COLLABORATIVE CARE MODELS IN HEART FAILURE

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Disclosures Van Spall

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  - Roche Diagnostics
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Objectives

1. Review established healthcare models for the shared care of patients with HF
2. Examine innovative strategies, including technology, for transitional care of patients with HF
3. Discuss approaches for timely access to consultative services from specialists
4. Review tools for knowledge translation
I. Review established healthcare models for the shared care of patients with HF

TRIPLE AIM vs QUADRUPLE AIM

The primary *Triple Aim* goal is **to improve the health of the population**, with 2 secondary goals –
- improving patient experience and
- reducing costs

*Quadruple Aim* adds in
- improving the work life of health care clinicians and staff

Primary Care Volume of HF Visits and Rural vs Urban Gaps

Table 3.21: Three-Year Visit Rates by Manitoba Patients in the Congestive Heart Failure Cohort by Regional Health Authority, 2007/08–2009/10

<table>
<thead>
<tr>
<th>Regional Health Authority</th>
<th>Total Number of Visits</th>
<th>Average Number of Visits per Person</th>
<th>Number of Visits to Primary Care Physicians</th>
<th>Average Number of Visits to Primary Care Physicians per Person</th>
<th>Number of Visits to Specialists</th>
<th>Average Number of Visits to Specialists per Person</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Eastman</td>
<td>9,295</td>
<td>30.78</td>
<td>2,357</td>
<td>24.36</td>
<td>1,939</td>
<td>6.42</td>
</tr>
<tr>
<td>Central</td>
<td>23,515</td>
<td>29.02</td>
<td>19,275</td>
<td>24.52</td>
<td>4,246</td>
<td>5.39</td>
</tr>
<tr>
<td>Assiniboine</td>
<td>19,761</td>
<td>34.85</td>
<td>17,343</td>
<td>30.59</td>
<td>2,418</td>
<td>4.26</td>
</tr>
<tr>
<td>Brandon</td>
<td>13,964</td>
<td>40.46</td>
<td>11,544</td>
<td>33.46</td>
<td>2,420</td>
<td>5.81</td>
</tr>
<tr>
<td>Winnipeg</td>
<td>172,898</td>
<td>37.26</td>
<td>116,107</td>
<td>24.99</td>
<td>56,763</td>
<td>12.21</td>
</tr>
<tr>
<td>Interlake</td>
<td>21,687</td>
<td>34.10</td>
<td>16,745</td>
<td>26.33</td>
<td>4,942</td>
<td>4.92</td>
</tr>
<tr>
<td>North Eastman</td>
<td>11,830</td>
<td>31.77</td>
<td>9,726</td>
<td>26.08</td>
<td>2,124</td>
<td>5.69</td>
</tr>
<tr>
<td>Parkland</td>
<td>22,803</td>
<td>37.88</td>
<td>19,643</td>
<td>32.96</td>
<td>2,900</td>
<td>4.92</td>
</tr>
<tr>
<td>Manitoba</td>
<td>295,734</td>
<td>35.81</td>
<td>217,940</td>
<td>26.39</td>
<td>77,794</td>
<td>9.42</td>
</tr>
</tbody>
</table>

Urban patients have more access to specialist care

In Canada……..Lack of referral to HF Specialists?
And Risk : Treatment Mismatch

Based on a cohort study conducted in Ontario in patients alive after an HF hospitalization, approximately 10% of patients with HF were seen at specialized HF clinics after hospital discharge.

Why You Still Need HF Clinics

Kaplan–Meier survival curves for care received, by ambulatory specialty.
- Blue line = combined care (both specialist and family physician),
- Red line = care by family physician only,
- Black line = no cardiovascular claims (i.e., no physician visits for a cardiovascular cause).


The EXPANDED CHRONIC CARE MODEL
CONTINUUM OF HF CARE

HUB AND SPOKE MODEL

Audience Question

• Does your HF clinic have a shared care policy with primary care or other specialists?
• What’s working?
• What’s not working?

II. Strategies for shared care: transitions and community-based care
Transitional Care Services: a systematic review and network meta-analysis

1505 potentially eligible studies identified from PUBMED, EMBASE, CINAHL, Cochrane

1314 excluded on basis of title/abstract review

136 reports excluded:
- 17 Non-RCTs
- 7 Randomized at level of health care provider (i.e. cluster randomization)
- 14 Non HF population included
- 37 Outpatient recruitment
- 13 Did not report mortality or readmission outcomes
- 11 Abstract only
- 5 Review articles
- 2 Methods paper
- 1 Commentary
- 7 Non-English studies
- 24 other

191 Reports of RCTs manually screened

53 RCTs meeting inclusion and exclusion criteria included for meta-analysis


Transitional Care Services: a systematic review and network meta-analysis

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Random Effects Model</th>
<th>RR</th>
<th>95% CI</th>
</tr>
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<tbody>
<tr>
<td>Disease management clinics</td>
<td>-</td>
<td>0.80</td>
<td>[0.67; 0.97]</td>
</tr>
<tr>
<td>Education alone</td>
<td>-</td>
<td>0.99</td>
<td>[0.8; 2.46]</td>
</tr>
<tr>
<td>Nurse case management</td>
<td>-</td>
<td>0.86</td>
<td>[0.71; 1.05]</td>
</tr>
<tr>
<td>Nurse home visits</td>
<td>-</td>
<td>0.78</td>
<td>[0.62; 0.98]</td>
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<tr>
<td>Pharmacist interventions</td>
<td>-</td>
<td>0.82</td>
<td>[0.56; 1.20]</td>
</tr>
<tr>
<td>Standard care</td>
<td>-</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Tele-monitoring</td>
<td>-</td>
<td>0.90</td>
<td>[0.68; 1.19]</td>
</tr>
<tr>
<td>Telephone support</td>
<td>-</td>
<td>0.82</td>
<td>[0.62; 1.08]</td>
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All cause mortality RR

Transitional Care Services: a systematic review and network meta-analysis

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All cause re-admission IRR


Effect of Patient-Centered Transitional Care Services on Clinical Outcomes in Patients Hospitalized for Heart Failure

The PACT-HF Randomized Clinical Trial

3-month composite all-cause death, readmission, or ED visit

PACT-HF stepped wedge cluster RCT

30-day composite readmission or ED visit

Patients at risk
<table>
<thead>
<tr>
<th>Intervention</th>
<th>Usual care</th>
</tr>
</thead>
<tbody>
<tr>
<td>1104</td>
<td>1300</td>
</tr>
<tr>
<td>1037</td>
<td>1316</td>
</tr>
<tr>
<td>980</td>
<td>1212</td>
</tr>
<tr>
<td>943</td>
<td>1143</td>
</tr>
<tr>
<td>888</td>
<td>1086</td>
</tr>
<tr>
<td>850</td>
<td>1034</td>
</tr>
<tr>
<td>810</td>
<td>966</td>
</tr>
</tbody>
</table>


PACT-HF stepped wedge cluster RCT

<table>
<thead>
<tr>
<th>Mean (SD)</th>
<th>Least-Squares Mean (95% CI)*</th>
<th>Difference</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intervention (n = 606)</td>
<td>Usual Care (n = 380)</td>
<td>Intervention (n = 606)</td>
<td>Usual Care (n = 380)</td>
</tr>
<tr>
<td>B-PREPARED 6-week scorea</td>
<td>15.31 (4.83)</td>
<td>13.57 (5.30)</td>
<td>16.55 (15.56-17.55)</td>
</tr>
<tr>
<td>CTM-2 6-week scoreb</td>
<td>74.24 (20.85)</td>
<td>68.73 (17.83)</td>
<td>76.47 (72.12-80.81)</td>
</tr>
<tr>
<td>EQ-5D-5L scorec</td>
<td>Discharge 0.70 (0.24)</td>
<td>0.56 (0.28)</td>
<td>0.72 (0.70-0.76)</td>
</tr>
<tr>
<td>6-week 0.71 (0.24)</td>
<td>0.59 (0.24)</td>
<td>0.73 (0.70-0.76)</td>
<td>0.67 (0.64-0.70)</td>
</tr>
<tr>
<td>6-month 0.69 (0.26)</td>
<td>0.56 (0.27)</td>
<td>0.71 (0.67-0.74)</td>
<td>0.64 (0.61-0.68)</td>
</tr>
<tr>
<td>QALYs for the first 6 monthsd</td>
<td>0.34 (0.11)</td>
<td>0.32 (0.11)</td>
<td>0.34 (0.33-0.36)</td>
</tr>
</tbody>
</table>

Abbreviations: CTM-3, 3-Item Care Transitions Measure; EQ-5D-5L, 5-level EQ-5D version; QALY, quality-adjusted life year.

a Least square mean models are adjusted for the stepped-wedge design. The 6-week and 6-month EQ5D5L scores and QALYs are adjusted for discharge EQ-5D-5L scores.
b B-PREPARED scores are a measure of discharge preaparation, ranging from 0 (worst) to 22 (best).
c CTM-3 is a measure for quality of care transition, ranging from 0 (worst) to 100 (best).
d QALY is a measure of both quantity and quality of life, obtained by multiplying the value associated with a given state of health by the years lived in that state. All postdischarge measures were obtained via telephone. A QALY of 1 implies perfect health for 1 year; QALYs were measured over 6 months, so it it anchored at 0 (dead) and 0.5 (best health at 6 months).

### Remote monitoring & clinical outcomes

<table>
<thead>
<tr>
<th>Intervention category</th>
<th>Types of interventions</th>
<th>Examples of interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telemonitoring</td>
<td>14 SRs examined the effect of telemedicine including telemonitoring and home telehealth. Among these, there were 4 reviews that also investigated the effect of structured telephone support.</td>
<td>Telephone-based symptom monitoring, automated monitoring of signs and symptoms, automated physiological monitoring (such as body weight, heart rate, arterial blood pressure, ECG recordings, and other data.</td>
</tr>
<tr>
<td>Video monitoring</td>
<td>One SR covering 3 RCTs that implemented videoconferencing as main intervention and compared it with usual care or telephone support.</td>
<td>Monitoring patients' body weight, blood pressure, heart rate, and/or ECG. Some systems also included consultations.</td>
</tr>
<tr>
<td>Mobile phone monitoring</td>
<td>Two SRs including 1 RCT and 1 pre-post study examined mobile phone–based interventions.</td>
<td>Monitoring body weight, blood pressure, heart rate, or ECG. Patient consultation.</td>
</tr>
</tbody>
</table>

Remote Telemonitoring


Remote Telemedical Management: TIM-HF2

**Electronic Heart Diary**

- Bluetooth/Manual data entry
- Store and retrieve data
- Database (e.g., Midata)
- Web platform

Arulnathan et al. Studies in health tech and inform. 2019; 259: 113-116

**Digital innovations and wearable technologies**

- Track & share physiologic signals & numbers
- Record ECG 1 lead
- Receive SMS to lose weight, stop smoking, increase physical activity, & take medications

Michard, J Clin Monit Comput 2017; 31:253-259
Wearable technology: Simband smartwatch


Smartphone mechanocardiography

Barriers

- Interoperability between devices and EMRs
- Integration with health care providers
- Billing for services related to monitoring
- Cost

Audience Question

- What technology does your HF clinic use to enhance
  - patient self monitoring / care
  - shared care with primary care providers?
- Have they been successful?
- What have been the major barriers?....Be honest
III. Approaches for timely consultative services between primary care and specialists

Integrated Care: Spoke-Hub-and-Node

E-Consults in Cardiology

Telecardiology E-consultation

- Users
  - MD (residents, fellows, non-cardiovascular specialists)
  - Physician’s assistant
  - Nurse practitioner
- Inpatient cardiology consult attending

Conventional Outpatient Cardiology Consultation Request

- Users
  - MD (residents, fellows, non-cardiovascular specialists)
  - Physician’s assistant
  - Nurse practitioner

  *Screening by physician’s assistant or nurse practitioner for triaging and ordering of ancillary lab or testing prior to clinic visit

  *Medical clerk for scheduling

- Cardiology clinic visit
  - Medicine residents’ clinic
  - Fellows’ clinic
  - Attending clinic
  - Physician’s assistant or nurse practitioner clinic

Bauer et al. J telemedicine and telecare 2019; 1357633.

Telemedicine Technology in Ontario

Thompson. Ivey International Centre for Health Innovation (Blog) 2018; 1.
OTNconnect App

Make and receive videoconference calls
Conduct patient consultations, case-conference with peers, participate in distance learning, and attend meetings.

Search for users and systems
Find other healthcare professionals and sites using telemedicine across Ontario.

Manage your favourites
Update your list, see contact details, and make videoconference calls.

 Audience Question

• Do you see telemedicine consults as a user friendly solution to improved shared care models?
• Will this technology be incorporated in your clinic?
IV. Tools and resources for primary care provider: knowledge dissemination

Knowledge to Action Framework
LOCAL KT INITIATIVES

- Discharge summaries with specific instructions on uptitration of GDMT embedded in care map **Quadruple Aim**
- Providing all of our uptitration protocols (“HFC in a box”) to all care provider teams in MB 2017 **Quadruple Aim**
- Providing additional CME to primary care regarding triple therapy, device referrals and new agents, Guideline updates - ongoing **Quadruple Aim**
- Enhancing community patient education opportunities with primary care Sept 2018 **Triple and Quadruple Aim**
- Proving telehealth links to twice monthly education heart failure education sessions province wide and to Nursing Stations. **Triple and Quadruple Aim**
- “Pop up” HF clinics, hands on exposure to GDMT and newer therapies Dec 2018 **Triple and Quadruple Aim**
NATIONAL KT INITIATIVES (CCS AND CHFS)
https://www.ccs.ca/en/guidelines/heart-failure-program

To achieve our knowledge translation goals, we offer a multi-pronged program which includes the following components:

- **E-GUIDELINES**: Easily browse and search the comprehensive HF guidelines.
- **POCKET GUIDES**: Is it Heart Failure and What Should I Do? The HF pocket guide is a quick reference tool that features essential diagnostic and treatment recommendations based on available HF guidelines.
- **COMPANION RESOURCES**: The CCS HF Companion document is a tool to facilitate integration of HF guidelines into clinical practice.
- **CALCULATORS AND FORMS**: Access clinical calculators and download the HF Referral Form, screening forms and printable FRS worksheets.
- **EDUCATIONAL SLIDE DECKS**: One HF slide decks are designed to educate practitioners on the essential diagnostic and treatment recommendations, and are developed in a case based format.
- **APPS**: The CCS app presents updated HF Guideline information, recommendations and algorithms in an easy to use and interactive format.

Visit the Guideline Resource section for more information on all our available resources.

**Audience Question**

- In your opinion what tools have been most successful in the adoption of GDMT among primary care providers?
  - Locally?
  - Nationally?
- Where can be done better?
- Are patients and nurses included in the KT cycle?
Thank you for your participation