* are formed by specialty service providers within a region, organized around a specific condition or population. Regional networks standardize pathways into and within specialty service lines, and work together to increase flexibility and achieve economies of scale; and
- 4) *Provincial programs* directly provide specialty service lines, often in a small number of facilities, under centralized oversight.

When considering how these models may interact with OHTs to support care for individuals at the peak of the population pyramid, relevant factors include:

- *Patient experiences:* Designing the interface between OHTs and specialty service lines will require careful attention to ensure these transitions are seamless and do not result in disjunctures in care. Moreover, key informants questioned how this transition out of the OHT will be communicated to patients.
- *Volume requirements:* As defined above, specialty service lines require an adequate volume of patients to maintain quality and competence. Population-specific accountable care organizations, which may be organized around conditions or around risk, require a critical mass of eligible patients within a manageable geographic area. This would be challenging to achieve in much of Ontario. In contrast, regional approaches may be particularly relevant in areas where single OHTs are smaller, and populations are more dispersed.
- *Financing context:* The Ontario Hospital Association stressed the importance of financially stabilizing specialized services during the OHT rollout,<sup>(1)</sup> a concern echoed by key informants. Contractual agreements between OHTs and specialty service lines would introduce novel financial arrangements. Drafting and managing these contracts would require expertise and administrative support. Meanwhile, population-specific accountable care organizations include elements of shared risk. These ACOs were developed against the very different backdrop of the American health funding context, which includes multiple payers, competition among providers, and familiarity with shared risk. Introducing these new elements into Ontario would require careful attention to ensure stability of services and to avoid unintended effects on other service areas.
- *Regional variation:* Key informants noted that OHTs vary in the size of their attributed population and the services included in the OHT itself. Specialty service lines offered within a single OHT in one area may require a regional approach in another, owing both to population makeup and to the composition of the OHT itself. This complicates planning as a single template for linking OHTs to specialty service lines is unlikely to be possible for some sectors and populations. This is particularly true for services that may need to be offered regionally (e.g., assertive community treatment), rather than provincially (e.g., maximum security forensic services, transplantation).
- *Data and information technology:* Under contracting arrangements, regional networks, or provincial programs, specialty service lines will need to accept referrals from, and communicate with, multiple OHTs. The non-interoperability of different electronic record systems will pose a challenge for providing seamless care. Key informants commented that there is a need for bridging solutions in this area.
- *Accountability:* While OHTs will be accountable for the health of their attributed populations, it is unclear how accountabilities will function when individuals require specialty care that is not available within the OHT. Moreover, while some sectors such as cancer and pediatric care have clear systems of accountability in place with respect to quality and performance, others do not. The interplay of specialty service line and OHT accountabilities remains to be defined.

**Question 2: How can specialized services support population-health management for specific population segments across the risk pyramid?**

Two of the models (regional networks and provincial programs) addressed support for population-health management in addition to direct care.

- 1) *Regional networks* interface with multiple regional or local care organizations to provide support with planning, care pathway development, evaluation, and other functions.
- 2) *Provincial programs* provide clinical leadership and performance monitoring of care for specific population segments at a provincial level, often with a regional layer of support for implementation.

When considering how these models may interact with OHTs to support care for population segments across the population pyramid, relevant factors include:

- *Regional variation:* While regional variation will affect direct provision of services, it also has implications for system supports. Regions may vary in the availability of specialty service lines with the infrastructure and expertise to lead networks and provide backbone support. For instance, information technology and research and evidence capacity tend to be concentrated in tertiary care centres, which are unevenly distributed across the province and across OHTs. Meanwhile key informants from the child and youth sector noted that multiple barriers, including a lack of leadership or capacity for community-based care for children with complex needs, can lead to regional “quality care deserts”.
- *Sectoral variation:* Ontario can draw on the strengths of existing provincial programs such as Cancer Care Ontario and CorHealth, which include both provincial and regional levels. However, key informants noted that uniqueness among specialty service lines means that a single template for provincial programs or regional approaches is unlikely to be feasible. For instance, some specialty service lines include a concentration of expertise in a small number of tertiary care centres, as is the case in transplantation. The structures that enable Trillium Gift of Life to support primary care and other sectors may not map onto specialty service lines that are concentrated in the community, such as HIV care. Other specialty service lines provide support that extends beyond healthcare. For instance, child and youth healthcare needs to interface with education, and mental health and addictions care has links with housing and justice. Moreover, sectors vary in the maturity of their existing collaboration and coordination. As such, provincial programmatic approaches may require sector-by-sector development.
- *Data and information technology:* Data-driven planning is critical to coordinated approaches at the regional and provincial level. For instance, CorHealth uses data to inform forecasting, planning and resource allocation in cardiac, stroke and vascular care across the province. Key informants in the mental health sector noted that the sector does not yet have the capacity for data-driven planning at a provincial level, an issue the Mental Health and Addictions Centre for Excellence seeks to address. The present lack of data poses a challenge for identifying need and aligning services and health human resources accordingly across the population pyramid.
- *Funding arrangements:* While specialty service lines often receive direct funding, related services such as follow-up support may be funded as sub-programs within an organization. For instance, a specialized surgery may be funded directly, while subsequent home care is not. This renders the full costs of specialized care invisible. Key informants called for funding that takes into account all sources and follows the full patient journey.
- *Administrative demands:* Supporting population-health management places administrative demands on specialty service lines. Where specialty service lines are provided in a single or small number of institutions, direct interaction with every OHT may not be feasible. In other cases, specialty service lines may be provided regionally by multiple organizations across the province, but these organizations may be small. For instance, assertive community treatment for individuals with severe and persistent mental illness may be offered by community mental health providers, which may lack human resources to participate in planning with multiple OHTs. A key informant from a regional network in Ontario stated that the network was developed in part to address this issue, by creating a single structure for multiple organizations to interact with multiple OHTs. However, the informant stated that governance continues to be time- and human-resource intensive, given the number of tables at which innovative model members must sit. Meanwhile, specialty service lines and OHTs fall under different ministerial branches, and collaborating effectively will require strong communication and shared learning.

**Question 3: How can specialized services collaborate with initiatives focused on population-health management in ways that are responsive to equity considerations (e.g., language, rural status)?**

Findings related to equity considerations point to the importance of both standardization where needed to address inequitable variation, and tailoring to meet the unique needs of particular regions and populations.

Standardization across specialty service lines can be used to ensure that services are fairly matched to needs. Provider collaboratives in the United Kingdom aim to reduce the “postcode lottery” by ensuring that specialty service lines provide a consistent standard of care within regions. In Ontario, key informants commented that in sectors without data-driven planning, defined care pathways, and provincial oversight, there are unexplained inequities in who receives what care.

However, standardization of models alone will not address equity concerns. Empirical findings relating to some of the models above suggest inequitable effects. For instance, specialized ACOs for patients with end-stage renal disease have differential outcomes across populations served, with higher mortality found among organizations serving populations with a greater proportion of Hispanic patients and with lower incomes. Further, these ACOs were more likely to achieve higher-than-median savings if they served fewer Black and Hispanic patients.<sup>(19)</sup> An evaluation of a regional network model in the United Kingdom found that stakeholders perceived that racialized clients were under-represented in some services.<sup>(9)</sup> Key informants in Ontario echoed these concerns, noting that specialty service lines are not equally accessed by all population groups.

Below are considerations relevant to the needs of specific populations in Ontario identified by key informants:

*Rural and Northern populations:* As noted above, all specialty service lines require an adequate volume of patients within a defined geographic area. These models would require adaptation in less densely populated areas. Meanwhile models including regional backbone support will need to take into account the disparities in health infrastructure in rural and Northern communities. Key informants commented on the importance of health human-resource planning to address needs in rural and Northern communities, taking into account both the objective of providing care as close to home as possible, and the lack of digital infrastructure in some areas.

*Francophone populations:* One key informant commented on the lack of individual providers within specialty service lines who can provide services in French. Another noted that because Francophone communities are small, providers from this community may be reluctant to provide sensitive care to fellow community members. Ontario’s French Language Health Planning Entities (often called the Entités) support OHTs to meet the needs of Francophone communities. Building on this work, one regional network in Ontario created an inventory of resources for Francophone patients in their region, and identified gaps and recommendations in this area.

*Indigenous populations:* Key informants noted the importance of culturally safe care for Indigenous persons. One key informant noted two challenges to building culturally-safe care pathways: first, Indigenous organizations may not be funded for developing these pathways; and second, a deeper evidence base is required to inform culturally safe care-pathway development, particularly in regards to more specialized services.

*Marginalized populations:* Key informants commented on the importance of engaging service users in shaping services, and noted that engagement of some populations including children and youth requires specific skills. One key informant also pointed out that, because of the influence of social determinants of health, specialty service lines often care for highly marginalized individuals. As such models that risk fragmentation of care for individuals in contact with specialty service lines, such as “carve outs,” may have a disproportionate impact on marginalized people. One key informant in the mental health sector commented that highly specialized facilities may be less prepared to provide care that is responsive to marginalization, in comparison to community-based organizations with deep knowledge of specific population needs. In contrast, a key informant from pediatric care noted that children with complex care needs, including complex social needs, experience barriers to accessing primary care while specialized services are more equipped to respond. Models that support collaboration of specialized service lines with the full continuum of care (including community-based care and social services) could allow for stronger responses to social needs.

**Table 1: Models for specialty service lines**

Model	Brief description	Function	Examples
Population-specific accountable care organizations	<ul style="list-style-type: none"> <li>Specialty accountable care organizations (ACOs) adopt shared risk and accountability for caring for attributed populations defined by specific conditions or characteristics</li> </ul>	Care at the peak of the pyramid	<ul style="list-style-type: none"> <li>End-stage renal disease Seamless Care Organizations (ESCOs) (U.S.): specialty accountable care organizations organized around dialysis facilities and nephrologists instead of primary care</li> <li>Ambulatory Intensive Care Unit (U.S.): an approach to serving high-needs, high-cost patients that has been adopted in ACOs such as Hennepin Health</li> </ul>
Contractual arrangements	<ul style="list-style-type: none"> <li>Health systems may contract with specialty service lines to provide specific services</li> </ul>	Care at the peak of the pyramid	<ul style="list-style-type: none"> <li>Carve outs (U.S.): accountable care organizations may “carve out” unavoidable high-cost services like trauma surgery, or individuals with extreme healthcare costs, meaning that care may be offered by a contracted provider and the services/individuals are not subject to shared savings and shared risk (4)</li> <li>Care compact (U.S.): healthcare providers and health systems and specialty services lines may also enter a non-binding “care compact” which specifies expectations of each party</li> <li>Clinical commissioning groups (U.K.): groups of primary-care practices and other stakeholders that plan and procure services within their local area, including specialty service lines</li> </ul>
Regional networks	<ul style="list-style-type: none"> <li>Specialty service lines may form regional networks that provide direct care while also offering support to health systems</li> </ul>	<p>Care at the peak of the pyramid</p> <p>Care for populations along the pyramid</p>	<ul style="list-style-type: none"> <li>Provider collaboratives (U.K.): groups of acute-care providers that coordinate to reduce variation in care while engaging with local levels of care to support planning</li> <li>Regional networks in Ontario support care for specific populations                             <ul style="list-style-type: none"> <li>Kids Come First Health Team: children and youth</li> <li>Central Ontario Health Network for Specialized Populations: people with complex mental health or substance use needs</li> </ul> </li> </ul>
Provincial programs	<ul style="list-style-type: none"> <li>Provincial programs coordinate direct care and support system functioning with respect to specific specialty service lines</li> </ul>	<p>Care at the peak of the pyramid</p> <p>Care for populations along the pyramid</p>	<ul style="list-style-type: none"> <li>Provincial programs (Ontario): examples include Cancer Care Ontario, CorHealth, Provincial Geriatric Leadership Ontario (PGLO), Trillium Gift of Life, and Complex Care for Kids Ontario</li> <li>Provincial Health Services Authority (PHSA) (B.C.): responsible for provincial clinical policy and oversight in a number of areas including cancer, children’s health, mental health and addictions, renal care, disease control, and others</li> </ul>
Blended approaches	<ul style="list-style-type: none"> <li>Partnerships across levels of governance that bring together two or more of the approaches above</li> </ul>	<p>Care at the peak of the pyramid</p> <p>Care for populations along the pyramid</p>	<ul style="list-style-type: none"> <li>U.K. integrated care systems bring together providers and commissioners of National Health Services across geographic areas at three different levels:                             <ul style="list-style-type: none"> <li>Neighbourhoods (populations of around 30,000 to 50,000 people) served by groups of GP practices working with NHS community services, social care and other providers</li> <li>Places (populations of around 250,000 to 500,000 people) served by a set of health and care providers in a town or district that connects primary-care networks to local councils, community hospitals and voluntary organizations</li> <li>Systems (populations of around 1 million to 3 million people) bringing together individuals’ whole area health and care partners in different sectors to set strategic direction and develop economies of scale</li> </ul> </li> </ul>

**Table 2A: Building blocks in specialty service line models, BB1-4**

Note: Q1 is used to label building blocks pertaining to the first question in this synthesis (“What can we learn from how initiatives similar to OHTs have collaborated with specialized services to support access to and quality of specialized services for individuals at the peak of the population risk pyramid?”), while Q2 is used to label building blocks pertaining to the second question in this synthesis (“How can specialized services support population-health management for specific population segments across the risk pyramid?”).

Model	BB1: Defined patient population	BB2: In-scope services	BB3: Patient partnership & community engagement	BB4: Patient care and experience
Population-specific accountable care organizations	<ul style="list-style-type: none"> <li>• In ESCOs, patients are assigned to an ESCO after their first visit for dialysis at a participating facility [Q1]</li> <li>• Ambulatory Intensive Care Unit models are designed to serve the highest-cost 20% of the population (5)                             <ul style="list-style-type: none"> <li>○ Hennepin Health serves individuals eligible under Minnesota’s Medicaid expansion (low-income, childless adults) [Q1]</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• ESCOs provide a continuum of end-stage renal disease care including hemodialysis, primary care, self-management supports, and palliative and end-of-life care                             <ul style="list-style-type: none"> <li>○ Some ESCOs provide mental health and substance use care and/or social services including food banks (6) [Q1]</li> </ul> </li> <li>• The Ambulatory Intensive Care Unit model includes a “first floor” of intensive non-medical care, a “second floor” of remodeled care from primary care physicians and nurse practitioners focusing on efficiencies and technological support, and a “third floor” of specialized care provided by partner organizations with track records of high-quality, efficient care (5) [Q1]</li> </ul>	<ul style="list-style-type: none"> <li>• Two ESCOs, out of 37 total ESCOs across the United States, include a patient advisory board (6) [Q1]</li> </ul>	<ul style="list-style-type: none"> <li>• ESCOs provide care coordination, self-management supports and patient and caregiver education (6) [Q1]</li> <li>• Ambulatory Intensive Care Units focus on “high-touch” interventions such as intensive-care coordination                             <ul style="list-style-type: none"> <li>○ Hennepin Health: proactive in-person outreach, intensive-care coordination and interdisciplinary support (7) [Q1]</li> </ul> </li> </ul>
Contractual arrangements	<ul style="list-style-type: none"> <li>• Accountable care organizations may carve out care of individuals with extreme healthcare costs, removing these individuals from calculations of the total cost of care (4) [Q1]</li> </ul>	<ul style="list-style-type: none"> <li>• Under carve-out agreements, health systems and providers may contract for services deemed out-of-scope                             <ul style="list-style-type: none"> <li>○ Carve outs are applied to low-prevalence, high-cost conditions (4) [Q1]</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• A key informant noted that patients can be engaged in identifying expectations for each party when creating care compacts [Q1]</li> <li>• Clinical commissioning groups can include patient partners [Q1]</li> </ul>	<ul style="list-style-type: none"> <li>• Key informants noted that carve-out arrangements can lead to fragmented care for individuals receiving care through a specialty service line [Q1]</li> </ul>
Regional networks	<ul style="list-style-type: none"> <li>• The scale of provider collaboratives may vary, with some operating at the level of a single Integrated Care System and others</li> </ul>	<ul style="list-style-type: none"> <li>• Provider collaboratives are organized around specific services, e.g., inpatient eating-disorder care (9) [Q1, Q2]</li> </ul>	<ul style="list-style-type: none"> <li>• Regional networks in Ontario include Indigenous organizations, and</li> </ul>	<ul style="list-style-type: none"> <li>• Provider collaboratives will develop standardized evidence-based care pathways through specialty service lines (8) [Q1]</li> </ul>

*Examining Intersections between Ontario Health Teams and Specialty Service Lines*

	<p>having a regional or national footprint (8) [Q1, Q2]</p> <ul style="list-style-type: none"> <li>• Provider collaboratives will directly engage in local “place-based partnerships” to support planning (8) [Q2]</li> <li>• Regional networks in Ontario provide direct care and system support at a regional level, working with multiple OHTs [Q1, Q2]</li> </ul>	<ul style="list-style-type: none"> <li>• Regional networks in Ontario are population specific rather than service specific [Q1, Q2]</li> <li>•</li> </ul>	<p>collaborate with Indigenous communities to provide culturally safe care [Q1, Q2]</p> <ul style="list-style-type: none"> <li>• Regional networks in Ontario include patient partners in their steering committees [Q1, Q2]</li> </ul>	<ul style="list-style-type: none"> <li>• Regional networks in Ontario are supporting evidence-based care within primary and other levels of care, through the development of locally tailored care pathways [Q2]</li> </ul>
Provincial programs	<ul style="list-style-type: none"> <li>• Ontario’s provincial programs are organized by condition or population [Q1, Q2]</li> <li>• The PHSA’s constituent service lines encompass a number of conditions (e.g., BC Cancer, BC Renal), populations (e.g., BC Women’s Hospital, BC Children’s Hospital), and specific services (e.g., autism assessment, emergency health services), along with public health [Q1, Q2]</li> </ul>	<ul style="list-style-type: none"> <li>• Some provincial programs in Ontario directly provide specialized care <ul style="list-style-type: none"> <li>○ Cancer Care Ontario’s regional cancer centres provide specialized cancer care</li> <li>○ Provincial Geriatric Leadership Office coordinates and provides specialized services for older adults with complex needs</li> <li>○ Trillium Gift of Life manages organ matching and oversees the Transplant Programs where direct care occurs</li> <li>○ Complex Care for Kids Ontario coordinates care for children with medical complexity [Q1]</li> </ul> </li> <li>• The PHSA directly provides care through specialized hospitals such as BC Children’s Hospital, and is responsible for specialized services such as trauma services delivered in collaboration with regional health authorities [Q1]</li> </ul>	<ul style="list-style-type: none"> <li>• In 2017, the PHSA underwent a public patient-engagement process [Q1]</li> </ul>	<ul style="list-style-type: none"> <li>• Ontario’s provincial programs support evidence-informed practice across the continuum of care <ul style="list-style-type: none"> <li>○ Cancer Care Ontario’s regional cancer programs implement the provincial cancer plan, which spans the continuum of care</li> <li>○ CorHealth aims to drive evidence-informed practice</li> <li>○ PGLO supports the development and dissemination of clinical models [Q2]</li> </ul> </li> <li>• The PHSA is responsible for provincial clinical policy</li> <li>• The PHSA’s 2020/21-2022/23 service plan includes developing referral pathways and service linkages between new integrated primary-care teams and PHSA services [Q2]</li> </ul>

**Table 2B: Building blocks in specialty service line models, BB5-8**

Note: Q1 is used to label building blocks pertaining to the first question in this synthesis (“What can we learn from how initiatives similar to OHTs have collaborated with specialized services to support access to and quality of specialized services for individuals at the peak of the population risk pyramid?”), while Q2 is used to label building blocks pertaining to the second question in this synthesis (“How can specialized services support population-health management for specific population segments across the risk pyramid?”).

Model	BB5: Digital health	BB6: Leadership, accountability, and governance	BB7: Funding & incentive structure	BB8: Performance measurement, quality improvement, and continuous learning
Population-specific accountable care organizations	<ul style="list-style-type: none"> <li>• ESCOs: shared electronic health records (HER), emergency-department alerting for providers (in some ESCOs), and secure text message and SharePoint communication with clients (in some ESCOs)                             <ul style="list-style-type: none"> <li>○ Information-sharing between ESCOs and external hospitals is inconsistent (6) [Q1]</li> </ul> </li> <li>• Hennepin Health: applies algorithms to a shared EHR in order to identify high-risk patients, in conjunction with staff assessment of individual patients (7) [Q1]</li> </ul>	<ul style="list-style-type: none"> <li>• ESCOs: voluntary networks organized around end-stage renal disease care, accountable for all beneficiaries of Medicare Part A and B costs [Q1]</li> <li>• Hennepin Health: comprised of the county’s human services department, a teaching hospital, a federally qualified health centre, and a county-run Medicaid managed care plan (7) [Q1]</li> </ul>	<ul style="list-style-type: none"> <li>• ESCOs: large dialysis facilities share losses as well as savings, while smaller facilities may choose one-sided or two-sided risk sharing (6; 10) [Q1]</li> <li>• Hennepin Health: receives a capitated Medicaid payment and reimburses providers on a fee-for-service basis                             <ul style="list-style-type: none"> <li>○ Human services are paid for by the county, with some Medicaid funding also directed towards these services (7) [Q1]</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Most ESCOs use quality dashboards to track key metrics (6) [Q1]</li> <li>• Hennepin Health sets performance benchmarks which inform the distribution of shared savings (7) [Q1]</li> </ul>
Contractual arrangements	<ul style="list-style-type: none"> <li>• A key informant noted that a lack of digital interoperability contributes to fragmentation of care under carve-out agreements [Q1]</li> </ul>	<ul style="list-style-type: none"> <li>• Carve-outs can include contracts with service providers [Q1]</li> <li>• Care compacts are non-binding agreements, predicated on mutual benefit [Q1]</li> <li>• Clinical commissioning groups include primary-care practices, clinicians, and patient representatives                             <ul style="list-style-type: none"> <li>○ Some CCGs partner with others to achieve efficiencies</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• In care compacts, incentives are assumed to be intrinsic</li> <li>• In an environment where specialty service lines compete for referrals, a care compact provides access to patients [Q1]</li> </ul>	<ul style="list-style-type: none"> <li>• Quality standards may be embedded in contracts or care compacts</li> <li>• Clinical commissioning groups monitor the quality of commissioned services [Q1]</li> </ul>

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		<ul style="list-style-type: none"> <li>○ Some CCGs partner with local authorities to consider an integrated approach to health and social care</li> <li>○ Under ongoing reforms, CCGs will be streamlined such that one CCG serves each integrated care system [Q1]</li> </ul>		
Regional networks	<ul style="list-style-type: none"> <li>● Regional networks in Ontario intend to provide some virtual care, as well as virtual consultation [Q1]</li> <li>● Regional networks in Ontario will use digital health to support referral pathways, quality improvement and implementation [Q2]</li> <li>●</li> </ul>	<ul style="list-style-type: none"> <li>● Leadership models for provider collaboratives include board models and lead-provider model [Q1, Q2]</li> <li>● While accountabilities for provider collaboratives will remain with statutory agencies including the care quality commission, collaboratives can also enact mutual accountabilities [Q1]</li> <li>● The Central Ontario Health Network for Specialized Populations collaborates with partner OHTs through a monthly meeting of OHT coordinators, and representation on partner OHTs’ steering committees and relevant working groups [Q2]</li> </ul>	<ul style="list-style-type: none"> <li>● Funding in board-led provider collaboratives can flow to individual members who can then pool funds [Q1, Q2]</li> <li>● A lead provider in a collaborative may receive the whole budget and contract with other providers [Q1, Q2]</li> </ul>	<ul style="list-style-type: none"> <li>● Regional networks in Ontario include members with expertise in measurement and quality improvement and will engage in iterative improvement [Q2]</li> </ul>
Provincial programs	<ul style="list-style-type: none"> <li>● Some of Ontario’s provincial programs use data to support system functions: <ul style="list-style-type: none"> <li>○ Trillium Gift of Life provides data and information technology support to facilitate transplant care</li> <li>○ Cancer Care Ontario uses data to drive planning</li> <li>○ Existing data infrastructure supports integration of pediatric care across multiple sectors including community and tertiary care [Q2]</li> </ul> </li> <li>● The PHSA’s 2018 Foundational Mandate included development of</li> </ul>	<ul style="list-style-type: none"> <li>● Some of Ontario’s provincial programs include both provincial and regional layers of governance: <ul style="list-style-type: none"> <li>○ CCO includes provincial system supports, and regional cancer programs that provide and integrate clinical care; regional vice-presidents report both to the cancer centre and to CCO</li> <li>○ PGLO has a central steering committee and a number of regional programs [Q2]</li> </ul> </li> <li>● The PHSA is accountable to the Minister of Health and collaborates with regional health authorities and the First Nations Health Authority</li> </ul>	<ul style="list-style-type: none"> <li>● Trillium Gift of Life has proposed a model of funding where funding follows the patient, including pre- and post-operative care [Q2]</li> </ul>	<ul style="list-style-type: none"> <li>● Ontario’s provincial programs carry out performance measurement and quality improvement in their respective areas: <ul style="list-style-type: none"> <li>○ CCO engages in planning and monitoring at a provincial level, in addition to quality measurement and reporting within regional cancer programs</li> <li>○ CorHealth prepares targeted outcome reports for institutions to compare performance with that of their peers</li> </ul> </li> </ul>



	a provincial digital information technology division [Q2]	<ul style="list-style-type: none"> <li>○ The PHSA has an executive structure</li> <li>○ The PHSA encompasses a number of specific programs (e.g., BC Cancer, BC Renal) [Q2]</li> </ul>		<ul style="list-style-type: none"> <li>○ PGLO supports performance management through development of indicators and an evaluation framework</li> <li>○ Pediatric provincial programs use measures specific to pediatric populations, and are supporting efforts to harmonize COVID recovery measures across adult and pediatric populations</li> <li>● The PHSA is responsible for monitoring and evaluating each of its constituent programmatic areas [Q2]</li> </ul>
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**Table 3: Findings related to models for specialty service lines**

Model	Findings from effectiveness studies	Findings from implementation studies
Population-specific accountable care organizations	<ul style="list-style-type: none"> <li>● ESCOs:                             <ul style="list-style-type: none"> <li>○ Associated with decreased costs and hospitalizations (6; 10)</li> <li>○ Associated with 0.3% increase in patient survival over a one-year period (6)</li> <li>○ Beneficiaries lacked awareness of the model and perceived no change in access to specialists (6)</li> </ul> </li> <li>● Ambulatory Intensive Care Units                             <ul style="list-style-type: none"> <li>○ A systematic review found that ambulatory intensive care generally did not affect emergency-department use or mortality, and effectiveness in reducing hospitalization varied (11)</li> </ul> </li> <li>● Hennepin Health:                             <ul style="list-style-type: none"> <li>○ Associated in reduced hospitalizations relative to comparators for individuals with frequent utilization, but not reductions in other types of care including emergency visits (12)</li> <li>○ Improved quality of life among enrollees was associated with strong connections to primary care, mental health care, and the primary-care team (13)</li> </ul> </li> </ul>	None identified

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Contractual arrangements	<ul style="list-style-type: none"> <li>• A cross-sectional study compared Oregon coordinated-care organizations that carved out mental health services with those that “carved in” and found:             <ul style="list-style-type: none"> <li>○ No difference in access to care for individuals with serious mental illness</li> <li>○ Greater access to care for individuals with mild/moderate mental illness in “carve-in” models</li> <li>○ Greater access to outpatient care for Black patients in “carve-in” models</li> <li>○ Lower access to specialists including psychiatrists and psychologists under “carve-in” arrangements (14)</li> </ul> </li> <li>• A simulation study using data from New Jersey Medicaid ACOs found that carving out three types of spending (injury care, residential care facilities, and inpatient care costs above US\$100,000) increased accuracy of estimates of savings (15)</li> </ul>	<ul style="list-style-type: none"> <li>• A qualitative review synthesized studies on the implementation of clinical commissioning policy and the influence of these factors on health inequities, and found:             <ul style="list-style-type: none"> <li>○ Benefits from implementing clinical commissioning including collaborative partnerships, strategic planning, and communication among commissioners and other stakeholders, including providers and communities</li> <li>○ Equity was not a major consideration in commissioning</li> <li>○ There is only one local quality indicator for CCGs, and few CCGs have followed through on a policy direction to create their own (16)</li> </ul> </li> </ul>
Regional networks	<ul style="list-style-type: none"> <li>• “New Care Models” (NCMs), an early pilot of the model now called provider collaboratives, were trialed in inpatient eating-disorder services, secure services, and child and youth inpatient mental health services             <ul style="list-style-type: none"> <li>○ Most sites supported care closer to home</li> <li>○ Existing data did not allow for analysis of quality or other outcomes</li> <li>○ Evaluators noted that NCMs appeared not to have a strong recovery focus(9)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Infrastructure that supported implementation of “New Care Models” (precursor to provider collaboratives) included case managers, project management support, staff for data management and analysis, senior-level support for contracts and finance, leadership for user involvement, and administrative support</li> <li>• Barriers to implementation included lack of policy guidance for contracting and commissioning, unclear accountabilities, separate funding streams for community services</li> <li>• Recommendations for improvements to the model included clarifying intentions, building relationships, embedding clinical and management leadership, planning for and communicating workforce implications of reforms, reaching agreement on how savings and costs will be shared, investing in data and case and pathway management, not assuming that savings will occur, standardizing measurement, and considering equity implications (9)</li> </ul>
Provincial programs	None identified.	<ul style="list-style-type: none"> <li>• Factors enabling the implementation of CCO:             <ul style="list-style-type: none"> <li>○ A quality mandate, including public reporting, performance-based agreements between CCO and integrated cancer programs, communities of practice, and CCO’s advisory role at the ministry (17)</li> <li>○ Agreed-upon core principles, a focus on rapid timelines for reform, and consensus on a master agreement first followed by a period to address emerging issues (18)</li> </ul> </li> </ul>

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## APPENDICES

### Appendix 1: Summary of findings from primary studies about the role of specialized services in population-health management

Focus of study	Study characteristics	Sample description	Key features of the intervention(s)	Key findings
Evaluation of a project linking community hospitals to specialized tertiary-care centres to coordinate care for children with medical complexity (20)	<p><i>Publication date:</i> 2012</p> <p><i>Jurisdiction studied:</i> Ontario</p> <p><i>Methods used:</i> mixed methods evaluation including pre-post measurement, costing, and caregiver and provider focus groups</p>	81 children with medical complexity, receiving services in a suburban or rural area (Brampton or Orillia)	Clinics were developed in two community hospitals which were staffed by community pediatricians and a nurse practitioner (NP) from a tertiary-care centre (SickKids). NPs could access pediatric hospitalists from SickKids for consultation, as well as community-based allied health services. Services included care coordination, goal setting, and symptom management.	Costs per patient decreased from \$244 per patient per month to \$131, driven by a reduction in hospitalization and shift in location of hospitalization from tertiary to community hospitals. Caregiver out-of-pocket costs also decreased. Caregiver quality of life did not change. Changes in child quality of life varied across measures and domains. Caregivers and providers viewed clinics positively.
Comparing cardiac catheterization and outcomes in community and tertiary hospitals in the Calgary Health Region (21)	<p><i>Publication date:</i> 2014</p> <p><i>Jurisdiction studied:</i> Alberta</p> <p><i>Methods used:</i> retrospective cohort study</p>	6,154 patients with acute coronary syndromes admitted to Southern Alberta hospitals from 2005 to 2009. 42.1% of these patients were admitted to community hospitals and 57.9% were admitted to the specialized tertiary-care centre.	The Calgary Health Region has one tertiary care hospital that offers cardiac catheterization and associated specialized supports. Community hospitals in the region follow a standard procedure when a patient is admitted requiring cardiac catheterization: a standardized referral is faxed and reviewed by the interventional cardiology group. If approved the referral is triaged and transport is arranged.	Patients admitted at community hospitals were more likely to receive cardiac catheterization than those admitted at the tertiary-care centre (69.5% versus, 51.4%) and had longer time to this procedure (four days versus 2.6 days; the article states that this is still timely). After adjusting for risk factors, risk of mortality among patients admitted at community hospitals were equal to those admitted to the tertiary-care centre at 30 days and one year.
Institutional factors affecting the feasibility of hospital networks in Belgium (22)	<p><i>Publication date:</i> 2019</p> <p><i>Jurisdiction studied:</i> Belgium</p> <p><i>Methods used:</i> policy analysis</p>	N/A	In 2015, Belgium created an Action Plan for local-regional hospital networks. Under this plan, hospitals are obliged to join regional networks and divide tasks among the network members, with funding provided in part at a network level; highly complex care would be provided in supra-regional reference centres.	Barriers to implementing this plan included: 1) division of responsibilities among levels of government, with the federal level setting parameters for the reforms while federated authorities have licensing authority over hospitals, which slowed down reforms and led to regional variation in implementation; 2) ground-level collaborations attempted to circumvent some centralization efforts by retaining specialized services within local hospitals, while intra-regional collaborations were stymied by rivalries and culture differences; 3) budgetary changes in the Act required ministerial decree and were not implemented immediately, meaning that changes to service provisions could create budgetary issues for hospitals; and 4) stakeholder input resulted in a more complex policy package, for instance, requiring physician input into specific

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Focus of study	Study characteristics	Sample description	Key features of the intervention(s)	Key findings
				topics and removing the requirement for networks to cover a specific number of inhabitants.
Describes the establishment of centres of excellence within the Willis-Knighton Health System (23)	<p><i>Publication date:</i> 2019</p> <p><i>Jurisdiction studied:</i> Louisiana, U.S.</p> <p><i>Methods used:</i> commentary</p>	Willis-Knighton Health System is a nongovernmental, not-for-profit healthcare provider based in Shreveport, Louisiana	The commentary describes centres of excellence as an opportunity for institutions to attract patients, enhance quality, recruit providers, and achieve efficiencies through developing concentrated expertise and resources related to a particular condition. Willis-Knighton Health System developed 11 centres of excellence as a strategy to enhance quality and attract patients. These centres are characterized by: 1) organizational design such that the centres are each a tightly-structured “functional organizational subunit”, delivering a fully continuum of care; 2) service design to enhance patient experience, (e.g., weight stigma training and bariatric furnishings in a metabolic centre; 3) interdisciplinary team members engaged in active learning; 4) personalized medical care; 5) marketing that increases patient awareness of centres and the health system as a whole; and 6) increased patient volume enabling economies of scale, and increased reimbursement under value-based payment schemes. The commentary describes three stages in establishing centres of excellence: visioning and validation (including interdisciplinary input, commitment from leadership, and feasibility studies); design and development (considering the six elements above); and completion and commercialization.	N/A
Describes specialized geriatric clinics developed by B.C.’s Fraser Health Authority(24)	<p><i>Publication date:</i> 2017</p> <p><i>Jurisdiction studied:</i> B.C.</p> <p><i>Methods used:</i> case description</p>	N/A	The Specialized Seniors Clinics (SSCs) provide interdisciplinary consultation for frail older adults through three core components: integrated care, interprofessional teams, and comprehensive geriatric assessment and care planning. SSCs are overseen by the health authority and are co-located or work closely with an acute care hospital. The clinics follow standardized processes, enabling staff to float among clinics, and have a shared	SSCs were developed when Fraser Health moved to a Program Management model – six previously distinct clinics all fell under the auspices of the new Older Adult Program, so a decision was made to standardize them. This required clinician buy-in. Quality improvement is an ongoing focus, through use of Plan-Do-Study-Act cycles and target monitoring. More than 90% of respondents in a patient-satisfaction survey were mostly satisfied or very satisfied. 91% of primary-care provider respondents in a provider-satisfaction survey were satisfied or very satisfied.

McMaster Health Forum

Focus of study	Study characteristics	Sample description	Key features of the intervention(s)	Key findings
			electronic record. SSCs are designed to support primary care, and are also building relationships with other sectors including mental health care. SSCs support education for other health professionals.	
Describes a web-based multidisciplinary lung cancer board linking rural providers with a specialized hospital (25)	<i>Publication date:</i> 2013  <i>Jurisdiction studied:</i> North Carolina, U.S.  <i>Methods used:</i> case description	N/A	A web platform was established, in compliance with privacy laws, to facilitate remote, multidisciplinary lung cancer case conferences. Providers from an academic hospital, cancer centre, and community hospitals all participate. Case discussion is conducted, and patients in need of more specialized care can be referred to the academic hospital.	Participation was facilitated by clinical champions. 10 participants (out of 20) returned surveys, 90% of whom felt the conferences aided patient care.
Perceptions of patients and providers regarding access to specialized services during regional integration reforms in Brazil (26)	<i>Publication date:</i> 2018  <i>Jurisdiction studied:</i> Brazil  <i>Methods used:</i> mixed-methods case study	Thirty-one semi-structured interviews were carried out with managers in universal healthcare in three municipalities in Bahia, Brazil. A cluster-randomized sample of 1,602 household addresses were sent a survey, and 590 surveys were completed. A total of 201 doctors and nurses also completed a survey.	Brazil is undergoing health reforms to integrate care at a regional level, including regional mechanisms for governance and care coordination.	Providers were aware of coordinating mechanisms for specialized services, and perceived a lack of services and inability to ensure timely follow-up as important issues in care. Managers also noted that a shortage of specialized services, due to public-funding constraints, lead to ethical dilemmas and found that providers did not always follow established pathways for prioritization and information sharing. Information sharing issues led to duplication of exams. Patients reported barriers to accessing specialized services, including long wait times.
Creation of a headache care network in Germany (27)	<i>Publication date:</i> 2013  <i>Jurisdiction studied:</i> Germany  <i>Methods used:</i> <i>Qualitative description</i>	N/A	A new law enabled insurers and providers to create partnerships without involving the Association of Statutory Health Insurance Physicians, enabling cross-sectoral partnerships. Start-up funding was provided to support innovation. This paper describes two headache-related initiatives formed under these policies. 1) Kiel Pain Clinic: linked physician treatment, inpatient care, and rehabilitation through standardized pathways. 2) Nationwide care model: interdisciplinary experts provide direct care regionally, and coordinate across regions in highly specialized supraregional headache centres. Regional and supraregional services	While this paper does not include primary analyses, it reports that an external evaluation found the Kiel Pain Clinic was cost-effective and achieved long-term pain reduction, increased ability to work, and reduced hospital visits.  In the national network, 4% of patients treated at regional centres required referral to the supra-regional centre for more specialized care. Patient satisfaction is high.

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Focus of study	Study characteristics	Sample description	Key features of the intervention(s)	Key findings
			coordinate to screen referrals, triage urgent admissions, and provide training. The network now involves 450 specialized practices. It accepts referrals based on complexity, not diagnosis.	
Introducing the ParkinsonNet model of care for Parkinson's Disease patients in California (28)	<p><i>Publication date:</i> January 2020</p> <p><i>Jurisdiction studied:</i> California, U.S.</p> <p><i>Methods used:</i> Mixed methods observational and modelling study</p>	Fifty-seven physical therapists, 18 speech therapists, and 20 occupational therapists providing care to approximately 14,000 Parkinson's Disease patients at 13 medical centres in California	The ParkinsonNet model that was developed in the Netherlands to improve care for patients with Parkinson's Disease (PD) was translated to the Kaiser Permanente system in California in phases. This study evaluates the first phase of implementation where nine interventions were performed simultaneously. The interventions included training of healthcare providers on evidence-based treatment, training the trainers on the principles of the ParkinsonNet, educating patients on PD and the existence of the ParkinsonNet, organizing IT systems, facilitating the creation of patient-centred team networks, co-designing care plans with patients, raising awareness amongst providers, streamlining referrals, and building a network for movement-disorder specialists.	<p>This study examined the outcome of implementing interventions of the Dutch ParkinsonNet model of providing PD care into California's Kaiser Permanente system. Approximately 14,000 patients were treated for PD by Kaiser Permanente in 2015 when the interventions were introduced. At the beginning of the study, 29% of patients received specialized allied health treatment. After the first year of interventions, this number increased to just under 55%, and in the second year this number increased to almost 67%. Interestingly, it took about 10 years to achieve the same concentration of treatment within the Dutch ParkinsonNet.</p> <p>Success of the implementation of the ParkinsonNet model was attributed to the top-down promotion of the principles of ParkinsonNet by Kaiser Permanente, which employs all health providers in the California network, the sharing of knowledge about the model and its implementation by the Dutch throughout the intervention period, patient engagement from the outset, starting in pilot regions at the onset before scaling up to full implementation, and adjusting the approach to fit within the existing Kaiser Permanente's system.</p>
Implementation of a telemedicine program at a regional burn centre in Colorado (29)	<p><i>Publication date:</i> May 2020</p> <p><i>Jurisdiction studied:</i> Colorado, U.S.</p> <p><i>Methods used:</i> Case description</p>	155 burn cases were included in this study from January 2017 to August 2018	The protocol for the telemedicine program at the Colorado burn centre involved having referring providers text or email still photographs of burn patients prior to transfer to the cellphones of the burn attending physician at the centre. Once images were reviewed, the referring provider and burn attending physician discussed patient transfer and management through a recorded conversation facilitated by the transfer centre. Privacy and data security protocols used included disabling data storage systems on the cellphones, deleting burn images within 24 hours, subjecting the burn attending's cellphone to audit at any	<p>This study examined the impact of a telemedicine program implemented at a Colorado burn centre to improve efficiency in burn-patient transfers and management. The burn centre served a rural population within eight states, three of which had no specialized burn centres.</p> <p>The protocol for the telemedicine program outlined the steps for facility emergent consultation where still photographs of burn patients prior to transfer were shared by referring providers with the burn attending physician at the burn centre. Photographs shared by the referring provider had to be compliant with the Health Insurance Portability and Accountability Act (HIPAA) meaning that they had to exclude any identifiable attributes of the patient, such as tattoos.</p>



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			time, and obtaining consent from burn patients to have their images shared during the consultation process.	Of the 155 cases included in the study, 24.5% of patient photographs led to changes in transfer decisions, with 60.5% of these cases being down-triaged to outpatient care and 39.5% of the cases being up-triaged to transfer for inpatient care at the burn centre. Due to the digital image consultations and subsequent changes in transfer recommendations, both the burn centre and the patient were spared the expenses of needless ground or air transport. Referring providers and the burn attending also benefitted from real-time education during phone consultations on different aspects of burn patient care, according to the recorded telemedicine log. The burn attending at the centre felt that the phone consultations had also improved relationships with referring providers.
Building capacity to manage specialty care in rural and underserved areas (30)	<p><i>Publication date:</i> December 2019</p> <p><i>Jurisdiction studied:</i> Ontario</p> <p><i>Methods used:</i> Descriptive study</p>	N/A	Project Extension for Community Health Outcomes (ECHO) is an educational model that uses video conferencing to facilitate case-based learning and best-practice knowledge sharing between specialists and primary-care providers (PCPs) in rural areas. The specialists provide didactic lectures and the PCPs present cases from their practices for bidirectional teaching and learning. The ECHO model uses the concept of Force Multiplication with a hub-and-spoke design whereby learning through interaction with the “hub” leads to “spoke” centres of expertise in rural areas.	<p>Project ECHO uses videoconferencing to connect PCP groups working in rural or urban communities with an academic interprofessional specialist hub on a routine basis. ECHO clinics combine didactics from hub specialists with case-based learning where real de-identified cases are presented by ECHO participants for discussion and consultation. After the hub discussions, hub members create a summary that includes all the recommendations and resources that are relevant to the cases. In Ontario, participants in the ECHO Ontario Chronic Pain and Opioid Stewardship Program were even able to disseminate ECHO knowledge to non-participating colleagues through ‘corridor conversations’ or by distributing materials.</p> <p>The benefits of the ECHO model include regular contact between colleagues that allows them to find potential solutions to complex cases and the ability for rural PCPs to increase their scope of practice. ECHO also fosters an ‘all teach all learn’ culture. Other educational models mentioned in this article for helping PCPs enhance their diagnosis and treatment skills for complex disorders were the specialist-centred lecture or workshop, the distance expert-consultation model, and e-consult, in which a specialist answers a clinical question by email.</p>
The potential effects of regionalized maternity care on U.S. hospitals (31)	<p><i>Publication date:</i> September 2019</p>	This study included 845,545 deliveries occurring at a total of 556 hospitals	Linked data from the 2014 State Inpatient Database of the Healthcare Cost and Utilization Project and the 2014 American Hospital Association Annual Survey from	This study aimed to assess how the regionalization of maternity care in U.S. hospitals affected the degree to which women at high risk of maternal morbidity received appropriate maternal care for their deliveries. Each hospital

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	<p><i>Jurisdiction studied:</i> U.S.</p> <p><i>Methods used:</i> cross-sectional study</p>		<p>seven states was used to estimate the degree to which women at high risk for developing severe maternal morbidity deliver at the appropriate level maternal care centre. National guidelines were used to assign each woman to a minimum level of maternal care (Level I to IV), and International Classification of Diseases, Ninth edition (ICD-9) coding was used to assign maternal care levels to each hospital.</p>	<p>included in the study was assigned a unique level of maternal care from Level I to Level IV. Level I (Basic Care) was appropriate for uncomplicated pregnancies, Level II (Specialty Care) provided Level I care plus care for some high-risk conditions, Level III (Subspecialty Care) provided Level II care plus care for more complex maternal conditions, and Level IV (Regional Perinatal Center) provided onsite medical and surgical care for the most complex maternal conditions.</p> <p>Of the 845,545 deliveries analysed, 23.2% were classified as Level I, 46.6% as Level II, 21.9% as Level III, and 8.3% as Level IV. The majority of women (85.1%) had maternal risk factors appropriate for delivery at a Level I hospital. Overall, the study found that 97.6% of women delivered at a hospital that could provide them with the appropriate level of care, while 2.4% of women did not. However, a substantial fraction of women (68.2%) at high risk of severe maternal mortality delivered at hospitals with an inappropriately low level of maternal care.</p> <p>The results of this study provided reassurance that the regionalization approach for maternal care ensured that most women would be given risk-appropriate care, but it also suggested that more needs to be done to triage and refer more high-risk maternal patients to the appropriate level hospital.</p>
<p>Implementation of a health regulatory complex as an integration tool in the Federal District of Brazil (32)</p>	<p><i>Publication date:</i> June 2019</p> <p><i>Jurisdiction studied:</i> Brazil</p> <p><i>Methods used:</i> Descriptive study</p>	<p>N/A</p>	<p>The regulation of access to specialized care in the Federal District is carried out by the Federal District Health Regulatory Complex (CRDF) in the following ways: medical regulation of pre-hospital and emergency care, monitoring of available beds, procedures and appointment schedules, standardization of procedure requests, and the establishment of references between units of different levels of care according to agreed protocols. Regulation Centers (RC) of the CRDF operationalize the regulatory process by receiving and processing requests and scheduling the direct service or referral for specialized care.</p>	<p>The restructuring of the public-health system of the Federal District in Brazil brought with it the need to improve integration between primary and specialized levels of care. The Federal District Health Regulatory Complex and its Regulatory Centers were created to play the role of gatekeeper by receiving requests from primary-care teams and facilitating equitable, transparent, and safe access to specialized care. There are eight Regulatory Centers of the CRDF that are linked to three Board of Directors: Ambulatory and Hospital Care Regulation, State Transplant Center, and the SAMU Board of Directors. The district manager is responsible for the regulation of inter-regional references.</p> <p>“Regulatory Scenarios” or Regulation Model are used to determine the distribution of health services under regulation by creating a supply list of services based on</p>

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				<p>regional distribution of specialized and hospital-care services. Scenario 1 or Regional Regulation occurs when the health territory/region is able to manage its own supply distribution and patient demand allocations. Scenario 2 or Agreed Regulation occurs in a region that is managing resources and demands of another territory/region in addition to its own. Scenario 3 or Central Regulation refers to scarce resources that are concentrated in specific units that supply the entire network and are managed by the regulatory centers of the CRDF itself. The restructuring of the healthcare system through the establishment of CRDF and its regulatory centers provided a single authority with transparent leadership in regulating access to services, and creating guidelines and protocols to standardize processes within the complex healthcare network of the Federal District.</p>
<p>Regionalization of specialized care services in Ceará, Brazil (33)</p>	<p><i>Publication date:</i> June 2019 <i>Jurisdiction studied:</i> Brazil <i>Methods used:</i> case study</p>	<p>Eighteen interviews were conducted with regional and municipal managers and health professionals, and visits to service centers were also conducted</p>	<p>A case study was conducted in the Aracati health region of Ceará involving face-to-face semi-structured interviews and visits to regulatory centers, secretariats, Public Health Consortia (PHC) facilities, and a regional polyclinic.</p>	<p>This study assessed the policies and management tools used to facilitate regionalization of specialized care in Ceará, Brazil. The state of Ceará established regional Health Care Networks (RAS) with regional and municipal actors to coordinate regionalization activities. Twenty-one Public Health Consortia were created to increase the supply of specialized services by region, and these were financed by a proportion of the funds allocated to polyclinics and CEOs. PHC referrals were established as the primary access route for specialized care services.</p> <p>Most respondents considered the path of Ceará's regionalization successful. Highlights included the active role of the Council of Municipal Health Secretariats (COSEMS) in decision-making and the activity of the local health movement. Respondents also viewed positively the provision of specialized care through the CPS/polyclinics/CEOs, as well as logistic support provided for the patient transportation system to prevent absenteeism and improve efficiency. Some critiques included the high turnover of primary-care physicians that increased pressure for follow-up at polyclinics and autonomization processes concerning regional management. Challenges remain for the integration within the regional health network, provision of hospital care, and the qualification of care regulation.</p>

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Rapid implementation of a hub-and-spoke care delivery model for specialty care services in a Northern Ontario community (34)	<p><i>Publication date:</i> July 2018</p> <p><i>Jurisdiction studied:</i> Ontario</p> <p><i>Methods used:</i> Descriptive study</p>	Children with medical complexity (CMC), i.e., complex medical conditions that require elevated service needs	A hub-and-spoke care delivery model was rapidly implemented for children with medical complexity by developing a community complex care ambulatory clinic in Timmins, Ontario, and having an interprofessional team consisting of a nurse practitioner (NP) who acts as the CMC family's point of contact to coordinate tertiary services with local care providers.	<p>This study describes an alignment cascade in which peers and staff of the Champlain Complex Care Program in Timmins, Ontario were engaged in the implementation of a sustainably designed complex-care model for CMC. The NP included in the model not only liaised with CMC families about care, but was also responsible for keeping a comprehensive medical care plan for each child in collaboration with community providers.</p> <p>The program benefited from having advocates in leadership from a similar complex-care program in Orillia and senior practitioners at the Timmins complex. Implementation was speedy because of active participation and integration of all partners involved from the onset of the program. CMC family members reported having a tremendously positive experience with receiving care close to home, which led to less travel costs and more cohesiveness between care providers.</p>
Specialized palliative home care: An interprofessional network (35)	<p><i>Publication date:</i> February 2015</p> <p><i>Jurisdiction studied:</i> Germany</p> <p><i>Methods used:</i> Descriptive study</p>	N/A	None specified	This study describes the legislative and conceptual framework for specialized outpatient palliative care (SAPV) in German clinical practice, as well as its future perspectives for addressing the complex demands for palliative care. In 2007, it was legislated that every patient covered by public health insurance must be guaranteed SAPV if needed. This law was based on the assumption that 10% of all dying people (80,000 per year) needed SAPV temporarily, which consequently would require approximately 330 treatment teams nationwide (i.e., one team for every 250,000 residents). It was found that due to differences in interpretation of SAPV requirements by medical services of health insurance companies and by SAPV teams themselves, some aspects of palliative care required, such as social services and physiotherapy, were not being financed and provided. The study highlights the need for more SAPV care in inpatient facilities and more needs-based understanding of palliative treatment, especially as it relates to non-cancer patients.





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