Effects of a transitional palliative care model on patients with end-stage heart failure

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Universal health coverage and palliative care: Don’t leave those suffering behind
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Don’t leave those suffering behind ...

“The wound [suffering] is the place where the Light enters you.” (Jalaluddin Rumi, a Persian poet)

Trajectory of illness of ESHF vs Cancer

Problems commonly encountered by ESHF patients

<table>
<thead>
<tr>
<th>Physical</th>
<th>Psychological</th>
<th>Social</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fatigue</td>
<td>Feelings of uncertainty</td>
<td>Isolated &amp; lonely</td>
</tr>
<tr>
<td>Dyspnoea</td>
<td>Fear</td>
<td>Carer burden</td>
</tr>
<tr>
<td>Swelling of limbs</td>
<td>Facing death</td>
<td></td>
</tr>
</tbody>
</table>
Low use of PC services (UK non-cancer 5%; HF 12%)

Disease-related – unpredictable disease trajectories, prognostication of life span difficult
Person-related – care providers lack appreciation of PC concept, patients unaware that PC is a treatment choice
System-related – lack of care coordination of specialties of HF and PC; clear guidelines of service integration

Patient journey

Support, meeting service needs
Healthcare intervention with deliberate design

Transitional care encompasses a broad range of services and environments designed to promote the safe and timely passage of patients between levels of health care and across care settings.

TCP (Transitional Care palliative) ESHF Program Design

<table>
<thead>
<tr>
<th>HF national guidelines for PC</th>
<th>4 C features of Transitional care</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Case management with periodic review</td>
<td>• Comprehensiveness</td>
</tr>
<tr>
<td>2. Multidisciplinary approach</td>
<td>• Continuity</td>
</tr>
<tr>
<td>3. Discussion of treatment preferences and EOL issues</td>
<td>• Coordination</td>
</tr>
<tr>
<td></td>
<td>• Collaboration</td>
</tr>
</tbody>
</table>

TCP (Transitional Care palliative) ESHF Program Design

- Nurse case managers (NCMs) – qualified PC home nurses with HF care, trained for intervention
- Volunteers – nursing students, trained for intervention
- Omaha System, a comprehensive assessment-intervention-evaluation framework
- Protocol based intervention and referrals
- Care goals commonly agreed between nurse & patients
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**Intervention**
- **Weeks 1-4**
  - Week 1: Home visit (NCM)
  - Week 2: Call (NCM)
  - Week 3: Home visit (TV)
  - Week 4: Call (NCM)
- **Weeks 5-12**
  - Monthly Home visit (NCM)
  - Monthly Home visit (TV)
  - Monthly Call (TV)
- Till end of the year/death
  - Monthly Home visit
  - Monthly Calls

**Control**
- **Weeks 1-4**
  - Unstructured routine care including home visits and calls
  - Week 1: Control Social Call
  - Week 3: Control Social Call
- **Weeks 5-12**
  - As above
- Till end of the year/death
  - As above

**Subjects Criteria**

**Inclusion**
1. Met 2 of the following
   i. NYHA Stage III or IV
   ii. Thought to be last year of life by clinicians
   iii. Repeated HF-related hospital admissions (3 in a year)
   iv. Refractory symptoms despite treatment
2. Cantonese speaking
3. Contactable by phone
4. Live in the service area
5. Referral acceptable by PC team

**Exclusion**
1. Discharged to institutions
2. Inability to communicate
3. Diagnosed with severe psychiatric disorders
4. Recruited to other programmes

**Table 2: Readmission at 4 and 12 weeks**

<table>
<thead>
<tr>
<th></th>
<th>Control</th>
<th>Intervention</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of readmissions at 4 weeks (mean, SE)</td>
<td>0.41 (0.10)</td>
<td>0.21 (0.07)</td>
<td>0.10</td>
</tr>
<tr>
<td>Number of readmissions at 12 weeks (mean, SE)**</td>
<td>1.10 (0.10)</td>
<td>0.42 (0.10)</td>
<td>0.025</td>
</tr>
<tr>
<td>Readmissions within 28 days (n, %) No</td>
<td>29 (70.7%)</td>
<td>34 (79.1%)</td>
<td>0.36</td>
</tr>
<tr>
<td>Readmissions within 28 days (n, %) Yes</td>
<td>12 (29.3%)</td>
<td>9 (20.9%)</td>
<td></td>
</tr>
<tr>
<td>Readmissions within 44 days (n, %)* No</td>
<td>16 (39.0%)</td>
<td>20 (47.6%)</td>
<td>0.30</td>
</tr>
<tr>
<td>Readmissions within 44 days (n, %) Yes</td>
<td>25 (60.9%)</td>
<td>14 (32.4%)</td>
<td></td>
</tr>
</tbody>
</table>

*Tested using Poisson regression and z² test. p=0.05. **p=0.01.
Amongst the usual group subjects (n=41), 8 subjects have received various amount of transitional care support

Home visits per patient count
- Received 1 visit (n=3)
  (Note: 2 patients visited by the PC team, 1 patient visited by geriatric team)
- Received 2 visits (n=2)
  (Note: All visits by PC team)
- Received 3 visits (n=1)
  (Note: All visits by geriatric team)
- Received 6 visits (n=1)
  (Note: All visits by geriatric team)
- Received 8 visits (n=1)
  (Note: All visits by geriatric team)

### McGill QOL

| Group | Before 1 week | Before 4 weeks | After 1 week | After 4 weeks | Recall Score | McGill QOL | McGill QOL
<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>34.10 (5.02)</td>
<td>34.00 (4.97)</td>
<td>34.00 (4.97)</td>
<td>34.00 (4.97)</td>
<td>6.386 (0.52)</td>
<td>6.386 (0.52)</td>
<td>6.386 (0.52)</td>
</tr>
</tbody>
</table>

### CHFQ-Chinese

| Group | Before 1 week | After 1 week | CHFQ Groups
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>34.10 (5.02)</td>
<td>34.00 (4.97)</td>
<td>6.386 (0.52)</td>
</tr>
</tbody>
</table>

**Notes:**
- CHFQ: Chinese Health and Functional Questionnaire; QOL: Quality of Life;
- *p* = 0.05

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Cost-effectiveness

To achieve a predetermined objective at least cost or a desire to maximise the benefit to the population of patients served.

TCP-ESHF costs

- Pre-program training (trainer + trainees)
- Intervention (NCM, volunteers)

Comparator costs

Customary PC service (unstructured home visits)

Healthcare costs (ER + hospital days)

<table>
<thead>
<tr>
<th>Study group</th>
<th>Cost ($)</th>
<th>Unit cost ($)</th>
<th>Total cost ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control group</td>
<td>N</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total cost (A + B + C)</td>
<td>28 days</td>
<td>337,450</td>
<td>647,104</td>
</tr>
<tr>
<td></td>
<td>84 days</td>
<td>435,280</td>
<td>1,484,644</td>
</tr>
<tr>
<td>Total cost per case</td>
<td>28 days</td>
<td>7619</td>
<td>15,783</td>
</tr>
<tr>
<td></td>
<td>84 days</td>
<td>10,123</td>
<td>96,296</td>
</tr>
<tr>
<td>Incremental cost</td>
<td>28 days</td>
<td>-309,654</td>
<td></td>
</tr>
<tr>
<td></td>
<td>84 days</td>
<td>-1,049,184</td>
<td></td>
</tr>
<tr>
<td>Incremental cost per case</td>
<td>28 days</td>
<td>-7915</td>
<td></td>
</tr>
<tr>
<td></td>
<td>84 days</td>
<td>-26,084</td>
<td></td>
</tr>
</tbody>
</table>

*THP-ESHF: transitional home-based palliative end-stage heart failure.

\(A=\text{training costs}; \ B=\text{ER costs}; \ C=\text{hospital costs} \)
Discussion

- A structured home-based transitional ESHF-PC program is effective in reducing readmissions, controlling symptoms, enhancing QOL.
- Professionals supported by volunteers – cost-effective.

What is the silver bullet?

1. Explicit referral guidelines
   - Case identification
   - Appropriate referral

2. Structured nurse case management supported by PC doctors & team
   - Symptom management, particularly dyspnoea and fatigue
   - Make adjustment to medications supported by PC doctors
   - Arrange early referral, if appropriate
   - Holistic care
C_104_O2: 但係佢係甘架啦。如果腫得緊要，食多粒去水丸囉！(自己調校呀?) 咪係醫生話呀！... [L2-4]

I_232_O2: (姑娘應該有教你話，有少少水腫唔好緊要呢時應該可以嘅樣做嘅嘅？) 食去水丸囉... (平日都有食嘅？) 平日有嘅？出院到而家都係。甘我今朝覺得腳腫，甘佢就叫我食半粒去水丸... 今朝就開始食半粒... (甘個係叫你食半粒嘅？) 呓呀姑娘呀 (你有打比佢問嘅？) 姐係佢磅呀吗... 朝朝磅，同埋量血壓呀... 如果重左就食去水丸... (佢教既？) 咪係... (食完去水丸有冇消返腫？) 都係甘樣... 食左半粒都係甘樣 (工人：岩岩食呀) [L245-257]

C_225_O2: (萬一你氣喘，你會唔會話點樣自己控制返個呼吸呀？) 如果氣喘控制唔到甘咪又入醫院囉... (去返醫院？) 會唔會自己... 坐好... 坐高個人呀... 如果重左呢就要食去水丸... (佢教既？) 咪係... (你有打比佢問呀？) 係... 姐係你辛苦呢就個鼻吸氣... 口就呼氣... 深呼吸得唔得... 都係甘樣... 係都係甘樣 (工人：岩岩食呀) [L156-165]

I_112_O2: (都年紀大啦，可能身體有時又會慢慢虛弱呀，甘如果個人再差既時呢，有冇諗過有咩情況呀？) 冇呀，冇諗呀，點知呀，過一日抖一日啦... 勤下，如果暈暈嘅話下覺都話唔定架嗎... 话唔定架嗎，有左心臟病嘅？ 好難講架嗎，冇諗啦，勤得就勤... 食得就食啦... 同埋整到佢呀！... (有左心臟病？) 好難講架嗎，冇諗啦，勤係度呀... 討咩呀，做唔到呀... 有得諗架啦... 你死咪死，生咪生... 當你想佢返學對唔對？而家冇得返學嚇，叫佢返學啦。第二朝又返工，後生就慘啦，D仔女返學又要洗校服啦... 還係有咩呀？... 你死咪死，生咪生... 最想仔女順順景景搞店我就算數啦，而家冇得傾架啦幾廿歲... 後生放工返黎又要買放煮飯洗衫... 第二朝又返工，後生就慘啦，D仔女返學又要洗校服啦... [L139-143]

I_112_O2: (有冇同你提過關於插唔插喉呀？) ... 都同我講清楚，啲我地就俾個訊息佢，唔好救嘅... 呓呀唔好救，唔好夾我啦... (唔好搶救？) 妻：梗係啦，費事整到佢肋骨斷又剩，好似我呀媽... 都一早同佢簽左唔好救唔好救，唔好救囉，救黎做乜姐... (有個文件係到嘅？) 有文件架啦，有信係到... [L332-340]
Policy & system support

• Alignment of financial incentives and system support for continuum of ESHF care
• General PC vs Specialist PC

Limitations

• High loss of follow-up – control (24.4%), intervention (14.0%)
• Small sample size

Acknowledgement

• Nurse case managers and PC physicians in Grantham Hospital, Haven of Hope Hospital and United Christian Hospital
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EPL/14thHKPCS/Notes/10233/20171018
"You treat a disease, you win, you lose. You treat a person, I guarantee you, you’ll win, no matter what the outcome."

— Patch Adams