Program Evaluation of Telehomecare for Patients with Heart Failure or Chronic Obstructive Pulmonary Disease: TeLeCare (TLC) Study

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BACKGROUND

- Chronic Obstructive Pulmonary Disease (COPD) and Heart Failure (HF) impose a significant social and economic burden to patients, families and healthcare systems.
- COPD is the fourth leading cause of death in Canada.
- HF affects approximately 500,000 Canadians and mortality is high reaching up to 98.8% over 10 years.
- The estimated annual cost of moderate to severe COPD exacerbations varies between $646-736M in Canada.
- Telehomecare (THC) may be effective in increasing quality of life and self-management of COPD and HF patients.
- Evidence still inconclusive with the lack of cost-effectiveness research in this area.
- With the introduction of the THC program and an expected increase in recruitment rate a multi-level evaluation of the clinical and cost-effectiveness of this program is needed.

OBJECTIVES

PRIMARY OBJECTIVE
- To explore the organizational factors (facilitators and barriers) and processes, which facilitate or impede the adoption and implementation of THC across three Local Health Integration Networks (LHINs) using a multi-level framework.

SECONDARY OBJECTIVES
- To explore how various models of THC-enabled patient self management impact patient outcomes, participant's experiences, and system costs for chronic disease management (HF or COPD) in Ontario;
- To explore how various models of telehomecare impact perceived quality of life and satisfaction with care (patient and informal caregiver when applicable) for chronic diseases HF or COPD;
- To explore how various models of telehomecare impact health system utilization for patients with HF or COPD;
- To explore how various models of telehomecare influence patient experiences and self management of their disease; and
- To explore among the population of patients that is enrolled, for whom, and under which conditions, does telehomecare appear to be the most effective.

INTERVENTION

Step 1	Step 2	Step 3
Patient Enrollment	Patient Care Delivery	Patient Discharge

Step 1 – Patient Enrollment
- Patient Referral
- Eligibility & Consent
- Enrollment Assessment
- Equipment Assignment
- Equipment Installation
- Medication Reconciliation
- Home Visit
- Notification of Enrollment

Step 2 – Patient Care Delivery

THC Nurse Daily Activities
- Alerts Management
- Answer incoming calls
- Consent/Enrollment process
- Health Coaching Sessions
- Discharge Processes
- Progress Reports

THC Coordinator Daily Activities
- Phone Triage
- Non-responder Follow-up
- Referrals
- Equipment Assignment
- Equipment Support
- General Inquiries
- General Admin Support

Step 3 – Patient Discharge
- Discharge Assessment
- Patient Discharge
- Equipment Retrieval

STUDY POPULATION & SETTING

LHINS:
North East, Central West and Toronto Central (20 sites including hospitals and CCAC sites)

Participants
The study population included current or former THC patients with a documented diagnosis of COPD or HF from across the three LHINs. The participant population also included healthcare professionals, technicians, decision-makers, and administrators occupying various roles in the THC Program.

METHODS

Overview:
The Program Evaluation consists of three components using qualitative and quantitative research methods:

1. Qualitative Comparative Case Study	• Ethnographic fieldwork • Semi-structured interviews • Collection/review of documentary sources
2. Quantitative Descriptive Study	• To evaluate overall patterns of use of Telehomecare • Administering surveys for patients (baseline, 1, 2, 3 mo.) and providers (one time)
3. Quantitative ICES Data Linkage	• Specific to outcomes related to healthcare services utilizations (such as hospital admissions, admission to Long Term Care, emergency department visits, primary care visits, specialist visits, in-home health professional visits) and cost

Multi-level comparative practice case study for three LHINs:

A. Ethnographic Fieldwork
- Processes at micro, meso & macro system
- 10 hours/LHIN; multiple locations & times of day
- Opportunity to identify and engage respondents (patient + provider)

B. Semi-structured interviews
- Data collected from interviews are triangulated with the implementation-relevant quantitative variables

Patient
- 60 one-on-one or paired, semi-structured interviews
- Patient, informal caregivers, health care providers (HCPs) or technicians providing installation of THC equipment
- Lived experience
- Beliefs and values about THC
- How technology fits in domestic space and conduct

Providers
- 14 Nurses and 4 Physicians semi-structured interviews
- Worked in setting for minimum 3 months
- Beliefs and values, experiences and preferences

Administrators
- 12 semi-structured interviews
- Explore team functioning, organization, competing values, organization readiness for change etc.
- Meso-system Insight into organizational culture and strategies, resource allocation

Larger Network of Care
- 13 semi-structured interviews with the key Decision Makers: Chief Executives, Directors, Managers
- Macro-system Insight into policy environment

C. Collect and Review Relevant Documentary Sources
- Data related to operation and processes at micro-, meso- and macro-system levels
- Data collected by searching publicly available documents and during the site visits

RESULTS

Barriers and Facilitators found across three LHINs

Level of Framework[1]	Barriers	Facilitators
Technology	• Equipment Questions not always relevant to Patients • Healthcare Providers experience software issues with THC Database	• Advances made in allowing technology to be easily connected (e.g., cellular connections becoming available)
Patient	• Multiple stakeholders argue that inclusion criteria doesn't often fit patients that are recruited • Patients experience language barriers	• Inclusion criteria allows for many patients with COPD and HF to be on program • Healthcare Provider establishing a strong rapport with Patient • Caregiver speaking in English
Provider	• Some feel program needs RPNs vs. RNs (as RNs are clinical managers) • Not uniform in how patients are chosen/alerts are picked (e.g., alphabetical, picking any alert, etc.)	• Beneficial skills include: experience with acute care, good assessors/listeners, language skills, specializations, can facilitate self-management vs. tell someone what to do, and a drive to want to do it • Develop own system/methods to prioritize tasks/alerts etc. because central system to facilitate prioritization process is not available
Organizational	• High Patient Case Load / Unrealistic targets • 3 days of intensive training may not prepare nurses for dealing with COPD and HF patients or with their daily workloads; webinars, etc. are hard for nurses to schedule-in due to workload • Organizational Isolation, disintegration of information	• Decision Makers view Auto-referral system with Hospitals as Host-Organization allowing access to higher volume of patients • Engagement Lead plays an integral role • Healthcare Providers value Team Assistant(s) support to help with workload • Integrated and inclusive information sharing • Flexible work environments are conducive
Structural	• Unclear Program Objective of the Program: self-management vs. symptom & vital monitoring • Uncertainty with funding affects hiring decision-making	• Seeing preliminary outcomes/benefits of program to keep it going • Technology to engage/talk about program, etc. helps; caregiver to help with technology

[1] A multi-level framework predicting implementation outcomes. Modified from Chaudoir et al. Implementation Science 2013, 8:22.

DISCUSSION

Initial key results emerging from the Qualitative Comparative Study include common themes of high caseloads and pressure to meet enrollment targets, which were found across the three LHINs. Setbacks due to software challenges were also seen across the various sites. A strong rapport between a THC Nurse and his/her patient was found to be a common facilitator in overcoming some of the barriers. In addition to this, the role of an 'Engagement Lead' was deemed highly critical in facilitating program implementation by increasing awareness and referrals to the program.

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