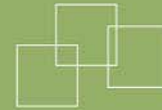




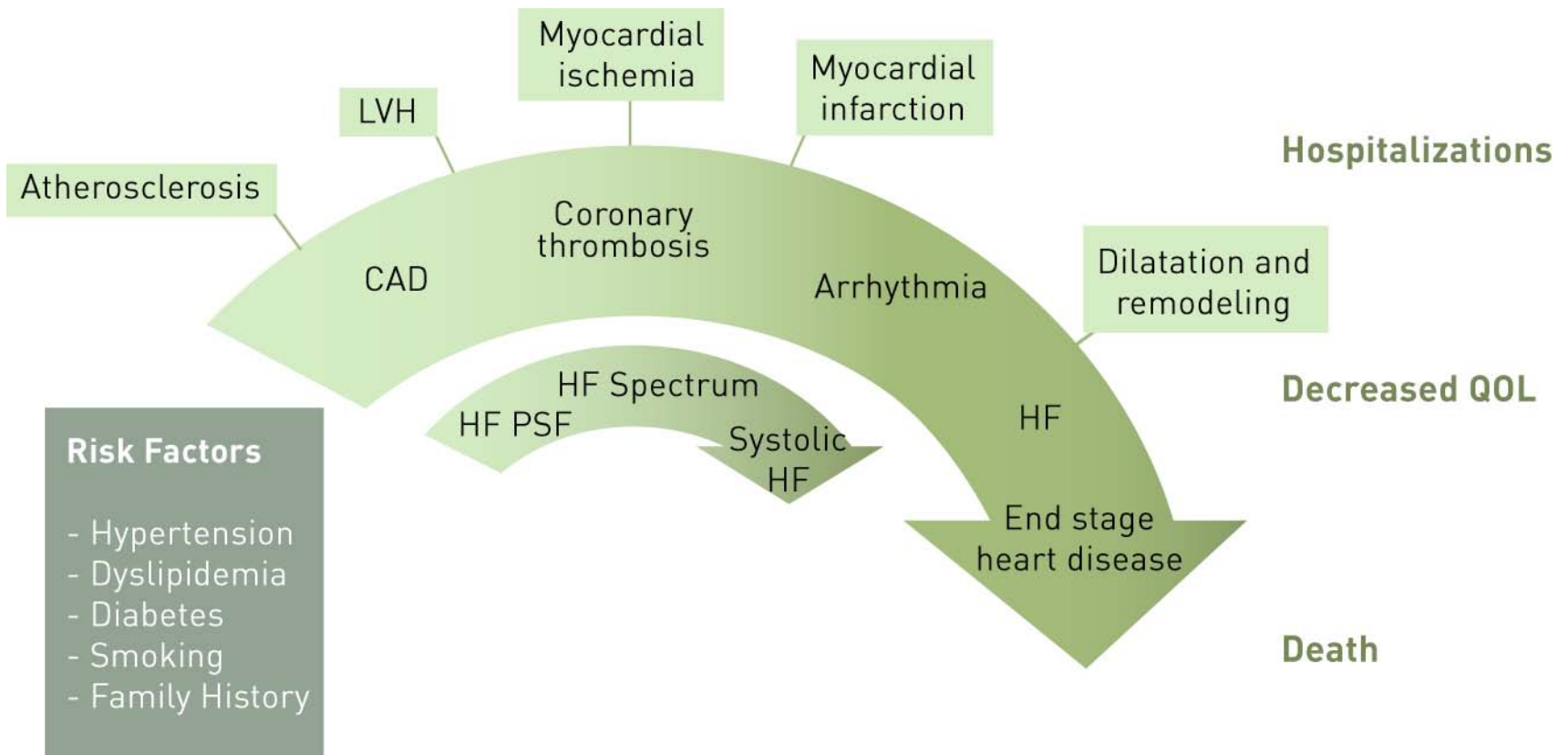
Taming Of The Queue VI

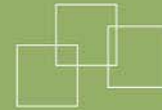
Christine Struthers
APN Cardiac Telehealth
University of Ottawa Heart Institute

March 2009



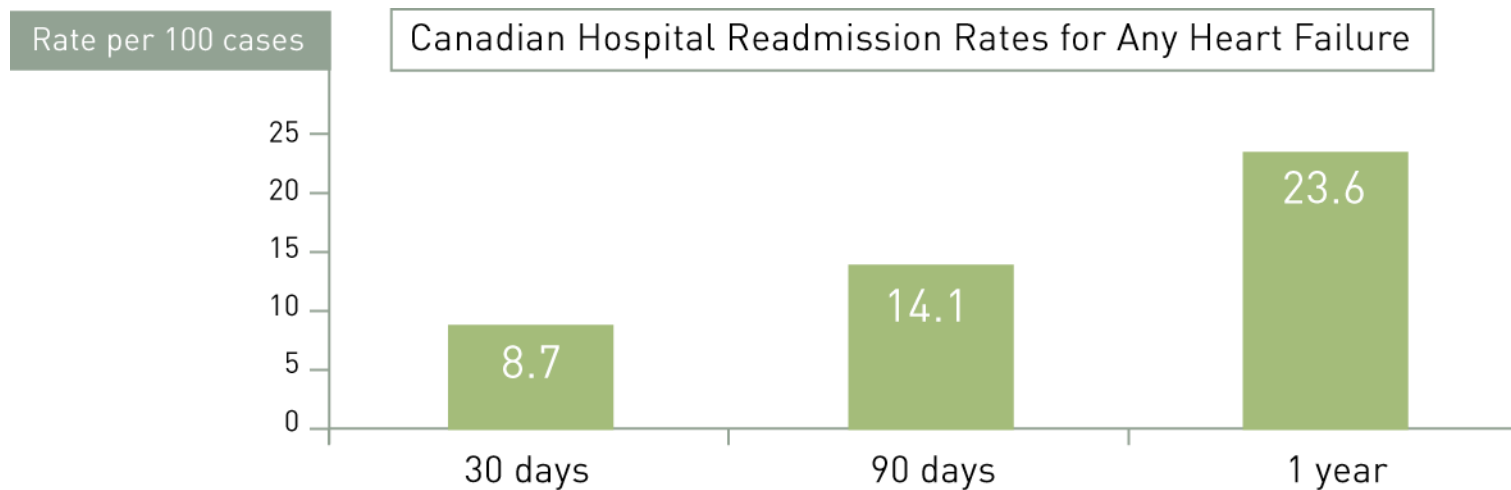
The Heart Failure Continuum





HF Readmissions

- Hospital readmission rates are high, and mainly due to recurrent heart failure



Upstream Demand

Goal: To Keep HF Patient Out of Hospital

- Addressing risk factors early
- Using alternate treatment for gout, no glycosides, no saline infusions
- Improving self-care maintenance (knowledge of salt & fluid restriction, signs & symptoms to report) & self-care management (taking action to prevent readmission)
- Optimizing treatment to maintain on best practice guidelines (improves survival, functional class & decreases ER visits & readmission)

Downstream Demand

Goal: Decrease Readmission

- Determine precipitating cause for HF admission (preventable versus unpreventable)
- Self-care education

Follow Up Strategies



Telehome Monitoring (THM)
Interactive Voice Response (IVR)

What is Telehome Monitoring?

- Point of care delivery system
- Uses POTS lines for data transmission
- Uses peripheral devices based on patient need: ECG, weight scale, glucometer cables, INR monitor
- Providers use call protocols & medical directives as needed
- Incorporates a clinical database (EHR)

Telehome Monitoring Technology



Who Should Be Monitored?

- HF patients with 1 readmission/1 month or 2/in 6 months
- Patients with new HF diagnosis
- Patients recovering from cardiac surgery
- Patients requiring VS, arrhythmia monitoring
- Any cardiac patient requiring frequent monitoring or trending of information to facilitate optimal clinical management

Operations

- 1 FTE at central station/ 40 active patients
- Monitoring duration 1-3 months +
- Data reviewed Monday-Friday 0800-1600 hrs & next regular working day
- Patients given 24/7 “One number to call” for off-hours and stats
- Reports sent to referring and primary care physicians and specialists on regular basis & on demand.

Cardiac Clinical Applications

- Monitoring of fluid status
- Medication management
- Vital sign & arrhythmia monitoring
- Risk factor education
- Self-care education
- Caregiver support

Readmission data (2007)

- Cohort of 62 patients admitted with HF Dx & referred to THM
- Average duration of monitoring = 144 days
- 40 males/22 females
- 60 % had 1-2 admissions for HF in previous 6 months prior to THM versus 11 % in 6 months post THM

Lessons Learned

- Using regular phone lines is easy & cost effective
- Patients are successful at connecting equipment in their homes. Equipment return by bus is feasible. No distance barriers.
- The technology is reliable, producing valid patient data & EHR
- The technology can be adapted to meet individual patient needs: volume, language, frequency of transmissions, clinical questions
- Infrastructure promotes collaborative care model

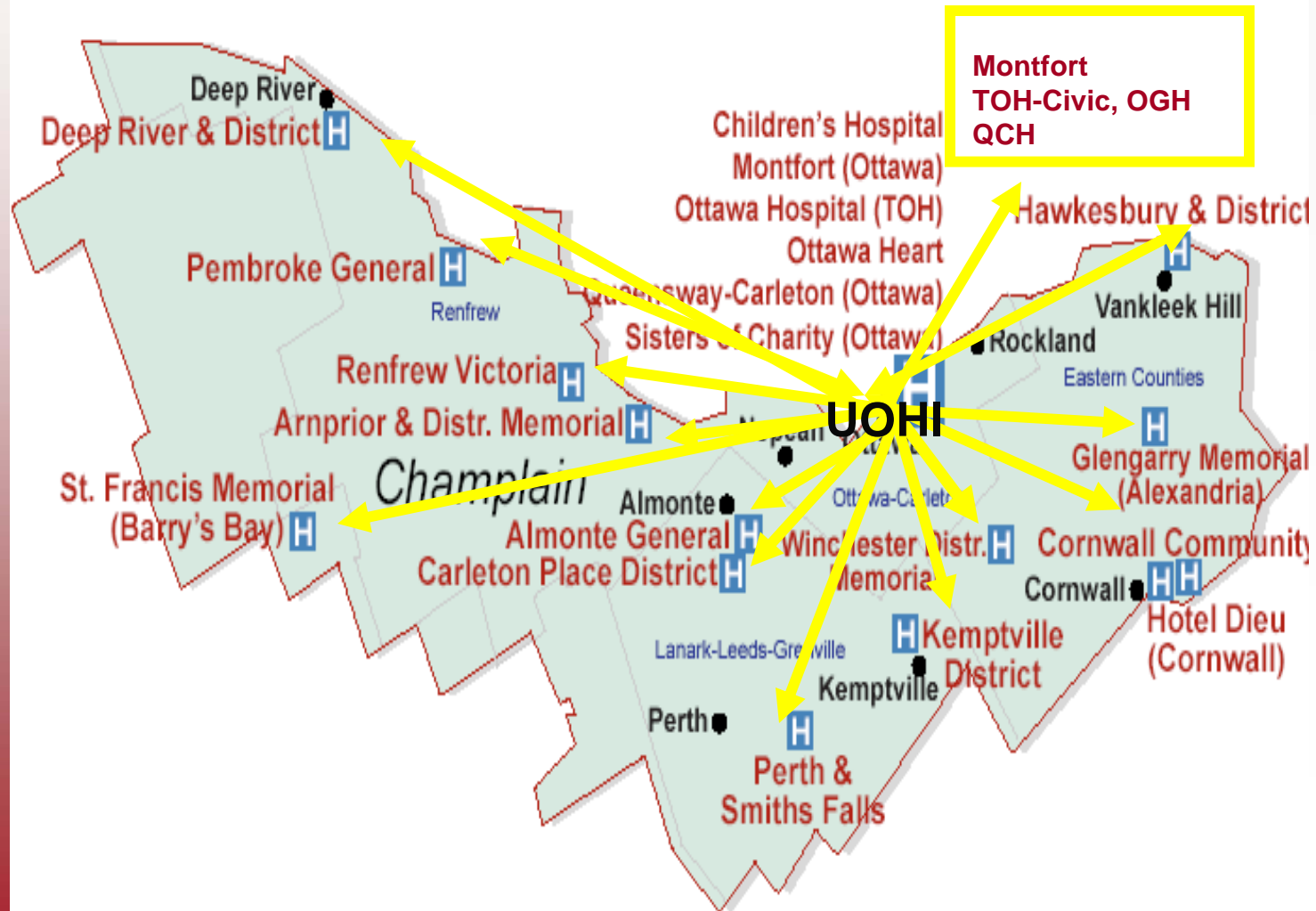
Limitations & Challenges

- Patients must be instructed to call with symptoms, data is just numbers without context
- Manual dexterity important for pocket ECG, and BP cuff
- Psychosocial & home environment assessment important
- Remote programming from central station now available

Case Study

- 67 yr old ♂, lives alone in rural community
- Papers submitted for ALC while in hospital
- Multiple comorbidities: IHD, HF, AF, DM, PVD, morbid obesity, chronic anemia
- 4 HF admissions in past 9 months (118 days)
- D/c wt. 131.8kg, current wt. 121kg 3 months later
- Pt. called 12 times, adjusted meds x 5, collaboration with Homecare, BW at home arranged
- Outcome: Feeling better, Lasix ↓ 80 mg BID, started walking, homecare visits reduced, need for placement being reconsidered

Regional Cardiac TeleCare Program



What is **I**nteractive **V**oice **R**esponse (IVR)?

A technology which uses the telephone system. It delivers a set of automated questions to which a patient can respond using voice instead of key pads. This interaction identifies the patient by name and collects the responses in a database.

It is not a telemarketing cold call!

How It Works

- Enter name of patient, contact number and discharge date
- System dials patient on scheduled dates
- Text to speech engine personalizes the call
- System asks questions in the algorithm
- Patient responses are dropped into a database
- System highlights issues that require management by health care provider

UOHI IVR Applications

- **Smokers:** contacts patients at day 3, 14, 30 and then monthly for six months for counseling and medication adjustments
- **Discharged cardiac surgery patients:** all patients are called at Day 3 and 10 after discharge to screen symptoms (+3000 patients)
- **Discharged post acute coronary syndrome:** current RCT, ~1500 patients were called at 1,3,6,9, and 12 months to improve compliance with BPGs
- **Medication safety:** RCT, 163 post op patients called 11 times in 24 weeks, medication compliance was statistically significant

HF IVR Algorithm

- 17 questions, Q2weekly calls x 3-6 months
- Call disposition: Complete, Callback, Request for information, Unreachable
- 5 potential callbacks
- 3 potential requests for information mail out
- 9 targeted IVR delivered information including information on 4 HF medications
- Final reminder tips



Patient Information

Patient ID:	07169527
Name:	
Phone number:	(613) 830-0362
Discharge Date:	03/20/07

Edit

Call Results

	Busy	AnsM	NA	Disc	Reason
Week 2	00	00	00	00	----
Week 4	00	00	00	01	----
Week 6	00	01	00	00	----
Week 8	00	02	00	01	----

	Week 2	Week 4	Week 6	Week 8
Date	04/03/07	04/17/07	05/01/07	05/15/07
Status	Active	CallBack	CallBack	CallBack
Q1	X	Y		Y
Q2	X	X	X	X

Q3				
Q4				
Q5				
Q6				
Q7				
Q8	X	Y	N	Y
Q9	X	Y	N	N
Q10	X	N	N	N
Q11	X	N	N	N
Q12				
Q13				
Q14				
Q15				
Q16	X	N	Y	Y
Q17	X	N	Y	Y
Q18	X	N	Y	N
Q19	X	Y	X	Y
Q20	X	Y	N	N
Q21	X	N	N	N
Q22	X	N	Y	Y
Q23	X	Y	N	N
Assessed	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Contacted	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lost	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Assessment Options

	Week 2	Week 4	Week 6	Week 8
Assessed By:	SSTROUD	SSTROUD	CSTRUTHERS	CSTRUTHERS
Referrals:	None	None	None	None
Call Attempts:	1	0	0	0
Cancel Reason:	None	None	None	None
Cancel Call:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Week 2 - Assessment

414 Characters left. Max 500.

No IVR calls made. Apr 7 AM NA Apr 9 Pt's family reports pt is in hospital(Montford)

5 Characters left. Max 500.

since a c with occasional rectal
 erned that this caused by new
 checked and these meds do not cause
 (ndur and Atacand) Pt's wife has been
 sick with the flu. He has an appointment w' Dr Higginson
 next week and will bring his list of meds w' him. He is

Week 6 - Assessment

317 Characters left. Max 500.

etite since
 spnea.
 ill mail

Week 8 - Assessment

150 Characters left. Max 500.

May 24-NA. Will mail out info requested and call later.
 May 25th-Stopped Bisoprolol and restarted Metoprolol-
 actions explained to patient. Had been on Plavix 1 year-
 stopped by MD. Started on Furosemide-explained
 relationship between wt. gain and fluid retention. c'o

Submit

Q8. Has the patient stopped or changed any of their heart failure medications

Q14. Does the patient want information about how to understand food labels?

Using IVR In The Care of Franco Ontarian HF Patients (2007) n=47 Demographics

- 32M, 15F
- Age (yrs): Mean 66 (range = 43-91yrs)
- 17% lived alone
- 72 % had NYHA III-IV

3 Month Follow-Up Results

- 125 total IVR calls: 47 callbacks requiring assessments, 58 requests made to system to hear information on heart failure medications
- Patient satisfaction with IVR n=35 (74% response rate: 74 % found IVR helpful & very helpful, 94% would use service again & believe it is a good way to follow patients in the community
- 7 medication adverse events captured
- No avoidable readmissions

Unreachable Calls

- 173 total for 40 patients
- 81 called by nurse & OK on assessment
- 66 could not be reached by nurse on 2 call attempts
- 26 interventions (20 patients): 17 self-care education, 2 required referrals, 3 requested information mail out, 3 calls made to GP, 1 other (arm laceration)

Key Issues

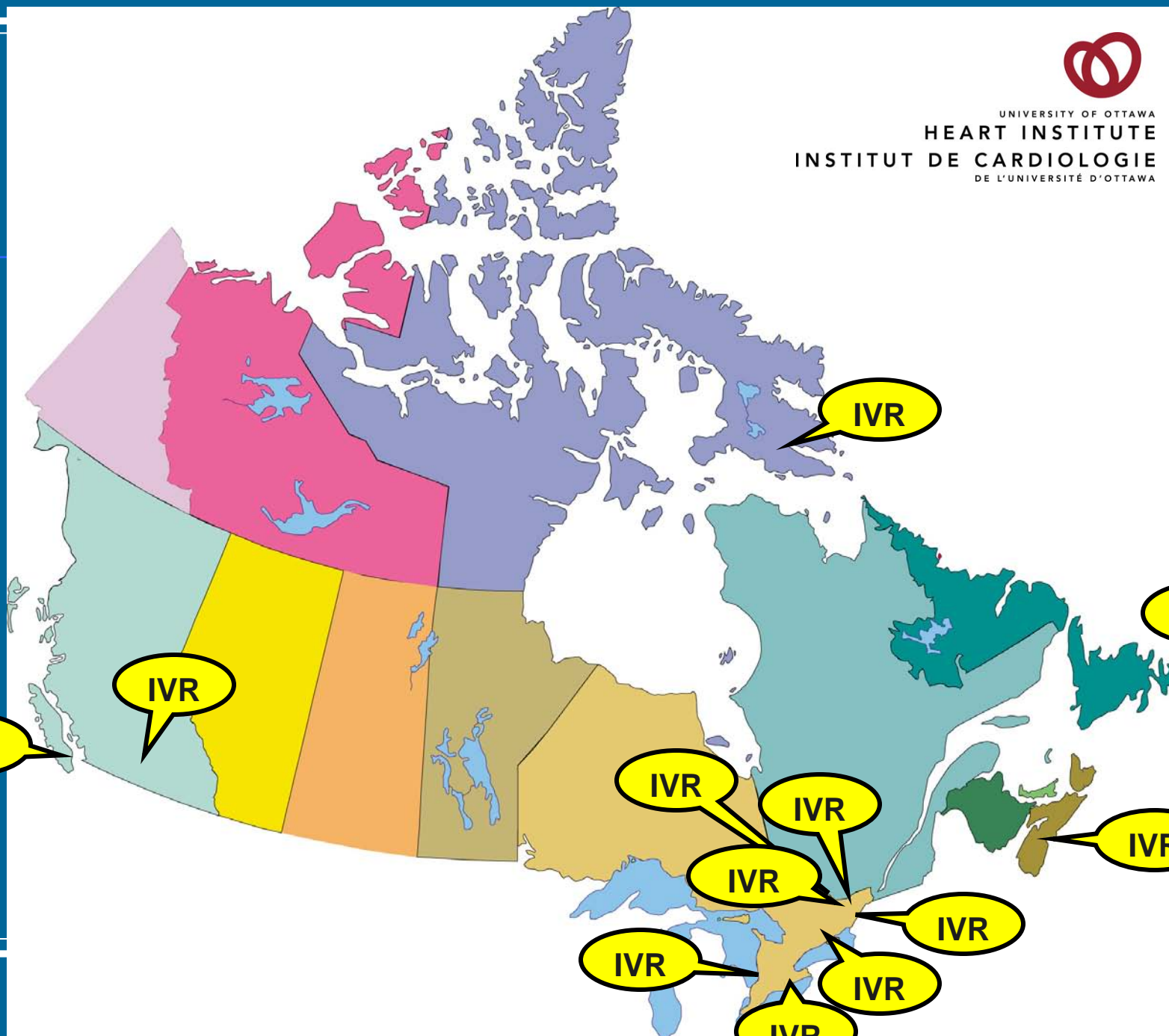
- Biggest learning – spend your technology dollars wisely
- Adds value for the patient
- Match program to regional needs
- Service provided in the most optimal location

Summary

- Patient-centered model
 - Follow natural history
- Decisions made based on service you're providing to the patient
 - Mild HF → IVR
 - Moderate to severe HF → THM
- Technology allows you to leverage providers
- Promotes collaboration & communication
- Fills a void where there are no primary care providers



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IVR

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