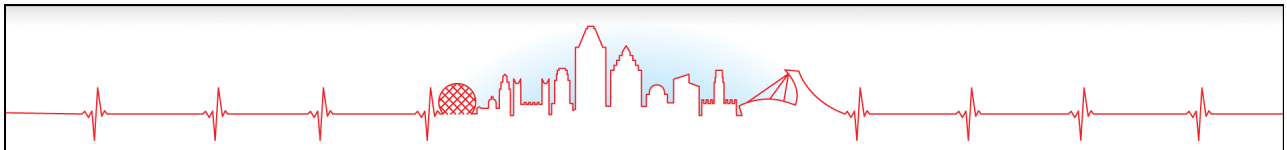

# COLLABORATIVE CARE MODELS IN HEART FAILURE

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CHFS SCIC Canadian Heart Failure Society / Société canadienne d'insuffisance cardiaque

## Disclosures Van Spall

- **Grants / research funding**
  - Canadian Institutes of Health Research
  - Ontario's Ministry of Health and Long Term Care
  - Center of Healthcare Optimization and Research Delivery
  - Hamilton Health Sciences Foundation
- **In-kind research support**
  - Roche Diagnostics

## Disclosures Zieroth

**Consulting/Advisory Board:**
Akcea, Astra Zeneca, Amgen, Alnylam, Bayer, Boehringer Ingelheim, Cardiol Therapeutics, Novartis, Pfizer, Servier

**Speaker:**
Boehringer Ingelheim, Novartis, Servier

**Clinical Trials:**
Amgen, Astra Zeneca, Bayer, Boehringer Ingelheim, Merck, Novartis

**Research Grants:**
Novartis

**Educational Grants:**
Servier

## 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**

*Bodenheimer, Sinsky. Ann Fam Med* 2014;12:573-576.

# Primary Care Volume of HF Visits and Rural vs Urban Gaps

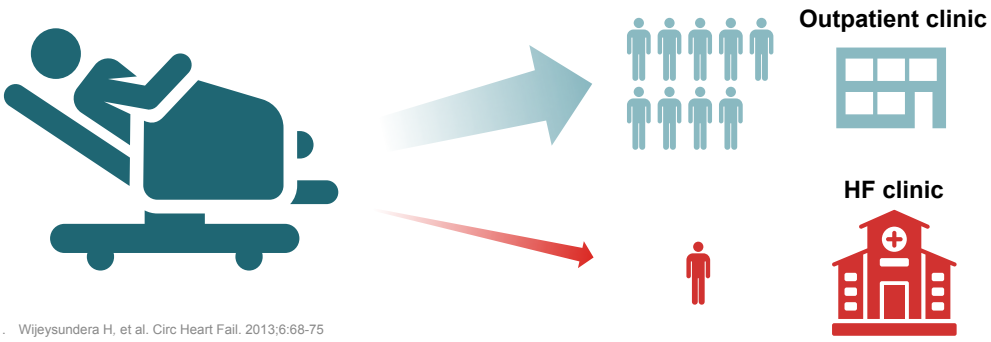
**Table 3.21: Three–Year Visit Rates by Manitoba Patients in the Congestive Heart Failure Cohort by Regional Health Authority, 2007/08–2009/10**

| Regional Health Authority | Total Number of Visits | Average Number of Visits per Person | Number of Visits to Primary Care Physicians | Average Number of Visits to Primary Care Physicians per Person | Number of Visits to Specialists | Average Number of Visits to Specialists per Person |
|---|---|---|---|---|---|---|
| South Eastman | 9,296 | 30.78 | 7,357 | 24.36 | 1,939 | 6.42 |
| Central | 23,515 | 29.92 | 19,275 | 24.52 | 4,240 | 5.39 |
| Assiniboine | 19,761 | 34.85 | 17,343 | 30.59 | 2,418 | 4.26 |
| Brandon | 13,964 | 40.48 | 11,544 | 33.46 | 2,420 | 7.01 |
| Winnipeg | 172,858 | 37.20 | 116,107 | 24.99 | 56,751 | 12.21 |
| Interlake | 21,687 | 34.10 | 16,745 | 26.33 | 4,942 | 7.77 |
| North Eastman | 11,850 | 31.77 | 9,726 | 26.08 | 2,124 | 5.69 |
| Parkland | 22,803 | 37.88 | 19,843 | 32.96 | 2,960 | 4.92 |
| Manitoba | 295,734 | 35.81 | 217,940 | 26.39 | 77,794 | 9.42 |

Urban patients have more access to specialist care

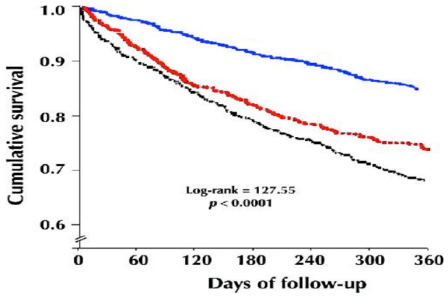
# In Canada……..Lack of referral to HF Specialists? And Risk : Treatment Mismatch

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[1]




1. Wijeysundera H, et al. Circ Heart Fail. 2013;6:68-75
2. Howlett J. Specialist heart failure clinics must evolve to stay relevant. Can J Cardiol 2014;30:276-80.

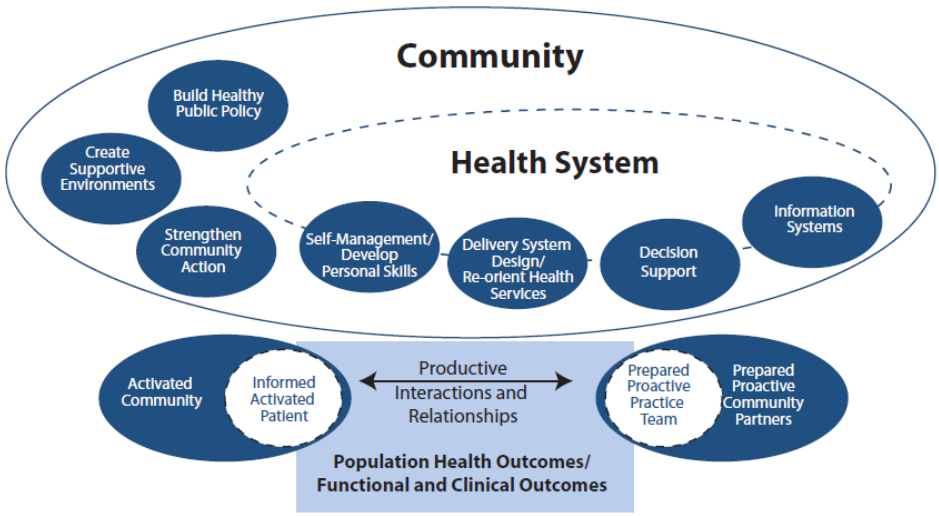
# Why You Still Need HF Clinics



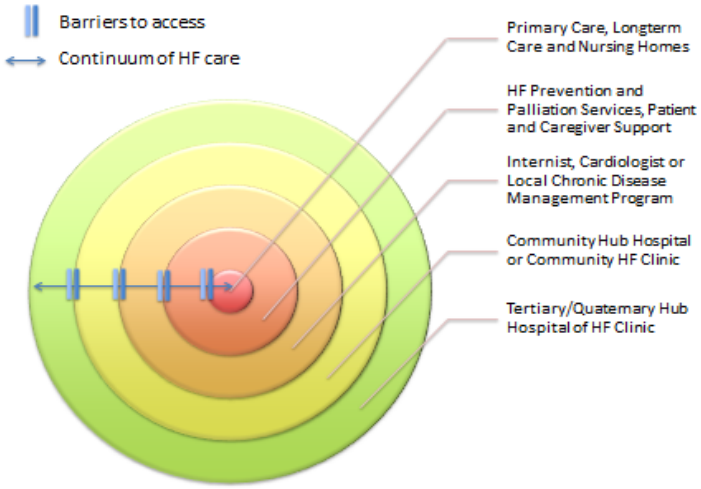

**Kaplan–Meier survival curves for care received, by ambulatory specialty.**
Blue line = combined care (both specialist and family physician),
Red line = care by family physician only,
Black line = no cardiovascular claims (i.e., no physician visits for a cardiovascular cause).

Ezekowitz, JA., et al. Impact of specialist follow-up in outpatients with congestive heart failure. CMAJ. 2005; 172(2): 189-194

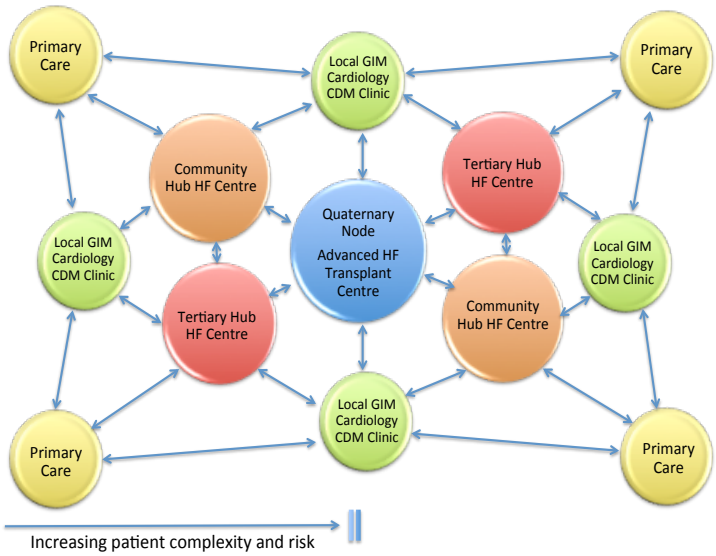
# The EXPANDED CHRONIC CARE MODEL



## CONTINUUM OF HF CARE




## HUB AND SPOKE MODEL



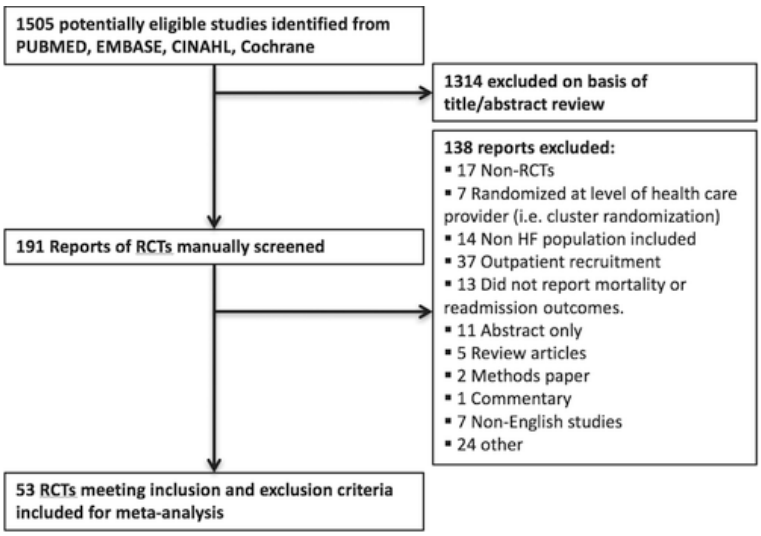

Huitema AA, Harkness K, Heckman GA and McKelvie RS. The Spoke-Hub-and-Node Model of Integrated Heart Failure Care. *Can J Cardiol*. 2018;34:863-870

## Audience Question

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

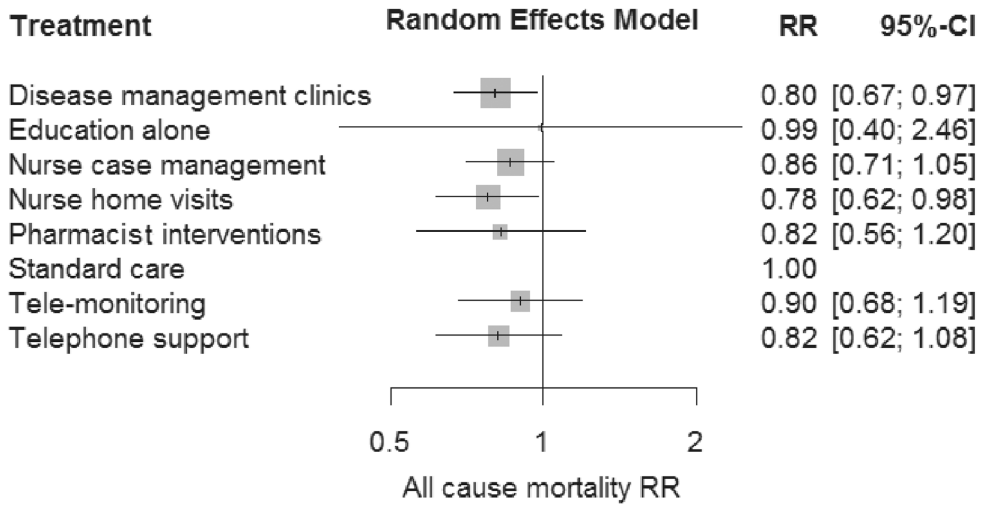
**II. Strategies for shared care: transitions and community-based care**

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



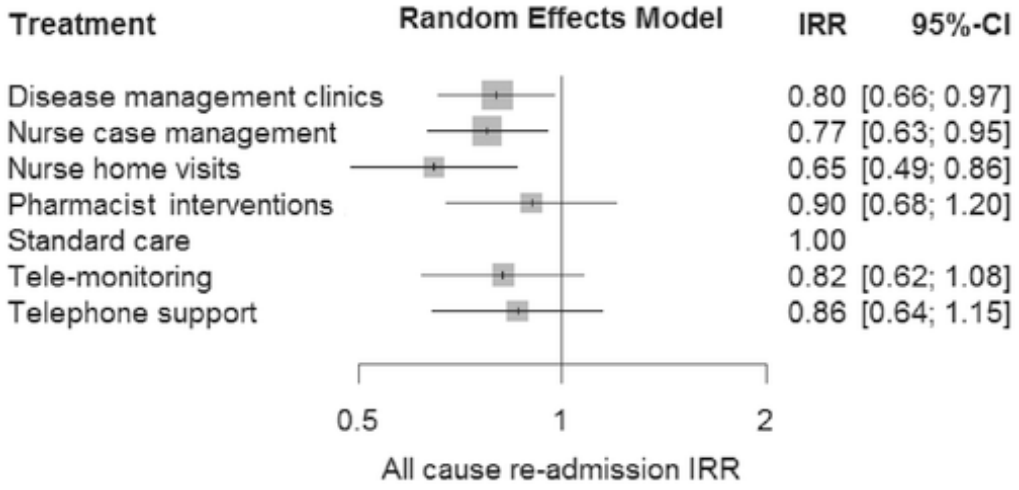

Van Spall et al. Eur J Heart Fail 2017; 19(11):1427-1443.

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




Van Spall et al. Eur J Heart Fail 2017; 19(11):1427-1443.

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



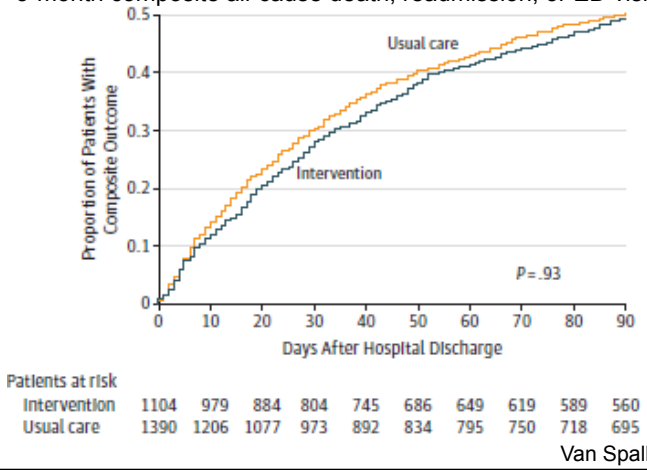

Van Spall et al. Eur J Heart Fail 2017; 19(11):1427-1443.

JAMA | Original Investigation

## Effect of Patient-Centered Transitional Care Services on Clinical Outcomes in Patients Hospitalized for Heart Failure
### The PACT-HF Randomized Clinical Trial

Harriette G. C. Van Spall, MD, MPH; Shun Fu Lee, PhD; Feng Xie, PhD; Urun Erbas Oz, PhD; Richard Perez, MSc; Peter R. Mitoff, MD; Manish Maingi, MD; Michael C. Tjandrawidjaja, MD; Michael Heffernan, MD, PhD; Mohammad I. Zia, MD; Liane Porepa, MD; Mohamed Panju, MSc, MD; Lehana Thabane, PhD; Ian D. Graham, MA, PhD; R. Brian Haynes, MD, MSc, PhD; Dilys Haughton, BScN, MHSc; Kim D. Simek, BSc; Dennis T. Ko, MD, MSc; Stuart J. Connolly, MSc, MD

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



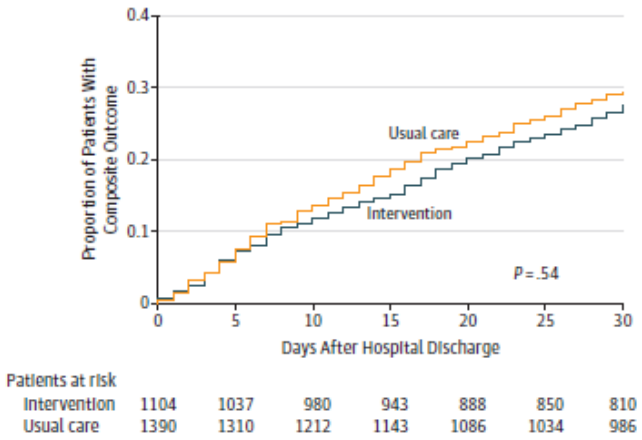

Patients at risk

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Intervention | 1104 | 979 | 884 | 804 | 745 | 686 | 649 | 619 | 589 | 560 |
| Usual care | 1390 | 1206 | 1077 | 973 | 892 | 834 | 795 | 750 | 718 | 695 |

Van Spall et al. JAMA 2019; 321(8):753-761.

# PACT-HF stepped wedge cluster RCT

30-day composite readmission or ED visit




Van Spall et al. JAMA 2019; 321(8):753-761.

# PACT-HF stepped wedge cluster RCT

| | Mean (SD) | | Least-Squares Mean (95% CI)[a] | | | |
|---|---|---|---|---|---|---|
| | Intervention (n = 606) | Usual Care (n = 380) | Intervention (n = 606) | Usual Care (n = 380) | Difference | *P* Value |
| B-PREPARED 6-week score[b] | 15.31 (4.83) | 13.67 (5.30) | 16.55 (15.50-17.59) | 13.91 (12.87-14.93) | 2.65 (1.37-3.92) | <.001 |
| CTM-3 6-week score[c] | 74.34 (20.85) | 68.73 (17.83) | 76.47 (72.12-80.81) | 70.30 (65.97-74.63) | 6.16 (0.90-11.43) | .02 |
| EQ-5D-5L score[d] | | | | | | |
| Discharge | 0.70 (0.24) | 0.56 (0.28) | 0.73 (0.70-0.76) | 0.55 (0.52-0.58) | 0.18 (0.14-0.23) | <.001 |
| 6-week | 0.71 (0.24) | 0.69 (0.24) | 0.73 (0.70-0.76) | 0.67 (0.64-0.70) | 0.06 (0.01-0.11) | .02 |
| 6-month | 0.69 (0.26) | 0.66 (0.27) | 0.71 (0.67-0.74) | 0.64 (0.61-0.68) | 0.06 (0.01-0.12) | .02 |
| QALYs for the first 6 months[e] | 0.34 (0.11) | 0.32 (0.11) | 0.34 (0.33-0.36) | 0.34 (0.33-0.35) | 0.00 (−0.02 to 0.02) | .98 |

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 score[24] is a measure of discharge preparedness, ranging from 0 (worst) to 22 (best).

[c] CTM-3[25] is a measure for quality of care transition, ranging from 0 (worst) to 100 (best).

[d] EQ-5D-5L[26] is a measure of quality of life based on domains of mobility, self-care, usual activities, pain/discomfort, and anxiety/depression. The scale ranges from 0 (dead) to 1 (best quality of life).

[e] QALY,[27] a measure of both quantity and quality of life, is 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 the telephone. A QALY of 1 implies perfect health for 1 year; QALY was measured over 6 months, so it is anchored at 0 (dead) and 0.5 (best health at 6 months).

Van Spall et al. JAMA 2019; 321(8):753-761.

# Remote monitoring & clinical outcomes

| Intervention category | Types of interventions | Examples of interventions |
|---|---|---|
| Telemonitoring | 14 SRs[a] 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. | Telephone-based symptom monitoring, automated monitoring of signs and symptoms, automated physiological monitoring (such as body weight, heart rate, arterial blood pressure, ECG[b] recordings), and other data. |
| Video monitoring | One SR covering 3 RCTs[c] that implemented videoconferencing as main intervention and compared it with usual care or telephone support. | Monitoring patients' body weight, blood pressure, heart rate, and/or ECG. Some systems also included consultations. |
| Mobile phone monitoring | Two SRs including 1 RCT and 1 pre-post study examined mobile phone–based interventions. | Monitoring body weight, blood pressure, heart rate, or ECG. Patient consultation. |

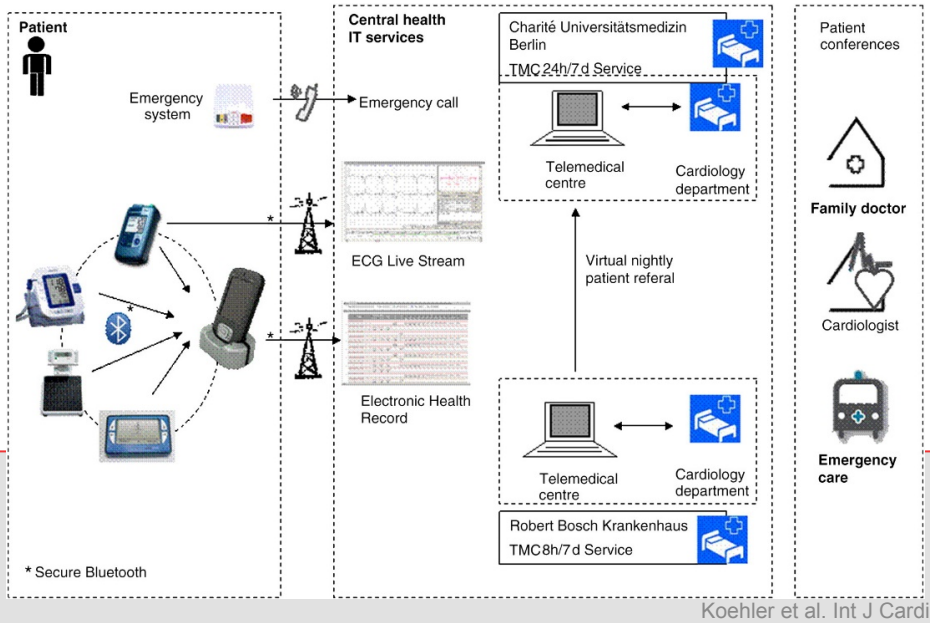
Bashi et al. J med internet research. 2017; 19(1): e18.

# Remote monitoring & clinical outcomes

| Intervention category | Types of interventions | Examples of interventions |
|---|---|---|
| PDA devices | One SR of 11 RCTs investigated the effect of PDA devices. The devices used in those RCTs were varied. | Monitoring body weight, blood pressure, heart rate, or ECG. Patient consultation. |
| Home telehealth | Four SRs investigated the effect of home telehealth on the clinical outcomes of HF. | Monitoring vital signs and/or ECG, individualized education, medication reminder. |

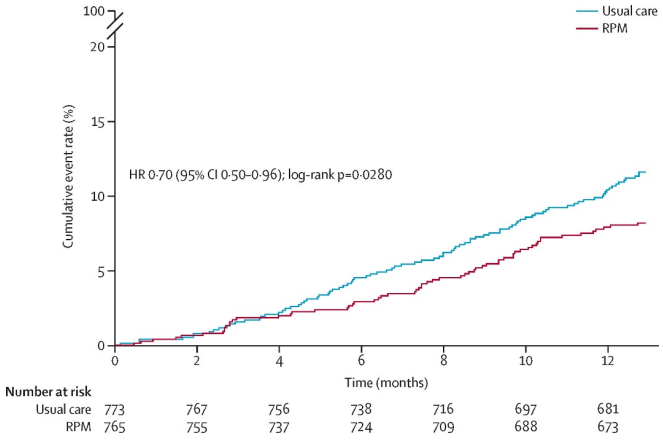
Bashi et al. J med internet research. 2017; 19(1): e18.

# Remote Telemonitoring



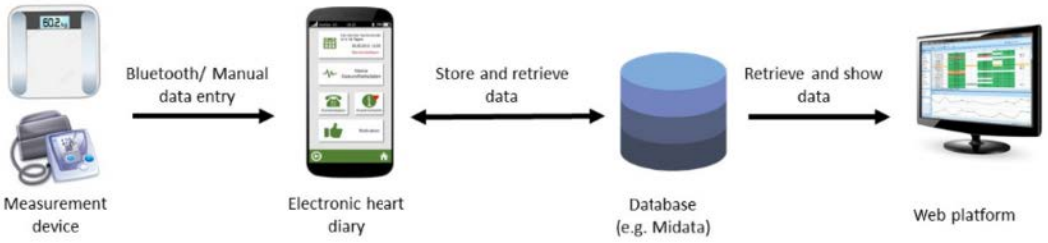

Koehler et al. Int J Cardiol 2012; 161(3): 143-150.

# Remote Telemedical Management: TIM-HF2



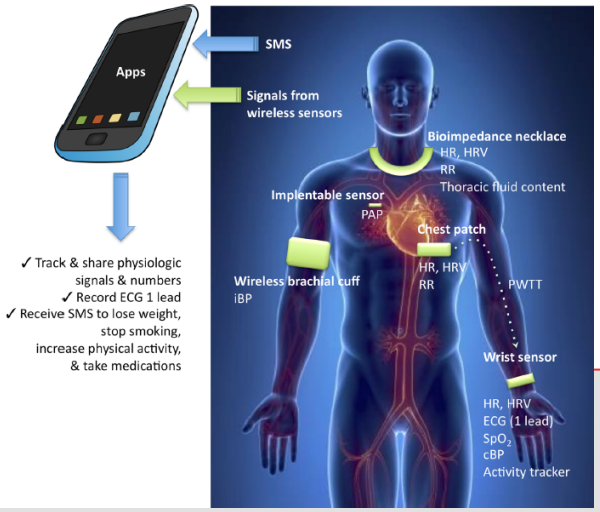

Koehler et al. The Lancet 2018; 392(10152): 1047-1057.

# Electronic Heart Diary




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

# Digital innovations and wearable technologies

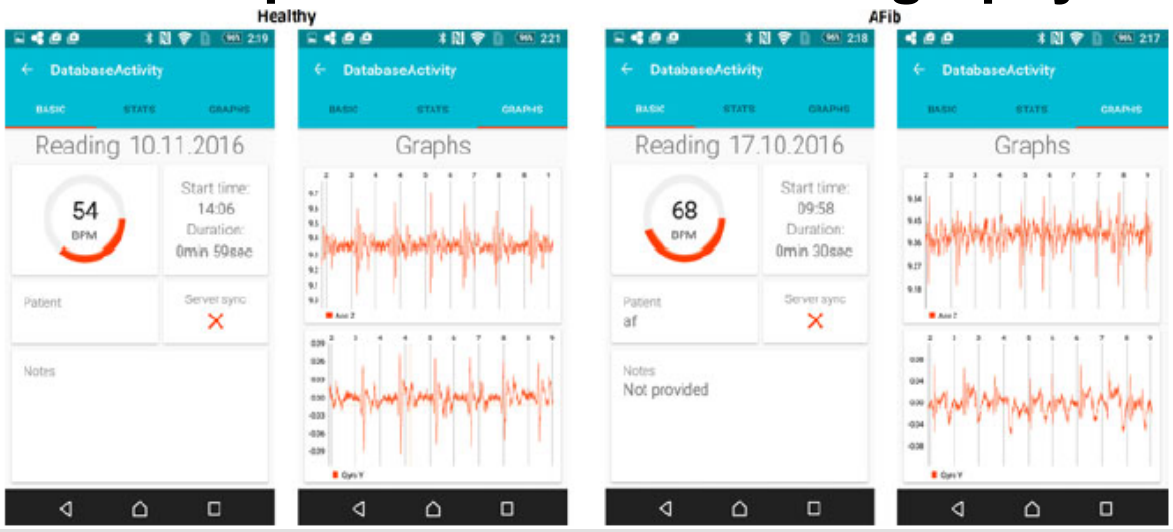



Michard. J Clin Monit Comput 2017; 31:253-259.

# Wearable technology: Simband smartwatch


Nemati et al. Conf Proc IEEE Eng Med Biol Soc 2016; 3394-3397.

# Smartphone mechanocardiography




Lahdenoja et al. IEEE J Biomed Health Inform 2018; 22: 108-118.

## Barriers

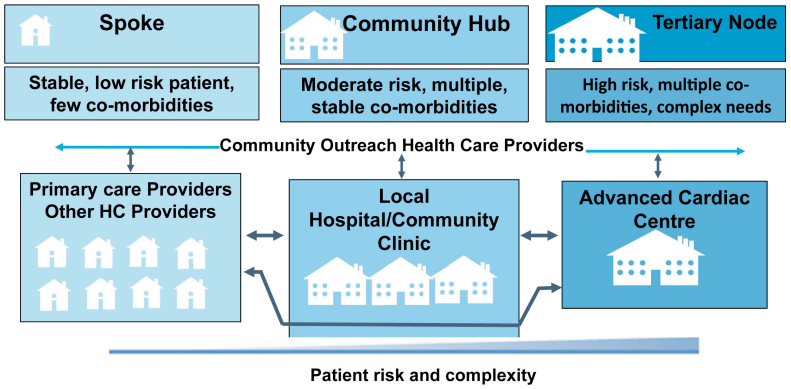
- Interoperability between devices and EMRs
- Integration with health care providers
- Billing for services related to monitoring
- Cost

## 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

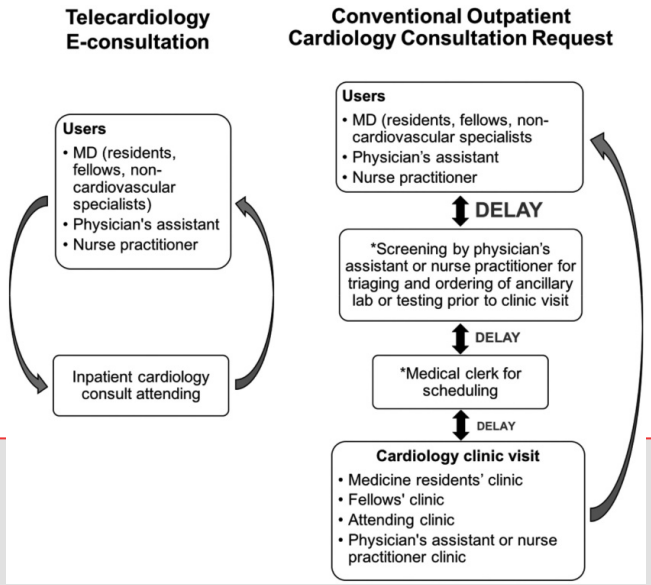
# Integrated Care: Spoke-Hub-and-Node




Two way **communication** between Levels of care: Face-to-face visits, phone, e-consult

Huitema et al. Canadian Journal of Cardiology 2018;34(7): 863-870.

# E-Consults in Cardiology

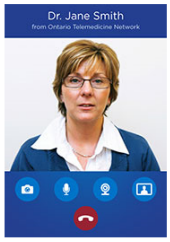



Bauer et al. J telemedicine and telecare 2019; 1357633.

# Telemedicine Technology in Ontario

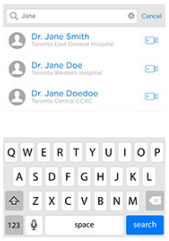
Thompson. Ivey International Centre for Health Innovation (Blog) 2018; 1.

# OTNconnect App



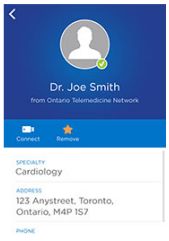

**Make and receive videoconference calls**

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.

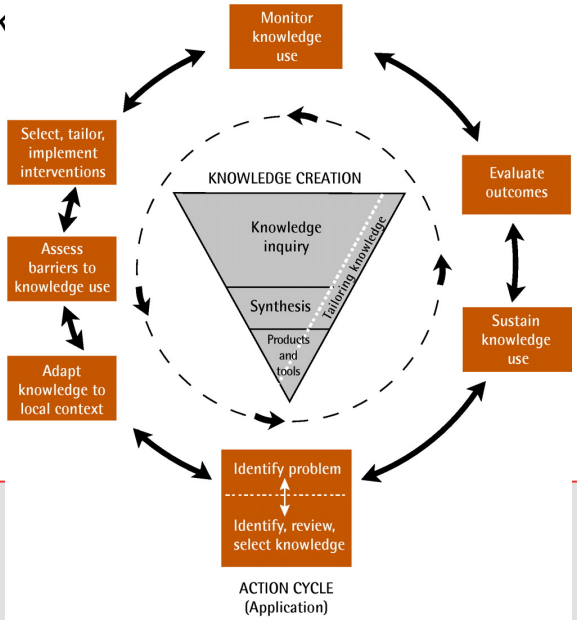


# Audience Question

- 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

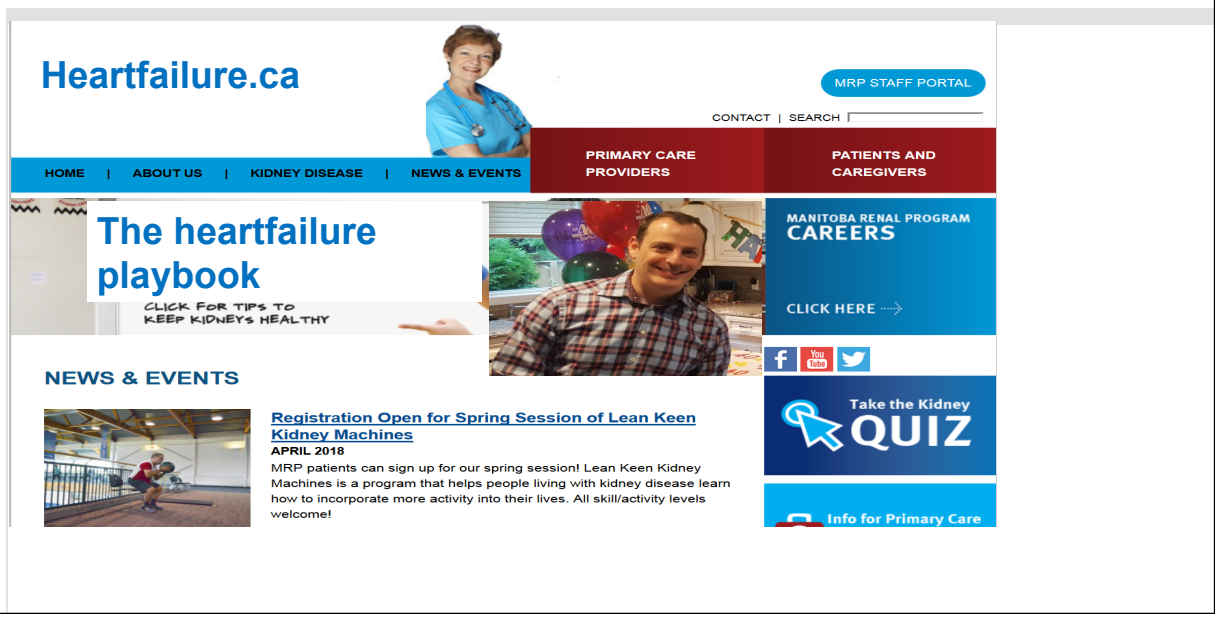
## Knowledge to Action Framework



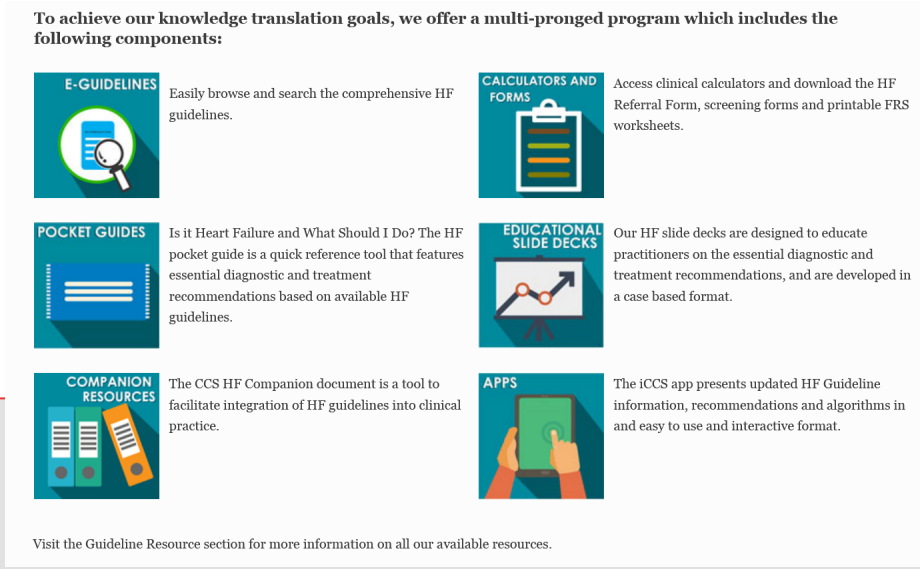

Matthew Menear, Kelly Grindrod, Kathleen Clouston, Peter Norton and France Légaré Canadian Family Physician June 2012, 58 (6) 623-627, reprinted from Graham et al

## 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




## 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