Impact of an Infectious Diseases Transitions Service on Outcomes in Patients Discharged on Parenteral Antibiotics Requiring Therapeutic Drug Monitoring

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Background

Outpatient Parenteral Antimicrobial Therapy (OPAT)1-4
- Common practice used to appropriately manage patients requiring long-term intravenous antibiotic therapy in the outpatient setting
- Benefits include improved quality of life, decreased risk of nosocomial infections and reduced hospital costs.

Infectious Diseases Transition Service (IDTS)
- IDTS at the Hospital of the University of Pennsylvania (HUP) was developed to ensure safe transition from hospital to home in patients on IV antimicrobial therapy.
- IDTS consists of infectious diseases (ID) pharmacists, ID physicians, patient service representatives and staff in ID clinic.

Methods

Design: Retrospective, controlled, quasi-experimental study
Population: All patients discharged from HUP on intravenous vancomycin and/or an aminoglycoside
Primary Endpoint: Hospital readmissions at day 30
Secondary Endpoints: OPAT-related events, process-related and clinical outcomes (100 randomly selected subjects evaluated)

Statistical Analysis: Interrupted time series

Results

Table 1. Baseline Characteristics.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Pre-Intervention N = 616</th>
<th>Post-Intervention N = 597</th>
</tr>
</thead>
<tbody>
<tr>
<td>ID Consult</td>
<td>300 (48.5)</td>
<td>297 (49.8)</td>
</tr>
<tr>
<td>Vancomycin</td>
<td>564 (91.6)</td>
<td>519 (86.9)</td>
</tr>
<tr>
<td>Aminoglycoside (AG)</td>
<td>67 (10.9)</td>
<td>85 (14.2)</td>
</tr>
<tr>
<td>Vancomycin + AG</td>
<td>15 (2.7)</td>
<td>7 (1.4)</td>
</tr>
<tr>
<td>Mean Age (SD)</td>
<td>55.9 (16.5)</td>
<td>58.1 (19.0)</td>
</tr>
<tr>
<td>Female</td>
<td>262 (42.5)</td>
<td>230 (38.5)</td>
</tr>
</tbody>
</table>

Severity of Illness Score
- Minor: 16 (2.6)
- Moderate: 126 (20.5)
- Severe: 231 (37.4)
- Extreme: 197 (32.0)
- Unknown: 46 (7.5)

Site of Infection
- Bloodstream: 116 (18.8)
- Cardiovascular: 60 (9.7)
- Pulmonary: 111 (18.0)
- Bone & Joint: 73 (11.9)
- CNS: 45 (7.3)
- Other: 211 (34.3)

Table 2. Secondary Endpoints: Clinical Outcomes

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Pre-IDTS N = 50</th>
<th>Post-IDTS N = 50</th>
</tr>
</thead>
<tbody>
<tr>
<td>60-Day Mortality</td>
<td>5 (10%)</td>
<td>1 (2%)</td>
</tr>
<tr>
<td>Total Outpatient OPAT Events</td>
<td>15 (30%)</td>
<td>24 (48%)</td>
</tr>
<tr>
<td>Relapse</td>
<td>2 (13.3%)</td>
<td>2 (13.3%)</td>
</tr>
<tr>
<td>Adverse Drug Event</td>
<td>11 (73.3%)</td>
<td>17 (70.8%)</td>
</tr>
<tr>
<td>Line-Related Event</td>
<td>2 (13.3%)</td>
<td>5 (20.9%)</td>
</tr>
</tbody>
</table>

Conclusions
- There was no difference in 30-day hospital readmission rates after implementation of IDTS, but overall, the study was underpowered.
- The presence of an ID consult may be associated with decreased readmission rates.
- Trends towards decreased OPAT-related readmissions and 60-day mortality in post-IDTS group.
- Greater frequency of process-related outcomes obtained in the post-IDTS group.

References

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Figure 1. IDTS Process.

- Patient receives ID consult prior to being discharged on IV antibiotics
- ID fellow enters discharge note in medical record
- IDTS pharmacist begins to follow patient
- Pharmacist ensures labs are obtained weekly, monitors for adverse events (AEs), makes dose and/or antibiotic adjustments, and ensures follow-up in ID clinic

Figure 2. Primary Endpoint: 30-Day Readmission Data.

Figure 3 and 4. Secondary Endpoints: OPAT-Related Events

Table 3. Secondary Endpoints: Process-Related Outcomes

Table 4. Secondary Endpoints: Clinical Outcomes

Figure 2. Primary Endpoint: 30-Day Readmission Data.