Winter Surge Programme to reduce hospital attendance/admission of the institutionalised elderly

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ABSTRACT

Objectives. To examine the effectiveness of the Winter Surge Programme (WSP) in reducing Accident and Emergency Department (AED) attendance and unplanned hospital admission of institutionalised elderly.

Design. Retrospective service audit.

Setting. Residential care homes for the elderly (RCHE) in the Hong Kong West Cluster.

Participants. All RCHE residents in the Cluster in 2010 and 2012 during the winter surge periods.

Results. In 2010, on comparing 6-week periods before and after commencing the WSP, there were reductions in AED attendance by 13%, acute hospital admission by 14.3%, mean length of stay (LOS) in acute hospitals by 15%, mean LOS in convalescent hospitals by 12%, and AED turn-away rate by 10%. The cost reduction in terms of hospital bed days was around 1.5 million. In 2012, on comparing RCHEs with and without the WSP, AED attendance and acute medical ward admission of patients with the WSP were 33.3% and 39% of those without the WSP, respectively.

Conclusion. The WSP is effective in reducing the influx of RCHE residents to hospitals. More resources should be allocated to the implementation of WSP for all RCHEs during high-risk periods.

Key words: Cost savings; Frail elderly; Homes for the aged; Influenza, human; Patient admission

INTRODUCTION

The causes of seasonal surges in influenza remain controversial.¹² In the northern hemisphere, flu outbreaks usually occur in winter or the rainy season.³ In Hong Kong, flu outbreaks usually emerge in 2 waves a year, namely in winter and in summer.⁴ The peaks of these surges usually last for 1 to 2 weeks. Particularly during the winter surge, there is a marked increase in accident and emergency department (AED) attendance and unplanned acute hospital admission of patients with influenza-like symptoms. This leads to a substantial increase in staff workload and has a negative impact on patient safety and service quality.

To reduce the impact of the winter surge, the Winter Surge Consultation Group was established
so as to generate plans to manage such patient influxes, coordinate and mobilise available resources, and enhance service quality and patient safety. The group is led by the Deputy Hospital Chief Executive (Clinical Services). It comprises representatives from the AED, the departments of medicine and orthopaedics, each hospital and cluster step-down hospitals, cluster hospital administrative services, general outpatient clinics, and community care service teams.

The winter surge response is activated in the inpatient, outpatient, and community settings, whenever admissions to medical wards via the AED exceed 65 per day for 3 consecutive days, or a warning of flu endemic is announced. Most such admissions are residents of residential care homes for the elderly (RCHE). They are usually frail and have multiple co-morbidities and advanced dementia.\(^5\) Repeated hospital admissions also known as the ‘revolving door syndrome’ are common.\(^6\) To reduce the influx of RCHE residents to hospitals, the Winter Surge Programme (WSP) was carried out in RCHEs through enhancement of outreach services and community support. This study aimed to evaluate the effectiveness of the WSP in reducing AED attendance and unplanned hospital admission of RCHE residents.

**METHODS**

All RCHEs in the Hong Kong West Cluster were invited to participate in the WSP. The WSP included increases in visits by Community Visiting Medical Officers (CVMO), clinic quota per session by Community Geriatric Assessment Team (CGAT) doctors, and ‘force in’ quota by general outpatient clinics to symptomatic RCHE residents. In addition, provision of fast track clinics in managing ad hoc medical problems of RCHE residents and post-AED-discharge follow-up within 48 hours by community care nurses (CCN) was in place. Infection control monitoring and coverage were also enhanced. Moreover, in addition to regular CGAT clinics, Winter Surge Clinics were set up in RCHEs, targeting patients with flu symptoms or pending AED attendance secondary to ad hoc medical issues. The Special Honorarium Scheme with overtime subsidies was used to support after-office-hour work; working hours of the community care service team were extended to provide timely intervention with support by the hospital 24-hour pharmacy.

Two retrospective service audits for the WSP were performed in 2010 and 2012. In 2010, 66 RCHEs with CGAT services participated in the WSP. The WSP was activated from 15 February to 11 April (8 weeks). The rates of AED attendance and unplanned acute and convalescent hospital admissions (number per person per month), and the length of stay (number of bed days per person) during the 6-week periods before and after starting the WSP were compared. Clinical admissions to acute or convalescent hospitals were excluded. The total occupancies of the 66 RCHEs during the winter surge periods were recorded. RCHE residents who attended the AED without hospital admission were recorded as AED turn-away cases. Potential cost savings was calculated using existing bed day costs stipulated by the Hospital Authority. In 2012, the rates of AED attendance and admission to the hospital medical wards during the 12-week periods before and after starting the WSP in the 66 RCHEs with the WSP were compared with those in 14 RCHEs without WSP. The winter surge response was activated from 25 January to 17 April (12 weeks).

**RESULTS**

In 2010, the occupancy of the 66 RCHEs with WSP was 4948. There were 2417 CGAT doctor visits, 1333 CVMO visits, 320 Winter Surge Clinic doctor visits, and 997 CCN visits. Respectively in the 6-week periods before and after starting the WSP, AED attendances were 1073 and 935 (13% reduction), and acute hospital admissions were 873 and 748 (14.3% reduction). The mean length of stay in acute and convalescent hospitals reduced by 15% and 12%, respectively, and the AED turn-away rate reduced by 10% (0.027 vs. 0.03 per person per month) [**Table 1**].

In 2012, in the 66 RCHEs with WSP, there were 3100 CGAT doctor visits, 2430 CVMO visits, 393 Winter Surge Clinic doctor visits, and 2480 CCN visits. The AED attendance was 33.3% that of the 14 RCHEs without WSP (0.13 vs. 0.39 per person per month), whereas the acute medical ward admission rate was 39% that of the 14 RCHEs without WSP (0.09 vs. 0.23 per person per month) [**Table 2**]. In the 66 RCHEs with WSP, the AED turn-away rate decreased from 0.027 (in 2010) to 0.021 per person per month.
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The 2010 data were used for cost calculation. There was a reduction of 661 acute hospital person bed days but an increase in 414 convalescent hospital person bed days. The estimated cost per patient day was HK$3333 in acute hospitals and HK$1740 in convalescent hospitals. The total cost saving was HK$1482753, whereas the expenditure for staff overtime subsidies using the Special Honorarium Scheme was around HK$12 000, and additional drug cost during WSP was HK$10 000.

DISCUSSION

Different clusters in Hong Kong have their own distinct winter surge strategies. The effectiveness of the cluster CGAT and CVMO has been reported.9,10 In the Hong Kong West Cluster, there was no additional manpower for implementation of the WSP in the community. The WSP intensified existing services in the community and made full use of present manpower (CGAT doctors, CVMOs, and CCNs) instead of establishing new services. The Special Honorarium Scheme was used to support community care service team to work overtime so as to provide extension of WSP to non-office hours. Under the resource constraints, enhancement of existing services was a pragmatic and cost-effective means of implementing WSP. In addition, increased surveillance of flu outbreaks was crucial for timely intervention with WSP. The RCHEs reported to the CGAT office daily regarding residents having flu-like symptoms, attending AEDs, and/or admitting to hospitals, as well as their chief complaints and diagnoses.

The 2010 audit suggested that the WSP was effective in reducing AED attendance, hospital admission, length of stay in hospitals, and AED turn-away rate. Other factors could have also contributed to the reduction, for example the difference in weather conditions before and after starting WSP. Nonetheless, the 2012 results confirmed the efficacy of WSP.

WSP would not be effective if it is not coupled with the influenza vaccination programme conducted by the Department of Health, especially that the pneumococcal vaccination can reduce the mortality and morbidity.11,12

Regarding limitations of our study, possible differences in the characteristics of the 66 RCHEs with WSP and the 14 without could have influenced the 2012 audit. Moreover, the audit was not a controlled trial, and the RCHEs with and without WSP were not matched. Individual patient characteristics and

### Table 1

2010 winter surge programme (WSP)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>6 weeks before WSP</th>
<th>6 weeks after starting WSP</th>
<th>Change (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean length of stay (bed days per person)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute hospital</td>
<td>5.23</td>
<td>4.46</td>
<td>-15</td>
</tr>
<tr>
<td>Convalescent hospital</td>
<td>15.6</td>
<td>13.7</td>
<td>-12</td>
</tr>
<tr>
<td>Accident and emergency department attendance (no. per person per month)</td>
<td>0.155</td>
<td>0.135</td>
<td>-13</td>
</tr>
<tr>
<td>Acute hospital admission (no. per person per month)</td>
<td>0.126</td>
<td>0.108</td>
<td>-14.3</td>
</tr>
</tbody>
</table>

### Table 2

Residential care homes for the elderly (RCHEs) with and without implementation of a winter surge programme (WSP) in 2012

<table>
<thead>
<tr>
<th>Parameter</th>
<th>RCHEs with WSP (n=66)</th>
<th>RCHEs without WSP (n=14)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of care and attention homes</td>
<td>18</td>
<td>1</td>
</tr>
<tr>
<td>No. of private RCHEs</td>
<td>48</td>
<td>13</td>
</tr>
<tr>
<td>Total occupancy</td>
<td>4692</td>
<td>759</td>
</tr>
<tr>
<td>Accident and emergency department attendance (no. per person per month)</td>
<td>0.13</td>
<td>0.39</td>
</tr>
<tr>
<td>Acute hospital admission (no. per person per month)</td>
<td>0.09</td>
<td>0.23</td>
</tr>
</tbody>
</table>
RCHE attributes were not examined, nor were the causes of death or predictors of outcomes. Statistical tests were not used. Reduction in person bed days was only a nominal saving. There was no actual reduction in other expenses as a result of reduced admissions. In addition, to make a fair comparison, the total nominal cost of the additional visits from CGAT, CVMO, winter surge clinic, CCN should have taken into consideration. It is unknown whether the results are generalisable to summer surges or to other regions of Hong Kong. Different influenza viruses have different degrees of virulence in different years and may warrant different types of WSP.

**CONCLUSION**

The WSP achieved a reduction in AED attendance, acute hospital admission, length of stay in hospitals, and AED turn-away rate. The cost reduction in terms of bed days was around 1.5 million in 6 weeks of WSP. Health care authority should consider extending implementation of WSP to all RCHEs during the high-risk period.

**REFERENCES**