Advance Prescription Service provided by Clinical Ward Pharmacist: Prospective study demonstrating reduction in discharge time of the medical wards

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Background

- Hospital overcrowding can result from numerous factors including discharge delays at ward
- Several medication related processes could impact adversely on effective discharge of patient
- Implementation of a discharge process that incorporated pharmacist pending of discharge medication orders
- Increased measures of safety and efficiency of the discharge process

To evaluate the impact of Advance Prescription Service provided by Clinical Ward Pharmacist on patient discharge times and facility care in medical wards at a teaching hospital of Hong Kong

**Objective**

The workflow of Advance Prescription Service

1. **Clinical Ward Pharmacist** reviews medications upon patient admission.
2. **Physician** reviews the patient.
3. **Clinical Ward Pharmacist** attends the daily grand round with physician.
4. **Clinical Ward Pharmacist** prepares the advance prescription for the physician upon patient discharge.
5. **Clinical Ward Pharmacist** and nurse have discussions about discharge planning including comprehensive medication review for discharge medications and patient discharge medication consultation.
6. **Reduce discharge time.**
Methodology

Part One

Pre-Intervention period
Intervention
Advance Prescription Service
Post-Intervention period

Advance Prescription Service implemented

Pre-Intervention data collection
Post-Intervention data collection

Date: 1st Jan 17 31st Mar 17 1st Dec 2017 1st Jan 2018 31st Mar 2018 30th Sep 2018

- Pre- and post-implementation: 802 discharge prescription prepared by House Officer (Jan to March 2017) was compared with 408 discharged prescription initiated by Clinical Ward Pharmacist (Jan to March 2018).
- Outcomes: Median discharge time and the proportion of patients discharged prior to 5pm.

Part Two

Control

A2  B2  E3  E6  D6

B1 (pilot study)

Admission/ Hospitalization
Advance discharge prescription

• A prospective controlled study: A pilot medical admission ward with Advance Prescription Service was compared with other six medical admission wards from Jan to Sept 2018.
• Outcomes included (1) proportions of types and risks of the drug-related problems (DRPs) reviewed by expert panel including ward physician and Clinical Ward Pharmacist; (2) average number of interventions accepted by doctors and (3) staff satisfaction with advance prescription service
Results

Improvement in median discharge time and the proportion of patients discharged prior to 5pm

Change in median Discharge Time

- 75 mins
- 4:31pm Pre-implementation (Jan-March 2017) n=802
- 3:46pm Advance Prescription Service (Jan-March 2018) n=408

Staff satisfaction

Nurse

你應為駐院病房臨床藥劑師提供「出院藥物輔導」服務可加快病人出院的時間

Doctor

Do you think pharmacists performing Med. Rec. and comprehensive discharge counseling could assist you in discharging patients more efficiently?

No 7%

Yes 93%

Percentage of interventions accepted by the doctors

- B1 (with pilot service) 95.4% (310/325)
- Traditional model 98.2% (248/251)

p value = 0.055

Proportions of the types of the drug-related problems

<table>
<thead>
<tr>
<th>Type of DRPs</th>
<th>B1 (with pilot service) N=329</th>
<th>A2, B2, D6, E3, E6 N=803</th>
</tr>
</thead>
<tbody>
<tr>
<td>Know drug allergy</td>
<td>0 (0.0%)</td>
<td>29 (3.6%)</td>
</tr>
<tr>
<td>Renal dose</td>
<td>19 (5.8%)</td>
<td>156 (19.4%)</td>
</tr>
<tr>
<td>Drug interactions</td>
<td>1 (0.3%)</td>
<td>15 (1.9%)</td>
</tr>
<tr>
<td>Suspected adverse drug reaction</td>
<td>8 (2.4%)</td>
<td>50 (6.2%)</td>
</tr>
<tr>
<td>Inadequate duration of treatment</td>
<td>3 (0.9%)</td>
<td>30 (3.7%)</td>
</tr>
<tr>
<td>No drug but clear indication</td>
<td>61 (18.5%)</td>
<td>139 (17.3%)</td>
</tr>
<tr>
<td>No clear indication of drug</td>
<td>47 (14.3%)</td>
<td>89 (11.3%)</td>
</tr>
<tr>
<td>Therapeutic duplication</td>
<td>10 (3%)</td>
<td>62 (7.7%)</td>
</tr>
<tr>
<td>Inappropriate drug form</td>
<td>15 (4.6%)</td>
<td>0</td>
</tr>
<tr>
<td>Inappropriate dosage</td>
<td>27 (8.3%)</td>
<td>137 (17.1%)</td>
</tr>
<tr>
<td>Administration problem</td>
<td>0</td>
<td>27 (3.4%)</td>
</tr>
<tr>
<td>Pharmacokinetic problem</td>
<td>0</td>
<td>2 (0.2%)</td>
</tr>
<tr>
<td>Others</td>
<td>138 (41.9%)</td>
<td>67 (8.3%)</td>
</tr>
</tbody>
</table>

p value = <0.01

The severity of the drug-related problems

<table>
<thead>
<tr>
<th>Severity of DRPs</th>
<th>B1 (with pilot service) N=329</th>
<th>A2, B2, D6, E3, E6 N=803</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insignificant</td>
<td>6 (1.8%)</td>
<td>104 (17.6%)</td>
</tr>
<tr>
<td>Minor</td>
<td>147 (44.8%)</td>
<td>216 (36.5%)</td>
</tr>
<tr>
<td>Moderate</td>
<td>155 (47.3%)</td>
<td>230 (38.9%)</td>
</tr>
<tr>
<td>Major</td>
<td>19 (5.8%)</td>
<td>41 (6.9%)</td>
</tr>
<tr>
<td>Catastrophic</td>
<td>1 (0.3%)</td>
<td>1 (0.2%)</td>
</tr>
</tbody>
</table>

p value = <0.01
Conclusions

- The introduction of Advance Discharge Service provided by Clinical Ward Pharmacists demonstrated a statistically significant reduced discharge time, increased the availability of hospital beds and enhanced quality of care of inpatients.