

# Rapid Synthesis

Identifying the Features and Impacts of Cancer-care Networks on Enhancing Person-centred Care and Access to Specialized Services

16 June 2021



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**Rapid Synthesis:**  
**Identifying the Features and Impacts of Cancer-care Networks on Enhancing Person-centred Care**  
**and Access to Specialized Services**  
**30-day response**

16 June 2021

*Identifying the Features and Impacts of Cancer-care Networks on Enhancing  
Person-centred Care and Access to Specialized Services*

#### 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 30-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)).

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#### 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.

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## KEY MESSAGES

### Question

- What are the features and impacts of cancer-care networks (e.g., multidisciplinary networks and/or centres of excellence) that are created to enhance person-centred care during treatment, and/or to help patients in rural and remote areas get access to specialists or specialized services?

### Why the issue is important

- There has been a rise in cancer diagnoses with an estimated 225,800 new cancer cases in 2020, in addition to an increased five-year net survival rate of any type of cancer in Canada.
- Cancer treatment is increasingly being considered a chronic disease, and primary care is promoted as an ideal setting to provide integrated support during and after active cancer treatment to meet patient preferences at manageable costs.
- However, people living in rural and remote areas may lack access to needed cancer care, particularly specialists and specialized services such as precision therapies.
- Multi-disciplinary networks and/or centres of excellence (i.e., ‘hub-and-spoke’ models) are one model that can be used to enhance patient-centred care and access to specialists and specialized care (e.g., by having ongoing care needs addressed through local primary-care providers and engaging specialist centres for other specialized services either virtually or in-person where needed).
- This rapid synthesis was requested to synthesize what is known from the available evidence about the features and impacts of using such cancer-care networks.

### What we found

- We identified two systematic reviews specifically focused on cancer care, one of high methodological quality, and one of medium quality. Additionally, we found two medium-quality systematic reviews focused on delivering healthcare services for other chronic conditions.
- Managed clinical networks tend to be organized by clinical discipline, and groups of clinicians deliver services across boundaries between healthcare professions and different sectors of the health system.
- Integrated service-delivery networks tend to be organized by geographical region and are made up of healthcare organizations as well as individuals within them, with an overarching administrative structure with a focus on integration and coordination of clinical services.
- One medium-quality systematic review focused on healthcare for patients with lung cancer found that a multidisciplinary cancer clinic, as compared with non-multidisciplinary cancer clinics, increased patient satisfaction in most of the studies included, and that patients reported that multidisciplinary care is patient-centred, effective, safe and efficient. The review also found that the multidisciplinary cancer clinic decreased time to treatment initiation from diagnosis or referral, but only one study included in this systematic review demonstrated improved patient survival.
- In a high-quality systematic review, a significant improvement in quality-of-care indicators as compared to previously received cancer services was identified.
- A medium-quality review assessed the clinical effectiveness of bypassing non-specialist centres for a specialist stroke centre to receive thrombolysis in acute ischemic stroke patients, and found that patients initially admitted to a non-specialist centre arriving within the therapeutic window had significantly higher mortality compared to those directly admitted to a specialist centre.
- A medium-quality systematic review assessed the cost-effectiveness of group clinics for patients with chronic health conditions and found that in the U.K., the evidence on costs and feasibility was equivocal.
- The most common barriers for implementing cancer-care networks were the lack of funding and resources; tension, distrust and competition (particularly over resources) between network members; and poor communication and unwillingness to collaborate.
- Some of the facilitators identified related to the governance of the networks, including a positive, trusting culture where networks are: seen as desirable; perceived to be necessary to sharing knowledge; inclusive and have open communication; and supportive of clinician engagement and widespread genuine stakeholder participation.

## **QUESTION**

What are the features and impacts of cancer-care networks (e.g., multidisciplinary networks and/or centres of excellence) that are created to enhance person-centred care during treatment, and/or to help patients in rural and remote areas get access to specialists or specialized services?

## **WHY THE ISSUE IS IMPORTANT**

The number of new cancer cases has continued to rise across Canada, with an estimated 225,800 new cancer cases and approximately 83,300 cancer deaths in 2020.(1) It is estimated that nearly one in two Canadians will develop some form of cancer over their lifetimes.(2) The burden that increased cancer prevalence has placed on health systems in Canada has been compounded by the growing aging population, and by improvements in cancer-treatment efficacy. Canada has experienced a demographic shift wherein there are now more persons aged 65 years and older than children under 15, and projections estimate that the 65 years and older age group will more than double, from 4.2 million in 2003-2007, to 9.4 million in 2028-2032.(3) The incidence of cancer increases with age; the majority (90%) of cancer diagnoses in Canada occur among those who are over the age of 50.(2) Additionally, advances in cancer detection and treatment have significantly improved the likelihood of cancer survival. The average five-year net survival rate for people diagnosed with any type of cancer in Canada is 63%.(2) All of these factors suggest that the number of people living with cancer or transitioning out of the cancer system into survivorship care will continue to increase.

In many jurisdictions across Canada, the provision of cancer services operates using a parallel cancer sub-system, which has limited overlap or integration with primary and community care.(4) The fragmented nature of this care transition is not sustainable and creates numerous challenges for both patients and primary-care providers.(5) This is particularly challenging for people living in rural and remote areas where access to the types of specialists and specialized care that is often needed for cancer care is limited or unavailable. For instance, Indigenous peoples in Canada are reported to experience inequitable healthcare access.(5)

Healthcare services in rural and remote Indigenous communities are particularly affected by different factors. Some of those factors are the low population density, poor transportation infrastructure, extreme weather conditions that often stop transportation to and from communities for a few days to weeks, difficulty retaining healthcare professionals, and financial barriers.(5) These geographic and financial barriers to accessing healthcare reflect a common understanding of accessibility of healthcare services as dependent on the proximity of the patient to those services.(6) Emerging evidence suggests that access to healthcare is determined not only through the location and availability of services and providers, but also through the delivery of services at the point of care.(7)

### **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.

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

This rapid synthesis was prepared over a 30-business-day timeframe and involved three steps:

- 1) submission of a question from a policymaker or stakeholder (in this case, the Canadian Partnership Against Cancer);
- 2) identifying, selecting, appraising and synthesizing relevant research evidence about the question; and
- 3) drafting the rapid synthesis in such a way as to present concisely and in accessible language the research evidence.

Different services in the continuum of cancer care are difficult to access in rural and remote Indigenous communities, including cancer screening, diagnostic testing, treatment, survivorship care and palliative care.(5) Poor access to cancer care may be contributing to the cancer-related disparities seen among Indigenous peoples in Canada, including higher incidence of some screen-detectable cancers, such as cervical and colorectal cancer,(8-11) diagnosis at later stages of cancer,(8; 12) and poorer survival.(9; 10; 13-15)

Networks of clinical experts are progressively being recognized as an approach to promote the uptake of evidence-based practice and make improvements in patient care, especially for populations in rural areas. These clinical networks aim to engage clinicians in developing enhanced models of care, integration of services and multidisciplinary teams. Broadly, clinical networks provide a structure for clinicians to work more closely across institutional and professional boundaries. Clinical networks also allow for continuous working relationships and flow of knowledge about best practice between individuals and organizations, thereby improving the quality of and access to care for patients, including those who require coordination of care across various settings.(16)

## **WHAT WE FOUND**

We conducted a synthesis of the evidence that we identified from our searches in Box 2 to inform the question. In reviewing evidence concerning the question, we sought to include documents that provide evidence with specific insights about different approaches to use a network-based model of care (e.g., multidisciplinary networks and/or centres of excellence that use a ‘hub-and-spoke’ model).

We identified two systematic reviews specifically focused on cancer care,(17; 18) one of high methodological quality,(17) and one of medium quality.(18) Additionally, we found two medium-quality systematic reviews focused on delivering healthcare services for other chronic conditions that addressed healthcare for stroke patients,(19) and healthcare for patients with diabetes, hypertension/heart failure and neuromuscular diseases.(20) We also identified 12 primary studies that provide additional insight.(16; 21-31)

We summarize the key findings from these documents in three tables. Table 1 presents the features of models that we identified, including how the network is structured, who is involved in it, and how the network enables access to needed cancer care for those living in rural or remote areas. In Table 2 the impacts of these networks are presented according to the quadruple-aim outcomes (patient experiences, health outcomes, costs and provider experiences). Finally, Table 3 describes barriers and facilitators that were identified in the included literature to implementing cancer-care networks.

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

We identified research evidence (systematic reviews and primary studies) by searching (in May 2021) Health Systems Evidence ([www.healthsystemevidence.org](http://www.healthsystemevidence.org)) and PubMed. In Health Systems Evidence we searched for overviews of systematic reviews, systematic reviews of effects and systematic reviews addressing other types of questions using filters under governance arrangements (networks/multi-institutional arrangements) and delivery arrangements (package of care/care pathways/disease management, skill-mix – multidisciplinary teams, communication & case discussion between distant health professionals, staff – continuity of care, where care is provided, and integration of services). The results were limited to those included in the disease-related filter for cancer and cardiovascular disease (as another chronic disease that typically requires highly specialized and ongoing care from multiple professionals). In PubMed, we searched for primary studies published since 2015 using the following combination of terms: (network or centers of excellence or hub-and-spoke models) AND (rural or remote) AND cancer. We focused on studies from Canada, and other countries that are typical comparators to Canada (e.g., Australia, New Zealand, European countries, the U.K., and the U.S.)

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, and if the study focused on the treatment of cancer patients, excluding screening, diagnosis, palliative care, and follow-up of survivors.

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.

## **Features of cancer-care networks designed to enhance access for people living in rural and remote areas**

A high-quality systematic review identified five typologies of clinical networks: 1) community of practice; 2) information network; 3) non-managed clinical network; 4) managed clinical network; and 5) integrated service delivery.<sup>(17)</sup> Three of these types of networks (community of practice, information network, and non-managed clinical network) are forms of a voluntary unstructured organization of groups of people who want to share information about improving the healthcare of patients. In contrast, managed clinical networks tend to be organized by clinical discipline and are defined by groups of clinicians who deliver services across boundaries between healthcare professions and the different sectors in the health system.<sup>(17)</sup> Managed cancer networks are widely promoted in national cancer-control programs as an organizational form that is focused on enabling integrated care and enhancing patient outcomes. The capacity to ensure more integrated cancer services likely requires multi-level governance processes that are responsive to the strengths and limitations of the contexts in which they operate, and that are capable of supporting network-based working.<sup>(32)</sup> Lastly, integrated service-delivery networks tend to be organized by geographical region and comprised of healthcare organizations and individuals within them with an overarching administrative structure focusing on the integration and coordination of clinical services.<sup>(17)</sup>

A common component of successful networks was the incorporation of an individual responsible for helping patients navigate through the multiple appointments within the clinic structure. Often referred to as a clinic coordinator, nurse or care coordinator, this role was noted as sometimes being filled by non-medical personnel, though typically by an individual with a background in nursing.<sup>(18)</sup> Usually, the network coordinator was identified as helping to compile necessary diagnostic information, schedule tests, ensure appropriate referrals and investigations were taking place, and collaborate with physicians to ensure the network ran as intended. It was also noted that care coordinators can become patient advocates who promote a holistic approach to patient care. Studies including a care coordinator demonstrated improvements in time from diagnosis to treatment and patient satisfaction in the cancer network, as compared to traditional models of care.<sup>(18)</sup>

One study analyzed graphically and statistically a rural health network consisting of federally qualified health centres, rural health clinics, and referral sites in the U.S. state of Missouri to determine how it delivers services.<sup>(26)</sup> It was found that most rural breast-cancer providers are connected, but some are isolated. In addition, it was found that clinics in the same county were significantly more likely to refer patients to the same provider than clinics in different counties.<sup>(26)</sup>

One cross-sectional study surveyed different stakeholders to understand the geographic reach of care, physician support of hospital networks, outcomes across networks, and the use of care paths and navigators for cancer-care centres in the United States and Canada.<sup>(21)</sup> Of the 44 respondents reporting the total number of medical/ hematologic oncologists, radiation oncologists, and surgeons at the main centre and network sites, 91% reported having network sites with at least medical/hematologic and radiation oncology board-certified experts. In addition, 43 out of 56 centres used patient navigators for disease-specific populations, 41 centres use them for assisting new patients, 35 for patients with financial needs, 34 for underserved populations, and 16 for transitioning patients on or off clinical trials.<sup>(21)</sup> This study also reported that healthcare providers in these hospital networks are more likely to use care paths and clinical practice guidelines.<sup>(21)</sup>

## **Impacts of cancer-care networks designed to enhance access for people living in rural and remote areas**

One medium-quality systematic review evaluated multidisciplinary cancer clinics in the care of lung cancer patients. The 13 studies included in this review were small, retrospective, single-institution with heterogeneous



study designs, limiting the strength and generalizability of the data.(18) Authors of this review found a positive impact of multidisciplinary cancer clinics on healthcare outcomes and patients' satisfaction.

#### *Patient experiences*

The medium-quality systematic review which compared data from multidisciplinary cancer clinics with non-multidisciplinary cancer clinics found that patient satisfaction increased in most of the studies included. However, studies assessing patient satisfaction lacked descriptive data to draw firm conclusions about why this measure was improved. Overall, patients reported that multidisciplinary care is patient-centred, effective, safe and efficient.(18) The authors of this review pointed out that the increase in patient satisfaction may be a consequence of the clinic's design and function, particularly that multidisciplinary cancer clinics with care coordinators likely ensure seamless transitions. The multiple collaborating physicians were highlighted as being important to ensure that patients are provided with timely, thorough, and appropriate information regarding their diagnosis and management plans.(18)

#### *Health outcomes*

The most frequently reported quantitative outcome in a medium-quality review was decreased time to treatment initiation from diagnosis or referral to a multidisciplinary cancer clinic, compared with non-multidisciplinary cancer-clinic data. The review also highlighted that multidisciplinary cancer clinics that reduce time to treatment included a care coordinator and at least two specialists from pulmonology, medical oncology, radiation oncology, or thoracic surgery, reflecting the teamwork needed to develop an appropriate treatment plan for patients with lung cancer.(18)

The same review also found that patient survival varied significantly across studies. While all the studies measuring survival benefit demonstrated improved times to treatment, only one found improved patient survival. The authors concluded that better integration of concurrent therapy and improved time to treatment might have led to improved survival, though the patient selection may have also played a role (but evidence supporting this is lacking). Of note, evaluations of multidisciplinary clinics for other cancer sub-types (brain, colorectal, and breast cancer) have also demonstrated mixed survival results, which was highlighted as being thought to be related to the diverse and complex nature of cancer as a disease, which can make it hard to explain survival benefit related to one intervention.(18)

In the high-quality review focused on cancer, the authors identified three observational studies that evaluated the effectiveness of clinical networks to improve the quality of care. Overall, those studies reported significant improvements on quality-of-care indicators as compared to the previous provision of cancer services. Two before-and-after studies reported an improvement in the compliance with clinical practice guidelines in network hospitals providing colon and breast cancer care, compared with non-network hospitals. In addition, a retrospective observational study included in this review showed that after the establishment of the Scottish Sarcoma Managed Clinical Network, more patients were seen by more specialties. The study also found significant improvements in the time interval from receipt of referral to initial assessment, the proportion of patients undergoing investigation with a magnetic resonance imaging (MRI) scan before excision of the sarcoma (67 to 86;  $p = 0.0009$ ), and the proportion of patients undergoing appropriate biopsy (57% to 79%;  $p = 0.006$ ). The rate of complete resection margins also significantly increased.(17)

In addition, a medium-quality systematic review assessed the effectiveness and cost-effectiveness of group clinics for patients with chronic health conditions (i.e., diabetes, hypertension/heart failure and neuromuscular disorders), which found that group-clinic approaches improved HbA1c and systolic blood pressure, but did not improve low-density lipoprotein cholesterol.(20)

### *Costs*

A medium-quality systematic review assessed the effectiveness and cost-effectiveness of group clinics for patients with chronic health conditions (i.e., diabetes, hypertension/heart failure and neuromuscular disorders) and found that in the U.K., the evidence on costs and feasibility was equivocal.(20) In a before-and-after study that investigated differences in clinical outcomes and costs between a hub-and-spoke model and usual models for healthcare delivery of services in acute stroke, a total cost saving of 5.2 million British sterling pounds per year was found at 90 days (95% CI 4.9-5.5 million pounds; 811 pounds per patient).(33)

### *Provider experiences*

In the cancer network in Quebec, some studies have shown that the implementation of networks are effective for improving health-system functioning. Specifically, there is evidence demonstrating the benefits of networks, both for patients and for the health system, access to social support, and overall satisfaction. However, researchers concur that the effectiveness of networks is highly context dependent, and that there is no ideal network model.(32)

A mixed-methods study evaluated the hub-and-spoke model for delivering mammography services at the county level in north Texas where the hub was a local cancer institute and the spokes were local providers and organizations. This study used different strategies of data collection, periodic site visits with interviews, patient surveys and patient interviews, and the evaluation consisted of quantifying women who received mammography services at the county level and assessing the ability of spoke organizations to conduct outreach activities.(30) The study found that there was no difference in capacity to deliver services between counties that were hub-led and those that were spoke-led.(30) A significant percentage of women opted to receive services outside of their county, mainly in large urban areas that feature a broader selection of providers and institutions.(30)

## **Barriers and facilitators to implementing cancer-care networks**

The high-quality systematic review discussed barriers and facilitators for the success of cancer-care networks.(17) Some of the facilitators are related to the governance of the networks, among them, a positive, trusting culture where networks are seen as desirable and perceived to be necessary to sharing knowledge, and where there is open and inclusive communication, clinician engagement and widespread genuine stakeholder participation. Other governance facilitators identified included engagement at different levels of the healthcare system and supportive policy environments and links with government agencies.(17) In addition, financial facilitators included having sufficient resources, such as funding, administration and human resources, and the availability of information and communication technologies.(17) The review also identified other facilitators related to the norms and values of the network, which were identified as needing to be compatible with those of the organizations involved, evidence-based work plans, and projects that address issues identified by network members (particularly gaps in current practice).(17)

The most common barriers identified in the same review were a lack of funding and resources; tension, distrust and competition (particularly over resources) between network members; and poor communication and unwillingness to collaborate. Other barriers identified related to the lack of representation of critical stakeholders in specific contexts (e.g., rural and Indigenous interests) and poor record keeping and documentation, which was noted as making it difficult to measure the impact of network initiatives and track progress.(17)

One study also noted that implementing networks is complex when health systems are fragmented, with several actors with competing priorities, multiple levels of governance (national, regional, local), multiple care processes over a long period, and the various issues of the disease.(32)

**Table 1: Overview of key features of networks designed to enhance access for people living in rural and remote areas**

Type of network	Key features of network models		
	Structure of the network	Who is involved	Approach to enabling access to specialists and specialized care for people in rural and remote areas
Managed clinical network (17; 32)	<ul style="list-style-type: none"> <li>• Groups of clinicians deliver services across boundaries between healthcare professions and the different sectors of the health system</li> <li>• Groups of clinicians tend to be organized by clinical discipline</li> </ul>	<ul style="list-style-type: none"> <li>• Healthcare organizations in different sectors</li> <li>• Different healthcare professionals</li> </ul>	<ul style="list-style-type: none"> <li>• Managed cancer networks are widely promoted in national cancer-control programs as an organizational form that enables integrated care as well as enhanced patient outcomes</li> <li>• The capacity to ensure more integrated cancer services likely requires multi-level governance processes responsive to the strengths and limitations of the contexts, and capable of supporting network-based working</li> </ul>
Integrated service delivery (17; 18)	<ul style="list-style-type: none"> <li>• Networks are made up of healthcare organizations as well as individuals within them, and includes an overarching administrative structure with a focus on integration and coordination of clinical services</li> <li>• Networks are commonly organized by geographical region</li> </ul>	<ul style="list-style-type: none"> <li>• Healthcare organizations in different geographic regions</li> <li>• Different healthcare professionals</li> <li>• A network coordinator (nurse or care coordinator, and this role was at times filled by non-medical personnel)</li> </ul>	<ul style="list-style-type: none"> <li>• The network coordinator was identified as typically helping to compile necessary diagnostic information, schedule tests, ensure appropriate referrals and investigations were taking place, and to collaborate with physicians to ensure the network ran as intended</li> <li>• Care coordinators can also become patient advocates who promote a holistic approach to patient care</li> </ul>

**Table 2: Overview of impacts of networks designed to enhance access for people living in rural and remote areas on the quadruple-aim outcomes of enhancing patient experiences and health outcomes with manageable costs and positive provider experiences**

Quadruple-aim outcomes			
Patient experiences	Health outcomes	Costs	Provider experiences
<ul style="list-style-type: none"> <li>• One low-quality systematic review focused on healthcare for patients with lung cancer found that a multidisciplinary cancer clinic as compared with non-multidisciplinary cancer clinic:               <ul style="list-style-type: none"> <li>○ Increased patient satisfaction in most of the studies included</li> <li>○ Had positive views from patients who reported that multidisciplinary care is patient-centred, effective, safe and efficient (18)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• One low-quality systematic review focused on healthcare for patients with lung cancer found that a multidisciplinary cancer clinic as compared with non-multidisciplinary cancer clinic decreased time to treatment initiation from diagnosis or referral</li> <li>• The same review found that multidisciplinary cancer clinics that reduced time to treatment included a care coordinator and at least two specialists from pulmonology, medical oncology, radiation oncology, or thoracic surgery</li> <li>• The review also found that patient survival varied significantly across studies; only one demonstrated improved patient survival (18)</li> <li>• A high-quality review found a significant improvement in quality-of-care indicators related to the previous provision of cancer services (17)               <ul style="list-style-type: none"> <li>○ Two before-and-after studies reported an improvement in the compliance with clinical practice guidelines in network hospitals providing colon and breast cancer care, in comparison with non-network hospitals</li> <li>○ A retrospective observational study showed that there were significant improvements in the time interval from receipt of referral to initial assessment</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• A medium-quality systematic review that assessed the effectiveness and cost-effectiveness of group clinics for patients with chronic health conditions (i.e., diabetes, hypertension/heart failure and neuromuscular disorders), found that in the U.K., the evidence on costs and feasibility was equivocal (20)</li> <li>• A before-and-after study assessed differences in clinical outcomes and costs between a hub-and-spoke model and usual models for healthcare delivery of services in acute stroke and found a total cost saving of 5.2 million British pounds per year at 90 days (95% CI 4.9-5.5 million pounds; 811 pounds per patient) (33)</li> </ul>	<ul style="list-style-type: none"> <li>• One study that evaluated a cancer network in Quebec concluded that networks have benefits for the health system, but that the effectiveness of networks is highly context dependent and that there is no ideal network model (32)</li> <li>• A mixed-methods study that evaluated the hub-and-spoke model for delivering mammography services at the county level in north Texas found that there was no difference in capacity to deliver services between counties that were hub-led and those that were spoke-led (30)               <ul style="list-style-type: none"> <li>○ A significant percentage of women opted to receive services outside of their county, mainly in large urban areas that feature a broader selection of providers and institutions</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>• A medium-quality review assessed the effectiveness and cost-effectiveness of group clinics for patients with chronic health conditions (i.e., diabetes, hypertension/heart failure and neuromuscular disorders), and found that: (20)             <ul style="list-style-type: none"> <li>○ Group-clinic approaches improved HbA1c and systolic blood pressure, but did not improve low-density lipoprotein cholesterol</li> <li>○ A significant effect was found for disease-specific quality of life in a few studies</li> </ul> </li> <li>• A medium-quality review assessed the clinical effectiveness in acute ischemic stroke patients, of bypassing non-specialist centres in preference for a specialist stroke centre to receive the time-critical intervention of thrombolysis, and found that: (19)             <ul style="list-style-type: none"> <li>○ Patients initially admitted to a non-specialist centre arriving within the therapeutic window had significantly higher mortality compared to directly admitted to a specialist centre</li> <li>○ Morbidity data also favoured direct admission to a specialist center, although not consistently</li> </ul> </li> <li>• A before-and-after study that assessed clinical outcomes and costs between a hub-and-spoke model and usual models for healthcare delivery of services in acute stroke found an improvement in the survival rate of patients (age-adjusted hazard ratio 0.54; 95% CI 0.41–0.72) (33)</li> </ul>		
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**Table 3: Barriers and facilitators to implementing networks designed to enhance access for people living in rural and remote areas**

<b>Barriers to implementation</b>	<b>Facilitators to implementation</b>
<ul style="list-style-type: none"> <li>• The high-quality systematic review (17) identified several implementation barriers:               <ul style="list-style-type: none"> <li>○ Lack of funding and resources</li> <li>○ Tension, distrust and competition (particularly over resources) between network members</li> <li>○ Imbalance of power between network members resulting in competition for resources</li> <li>○ Poor communication and unwillingness to collaborate</li> <li>○ Lack of confidence in the ability of network leaders and managers</li> <li>○ Lack of representation of key stakeholders in specific contexts (e.g., rural and Indigenous interests)</li> <li>○ Poor record keeping and documentation, which makes it difficult to measure the impact of network initiatives and track progress</li> <li>○ A top-down approach of network implementation, or where implementation is mandated, led by external organizations, and/or decision-making powers and responsibilities are maintained by external parties, thereby limiting the powers of network members</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• The high-quality systematic review (17) identified several implementation facilitators:               <ul style="list-style-type: none"> <li>○ Sufficient resources (funding, administration and human/staffing)</li> <li>○ Availability of information and communication technologies</li> <li>○ A bottom-up, locally initiated and driven approach to network implementation, with subsequent formalization to increase the adoption of new processes</li> <li>○ A positive and trusting culture where networks are seen as desirable and perceived to be necessary for sharing knowledge, and where there is open and inclusive communication, clinician engagement and widespread genuine stakeholder participation</li> <li>○ The norms and values of the network are compatible with those of the organizations involved</li> <li>○ Strong leadership, particularly by clinical leaders and network managers using a facilitative approach</li> <li>○ Inclusive membership in the network, including representation of patients and other stakeholders</li> <li>○ Engagement at different levels of the healthcare system</li> <li>○ Evidence-based work plans and projects that address issues identified by network members (e.g., gaps in current practice) with goals that are feasible and can be objectively measured</li> <li>○ Supportive policy environments and links with government agencies</li> </ul> </li> </ul>

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## APPENDICES

The following tables provide detailed information about the systematic reviews and primary studies identified in the rapid synthesis. The ensuing information was extracted from the following sources:

- systematic reviews - the focus of the review, key findings, last year the literature was searched, and the proportion of studies conducted in Canada; and
- primary studies - the focus of the study, methods used, study sample, jurisdiction studied, key features of the intervention and the study findings (based on the outcomes reported in the study).

For the appendix table providing details about the systematic reviews, the fourth column presents a rating of the overall quality of each review. The quality of each review has been assessed using AMSTAR (A MeaSurement Tool to Assess Reviews), which rates overall quality on a scale of 0 to 11, where 11/11 represents a review of the highest quality. It is important to note that the AMSTAR tool was developed to assess reviews focused on clinical interventions, so not all criteria apply to systematic reviews pertaining to delivery, financial or governance arrangements within health systems. Where the denominator is not 11, an aspect of the tool was considered not relevant by the raters. In comparing ratings, it is therefore important to keep both parts of the score (i.e., the numerator and denominator) in mind. For example, a review that scores 8/8 is generally of comparable quality to a review scoring 11/11; both ratings are considered “high scores.” A high score signals that readers of the review can have a high level of confidence in its findings. A low score, on the other hand, does not mean that the review should be discarded, merely that less confidence can be placed in its findings and that the review needs to be examined closely to identify its limitations. (Lewin S, Oxman AD, Lavis JN, Fretheim A. SUPPORT Tools for evidence-informed health Policymaking (STP): 8. Deciding how much confidence to place in a systematic review. *Health Research Policy and Systems* 2009; 7 (Suppl1):S8).

All of the information provided in the appendix tables was taken into account by the authors in describing the findings in the rapid synthesis.

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**Appendix 1: Summary of findings from systematic reviews about networks designed to enhance access for people living in rural and remote areas**

Focus of systematic review	Key findings	Year of last search/ publication date	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada
Effectiveness of clinical networks and identifying how successful networks improve quality of care and patient outcomes (17)	<p>This is a quantitative and qualitative systematic review.</p> <p>A total of 22 eligible studies (nine quantitative, 13 qualitative) were included. Of the quantitative studies, seven focused on improving quality of care and two focused on improving patient outcomes. Quantitative studies were limited by a lack of rigorous experimental design.</p> <p>Authors identified three observational studies that evaluated the effectiveness of clinical networks to improve quality of care. Overall, those studies reported significant improvements on quality-of-care indicators related to previous provision of cancer services.</p> <p>A controlled before and after study (Ray-Coquard et al.) reported a significant increase in the observed compliance rate for overall treatment sequences for breast (36% versus 12%) and colon (46% versus 14%) cancer (both <math>p &lt; 0.001</math>) post-implementation of clinical practice guidelines established and disseminated by a regional cancer network for hospitals in the network. In the control group of non-network hospitals, there was no significant difference in the observed compliance rate pre-and post-implementation.</p> <p>In a three-year follow-up repeated controlled before and after study (Ray-Coquard et al.) of the same network clinical practice guideline implementation initiative, authors observed that compliance of medical decisions with clinical practice guidelines was significantly higher in network hospitals at follow-up for colon cancer (73% versus 56%; <math>p = 0.003</math>) and similar for the two periods for breast cancer (36% versus 40%; <math>p = 0.24</math>). In the control group, compliance was significantly higher at three-year follow-up for colon cancer (67% versus 38%; <math>p = 0.001</math>) and the same for the two periods for breast cancer. While there was improvement in compliance for colon cancer in both networked and non-networked hospitals at three-year follow-up, behaviour change was more rapid in the region within the cancer network, suggesting that evidence-based information was disseminated more expeditiously through the network and improvements were sustained over time.</p> <p>A retrospective observational study, (McCullough et al.) conducted a cohort analysis of patient records and administrative datasets before and after establishment of the Scottish Sarcoma Managed Clinical Network. More patients were seen by more specialties after establishment of the network, and there were significant improvements in the time interval from receipt of referral to initial assessment, the proportion of patients undergoing investigation with a magnetic resonance imaging (MRI) scan prior to excision of the sarcoma (67% to 86%; <math>p = 0.0009</math>), and the proportion of patients undergoing appropriate biopsy (57% to 79%; <math>p = 0.006</math>). The rate of complete resection margins also significantly increased.</p>	2014	9/11	2/26 2/13 qualitative 0/9 quantitative
Effectiveness of multidisciplinary cancer clinics in the care of lung cancer patients (18)	This review included 13 studies. Overall, these studies were small, retrospective, single institution with heterogeneous study designs, limiting the strength and generalizability of the data.	2017	4/10 (AMSTAR rating from	2/13

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Focus of systematic review	Key findings	Year of last search/ publication date	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada
	<p>Authors found that while the available literature is flawed, these studies provide evidence about the impact of multidisciplinary cancer clinics.</p> <p>Timeliness of Care: The most frequently reported quantitative outcome was decreased time to treatment initiation from diagnosis or referral to an multidisciplinary cancer clinic (MDCC), as compared with non-MDCC data. Of studies that demonstrated improvements in time from diagnosis to treatment, all but one included a care navigator. These studies also all included at least two different specialists from medical oncology, radiation oncology, pulmonology, and thoracic surgery. The study demonstrating the greatest proportional reduction in treatment initiation time included all four of the aforementioned specialists, as well as a care coordinator. It is hypothesized that MDCC models may eliminate redundant physician visits, while the coordination of multi-specialty evaluation and planning in one appointment enhances communication between care providers and allows for multi-specialty discussion where treatment uncertainty exists. Meanwhile, care coordinators may ensure that patients are not lost in the system. Based on the literature, MDCCs that reduce time to treatment include a care coordinator and at least two specialists from pulmonology, medical oncology, radiation oncology, or thoracic surgery, which reflects the teamwork needed to develop an appropriate treatment plan for patients with lung cancer. Further robust evidence is required to ascertain whether MDCCs improve timeliness, and what clinic characteristics lead to the best outcomes.</p> <p>Patient Survival; Patient survival varied significantly across studies. While all of the studies measuring survival benefit demonstrated improved times to treatment, only one demonstrated improved patient survival. Interestingly, this study only included patients with non-metastatic, non-small cell cancer. The authors concluded that better integration of concurrent therapy and improved time to treatment may have led to improved survival, though patient selection may have also played a role, however, evidence supporting this is lacking. Of note, evaluations of multidisciplinary clinics in other cancer sub-types (brain, colorectal and breast) have demonstrated mixed survival results as well, thought to be related to the diverse and complex nature of cancer as a disease, which can make it hard to demonstrate survival benefit related to one intervention.</p> <p>Patient Satisfaction: Patient satisfaction was a common theme related to MDCC implementation. Studies that demonstrated improved patient satisfaction were similar in that all but one included a care navigator. Five studies included the combination of medical oncology, radiation oncology, and pulmonology as physician specialties, while two studies omitted pulmonology from the MDCC clinic model. The majority of these studies occurred at tertiary care centres. The increase in patient satisfaction may be a consequence of the clinic design and function - care coordinators ensure that transitions are seamless, while the multiple collaborating physicians ensure that patients are provided with timely, thorough, and appropriate information regarding their diagnosis and management plans. Studies assessing patient satisfaction lack descriptive data to draw firm conclusions as to why this measure was improved. Overall, where reported, multidisciplinary care is perceived by patients as patient-centred, effective, safe and efficient.</p>		McMaster Health Forum)	

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Focus of systematic review	Key findings	Year of last search/ publication date	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada
	<p>Clinic Coordinator Role: A common component of successful MDCCs was incorporation of an individual responsible for helping patients navigate through the multiple appointments within the clinic structure. Often referred to as a clinic coordinator, nurse or care coordinator, this role was at times filled by non-medical personnel, though typically by an individual with a background in nursing. Usually, the MDCC coordinator helped to compile necessary diagnostic information, schedule tests, ensure appropriate referrals and investigations were taking place, and collaborated with physicians to ensure the MDCC ran as intended. One study in particular specified that this role be filled by an individual with experience in the care of cancer patients, such as an oncology registered nurse as their knowledge of the MDCC structure, cancer workup, and treatment modalities renders these individuals optimally suited to provide patient education and counselling as they navigated their care. Care coordinators can also become patient advocates who promote a holistic approach to patient care. Studies including a care coordinator demonstrated improvements in time from diagnosis to treatment and patient satisfaction in the MDCC model versus traditional models of care.</p>			
Effectiveness of specialist stroke centre (19)	<p>This review assesses the clinical effectiveness, in acute ischemic stroke patients, of bypassing non-specialist centres in preference for a specialist stroke centre to receive the time-critical intervention of thrombolysis. Fourteen studies investigating 2,790 patients were identified. Studies comparing commencement of thrombolysis in non-specialist centres versus the specialist centres (n=1,394) showed no significant difference in unadjusted mortality (OR 0.89; 95% CI 0.61–1.30) or morbidity (favourable modified Rankin Score, n=899) (OR 1.16; 95% CI 0.85–1.59) among thrombolysed patients. In studies where thrombolysis could only be administered in a specialist centre, data for patients arriving within the therapeutic window (n=140) revealed significantly higher mortality for those initially admitted to a non-specialist centre compared to directly admitted to a specialist centre (OR 6.62; 95% CI 2.60–16.82). Morbidity data also favoured direct admission to a specialist centre, although not consistently. Authors concluded that for ischemic stroke patients, the location of initial thrombolysis treatment does not affect outcomes. However, if thrombolysis is only available at a specialist centre, outcomes are considerably better for those patients admitted directly. However, these conclusions are based on poor quality data with small sample populations, significant heterogeneity and subject to confounding.</p>	2012	8/11 (AMSTAR rating from McMaster Health Forum)	1/15
Feasibility, appropriateness, meaningfulness, effectiveness and cost-effectiveness of group clinics for patients with chronic health conditions (20)	<p>Group clinics are a form of delivering specialist-led care in groups rather than in individual consultations. This systematic review aims to examine the evidence for the use of group clinics for patients with chronic health conditions. Authors included randomized controlled trials (RCTs) supplemented by qualitative studies, cost studies and U.K. initiatives.</p> <p>Thirteen systematic reviews and 22 RCT studies met the inclusion criteria. These were supplemented by 12 qualitative papers (10 studies), four surveys and eight papers examining costs. Thirteen papers reported on 12 U.K. initiatives. With 82 papers covering 69 different studies, this constituted the most comprehensive coverage of the evidence base to date.</p> <p>Disease-specific outcomes: The large majority of RCTs examined group clinic approaches to diabetes. Other conditions included hypertension/heart failure and neuromuscular conditions. The most commonly measured outcomes for diabetes were glycated haemoglobin A1c (HbA1c), blood pressure</p>	2014	6/9 (AMSTAR rating from McMaster Health Forum)	4/100

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Focus of systematic review	Key findings	Year of last search/ publication date	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada
	<p>and cholesterol. Group clinic approaches improved HbA1c and improved systolic blood pressure, but did not improve low-density lipoprotein cholesterol. A significant effect was found for disease-specific quality of life in a few studies. No other outcome measure showed a consistent effect in favour of group clinics. Recent RCTs largely confirm previous findings.</p> <p>Health services outcomes: The evidence on costs and feasibility was equivocal. No rigorous evaluation of group clinics has been conducted in a U.K. setting. A good-quality qualitative study from the U.K. highlighted factors such as the physical space and a flexible appointment system as being important to patients. The views and attitudes of those who dislike group-clinic provision are poorly represented. Little attention has been directed at the needs of people from ethnic minorities. The review team identified significant weaknesses in the included research. Potential selection bias limits the generalizability of the results. Many patients who could potentially be included do not consent to the group approach. Attendance is often interpreted liberally.</p> <p>Although there is consistent and promising evidence for an effect of group clinics for some biomedical measures, this effect does not extend across all outcomes. Much of the evidence was derived from the U.S. It is important to engage with U.K. stakeholders to identify NHS considerations relating to the implementation of group-clinic approaches.</p>			
Impact of co-located specialty care models in primary-care settings (34)	<p>Co-location of specialists in primary care has been suggested as an approach to reduce care fragmentation, inefficiency, and cost. Authors of this review evaluated the impact of co-located specialty-care models in primary-care settings. Randomized controlled trials (RCTs) and observational studies reporting physically co-located specialties in primary care on the following outcomes were included: patient satisfaction; provider satisfaction; healthcare access and utilization; clinical outcomes; and costs.</p> <p>Authors identified 1,620 articles, of which 22 studies met inclusion criteria, including nine RCTs and 13 observational studies. Co-located care was observed to be associated with increased patient satisfaction (OR 2.04; 95% CI 1.04-3.98), primary-care provider satisfaction (OR 6.49, 95% CI 4.28-9.85), and outpatient visits (OR 1.94; 95% CI 1.13-3.33). Co-located care was associated with reduced appointment wait time (OR 0.20, 95% CI 0.10 - 0.41). Reduced costs and improvement in quality of life and selected diabetes-related outcomes were also observed. Evidence quality was limited by few studies, high risk of bias, and heterogeneity.</p> <p>Authors concluded that co-located specialty care in primary-care settings may support the aims of high value care delivery. However, additional studies are needed to further evaluate the value of co-location of specific specialties and stronger data on impact to health outcomes and cost.</p>	2015	8/11 (AMSTAR rating from McMaster Health Forum)	1/22
Identify models of care that incorporate district hospitals (35)	District hospitals are important symbolic structures in rural and remote communities; however, little has been published on the role, function or models of care of district hospitals in rural and remote Australia. The aim of the present study was to identify models of care that incorporate district hospitals and have relevance to the Australian rural and remote context.	2013	5/9 (AMSTAR rating from McMaster)	0/1

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Focus of systematic review	Key findings	Year of last search/ publication date	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada
	<p>The search yielded 1,626 articles and reports. Following removal of duplicates, initial screening and full text screening, 24 data sources remained: 21 peer-reviewed publications and three from the grey literature. Identified models of care related specifically to maternal and child health, end-of-life care, cancer care services, Aboriginal health, mental health, surgery and emergency care.</p> <p>Authors concluded that district hospitals play an important role in the delivery of care, particularly at key times in a person's life (birth, death, episodes of illness). They enable people to remain in or near their own community with support from a range of services. They also play an important role in the essential fabric of the community and the vertical integration of the health services.</p> <p>Little has been published on the function of small-to-medium district hospitals in rural and remote Australia, and almost nothing is known about models of care that are relevant to these settings. Authors found that district hospitals form an important part of vertically integrated models of care in Australia. Effective models of care aim to keep health services close to home. There is scope for networked models of care that keep healthcare within the community supported by hub-and-spoke models of service delivery. International evidence suggests that providing surgical services locally can help increase the sustainability of smaller hospitals because they typically provide high-return, short episodes of care. However, this depends on the funding model being used. Similarly, the skill mix of staff required to sustain a functioning emergency department brings a skill base that supports a higher level of expertise across the hospital.</p>		Health Forum)	
Hub-and-spoke model for acute stroke care (33)	<p>In July 2010 a new multiple hub-and-spoke model for acute stroke care was implemented across the whole of London, England, with continuous specialist care during the first 72 hours provided at eight hyper-acute stroke units (HASUs) compared to the previous model of 30 local hospitals receiving acute stroke patients. Authors investigated differences in clinical outcomes and costs between the new and old models.</p> <p>Authors compared outcomes and costs 'before' (July 2007–July 2008) versus 'after' (July 2010–June 2011) the introduction of the new model, adjusted for patient characteristics and national time trends in mortality and length of stay.</p> <p>In a pooled sample of 307 patients 'before' and 3,156 patients 'after', survival improved in the 'after' period (age adjusted hazard ratio 0.54; 95% CI 0.41–0.72). The predicted survival rates at 90 days in the deterministic model adjusted for national trends were 87.2% 'before' (95% CI 86.7%–87.7%) and 88.7% 'after' (95% CI 88.6%–88.8%). There was a relative reduction in deaths of 12% (95% CI 8%–16%). Based on a cohort of 6,438 stroke patients, the model produces a total cost saving of 5.2 million British pounds per year at 90 days (95% CI 4.9-5.5 million pounds; 811 pounds per patient).</p> <p>Authors concluded that a centralized model for acute stroke care across an entire metropolitan city appears to have reduced mortality for a reduced cost per patient, predominately as a result of reduced hospital length of stay.</p>	2013	Not available	0/1

**Appendix 2: Summary of findings from primary studies about networks designed to enhance access for people living in rural and remote areas**

Focus of study	Study characteristics	Sample description	Key features of the intervention(s)	Key findings
<p>Investigating the status of cancer care at network sites of academic cancer centres (21)</p>	<p><i>Publication date:</i> 2021</p> <p><i>Jurisdiction studied:</i> United States and Canada</p> <p><i>Methods used:</i> Mixed-methods descriptive survey study</p>	<p>69 centres responded to the survey, of which 74% were a National Cancer Institute (NCI)-designated centre, 87% were a part of a matrix health system, and 13% were freestanding. One centre was from Canada and was part of a matrix system with no reported network sites. Respondents indicated a range of two to 31 in-state networks, zero to 19 out-of-state networks, and zero to four international networks.</p>	<p>A mixed-methods survey was sent to 91 cancer centres in the United States and Canada to understand care coordination and identify opportunities for care improvements.</p>	<p>This study aimed to understand geographic reach of care, distribution of oncology expertise, physician support of hospital networks, electronic medical record consolidation, support for clinical trials, management of quality measurement and outcomes across networks, and the use of care paths and navigators for cancer care centres in the United States and Canada.</p> <p>Of the 44 respondents reporting the total number of medical/ hematologic oncologists, radiation oncologists, and surgeons at the main centre and network sites, 91% reported having network sites with at least medical/ hematologic and radiation oncology board-certified experts. Forty-three out of 56 centres used patient navigators for disease-specific populations, 41 centres use them for assisting new patients, 35 for patients with financial needs, 34 for underserved populations, and 16 for transitioning patients on or off clinical trials. Of those who used patient navigators, 37% indicated they were used for all patients at both the main cancer centre and network sites.</p> <p>Of 56 respondents who used care paths at network sites, seven (13%) used a homegrown system, three (5%) used insurance carrier-defined care paths, and 16 (29%) used more than one type of care path including care path models outlined in NCCN Clinical Practice Guidelines in Oncology. Twenty-one (38%) reported care paths were not available at network sites. The use of care paths was associated with increased consistency in care, efficiency, survival outcomes, and a decrease in hospital admissions.</p> <p>Most respondents used ASCO’s QOPI or the Commission on Cancer for quality measurement, however quality measures and participation in certification programs was lacking. A primary challenge in care coordination included a lack of integrated medical record systems between the main centre and networks. Additionally, network sites received less investments or centre support for clinical trial participation, with network physicians less frequently involved as principal investigators.</p>

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Focus of study	Study characteristics	Sample description	Key features of the intervention(s)	Key findings
<p>Identifying perceptions of the relationship between Practice-Based Research Networks (PBRNs) and Clinical and Translation Science Awards' (CTSAs)(16)</p>	<p><i>Publication date:</i> 2017</p> <p><i>Jurisdiction studied:</i> United States</p> <p><i>Methods used:</i> Cross-sectional survey study</p>	<p>Of the survey respondents, 57 were PBRNs directors and 26 were CTSA CE directors.</p>	<p>An anonymous cross-sectional web-based survey was conducted where participants were asked about the relationship between PBRNs and CTSAs, support characteristics, and future expectations.</p>	<p>This study was conducted as an update to a 2008 study which investigated the perceptions of PBRNs directors and CTSAs CE directors regarding relationships between the two institutions. PBRNs are groups of primary-care physicians conducting research on the experience and delivery of care to patients, and are also heavily involved in community-based research. CTSAs, established by the National Institutes of Health, aim to improve the conduct of biomedical research and increase translational research timelines.</p> <p>Using a cross-sectional web-based survey of CTSA CE directors and PBRN directors, the study aimed to identify how participants viewed the current relationship between the two institutions and to determine if any changes had occurred since the original survey.</p> <p>Primary findings demonstrated that the relationship between PNRNs and CTSAs was variable, with some respondents indicating that there was strong support and collaboration between the two institutions, while others indicated that PBRNs held minimal roles in decision-making and leadership in the relationship with their CTSAs. There was also a decrease in financial support for PBRNs from CTSAs. Changes in healthcare funding and delivery may have affected the relationship between CTSAs and PBRNs as both attempted to meet conflicting demands of stakeholders and funders.</p> <p>The authors conclude that opportunities for partnership on community-engagement research initiatives are needed, where CTSAs could learn from and leverage existing PBRN expertise.</p>
<p>Evaluating the distribution, infrastructure, and expertise of a national network of heart failure clinics and cardio-oncology clinics, and how adjustments have been made during the COVID-19 pandemic (22)</p>	<p><i>Publication date:</i> 2020</p> <p><i>Jurisdiction studied:</i> Greece</p> <p><i>Methods used:</i> Two electronic 16-item questionnaire surveys were conducted</p>	<p>Of the 68 clinics in the network, 52 (76.4%) responded to the first survey and 55 (88.0%) responded to the second survey. Twenty-seven (39.7%) of the heart failure clinics were in the greater region of the capital. Of the cardio-oncology clinics</p>	<p>Two electronic 16-item questionnaire surveys were conducted from September 2018 to February 2020. A supplementary questionnaire survey was conducted in February 2020 which targeted cardio-oncology clinics in the</p>	<p>This study aimed to determine the key features of a national network of heart failure clinics and cardio-oncology clinics developed by the Hellenic Heart Failure Association in Greece. Through the administration of electronic questionnaire surveys, the study aimed to uncover the distribution, infrastructure, resources, manpower, and level of training and expertise of existing clinics. In addition, adjustments made to the network over a 17-month period and during the COVID-19 pandemic were investigated.</p>



Focus of study	Study characteristics	Sample description	Key features of the intervention(s)	Key findings
		involved in the network, 13 (19.1%) participated in the surveys and nine (13.2%) were in the capital region.	network. In April of 2020 a relative survey was conducted to evaluate changes that were made to the network during the pandemic.	<p>Challenges were identified in the location of clinics, training of practitioners, and access to resources. The majority of heart failure clinics in the network were located in the capital region, limiting access for patients in far land areas and islands. The surveys found a lack of training in heart failure for practitioners, as only one-third of the heart failure clinics had cardiologists with special training, half of whom had taken the European Society of Cardiology/ Heart Failure Association exam for Heart Failure Certification, and one-third had attended a post-graduate course in heart failure. Ergospirometry is underused in most clinics and heart failure rehabilitation facilities are limited. Inter-clinic communication and collaboration and organized patient referral procedures are needed to ensure equal access to diagnostic treatments for patients.</p> <p>For cardio-oncology clinics, there is only one clinic for 1.3 million citizens in Greece with 70% of clinics located in the capital region within hospitals with oncological and hematological units. Speciality training in cardio-oncology is limited. Patients can contact cardiologists in all clinics via phone, and virtual consultations were provided in 38.5% of clinics.</p> <p>During the COVID-19 pandemic, 77% of cardio-oncology clinics continue to follow up with cancer patients, with 23% of clinics reporting patients are assessed out of hospital. A total of 92.3% of clinics provide options for electronic prescriptions without a hospital visit.</p> <p>The authors conclude that a national network of clinics can promote effective cooperation between clinics, enhance research opportunities, supports guideline implementation, allows rapid acquisition of data on public health emergencies, and can allow timely and efficient adjustments during crises.</p>
Exploring the clinical profiles, treatments, and survival outcomes of rural and metropolitan patients with well differentiated neuroendocrine tumors (NET) in a health network in Australia(23)	<p><i>Publication date:</i> 2019</p> <p><i>Jurisdiction studied:</i> New South Wales, Australia</p> <p><i>Methods used:</i> Retrospective study</p>	Patients who received diagnosis of NET from 2008 to 2013 in the Hunter New England Local Health District in New South Wales, Australia. Ninety-six patients were included in the study, in which	Data was collected retrospectively using a local Cancer Clinical Registry. Patient and tumor characteristics, treatment, and follow-up details were collected. Residential postal codes and the	<p>This study investigated the incidence, clinical profile, and treatment and survival outcomes of rural and metropolitan patients with well-differentiated NETs in the Hunter New England Local Health District in New South Wales using a retrospective analysis.</p> <p>Patient characteristics associated with death due to NETs included older age, tumor type, stage at diagnosis, and grade at diagnosis. The gastrointestinal tract is believed to be the</p>

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		<p>38.5% were men and 61.5% were women. Forty patients (41.7%) were 65 years of age or older, 50 patients (52.1%) lived in rural or remote areas, and 46 (47.9%) lived in city-metropolitan areas. Thirty-six (37.5%) died during follow-up.</p>	<p>Socio-Economic Indexes for Areas Index of Relative Socioeconomic Disadvantage were used to determine level of remoteness. Analyses were conducted to determine all-cause and NET-related mortality, and the five-year overall survival and disease-free survival rates.</p>	<p>most common location of NETs. The primary site of the tumor is a significant determinant of mortality, as patients who had gastroenteropancreatic NETs faced lower risk of mortality than those with NETs in other sites including lungs and extraintestinal NETs. Patients with grade 2/3 tumours had an increased risk of cancer-related mortality compared to those with grade 1 tumours. Additionally, those living in rural and remote areas had inferior clinical outcomes compared to those in metropolitan areas, potentially due to reduced access to advanced healthcare services.</p>
<p>Response to an existing study which investigated the challenges in breast cancer care in Japan (24)</p>	<p><i>Publication date:</i> 2021</p> <p><i>Jurisdiction studied:</i> Japan</p> <p><i>Methods used:</i> Correspondence to study</p>	<p>N/A</p>	<p>N/A</p>	<p>This paper was written as a response to an existing study which investigated the current status of breast cancer care in rural hospitals in Tohoku, through surveys administered to breast cancer surgeons. The primary findings of the existing study were that surgeons preferred to treat patients in their own hospitals over referring them to larger urban hospitals. The authors of the response posit that the study did not identify all the potential challenges facing rural hospitals in Tohoku.</p> <p>The authors highlight that the impact of the 2011 triple disaster of earthquake, tsunami, and nuclear power plant accident led to delays in medical consultations for symptomatic breast cancer patients in Minamisoma city immediately after the disaster, and continued for five years after. Local facilities were developed to provide breast cancer care in residential areas, and some survivors were evacuated from the region and cared for in rural hospitals. Additionally, COVID-19 rural hospitals have faced challenges in referring new breast cancer patients to urban hospitals due to the risk of COVID-19 transmission. Conversely, patients living in rural areas who received care in urban hospitals opted to receive care in rural hospitals.</p> <p>Approaches to overcoming these challenges included a monthly remote Breast Cancer Board Meeting for breast cancer facilities in Fukushima, to facilitate remote consultations for difficult cases in rural hospitals. The authors conclude that increased collaboration is needed between rural and urban hospitals.</p>

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<p>Exploring factors which influence access to fertility preservation services for young adults receiving care at a National Cancer Institute Community Oncology Research Program (25)</p>	<p><i>Publication date:</i> 2016</p> <p><i>Jurisdiction studied:</i> United States</p> <p><i>Methods used:</i> Qualitative study</p>	<p>Interview respondents included 10 board-certified physicians, of which five were oncologists and five were reproductive endocrinology/infertility specialists.</p>	<p>Semi-structured phone interviews with healthcare practitioners practising at the National Cancer Institute Community Oncology Research Program Minority/Underserved Community sites were conducted.</p>	<p>This study conducted semi-structured interviews with board-certified physicians working at a cancer care site where more than 30% of patients are from racial/ethnic minorities or rural residents. Through the interviews, respondents were asked about fertility preservation services and resources for young adults who received a cancer diagnosis.</p> <p>Primary findings indicated that access to fertility-planning resources varied between sites, with significant barriers in cost, time, provider education, lack of clinical guideline application, and negative perceptions among healthcare providers, which dissuaded them from discussing fertility preservation options and risks with their patients.</p> <p>The authors conclude that clinical guidelines for fertility-preservation services are necessary and should be integrated into existing cancer networks.</p>
<p>Rural health networks: how network analysis can inform patient care and organizational collaboration in a rural breast cancer screening network (26)</p>	<p><i>Publication date:</i> March 2019</p> <p><i>Jurisdiction studied:</i> Missouri, United States</p> <p><i>Methods used:</i> Network analysis methodology</p>	<p>Organizational leaders from 47 Federally Qualified Health Centers (FQHC) and Rural Health Clinics (RHC) completed a survey on the provision of breast cancer care and patient navigation services; at least one clinic from each of 10 adjacent rural counties (n=22) also participated.</p>	<p>A rural health network, consisting of federally qualified health centres, rural health clinics, and referral sites, was analyzed graphically and statistically using exponential random graph modelling; the model nodes representing these clinics and referral sites were mapped and connected based on the number of patient referrals to any given site.</p>	<p>This study aimed to use network analysis to understand how a network of cancer care providers in adjacent rural counties delivers services, and to value of the network analysis methodology for this research purpose.</p> <p>Network analysis of the breast cancer provider network indicated that most rural breast cancer providers are connected to each other, but some are isolated. Clinics in the same county were significantly more likely to refer patients to the same provider than clinics in different counties.</p> <p>The results of this study may be useful for guiding the dissemination of breast cancer interventions by targeting programs to referral sites that are connected to a majority of clinics. Given that the results showed that county location is a significant factor, targeting interventions to at least one referral site in each county could also be an efficient approach. Clinic and policy leaders can also use these study findings as a basis for developing a stronger breast cancer provider network that connects isolated rural clinics and builds resource capacity across the network.</p>
<p>Use of clinical quality indicators to improve lung cancer care in a regional/rural network of health services (27)</p>	<p><i>Publication date:</i> 4 April 2019</p> <p><i>Jurisdiction studied:</i> Australia</p>	<p>Data was collected retrospectively from the Evaluation of Cancer Outcomes Barwon South West Registry</p>	<p>Following a literature review, an expert panel was used to select clinical quality indicators to evaluate the lung</p>	<p>This study aimed to develop clinical quality indicators (CQIs) that are based on nationally and internationally recognized indicators mapped to the local environment, to evaluate the care provided to lung cancer patients in the Barwon South West region.</p>

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	<p><i>Methods used:</i> Quantitative study</p>	<p>where detailed information about all new cancer patients are recorded; a total of 1,113 cases of lung cancer, including 997 cases of non-small-cell lung cancer (NSCLC), were collected and evaluated.</p>	<p>cancer care in the Barwon South West region; these indicators were used to measure the quality of care provided to lung cancer patients in the region from 2009 to 2014.</p>	<p>After applying the CQIs to data collected from the region's cancer outcomes registry, it was found that CQIs that fell short of expected targets included: 1) time from diagnosis to treatment being less than four weeks (2013 only); 2) surgical intervention for at least 50% of patients with early NSCLC (2010 only); 3) systematic therapy for 60% of patients with advanced NSCLC and good performance status (all years except 2013); 4) palliative-care team input for more than 60% of advanced NSCLC patients with poor performance status (2013 only); and 5) less than 10% of 30-day mortality following active treatment (2013 only).</p> <p>The study showed that there were areas for service improvement that resulted in the introduction of a multidisciplinary clinic in response to the results, with the aim of increasing efficiency and introducing patients to therapeutic options early.</p>
<p>Improving regional and rural cancer services in Western Australia (28)</p>	<p><i>Publication date:</i> 17 February 2015</p> <p><i>Jurisdiction studied:</i> Australia</p> <p><i>Methods used:</i> Comparative study</p>	<p>(not identified)</p>	<p>Cancer care services in Western Australia pre-2005 were compared with service delivery in 2014; partnership initiatives and programs were also reviewed.</p>	<p>The aim of this study was to examine health reform that has been designed to improve cancer care services in Western Australia (WA). Prior to 2005, there was no workforce dedicated to cancer care based in rural WA, and oncology services were very limited. The Western Australia Cancer and Palliative Care Network (WACPCN) became the first official clinical network established in WA, and has been improved upon since its launch in 2005.</p> <p>While cancer incidence has increased over the years in WA, prevalence has also increased as more people have survived their initial cancer diagnosis. The service delivery approach in the region has led to an increase in services provided closer to patients' homes and greater involvement of primary-care providers in cancer care. This is helping to mitigate the significant burden of travel to large centres for cancer treatments. Given the findings that distance to care services is an important factor in providing cancer care, these services need to be provided for cancer patients closer to their homes.</p>
<p>Evaluating a centralized cancer support centre in the remote region of Northern Norway (29)</p>	<p><i>Publication date:</i> 2 September 2020</p> <p><i>Jurisdiction studied:</i> Norway</p>	<p>Visitors to the cancer support centre completed a survey (n=181) about their reasons and</p>	<p>A comprehensive prospective survey was used to collect information from participants about their demographics,</p>	<p>This study explored the experiences of cancer patients and their family members visiting the centralized cancer support centre in Northern Norway.</p> <p>The majority of visitors to the centre were women, with the most frequent diagnosis being breast cancer. Some lived in</p>

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	<p><i>Methods used:</i> Prospective study</p>	<p>expectations for visiting the cancer centre.</p>	<p>expectations for their visit, how they viewed the centre in the context of cancer care, and whether they wanted to meet peers and volunteers rather than clinicians. Statistical analysis of all responses was conducted to make comparisons and conclusions.</p>	<p>densely populated areas, but the majority of participants lived in rural and remote areas. Notably, there were no significant differences in characteristics or evaluation of the support centre between visitors living in rural areas and those living in more urban areas.</p> <p>It was found that visitors wanted better access to peers with a cancer diagnosis, a nurse specializing in cancer care, an oncologist, and volunteers that are not peers or health professionals. Participants also expressed that the cancer support centre was an integral part of the healthcare system and wanted to have a similar centre in their local community. Efforts to improve access to the cancer support centre can encourage even more patients to attend.</p>
<p>County-level outcomes of a rural breast cancer-screening outreach strategy: a decentralized hub-and-spoke model (BSPAN2)(30)</p>	<p><i>Publication date:</i> 11 June 2016</p> <p><i>Jurisdiction studied:</i> Texas, United States</p> <p><i>Methods used:</i> Mixed methods evaluation</p>	<p>The study was conducted in 17 counties of which six were selected by outreach approach and geography for qualitative evaluation. Multiple site visits and interviews with spoke organization staff and medical and community leaders were conducted, and 73 individuals staffing or leading clinical and community-based organization were also interviewed. Ninety-two BSPAN participants were surveyed on the timeliness and quality of patient care, and 30 of them participated in longer, open-ended phone interviews.</p>	<p>A mixed methods evaluation of the hub-and-spoke model (local cancer institute = “hub”, local providers and organizations = “spokes”) used at the county level was conducted using electronic medical record data, systematic site visits with interviews, patient surveys, and patient interviews. The evaluation consisted of quantifying women who received mammography services at the county level and assessing spoke organizations’ ability to conduct outreach activities.</p>	<p>In this study, the expansion of the Breast Screening and Patient Navigation (BSPAN) program in North Texas into a “hub-and-spoke” delivery model for delivering mammography services to 17 counties was evaluated. The study found that there was no difference in capacity to deliver services between counties that were hub-led and those that were spoke-led.</p> <p>A significant percentage of women opted to receive services outside of their county, mostly in large urban areas that feature a broader selection of providers and institutions. Convenience to places of employment may have also been a factor in women choosing to crossover to other counties to access care. Qualitative data revealed contextual issues to consider for crossovers including motivation to receive services from providers that communicate in Spanish and outreach efforts that leverage grassroots connections. Outreach strategies (e.g., radio and newsletter advertising) initiated in one county may have also reached women in other counties and contributed to crossovers.</p> <p>Overall, the program’s expansion was highly successful as demonstrated by the study’s findings that the number of women interested in receiving services exceeded expectations of the program.</p>
<p>Barriers and opportunities of oncofertility practice in nine developing countries and the emerging</p>	<p><i>Publication date:</i> 2 March 2020</p> <p><i>Jurisdictions studied:</i></p>	<p>The nine surveyed country centres in this study responded to questions grouped into</p>	<p>A survey was distributed by email to oncofertility centres in nine developing countries in</p>	<p>The purpose of this study was to explore oncofertility in nine developing countries and to identify opportunities for coalescence. Study findings revealed that the oncofertility practices surveyed all experienced common challenges that</p>

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oncofertility professional engagement network (31)	<p>Mexico, Columbia, Guatemala, Argentina, Chile, South Africa, Nigeria, India, and Saudi Arabia</p> <p><i>Methods used:</i> Qualitative survey</p>	<p>six categories: country profile, cancer care, fertility preservation treatments, fertility treatments, barriers to oncofertility, and opportunities of oncofertility.</p>	<p>the oncofertility Consortium Global Partners Network, and all country centres responded to all questions.</p>	<p>included lack of insurance coverage and funding, lack of provider and patient awareness, cultural and religious restraints, and high out-of-pocket costs for patients. Lack of advances in early diagnoses and treatment of cancer, and the absence of oncofertility specialists were also observed.</p> <p>Despite the challenges, oncofertility still has great potential in the countries surveyed, according to the study, because fertility preservation provides a viable option for cancer patients, cryopreservation of sperm, eggs, and oocytes is available, new cancer hospitals are improving access to cancer diagnosis and treatments, and awareness and financial supports can be improved.</p>





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