Innovative Collaborative Practice: Improving Length Of Stay (LOS), Operational Efficiency And Staff Satisfaction

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Background
Clinical operations on Medicine inpatient wards of Academic Medical Centers are often very inefficient. The reasons are multifactorial but timely communication among care givers and houseofficer availability are important contributors. In addition, the educational needs of housestaff are often infringed upon by clinical service requirements.

The Average Length of Stay (ALOS) for the Massachusetts General Hospital Medical Academic Service is a day longer than the Joint Commission National Average. Long Inpatient LOS impacts occupancy and emergency department overcrowding.

Goals
- Decrease hospital LOS on a General Medical Unit
- Improve patient throughput on the Unit
- Increase percentage of early morning discharges
- Improve quality of patient care
- Improve staff satisfaction

Methods
- We developed a collaborative process incorporating a Nurse Practitioner and Case Manager with a traditional academic medical team. (Including Physicians, Staff Nurses, Physical Therapists, Social Workers, and Nutritionists.)
- The Nurse Practitioner and Case Manager worked together to identify patient readiness for discharge and to prioritize and facilitate discharge processes, including help with discharge orders and summaries and communication with outpatient providers, facilities, patients, and families.
- Evaluation time period was 1/06-1/07. We compared the intervention team with the four control teams. Comparisons included ALOS, discharges per allocated bed, frequency of early morning discharges, and results of staff and housestaff surveys.

Results
- ALOS on intervention team was 5.7 days vs. 6.4 days on the control teams (p = 0.0125). There was no significant difference in Case Mix Index (p = 0.3).
- Discharges per year per allocated bed were 66 on intervention team vs. 54 on our control teams (p <0.0001).
- Number of morning discharges per allocated bed was higher on intervention team (5.8 vs. 4.8; statistical testing not done).
- Compared with our traditional model
  - 86% of MDs and 84% of nurses felt that the collaborative team enhanced the quality of patient care
  - 96% of MDs and 77% of nurses felt that the collaborative team enhanced efficiency of care
  - 71% of MDs felt the collaborative model increased the ability for teams to take of advantage of educational opportunities and 79% felt there was more time for teaching

Conclusions
- Clinical operations on Medicine Academic inpatient wards are often very inefficient.
- Timely communication among care givers and houseofficer availability are important contributors.
- We developed a collaborative process incorporating a Nurse Practitioner and Case Manager with a traditional academic medical team with the goal of improving efficiency of care and staff satisfaction.
- When compared to traditional control teams, the intervention team showed better efficiency (LOS 5.7 vs. 6.4 days, Discharges per bed 66 vs. 54, Morning Discharges per bed 5.8 vs 4.8).
- Surveys of staff perception showed that the collaborative Nurse Practitioner – Case Manager team led to enhanced quality of care and efficiency, and increased time for housestaff education.
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ALOS and Case Mix index for Intervention (Team D) and Control Teams

<table>
<thead>
<tr>
<th>Team</th>
<th>ALOS</th>
<th>CMI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team A</td>
<td>1.98</td>
<td>6.69</td>
</tr>
<tr>
<td>Team B</td>
<td>2.01</td>
<td>6.16</td>
</tr>
<tr>
<td>Team C</td>
<td>1.96</td>
<td>6.43</td>
</tr>
<tr>
<td>Team D</td>
<td>2.10</td>
<td>5.7</td>
</tr>
<tr>
<td>Team E</td>
<td>2.04</td>
<td>6.5</td>
</tr>
</tbody>
</table>

*p = 0.0125

Morning Discharges per Allocated Bed on the Intervention (Team D) and Control Teams

<table>
<thead>
<tr>
<th>Team</th>
<th>AM Discharges/Allocated Bed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team A</td>
<td>5.0</td>
</tr>
<tr>
<td>Team B</td>
<td>5.0</td>
</tr>
<tr>
<td>Team C</td>
<td>4.5</td>
</tr>
<tr>
<td>Team D</td>
<td>5.8</td>
</tr>
<tr>
<td>Team E</td>
<td>4.7</td>
</tr>
</tbody>
</table>

Discharges per day and Discharges per Allocated Bed for the Intervention (Team D) and Control Teams

<table>
<thead>
<tr>
<th>Team</th>
<th>Discharges per Day</th>
<th>Discharges per Bed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team A</td>
<td>3.71</td>
<td>56.4</td>
</tr>
<tr>
<td>Team B</td>
<td>3.29</td>
<td>60</td>
</tr>
<tr>
<td>Team C</td>
<td>2.91</td>
<td>53.4</td>
</tr>
<tr>
<td>Team D</td>
<td>3.61</td>
<td>65.9*</td>
</tr>
<tr>
<td>Team E</td>
<td>3.68</td>
<td>56</td>
</tr>
</tbody>
</table>

*p < 0.0001
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Staff Survey: NP -CM Enhances Quality of Care

- MD
  - Agree 86%
  - Disagree 0%
  - Not sure 14%

- Nurses
  - Agree 84%
  - Disagree 8%
  - Not sure 8%

Staff Survey: NP -CM Enhances Efficiency of Care

- MD
  - Agree 93%
  - Disagree 0%
  - Not sure 7%

- Nurses
  - Agree 77%
  - Disagree 15%
  - Not sure 8%

Staff Survey: NP -CM Impact on education among MDs

- Time to take advantage of educational opportunities
  - Agree 71%
  - Disagree 7%
  - Not sure 29%

- Time to teach
  - Agree 79%
  - Not sure 14%
  - Disagree 0%