Best Practice in Cardiac Rehabilitation Referral: Integration across the continuum of care

Toronto General Hospital

University Health Network

Sherry L. Grace, PhD
Associate Professor, York University
Scientist TGRI & Adjunct Scientist TRI

CRCARE: Cardiac Rehab
Care Continuity through Automatic Referral Evaluation

HEART & STROKE FOUNDATION
Finding answers. For life.
## CR Use in Ontario

### Table 4: Pilot Catchment Area Adult Population and Cardiac Discharges by Planning Region

<table>
<thead>
<tr>
<th>Ontario Planning Region</th>
<th>Pilot Catchment Area Population 20+ (1996 Actual)*</th>
<th>Pilot Catchment Area Population 20+ (2001 Projection)**</th>
<th>Pilot Catchment Area 2001 Cardiac Discharges (C)</th>
<th>Pre-Pilot Total Patient Intakes (D)</th>
<th>Pilot Total Patient Intakes (E)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central East</td>
<td>535,025</td>
<td>638,285</td>
<td>5,145</td>
<td>250</td>
<td>410</td>
</tr>
<tr>
<td>Central South</td>
<td>370,385</td>
<td>387,793</td>
<td>3,975</td>
<td>930</td>
<td>1,116</td>
</tr>
<tr>
<td>Central West</td>
<td>1,197,730</td>
<td>1,388,169</td>
<td>8,968</td>
<td>276</td>
<td>1,448</td>
</tr>
<tr>
<td>East</td>
<td>650,135</td>
<td>692,394</td>
<td>6,024</td>
<td>890</td>
<td>1,292</td>
</tr>
<tr>
<td>North</td>
<td>206,575</td>
<td>208,021</td>
<td>2,532</td>
<td>547</td>
<td>1,104</td>
</tr>
<tr>
<td>South West</td>
<td>671,155</td>
<td>705,384</td>
<td>6,391</td>
<td>800</td>
<td>1,416</td>
</tr>
<tr>
<td>Toronto</td>
<td>1,823,220</td>
<td>1,896,149</td>
<td>12,344</td>
<td>2444</td>
<td>3,010</td>
</tr>
<tr>
<td>Total</td>
<td>5,454,225</td>
<td>5,918,195</td>
<td>45,377</td>
<td>6137</td>
<td>9,796</td>
</tr>
</tbody>
</table>

*Source: Statistics Canada, 1996 Census

**Source: Ministry of Health and Long-Term Care, Information and Finance Branch

Toronto General Hospital

CCN CR Pilot Project; Suskin, Arthur et al. CJC.
The Problem

• Under-utilization of CR
• Due to a combination of factors:
  1. Patients (preferences),
  2. physicians (referral failure, encouragement, time constraints),
  3. CR programs (distance, waits, hours)
  4. and the health care system (fragmentation, short stays, funding)
<table>
<thead>
<tr>
<th>Reasons for Non-participation</th>
<th>Pre-intervention</th>
<th>Post-intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not referred</td>
<td>54 (78%)</td>
<td>0</td>
</tr>
<tr>
<td>Transportation</td>
<td>9 (13%)</td>
<td>4 (12%)</td>
</tr>
<tr>
<td>Financial</td>
<td>3 (4%)</td>
<td>4 (12%)</td>
</tr>
<tr>
<td>Not feeling well</td>
<td>7 (10%)</td>
<td>7 (21%)</td>
</tr>
<tr>
<td>Too busy</td>
<td>2 (3%)</td>
<td>3 (9%)</td>
</tr>
<tr>
<td>Safety</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Not interested</td>
<td>8 (12%)</td>
<td>26 (76%)</td>
</tr>
<tr>
<td>Exercising on own</td>
<td>6 (9%)</td>
<td>6 (18%)</td>
</tr>
</tbody>
</table>

*Patients could cite more than one reason. As there were no differences across age groups, overall data are displayed.
CR Referral Process
Automatic Referral

• DEF’N:
  - The implementation of standing referral orders to CR based on eligible diagnoses supported by clinical practice guidelines

Fischer, 2008; JCN 23(6): 475
The Cardiac Continuum of Care

In-patient Cardiac Unit

Primary Care

Cardiac Rehab

Patient
## CR Referral Strategies

1. **Liaison**
   - Allied health professional talks to patients one-on-one regarding CR (i.e., more interpersonal, less universal)

2. **Systematic Discharge Order Set/Pathway**
   - **Electronic**
     - Prompts to CR referral are electronically generated, such as via electronic health records.
   - **Paper-based**
     - Manual standard order, such as a discharge order set

3. **Usual care**
   - Referral to CR is at the discretion of the cardiac specialist or other physician

---

Krepostman, Grace et al. 2005
Liaison Referral Strategy: PT, NP, RN, Peer
eReferral Strategy

CR SITE
# Safer Healthcare Now! AMI

## PHYSICIAN RX AT DISCHARGE FROM CCU/SDU/ICU/OTHER CARE AREA

<table>
<thead>
<tr>
<th>Diagnosis Non Cardiac?</th>
<th>Yes</th>
<th>If YES</th>
<th>Do Not Complete Remainder of Form</th>
</tr>
</thead>
</table>

### ASA
- Ordered: □ Yes □ No  
  - If not, why not? □ Allergy  
  - □ Active bleeding  
  - Warfarin □ Other

### Beta Blocker
- Ordered: □ Yes □ No  
  - If not, why not? □ Allergy □ Bradycardia  
  - □ LV failure □ SBP < 90 mm Hg □ PR-interval > 0.24 sec.  
  - □ Active asthma/reactive airways disease □ Other

### ACE Inhibitor/ARB
- Ordered: □ Yes □ No  
  - If not, why not? □ Allergy or intolerance  
  - □ Severe AS □ Creatinine > 200 μmol/L □ Not Indicated  
  - □ SBP < 100 mm Hg □ Bilateral renal artery stenosis □ K+ > 4.5 mmol/L  
  - □ Other

### Lipid Lowering Medication
- Ordered: □ Yes □ No  
  - If not, why not? □ At Target Level □ Intolerance  
  - □ CK > 10 x upper limit □ ALT/AST > 3 x upper limit □ Other

### Clopidogrel
- Ordered: □ Yes □ No  
  - If not, why not? □ Allergy or intolerance  
  - □ Not indicated □ Other

### Nitroglycerine PRN
- Ordered on D/C: □ Yes □ No  
  - If not, why not?

### Nicotine Replacement Therapy
- Given as inpatient □ Yes □ No  
  - If not, why not? □ Non-smoker  
  - □ Allergy or intolerance □ Refused □ Other cessation medication given □ Yes □ No

### Cardiac Rehab
- Ordered: □ Yes □ No  
  - If not, why not?

### Diagnosis
- □ STEMI □ NSTEMI □ Angina □ CABG □ Other
CRCARE: Cardiac Rehab care Continuity through Automatic Referral Evaluation

- Study objective: to compare cardiac rehab enrollment following different referral strategies
- 5 yr study tracking pts from 11 hosps
- Which referral strategy can optimize the number of patients who enroll?
  - Automatic?
11 Participating Ontario Sites

- Sudbury Regional
- William Osler
- St. Mary’s (KW)
- Windsor Regional
- Hotel Dieu-Grace
- Ottawa Heart
- York Central
- Sunnybrook
- UHN
- Hamilton Health Sciences
- Trillium
Methods

- Prospective, observational design
  - Comparative effectiveness / quality improvement
- ACS & revascularization inpatients recruited at all participating sites
- Clinical data extracted from charts
- Patients completed baseline survey
- Follow-up survey mailed 1 yr later
  - Assesses self-reported CR utilization
  - We have data to show high concordance with CR site report (Kayaniyil, Grace et al. CJC)
CRCARE Flow Diagram

5781 CAD in-patients approached from 11 hospitals

1537 ineligible

N = 2636 participants
62% response rate

401 ineligible

N = 1803 participants
79% retention

1608 declined

Chart Extraction
In-Hospital Survey

446 declined

1 YR Follow-up Mailed Survey
RESULTS: CR Utilization by Referral Strategy

- Pts referred to 1 of 52 CR programs
- ps ≤ .001 w GEE controlling for site

OR = 12.8
OR = 5.1
OR = 3.1

- Referral
  - Automatic + Liaison (86%)
  - Automatic only (71%)
  - Allied Health / Liaison Only (59%)
  - Usual (32%)

- Enrollment
  - Automatic + Liaison
  - Automatic only
  - Allied Health / Liaison Only
  - Usual
So what is Best Practice for integration across the cardiac care continuum?
Referral Order to an Early Outpatient Cardiac Rehabilitation/Secondary Prevention Program:
From an Inpatient Setting

(Order applies to patients [18 years of age and older] with cardiovascular disease)

**ALERT:** This order set does not apply to patients who are deemed ineligible for cardiac rehabilitation/secondary prevention programs, including those in long-term nursing home placement for more than 60 days, homebound patients, or patients with severe dementia.

**Intervention requested:** □ Order early outpatient cardiac rehabilitation referral (Phase II).

**Primary Diagnosis During this Hospitalization:** (Select All That Apply)

- □ Angina
- □ Percutaneous Coronary Intervention (PCI)
- □ Myocardial Infarction (MI)
- □ Coronary Artery Bypass Graft (CABG) Surgery
- □ Coronary Artery Disease (CAD)
- □ Heart Transplant
- □ Valve
- □ Other:

**Prescriber’s Signature:** ____________________________ **Prescriber’s Pager#:** ____________________________

**Prescriber’s Printed Name:** ____________________________ **Date:** ____________________________ **Time:** ____________________________

**Referral Process:**

1. Patient’s primary cardiovascular provider, or designate, to carry out.
2. Impress upon the patient the importance of early outpatient cardiac rehabilitation (see script).
3. Arrange for inpatient cardiac rehabilitation contact prior to dismissal.
4. CR contact to:
   a. Discuss with patient the choices of cardiac rehabilitation programs in his/her home area and have patient select a program.
   b. Provide patient with information about the selected cardiac rehabilitation program
   c. With patient consent, call the receiving cardiac rehabilitation program, chosen by patient, requesting that the program contact the patient at home to arrange the first appointment.
   d. Document the name of the cardiac rehabilitation program in the hospital discharge summary with copies of the appropriate enclosures.
   e. With patient consent, send hospital discharge summary and other appropriate information to the CR program (could include surgical report, angiogram report, electrocardiogram, inpatient CR evaluation, etc.).

**Suggested Script for Description of Cardiac Rehabilitation Program:**

Cardiac rehabilitation is important for patients like you who are recovering from a heart problem. Health care professionals work in cardiac rehabilitation programs and assist you with getting the treatments you need to get stronger and healthier, like exercise, healthy eating habits, and medications. Cardiac rehabilitation has been shown to help people with heart problems live longer and have better life enjoyment than people who do not go to cardiac rehabilitation. Insurance companies generally cover cardiac rehabilitation, but if you are not sure about your insurance coverage, you should talk with your insurance company or with the cardiac rehabilitation program staff.

**Figure 2.** Example of a referral tool for an inpatient to an outpatient CR program. Tool to be considered for use with the Cardiac Rehabilitation/Secondary Prevention Performance Measurement Set A. Adapted with permission from Zarpin et al.27 CR, cardiac rehabilitation/secondary prevention program.
Multidisciplinary Cardiac Discharge Checklist/Instructions
To be completed by physician, nurse, or other care provider at patient’s discharge

Admission Date: ___________________ Discharge Date: ___________________

Diagnosis: _______________________

Check each therapy prescribed or check contraindication reason.

☐ Aspirin: next dose due (date/time) ________________
☐ No aspirin, reason documented in discharge summary.
☐ Clopidogrel: next dose due (date/time) ________________
☐ No clopidogrel, reason documented in discharge summary.
☐ Beta blocker: next dose due (date/time) ________________
☐ No beta blocker, reason in discharge summary.
☐ ACE inhibitor: next dose due (date/time) ________________
☐ No ACE inhibitor, reason documented in discharge summary.
☐ Statin or other lipid-lowering agent (LLA): next dose due (date/time) ________________
☐ No statin or other LLA, reason documented in discharge summary.

Cardiac rehabilitation referral made, patient information communicated to program, and program information/appointment communicated to patient

☐ No exercise prescription and/or cardiac rehabilitation referral with reason in discharge summary.
☐ Smoking cessation teaching and pharmacological therapy given (patient is a current smoker or former smoker of less than 1 year) or
☐ Smoking cessation teaching and pharmacological therapy not required (patient is nonsmoker or former smoker of greater than 1 year).
☐ Education on warning signs of MI and what to do if symptoms given.
☐ Education not given, reason documented in discharge summary.
☐ Diet: low-fat, low-cholesterol, no added salt
☐ Follow-up appointment documented in medical record.

Follow-up appointment made? Date: _______________ Time: _______________ OR

Call Dr. __________________ for an appointment in ____________ days. Phone # ______

Call Dr. __________________ for an appointment in ____________ days. Phone # ______

Call __________________ Cardiac Rehabilitation Program within ____________ days. Phone # ______

If condition worsens, new symptoms develop, or questions arise, call your physician.

I hereby acknowledge receiving the explanation of the above instructions:

Patient’s signature: ___________________ Date: _______________

__ Patient left w/o signing

It is recommended that a copy of this go to medical records, to the patient, and to the physician. You may want to consider triplicate carbonless copy forms.
## Safer Healthcare Now! AMI

### Physician Rx at Discharge from CCU/SDU/ICU/Other Care Area

<table>
<thead>
<tr>
<th>Item</th>
<th>Yes</th>
<th>No</th>
<th>If not, why not?</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ASA</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ordered</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Yes □ No</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ If not, why not?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Allergy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Active bleeding</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Warfarin</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ <strong>Beta Blocker</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ordered</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Yes □ No</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ If not, why not?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Allergy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Bradycardia</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ LV failure</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ SBP &lt; 90 mm Hg</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ PR-interval &gt; 0.24 sec.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Active asthma/reactive airways disease</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ <strong>ACE Inhibitor/ARB</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ordered</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Yes □ No</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ If not, why not?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Allergy or intolerance</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Mod. or severe AS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Creatinine &gt; 200 μmol/L</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Not indicated</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ SBP &lt; 100 mmHg</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Bilateral renal artery stenosis K+ &gt; 4.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>mmol/L</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ <strong>Lipid Lowering Medication</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ordered</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Yes □ No</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ If not, why not?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ At Target Level</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Intolerance</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ CK &gt; 10 x upper limit</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ ALT/AST &gt; 3 x upper limit</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ <strong>Clopidogrel</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ordered</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Yes □ No</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ If not, why not?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Allergy or intolerance</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Not indicated</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ <strong>Nitroglycerine PRN</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ordered on D/C</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Yes □ No</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ If not, why not?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ <strong>Nicotine Replacement Therapy</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Given as inpatient</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Yes □ No</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ If not, why not?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Allergy or intolerance</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Refused</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smoking Cessation Counseling given</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Yes □ No</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ If not, why not?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ <strong>Cardiac Rehab</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ordered</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Yes □ No</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ If not, why not?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ <strong>Diagnosis</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ STEMI</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ NSTEMI</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Angina</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ CABG</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
CR Referral Policy In Ontario

- GAP Tool / "Get with the Guidelines" - Best Practice for ACS
- Priority project for CCN for 2008/09
  - Approved through the OMoHLTC
  - Rolled out at regional cardiac centres
  - Mandated to be implemented across province
  - Soon to be posted on CCN website
- All ACS patients ordered onto a clinical pathway
  - Discharge procedure and contract
  - Component of discharge care is an automatic referral to cardiac rehab
UOHI ACS Clinical Pathway Excerpt: CR Referral

Patient ___________________________ Chart No. – No du dossier ___________________________ Patient ___________________________

<table>
<thead>
<tr>
<th>Date (mm/dd)</th>
<th>Day of Admission (ER – HI)</th>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
<th>Additional Days (Re)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cardiology Mgr Coordinator PIN (H1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Social work consult FRN</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Patient Revascularization Registry Form Completed: □ Yes □ No</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cardiac Rehabilitation Referral done</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Patient Revascularization Registry Form Completed: □ Yes □ No</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dietitian for T Lipids &amp; FRN</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Physiotherapy FRN</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Occupational Therapy FRN</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Patient Revascularization Registry Form Completed: □ Yes □ No</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Echo-cardiogram</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>□ Yes □ No □ N/A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

http://www.ccpnetwork.ca/GWG/resources/ACS_Clinical_Pathway.pdf
### Patient Discharge Information – Acute Coronary Syndrome

**1. Take medicine.** I understand that there are certain medications which may help prevent a future heart attack and may help to extend my life. I will be taking:

<table>
<thead>
<tr>
<th>Medication</th>
<th>Trade Name/Generic Name</th>
<th>Dose</th>
<th>A.M.</th>
<th>Noon</th>
<th>P.M.</th>
<th>Bedtime</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aspirin</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACE Inhibitor or ARB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beta Blocker</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cholesterol-Lowering Agent</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clopidogrel (Plavix)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nitroglycerin</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**2. Quit smoking.** I understand that smoking is a major risk factor in the development of obstructions in arteries and it increases my chances of suffering from a future heart attack. Smoking may also cause other illnesses which may shorten my life. I smoke and have been counseled to stop. **Yes** or **No**

I have been given medication to help me stop smoking. **Yes** or **No**

If I am interested in the smoking cessation program, I can call (613) 761-4753.

**3. Eat a low-fat diet.** I understand that a diet low in cholesterol and fat may help to reduce my chances of suffering a future heart attack. **Yes** or **No**

I have received the “Eat for My Heart’s Content” Diet Education Handout and I am aware of my lipid profile. **Yes** or **No**

**4. Exercise regularly.** I have received activity instructions for the next few weeks, before I start cardiac rehabilitation. **Yes** or **No**

I have been referred to a cardiac rehabilitation program. **Yes** or **No**

If I haven’t heard from the cardiac rehabilitation program within 4-6 weeks and I would like information, I can call (613) 761-4572.

**5. Learn about heart disease.**

I have received cardiac education (discharge book & resource materials) during my hospitalization. **Yes** or **No**

I know what to do if I have a recurrence of my symptoms. **Yes** or **No**

I understand how to take my nitroglycerine spray when I have symptoms. **Yes** or **No**

I have received instructions on my discharge medications. **Yes** or **No**

**6. Follow up with my physician.**

- **I have a follow-up appointment made with a cardiologist at**
- **I need to call Dr.**

I should make an appointment with my family physician within 2-3 weeks.
Conclusions

• Automatic referral can result in significantly greater CR enrollment
  – 3-13x greater
  – Can achieve 85% referral & 70% enrolment
• Gold standard = systematic + patient discussion
• Presentation to participating sites has lead to implementation of standard order sets and discussion on use of EPR to improve referral flow
• Discussions with CR programs re: handling increased pt volumes through evidence-based alternative program models

Toronto General Hospital
Research Program: Understanding & Optimizing Post-Acute Cardiac Care & Recovery

- Cardiac Inpatients
- Cardiac Rehab & Chronic Disease Management
- Primary Care
- Healthy Living in Community

Vulnerable Groups:
- Women
- Low SES
- Rural
- South Asian

Psychosocial Well-being:
- Depression
- Posttraumatic Growth
- Insomnia
- Social Support

HF Stroke DM

CR Program Models

CR Registries & Dashboards

Toronto General Hospital

YU: Central LHIN = YCH, Southlake
UHN: Global Impact
Acknowledgements

• Co-PI: Donna E. Stewart MD, UHN
• Co-Investigators: Alter D., Rush J., Anand S., Williamson K., Harvey P., Oh P., Gupta M.…
• Co-Authors: Kelly Russell, Terry Fair, Gilbert Wu & Paul Oh
• Research Assistants & Graduate Students

• Funding:
GWTG is a national initiative of the AHA to improve guidelines adherence in patients hospitalized with cardiovascular disease.

GWTG uses collaborative learning sessions, conference calls, e-mail and staff support to assist hospital teams improve acute and secondary prevention care systems.

A web-based Patient Management Tool is used for point of care data collection and decision support, on-demand reporting, communication and patient education.
CR

Interactively checks patient’s data with the AHA guidelines
Impact of AHA GWTG-CAD Program on Quality of Care

- N=45,988 pts from 92 US hospitals
- Significant increase (12.7%) in referral to CR following GWTG pathway implementation (p<0.0001)
- No control grp


Toronto General Hospital
AHA GWTG: CR Referral & Enrollment

Usual Referral
N=66
n=25
40%
n=4
6.1%

GWTG Pathway
N=714
n=392
55%
n=139
34%
19% of total

CR Referral

OR=2.3*
P=.08

CR Enrolment

N = 780 AMI patients admitted to a single center during an 18-month period and discharged to home

• Retrospective design

How Many Cardiac Patients Should we Aim to Reach?

UK: In 2000, the National Service Framework for Coronary Heart Disease set a target for 85% of eligible patients to be offered cardiac rehabilitation, the eligible group including patients after AMI, CABG or PCI. Since the publication of this document, however, there has been no increase in the enrolment into cardiac rehabilitation of either AMI or CABG patients.

Bethell et al., JPH 2006
should consider instituting processes that encourage referral of appropriate patients to cardiac rehabilitation/secondary prevention programs (for example, the use of standardized order sets that facilitate this, such as the AHA “Get with the Guidelines” tools). In addition, it is important that referring health care practitioners and cardiac rehabilitation teams communicate in ways that promote patient participation. Of note, Medicare coverage for rehabilitation continues to the
Comparative Effectiveness of CR Referral Strategies in Ontario

1. Automatic (paper or electronic) referral (n=3 wards)
   - prompts to CR referral are electronically generated, such as via electronic health records.

2. Liaison referral (n=7 wards)
   - Allied health professional talks to patients one-on-one regarding CR (i.e., more interpersonal, less universal)

3. Automatic referral + liaison (n=5 wards)
   - Manual standard order, such as a discharge order set

4. Usual referral (n=2 wards)
   - referral to CR is at the discretion of the cardiologist or other physician, signature required.