Validation Study
Pilot Study: Tennessee

Marion Kainer MD MPH
ARRA HAI grantee meeting
October 19, 2009
Validation: Tennessee

- Very limited resources
  - After public reporting mandate, no additional resources to perform validation

- Targeted approach
Validation

- Internal validation (within NHSN)
  - Pathway
  - Organism is pathogen / Common skin contaminant
  - Max. # of pt-days
    = # of days in month * bed # (±5%)

Max # of central line days <+ # of patient days

Kainer 2009 (unpublished data)
External Validation
Methodology: CLABSI

- Letter to microbiology laboratory director
- All positive BC taken in the ICU in CY 2008
  - Grouped by ICU, sorted by patient name or identifier then by date of collection
- Hospitals that were > 95th or <5th percentile for that ICU vs NHSN
- Random selection of other facilities

Kainer 2009 (unpublished data)
Validation: CLABSI

- Asked to pull 22 medical charts for on-site review (plan to review 16 charts per site):
  - 2 x CNS or Staph epi (one with 1 isolate, one with 2 isolates within 72 hours)
  - 1-2 x MRSA
  - 1-2 x MSSA
  - 1-2 x Candida or other yeast
  - Random selection of other positive blood cultures

Kainer 2009 (unpublished data)
Validation Studies: Chart Review

<table>
<thead>
<tr>
<th>TDH determination</th>
<th>Entered into NHSN</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CLABSI Yes</td>
<td>Yes</td>
<td>46</td>
<td></td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>CLABSI No</td>
<td>4</td>
<td>157</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>170</td>
<td></td>
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</tbody>
</table>

Kainer 2009 (unpublished data)
Validation Study: Chart Review

- **Sensitivity:**
  - 46/59
  - 78.0% (Range: 40% to 100%)

- **Specificity:**
  - 157/161
  - 97.5% (Range: 80% to 100%)

Kainer 2009 (unpublished data)
Validation Study: Chart Review

- Positive Predictive Value (PPV):
  - $\frac{46}{50} = 96\%$

- Negative Predictive Value (NPV):
  - $\frac{157}{170} = 92\%$
During Visit

- Questioned IPs on definitions of how collect denominator data etc…
- Reviewed raw denominator data collection tools
- Reviewed central line cart/ check-list

Kainer 2009 (unpublished data)
Discrepancy:

- "Over-calling" of CLABSI by IP
  - Single skin contaminant
  - 2 skin contaminants, but vary in antibiotic susceptibility by ≥ 2 antibiotics

- "Under-calling" of CLABSI by IP
  - Attribute the positive BC to another site, even though NHSN criteria for infection at other site not met.
  - Candida spp. from respiratory tract
    - Definition of pneumonia

Kainer 2009 (unpublished data)
Pneumonia Definition

- Must have CXR changes
- Signs and Symptoms (at least one)
- Laboratory (bacterial):
  - Pleural fluid
  - Histopath
  - Positive quantitative culture (BAL, protected specimen brushing)
  - NOT: sputum or endotracheal aspirate (unless IMMUNOCOMPROMISED)
  - See definition algorithm

Kainer 2009 (unpublished data)
Acknowledgements

- Joan Mitchell
- Minn M. Soe
- IPs
- Microbiology Laboratory Directors