

# A Chronic Disease Management Intervention for Home Care Patients with Cardio-Respiratory Symptoms: The DIVERT-CARE Intervention

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## Abstract

*The Canadian home care population is growing and cardio-respiratory chronic care needs are more prevalent. Specialized programs for self-management support are usually initiated during an acute episode or upon discharge from hospital. These hospital and community-based outpatient programs are typically delivered by cardiac and respiratory disease management specialists and clinics, and only a small proportion of patients living with cardio-respiratory disorders have access to these. Self-management support provided in settings other than the home fail to account for challenges unique to the patient's home environment where self-management is practised. The DIVERT-CARE Intervention is a scalable, home-based, multi-component intervention to increase health literacy, optimize self-management behaviours,*

*strengthen community supports, and increase co-management between home care and primary care providers. We describe the DIVERT-CARE Intervention components in detail, including the prerequisite nurse training and education, case-finding, and inter-professional self-management supports. This paper is relevant for the advancement of community nursing practice to adequately support the needs of home care patients with heart failure and COPD-related cardiorespiratory symptoms and promote clinical practice consistency across the healthcare system.*

**Key words:** home care, cardio-respiratory, hospital avoidance, chronic disease management, heart failure, community nursing, self-management

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## Clinical Highlights

- The increasingly complex nature and growing number of home care patients with cardio-respiratory disorders necessitates that community-based nurses and allied health professionals are equipped with the knowledge and skills that align with the overall care needs of these patients.
- Chronic disease management strategies initiated in the community can target higher-risk home care patients earlier using the DIVERT-CARE Intervention to effectively prevent future ED visits and hospitalizations.
- Evidence-based clinical care guidelines can be used in the community, thereby strengthening the overall system by providing more consistent chronic disease management across the healthcare continuum.

**M**ore than 2 million Canadians required care in the home in 2012 and 85% were 65 years of age or older (Canadian Institute for Health Information [CIHI], 2017; Statistics Canada, 2017). Older patients with three or more chronic conditions use 40% of healthcare resources, and heart failure (HF) and chronic obstructive pulmonary disease (COPD) are main drivers of hospitalization (CIHI, 2014; Wodchis, Austin, & Henry, 2016). At the same time, emphasis on the care of complex patients has increasingly shifted to the community (Goldhar et al., 2014). Chronic disease

strategies that promote self-management have been shown to improve patient outcomes and avoid unnecessary hospitalizations (Heart Failure Society of America, 2006; Kasper et al., 2002). Despite enhanced hospital discharge initiatives, self-management behaviours are often inadequate (Buck et al., 2012; Casas et al., 2006). Patient access to self-management programs typically occurs after multiple hospitalizations and clinical deterioration, and these programs do not focus on self-management in the home environment. A home-based program is needed to address the gap in care for patients with cardio-respiratory management needs. Identification of those most at risk for hospitalization will allow for deployment of a focused community nurse-led self-management program. As in-home care expands proportionate to the aging population, there is a need for specialized care providers, health literacy improvement, and effective health promotion programs to ensure the sustainability of publically funded healthcare (Canadian Medical Association, 2015). DIVERT-CARE (Collaboration, Action, Research and Evaluation) is a proactive intervention targeting home care patients at risk for hospitalization from HF and COPD symptoms.

HF is a leading cause of hospitalization for those 65 years of age and older and is associated with increased severity and frequency of symptoms as the disease progresses (Bui, Horwich,

& Fonarow, 2011; Cardiac Care Network [CCN], 2014). Access to specialized HF care is limited, with the majority of acute medical treatment provided by general internists and family physicians in hospitals (CCN, 2014; Tu, Gong, Austin, Jaakimian, & Tu, 2004). Although home-based HF education and social supports have been shown to reduce hospitalizations, there remain care gaps in chronic disease monitoring and management in community settings (CIHI, 2014; Yancy et al., 2013). Specifically, Foebel et al. (2011a) found 28.6% of home care patients with HF were not receiving any HF therapies, and only 28% were on the recommended combination drug therapy. Additionally, 28.7% of home care patients with HF also have reactive airway disease, and this comorbid combination has been associated with non-use of HF therapy (Foebel et al., 2011a; Foebel, Hirdes, Heckman, Tyas, & Tjam, 2011b). HF and COPD are shown to have concomitant rates as high as 52% in North America, and share the signs and symptoms of fatigue and shortness of breath (Hawkins et al., 2009; Zeng & Jiang, 2012). The presence of COPD must, therefore, be taken into consideration when implementing self-management strategies.

COPD is a respiratory illness affecting more than 1.9 million Canadians in 2011/2012 (Public Health Agency of Canada, 2016). It is a life-limiting disease associated with an increased risk of developing community-acquired pneumonia and exacerbations requiring hospitalization, which impact overall quality of life, prognosis, and healthcare resources (Bourbeau et al., 2003; Williams et al., 2017). A reported 19.4% of home care recipients have COPD, which is likely a conservative estimate of this underdiagnosed disease (Agusti et al., 2016; CIHI, 2017). Community management of COPD is focused on reducing the frequency and severity of exacerbations, smoking cessation and improving exercise tolerance (O'Donnell et al., 2008). Out-patient COPD education has been shown to improve medication adherence with a reduction in the need for rescue inhaler use (Gallefoss, 2004).

The home care sector is ideally situated to be an effective component of an integrated chronic disease management strategy. A reported 55% of adults receive chronic disease counselling and education from their primary care providers, but supportive chronic disease management is constrained by the volume of patients and multiple disease-specific patient education materials required (Schoen et al., 2004; Yarnall, Pollak, Ostbye, Krause, & Mitchener, 2003). Education provided in settings other than the home fail to account for challenges unique to the patient's home environment where self-management is practised (Dickson & Riegel, 2009; Flocke & Stange, 2004; Strömberg, 2005). Education provided in acute care settings is often associated with poor knowledge retention after discharge, reasons cited include an overload of information during a period of stress, the hospital's atypical environment, and limited time to deliver education (Reiley et al., 1996; White, Garbez, Carroll, Brinker, & Howie-Esquivel, 2013). The evidence suggests that education should last a minimum of 60 minutes to optimize

information recall (Flocke & Stange, 2004; Kessels, 2003; White et al., 2013). Providing self-management education at non-acute stages highlights the natural course of the disease, reinforces monitoring during stable periods, and helps integrate knowledge into the patient's home environment (CCN, 2014; Krumholz et al., 2002; Lainscak et al., 2011; Jaarsma et al., 2008). There is a growing body of evidence that supports specialized home nursing as an integral part of community self-management interventions (Casas et al., 2006; Kalter-Leibovici et al., 2017; Ruiz et al., 2017; Tricco et al., 2014). In fact, when compared to telemonitoring, specialized clinic visits, and the use of allied health professionals, nurse home visits were shown to be most effective at reducing hospitalization and all-cause mortality following a hospital admission for HF (Feltner, et al., 2014; Van Spall et al., 2017).

Self-management encompasses the day-to-day chronic disease care, including engagement in monitoring and managing disease signs and symptoms, adopting risk-reducing lifestyle behaviours, and maintaining contact with health professionals (Registered Nurses Association of Ontario, 2010; Schulman-Green et al., 2012). Self-management is a process that changes over the life course of the disease, with patients reporting increased difficulty and time commitment required to control symptoms towards end-stage trajectories (Moser & Watkins, 2008). Additional challenges identified by patients include interpreting symptoms, symptom unpredictability, and what to do with the information collected during the monitoring phase of self-management (Herr et al., 2014; Spaling, Currie, Strachan, Harness, & Clark, 2015; Wingham, Harding, Britten, & Dalal, 2014). Home care patients with HF also have complex functional needs that require care coordination and supportive care (CCN, 2014; Foebel et al., 2011b). Strategies shown to be effective in promoting self-management behaviours include prolonged involvement, patient-centred goal setting, and opportunities to contextualize education to environment (Benzo et al., 2016; Dickson & Riegel, 2009; Jaarsma et al., 2008). The DIVERT-CARE Intervention is comprised of evidence and home-based interventions to promote self-management while leveraging existing tools to improve system integration.

## Aim

DIVERT-CARE is a home-based chronic disease management intervention. The aim of this paper is to describe how the DIVERT-CARE Intervention (see Table 1) is being used to deliver comprehensive chronic disease management and support in the home. The Intervention's components will be described based on the template for intervention description and replication (TIDieR), an extension of the SPIRIT statement (item 11) (Hoffmann et al., 2014). The role of specialized community-based nurses is highlighted, including delivering education and training recommendations to adequately meet the complex needs of the growing population of home care clients with unstable cardio-respiratory disease.

<b>DIVERT-CARE Intervention Components</b>	<b>Description</b>
Case Finding Using the DIVERT Scale	Use of the DIVERT Scale (embedded in interRAI assessment) to identify home care patients most likely to benefit.
Self-Management Education and Supports	In-home assessment of self-management goals and needs, with practical education and skills training to recognize and manage symptoms.
Access to an immediate nurse-staffed helpline	Direct phone line staffed by nurses involved in the DIVERT-CARE Intervention to aid with self-management and problem resolution.
Promotion of Vaccines	Seasonal flu vaccine and pneumococcal polysaccharide (Pneu-P-23) information and health promotion.
Advance Care and Goal Planning	Consultation for advance care and goals of care planning, advanced care decisions, and communication of care wishes.
Clinical Pharmacist-Led Medication Review	Review of medication for safety, efficacy and appropriate use of medications and delivery options.
Interprofessional Team Case Rounds	Weekly care team meeting to discuss care plan, update goals, and how to support changing care needs.
SBAR Communication with Primary Care Providers	SBAR formatted communication to effectively communicate disease relevant information and care updates to primary and specialist care providers.
Standardized ED Transition Package/Personal Care Record	A succinct document to support continuity of care throughout health system. Personal care record of goals, plan of care, and community supports.

### Theoretical Foundation: Chronic Care Model

DIVERT-CARE was developed to leverage existing clinical guidelines and education resources used in acute and specialized care areas and apply them in a more targeted manner to the community care sector. This approach aligns the intervention with the hub-and-spoke model that calls for integration across the continuum of care (Canadian Medical Association, 2015; CCN, 2014). The theoretical foundation for the DIVERT-CARE Intervention is based on Wagner et al.'s (2001) Chronic Care Model (CCM). The foundations of the CCM are improved communication, collaboration, and integration between healthcare environments and care partners. DIVERT-CARE aligns with the system delivery elements and patient-centred approach of the CCM (see Table 2). The components of DIVERT-CARE also conform to the essential elements of person-centred care (Brummel-Smith et al., 2016) (see Table 3). Productive interactions are facilitated when the patient and healthcare team have shared goals and use a

<b>Chronic Care Intervention</b>	<b>DIVERT-CARE Model</b>
Prepared Proactive Practice Team	Pre-intervention assessment of competencies Workforce development Nurse education tool kit CORE <sup>2</sup> , Lung Association, INSPIRE Guidelines <sup>3</sup>
Community Self-Management Support	Patient education, skills training, self-management support
Decision Support	DIVERT Scale for patient identification Guideline-based chronic disease patient education Decision Aids—Zones Teach-back methods
Delivery System Design	Focus on continuity of care and prevention 15-week nursing component, comprising 4 home visits and 4 phone calls Medication reconciliation Advance care planning (psychosocial support) Care coordination + Usual home care supports Primary Care Physician—sustained follow-up
Informed Activated Patient	Patient-centred goals Patient Activation Measure (PAM) <sup>4</sup>
Productive Interactions	Team case rounds /Huddles Multi component approach (physician, care coordinator, nurse, pharmacy, social/spiritual supports) Shared care plan/ personal care record

<sup>1</sup>Wagner, E.H., Austin, B.T., Davis, C., Hindmarsh, M., Schaefer, J., & Bonomi, A. (2001). Improving chronic illness care: Translating evidence into action. *Health Affairs* 20(6), 64–78. <https://dx.doi.org/10.1377/hlthaff.20.6.64>

<sup>2</sup>CORE. (2017). *Expert led education for the multidisciplinary management of heart failure*. Retrieved from <http://www.corehearteducation.com/>

<sup>3</sup>Rocker, G.M., & Verma, J.Y. (2014). INSPIRED<sup>3</sup> COPD outreach program TM: Doing the right things right. *Clinical & Investigative Medicine*, 37, 311–319

<sup>4</sup>Hibbard, J.H. (2017). Patient activation and the use of information to support informed health decisions. *Patient Education and Counseling*, 100 (1), 5–7.

common language. A multi-professional approach is used involving nurses, nurse practitioners, respiratory therapists, care coordinators of various professional designations, spiritual/social councilor, pharmacists, and physicians. In preparation to deploy the interventions, community-based nurses participate in a comprehensive disease-related and self-management education training program (see Table 4.). The DIVERT-CARE Intervention leverages existing decision support tools and patient resources derived from clinical guidelines and best practice evidence, thereby ensuring a consistent delivery platform across disciplines and points of care. Patient education and supports are tailored to clinical needs, self-management skills, and patient centred goals. An individualized care plan is developed to be shared between the home care team and primary care

Essential Elements of Person-Centred Care	DIVERT-CARE Intervention
Individualized goal-oriented care plan	Assessment in home environment Goals established by person DIVERT-CARE interventions selected by person Standardized ED transition package/Personal Care Record
Ongoing review of goals and care plan	Review of goals and updates to plan of care with person at each interaction Weekly care team rounds
Person as integral team member	Person is the taught to self-manage DIVERT-CARE components selected by person Continual involvement of person, updates and evaluation of care plan and goals
One primary lead point of contact	Case Manager is primary lead point for in-home management
Active coordination of health care and service providers	Team rounds/Interdisciplinary involvement SBAR communication with Primary and Specialized Care Providers Shared Care Plan on Personal Care Record
Continual information sharing/ integrated	SBAR communication Team rounds Immediate nurse-staffed helpline
Education and training for care providers, person, and informal caregivers	<b>Provider Education Curriculum:</b> Heart Failure (HF), Chronic Obstructive Pulmonary Disease (COPD), Self-Management, Advanced Care Planning, Teach-back, communication principles  <b>Person/Informal Caregiver Education and Training:</b> HF and COPD Teaching Aids Zones Communicating with healthcare providers Chronic disease monitoring and self-management skills training Medication management
Performance measurement and feedback from person and caregivers	Care plan evaluation-continual feedback at each point of contact Cardio-respiratory symptom frequency Patient Activation Measure (PAM) Health Related Quality of Life (QOL)
<sup>5</sup> Brummel-Smith, K., Butler, D., Frieder, M., Gibbs, N., Henry, M., Koons, E., ... & Scanlon, W.J. (2016). Person-centered care: A definition and essential elements. <i>Journal of the American Geriatrics Society</i> , 64(1), 15–18. <a href="https://dx.doi.org/10.1111/jgs.13866">https://dx.doi.org/10.1111/jgs.13866</a>	

physician. The care plan and medication list are also provided to the patient, serving as a communication tool for pertinent clinical information, as the patient moves through various points in the healthcare system. The DIVERT-CARE Intervention is intended to empower the patient as he/she gains knowledge, problem-solving skills, and adopts healthy lifestyle behaviours.

Content	Competencies
CHF and COPD Assessments Pathophysiology	Describe the common causes, pathological features, presentation and trajectory of Heart Failure (HF) and Chronic Obstructive Pulmonary Disease (COPD). Knowledge of monitoring and self-management strategies for optimal treatment and symptom management.
Pharmacology	Knowledge of pharmacological approaches (best practice), side effects, and mechanism of action.
Guidelines	Knowledge and application of guidelines for optimal treatment.
Patient Education Teach-back and PAM	Assess and identify barriers to learning. Develop person-centred care plan. Apply teach-back to ensure understanding. Tailor education to Patient Activation Measure (PAM) level.
Self-Management	Individualized patient education for persons with HF and COPD and their caregivers (including: lifestyle management, pharmacological and/or non-pharmacological interventions).

### Intervention: DIVERT-CARE

The DIVERT-CARE Intervention combines knowledge, psychosocial, and behavioural supports. The 15-week intervention tackles the complexity of HF and COPD symptom presentation, self-management behaviour changes, and lifestyle adaptations (Bos-Touwen et al., 2015; Fletcher & Dahl, 2013). Disease-specific self-care educators require the prerequisite competencies of understanding the pathophysiology of common cardiorespiratory diseases such as COPD and HF (Fowler, 2012). This foundational knowledge allows the nurse educator to align symptom management education with the patient’s pharmacological regimen, physical assessment findings, and clinical guidelines for management of the disease (Delaney, Apostolidis, Lachapelle, & Fortinsky, 2011). A combination of motivational interviewing techniques, principles of choice and change, and developing achievable patient-centred goals completes nursing preparation for implementing DIVERT-CARE. Full integration of this knowledge is necessary to competently answer patient questions and facilitate problem-solving skills for disease presentation and symptom changes. Ontario’s Rapid Response Nurse Program is an example of the contribution nurses with specialized training can make for transitional care and chronic disease management (CCN, 2014).

The DIVERT-CARE Intervention requires system preparation, tools, and skills necessary for effective deployment. It is a sustainable approach with an emphasis on using the existing continuum of care. The components of DIVERT-CARE are designed to be flexible in their delivery and tailored to the specific needs and strengths of the individual. It is defined by the following components:

### **Component 1: Case Finding Using the DIVERT Scale**

Home care coordinators or case managers possess expertise in system navigation and resource allocation based on their clinical knowledge and assessments using the interRAI Home Care (HC). Care coordinators have varied professional backgrounds, including nursing, physiotherapy, occupational therapy, and social work. The interRAI (2017) HC is a comprehensive clinical assessment instrument used to guide care and service planning for long-term home care patients in community settings. The Detection of Indicators and Vulnerabilities of Emergency Room Trips (DIVERT) Scale is a prognostic case finding tool derived from the interRAI (HC) standardized home care assessment (CCN, 2014; Costa et al., 2015). InterRAI is an international collaborative of researchers and practitioners, including nurses, whose mission is to promote evidence informed clinical practice (InterRAI, 2018). The DIVERT scale, as a validated tool, identifies home care patients at risk for an emergency department (ED) visit and hospital admission. The DIVERT scale, therefore, facilitates case finding and ensures that the chronic disease supports are offered to those in need of and most likely to benefit.

### **Component 2: Self-Management Education and Supports**

The first component is composed of nurse-led self-management supports including four in-home nursing visits and four telephone calls over a period of 15 weeks. Home visits include a physical assessment, medication review, and a baseline readiness assessment using the Patient Activation Measure (PAM) (Hibbard, 2017). Patient activation is a reliable measure that coincides with self-management coaching strategies for achievable behaviour change and building confidence (Hibbard, 2017). The PAM includes questions that assess patient readiness to learn and their knowledge of their condition, medications, management of symptoms, and treatment (Hibbard, 2017). Subsequent education content, depth, pace, and support is tailored to the specific needs and goals of the patient. PAM scores range from one to four, with level one patient characteristics representing minimal involvement in self-care and level four representing characteristics of a highly involved and engaged patient (Hibbard, 2017). The physical assessment, with a focus on cardio-respiratory symptoms, is followed up with education to support early identification of signs and symptoms of concern. The nurse consults with involved primary care providers or specialists to optimize the treatment plan, as tolerated by the patient (Howlett et al., 2016). The patient's response is monitored while titrating medications to mitigate adverse drug reactions that are prevalent in individuals over the age of 65 years (Hilmer, McLachlan, & Le Couteur, 2007). Education occurs in the home, face-to-face, where the patient resides and practises self-management. Follow-up visits and phone calls ensure that education is reinforced over the 15 weeks to the minimum standard of the patient stating how to respond to worsening symptoms (Hoving, Visser, Mullen, & Van den Borne, 2010; HQO & MOHLTC, 2015). The *Managing Heart Failure*

Guide produced by the Heart and Stroke Foundation of Canada (2015) is the main resource for HF education. COPD education is taken from Lung Association's *The Breathworks Plan* (Lung Association, 2008). Patient education is delivered using the principles of 'teach-back', where the patient repeats information in his/her own words, and supplemented with visual decision aids. Education sessions include family and informal caregivers who support the patient in self-management and achieving his/her care goals. Recommended topics to be covered include early signs and symptoms of compromise, monitoring fluid intake and weights, sodium reduction, exercise and pacing, medications and inhaler technique, smoking cessation, and how to communicate with health care providers. As the patient acquires knowledge and skills to manage his/her disease, learning how to effectively communicate with healthcare providers will ensure smooth transition to independence at the end of the intervention (Kogan, Wilber, & Mosqueda, 2016).

### **Component 3: Access to an Immediate Nurse-Staffed Helpline**

A nurse-staffed helpline is used to supplement decision-aids and support the patient with problem-solving. The helpline is staffed by nurses who are aware of the aims of the intervention and actively involved in the deployment of its patient education (Roberts, Leeder, & Robinson, 2008). Evidence suggests that patients have increased confidence and comfort discussing their care needs with professionals aware of their medical history (Hurst et al., 2010). The nurse-staffed helpline allows the patient to seek assistance when required and reassurance as he/she learns to manage his/her symptoms independently.

### **Component 4: Promotion of Vaccines**

Patients with pre-existing cardio-respiratory diseases are at an increased risk of acquiring pneumonia and respiratory complications. Based on this identified risk, patients are encouraged and supported with vaccine information. Vaccination for influenza and Pneumococcal Polysaccharide (Pneu-P-23) are recognized primary prevention strategies against community-acquired pneumonia (Almirall, Serra-Prat, & Bolibar, 2016). Vaccination status is checked during assessment and nurses provide education on the benefits of vaccination. The care coordinator and the nurse provide information on existing resources in the community and assist, as needed, to obtain the recommended vaccines. The influenza vaccine is publicly funded to high-risk groups across Canada, including those with cardiac and respiratory disorders (Government of Canada, 2017). Public funding for the pneumococcal vaccine is dependent on risk group and provincial programs (Government of Canada, 2017).

### **Component 5: Advance Care and Goal Planning**

Chronic disease guidelines and best practices recommend advance care planning and goals of care discussions to adequately prepare for the patient's disease trajectory and illness progression. Care coordinators and nurses are trained

to begin discussions with patients regarding their health goals and care wishes, and includes identification of a substitute decision maker. A social worker or psychosocial support counsellor possess the recommended skills to support and augment discussions for more complex patients. Standardized tools such as *A Guide to Advance Care Planning* and *Speak Up* best capture the appropriate information to be shared with family and health care providers.

#### **Component 6: Clinical Pharmacist-Led Medication Review**

Adverse drug events and polypharmacy in the community can lead to clinical deterioration, falls, hospitalization, and mortality (Fried et al., 2014; Hamilton, 2013). Common community risks include hoarding medications, incorrect medication use, label discrepancy, lack of monitoring, and suboptimal dosing (Sorensen et al., 2004). A comprehensive medication review by a pharmacist can eliminate redundant medications, reduce polypharmacy, and ensure that pharmacological management is optimized according to best practice guidelines. This review is also an opportunity to identify if medication devices are used correctly and if packaging alternatives are required. Results from the review are communicated to the primary care physician for follow up and resolution. The nurse supports this component by engaging the patient and family during scheduled visits to augment best practices in medication management.

#### **Component 7: Interprofessional Team Case Rounds**

Team case rounds underpin the interprofessional nature of the DIVERT-CARE Intervention. The care coordinator facilitates system navigation and aligning supports with the needs of the patient. Interdisciplinary weekly rounds are conducted to identify, discuss, and clarify outstanding issues and update the plan of care. Rounds are an opportunity for collaboration while maintaining a consistent approach to therapeutic goal achievement.

#### **Component 8: SBAR Communication with Primary Care Providers**

Communication between the nurse and primary care provider is based on the Institute for Healthcare Improvement's Situation, Background, Assessment and Recommendation (SBAR) technique. Structured communication processes reduce care delivery inefficiencies and clinical errors (Crawford, Omery, & Seago, 2012). This standardized common language approach is used in both written and verbal communications to ensure that clinical issues are conveyed in a direct and consistent manner.

#### **Component 9: Standardized ED Transition Package/ Personal Care Record**

Home care patients involved in the DIVERT-CARE Intervention receive a personal health record to support flow of information between transitions in care. The personal care record includes relevant clinical information and a patient-centred

chronic disease management plan. The record is portable and is taken by the patient as he/she interacts with healthcare providers at different points in the healthcare system.

#### **Tested and Feasible**

The DIVERT-CARE Intervention was developed from a thorough review of current clinical guidelines, clinical expert and scientific review panel, and pilot study results. The intervention was tested in Southern Ontario in a non-randomized cluster trial that established its feasibility and effectiveness in a single setting and is now in further testing through a pan-Canadian pragmatic, cluster-randomized trial (#NCT03012256). Forthcoming publications will describe the overall feasibility and effectiveness of the catalyst trial and the study protocol in detail.

#### **Conclusion**

The aim of this paper was to describe the components of a pre-emptive chronic disease intervention for long-stay home care patients with cardio-respiratory disorders in the community setting. The DIVERT-CARE Intervention is an evidence-based chronic disease management approach that is proactive in the early identification of high-risk home care patients to avoid hospitalizations. It strengthens relationships between the patient, his/her community, primary, and specialist care providers. Cardio-respiratory diseases are complex and necessitate that additional training and education be provided to the professionals delivering the components. The approach is patient-centred, incorporates systems thinking principles to improve collaboration, continuity, and communication, while leveraging existing resources and guidelines to maximize transferability and uptake. ♥

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## REFERENCES

- Agusti, A., Bel, E., Thomas, M., Vogelmeier, C., Brusselle, G., Holgate, S., ... Beasley, R. (2016). Treatable traits: Toward precision medicine of chronic airway diseases. *European Respiratory Journal*, 47, 410–419.
- Almirall, J., Serra-Prat, M., & Bolibar, I. (2016). Risk factors for community-acquired pneumonia in adults: A review. *Clinical Pulmonary Medicine*, 23(3), 99–104. <https://dx.doi.org/10.1097/CPM.0000000000000120>
- Benzo, R., Vickers, K., Novotny, P.J., Tucker, S., Hoult, J., Neuenfeldt, P., ... McEvoy, C. (2016). Health coaching and chronic obstructive pulmonary disease rehospitalization. A randomized study. *American Journal of Respiratory and Critical Care Medicine*, 194, 672–680.
- Bos-Touwen, I., Jonkman, N., Westland, H., Schuurmans, M., Rutten, F., Wit, N., & Trappenburg, J. (2015). Tailoring of self-management interventions in patients with heart failure. *Current Heart Failure Reports*, 12, 223–235. <https://dx.doi.org/10.1007/s11897-015-0259-3>
- Bourbeau, J., Julien, M., Maltais, F., Rouleau, M., Beaudré, A., Bégin, R., ... Singh, R. (2003). Reduction of hospital utilization in patients with chronic obstructive pulmonary disease: A disease-specific self-management intervention. *Archives of Internal Medicine*, 163, 585–591. <https://dx.doi.org/10.1001/archinte.163.5.585>
- Brummel-Smith, K., Butler, D., Frieder, M., Gibbs, N., Henry, M., Koons, E., ... Scanlon, W.J. (2016). Person-centered care: A definition and essential elements. *Journal of the American Geriatrics Society*, 64(1), 15–18. <https://dx.doi.org/10.1111/jgs.13866>
- Buck, H.G., Lee, C.S., Moser, D.K., Albert, N.M., Lennie, T., Bentley, B., ... Riegel, B. (2012). Relationship between self-care and health-related quality of life in older adults with moderate to advanced heart failure. *Journal of Cardiovascular Nursing*, 27(1), 8–15. <https://dx.doi.org/10.1097/JCN.0b013e3182106299>
- Bui, A.L., Horwich, T.B., & Fonarow, G.C. (2011). Epidemiology and risk profile of heart failure. *Nature Reviews Cardiology*, 8(1), 30–41. <https://dx.doi.org/10.1038/nrcardio.2010.165>
- Canadian Institute for Health Information. (2014). *Chronic disease management in primary health care: A demonstration of EMR data for quality and health system monitoring*. Retrieved from [https://secure.cihi.ca/free\\_products/Burden-of-Chronic-Diseases\\_PHC\\_2014\\_AiB\\_EN-web.pdf](https://secure.cihi.ca/free_products/Burden-of-Chronic-Diseases_PHC_2014_AiB_EN-web.pdf)
- Canadian Institute for Health Information. (2017). *HCRS profiles of clients in home care 2016-2017*. Retrieved from <https://www.cihi.ca/en/quick-stats>
- Canadian Medical Association. (2015). *A policy framework to guide a national seniors' strategy for Canada*. Retrieved from [https://www.cma.ca/Assets/assets-library/document/en/about-us/gc2015/policy-framework-to-guide-seniors\\_en.pdf](https://www.cma.ca/Assets/assets-library/document/en/about-us/gc2015/policy-framework-to-guide-seniors_en.pdf)
- Cardiac Care Network. (2014). *Strategy for community management of heart failure in Ontario*. Retrieved from [http://www.ccn.on.ca/ccn\\_public/uploadfiles/files/Strategy\\_for\\_Community\\_Mgmt\\_in\\_HF\\_in\\_ON.pdf](http://www.ccn.on.ca/ccn_public/uploadfiles/files/Strategy_for_Community_Mgmt_in_HF_in_ON.pdf)

- Casas, A., Troosters, T., Garcia-Aymerich, J., Roca, J., Hernández, C., Alonso, A., ... Decramer, M. (2006). Integrated care prevents hospitalisations for exacerbations in COPD patients. *European Respiratory Journal*, 28, 123–130. <https://dx.doi.org/10.1183/09031936.06.00063205>
- CORE. (2017). *Expert led education for the multidisciplinary management of heart failure*. Retrieved from <http://www.corehearteducation.com/>
- Costa, A.P., Hirdes, J.P., Bell, C.M., Bronskill, S.E., Heckman, G.A., Mitchell, L., ... Stolee, P. (2015). Derivation and validation of the detection of indicators and vulnerabilities for emergency room trips scale for classifying the risk of emergency department use in frail community dwelling older adults. *Journal of the American Geriatrics Society*, 63, 763–769. <https://dx.doi.org/10.1111/jgs.13336>
- Crawford, C.L., Omery, A., & Seago, J.A. (2012). The challenges of nurse-physician communication: A review of the evidence. *Journal of Nursing Administration*, 42, 548–550. <https://dx.doi.org/10.1097/NNA.0b013e318274b4c0>
- Delaney, C., Apostolidis, B., Lachapelle, L., & Fortinsky, R. (2011). Home care nurses' knowledge of evidence-based education topics for management of heart failure. *Heart & Lung: The Journal of Acute and Critical Care*, 40, 285–292. <https://dx.doi.org/10.1016/j.hrtlng.2010.12.005>
- Dickson, V.V., & Riegel, B. (2009). Are we teaching what patients need to know? Building skills in heart failure self-care. *Heart & Lung: The Journal of Acute and Critical Care*, 38, 253–261.
- Feltner, C., Jones, C.D., Cené, C.W., Zheng, Z.J., Sueta, C.A., Coker-Schwimmer, E.J., ... Jonas, D.E. (2014). Transitional care interventions to prevent readmissions for persons with heart failure: A systematic review and meta-analysis. *Annals of Internal Medicine*, 160, 774–784.
- Fletcher, M.J., & Dahl, B.H. (2013). Expanding nurse practice in COPD: Is it key to providing high quality, effective and safe patient care? *Primary Care Respiratory Journal*, 22, 230–233. <https://dx.doi.org/10.4104/pcrj.2013.00044>
- Flocke, S.A., & Stange, K.C. (2004). Direct observation and patient recall of health behavior advice. *Preventive Medicine*, 38, 343–349. <https://doi.org/10.1016/j.ypmed.2003.11.004>
- Foebel, A.D., Heckman, G.A., Hirdes, J.P., Tyas, S.L., Tjam, E.Y., McKelvie, R.S., & Maxwell, C.J. (2011a). Clinical, demographic and functional characteristics associated with pharmacotherapy for heart failure in older home care clients. *Drugs & Aging*, 28, 561–573.
- Foebel, A.D., Hirdes, J.P., Heckman, G.A., Tyas, S.L., & Tjam, E.Y. (2011b). A profile of older community-dwelling home care clients with heart failure in Ontario. *Chronic Diseases and Injuries in Canada*, 31(2), 49–57.
- Fowler, S. (2012). Improving community health nurses' knowledge of heart failure education principles. *Home Healthcare Nurse*, 30, 91–99. <https://dx.doi.org/10.1097/NHH.0b013e318242c5c7>
- Fried, T.R., O'leary, J., Towle, V., Goldstein, M.K., Trentalange, M., & Martin, D.K. (2014). Health outcomes associated with polypharmacy in community-dwelling older adults: A systematic review. *Journal of the American Geriatrics Society*, 62, 2261–2272. <https://dx.doi.org/10.1111/jgs.13153>
- Gallefoss, F. (2004). The effects of patient education in COPD in a 1-year follow-up randomised, controlled trial. *Patient Education and Counseling*, 52, 259–266. [https://dx.doi.org/10.1016/S0738-3991\(03\)00100-9](https://dx.doi.org/10.1016/S0738-3991(03)00100-9)
- Goldhar, J., Daub, S., Dhalla, I., Ellison, P., Purbhoo, D., & Sinha, S.K. (2014). Integrated client care for frail older adults in the community: Preliminary report on a system-wide approach. *Healthcare Quarterly*, 17(3), 61–69.
- Government of Canada. (2017). *Public funding for influenza vaccination by Province/Territory (as of September 2017)*. Retrieved from <https://www.canada.ca/en/public-health/services/provincial-territorial-immunization-information/public-funding-influenza-vaccination-province-territory.html>
- Hamilton, M. (2013). *Medication errors in the community*. ISMP. Retrieved from <https://www.ismp-canada.org/download/presentations/MedicationErrorsInTheCommunity22May2014.pdf>
- Hawkins, N.M., Petrie, M.C., Jhund, P.S., Chalmers, G.W., Dunn, F.G., & McMurray, J.J. (2009). Heart failure and chronic obstructive pulmonary disease: Diagnostic pitfalls and epidemiology. *European Journal of Heart Failure*, 11, 130–139.
- Heart and Stroke Foundation of Canada. (2015). *Managing heart failure*. Retrieved from <http://www.heartandstroke.ca/-/media/pdf-files/canada/health-information-catalogue/en-managing-heart-failure-v3.ashx>
- Heart Failure Society of America. (2006). Executive summary: HFSA 2006 comprehensive heart failure practice guideline. *Journal of Cardiac Failure*, 12(1), 10–38. <https://dx.doi.org/10.1016/j.cardfail.2005.12.001>
- Herr, J.K., Salyer, J., Lyon, D.E., Goodloe, L., Schubert, C., & Clement, D.G. (2014). Heart failure symptom relationships: A systematic review. *Journal of Cardiovascular Nursing*, 29, 416–422. <https://dx.doi.org/10.1097/JCN.0b013e31829b675e>
- Hibbard, J.H. (2017). Patient activation and the use of information to support informed health decisions. *Patient Education and Counseling*, 100(1), 5–7.
- Hilmer, S.N., McLachlan, A.J., & Le Couteur, D.G. (2007). Clinical pharmacology in the geriatric patient. *Fundamental & Clinical Pharmacology*, 21, 217–230. <https://dx.doi.org/10.1111/j.1472-8206.2007.00473.x>
- Hoffmann, T.C., Glasziou, P.P., Boutron, I., Milne, R., Perera, R., Moher, D., ... Lamb, S.E. (2014). Better reporting of interventions: Template for intervention description and replication (TIDieR) checklist and guide. *British Medical Journal*, 348, g1687. <https://dx.doi.org/10.1136/bmj.g1687>
- Hoving, C., Visser, A., Mullen, P.D., & Van den Borne, B. (2010). A history of patient education by health professionals in Europe and North America: From authority to shared decision making education. *Patient Education and Counseling*, 78, 275–281. <https://dx.doi.org/10.1016/j.pec.2010.01.015>
- Howlett, J.G., Chan, M., Ezekowitz, J.A., Harkness, K., Heckman, G.A., Kouz, S., ... Ducharme, A. (2016). The Canadian Cardiovascular Society heart failure companion: Bridging guidelines to your practice. *Canadian Journal of Cardiology*, 32, 296–310. <https://dx.doi.org/10.1016/j.cjca.2015.06.019>
- HQO and MOHLTC. (2015). *Quality based procedures: Clinical handbook for heart failure (acute and post acute)*. Retrieved from [http://www.health.gov.on.ca/en/pro/programs/ecfa/docs/qbp\\_heart.pdf](http://www.health.gov.on.ca/en/pro/programs/ecfa/docs/qbp_heart.pdf)
- Hurst, J.R., Fitzgerald-Khan, F., Quint, J.K., Goldring, J.J., Mikelsons, C., Dilworth, J.P., & Wedzicha, J.A. (2010). Use and utility of a 24-hour telephone support service for 'high risk' patients with COPD. *Primary Care Respiratory Journal*, 19, 260–265. <https://dx.doi.org/10.4104/pcrj.2010.00035>
- InterRAI. (2017). *Home care (HC)*. Retrieved from <http://www.interrai.org/home-care.html>
- InterRAI. (2018). *InterRAI organization*. Retrieved from <http://www.interrai.org/organization/>
- Jaarsma, T., Van der Wal, M.H., Lesman-Leegte, I., Luttkik, M.L., Hogenhuis, J., Veeger, N.J., ... Dunselman, P.H. (2008). Effect of moderate or intensive disease management program on outcome in patients with heart failure: Coordinating Study Evaluating Outcomes of Advising and Counseling in Heart Failure (COACH). *Archives of Internal Medicine*, 168, 316–324.
- Kalter-Leibovici, O., Freimark, D., Freedman, L.S., Kaufman, G., Ziv, A., Murad, H., ... Asher, E. (2017). Disease management in the treatment of patients with chronic heart failure who have universal access to health care: A randomized controlled trial. *BMC Medicine*, 15(1), 90. <https://dx.doi.org/10.1186/s12916-017-0855-z>
- Kasper, E.K., Gerstenblith, G., Hefter, G., Van Anden, E., Brinker, J.A., Thiemann, D.R., ... Gottlieb, S.H. (2002). A randomized trial of the efficacy of multidisciplinary care in heart failure outpatients at high



- risk of hospital readmission. *Journal of the American College of Cardiology*, 39, 471–480. [https://dx.doi.org/10.1016/S0735-1097\(01\)01761-2](https://dx.doi.org/10.1016/S0735-1097(01)01761-2)
- Kessels, R.P. (2003). Patients' memory for medical information. *Journal of the Royal Society of Medicine*, 96, 219–222.
- Kogan, A.C., Wilber, K., & Mosqueda, L. (2016). Person-centered care for older adults with chronic conditions and functional impairment: A systematic literature review. *Journal of the American Geriatrics Society*, 64(1), e1–7. <https://dx.doi.org/10.1111/jgs.13873>
- Krumholz, H.M., Amatruda, J., Smith, G.L., Matterna, J.A., Roumanis, S.A., Radford, M.J., ... & Vaccarino, V. (2002). Randomized trial of an education and support intervention to prevent readmission of patients with heart failure. *Journal of the American College of Cardiology*, 39, 83–89.
- Lainscak, M., Blue, L., Clark, A.L., Dahlström, U., Dickstein, K., Ekman, I., ... Strömberg, A. (2011). Self-care management of heart failure: Practical recommendations from the Patient Care Committee of the Heart Failure Association of the European Society of Cardiology. *European Journal of Heart Failure*, 13, 115–126. <https://dx.doi.org/10.1093/eurjhf/hfq219>
- Lung Association. (2008). *The breathworks plan*. Retrieved from <https://www.lung.ca/file/copd-breathworks-plan>
- Moser, D.K., & Watkins, J.F. (2008). Conceptualizing self-care in heart failure: A life course model of patient characteristics. *Journal of Cardiovascular Nursing*, 23, 205–218. <http://dx.doi.org/10.1097/01.JCN.0000305097.09710.a5>
- O'Donnell, D.E., Hernandez, P., Kaplan, A., Aaron, S., Bourbeau, J., Marciniuk, D., ... Maltais, F. (2008). Canadian Thoracic Society recommendations for management of chronic obstructive pulmonary disease—2008 update—highlights for primary care. *Canadian Respiratory Journal*, 15(Suppl A), 1A–8A.
- Public Health Agency of Canada. (2016). *How healthy are Canadians: A trend analysis of the health of Canadians from a healthy living and chronic disease perspective*. Retrieved from <https://www.canada.ca/content/dam/phac-aspc/documents/services/publications/healthy-living/how-healthy-canadians/pub1-eng.pdf>
- Registered Nurses Association of Ontario. (2010). *Clinical best practice guideline: Strategies to support self-management in chronic conditions: Collaboration with clients*. Retrieved from [http://rnao.ca/sites/rnao-ca/files/Strategies\\_to\\_Support\\_Self-Management\\_in\\_Chronic\\_Conditions\\_-\\_Collaboration\\_with\\_Clients.pdf](http://rnao.ca/sites/rnao-ca/files/Strategies_to_Support_Self-Management_in_Chronic_Conditions_-_Collaboration_with_Clients.pdf)
- Reiley, P., Iezzoni, L.L., Phillips, R., Davis, R.B., Tuchin, L., & Calkins, D. (1996). Discharge planning: Comparison of patients' and nurses' perceptions of patients following hospital discharge. *Journal of Nursing Scholarship*, 28, 143–147. <https://dx.doi.org/10.1111/j.1547-5069.1996.tb01207.x>
- Roberts, M.M., Leeder, S.R., & Robinson, T.D. (2008). Nurse-led 24-h hotline for patients with chronic obstructive pulmonary disease reduces hospital use and is safe. *Internal Medicine Journal*, 38, 334–340. <https://dx.doi.org/10.1111/j.1445-5994.2007.01519.x>
- Rocker, G.M., & Verma, J.Y. (2014). 'INSPIRED' COPD outreach program TM: Doing the right things right. *Clinical & Investigative Medicine*, 37, 311–319.
- Ruiz, S., Snyder, L.P., Rotondo, C., Cross-Barnet, C., Colligan, E.M., & Giuriceo, K. (2017). Innovative home visit models associated with reductions in costs, hospitalizations, and emergency department use. *Health Affairs*, 36, 425–432. <https://dx.doi.org/10.1377/hlthaff.2016.1305>
- Schoen, C., Osborn, R., Trang Huynh, P., Doty, M., Davis, K., Zapert, K., & Peugh J. (2004). Primary care and health system performance: Adults' experiences in five countries. *Health Affairs*, W4, 487–503. <https://dx.doi.org/10.1377/hlthaff.w4487>
- Schulman-Green, D., Jaser, S., Martin, F., Alonzo, A., Grey, M., McCorkle, R., ... Whittemore, R. (2012). Processes of self-management in chronic illness. *Journal of Nursing Scholarship: An Official Publication of Sigma Theta Tau International Honor Society of Nursing/Sigma Theta Tau*, 44, 136–144. <https://dx.doi.org/10.1111/j.15475069.2012.01444.x>
- Sorensen, L., Stokes, J.A., Purdie, D.M., Woodward, M., Elliott, R., & Roberts, M.S. (2004). Medication reviews in the community: Results of a randomized, controlled effectiveness trial. *British Journal of Clinical Pharmacology*, 58, 648–664. <https://dx.doi.org/10.1111/j.1365-2125.2004.02220.x>
- Spaling, M.A., Currie, K., Strachan, P.H., Harkness, K., & Clark, A.M. (2015). Improving support for heart failure patients: A systematic review to understand patients' perspectives on self-care. *Journal of Advanced Nursing*, 71, 2478–2489. <https://dx.doi.org/10.1111/jan.12712>
- Statistics Canada. (2017). *Receiving care at home*. Retrieved from <http://www.statcan.gc.ca/pub/89-652-x/89-652-x2014002-eng.htm>
- Strömberg, A. (2005). The crucial role of patient education in heart failure. *European Journal of Heart Failure*, 7, 363–369.
- Tricco, A.C., Antony, J., Ivers, N.M., Ashoor, H.M., Khan, P.A., Blondal, E., ... Straus, S.E. (2014). Effectiveness of quality improvement strategies for coordination of care to reduce use of health care services: A systematic review and meta-analysis. *Canadian Medical Association Journal*, 186, E568–E578.
- Tu, K., Gong, Y., Austin, P.C., Jaakimianian, L., & Tu, J.V. (2004). An overview of the types of physicians treating acute cardiac conditions in Canada. *The Canadian Journal of Cardiology*, 20, 282–291.
- Van Spall, H.G., Rahman, T., Mytton, O., Ramasundarahettige, C., Ibrahim, Q., Kabali, C., ... Connolly, S. (2017). Comparative effectiveness of transitional care services in patients discharged from the hospital with heart failure: A systematic review and network meta-analysis. *European Journal of Heart Failure*, 19, 1427–1443. <https://dx.doi.org/10.1002/ejhf.765>
- Wagner, E.H., Austin, B.T., Davis, C., Hindmarsh, M., Schaefer, J., & Bonomi, A. (2001). Improving chronic illness care: Translating evidence into action. *Health Affairs*, 20(6), 64–78. <https://dx.doi.org/10.1377/hlthaff.20.6.64>
- White, M., Garbez, R., Carroll, M., Brinker, E., & Howie-Esquivel, J. (2013). Is “teach-back” associated with knowledge retention and hospital readmission in hospitalized heart failure patients? *Journal of Cardiovascular Nursing*, 28, 137–146. <https://dx.doi.org/10.1097/JCN.0b013e31824987bd>
- Williams, N.P., Coombs, N.A., Johnson, M.J., Josephs, L.K., Rigge, L.A., Staples, K.J., ... Wilkinson, T.M. (2017). Seasonality, risk factors and burden of community-acquired pneumonia in COPD patients: A population database study using linked health care records. *International Journal of Chronic Obstructive Pulmonary Disease*, 12, 313. <https://dx.doi.org/10.2147/COPD.S121389>
- Wingham, J., Harding, G., Britten, N., & Dalal, H. (2014). Heart failure patients' attitudes, beliefs, expectations and experiences of self-management strategies: A qualitative synthesis. *Chronic Illness*, 10, 135–154. <https://dx.doi.org/10.1177/1742395313502993>
- Wodchis, W.P., Austin, P.C., & Henry, D.A. (2016). A 3-year study of high-cost users of health care. *Canadian Medical Association Journal*, 188, 182–188.
- Yancy, C.W., Jessup, M., Bozkurt, B., Butler, J., Casey Jr, D.E., Drazner, M.H., ... Johnson, M.R. (2013). 2013 ACCF/AHA guideline for the management of heart failure: A report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines. *Circulation*, 128, e240.
- Yarnall, K.S.H., Pollak, K.I., Ostbye, T., Krause, K.M., & Michener, J.L. (2003). Primary care: Is there enough time for prevention? *American Journal of Public Health*, 93, 635–641. Retrieved from <http://ajph.aphapublications.org/>
- Zeng, Q., & Jiang, S. (2012). Update in diagnosis and therapy of coexistent chronic obstructive pulmonary disease and chronic heart failure. *Journal of Thoracic Disease*, 4, 310–315. <https://doi.org/10.3978/j.issn.2072-1439.2012.01.09>