

Collaborative Emergency Centres: Rapid Knowledge Synthesis

Short Report

The Nova Scotia Department of Health and Wellness originally defined a CEC as “a model that brings together rural community emergency departments and local family practices to work together to provide seamless access to primary and emergency care to the community”. CECs have three formally linked components: a primary health care team, the capacity to provide urgent care, and protocols in place for emergency care.

Report Objectives:

To inform decision making regarding the development and implementation of effective CECs across Nova Scotia by:

1. Defining CECs through the identification of potential structures, process and implementation strategies of CEC-type models in other jurisdictions.
2. Identifying scientific evidence that investigates the effectiveness of CEC-type models and their structures and processes for improving health outcomes.

Research Methods:

Our approach included two major parts: 1. Scanning of CEC-type models, 2. Summarizing the scientific evidence for CEC-type models.

We collected information on CEC-type models relevant to the Nova Scotia context through a scan of other jurisdictions. We summarized information on the structures and processes included in other models and iteratively refined an operational definition of a CEC.

We summarized the scientific evidence for CEC-type models. Comprehensive literature searches of the peer-reviewed and grey literature studies that provide evidence on the effectiveness of CEC-type models and their structures and processes were executed.

The project included an integrated knowledge translation process, including interactions with important Nova Scotia clinical and policy decision-makers, such as the Department of Health and Wellness, primary health care practitioners (family physicians, nurses), emergency care practitioners (members of Emergency Health Services, emergency physicians), and members of the Cumberland County Health authority involved in the development and/or functioning of the first implemented CEC, located in Parrsboro, Nova Scotia.

Who is this report for?

This evidence synthesis is intended for use by local health system stakeholders, policy and decision-makers within the Nova Scotia Department of Health and Wellness.

Information about this evidence synthesis:

This report has been developed into three sub-reports: an executive summary, a short report, and a full report. The executive and short reports are summaries, while additional and more comprehensive information is available in the full report.

Included in this report:

Information from a broad collection of literature and evidence sources. Searches were often restricted to systematic reviews. This is supported by information from published reports from other jurisdictions and stakeholder workshops.

Not included in this report:

- Primary research studies or detailed descriptions of individual study interventions within systematic reviews.
- Information not presented in the peer-reviewed literature except that provided through integrated knowledge translation process.
- We do not make recommendations for practice.

Defining CECs:

Our operational definition of a CEC-type centre, which was finalized at a stakeholder workshop, is:

A CEC-type centre focuses on the delivery of health care services including both primary care and access to emergency care through a seamless collaborative team approach.

- Primary care encompasses access to health promotion, wellness, chronic disease management, illness and injury prevention, and diagnosis and treatment of illness and injury.
- Access to emergency care includes initial emergency stabilization of life-threatening conditions, response to (including treatment or referral) the majority of urgent conditions and those conditions of lesser urgency.

A health care provider must be available on-site, and has a formal supportive relationship with other professional(s) or institution(s) elsewhere through telephone or technological means.

Jurisdictional scan:

We selected 12 locations that represented CEC-type centres across selected Canadian jurisdictions (see Table 1).

Selected centres were from locations across Canada. Two centres were located in Alberta, two in British Columbia, two in Newfoundland and Labrador, two in the North West Territories, one in Nunavut, two in Saskatchewan, and one in the Yukon.

Three centres had a health care model with features and demographics similar to those of the CEC model in Nova Scotia, labeled “CEC-type centres with Nova Scotia context”. The remainder of centres are categorized generally as meeting the final operationalized “CEC-type centres” model definition.

Table 1: CEC-type centres identified from selected Canadian jurisdictions

CEC-type centres with Nova Scotia context:

- Rainbow Lake Health Centre, Rainbow Lake, Alberta
- Ladysmith Community Health Centre, Ladysmith, British Columbia
- Dr. W. H. Newhook Community Health Centre, Whitbourne, Newfoundland

CEC-type centres:

- Northeast Community Health Centre, Edmonton, Alberta
- Oceanside Primary & Urgent Centre, Parksville, British Columbia
- Hopedale Community Clinic, Hopedale, Newfoundland
- Fort Simpson Health Centre, Fort Simpson, North West Territories
- Wrigley Health Centre, Wrigley, North West Territories
- Igloodik Community Health Centre, Igloodik, Nunavut
- Black Lake Health Centre, Black Lake, Saskatchewan
- Cumberland House Health Centre, Northern Village of Cumberland House, Saskatchewan
- Health Centres (case: Dawson City Community Health Centre), Yukon

Introduction to Structures and Processes:

Twenty-four potential structures and processes relevant to CECs were identified. These included components related to health professional staffing, available services, use of treatment protocols, collaborative practices, funding and governance, research and evaluation. These define important considerations for CEC-type centres and directed our topics for evidence synthesis.

Seven structures and processes were prioritized through discussion amongst the research and investigator team and stakeholder workshop participants as of critical importance to the functioning and implementation of a CEC. There were 16 other important structures and processes relevant to CECs, but were not prioritized by Nova Scotia stakeholders.

Prioritized Structures and Processes:

1. **CEC-type models of health care delivery** considered the effects of CEC-type models according to our operationalized definition.
2. **Hours of access to health care services** were defined as the operational hours that emergency or primary care services are accessible to members of a community (for example, extended hours, access to on-call physician only, or daytime only hours).
3. **Health care professional staff available (emergency care)** included personnel who provide, or assist and support the provision of, care to patients in an organized emergency care facility. This included traditional and allied health professionals and support staff involved in care.
4. **Health professional staff available (primary care)** included personnel who provide, or assist and support the provision of, care to patients in an organized primary care facility. This included traditional and allied health professionals and support staff involved in care.
5. **Collaborative practices (primary or emergency care)** were described as multiple health professionals working together to provide care. This was defined broadly according to primary studies as ≥ 2 professionals involved in care.
6. **Telehealth/Tele-consultation** included off-site consultation and delivery of health services via remote telecommunication. Off-site consultation meant consultation via remote telecommunications (using various tools) of a health provider on-site to one at a distance to enhance local scope of practice. This is generally for the purpose of diagnosis or treatment of a patient. Delivery of health services via remote telecommunications included interactive consultative and diagnostic services for a patient communicating with a health care provider at a distance.
7. **Comprehensive set of diagnostic services available (primary or emergency care)** described having diagnostic services available, organized for the purpose of providing diagnosis to promote and maintain health (for example, x-ray and other forms of diagnostic imaging, blood work, electrocardiograms, and blood pressure monitoring).



Non-prioritized Structures and Processes:

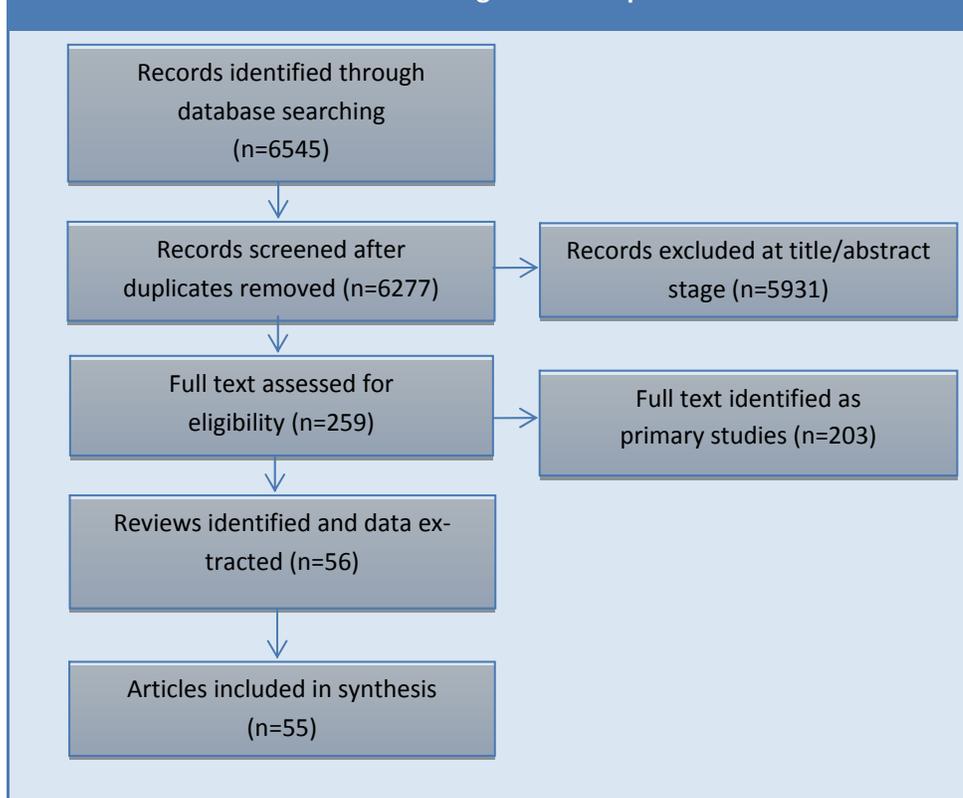
8. **Structure of emergency services** represented the different methods of scheduling or prioritizing patient visits or waiting time in emergency departments (e.g., prioritizing care by triage).
9. **Structure or primary care services** represented the different methods of scheduling or prioritizing patient visits, appointment systems, individual or group appointments, or waiting times (for example, walk-in appointments).
10. **Emergency protocols or use of standing orders in emergency care delivery** provide a planned course of medical treatment from providers in the assessment and treatment of patients with acute illness or injuries. The use of standing orders signifies the use of written documents containing rules, policies, procedures, regulations, and orders for the conduct of patient care in various stipulated clinical situations.
11. **Destination and transfer plan in emergency health care delivery to manage patients** represented the inter-facility transfer and transportation methods of patients to obtain specific, definitive or specialist care not available on site. Options for destination plans may include transfer to community hospital, regional hospital, or tertiary care centre, emergency stabilization and transfer to increased care, referral to specialist care, or maximum patient observation time. Transfer mechanism options may include ground ambulance, air ambulance, or Medevac.
12. **Levels of service infrastructure in emergency and primary health care delivery** referred to the medical or health related services provided in one facility, compared to these services being offered through neighbouring facilities.
13. **Ambulatory clinic services available in primary health care delivery** are health services provided to patients on an ambulatory basis, rather than by admission to a hospital or other health care facility. Examples of ambulatory services include chemotherapy, intravenous medications, and orthopaedic follow-up.
14. **In-patient beds available within a community health centre** are set up and staffed for use in caring for patients who are deemed to require admission to a hospital.
15. **Formal community health needs assessment** for organizing health care services in a community represented the systematic identification of a population's needs to determine the proper level of services needed. Formal community health needs assessments could be in the form of an evaluation developed by a strategic planning team linked with representatives of a community advisory committee.

16. **Specific health promotion and prevention services available in primary health care delivery** encourages individuals' behaviour to most likely optimize health potentials (physical and psychosocial) through health information, preventive programs, and access to medical care.
17. **Specific governance structure for a community health centre** considered the form that a governing body takes. A governing body oversees daily and administrative activities.
18. **Formal program evaluations for a community health centre** are designed to assess the efficacy of a program. They may include the evaluation of cost-effectiveness, the extent to which objectives are met, or impact of a program.
19. **Program funding structure for a community health centre** were the source and means by which programs and services are financed.
20. **Funding structure for health professionals at a community health centre** were the remuneration paid or benefits granted to an employee.
21. **Community awareness campaigns for a community health centre and availability of services** represented the use of communications media to interchange, transmit and receive information to increase awareness of services in a community.
22. **Recruitment and retention programs for rural health centres** were programs and/or plans (financial or otherwise) designed to incentivise and motivate physicians and employees to work in and remain in rural areas to provide health services.
23. **Affiliation with an education institution** represented a formal relationship with an academic institution to partner with in research and teaching initiatives.
24. **Conducting research at a community health centre** included basic or applied collaborative research efforts between centre staff and researchers from academic settings.

Overall summary of research evidence:

A total of 55 systematic reviews were included in the evidence summary of prioritized structures and processes (see Table 2 for overall screening results for prioritized searches). Eleven records were included from additional scoping searches for non-prioritized structures and processes (see full report for more information).

Table 2: Flow chart of overall screening results for prioritized searches



Summary of the research evidence on CEC-type models of health care delivery:

CEC-type models

We identified 1723 unique records potentially relevant to the effectiveness of CEC-type models of health care delivery. We selected 45 that we reviewed in full text (32 primary studies and 12 grey literature documents). None of the identified studies met our CEC-type model definition selection criteria.

Key Messages

- *There is limited scientific literature on the concept of CEC-type models as a health care delivery model.*
- *This is an area for future research studies.*

Summary of research evidence on the effectiveness of specific structures and processes relevant to CEC-type models of healthcare delivery:

Hours of access to health care services

We identified and screened 835 unique results. We identified two well-conducted systematic reviews related to the impact of hours of health care service delivery on individual or community health outcomes (1, 2).

Key Messages

- *Lack of evidence is available on the impact of alternative models of after-hours care.*
- *Telephone triage and advice lines appear to reduce medical workload, have potential to reduce costs, but need to be balanced against reduced patient satisfaction.*
- *While ED overuse is associated with lack of hours of access to primary care, expanding these services does not appear to have a major impact on reducing inappropriate ED use.*

Health care professional staff available (emergency care)

We identified and screened 496 unique results and 46 records were reviewed in full text. We identified eight systematic reviews on the topic of the effect of health care professional staff available in an emergency care delivery environment on health outcomes (3-10). They included novel medical and non-medical roles in the emergency care delivery settings. These systematic reviews assessed a small number of RCTs, more frequently including lower levels of study designs. Four systematic reviews investigated the effect of nurse practitioners (NPs) or NPs and other non-medical staff in the ED (4,7,8,10). These systematic reviews investigated studies conducted in combined adult and paediatric populations (4,7), or in adult only populations (10). Hoskins (2011) examined the effect of emergency NPs, expanded-scope physiotherapists and emergency care practitioners in all emergency care settings (7). The other four systematic reviews each investigated one of the following health professional roles/models: triage liaison physicians (9), pharmacists (5), physician assistants (6), and multidisciplinary teams targeted toward frequent ED users (3).

Key Messages

- *Patients accept and are satisfied with the care provided by NPs and physician assistants in the ED.*
- *Additional patient contact time afforded by alternative ED staffing is associated with improved communication and increased health promotion.*
- *Shorter length of stay may be associated with greater patient satisfaction.*
- *The quality of care provided by NPs and physician assistants vs. residents in the ED is comparable.*
- *Case management may reduce ED use for specific groups of vulnerable patients and also for all frequent users of EDs.*
- *Financial implications of staff changes might be significantly different in Canada (current evaluation data is inadequate).*
- *Data from systematic reviews on other health professionals in these roles is lacking.*

Health care professional staff available (primary care)

We identified and screened 1052 unique results, 78 records were reviewed in full text. Twelve systematic reviews evaluated the effect of different primary care staff on health outcomes (11-22). Reviews assessed the effectiveness of including specific staff in the fields of: 1. General primary care, 2. Mental health, and 3. Various other primary care populations.

Key Messages

- *NPs in primary care as substitutes in the same role as GPs has been shown to have no difference in care, and to have improvement in patient compliance, knowledge, or satisfaction.*
- *Evidence is lacking for cost-effectiveness analyses and examination of long-term effects of the addition of health care professional staff in primary care; the few cost studies available suggest similar or increased costs with NP compared to extra salaried GPs.*
- *Nurse- and pharmacist-led care for hypertension was found to be effective for hypertension and heart failure. Specialist nurse care in treating diabetes resulted in neutral outcomes.*
- *There is modest evidence to support the addition of pharmacists, paraprofessionals and mental health care workers in primary care settings for mental health.*
- *Characteristics of health care providers, including training and experience, should be reported more consistently in studies.*

Collaborative practices (primary and emergency care)

We identified and screened 1521 unique results, 127 records were reviewed in full text. We identified 18 systematic reviews that assessed the effectiveness of collaborative models of care (23-40). Nine systematic reviews assessed the team-based models of collaborative care in: 1. ED, and 2. Primary care (mental health and other chronic diseases). Systematic review definitions of collaborative care ranged from broad (e.g., multiple professionals involved) to more specific (e.g., multifaceted intervention involving combinations of three distinct professionals working collaboratively within the primary care setting: a case manager, a primary care practitioner, and a mental health specialist [to be included in the review, studies had to involve two of these three components of collaborative care]). Collaborative care was most commonly defined by the number of health professional disciplines involved in patient care.

Key Messages

- *Collaborative care (multidisciplinary models) in primary care settings has been shown to consistently improve symptoms and management of chronic disease (depression, hypertension).*
- *Collaborative care has been consistently found to be more expensive than usual care (other than Community Mental Health Teams), although additional high quality economic evaluations are required.*
- *The introduction of multidisciplinary teams to the ED may be successful in improving access, however, more research is needed.*
- *No consistent improvements in health outcomes were observed in many studies examining shared GP -specialist consultation in primary care management of chronic health conditions.*
- *Generalizability to the Nova Scotia CEC model is limited as these collaborative models focus largely on physician collaboration with either another physician or an allied health professional, and do not examine the idea of two non-physicians working collaboratively.*

Tele-Consultation/Telehealth

A good quality review of reviews on the topic of telehealth, published in 2009, was identified (41). We conducted searches to locate reviews published after 2009. We identified 663 unique results. Fifty-one records were reviewed in full text. Fourteen additional systematic reviews published after 2009 were selected (42-55). These systematic reviews assessed the effectiveness of telehealth in: 1. Off-site consultation, 2. Mechanisms for off-site communication, and 3. Off-site health care delivery.

Key Messages

- *Studies on telehealth are heterogeneous, making it difficult to draw general conclusions from studies.*
- *Despite a large number of studies and systematic reviews on the effectiveness of telemedicine, high quality evidence is still lacking (mostly observational studies are available).*
- *Reviews demonstrate that telehealth services do not appear to harm patients and are both reliable and feasible in this limited assessment of non-emergency conditions.*
- *The effect of tele-consultation on clinical outcomes is not clearly established (findings are mixed and many studies show no difference from usual care).*
- *Studies of telehealth for service provision in chronic/mental health conditions report neutral to positive findings.*
- *Few studies examine the cost effectiveness of tele-consultation.*

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No conflicts of interest have been declared by the authors.

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