VIRTUAL WARD PROGRAMME
FOR FRAIL OLDER PATIENTS
AFTER DISCHARGE

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7 MAY 2014
An innovative community health care model in HK
Nurse-led hospital-level care in patient’s home
39 beds in the ward, serving ≥ 240 patients/yr.
Multidisciplinary team collaboration to provide comprehensive & coordinated care

Aims:
• To reduce avoidable hospitalization
• To improve quality of life of patients & their family

Service offered to patient since Oct 2011:
In UCH(KEC), KH(KCC) & PMH (KWC)
• Living at home with Carer
• With high admission risk (*HARRPE ≥ 0.4)
• Chronic diseases requiring complex care e.g. COPD, CHF, Renal failure, Cancer etc.

*HARRPE: High Admission Risk Reduction Program for the Elderly is to screen those high-risk elderly on the rate of unplanned readmission. The score is from 0 to 1; 0.4 represents 40% of unplanned readmission rate. (Source: HAHO 2006)
CARE IN VIRTUAL WARDS

- Hospital level care at patient’s home
- Symptoms control, optimize function & coping
- Medical & nursing specialized assessment & investigations
- Patient / carer self-care empowerment
  - Ventilator care, domiciliary rehydration therapy
- Schedule /ad hoc doctor/ nurse visit/ Allied Health visit
- Telephone hotline, flexible & extended service hours
- Emergency drug kit
- Fast track clinic / direct clinical admission
- Report, ward round & case conference
Virtual Wards in KH(KCC), UCH (KEC) & KWC PMH Hospital Service Utilizations (Pre & post 90 days) (Apr. 2012 - 31 Mar. 2013)

<table>
<thead>
<tr>
<th></th>
<th>N = 252</th>
<th>AED</th>
<th>E-ADM</th>
<th>Bed Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre</td>
<td>451</td>
<td>403</td>
<td>2676</td>
<td></td>
</tr>
<tr>
<td>Post</td>
<td>164</td>
<td>138</td>
<td>794</td>
<td></td>
</tr>
<tr>
<td>Difference in %</td>
<td>-64%</td>
<td>-66%</td>
<td>-70%</td>
<td></td>
</tr>
</tbody>
</table>
VIRTUAL FIGURES
An evaluation of the impacts of ‘Virtual Wards’ on frail patients receiving community nursing service at home: A case-based mixed-method approach

Joint Project
Aims of the Study

• To evaluate the impacts of Virtual Ward on frail patients in comparison with the usual community nursing service

• To explore the experiences of patients, careers and healthcare professionals with respect to the Virtual Ward service.
Study Design

A case-based mixed-method approach

1. The matched-control quasi-experimental study
   (3-month follow-up survey or till discharge from
   Virtual Ward or patient deceased)

2. The in-depth individual interviews (*in separate report*)

Note: a case = a patient-carer dyad
Matched-control Quasi-experimental Study

**Intervention group**
40 patient-carer dyads recruited from KEC, KCC and KWC

**Matched control group**
40 matched patient-carer dyads recruited from NTWC

**Virtual Ward Service**

**Community Nursing Service**

Face-to-face survey on 1\textsuperscript{st} month & 3\textsuperscript{rd} month
(or death or early discharge from the Virtual Ward Service)

**Matching criteria:**
1. disease type of the patient
2. frailty level of the patient
3. gender of the patient
4. age of the patient (± 5 years)
5. the carer’s relationship with the patient
## Outcome Measures

### Patients

1. Changes in health service utilizations
   - no. of AED attendance
   - no. of unplanned hospital admission
   - no. of hospital bed days

2. Changes in quality of life
   - Quality-of-Life Concerns in the End of Life Questionnaire (mQOLC-E) (Chan & Pang, 2008)

3. Level of satisfaction with the service
   - A researcher-developed satisfaction questionnaire

### Carers

1. Changes in level of anxiety and depression
   - Hospital Anxiety and Depression Scale (HADS) (Zigmond & Snaith, 1983)

2. Changes in difficulties in handling common problems as a family carer
   - Caregiver Assessment Scale (CAS) (Mackenzie, Holroyd, & Lui, 1998)

3. Changes in burden in taking care of the patient
   - Caregiver Strain Index (CSI) (Robinson, 1983)

4. Level of satisfaction with the service
   - A researcher-developed satisfaction questionnaire
# Hospital Service Utilization

<table>
<thead>
<tr>
<th>Hospital service</th>
<th>N</th>
<th>Intervention group Mean±SD</th>
<th>Control group Mean±SD</th>
<th>p-value(^1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of hospitalization via clinical admission in the past 90 days (Days)</td>
<td>39</td>
<td>-1.21 ± 7.78</td>
<td>-3.00 ± 12.46</td>
<td>0.62</td>
</tr>
<tr>
<td>Number of admissions via clinical admission in the past 90 days</td>
<td>39</td>
<td>-0.56 ± 1.64</td>
<td>-0.21 ± 1.03</td>
<td>0.26</td>
</tr>
<tr>
<td>Length of hospitalization via emergency admission in the past 90 days (Days)</td>
<td>39</td>
<td>-11.62 ± 17.91</td>
<td>-4.38 ± 26.41</td>
<td>0.14</td>
</tr>
<tr>
<td>Number of admissions via emergency admission in the past 90 days</td>
<td>39</td>
<td>-1.41 ± 1.23</td>
<td>-0.77 ± 1.31</td>
<td>0.049*</td>
</tr>
<tr>
<td>Number of A&amp;E attendance in the past 90 days</td>
<td>39</td>
<td>-1.51 ± 1.25</td>
<td>-1.08 ± 1.48</td>
<td>0.29</td>
</tr>
</tbody>
</table>

\(^1\) Wilcoxon Signed Ranks Test

* p-value < 0.05,  ** p-value < 0.01,  *** p-value < 0.005
## Hospital Service Utilization

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<tr>
<th>Hospital service</th>
<th>N</th>
<th>Intervention group Mean±SD</th>
<th>Control group Mean±SD</th>
<th>p-value¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of hospitalization via clinical admission in the past 90 days (Days)</td>
<td>24</td>
<td>-1.75 ± 6.70</td>
<td>-3.33 ± 1.71</td>
<td>0.50</td>
</tr>
<tr>
<td>Number of admissions via clinical admission in the past 90 days</td>
<td>24</td>
<td>-0.50 ± 1.64</td>
<td>-0.21 ± 0.78</td>
<td>0.80</td>
</tr>
<tr>
<td>Length of hospitalization via emergency admission in the past 90 days (Days)</td>
<td>24</td>
<td>-12.54 ± 21.74</td>
<td>0.13 ± 25.12</td>
<td>0.12</td>
</tr>
<tr>
<td>Number of admissions via emergency admission in the past 90 days</td>
<td>24</td>
<td>-1.54 ± 1.22</td>
<td>-0.67 ± 1.49</td>
<td>0.038*</td>
</tr>
<tr>
<td>Number of A&amp;E attendance in the past 90 days</td>
<td>24</td>
<td>-1.63 ± 1.24</td>
<td>-1.25 ± 1.59</td>
<td>0.50</td>
</tr>
</tbody>
</table>

¹ Wilcoxon Signed Ranks Test
* p-value < 0.05,  ** p-value < 0.01,  *** p-value < 0.005
## QoL Scores of Patients

<table>
<thead>
<tr>
<th>mQOLC-E Dimension(^1)</th>
<th>N</th>
<th>Intervention group</th>
<th>Control group</th>
<th>p-value(^2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall mQOLC-E</td>
<td>18</td>
<td>0.60 ± 0.56</td>
<td>0.07 ± 0.56</td>
<td>0.02*</td>
</tr>
<tr>
<td>Physical discomfort</td>
<td>22</td>
<td>0.67 ± 0.92</td>
<td>0.20 ± 0.96</td>
<td>0.17</td>
</tr>
<tr>
<td>Food-related concerns</td>
<td>22</td>
<td>0.82 ± 0.87</td>
<td>-0.14 ± 0.95</td>
<td>0.006**</td>
</tr>
<tr>
<td>Care and support</td>
<td>21</td>
<td>0.43 ± 0.46</td>
<td>0.12 ± 0.59</td>
<td>0.09</td>
</tr>
<tr>
<td>Negative emotions</td>
<td>20</td>
<td>0.73 ± 0.74</td>
<td>0.02 ± 1.03</td>
<td>0.004***</td>
</tr>
<tr>
<td>Existential distress</td>
<td>20</td>
<td>0.72 ± 1.06</td>
<td>0.15 ± 0.81</td>
<td>0.06</td>
</tr>
<tr>
<td>Value of life</td>
<td>19</td>
<td>0.22 ± 0.85</td>
<td>-0.01 ± 0.40</td>
<td>0.23</td>
</tr>
</tbody>
</table>

\(^1\) Scores range from 1 = ‘the least satisfaction’ to 4 = ‘the most satisfaction towards the condition’

\(^2\) Wilcoxon Signed Ranks Test

* p-value < 0.05,  ** p-value < 0.01,  *** p-value < 0.005
## Psychosocial Characteristics & Satisfaction of Carers

<table>
<thead>
<tr>
<th>Psychological characteristics</th>
<th>N</th>
<th>Intervention group</th>
<th>Control group</th>
<th>p-value&lt;sup&gt;5&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Mean±SD</td>
<td>Mean±SD</td>
<td></td>
</tr>
<tr>
<td><strong>HADS Depression</strong>&lt;sup&gt;1&lt;/sup&gt;</td>
<td>31</td>
<td>0.19 ± 2.29</td>
<td>-0.55 ± 2.55</td>
<td>0.48</td>
</tr>
<tr>
<td><strong>HADS Anxiety</strong>&lt;sup&gt;1&lt;/sup&gt;</td>
<td>31</td>
<td>-2.00 ± 3.48</td>
<td>-1.09 ± 3.02</td>
<td>0.19</td>
</tr>
<tr>
<td><strong>Caregiver Assessment Scale (CAS-C)</strong>&lt;sup&gt;2&lt;/sup&gt;</td>
<td>31</td>
<td>-6.36 ± 9.84</td>
<td>-3.68 ± 10.17</td>
<td>0.25</td>
</tr>
<tr>
<td><strong>Caregiver Strain Index (CSI-C)</strong>&lt;sup&gt;3&lt;/sup&gt;</td>
<td>31</td>
<td>-2.26 ± 3.52</td>
<td>-2.06 ± 2.74</td>
<td>0.94</td>
</tr>
<tr>
<td><strong>Satisfaction to the medical service</strong>&lt;sup&gt;4&lt;/sup&gt;</td>
<td>31</td>
<td>1.06 ± 2.21</td>
<td>0.42 ± 2.39</td>
<td>0.11</td>
</tr>
</tbody>
</table>

1 Scores of depression and anxiety range from 0 to 21 with higher scores indicating more depression and anxiety respectively
2 CAS-C total score ranges from 0 to 57 with higher scores indicating greater needs
3 CSI-C total score ranges from 0 to 13 with higher scores indicating higher levels of strain
4 Scores range from 1 to 10 with higher scores indicating higher satisfaction
5 Wilcoxon Signed Ranks Test
* p-value < 0.05, ** p-value < 0.01, *** p-value < 0.005
• Meeting service needs of patients and carers
• Extending VW service to other clusters
• Further studies to VW service
• A reference for future innovations of healthcare models
• Training on palliative care, EoL & advanced communication skills
SUCCESS ELEMENTS IDENTIFIED

• Targeting patients
• Comprehensive, intensive, coordinated & timely home care
• Multi-disciplinary healthcare team
• Flexible working schedule & extended service hours.
• Effective communication
CONCLUSION

• Concept of ‘Virtual Ward’
  – New community care model
  – Effective innovative approach
    • Reduce unplanned hospital admissions
    • Improve patient’s quality of life
    • Patients/carers – very satisfied

• Support adoption of the ‘Virtual Ward’ in HK
HAHO

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Thank you