Optimizing validation of central line-associated bloodstream infections — Oregon, 2014

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Objectives:
1. Validate N=11 reported events:
   a. Calculate underreporting
   b. Adjusted discharge reporting
   c. Calculate sensitivity and specificity of N=11 reporting
2. Compare different methods of CLABSI validation by:
   a. Positive blood culture result
   b. CLABSI event
   c. Complete medical chart review
   d. Validate denominator methods

Methods:
Data: NHSN data on ICU and NICU patients of selected hospitals participating Oregon hospitals.
Sampling: An independent sample of 10% of CLABSI-Yes events (20%) was selected.
Numerator validation:
- For each selected ICU and NICU patient with CLABSI-Yes status, look for:
  a. List of all ICU or NICU positive blood cultures, selected
  b. Targeted chart review
  c. Date of event
  d. Site of event
  e. Pathogen isolated
  f. Sensitivity and resistance
- Select up to 20 selected blood cultures and up to 10 selected medical records.
Numerator validation:
- Each selected blood culture and corresponding infection event was reviewed using standardized tool.
- Each selected admission was reviewed for other possible CLABSI-Yes event.
Denominator validation:
- Hospital infection prevention (IP) staff reviewed entire medical chart.
- Adjudicated different definitions chosen.
- Numerator validation:
  - NHSN facility: 10 days to complete interviews.
  - Six facilities had 15 discrepancies; 11 discrepant patient days.
  - Summary of responses (Figures 4–8)
Denominator validation:
- NHSN facility: 17 days to complete interviews.
  - Six facilities had 15 discrepancies; 11 discrepant patient days.
  - Summary of responses (Figures 4–8)

Background:
- Central line-associated bloodstream infections (CLABSI) are common infections in hospitalized patients.
- A study estimated cost of 83.4 million cases.
- The Direct Medical Costs of Healthcare-Associated Infections in U.S. Hospitals was estimated at 10.4 billion dollars.
- Systematic review of CLABSI events showed an underreporting of 46%.
- Preventing these infections could save billions of dollars.

Results:
Demographics:
- 11 of 17 Oregon hospitals (65%)
- 9 facilities reported 4–10 CLABSI events.
- Adjusted reporting
- Calibration sensitivity and specificity of N=11 reporting
- Complete medical chart review
- Validate denominator methods

Conclusions:
- Surveys and interviews found focus on areas of improvement.
- Analysis of medical record identified factors found (unsystematic limitations in validation).
- Hospitals should report CLABSI rates with accuracy.
- Not because of change in reporting.
- Improvements in validation of denominator data may lead to errors.

Recommendations:
- We would do differently next time:
- Use NHSN numbers; no confusion.
- Validate medical chart record and identify factors.
-hospital reported CLABSI rates.
- Smaller hospital sample to reduce the time and effort.
- Include data in robust validation.
- Ignore outliers within 10% of admittance; effort in calculating a single number for validation.
- All hospitals should report and validate their data.
- Facility should also consider reporting data.
- Improvement in current data for future validation.
- Thank you for your attention.
- We would do again:
- Travel to meet IPs face-to-face.
- Good relationship-building.
- Confirming rights to review hospital reported data.
- Smaller hospital sample to reduce the time and effort.
- Complete medical record identified found four abnormalities.
- Small validation of denominator data.
- Make a database; one user can access.
- Each patient’s charts accessed when possible to avoid travel costs.

References: