



Minimal requirements and key clinical services for heart failure programs within a spoke-hub-node model of care

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Introduction

Background

Heart failure (HF) is a heterogeneous, complex chronic condition requiring regular, but somewhat unpredictable health care. People with HF experience periods of relative stability, interspersed with unpredictable episodes of worsening symptoms and therefore frequently require access to multiple levels of care within the health care system.

In 2014, the Cardiac Care Network (currently known as CorHealth Ontario) proposed a strategy for community management of HF in Ontario based on input of providers, a scan of current practice in Ontario, and documented best practices.¹ The strategy recognizes that people with HF require an integrated multidisciplinary team-based approach that spans the full continuum of care of early disease management through palliative care. A formal spoke-hub-node model of care was proposed to improve integration, accountability and patient management across that care continuum.

In response to a request from the MOHTLC and CorHealth Ontario's continued desire for improved cardiovascular care, this supplementary report was developed to further outline a formal spoke-hub-node model of care for patients with HF. Three levels of increasingly complex and sophisticated care are proposed to better integrate and improve access to and delivery of a broad array of multi-disciplinary care required for persons suffering from HF.

The purpose of this supplementary report is to outline the minimal standards and key clinical requirements for evidence-based HF care that contributes to optimal patient-centred outcomes.

Information from current clinical guidelines, Canadian Cardiovascular Society (CCS) quality indicators for HF, Quality-Based Procedures (QBP) for HF, C-CHANGE-HF initiatives, findings from The Ontario Health Technology Advisory Committee (OHTAC) report for HF clinics, and stakeholder expert opinions from the CorHealth Heart Failure working group members are considered and integrated into recommendations outlined in this section. The purpose of these standards is to reduce variation in care, whilst ensuring HF programs located within spoke-hub-node models are patient-centred, clinically effective, cost-effective, and achieve sustainable outcomes for patients.

¹ Strategy for Community Management of Heart Failure in Ontario. www.corhealthontario.ca

The heart failure provincial strategy, published by CCN in 2014, recognizes that the ideal, patient-centred system to manage HF must be firmly rooted in a primary care sector that is highly integrated with specialty services and community-based teams of health care professionals. As such, the strategy proposes a highly integrated and collaborative multidisciplinary team approach using a regional spoke-hub-node model for organizing care in the community for patients with HF and centralizing the coordination of care, along with provision of more complex care, within the HF community hub or tertiary node. Similar models have been successfully deployed for other chronic conditions in Ontario, such as chronic kidney disease and cancer.

A spoke-hub-node model represents a comprehensive organization of care that facilitates an integrated and person-centred approach to coordination and delivery. Using a shared care approach, less complex care is provided in the patient's own community and more complex care, when required, is provided at a more centralized and specialized centre of practice or program. Care plans, resources, and health information are regularly shared across all sites to enable more seamless care and improved outcomes. For patients with HF, the location and intensity of care is determined by disease complexity and risk of adverse outcomes. Individuals with HF who are low risk and complexity (Level 1) can be cared for in a spoke, close to home. Individuals of intermediate risk require the more complex care provided by a community hub (Level 2). High risk individuals require Level 3 care, which is the most complex and delivered in a tertiary node. The intensity and level of care may vary over time with the patient's complexity and risk changes, but the goal is to ensure that high quality care is available as close to home as possible and that care is coordinated across all level of care.

The spoke-hub-node model, along with a set of minimum standards, will help to:

- identify individuals at an earlier stage of disease;
- optimize patient access and referral to an appropriate level of care;
- promote system integration, efficient and coordinated care; and
- support evaluation and continuous quality improvement across the system.

Although the standards presented in this section apply for all outpatient HF programs, the breadth and depth of their application varies between centres that provide different levels of care.

Overview of a spoke-hub-node model of care

A spoke-hub-node model represents an integrated, patient-centred organization of care, whereby patients move between the levels of care as guided by disease complexity and risk of adverse outcomes. A spoke-hub-node model facilitates a person centred approach to care by allowing care to be received as close to home as possible with less complex care being provided in one's own community and more complex care requiring visits or a shared care approach with a more centralized and specialized centre of practice or program. Regional spoke-hub-node models have been successfully adopted to better manage other chronic conditions in Ontario, such as chronic kidney disease and cancer.

“For the past two decades, many healthcare providers have been developing networks for primary, secondary, and tertiary care settings to provide care to their patient population. Depending on the size and scope of the provider, these networks have varied in sophistication with many working on loose coalitions of segregated services. In the fee-for-service reimbursement model of the past, the flow of care was designed to feed patients from the lower acuity outpatient settings to the larger more comprehensive tertiary centre. This was known as the hub-and-spoke model for many years”.²

Implicit in this framework is a need for agreed-upon criteria for referral and risk stratification, and a role for more specialized levels to provide direct patient care in addition to capacity building and mentorship for other team members in a shared-care model. An example of this approach can be found in the management of chronic kidney disease where the Ontario Renal Network has introduced tools and processes to help identify, manage and refer patients from primary care through specialist care, including but not limited to evidence-based care algorithms, standardized referral forms, mentorship, and explicit program eligibility criteria.

For patients with HF, the intensity of care is determined by patient complexity and risk of adverse outcomes at any given time. Individuals with HF who are low risk and require care that is the least complex (Level 1) can be managed in a spoke. Individuals with HF who are at intermediate risk require Level 2 care, which is more complex and provided by a community hub. Individuals with HF who are high risk require Level 3 care, which is the most complex and delivered in a tertiary node (Table 1).

²<http://www.haskell.com/Resources/February-2014/The-New-Hub-and-Spoke-Model-Redirecting-the-Flow#sthash.RGoOLb70.dpuf>

Table 1. Levels of care as guided by patient complexity and risk

Level of care	Patient status	Care provisions
1	<p>Low complexity or low risk</p> <p>Few co-morbidities</p> <p>Co-morbidities well controlled (e.g. stable)</p> <p>NYHA Class I-II symptoms (mild)</p>	<p>Spoke: Optimal prescription of pharmacological and non-pharmacological therapy, well controlled risk factors, reversible causes of HF fully controlled, patient and caregiver self-care education, support and feedback well established, regular follow up according to patient condition and needs. Established bidirectional communication links and referral of patients within identified Level 2 and 3 care teams.</p>
2	<p>Intermediate complexity or intermediate risk</p> <p>Co-morbidities reasonably well controlled</p> <p>Recent hospitalization</p> <p>NYHA II-III symptoms (moderate)</p> <p>Unable to stabilize at Level 1</p>	<p>Community Hub: Consultation with level 2 HF multidisciplinary team</p> <p>Patient stabilization, review of therapies and recommendations for change. Require optimization of risk factors, patient and caregiver self-care education, support and feedback. May require investigation for reversible causes of HF. Established bidirectional communication links and referral of patients with identified Level 1 and Level 3 care teams. Provide guidance/mentorship to Level 1 care providers</p>
3	<p>High complexity or high risk</p> <p>Multiple co-morbidities not well controlled (e.g. active illness)</p> <p>Frequent hospitalizations</p> <p>NYHA III-IV symptoms (moderate to severe)</p> <p>Unable to stabilize at Level 2</p>	<p>Tertiary Node: Consultation and involvement with Level 3 specialized multidisciplinary HF team until patient stabilizes sufficiently for transfer to Level 2 care. Has the ability to provide advanced HF care. Possesses expertise for sophisticated diagnostic modalities, implement complex medication regimen and device implantation. Established bidirectional communication links and referral of patients with identified Level 1 and 2 care teams. Provide guidance/mentorship to Level 1 and or 2 care providers</p>

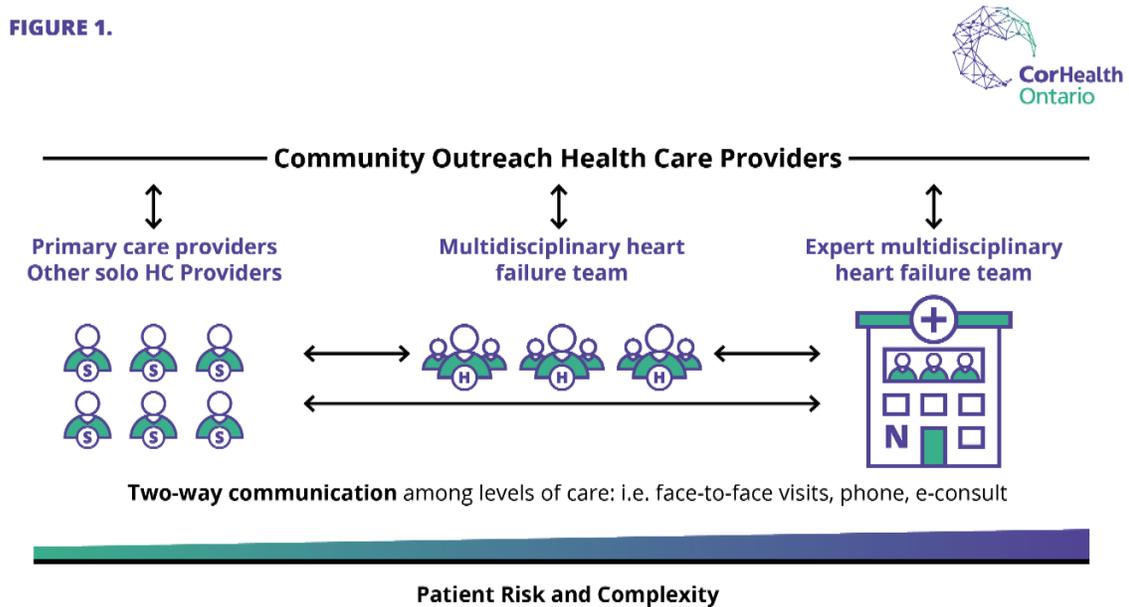
NYHA-New York Heart Association classification; HF-heart failure

Adapted from Howlett et al., 2016

The intensity of care a patient requires may increase or decrease over time based on changing complexity. As a result, patient care will be shared across providers within the regional spoke-hub-node network, ensuring the right care by the right person at the right place and within the right time. For example, individuals initially diagnosed with HF during hospitalization may require high intensity care (e.g. frequent follow up and close monitoring) to stabilize and optimize treatment to improve symptoms and decrease risk. This may be provided in a community hub or tertiary node, depending on other factors that contribute to the patient's overall risk. As these patients receive ongoing treatment, their condition may stabilize and overall risk decreases and care can be primarily managed within a spoke. Nevertheless, there is an ongoing formal arrangement for a 'shared care approach' with the original hub or node and the spoke location, in the event of a change in patients' clinical status or risk. For example, an older individual with HF and preserved ejection fraction experiencing worsening symptoms due to fluid overload but also has underlying renal impairment that complicates medication options for managing the deterioration. Care can be quickly escalated to the hub or node, or the spoke can access readily available support from health care professionals (HCPs) in the hub or node to guide management of the individual's care in the spoke. The patient receives evidence-based care closer to home while the HCP(s) in the spoke are supported by teams in the hub or node. Alternatively, in other cases, care originally provided within a spoke may need to be escalated to include access to advanced expertise and cardiac diagnostics and therefore requires patients to travel to a hub or node setting as further cardiac investigations or procedures may be necessary.

Patients with HF may require care from different settings within the spoke-hub-node network throughout their illness trajectory. Navigation through the network is facilitated by well-established referral criteria, bidirectional communication links, and collaboration between HCPs as guided by individual patient need and preference (Figure 1).

Figure 1. Example of a regional spoke-hub-node integrated model of heart failure care



LEVELS OF PATIENT CARE AND SETTING



Importantly, by providing a more integrated solution to care provision, the spoke-hub-node model will help establish close working relationships among care providers who may be currently operating in isolation, and thus foster opportunities for building trust among providers, improved knowledge translation, exchange and capacity development. For example, specialists can also contribute to clinical skills development through bedside mentorship opportunities, the development and refinement of protocols and decision-support tools to implement practice guidelines, and promote quality assurance.

Minimum standards and key elements of heart failure patient care

In response to the current gaps in HF management in Ontario, the following section highlights the minimal standards and key clinical requirements for evidence-based HF care that contributes to optimal patient-centred outcomes. Specifically, this section outlines the minimum standards for:

1. Key clinical services associated with improving patient outcomes; and
2. Administrative components to optimize patient access, promote system integration and coordination of care and engage in audit and evaluation activities for the purposes of quality improvement.

Meeting the standards may be achieved through a number of strategies such as redesigning, or enhancing local HF services, leveraging or strategically aligning with appropriate health care partners. Enhanced collaboration will ensure the efficient use of limited resources to improve the health outcomes for patients with HF and other associated chronic conditions.

Key clinical services of a heart failure program

All HF programs, regardless of the level of care they provide or the setting in which they operate (e.g. Levels 1 to 3) need to provide the following clinical services:

- Initial assessment and follow up monitoring;
- Establishing a care plan and goals of care according to a patient's condition and needs;
- Pharmacological optimization;
- Self-care patient education, support and feedback;
- Advance care planning.

The minimum standards of care for each of these clinical services are outlined in the following section. Although these standards apply for all HF programs, the breadth and depth of their application varies between centres that provide different levels of care. Variations in applications of the standards between programs within spoke, hub, and node settings are highlighted following the list of the minimum standards.

Patient assessment and follow up monitoring

All patients require an initial assessment to develop an individualized plan of care that integrates best clinical practice recommendations with patient preferences and goals of care. Follow up appointments provide necessary opportunities to implement the care plan, assess and monitor progress and respond to changes as needed for optimizing patient-centred outcomes.

The trajectory of HF includes periods of stability interspersed with periods of deterioration that require additional health care support and intervention. Therefore, patients also need the opportunity for additional 'ad hoc' or urgent follow up assessment or rapid and seamless consultation through a shared care model of patient management for situations of clinical deterioration that require further intervention to help reduce the need for hospitalization.

Although the intensity and frequency of follow up appointments may vary between patients according to individual risk, all patients should have regular functional and physical assessments as part of standard care. Follow up appointments that include both a functional and physical assessment can provide information to help determine the:

- Symptom burden on quality of life;
- Prognostic risk for mortality and hospitalization;
- Dynamic risk and changes in disease status and progression over time;
- Appropriateness of therapies and treatment of HF;
- Response to therapies; and
- Progress towards the patient's goals of care.

Minimum standards:

- The initial patient assessment shall include all necessary information (e.g. cardiac and medical history, risk factors, functional and physical status, psychosocial and emotional needs) obtained from a patient history and physical exam to establish an individualized care plan that is guided by best practice guidelines, patient preferences and goals of care;
- Assessment of functional status, symptom burden, and current medications shall be assessed and documented for every patient appointment using a standardized approach;
- The plan of care shall be reviewed with the patient at every follow up appointment to ensure it is current while updating as required;

- The frequency and intensity of patient follow up appointments shall be determined according to patient's individual risk, needs and preferences;
- Routine physical assessment, including assessment of volume status shall be conducted and documented for every follow up appointment;
- Common supporting tests such as serum electrolytes and renal function, 12-lead ECG and chest X-ray shall be performed as per best practice guidelines;
- Cardiac diagnostic tests where appropriate for critical clinical decision making shall be arranged based on best practice guidelines and according to patient preferences and goals;
- Patients' clinical risk shall be assessed using a standardized approach at every follow up appointment. There shall be a process in place to guide appropriate changes in the care plan as guided by patient risk, patient preference and goals of care. This may include transfer of care to a different level within the hub-and-spoke regional network;
- Patient eligibility for referral to non-pharmacological invasive therapy (e.g. devices, percutaneous interventions, surgery) for HF management and patient preference for these service(s) shall be documented;
- There shall be a process in place to facilitate adjustment of diuretic therapy according to patient symptoms and clinical assessment;
- There shall be a process in place to assess and facilitate optimization and management of cardiovascular risk factors;
- There shall be a process in place to facilitate assessment and management of co-morbidities that require further attention to optimize patient cardiovascular outcomes (e.g. COPD, renal impairment, geriatric syndrome).

Please see Table 2 that highlights differences in the intensity and frequency of assessment and monitoring activities between programs in node, hub and spoke settings.

Table 2. Patient assessment and follow up heart failure care

Clinical service	Patient complexity and risk for clinical event		
	Spoke Level 1 low risk	Community hub Level 2 intermediate risk	Tertiary node Level 3 high risk, complex
Initial physical assessment	General health and cardiovascular history and physical exam	Level 1 assessment including etiological work up and prognostic assessment/risk stratification	Level 2 plus: - Full cardiac history and exam that requires integration of results from advanced cardiovascular diagnostics or procedures - Patients often have unstable co-morbidities increasing the complexity of the assessment
Follow up physical assessment	General assessment such as weight, blood pressure, heart rate, respiratory auscultation, presence of peripheral edema	Level 1 plus cardiac auscultation, jugular venous pressure and hepato-jugular-reflex assessment, heart rhythm	- Level 2 in patients who are highly complex and often have unstable co-morbidities influencing intensity and complexity of assessment - Require same-day blood test and ECG at most appointments to guide clinical decisions
Common supporting tests	Results within 72 hours	Results within 48 hours	Available on site with same day results
Cardiac diagnostic tests	Routine referral processes	Partnerships for seamless referral	Cardiac diagnostic tests available on site
Frequency and intensity of follow up appointment: pre-arranged and urgent	Able to provide monthly pre-arranged follow up	- Able to provide biweekly pre-arranged follow up appointment - Able to provide urgent follow up appt. within 48 hours - Seamless process for referring to tertiary hub for urgent appointment. due to clinical deterioration	- Able to provide pre-arranged follow up appointment Mon-Fri - Able to provide urgent same-day appointment Mon-Fri
Adjustment of diuretic therapy	Titration of oral diuretic therapy as needed	Level 1 service in patients with moderate risk for clinical event	Adjustment of diuretic therapy, which may include intravenous furosemide

Establishing a patient-centred care plan and goals of care

Ontario's health care system is committed to improving the patient experience and being responsive to the needs of patients. This patient-centred approach helps patients actively participate in their care and clinical decision making, based not only on HF, but also on the uniqueness of culture, preferences and values. Patient-centred care requires an assessment of patients' experiences with HF on their physical, emotional, and psychosocial well-being in addition to understanding their preferences and goals of care. Often this information is organized into an individualized care plan which can be used as a guide/roadmap that outlines relevant assessment results and the identification of problems/concerns. The plan indicates the prioritization of each problem/concern, what will happen to address each, when it will happen, who will do it, transition planning and the outcomes expected.

Minimum standards:

- Patients shall be provided opportunities to discuss care planning according to their preferences and goals. Family members/significant others are encouraged to participate in these discussions as appropriate;
- There shall be a process in place to incorporate patient preference and goals into the plan of care;
- Patient preferences and goals shall be documented clearly and readily accessible for all members of the patient's health care team. Documentation shall be updated with any changes to patient preferences or goals of care;
- Patient assessment of quality of life shall be incorporated into initial and follow up assessments. There shall be a process in place to address areas of patients' concerns related to quality of life;
- There shall be a process for identifying key clinical stakeholders in the care plan and communication strategies for patient progress and updates in the plan of care;
- Establishment and review of care plans and goals appropriate for the patient's current condition;
- All follow up appointments shall ensure the plan of care is current and updated as required.

Although a patient-centred approach is necessary for all Levels of care, the care plan may require more frequent adjustments for patients who are at intermediate to high risk as they may require frequent changes to treatment options in response to their unstable clinical condition. Table 3 highlights some differences between HF programs as they provide patient-centred care.

Table 3. Patient care planning

Clinical service	Patient complexity and risk for clinical event		
	Spoke Level 1 low risk	Community hub Level 2 intermediate risk	Tertiary node Level 3 high risk, complex
Establish and review care plan and goals of care	Initially and then annually or when there is a status change or additionally upon patient request	Review and revise plans whenever new referrals are made, or the patient has a major status change (e.g. hospitalization), or additionally upon patient request	Review every visit where appropriate or additionally upon patient request

Medication optimization

Evidence-based pharmacological therapies are available to reduce mortality, morbidity and improve quality of life in people with HF and reduced ejection fraction. Recommendations from the QBP document for HF patients in the post-acute period have also been used to inform these standards.

Minimum standards:

- Pharmacological therapy for HF shall be optimized as per current clinical guidelines. Patient adherence to and contraindications for evidence-based pharmacological therapies shall be part of routine patient assessment;
- Patient education and counselling shall be provided to optimize patient medication adherence;
- Tolerance of medications shall include patient symptoms, physical assessment and recommended laboratory tests as per current clinical guidelines;
- Reasons for not prescribing recommended pharmacological therapies or reasons for intolerance if target dose is not achieved shall be documented clearly and readily accessible;
- Medication reconciliation shall occur at every patient appointment;
- There shall be a communication strategy that identifies key clinical partners and defines how they coordinate medication optimization.

Table 4 below highlights the differences in medication management for patients receiving care in a tertiary node, community hub, or spoke.

Table 4. Medication optimization

Clinical service	Patient complexity and risk for clinical event		
	Spoke Level 1 low risk	Community hub Level 2 intermediate risk	Tertiary node Level 3 high risk, complex
Initiation, titration, and monitoring tolerance of cardiac medications	<ul style="list-style-type: none"> - Assess ongoing tolerance of optimized medications - Initiation and titration in low risk patients or through consultation with a hub or as outlined in medication plan provided by hub 	<ul style="list-style-type: none"> - Initiation and titration for cardiac medications in patients with moderate risk or stable co-morbidities - Assess ongoing tolerance of optimized medications - Provide guidance to spoke for medication initiation or titration in low risk patients 	Level 2 plus: <ul style="list-style-type: none"> - Initiation and titration of all cardiac medications in high risk patients or in patients with titration challenges such as hypotension, renal impairment, or conduction disease - Provide guidance to Level 1 or 2 care providers when consulted
Initiation of newly approved HF medications	Consideration for titration if appropriate expertise available	Same as Level 1	<ul style="list-style-type: none"> - Initiation and titration - Provide guidance/mentorship to Level 1 or 2 care providers

Self-care patient education, support and feedback

Supporting patient engagement in self-care is recommended as part of best practice guidelines and patient-centred care. The objective of education is to help patients/family caregivers to increase knowledge, understanding, and develop the skills necessary for self-care and reducing cardiovascular risk factors. Education with ongoing support with feedback helps patients build the knowledge and skills they need to be active and informed partners in their care. Self-care in HF includes:

- *Self-care maintenance*: treatment adherence such as reducing risk factors, following dietary restrictions, taking medications as prescribed, performing daily weights, and exercising daily;
- *Symptom perception and management*: surveillance and monitoring, recognizing, interpreting, and responding to symptoms when they occur or change.

Minimum standards:

- Self-care interventions shall be used in conjunction with education and coaching strategies. Guidance shall be provided to help patients gain not only the knowledge, but also the confidence, skills and motivation to successfully create and sustain self-care behaviours;
- Education interventions shall be provided to help patients become active and informed partners in their care;
- Education shall be delivered using interactive, individualized and experiential methods where clinicians are facilitators of education while also providing ongoing feedback. Whenever possible, family members/significant others shall be offered access to educational sessions;
- All eligible patients shall be offered referral for cardiovascular rehabilitation to help reduce risk factors and optimize cardiovascular outcomes.

Patients, who are complex or high risk, may also be eligible for advanced treatment options. Information content must be tailored to patient needs and therefore may vary between the levels of care intensity. Table 5 below highlights the differences in the content that may be provided to help patients make informed choices when facing treatment options.

Table 5. Patient education

Clinical service	Patient complexity and risk for clinical event		
	Spoke Level 1 low risk	Community hub Level 2 intermediate risk	Tertiary node Level 3 high risk, complex
Teaching content regarding advanced therapies	Standard treatment for low risk patients	Standard treatment for moderate risk patients	Level 2 plus: - information regarding advanced cardiac procedures (e.g. cardiac devices, cardiac surgery, cardiac transplantation) - Resource support for patients with complex questions at spoke or community hub
Self-care education	All HF self-care topics	Level 1	Level 1 plus individualized exercise prescription for improving aerobic fitness level

Advance care planning

HF is a chronic, progressive life-limiting condition. Clinical guidelines and literature exploring the patient experience in HF highlight the need to explore advance care planning. Advance care planning addresses the challenges of living with HF, the complications that may arise and the treatment options available, including end-of-life wishes. These conversations are often re-visited in the setting of changes in the illness trajectory or changes in patients' preferences.

Minimum standards:

- Patients shall be provided ongoing opportunities to discuss advance care plans according to their preferences and goals. Substitute decision makers/family/significant others are encouraged to participate in these discussions as appropriate;
- There shall be a process in place to incorporate patient end-of-life wishes in the care plan;
- Patient end-of-life wishes shall be documented clearly and readily accessible for all members of the patient's health care team. Documentation shall be updated with any changes;
- There shall be a communication strategy that identifies all health care providers on a patient's team and defines how they are aware of plans for end-of-life care;
- All patients shall have access to palliative care when necessary.

Note: End-of-life decisions in patients who are receiving advance therapies such as implantable defibrillators or mechanical support devices will require the expertise of the health care teams who provide these services. Therefore, appropriate care providers in HF programs that provide care to patients who receive these therapies need to provide direct involvement or be readily available for consultation to help guide end-of-life discussions with substitute decision makers/patients/family caregivers (e.g. deactivation of anti-tachycardia/shock therapy for people with an implantable cardioverter defibrillator).

Program administration

The following section outlines the minimum standards identifying the necessary program administrative infrastructure and processes within a HF program to optimize patient access to the right care, promote system integration and coordination of care, and engage in quality and performance improvement. Specific sections include:

- Program integration and coordination of care;
- Access to care;
- Human resource requirements;
- Health and safety considerations; and
- Quality improvement and outcome measurement.

Program integration and coordination of care

Within a hub-and-spoke model, HF programs need to clearly identify the integration and coordination of care between health care partners and also within the actual program. Each HF program will need to make decisions about the most appropriate organizational structure, the job titles and relationships between these positions to achieve the goals of the program.

At a minimum, a HF program shall have:

- An organizational framework that illustrates and defines the interrelationships between patients in the HF program, and health care system partners, including regional nodes, community hubs and spokes for seamless HF care, transitions and coordination;
- A process in place to identify and maintain awareness of other relevant services, programs, providers, and organizations to identify, address, and coordinate services across the continuum of care for patients with HF (e.g. community care, cardiovascular rehabilitation, remote monitoring);
- A process in place to describe linkages and relationships between the HF program and relevant health care system partners involved in the patients' circle of care (e.g. other specialized services such as geriatrics, nephrology, palliative care);
- Mechanisms to facilitate patient navigation through the health care system for accessing HF related care;
- An operational framework that provides a description of the HF program's organizational structure, the job titles and the relationships between these positions;

- A process for integrating evidence-based alternative models (e.g. location and monitoring techniques) for providing follow up care that is tailored to individuals' needs, risk profiles and preferences in order to enhance patient-centred outcomes.

Patient access to care

Patients with HF may access the health care system at any time during the trajectory of their chronic condition from initial diagnosis to end-of-life. HF programs need to be able to provide timely and seamless access in response to the needs of the population they serve.

Minimum standards:

- Patients should have the opportunity to access the required care in a timely fashion with appropriate referral based on the patient's condition;
- All HF programs shall have standardized referral criteria that are in alignment with the level of patient care they provide;
- Referrals for a HF program shall be made as an official communication between the referring HCP, the HF program and the patient. All communication shall maintain appropriate confidentiality as outlined by the Personal Health Information Act (2004);
- Following referral, the initial appointment shall be scheduled within a pre-established wait time that is based on patient complexity and risk of an adverse clinical event. Patients requiring an appointment following hospitalization shall be offered an appointment within two weeks or sooner if required;
- Regular pre-arranged follow up patient appointments shall be scheduled according to patient complexity, clinical risk, and plan of care, in addition to patient preferences.

Although all HF programs need to provide timely and seamless access, programs servicing complex patients or those who are intermediate or high risk for clinical events need to be available for urgent appointments and close follow up. They also need to provide access to care indirectly through requests for clinical consultation within pre-arranged mentorship agreements between nodes, hubs and spokes within their regional network. From a human resources standpoint, an individual who serves as a triage coordinator can help facilitate timely and appropriate access. See Table 6 which outlines variations between programs providing different levels of care intensity.

Table 6. Heart failure program administration to optimize access to the right care

Program administration- Access to care	Patient complexity and risk for clinical event		
	Spoke Level 1 low risk	Community hub Level 2 intermediate risk	Tertiary node Level 3 high risk, complex
Urgent clinical attention due to decompensation	Process in place for timely referral to appropriate HCP for assessment	Within 48 hours, Monday-Friday	Same day, Monday-Friday
Opportunity for two way communication between patient/family and an appropriate health care provider	- Minimum 2 days a week - Regular business hours	- Minimum 3 days a week - Regular business hours	- Minimum 5 days a week - Regular business hours
Opportunity for two way communication between health care providers for consultation re HF	Minimum 2 days a week Regular business hours	Minimum 3 days a week Regular business hours	7 days a week 24 hour coverage
Access to acute care services for HF	Referral to local acute care services or urgent referral to community hub or node where appropriate	- Referral to local acute care services - May have opportunity for direct hospital admission from clinic setting - Urgent referral to node where appropriate	Seamless coordination with an opportunity for direct hospital admission or urgent care from clinic setting
Location of HF program	Community-based	Community-based or outpatient setting in community hospital	Hospital outpatient setting with on-site advanced cardiac diagnostics/procedures

Human resources

Outcomes are better for patients when they are managed by a multidisciplinary team that include, at a minimum, a physician and nurse with specialized knowledge of HF. A physician is also necessary to provide clinical leadership and medical direction for the HF program and ensure that policies and procedures are consistent with evidence-based standards and guidelines for the delivery of clinical care. A registered nurse (or nurse practitioner) is required to help deliver many of the program services. Administrative staff is also required to support clinical and administrative positions in the HF program. Finally, although there will be some variety in HF program staffing models, every program requires a manager or clinical coordinator to provide administrative leadership and a vision to the program. The coordinator or manager role may be fully or partially combined with the physician or nursing role, depending on the size and scope of the HF program.

The number of additional health care professionals within any HF program is dependent on the level of care they provide, the human resource policies within the organization, and the resources available to provide the program.

Minimum standards:

- HF program services shall be provided through an integrated multidisciplinary team of qualified practitioners, administrative support, and led by a program manager;

A HF program shall:

- Include a physician who has demonstrated sustained interest, commitment, and knowledge in management of HF;
- Include a registered nurse (or nurse practitioner) who has demonstrated the necessary knowledge, skills, and judgement and functioning within the proper scope of practice to meet the core competencies required for the position;
- Define the specific qualifications and responsibilities for each health care professional within the HF program. These qualifications should include the required level of education, training, experience and certification/recertification;
- Have a formalized process to ensure team members have access to education/training opportunities to maintain competency. This process should include access to opportunities for continual professional growth and development;
- Regularly planned meetings with program team members to facilitate communication between team members, provide regular opportunities to discuss progress and/or challenges of the patients attending the HF program, and create a forum to improve care and services.

The knowledge and expertise required for HF programs located in nodes, hubs and spokes will vary in response to the level of patient complexity. Table 7 highlights some differences in team member requirements among these settings.

Table 7. Human resources

Program administration- Human resources	Patient complexity and risk for clinical event		
	Spoke Level 1 low risk	Community hub Level 2 intermediate risk	Tertiary node Level 3 high risk, complex
Physician	<ul style="list-style-type: none"> - Generalized knowledge of HF - Awareness of up to date evidence-based HF guideline practices - Family physician or internist 	<ul style="list-style-type: none"> - Additional knowledge of evidence-based complex HF patient care - Specialist (cardiologist, internist) or family physician with additional training in HF - Able to provide mentorship to spokes regarding evidence-based HF care 	<ul style="list-style-type: none"> - Specialist (cardiologist or internist) with well-developed HF expertise - Seamless access to cardiologist with experience in advanced HF care and if available, heart transplant or mechanical support - Able to provide mentorship to practitioners in other HF programs
Registered nurse/Nurse Practitioner	<ul style="list-style-type: none"> -Generalized knowledge of HF - Registered nurse, or advanced practice nurse/nurse practitioner 	<ul style="list-style-type: none"> - Some additional HF knowledge - Registered nurse, advanced practice nurse/nurse practitioner - Able to provide mentorship to spokes regarding HF 	<ul style="list-style-type: none"> - Expertise in HF - Advanced practice nurse/nurse practitioner - Speciality certification in HF or cardiovascular nursing preferred - Registered nurse with minimal 5 years of experience, medical directives - Able to provide mentorship to nurses in other HF programs
Allied health- e.g. Dietitian, social worker, pharmacist, exercise specialist or physiotherapist	Seamless referral to allied health who have generalized HF knowledge for management of low risk patients	Some dedicated allied health or seamless referral to allied health who have working knowledge of HF management for moderate risk patients	Dedicated allied health as part of HF program include: dietitian, social worker, pharmacist, exercise specialist/physiotherapist who have knowledge of HF management in high risk or complex patients
Administrative support	Part time administrative support-additional support per clinic volumes	Part time administrative support - additional support per clinic volumes	Full time administrative support-additional support per clinic volumes

Health and safety considerations

Ideally, workplaces should always be improving service delivery in a way that improves the health and safety and minimizes the risk to health care providers, support staff, and patients/family members attending the HF program. People with HF tend to be elderly with limited mobility and appropriate equipment and resources to ensure patient and staff safety are needed.

Minimum standards:

- Health and safety considerations shall be built into strategic and tactical decision-making around the operations of a HF program;
- HF program facilities shall be located and designed based on patient safety, confidentiality, accessibility and the types of clinical services provided;
- In HF programs that have patients with special needs that have been identified, appropriate equipment and resources to ensure patient and staff safety shall be made available.

Quality improvement and outcome measurement

Being able to evaluate a HF program to determine the quality of patient services and care against standards, best practice guidelines and benchmarking is essential. Evaluation of the program should also take into consideration both organizational perspectives and the patient/family caregiver experiences.

Minimum standards:

All HF programs shall:

- Have mechanisms in place to support an awareness of and the ability to implement evidence-based HF practice according to the latest guidelines (such as C-CHANGE-HF or CCS consensus guidelines);
- Address CCS quality indicators for HF, forthcoming HQO Heart Failure Care in the Community Quality Standards, and strive to monitor and evaluate the quality and effectiveness of all clinical services within the program;
- Have access to and the ability to demonstrate up to date evidence-based HF care and implement them effectively for the appropriate patient;
- Participate in activities to support performance measurement and monitoring at a local and provincial level.

Specific data elements that may be collected include:

- Patient volumes and wait times for access to the HF program clinical services;
- Documentation of: etiology of HF, left ventricular ejection fraction, history and physical;
- Utilization and optimization of evidence-based medications;
- Investigations and monitoring of efficacy of therapy;
- Documentation of referral for eligible patients for evidence-based non pharmacological invasive therapy, cardiac diagnostics, palliative care, and cardiovascular rehabilitation;
- Assessment and documentation of patient education and engagement in self-care, quality of life, advance care planning and goals of care;
- Hospital readmissions, including 30-day and 6 month readmission and mortality.

References and supporting documents

- Abrahamyan L, Trubiani G, Witteman W, Mitsakakis N, et al. Insights Into the Contemporary Management of Heart Failure in Specialized Multidisciplinary Ambulatory Clinics. *Can J Cardiol*. 2013; 29: 1062-1068.
- Blais C, Dai S, Waters C, Robitaille C, et al. Assessing the Burden of Hospitalized and Community-Care Heart Failure in Canada. *Can J Cardiol*. 2014; 30: 352- 358.
- Bui AL, Horwich TB, Fonarow GC. Epidemiology and risk profile of heart failure. *Nat Rev Cardiol*. 2011; 8: 30-41.
- Cardiac Care Network (Ontario). Strategy for Community Management of Heart Failure in Ontario. February 2014. www.corhealthontario.ca
- Cawley J and Grantham CC. Building a System of Care: Integration across the Heart Failure Care Continuum. *Perm J*. 2011; 15:37-42.
- Chun S, Tu JV, Wijeyesundera HC, Austin PC, et al. Lifetime analysis of hospitalizations and survival of patients newly admitted with heart failure. *Circ Heart Fail*. 2012; 5: 414-421.
- Dai S, Walsh P, Wielgosz Y, Gurevich Y, et al. Comorbidities and mortality associated with hospitalized heart failure in Canada. *Can J Cardiol*. 2012; 28: 74-79.
- Davidson PM, Newton PJ, Tankumpuan T, Gaull G, et al. Multidisciplinary Management of Chronic Heart Failure: Principles and Future Trends. *Clin Ther*. 2015; 37: 2225- 2233.
- Ezekowitz JA, O'Meara E, McDonald MA, et al. 2017 Comprehensive Update of the Canadian Cardiovascular Society Guidelines for the Management of Heart Failure. *Can J Cardiol*. 2017;33(11):1342-1433.
- Gagliardi A, Webster F, Straus S. Designing a knowledge translation mentorship program to support the implementation of evidence-based innovations. *BMC Health Serv Res*. 2015; 15: 198.
- Goodlin SJ. Palliative care in congestive heart failure. *Journal of the American College of Cardiology* 2009; 54: 386-96.
- Goodwin N. Understanding Integrated Care. *Int J Integr Care*. 2016;16(4):1-4.
- Government of Canada. Unleashing Innovation: Excellent Healthcare for Canada. July 2015.
- Hauptman PJ, Rich MW, Heidenreich PA, Chin J et al. The Heart Failure Clinic: A Consensus Statement of the Heart Failure Society of America. *J Cardiac Fail*. 2008; 14: 801-815.

- Hayes S, Peloquin S, Howlett JG, Harkness K, et al. A qualitative study of the current state of heart failure community care in Canada: what can we learn for the future? *BMC Health Serv Res.* 2015; 15: 290.
- Howlett J, Chan M, Ezekowitz J, Harkness K, et al. The Canadian Cardiovascular Society Heart Failure Companion: Bridging Guidelines to Your Practice. *Can J Cardiol.* 2016; 32(3):296-310.
- Howlett JG, Mann EO, Baillie R, Hatheway R, et al. Heart failure clinics are associated with clinical benefit in both tertiary and community care settings: Data from the Improving Cardiovascular Outcomes in Nova Scotia (ICONS) registry. *Can J Cardiol.* 2009; 25: e306-e311.
- Johansen H, Strauss B, Arnold JM et al. On the rise: The current and projected future burden of congestive heart failure hospitalization in Canada. *Can J Cardiol.* 2003; 19: 430-435.
- Law commission of Ontario report on Health Care Consent and Advance Care Planning in Ontario. January 2014
- Leyshon S, McAdam S. Scene setter: the importance of taking a systems approach to person centred care. *BMJ.* 2015; 350.
- Maar M, Yeates K, Barron M, Hua D et al. I-REACH: an engagement and assessment tool for improving implementation readiness of researchers, organizations and communities in complex interventions. *Implement Sci.* 2015; 10: 64.
- McDonagh TA, Blue L, Clark AL, Dahlstrom U et al. European Society of Cardiology Heart Failure Association Standards for delivering heart failure care. Position Statement. *Eur J Heart Fail.* 2011; 13: 235-241.
- McKelvie RS, Heckman GA, Blais C, et al. Canadian Cardiovascular Society Quality Indicators for Heart Failure. *Can J Cardiol.* 2016; 32(8):1038.e5-9.
- MOHTLC. Community-Based Care for the Specialized Management of Heart Failure. An Evidence-Based Analysis. Ontario Health Technology Assessment Series November 2009; Vol. 9, No.17.
- MOHLTC. Quality-Based Procedures: Clinical Handbook for Heart Failure (Acute and Postacute). February 2015.
- MOHLTC. Patients First: Action Plan for Health Care. February 2015.
- OMA. Key Elements to Include in a Coordinated Care Plan. June 2014.
- Page K, Marwick TH, Lee R, Grenfell R et al. A systematic approach to chronic heart failure care: a consensus statement. *The Medical Journal of Australia* 2014; 201: 146-150.
- Riegel B, Lee C, Sochalski J. Developing an Instrument to Measure Heart Failure Disease Management Program Intensity and Complexity. *Circ.* 2010; 3: 324-330.

- Vedel I and Khanassov V. Transitional Care for Patients With Congestive Heart Failure: A Systematic Review and Meta-Analysis. *Am Fam Medicine* 2015; 13: 562-571.
- Wijeysundera H, Trubiani G, Abrahamyan L, Mitsakakis N et al. Specialized multi-disciplinary heart failure clinics in Ontario, Canada: an environmental scan. *BMC Health Serv Res.* 2012; 12: 236.
- Wijeysundera H, Trubiani G, Wang X, Mitsakakis N, et al. A Population-Based Study to Evaluate the Effectiveness of Multidisciplinary Heart Failure Clinics and Identify Important Service Components. *Circ Heart Fail.* 2013; 6: 68-75.
- Yeung D, Boom N, Guo H, Lee D, Schultz S, Tu J. Trends in the incidence and outcomes of heart failure in Ontario, Canada: 1997-2007. *CMAJ.* 2012; 184: 1-9.