Validating HAI Reporting: 
*The Washington State Perspective*

Jason M. Lempp, MPH, CIC

July 23rd, 2014

2014 Arizona Infectious Disease Training & Exercise
Outline

- Background – Washington State HAI Reporting
- Washington State HAI Validation
  - Protocol
  - HAI Reporting process with validation components
  - Findings from CLABSI Validation 2009-2013
  - Hospital reporting process improvements
- Arizona Perspective
Washington HAI Reporting

Mandatory public reporting, specific HAIs:

- CLABSI, SSI (x7), VAP (retired), CDI (2014)
- **Reporting process validation:** Quality sciences

  *The act of confirming a product or service meets the requirements for which it was intended*¹

Validation options?

- CMS? NHSN (CLABSI)? other states?
  - **WA validation: accepted international methods**²


HAI – Healthcare Associated Infection; CLABSI – Central Line-Associated Bloodstream Infection; SSI – Surgical Site Infection; VAP – Ventilator Associated Pneumonia; CDI – *Clostridium difficile* Infection; CMS – Centers for Medicare and Medicaid Services; NHSN – National Healthcare Safety Network
Validation Implementation Timeline

- **2007**: HAI reporting law passed - acute care hospitals (RCW 43.70.056)
  - NHSN access
  - Evaluate reporting quality (validation)
  - Public disclosure protection
- **2008**: CLABSI in ICUs reportable
- **2009**: HAI Program develops CLABSI Validation Protocol
- **2009**: CLABSI Internal Validation pilot
- **2009**: CLABSI Internal Validation state-wide
- **2010**: CLABSI External Validation pilot
- **2010**: CLABSI Internal Validation state-wide
- **2011**: CLABSI External Validation active
- **2011**: CLABSI reporting period covered under validation “Phase 1”
- **2012**: CLABSI reporting period covered under validation “Phase 1”
- **2013**: CLABSI facility-wide reportable
- **2013**: SSI via NHSN
- **2013**: Pilot SSI validation
- **2014**: Pilot SSI validation

NHSN – National Healthcare Safety Network; CLABSI – Central Line-Associated Bloodstream Infection; ICU – Intensive Care Unit; SSI – Surgical Site Infection
Washington HAI Validation

**“Internal” Validation**
self-assessment using accuracy standards
(all reporting hospitals, annually)

**Pass**

**Not Pass**
Prioritized

**Geographic Sample**

**“External” Validation**
records audit by department staff
(select hospitals, multi-year cycle)
HAI Reporting Journey

Potential HAI

Prospective Surveillance

Retrospective Surveillance

• Hospital readmissions
• Post discharge survey
• Administrative/billing
• Inter-facility reports

(+) Laboratory Result

HCW Rounds/Alerts

Surveillance Program Aware of Infection

Report to Infection Control? Yes

Meets NHSN Surveillance Definition? No

Entered into NHSN? No

Analysis

• State/national benchmarking
• Prevention collaboratives
WA Reporting Process Validation

Potential HAI

Prospective Surveillance

Retrospective Surveillance

Laboratory Result

Report to Infection Control? (Yes/No)

Surveillance Program Aware of Infection

Meets NHSN Surveillance Definition? (Yes/No)

Entered into NHSN? (Yes/No)

“Internal” Validation
Accuracy standard:
Sensitivity 85%
Specificity 98%

Analysis
WA Reporting Process Validation

Potential HAI

Prospective Surveillance

Retrospective Surveillance

(+) Laboratory Result

Report to Infection Control? Yes No

Surveillance Program Aware of Infection

IP Training!

Meets NHSN Surveillance Definition? Yes No

Entered into NHSN? Yes

Analysis
WA Reporting Process Validation

Potential HAI

Prospective Surveillance

Retrospective Surveillance

(+) Laboratory Result

Report to Infection Control?

Yes

No

Meets NHSN Surveillance Definition?

Yes

No

Entered into NHSN?

Yes

Analysis

“External” Validation

- Same accuracy standard
- Laboratory & clinical (ICD-9) case review
- Record volume by inspection level
- CLABSI burden & distribution
WA Reporting Process Validation

Potential HAI

(+) Laboratory Result

Prospective Surveillance

Retrospective Surveillance

Surveillance Program Aware of Infection

Report to Infection Control? Yes No

Yes

No

Meets NHSN Surveillance Definition? Yes No

Entered into NHSN? Yes No

Analysis

• Data cleaning
• Inter-facility comparison
• NHSN metrics
CLABSI Validation Findings

Internal Validation

- 2009-2013 review, 65 ICU reporting hospitals
  - 44 records/hospital/yr; Hospital time ≤ 6 hrs/yr

- 2014 expand to 95 hospitals, inpatient CLABSI
CLABSI Validation Findings

External Validation

- 2010-2013, all 65 hospitals, at least one visit
  - 89% visits ≤ 1 day, complex hospitals ~2 days
  - Typically ≥ 90% sensitivity, ≥ 98% specificity

Validation & Data Quality Activities (ICU CLABSI)

- ~0.19 FTE/year for external validation + travel
- ~0.21 FTE/year for data quality + annual report
- < 0.5 FTE/year for CLABSI ICU Validation
- Supports WA among lowest US CLABSI rates
CLABSI Validation Findings

External Validation – Records Reviewed

- ~2,100 records, 36% (768) ICD-9 CVC infection
  - 54% (415) of ICD-9 records met NHSN CLABSI
- 628 unique CLABSI
  - 155 NHSN entered ICU CLABSI
    o 24 (13%) had ICD-9 code
- ICD-9 ≠ NHSN CLABSI
  - ICD-9 + NHSN = big picture
- 15 ICU CLABSI unreported
  - ~9% average annual total

Distribution of CLABSI records

CVC – Central Venous Catheter
CLABSI Validation Findings

Hospital Distribution of CLABSI

- **NHSN**: 151
  - ICU: 4
  - Ward: 0
  - POA: 0

- **Blood Culture**: 98
  - ICU: 37
  - Ward: 36
  - POA: 0

- **ICD-9**: 285
  - ICU: 24
  - Ward: 106
  - POA: 285

POA – Present on Admission
CLABSI Validation Findings

Burden and Distribution Estimation

- 2,250 – 3,650 CLABSI per year
- ~11% ICU
- ~22% Wards
- ~67% Present on hospital admission

2014
- Hospital wide inpatient reporting
- Expand authority beyond acute care?
CLABSI Validation Findings

Days to infection analysis (n = 187 CLABSI)
CLABSI Validation Findings

Days to infection analysis (n = 187 CLABSI)

- ICU CLABSI: ~ 48%
- Ward CLABSI: ~ 52%
CLABSII Validation Findings

Days to infection analysis (n =187 CLABSII)

Early Onset CLABSII (2-9 days)
25% - 49% CLABSII
~Line Insertion Practices

Late Onset CLABSII (5+ days)
51% - 75% CLABSII
~Line Maintenance Practices
Reporting Process Improvements

- Manual: Communication
- Automated: Algorithms

(+) Laboratory Result

Report to Infection Control?

Yes

Surveillance Program Aware of Infection

Prospective Surveillance

Potential HAI

Retrospective Surveillance

Meets NHSN Surveillance Def.

Entered into NHSN

Analysis
Reporting Process Improvements

- Manual: Communication
- Automated: Algorithms

(+) Laboratory Result

Report to Infection Control?

Yes

Prospective Surveillance

Surveillance Program Aware of Infection

Meets NHSN Surveillance Definition?

Yes

Entered into NHSN?

Yes

Analysis

Potential HAI

Retrospective Surveillance

- Improve billing coding
- Inter-facility communication protocol
Reporting Process Improvements

- Manual: Communication
- Automated: Algorithms

(+) Laboratory Result

Report to Infection Control? Yes

Report to Infection Control?

Yes

Surveillance Program Aware of Infection

- Annual definitions
- NHSN consult
- IP training

Entered into NHSN?

Yes

Analysis

Yes

- Improve billing coding
- Inter-facility communication protocol
Process Improvement

- Manual: Communication
- Automated: Algorithms

(+) Laboratory Result

Report to Infection Control?
- Yes
- No

Potential HAI

Prospective Surveillance

Retrospective Surveillance

Surveillance Program Aware of Infection

- Annual definitions
- NHSN consult
- IP training

Meets NHSN Surveillance Definition?
- Yes
- No

Entered into NHSN?
- Yes
- No

- Clinical or administrative override
- HAI adjudication panels
- Workflow process improvement

Analysis

- Improve billing coding
- Inter-facility communication protocol
Prospective Surveillance

Retrospective Surveillance

Laboratory Result

Report to Infection Control?

Yes

No

Surveillance Program Aware of Infection

Meets NHSN Surveillance Definition?

No

Yes

Entered into NHSN?

No

Yes

Analysis

- HAI Sentinel Events
- Quality Reporting → RCA
- Process Improvement
Washington HAI Public Reporting Network:

- ~98 WA Licensed Acute Care Hospitals
  - 66% NHSN via CLABSI ICU (2009)
  - 80% NHSN via SSI (7 procedures, 2013)
  - 96% NHSN via CLABSI all inpatient (2013)
  - 100% NHSN via C diff. (2014)

Non-reporting:

- 13 VA/Fed/Psych/EtOH – non-NHSN
- ?? LTC, outpatient dialysis & ambulatory
Public HAI reporting already occurs, somewhat

- CMS hospital compare, other score sites
- CDC HAI reports (state-wide performance)
Washington Perspective
Arizona
ADHS/NHSN Data Use Agreement
ADHS/NHSN Data Use Agreement

- AZ facilities:
  - ~90-100 acute care hospitals; ~150-160 LTC

- ADHS/NHSN access:
  - CMS reporters (>80% ACH), more enrollment?

- Locations:
  - All patient care locations
    - ICU, wards; rehab; ambulatory surgery, outpatient dialysis
ADHS/NHSN Data Use Agreement

- **Device Associated**
  - CLABSI
  - Catheter urinary tract infection (CAUTI)
  - Ventilator associated events (VAE)
  - Central line insertion practices (CLIP)
  - Dialysis Events (DE)

- **Surgical Site Infections**
  - 6 procedures

- **Multi-drug resistant organisms**
  - MRSA, C. diff, CRE, others
Arizona Plan:

- Surveillance steering prevention collaboratives
- Partner with QIO to avoid duplication
- State-wide aggregate reporting

Washington advice for state HAI reporting:

- Validation needed for even playing field
- Tools for validation methods available
- Mandatory reporting helps
- Balance/increase state resources to HAI needs
  - Size & number of facilities; type & volume of infections
Resources

ADHS/CDC Dual Use Agreement Template

American Society for Quality
http://asq.org/index.aspx

CDC NHSN
http://www.cdc.gov/nhsn/

Washington State HAI Program
Validation reference manual available upon request
Thank You!

Questions?
Jason Lempp
Jason.Lempp@doh.wa.gov
(206) 418-5500

Acknowledgements

Washington State Department of Health:
  David Birnbaum
  Jeanne Cummings
  Pamela Lovinger

Washington State HAI Advisory Committee Members

Washington State’s Hospital Infection Preventionists