Impact on Further Utilization of Hospital Services Among Discharged Frail Elders

An Evaluation of Integrated Care and Discharge Support Service in Kowloon Central Cluster

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Older People are major clients

- 15.5% of our catchment population.
- occupied 56.2% of the KCC bed-days (2011–12)
High Unplanned Readmission rates of Older people (28-days) $\geq$ 60 years in QEH
Unplanned Readmission

“Many of these readmissions are avoidable”

Obama 2009
Health Care Reform
ICDS / ICM Services

- Home Support Team
- Case Managers
  - GDH, CGAT
  - Enhanced CNS
  - Call Centre

Link to Linked Nurse
Objectives

(1) Evaluate the impact of Case Management and Home Support Team service of ICDS/ICM

(2) On the utilization of hospital based services

- AED attendance rate
- Medical readmission rate
- Average length of stay (LOS)
Methodology

- Retrospective analysis

- **Patient list**
  - Out-patient Appointment System (OPAS)
  - Patient based analysis

- **Data**
  - Clinical Data Analysis and Reporting System (CDARS)

- **Study period**
  - 1 Oct 2011 (starts Program) to 30 Sept 2012

- Paired $t$ test – $p$ value of $<0.05$ being significant.
Methodology

Comparisons:

- Pre-admission
- Post-discharge

3 different time frames ($\pi$ days)
- 28–day
- 90–day
- 180–day
## Methodology

### Comparisons:

**Pre-admission**

<table>
<thead>
<tr>
<th>( \pi ) days</th>
<th>No of Med pt (( &gt;60 ) yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>28 days</td>
<td>14955</td>
</tr>
<tr>
<td>90 days</td>
<td>12854</td>
</tr>
<tr>
<td>180 days</td>
<td>9183</td>
</tr>
</tbody>
</table>

**Post-discharge**
Percentage Change in Outcome Measures

ICM Intervention Patients

Expected (Post) if NO intervention = Pre ICM (100% + %Changes of Pre-Post Diff Non-ICM)

Δ Outcome = \[ \frac{\text{Expected (Post)} - \text{Actual (Post)}}{\text{Expected (Post)}} \]
AED Attendance
All Medical patients ≥ 60 years

- 14% (P < 0.001) at 28 days
- 35% (P < 0.001) at 90 days
- 25% (P < 0.001) at 180 days

n = 14955
n = 12854
n = 9183

28 days | 90 days | 180 days
0.2 | 0.35 | 0.58
0.23 | 0.48 | 0.73

KCC ≥ 60 yrs Pre | KCC ≥ 60 yrs Post
Medical Readmission Rate
All Medical patients ≥ 60 years

182% P < 0.001
174% P < 0.001
99% P < 0.001

28 days: 0.1, 0.28
90 days: 0.24, 0.67
180 days: 0.58, 1.15

KCC ≥ 60 yrs Pre  KCC ≥ 60 yrs Post
Average Length of Stay (days)
All Medical patients ≥ 60 years

- 468% increase, \( P < 0.001 \) (1.78 days)
- 225% increase, \( P < 0.001 \) (3.74 days)
- 129% increase, \( P < 0.001 \) (5.18 days)

KCC ≥ 60 yrs Pre KCC ≥ 60 yrs Post
## Compare non–ICM patients with ICM Patients

<table>
<thead>
<tr>
<th></th>
<th>Non–ICM Medical ≥ 60 yrs</th>
<th>ICM ≥ 60 yrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>28 days</td>
<td>13948 patients</td>
<td>1075 patients</td>
</tr>
<tr>
<td>90 days</td>
<td>11942 patients</td>
<td>895 patients</td>
</tr>
<tr>
<td>180 days</td>
<td>8507 patients</td>
<td>565 patients</td>
</tr>
</tbody>
</table>
AED Attendance
Non-ICM Patients

11% P < 0.001
32% P < 0.001
21% P < 0.001

KCC ≥ 60 yrs (excluded ICM) Pre
KCC ≥ 60 yrs (excluded ICM) Post
AED Attendance

ICM Patients

41%  P < 0.001

21%  P ≤ 0.001

4%  P = 0.474
Reduction in AED Attendance with ICM intervention

47% (28-days)

40% (90-days)

21% (180-days)
Medical Readmission Rate Non-ICM Patients

- 28 days: 172% P < 0.001
- 90 days: 167% P < 0.001
- 180 days: 91% P < 0.001

KCC ≥ 60 yrs (excluded ICM) Pre vs. KCC ≥ 60 yrs (excluded ICM) Post
Medical Readmission Rate
ICM Patients

- 25% with P < 0.001
- 2% with P = 0.663
- 12% with P = 0.080

Comparison of readmission rates over different time periods:
- 28 days: Pre-ICM 0.46, Post-ICM 0.34
- 90 days: Pre-ICM 1.02, Post-ICM 1.04
- 180 days: Pre-ICM 1.82, Post-ICM 2.03

Legend: Pre-ICM, Post-ICM
Reduction in Medical Readmissions with ICM Intervention

72% (28-days)

62% (90-days)

41% (180-days)
Average Length of Stay (days) Non-ICM Patients

- 448% P < 0.001 (1.65 days)
- 215% P < 0.001 (3.39 days)
- 117% P < 0.001 (4.48 days)

KCC ≥ 60 yrs (excluded ICM) Pre | KCC ≥ 60 yrs (excluded ICM) Post
Average Length of Stay (days) ICM Patients

- 3% (P = 0.775, 0.08 day)
- 10% (P = 0.211, 0.77 days)
- 19% (P = 0.044, 2.51 days)
Reduction in Length Of Stay

81% (28-days)

65% (90-days)

45% (180-days)
Non-ICM Patients

AED Visit

Re-admission

LOS

ICM Patients
## Summary

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>No intervention (all Med pt aged ≥ 60)</th>
<th>Intervention (Frail elders)</th>
<th>Estimated Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>AED visits</td>
<td>28 days: ↑ 11%</td>
<td>↓ 41%</td>
<td>↓ 47%</td>
</tr>
<tr>
<td></td>
<td>90 days: ↑ 32%</td>
<td>↓ 21%</td>
<td>↓ 40%</td>
</tr>
<tr>
<td></td>
<td>180 days: ↑ 21%</td>
<td>↓ 4%</td>
<td>↓ 21%</td>
</tr>
<tr>
<td>Unplanned</td>
<td>28 days: ↑ 172%</td>
<td>↓ 25%</td>
<td>↓ 72%</td>
</tr>
<tr>
<td>readmissions</td>
<td>90 days: ↑ 167%</td>
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<td></td>
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<td>LOS</td>
<td>28 days: ↑ 448%</td>
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</tr>
<tr>
<td>Characteristics</td>
<td>Unplanned readmissions in 1st month or subsequent AED visits first 3 months</td>
<td>Stay healthy in community Not at cost of LOS</td>
<td></td>
</tr>
</tbody>
</table>
Hospitalization predicts poor outcome for older people

ICDS/ICM is Effective gatekeeper –
  ◦ Keep frail elderly stay healthy
  ◦ Reduce hospital service utilization of frail elderly

Not by delaying admissions

Not at the cost of increasing subsequent LOS
Acknowledgement

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- QEH Quality and Standards Department
- Neighbourhood Advice–Action Council Home Support Team
The End