New Paradigm in Cardiac Rehabilitation

Cardiac Rehabilitation & Resource Centre
Department of Medicine & Rehabilitation
Tung Wah Eastern Hospital
Ms Kaur Sarbjeet, Irene APN
Background

- **WHO – Coronary Heart Disease (CHD)**
  - 2nd top causes of disability and premature death in the world by 2030

- Significant increase in no. of in-pat discharge/deaths

- Projected 26% increase in CHD patients treated in HA

- Cardiac Rehabilitation is Class I level A evidence
## Demands

<table>
<thead>
<tr>
<th>Service</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CHF admissions</strong></td>
<td>HA - 18000 /yr</td>
</tr>
<tr>
<td></td>
<td>HKEC- 2700/yr</td>
</tr>
<tr>
<td><strong>CHD admissions</strong></td>
<td>HK -35000/yr</td>
</tr>
<tr>
<td></td>
<td>HKEC - 800(ACS)/yr</td>
</tr>
<tr>
<td><strong>Percutaneous Coronary</strong></td>
<td>HK - 6000/yr</td>
</tr>
<tr>
<td><strong>Intervention (PCI)</strong></td>
<td>PY- 550/yr</td>
</tr>
<tr>
<td><strong>Cardiac Devices</strong></td>
<td>PY -180 /yr</td>
</tr>
<tr>
<td>(PPM/ICD/CRT/CRT-D)</td>
<td></td>
</tr>
<tr>
<td><strong>Risk Factors Prevalence</strong></td>
<td>HT (25-30%)</td>
</tr>
<tr>
<td></td>
<td>DM (10%)</td>
</tr>
<tr>
<td></td>
<td>Overweight/Obesity(40%)</td>
</tr>
</tbody>
</table>

**Demand for CR is High**
Performance Measure A-1

Referral from In-patient Setting

- Hospitalized with primary diagnosis of
  - Acute myocardial infarction (MI)
  - Chronic stable angina (CSA)
  - Undergone Coronary Artery Bypass Graft (CABG) or Percutaneous Coronary Intervention (PCI) or Cardiac Valve Surgery or Cardiac Transplantation
Performance Measure A-2

Patient Referral from an Out-patient Setting

- Who within 12 months have experienced the following conditions but have not already participated in early outpatient program
  - Acute myocardial infarction (MI)
  - Chronic stable angina (CSA)
  - Coronary Artery Bypass Graft (CABG) Surgery or Percutaneous Coronary Intervention (PCI) or Cardiac Valve Surgery or Cardiac Transplantation
Traditional Model

Hospital-based Rehabilitation

- Immediately after myocardial event
- Education
  - Before physical training
  - Introduction and explanation of therapeutic modalities
  - Rehabilitation targets and risk factors modification
- Exercise component
  - Advices on suitable activities
- Psychological support
- Stress testing
## Traditional Model

### Centre-based Rehabilitation

- 1-2 weeks after discharge
- Duration 1-4 months
- Group exercise few times per week
- Cardiac monitoring

### Patient Education:
- Exercise and daily activities
- Disease processes, stress management, psychosocial assessment, vocational counseling, dietary modification
- Modifying risk factors
Case Management Model

• Case manager, usually a Nurse or Exercise Physiologist
  - coordinate care and identify needs
  - triage
  - provide surveillance on safety and self-efficacy
  - follow-up
  - measure outcomes

• Combination of 3 concepts
  Cardiac Rehabilitation, Secondary Prevention and Disease Management
Study on Case Management Model

MULTIFIT (Kaiser Permanente Health Care System)

- Case management program for patients hospitalized with acute MI
- Interventions-
  - Education and counselling on smoking cessation, risk factors modification and home exercise etc…
  - Medications
- Initial clinic visits, then mostly telephone / mail follow-up and surveillance
- Use of treatment algorithms and standardized procedures
- With outcomes of improved cardiac risk factors, treatment compliance and satisfaction
- Cost-effectiveness
- Concern: Less “face-to-face” contact which leading to reduction in self-responsibility and cooperation
Our Nurse Clinic

• Accredited in 2011

• Monitor medication & diet compliance, clinical stability, well being, quality of life and decreased the readmission rate

• Early consultation before medical FU

• Regular monitoring

• Make suitable referral
Teaching of Self Home Monitoring Strategies

- Self BP Monitoring
- Drug Compliance
- Self LL Oedema Monitoring
- Self BW Monitoring
Interactive Teaching Activities

- Group Education
- 3D Model Display
- Interactive Computer Programs
Nursing Role in Cardiac Disease Care

PYNEH
SOPD/Day centre
In-pat

RH
SOPD
In-pat

TWEH convalescence/Rehabilitation in-pat

TWEH CRRC
Ambulatory CR Program

CRN
CFYH
TSKKWM C/HOH
Methodist KLH
A Proactive Nursing Approach to Enhance Referral and Participation of Patients to CR Program 2011

A specialty nurse visits PYNEH Cardiac SOPD weekly to recruit patients. Patient will be triaged to TWEH or NGOs according to their ability and needs.

Results:
- Before the implementation, the number of received referrals from Cardiac SOPD was only 1 in year 2007 and 10 in 2008.
- The number of referrals increased to 62 in year 2010 and 135 in the 2011 (Fig. 1). It contributes to 13.8% and 27% of the total number of referral to CRRC.
- High participation rate were recorded with 82.8% and 92.8% in year 2010 and 2011 respectively (Fig 2).
Effects of a Nurse-led Heart Failure Clinic on Patient Outcomes 2008

44 patients completed the study
40 patients did not attend the clinic (their baseline data were collected upon hospital discharge)

Re-admission rate was compared between those who attended and did not attend the clinic

<table>
<thead>
<tr>
<th></th>
<th>No attending N= 40</th>
<th>Attending N=44</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age: mean (range, SD)</td>
<td>77.45 (57-90, SD + 8.0)</td>
<td>74.25 (47-94, SD + 9.59)</td>
<td>0.103</td>
</tr>
<tr>
<td>Re-admission episodes mean (SD)</td>
<td>2.72 (SD + 2.46)</td>
<td>0.78 (SD + 1.8)</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Changes of outcome variables across time

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>3 months</th>
<th>6 months</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jugular venous pressure*</td>
<td>3.8</td>
<td>3.9</td>
<td>4.15</td>
<td>0.552</td>
</tr>
<tr>
<td>Systolic blood pressure*</td>
<td>131</td>
<td>125</td>
<td>121</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Diastolic blood pressure*</td>
<td>71</td>
<td>66</td>
<td>64</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Body weight*</td>
<td>59.7</td>
<td>56.6</td>
<td>52.4</td>
<td>0.015</td>
</tr>
<tr>
<td>Pitting edema*</td>
<td>0.34</td>
<td>0.30</td>
<td>0.25</td>
<td>0.543</td>
</tr>
</tbody>
</table>

* Mean values
5.1 Cardiovascular disease prevention in primary care: role of nurse

### Recommendation on nurse coordinated care

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Class</th>
<th>Level</th>
<th>GRADE</th>
<th>Ref.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurse coordinated prevention programs should be well integrated into healthcare system</td>
<td>IIa</td>
<td>B</td>
<td>Strong</td>
<td>35,530,531</td>
</tr>
</tbody>
</table>

**Most important**

*Nurse-led clinics or nurse coordinated multidisciplinary prevention programs are more effective than usual care in reducing cardiovascular risk, in a variety of healthcare settings.*
# Home-based Cardiac Rehabilitation

Systematic review finds no difference in effect between home and centre-based cardiac rehabilitation on mortality, morbidity and modifiable risk factors in patients with CHD

<table>
<thead>
<tr>
<th>Service</th>
<th>Professional role</th>
</tr>
</thead>
</table>
| **Home-based Cardiac Recovery**  | ✓  Empower staff in principles and application of cardiac rehabilitation  
|                                  | ✓  Assist with development of clinical pathways  
|                                  | ✓  Develop a system for referral to outpatient rehabilitation                     |
| **Home-based Cardiac Rehabilitation** | ✓  Identify home-based candidates  
|                                  | ✓  Individualize exercise prescription  
|                                  | ✓  Develop a system of regular follow-up                                            |
| **Home-based Exercise Maintenance** | ✓  Recommend maintenance rehabilitation options  
|                                  | ✓  Update exercise prescriptions  
|                                  | ✓  Develop a system for periodical maintenance                                      |

(Rogustski et al., 1999)
Alternative Cardiac Rehabilitation Models

Web Based Education

Telehealth Linkages

Self-Management Concept

Provides clinical decision support & case management

Professional linkages and support

Community linkages

How can nurses contribute more in CR?
References

AACVPR/ACCF/AHA 2010 Update: Performance Measures on Cardiac Rehabilitation for Referral to Cardiac Rehabilitation/Secondary Prevention Services


European Guidelines on Cardiovascular Disease Prevention in Clinical Practice (version 2012).


Acknowledgements to Our Enthusiastic Team Members:

Ms Yeung Sim Heung, GMN
Ms Flora Mak, DOM
Ms Tang Siu Wai, WM
Ms Ma Ka Wai, APN
Ms Lau Pui Shan, RN
Ms Wong Man Chi, RN
Thank you !