Clinical Experience

A New Model for End-of-Life Care in Nursing Homes

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Keywords: End-of-life care model, nursing homes

ABSTRACT

Objectives: This study aimed to promote quality end-of-life (EOL) care for nursing home residents, through the establishment of advance care plan (ACP) and introduction of a new care pathway. This pathway bypassed the emergency room (ER) and acute medical wards by facilitating direct clinical admission to an extended-care facility.

Methods: An audit on a new clinical initiative that entailed the Community Geriatrics Outreach Service, ER, acute medical wards, and an extended-care facility during winter months in Hong Kong.

Results: A total of 76 patients were hospitalized from January to March 2013. Of them, 30 (39%) were directly admitted to the extended-care facility, either through the liaison of Community Geriatrics Outreach Service (group A, 19/76, 25%) or transferred from the ER (group B, 11/76, 14%). The remaining 46 patients (group C, 61%) were admitted via the ER to acute medical wards following the usual pathway, followed by transfer to an extended-care facility if indicated. The ACP compliance rate was nearly 100%. In the extended-care unit, groups A and C had similar ALOS of 11.8 and 11.1 days, respectively, whereas group B had a shorter stay of 7.6 days. The ALOS of group C in acute medical wards was 3.5 days. The in-hospital mortality rates were comparable in groups A and C of 26% and 28%, respectively, whereas group B had a lower mortality rate of 18%.

Conclusions: Nearly 40% of EOL patients could be managed entirely in an extended-care setting without compromising the quality of care and survival. A greater number of patients may benefit from the EOL program by improving the collaboration between community outreach services and ER; and extending hours for direct clinical admission to an extended-care facility.

Keywords: End-of-life care model, nursing homes

In Hong Kong, chronic diseases, such as chronic obstructive pulmonary disease, congestive heart failure, cerebrovascular accident, and dementia-related complications, account for a high level of healthcare utilization, especially during the winter months when patients are more likely to experience acute exacerbations. This phenomenon, known as winter-surge, is associated with an increase in attendances and lengthy waiting times in the emergency room (ER), and severe congestion in acute medical wards. Although only 7% of older people in Hong Kong are institutionalized, the 'Revolving Door Syndrome,' characterized by repeated hospitalizations, is very common among nursing home residents. In Hong Kong, the early (≤28 days) unplanned readmission rate to acute medical units of public hospitals is 2-fold higher among institutionalized older people than those living in the community (ie, 36% vs 18%). Most of these patients had multiple comorbidities and may have reached their end-of-life (EOL) with a life expectancy of less than 12 months.

The Prince of Wales Hospital (PWH) is a 1600-bed acute general hospital, which serves a catchment population of 0.7 million in Shatin, Hong Kong, of which 12% are older people aged over 65. There are 4800 nursing home places in the district, and these institutions
are supported by a Community Geriatric Assessment Team (CGAT), which provides on-site medical care to the residents. Of the older people hospitalized with community-acquired pneumonia at PWH, nearly 25% live in nursing homes.\(^5\) Many older patients are transferred to an extended-care facility, Shatin Hospital, for subacute care and rehabilitation. Consequently, the average length of stay (ALOS) at the PWH is only 5.5 days. In Hong Kong, an extended-care facility is a ‘step-down’ unit for further management of their medical conditions, such as drug titration, completion of antibiotic therapy, and rehabilitation. In a study by Woo et al.,\(^6\) dementia (50%), end-organ failure (40%), and malignancy (10%) were the principal diagnoses of patients in the EOL program, with a 6-month mortality rate of 95%. The objective of the EOL program was to promote symptom relief, facilitate direct admission to an extended-care facility in case of deterioration, and ensure the continuity of care according to the advance care plan (ACP). A 2-year (2009–2010) audit in our unit revealed that only 1 out of 10 EOL patients from nursing homes were directly admitted to an extended-care facility if they developed acute medical problems. For patients at their EOL care in acute hospitals had little to offer but may induce unnecessary sufferings. Based on the above, a new EOL service was introduced to address the needs of patients. The aims of this initiative were to bypass the ER and acute medical wards during the winter-surge period and to promote quality EOL care through establishing ACP. Figure 1 depicts the new care pathway. The preliminary findings are reported in this article. The data for this audit were captured by review of medical records. Thus, approval for this audit was granted by the Clinical Research Ethics Committee of the hospital and the informed consents from the patients and caregivers were deemed unnecessary.

### Methods

#### Participants

There was no absolute black-and-white criterion in recruiting patients into the EOL program. The decision was a mutual consensus among physicians, patients, and caregivers. The establishment of ACP was part of routine care provided by geriatricians in both the acute hospital and extended-care facility. However, ACP was not legally binding in Hong Kong. During the process of establishing ACP, some patients and relatives expressed the wish for less aggressive treatment; geriatricians would introduce the EOL program to them. In other words, EOL patients had their ACP established before joining the program but not vice versa. ACP covered 5 aspects of medical care: cardiopulmonary resuscitation, artificial ventilation, artificial fluids and nutrition, oral or intravenous antibiotics, and transfer to an acute hospital in case of deterioration in an extended-care facility. It did not include surrogate decision marker and living will.

A visiting medical officer and a liaison nurse from the CGAT were assigned to each nursing home. They coordinated with the extended-care facility if EOL patients required hospitalization for acute illness. Service hours were between 9 AM to 8 PM on weekdays and 9 AM to 1 PM on Saturdays. Nursing home staff may opt to send patients directly to the ER if they were critically ill with unstable vital signs, or outside the CGAT’s service hours. Medical staff in the ER delivered medical care according to each patient’s ACP. Unstable patients were admitted to acute medical wards. Otherwise, clinically stable patients were managed in the emergency medical ward and transferred to the extended-care facility the next day. The geriatric team of the acute hospital tracked down any EOL patients admitted to the acute medical wards or the emergency medical ward to ensure that ACP was followed, and facilitated early transfer to the extended-care facility.

### Outcomes

The ratio of clinical to emergency admissions and ACP compliance rate were the primary outcomes. Secondary outcomes included ALOS in acute hospital and extended-care facility, in-hospital mortality rate, and the 3- and 6-month mortality rates after enrollment into the EOL program.

### Results

The total numbers of EOL patients were 70, 69, and 71 in the months of January, February, and March, respectively (Table 1). There was a preponderance of female patients (70%); 76 patients whose mean age was 89.3 (±10) years were hospitalized. Their clinical diagnoses of EOL care were dementia (35, 46.1%), frailty (16, 21.1%),

### Table 1

**The Pattern of Hospitalization**

<table>
<thead>
<tr>
<th>Month</th>
<th>Total Number</th>
<th>Group A</th>
<th>Group B</th>
<th>New Care Pathway</th>
<th>Group C</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>26</td>
<td>5 (19%)</td>
<td>3 (12%)</td>
<td>31%</td>
<td>18 (69%)</td>
</tr>
<tr>
<td>February</td>
<td>23</td>
<td>5 (22%)</td>
<td>3 (13%)</td>
<td>35%</td>
<td>15 (65%)</td>
</tr>
<tr>
<td>March</td>
<td>27</td>
<td>9 (33%)</td>
<td>5 (19%)</td>
<td>52%</td>
<td>13 (48%)</td>
</tr>
<tr>
<td>Overall</td>
<td>76</td>
<td>19 (25%)</td>
<td>11 (14%)</td>
<td>39%</td>
<td>46 (61%)</td>
</tr>
</tbody>
</table>


### Table 2

**A Summary on ACP Adherence and Secondary Outcomes**

<table>
<thead>
<tr>
<th></th>
<th>Group A</th>
<th>Group B</th>
<th>Group C</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACP adherence (%)</td>
<td>100%</td>
<td>100%</td>
<td>98%</td>
</tr>
<tr>
<td>ALOS (day)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute</td>
<td>0</td>
<td>0</td>
<td>3.5</td>
</tr>
<tr>
<td>Convalescent</td>
<td>11.8</td>
<td>7.6</td>
<td>11.1</td>
</tr>
<tr>
<td>Mortality rates (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In-hospital mortality</td>
<td>26% (5/19)</td>
<td>18% (2/11)</td>
<td>28% (13/46)</td>
</tr>
<tr>
<td>3 months (overall)</td>
<td>9 (33%)</td>
<td>5 (19%)</td>
<td>50%</td>
</tr>
<tr>
<td>6 months (overall)</td>
<td>5 (19%)</td>
<td>0</td>
<td>85%</td>
</tr>
</tbody>
</table>

ACP: advance care plan; ALOS: average length of stay; ER: emergency room; PWH: Prince of Wales Hospital; SH, Shatin Hospital. Group A = Clinical admission to SH. Group B = Admission to SH through ER of PWH. Group C = Admission to PWH acute medical wards ± transfer to SH. New care pathway = Group A (new pathway–clinical) + Group B (new pathway–ER). Usual care = Group C. The 3- and 6-month mortality rates were the average values for all 3 groups.
cerebrovascular accident with poor neurologic recovery (13, 17.1%), malignancy (5, 6.6%), chronic kidney disease (4, 5.3%), congestive heart failure (2, 2.6%) and bone marrow failure (1, 1.3%).

We analyzed all cases in group B (new care pathway—emergency room) and group C (usual care pathway) on the reasons for not following the pathway of direct clinical admission (group A: new care pathway—clinical). The most common reasons were hospitalization outside the CGAT’s office hours (60%) and patients deemed critically ill (35%). Both reasons coexisted in a number of cases. Other barriers to the new care pathway included the lack of beds in the extended-care facility, failure to contact patient’s next-of-kin for consent to clinical admission, and family members having second thoughts about the ACP.

Table 2 summarizes the adherence rates to ACP items and the secondary outcomes.

Discussion

The new EOL pathway increased the proportion of patients directly admitted to an extended-care facility from 10% to 40%. The ER played a key role in this new care pathway because patients were stabilized in its department and transferred to the extended-care facility. The geriatric team of the acute hospital facilitated the compliance with ACP and expedited the transfer of patients to the extended-care facility.

Groups A (new care pathway—clinical) and C (usual care pathway) had similar in-hospital mortality rates, suggesting that patient survival was not compromised by direct clinical admission to the extended-care facility. The overall 6-month mortality rate was 85%, confirming the EOL status of the patients. The lower mortality rate (18%) and shorter ALOS (7.6 days) in group B (new care pathway—emergency room) may reflect that the nursing home staff members were more empowered after training, orientation, and ongoing support from CGAT since the launch of the EOL program. With enhanced support from the CGAT on clinical care such as oral antibiotics, some of the admissions to the extended-care facility could be avoided. The ER may be able to facilitate direct discharge of EOL patients back to nursing homes with early review by the CGAT in the nursing homes.

The EOL program did not prolong the ALOS in acute or extended-care settings. The ALOS in the acute medical unit (group C—usual care) was 3.5 days, which was lower than the finding of 5.3 days from our internal audit. The ALOS of group A was 11.8 days, which was comparable to the figure of 12.2 days reported by our internal audit. With the establishment of ACP, the clear management plan and the preparedness of nursing homes to take care of EOL patients may have facilitated timely discharge from the extended-care facility. Despite an initial stay in the acute medical unit, group C (usual care) did not have a shorter stay in an extended-care hospital. It is possible that the cases were sicker and required longer hospitalization. The interpretation of our preliminary results was limited by the fact that readmission rates were not examined and compared with the figures of previous years and the lack of statistical comparison among 3 care pathways.

Looking ahead, the possibility of allowing dying patients to succumb in the ER without transferring to wards should be explored. EOL patients who are admitted to the acute hospital should be under the care of the acute geriatric team. A full-time EOL coordinator, likely a nurse, can liaise with all stakeholders, including patients, family members, nursing homes, visiting doctors to nursing homes, the ER, the geriatric team based at the acute hospital, and extended-care facility, to facilitate hospitalization and discharge. In the immediate future, the service hours of CGAT will be extended to weekends, 9 AM to 1 PM, including long holidays. Overnight service could be covered by the extended-care facility through a ward manager. However, this is limited by the lack of transport for patients requiring admission to the extended-care facility. With the concerted efforts from all parties and additional resources, a seamless service may be provided to EOL patients.

Our EOL program is reformed to suit older Chinese people in Hong Kong. In a local study in nursing homes by Chu et al,88% of cognitively normal older people would prefer to have ACP established regarding medical treatment in the future. However, only 35% would prefer to die in nursing homes. According to the Hong Kong laws, death outside hospitals automatically triggers referral to the coroner’s court. Furthermore, death in private residences is not culturally accepted in Hong Kong.5 It is hoped that the reformed program is able to provide timely hospitalization for EOL patients when death is imminent.

Conclusions

This study shows that 40% EOL patients requiring hospitalization could be managed in an extended-care facility without compromising their survival. It is expected that a greater number of patients may benefit from this EOL program by fostering the collaboration of the acute geriatric team with the ER and extending the hours of direct clinical admission to the extended-care unit.

References

1. Chau PH, Wong M, Woo J. Challenge to long term care for the elderly: Cold weather impacts institutional population more than community-dwelling popula-