Effectiveness of Case Management Model on Chronic Heart Failure (CHF) Patients

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HA Convention 2008
Background (1)

- Heart failure (HF) is a complex syndrome
- >5 million Americans diagnosed in year 2004
- Mortality rate ↑ 28% in the past 10 years (American Heart Association)
- In Hong Kong, CHF patients in QEH account for 11-12% of total hospital admissions in all HA hospitals → ↑ burden on health care system
## Number of CHF Patients and their Admission

<table>
<thead>
<tr>
<th>Year</th>
<th>IP Admissions HA</th>
<th>IP Admissions Patient Headcount HA</th>
<th>IP Admissions Patient Headcount in QEH</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>27405</td>
<td>15812</td>
<td>2500</td>
</tr>
<tr>
<td>2005</td>
<td>27195</td>
<td>15916</td>
<td>2568</td>
</tr>
<tr>
<td>2006</td>
<td>25116</td>
<td>14872</td>
<td>2509</td>
</tr>
<tr>
<td>2007</td>
<td>16003</td>
<td>9917</td>
<td>1649</td>
</tr>
<tr>
<td>Average</td>
<td>26572</td>
<td>15533</td>
<td>2526</td>
</tr>
</tbody>
</table>

Patients diagnosed with CHF (ICD9 CM Code 402, 404 & 428) = 11% of total hospital admissions in HA

Data Source from CDARS
Background (2)

- Although effective therapies can improve functioning and survival, patients are not receiving full benefits of existing knowledge.
- Case management model provides patients with tailored-made and practical help in managing their conditions.
Case Management Model Definition

- Traditional Model (crisis intervention) → Case Management Model:
  - More proactive disease management
  - Promote health seeking behavior
  - Improve compliance
  - Patient empowerment
Case Management Model definition (2)

- Continuous monitoring following discharge from hospital by specialty nurse through regular telephone calls with hotline provided → build up rapport & reinforce self management
  - weight monitoring
  - sodium and fluid restriction +/- dietary advice
  - exercise recommendations
  - medication review
  - social and psychological support
Objective

- To evaluate the effectiveness of case management model on
  - Hospital bed occupancy
  - Physical functioning
Case Management Model in Q.E.H

- 4-month intensive multi-disciplinary program in the initial phase
- Educational talks by 6 disciplines
- 8-month subsequent phase—monthly telephone FU by cardiac nurses (30-60 min/week)
- Clinical end-points reported at 4 months (6MWT, SF-12 & NYHA classification) and 1 year (Readmission & LOS)
Contributions of 6 disciplines

- Cardiologists – patient referral and medical supports
- Cardiac nurses – case managers
- Physiotherapists – exercise prescription
- Pharmacists – drug knowledge
- Dietitians – diet advice
- Clinical psychologists – psychological support
- Community partnership – “Care For Your Heart”
Program content:

- Education (Dr, PT, Nurse, C.P., Pharm., Diet.)
- Assessment by individual profession
- Exercise therapy (assessment, exercise training and home exercise prescription by PT)
- Patient empowerment on self-monitoring and home management
- Three sessions of program at the span of 16 weeks
- Telephone follow-up by nursing colleague
Methods

- Retrospective data collection from March 2005 to Feb 2008 in QEH
- Patients admitted for CHF would be screened and assessed by Cardiac Ambulatory Care Team
Methods (2)

Outcome measures:

**Initial phase**
- 6-minute walk test (6MWT)
- Chinese (Hong Kong) Short Form-12 Health Survey (SF-12): Physical Component Score and Mental Component Score- self perception on own health
- NYHA (New York Heart Association) classification

**Subsequent phase**
- 1-year re-admission rates and hospital length of stay
Results

- March 2005 to February 2008
- 127 patients were recruited
- 71 males and 56 females
- Mean age = 69 ± 11 years
- Ejection fraction: 47.4 ± 18.2%
- 14 patients died, 5 of them died of end stage HF, 9 from other medical diseases and 21 patients dropped out
- 89 patients completed initial phase
Distance in 6-minute walk test (6MWT)

Mean distance (feet)

Pre 16 weeks

924.41 1020.95

P<0.01

↑ in distance covered ⇒ ↑ exercise tolerance
Short Form-12 (SF-12) Health Survey
Physical Component Score

Patients perceived a better physical health status

Mean score

Pre 16 weeks

P <0.01
Short Form-12 (SF-12) Health Survey
Mental Component Score

Mean score

P = 0.674
Change in Functional Class

29 (45%) - improved 1 class
1 (1%) - improved 2 class
28 (45%) - no change
7 (10%) - deteriorated

P< 0.000, Z -4.27

(Wilcoxon signed ranks test for pre- and post- test functional level)
1-year readmission rate due to CHF

No. of admission

Pre: 1.44
1 year: 0.32

p=0.00
Average Hospital Length of Stay

- Pre: 10.37 days
- 1 year: 2.03 days

p=0.00
Conclusions

Case Management Model utilizing minimum nursing time:

- Provides evidence-based care
- Patients perceive better physical health status
- Improves physical functional class
- Shortens hospital length of stay
- Reduces hospital readmissions
- Promotes patient health seeking behavior

Case Management Model for CHF is cost-effective!
Limitations

- With the existing resources, not all the patients admit for CHF were recruited into program.

- Monthly telephone calls (instead of more frequent calls) may limit patients’ compliance behaviour.
Further Directions

• Expansion of current CHF program to recruit more patients
• Case management model approach not only beneficial to CHF patients but also other chronic illnesses