Intervention databases: A tool for documenting student learning and clinical value

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APPE initiative: designing a web-based clinical intervention system (wCIS)

• Rationale
  ▫ Documentation of services/clinical activities
  ▫ Documentation of competency achievement
  ▫ Curricular assessment

• Desirable qualities
  ▫ Student and preceptor access
  ▫ Web-based
  ▫ Ease of use
  ▫ Consistency among users in documentation practices

Designing wCIS: process

• Department developed consensus-based intervention form
• Form was built and tested utilizing EMS software
• Simultaneously, intervention form was implemented in several didactic courses to document DTP identification and management
Implementation

- Spring of 2005
- Students were oriented to the wCIS
  - Students received written guidelines for documentation with definitions
  - Participation: voluntary or at discretion of the preceptor
- After the first year, feedback obtained & changes implemented
  - Form streamlined
  - Reporting feature added

<table>
<thead>
<tr>
<th></th>
<th>First generation database (May 05-Oct 06; 11 APPE blocks)</th>
<th>Second generation database (Nov 06-Apr 2010)</th>
<th>Total N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambulatory</td>
<td>1388</td>
<td>7201</td>
<td>8589 (28.1)</td>
</tr>
<tr>
<td>Community</td>
<td>875</td>
<td>1750</td>
<td>2625 (8.6)</td>
</tr>
<tr>
<td>Institutional</td>
<td>4363</td>
<td>14976</td>
<td>19330 (63.3)</td>
</tr>
<tr>
<td>General Medicine</td>
<td>3433</td>
<td>9908</td>
<td>13340 (43.7)</td>
</tr>
<tr>
<td>Specialties</td>
<td>930</td>
<td>5068</td>
<td>5998 (19.6)</td>
</tr>
<tr>
<td>Total</td>
<td>6626</td>
<td>23927</td>
<td>30553</td>
</tr>
</tbody>
</table>

Results

- Common categories:
  - Patient and provider education
  - Dose adjustments
  - New drug for untreated indication
  - Drug information
- Well accepted by the team:
  - Only 4% of recommendations rejected
  - > 90% have clinical significance
  - Majority of interventions are initiated by the student (average preceptor involvement 20%)
Results: curriculum committee considerations

- Most common disease states
  - DM
  - HTN
  - Hyperlipidemia
  - Pain
  - Asthma
  - Infections
  - Osteoporosis

Economic impact

- Significant events prevented
  - 6976 ADRs
  - 1342 MEs
- Challenging to estimate cost savings
- No costs assigned to interventions in the database

Economic impact

- Cost of preventable ADR in hospitalized population*
  - $4865 per ADR; with 6.5% of incidence

- Intervention database**
  - 4834 potential ADRs prevented in the hospital setting
  - 4834 x 0.065 x $4865 = $1.5 million in 1997 US$
  - Inflation to present value = $2 million

* Bates DW et al. JAMA 1997;227:307-11
Data utilization

**Faculty**
- Assessment of student-driven patient care activities
- Merit and promotion dossiers
- Ensure curriculum contains the most common disease states/drugs which are being managed in the local health system

**Students**
- Professional portfolio
- Residency/job interviews

**Administrators**
- ACPE accreditations
- Justification of new sites

Next steps/ challenges

- Expand the demographic characteristics to capture patient case mix
- Increase documentation rates
  - Educate adjunct preceptors
  - Create form which is hand-held compatible
- Determine the economic impact of the student/faculty interventions
- Identify how to feedback data to stakeholders

In your opinion, the most significant benefit of this system is:

1. Curriculum assessment
2. ACPE documentation
3. New site acquisition
4. Teaching students the value of documentation