How Long is Long Enough?

Determining the Optimal Surgical Site Infection Surveillance Period

Elizabeth Bryce and Leslie Forrester
Background

Optimal post-operative surveillance period for SSIs a balance between:

Efficient use of surveillance resources.  

Need for accurate case ascertainment.
Background

• Traditional surveillance requires a one-year follow-up period for surgeries with an implantable device
• Rationale: indolent infections may not manifest for some time
• This prolonged duration for surveillance is a burden on limited resources and may delay reporting of adverse events.
Methods

**WHO:** cardiac, orthopedic, neurosurgical, spinal, thoracic and vascular services from 2000 to 2010-2011 at one tertiary care adult hospital and two community hospitals.

**WHAT:** CABG, hip and knee replacements, craniotomies, spinal procedures, thoracotomies, vascular grafts.

**HOW:** Standard definitions for SSI as described by the Centers for Disease Control and Prevention National Healthcare Surveillance Network used. Cases were identified by routine surveillance by infection preventionists,
Results

- 50,128 procedures followed over ten years
- 888 infections (1.7 SSI/100 procedures) were identified.
- Thirteen cases had a SSI detected beyond the standard one year follow-up and were excluded.
- The majority (86%) of infections was identified within the first month of the operative event and by three months most surgical services identified over 90% of SSIs.
- Hip and knee replacements and craniotomies with implants required six months to capture over 90% of cases.
Table 1: Percentage of SSI’s captured per cumulative month of surveillance stratified by surgical service

<table>
<thead>
<tr>
<th>Service</th>
<th>1 month</th>
<th>3 months</th>
<th>6 months</th>
<th>9 months</th>
<th>12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cardiac</strong></td>
<td>86% (n=177)</td>
<td>92% (n=189)</td>
<td>96% (n=198)</td>
<td>97% (n=200)</td>
<td>100% (n=205)</td>
</tr>
<tr>
<td><strong>Ortho</strong></td>
<td>79% (n=107)</td>
<td>86% (n=116)</td>
<td>94% (n=127)</td>
<td>99% (n=133)</td>
<td>100% (n=135)</td>
</tr>
<tr>
<td><strong>Neuro</strong></td>
<td>75% (n=52)</td>
<td>88% (n=61)</td>
<td>93% (n=64)</td>
<td>99% (n=68)</td>
<td>100% (n=69)</td>
</tr>
<tr>
<td><strong>Spinal</strong></td>
<td>92% (n=302)</td>
<td>97% (n=317)</td>
<td>99% (n=323)</td>
<td>99% (n=324)</td>
<td>100% (n=327)</td>
</tr>
<tr>
<td><strong>Thoracic</strong></td>
<td>83% (n=33)</td>
<td>95% (n=38)</td>
<td>98% (n=39)</td>
<td><strong>100%</strong> (n=40)</td>
<td><strong>100%</strong> (n=40)</td>
</tr>
<tr>
<td><strong>Vascular</strong></td>
<td>83% (n=93)</td>
<td>97% (n=109)</td>
<td><strong>100%</strong> (n=112)</td>
<td><strong>100%</strong> (n=112)</td>
<td><strong>100%</strong> (n=112)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>86%</strong> (n=764)</td>
<td><strong>93%</strong> (n=830)</td>
<td><strong>97%</strong> (n=863)</td>
<td><strong>99%</strong> (n=877)</td>
<td><strong>100%</strong> (n=888)</td>
</tr>
</tbody>
</table>

*Note: The circled percentages indicate the highest percentage of SSI’s captured per cumulative month of surveillance.*
Comments

• Data prospectively collected in a consistent manner over a ten-year period
• Reflects a broad range of surgical procedures
• Reflects community and tertiary care experience
Comments

• Supports a previous article recommending a shorter surveillance period AND and extends the observations to include spinal, thoracic, neurosurgical and vascular surgeries.

• Orthopedic and neurosurgical procedures did not quite capture 90% of SSIs at three months BUT actual number of cases that would be missed: 1.9 cases/year for orthopedic and 0.8 cases/year for neurosurgical procedures.
Why is this important?

• Provides evidence that decreasing surveillance from 12 to 3 months does not compromise decision making
• Provides support for redesigning how we do surveillance
• Allows us to provide information to the surgical groups in a more timely manner
• Very important in USA with Pay for Performance
Conclusions

• Surveillance need not capture every case to be effective; it does need to detect sufficient cases to permit informed decision making and to allow benchmarking.

• Limiting case ascertainment to three months detects the majority of SSIs.

• Time spent following cases for one year can be more appropriately allocated.