HEALTHCARE-ASSOCIATED INFECTIONS (HAI) DATA QUALITY REVIEW FINDINGS SFY 2015 (2014 DATA)

MARYLAND HEALTH CARE COMMISSION (MHCC 11-016)
Presentation Outline

- Introduction/Purpose
- The Data Quality Review Project
- Statewide Findings
- General Recommendations
  - Q&A
- Individual Event Types
  - Process
  - Findings
  - Recommendations
  - Q & A
- Conclusion
Introduction – Project Structure

State of Maryland

MD Health Care Commission (MHCC)

HAI Advisory Committee

Advanta Medical Solutions, LLC

Advanta Government Services, LLC (AGS)

NHSN Discordancy Resolution

Haleyon Research

HCRS Inc IT Programmers & Chart Auditors
Project Objectives

- Review the completeness & accuracy of HAI data collected thru CDC’s NHSN surveillance system.
- Use alternative data sources including HSCRC case mix (clinical) data to target audit activities.
- Develop cost effective alternative to random on-site chart reviews.
- Identify data quality issues in the HSCRC data.
- Provide recommendations & training to facilitate data quality improvement.
Project Overview

- Contract with Advanta Government Services, LLC
  - Five years
  - Modifications made to original yearly plans
    - SFY 2012- CLABSI on-site chart review audits
    - SFY 2013- CLABSI on-site chart review audits
    - SFY 2014- SSI on-site chart review audits
    - SFY 2015- HAI Data Quality Review- all event types
    - SFY 2016- Education, focused on-site reviews, foster collaborative process improvement
HAI Data Quality Review

- Data reported to NHSN
  - Accurate
  - Complete
  - Consistent
  - Timely
  - Reproducible
HAI Reporting

- **IP**: Report all cases that meet NHSN surveillance definitions
- **Leadership & Physicians**: Respect and support the NHSN reporting process

### SURVEILLANCE
- Population based
- Standard definitions
- Data collection & analysis
- Process improvement
- NHSN Event

### CLINICAL
- Patient based
- All available data
- Unique diagnosis
- Guide medical treatment
- HSCRC ICD-9-CM /CPT coding
Response to reports of reporting avoidance activity

- Purposeful non-reporting, deviations from standards of medical care, & pressure on IPs to alter data submitted to NHSN

- CDC/NHSN- CMS Communique October 7, 2015
  - Addressing Failure to Report HAIs
  - Input from
    - AHA, FAH, APIC
Communique (cont.)

- NHSN
  - Right to revoke enrollment if knowingly violate NHSN protocols
- The United States Department of Health and Human Services Office of the Inspector General
  - Unable to reconcile differences within facility
  - Intentional deviations from NHSN reporting protocols
  - Hotline 1-800-447-8477
  - https://oig.hhs.gov
Data Review Focus

- 2014 NHSN data
  - Surgical Site Infection (SSI)
  - Catheter-Associated Urinary Tract Infection (CAUTI)
  - Central Line-Associated Blood Stream Infection (CLABSI)
  - CDIF toxin-positive stool specimens
  - MRSA bacteremia/MRSA positive blood cultures
Statewide Findings

- **SSI procedures**
  - 8,469 reported to NHSN
  - 343 (4.1%) potential over-reported
  - 1,097 (13%) potential under-reported

- **SSI Events**
  - 170 reported to NHSN
  - 5 (2.9%) potential over-reported
  - 246 (144.7%) potential under-reported
Statewide Findings

- **3,334** CDIF specimens reported to NHSN
  - 1,867 potential errors

- **583** MRSA specimens reported to NHSN
  - 692 potential errors

- **151** CAUTI reported to NHSN
  - 5 (3.4%) device Insertion coded
  - 5 (3.4%) infection related to urinary catheter coded

- **49** CLABSI reported to NHSN
  - 38 (77.6%) device insertion coded
  - 11 (22.5%) bacteremia related to a central line coded
Lessons Learned

- Findings from review to be used by
  - State
    - MHCC
      - Reference for education tools & future audits
    - HSCRC
      - Develop additional screening tools
  - Facility
    - Identify system vulnerabilities
      - Initiate process improvements
HAI Data Quality

- How do we achieve HAI data quality?
  - Leadership
  - Interdepartmental ownership & accountability

- Majority of key elements in HAI reporting
  - Medical record documentation
    - 67-95% - Medical record
      - Accurate, complete, archived, & retrievable
    - 5-33% - IP
All departments have numerous responsibilities

- Do all departments have HAI slices in their pies?
Multidisciplinary approach not just for HAI prevention
MHCC Recommendations

- Multidisciplinary & interdepartmental review of HAI surveillance processes
  - Identify key reporting elements
  - Assign departmental responsibility
    - Assure accurate documentation
    - Retrieval of key elements

- NHSN on-line HAI educational resources
  - IP & multidisciplinary team
    - Initial & Ongoing education
Questions

- Questions from CEO’s/CFO’s
- Details for each event type will follow
HAI Data Reliability

- Denominator data
  - Identify at risk populations
  - Device, Patient days & Admission totals
  - Specific NHSN requirements by event type
  - Compliance difficult when data available does not meet NHSN requirements
HAI Data Reliability (cont.)

- **Numerator Data**
  - HAI Events determined by IP
  - **Factors**
    - NHSN definitions & reporting guidelines
    - Medical record documentation
HAI Data Reliability (cont.)

- Denominator & Numerator accuracy
  - Collection & Reporting
    - Specific requirements for each event type
    - Labor intensive
    - Electronic collection processes
      - Adhere to NHSN guidelines
      - NHSN specified validation parameters
        - Compare to manual counts at least 3 months
        - +/- 5%
SSI Reporting Overview

- SSI reporting components
  - Surgical Procedures – NHSN denominator
    - CBGB, CBGC
    - COLO
    - HPRO
    - HYST
    - KPRO
  - SSI Events – NHSN numerator
    - Infections related to surgical site following NHSN defined operative procedure
### 1st Q 2014 NHSN SSI data

#### NHSN Reporting by Procedure Type 1Q 2014

<table>
<thead>
<tr>
<th>NHSN Reported</th>
<th>Total</th>
<th>CBGB (6.7%)</th>
<th>CBGC (0.5%)</th>
<th>COLO (15.9%)</th>
<th>HPRO (23.2%)</th>
<th>HYST (14.9%)</th>
<th>KPRO (39%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procedures</td>
<td>8,469</td>
<td>566</td>
<td>41</td>
<td>1,344</td>
<td>1,966</td>
<td>1,252</td>
<td>3,300</td>
</tr>
<tr>
<td>SSI: All Types</td>
<td>170</td>
<td>10 (5.9%)</td>
<td>0 (0%)</td>
<td>106 (62.4%)</td>
<td>19 (11.2%)</td>
<td>19 (11.2%)</td>
<td>16 (9.4%)</td>
</tr>
<tr>
<td>SSI: DIP/OS</td>
<td>94</td>
<td>6 (6.4%)</td>
<td>0 (0%)</td>
<td>51 (54.3%)</td>
<td>11 (11.7%)</td>
<td>13 (13.8%)</td>
<td>13 (13.8%)</td>
</tr>
</tbody>
</table>
## Data Review Findings

### SSI Procedures

- **Procedure findings 1\(^{st}\) Q 2014**

<table>
<thead>
<tr>
<th>Qualifying Procedures 1Q 2014</th>
<th>NHSN SSI Reporting</th>
<th>Reported to NHSN</th>
<th>Potential Over-Reported Procedure</th>
<th>Potential Under-Reported Procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qualifying Surgical Procedures</td>
<td>8,469</td>
<td>343 (4.1%)</td>
<td>1,097 (13.0%)</td>
<td></td>
</tr>
</tbody>
</table>
## Data Review Findings
### SSI Events

- **SSI events**
  - Facility report workbook with line list of discrepant cases

<table>
<thead>
<tr>
<th>SSI Events 1Q 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NHSN SSI Reporting</strong></td>
</tr>
<tr>
<td>--------------------</td>
</tr>
<tr>
<td>SSI Events</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

(1) Identified by infection codes during a readmission following a stay for a qualifying procedure.
(2) Identified by infection codes during the same stay as the qualifying procedure, excluding colon surgeries.
Data Review Findings
SSI Events (cont.)

- Potentially under-reported SSI
  - Readmission (RE): infection codes in HSCRC data within specified infection surveillance window
    - 30 or 90 days
  - Same-stay (SS) infection codes in HSCRC data
    - Same admission as index procedure
SSI Event to HSCRC Verification

- NHSN Reported SSI: DIP/OS

### NHSN DIP/OS Detection 1Q 2014

<table>
<thead>
<tr>
<th>NHSN Reported SSI</th>
<th>Detection During Index Adm.</th>
<th>Detection Readmit Same Facility</th>
<th>Detection Readmit Other Facility</th>
<th>Detection Post-discharge</th>
<th>Eligible for NHSN Event to HSCRC Stay Match</th>
<th>Ineligible for NHSN Event to HSCRC Stay Match</th>
</tr>
</thead>
<tbody>
<tr>
<td>94</td>
<td>40 (42.5%)</td>
<td>42 (44.7%)</td>
<td>4 (4.3%)</td>
<td>8 (8.5%)</td>
<td>82</td>
<td>12</td>
</tr>
</tbody>
</table>

### NHSN/HSCRC Findings 1Q 2014

<table>
<thead>
<tr>
<th>NHSN Reported SSI</th>
<th>Eligible NHSN Event to HSCRC Stay Match</th>
<th>NHSN Event to HSCRC Stay Match</th>
<th>NHSN Event to HSCRC Stay No Match</th>
</tr>
</thead>
<tbody>
<tr>
<td>94</td>
<td>82</td>
<td>79 (96%)</td>
<td>3 (4%)</td>
</tr>
</tbody>
</table>
Role of HSCRC Administrative Data

SSI Reporting

- Highly effective

- Potential over & under-reported
  - Procedures (denominator)
  - SSI (numerator) except COLO during same-stay
    - Infection codes for COLO
      - Large subset-lack of specificity
    - COLO procedures have higher potential for initial admission diagnoses codes = infection codes
      - Intestinal perforation/peritonitis
      - Abscess
      - Fistula
SSI Questions

☐ Questions?
LabID Event Reporting

- **IS NOT** MDRO/CDI infection surveillance
- Calculate proxy measures
  - Healthcare acquisition
  - Exposure burden
  - Infection burden
- Decrease the surveillance burden
- Complex guidelines
  - On-line tools
LabID NHSN logistics “Onset” assignment

<table>
<thead>
<tr>
<th>LabID Event MRSA (blood specimen only) NHSN Onset Assignment 1&amp;2Q 2014</th>
<th>NHSN Events</th>
<th>Hospital Onset (HO)</th>
<th>Community Onset (CO)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MRSA</td>
<td>583</td>
<td>156 (26.8%)</td>
<td>427 (73.2%)</td>
</tr>
</tbody>
</table>
- LabID NHSN logistic CDIF categorization

<table>
<thead>
<tr>
<th>LabID Event CDIF Categorization NHSN 1&amp;2Q 2014</th>
<th>Incident</th>
<th>Recurrent</th>
<th>Neither</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDIF</td>
<td>3,334</td>
<td>3112 (93.34%)</td>
<td>201 (6.03%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LabID Event CDIF NHSN Onset Assignment 1&amp;2Q 2014</th>
<th>Hospital Onset (HO)</th>
<th>Community Onset (CO)</th>
<th>Community-Onset Healthcare Facility-Associated (CO-HCFA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incident</td>
<td>3,112</td>
<td>1286 (41.3%)</td>
<td>1423 (45.7%)</td>
</tr>
<tr>
<td>Recurrent</td>
<td>201</td>
<td>56 (27.86%)</td>
<td>51 (25.37%)</td>
</tr>
<tr>
<td>Neither</td>
<td>21</td>
<td>14 (66.67%)</td>
<td>0 (0%)</td>
</tr>
</tbody>
</table>
LabID Data Submission Challenges

- Facility
  - Excel format
  - Lack of IT, Lab, & HIMS support
  - Unable to identify
    - Facility-affiliated outpatient locations
    - NHSN location- “location” field in NHSN data (your code)
Data Review Findings

Lab ID Events

- Admission & coding analysis

<table>
<thead>
<tr>
<th>LabID Events Q1&amp;2 2014</th>
<th>LabID Event Type</th>
<th>Reported to NHSN</th>
<th>NHSN/HSCRC Stay Verified</th>
<th>HSCRC ICD-9-CM Infection Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CDIF, Toxin positive stool specimens</td>
<td>3,334</td>
<td>3,136 (94.1%)</td>
<td>2,670 (80.1%)</td>
</tr>
<tr>
<td></td>
<td>MRSA, Blood Specimens Only</td>
<td>583</td>
<td>540 (92.6%)</td>
<td>497 (85.3%)</td>
</tr>
</tbody>
</table>

- Unverified specimens ➔ Potential reporting error
- Included in “Potential Errors” category on facility report
- Require medical record review to verify stay
## Overview

### Table 2. LabID Event Findings 1Q & 2Q 2014

<table>
<thead>
<tr>
<th>LabID Type</th>
<th>Reported to NHSN</th>
<th>NHSN to HSCRC Match</th>
<th>NHSN to Lab Match</th>
<th>NHSN to Lab Errors &amp; NHSN No Match to HSCRC or Lab</th>
<th>Potential Under-Reported Specimens</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDIF</td>
<td>3,334</td>
<td>3,136 (94.1%)</td>
<td>2,567 (67.3%)</td>
<td>964 (28.1%)</td>
<td>848 (25.4%)</td>
</tr>
<tr>
<td>MRSA</td>
<td>583</td>
<td>540 (92.6%)</td>
<td>447 (76.7%)</td>
<td>170 (29.1%)</td>
<td>522 (89.5%)</td>
</tr>
</tbody>
</table>
## Data Review Findings

### LabID Events (cont.)

- **NHSN to Lab errors**

<table>
<thead>
<tr>
<th>LabID Events Potential NHSN to Lab Errors 1&amp;2 Q 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NHSN to Lab Potential Errors</strong></td>
</tr>
<tr>
<td>---------------------------------</td>
</tr>
<tr>
<td>CDIF</td>
</tr>
<tr>
<td>MRSA</td>
</tr>
</tbody>
</table>
Data Review Findings
LabID Events (cont.)

- **Potential under-reported cases**

<table>
<thead>
<tr>
<th>LabID Events Q1&amp;2 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>LabID Event Type</td>
</tr>
<tr>
<td>CDIF</td>
</tr>
<tr>
<td>MRSA <em>Blood Specimens Only</em></td>
</tr>
</tbody>
</table>

- **All included in potential error totals**
  - Cases with HSCRC coding (column 2) MR review for + specimen collection
    - Since all positive specimens were not submitted for review could not exclude
  - “Qualifying specimens” included non-duplicate/unique specimens
    - Inpatient collection location
    - Facility-affiliated outpatient collection location & HSCRC data supporting admission the same day
LabID Questions

- Questions?
Device-Associated Reporting

- **CAUTI & CLABSI**
  - **Denominator**
    - Patient days
    - Device days
      - Same time every day
      - CLABSI NICU includes
        - Birth weight categories
  - **Numerator:**
    - NHSN surveillance criteria
      - Diagnostic testing
      - S/S
## CAUTI & CLABSI

<table>
<thead>
<tr>
<th>NHSN Event Type</th>
<th>Reported to NHSN</th>
<th>NHSN Event within HSCRC Stay Verified</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAUTI</td>
<td>151</td>
<td>147 (97.4%)</td>
</tr>
<tr>
<td>CLABSI</td>
<td>49</td>
<td>49 (100%)</td>
</tr>
</tbody>
</table>
## Data Coding Review
### Device-Associated Event

- **CC Stay, Device Insertion, & Infection**

<table>
<thead>
<tr>
<th>Device-Associated Coding</th>
<th>CAUTI Admit Verified</th>
<th>CC Stay Identified</th>
<th>Device Insertion Coded in HSCRC Data</th>
<th>UTI Coded in HSCRC Data</th>
<th>ICD-9 CM Code 996.64</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>147</td>
<td>146 (99.3%)</td>
<td>5 (3.3%)</td>
<td>77 (51.1%)</td>
<td>5 (3.3%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>CLABSI Admit Verified</th>
<th>CC Stay Identified</th>
<th>Device Insertion Coded in HSCRC Data</th>
<th>CL Related Infection Codes in HSCRC Data</th>
<th>ICD-9 CM Code 999.32</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>49</td>
<td>45 (91.8%)</td>
<td>38 (77.6%)</td>
<td>11 (22.4%)</td>
<td>6 (12.4%)</td>
</tr>
</tbody>
</table>
Role of HSCRC Administrative Data

Device-Associated Events

- ICD-9 CM coding
  - Not effective in identifying potential events
    - Used with positive BC results may be moderately effective in identifying potential CLABSI events
  - Coding findings may be useful to facilities
    - Identify coding deficits
      - CC location
      - Device insertion
Recommendations

- Process improvement
  - Best practice protocols
  - Unit-based ownership
  - Infection rates & utilization ratios posted for staff
    - Action plan when above NHSN pooled mean

- Coding deficiency
  - HIMS & physicians, nursing management investigate
    - Lack of documentation versus coding errors
Recommendations (cont.)

- Identify stakeholders for each event type
- Education
  - All NHSN definitions and reporting guidelines
    - On-line event modules
    - NHSN IT support
- Identify key elements & assign stakeholder
- Unit based process improvement initiatives
  - Accurate documentation of key elements
    - Example: Admitting department: Admission totals by unit demonstrating outpatients housed on inpatient units are included.
Recommendations (cont.)

- **SSI Reporting Procedures & SSI events**
- **Capture all NHSN qualifying procedures**
  - Accurate & complete list of ICD-10-CM/PSC codes
  - IT develop report of all procedures
  - SS primary stakeholder
    - Responsible for denominator submission
    - PI procedure coding, pre-intra & post perioperative documentation
  - Electronic system rep
    - Demonstrate definitions & procedures are incorporated
Recommendations (cont.)

- **SSI surveillance**
  - IT develop electronic reports readmission 30/90 days
  - IP alert from HIMS when procedure & diagnosis codes suggestive of potential SSI are coded
  - All staff report suspected SSI to IP
  - Wound & tissue cultures

- **Post- discharge surveillance**
  - IP report suspected SSI back to index facility
  - Medical staff office
  - Facilitate surveys to office managers/surgeons
Recommendations (cont.)

- LabID events

- Lab management, IT, electronic surveillance rep, & IP
  - IP identify NHSN inpatient, ED, 24 hr observation, & hospital affiliated outpatient locations
    - Use to develop reports and archiving data
  - Lab, IT demonstrate to IP
    - Key elements are accurate according to NHSN definitions
    - Why weren’t all positive specimens retrievable
    - ? Specimen collection location accuracy for some facilities

- Develop electronic reports specific for CDIF & MRSA
  - Based on reporting definitions
Recommendations (cont.)

- Device-associated events

- Review denominator collection processes
  - Patient and device days
    - Collected same time each day
      - Unit-based responsibility
      - Electronic collections that provide a 24 hr total instead of a snapshot in time are not valid for NHSN reporting
      - Electronic collection must be manually validated
    - Does the facility meet the criteria to allow the use of the new NHSN weekly device day reporting option?
      - Recommend internal validation of this option before incorporating into NHSN reporting
      - Under-reporting device days negatively impacts infection rates
Conclusion

- MHCC intends to coordinate the promotion of
  - Greater facility-level interdepartmental involvement in HAI surveillance
  - Collaboration among facilities to share best practice processes

You have to do it by yourself...
but you cannot do it ALONE.
Appendix Index

- Abbreviations
- Audit Processes
- ICD-9-CM diagnosis & procedure codes potential SSI detection
Abbreviations (cont.)

- AHA-American Hospital Association
- APIC-Association for Professionals in Infection Control and Epidemiology
- CAUTI-Catheter-Associated Urinary Tract Infection
- CBGB- Coronary Artery Bypass Graft Both Chest and Donor Site Incisions
- CBGC- Coronary Artery Bypass Graft Chest Incision Only
- CC-Critical Care
- CDC-Centers for Disease Control and Prevention
Abbreviations (cont.)

- CDI - *Clostridium difficile* Infection
- CDIF - *Clostridium difficile*
- CL - Central Line
- CMS - Centers for Medicare & Medicaid Services
- COLO - Colon Surgery
- CLABSI - Central Line-Associated Bloodstream Infection
- DIP - Deep incisional primary
- FAH - Federation of American Hospitals
Abbreviations (cont.)

- ICD-International Classification of Diseases
- HAI-Healthcare-Associated Infection
- HPRO-Hip Prosthesis Surgery
- HSCRC-Health Services Cost Review Commission
- HYST-Abdominal Hysterectomy
- IP-Infection Preventionist
- KPRO-Knee Prosthesis Surgery
- Lab-Laboratory
- LabID-Laboratory-Identified
- MHCC-Maryland Health Care Commission
Abbreviations (cont.)

- ICD-International Classification of Diseases
- HAI-Healthcare-Associated Infection
- HPRO-Hip Prosthesis Surgery
- HSCRC-Health Services Cost Review Commission
- HYST-Abdominal Hysterectomy
- IP-Infection Preventionist
- KPRO-Knee Prosthesis Surgery
- Lab-Laboratory
- LabID-Laboratory-Identified
- MHCC-Maryland Health Care Commission
Abbreviations (cont.)

- MDRO-Multi-Drug Resistant Organism
- MRN-Medical Record Number
- MRSA-Methicillin-Resistant *Staphylococcus aureus*
- NHSN-National Healthcare Safety Network
- NICU-Neonatal Intensive Care Unit
- OS-Organ Space
- SIR-Standardized Infection Ratio
- SSI- Surgical Site Infection
- UC-Umbilical Catheter
- UTI-Urinary Tract Infection
SSI Review Process

- NHSN ↔ HSCRC (inpatient & outpatient data)
  - Procedure date within stay
    - Potential over-reported procedure & SSI
  - Verify qualifying procedure reported to NHSN was coded in HSCRC data
    - Potential over-reported procedure
    - Potential under-reported procedures

- HSCRC → Qualifying CPT, procedure, or Infection codes
  - Potential under-reported procedure & SSI
LabID Event Review Process

- **NHSN → HSCRC**
  - Specimen within stay
  - Potential over-reported specimens

- **Facility Lab data ↔ NHSN & HSCRC**
  - Specimen reported NHSN, with stay
  - Potential over- & under-reported specimens

- **HSCRC → Infection codes**
  - Potential under-reported specimens
Device-Associated Event Coding Review Process

- NHSN ↔ HSCRC (inpatient data)
  - NHSN reported Date of event within HSCRC stay
  - CC stay verified
  - Infection Coded
  - Device insertion coding
    - NHSN
      - Org ID, MRN, DOB, Date of event
    - HSCRC
      - CCN, Org ID, MRN, DOB, CC stay, diagnosis codes indicating device insertion, and infection
## Infection codes for COLO & HYST potential SSI

<table>
<thead>
<tr>
<th>ICD-9-CM</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>86.04</td>
<td>Skin and subcutaneous I&amp;D NES</td>
</tr>
<tr>
<td>86.22</td>
<td>Excisional debridement of wound, infection, burn</td>
</tr>
<tr>
<td>86.28</td>
<td>Non-excisional debridement of wound, infection, burn</td>
</tr>
<tr>
<td>567.21</td>
<td>Peritonitis (acute) generalized- male</td>
</tr>
<tr>
<td>567.22</td>
<td>Peritoneal abscess: abdominopelvic, mesenteric, omentum, peritoneum</td>
</tr>
<tr>
<td>567.29</td>
<td>Other suppurative peritonitis</td>
</tr>
<tr>
<td>567.38</td>
<td>Pelvic abscess</td>
</tr>
<tr>
<td>569.5</td>
<td>Intestinal abscess</td>
</tr>
<tr>
<td>569.61</td>
<td>Infection of colostomy or enterotomy</td>
</tr>
<tr>
<td>569.81</td>
<td>Fistula of intestine</td>
</tr>
<tr>
<td>614.5</td>
<td>Acute or unspecified pelvic peritonitis, female</td>
</tr>
<tr>
<td>682.2</td>
<td>Other cellulitis and abscess-trunk</td>
</tr>
</tbody>
</table>
# ICD-9-CM

## Procedure Codes

- **Infection codes for COLO & HYST potential SSI**

<table>
<thead>
<tr>
<th>ICD-9-CM</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>38.4</td>
<td>Septicemia due to gram-negative organism, unspecified</td>
</tr>
<tr>
<td>38.42</td>
<td>Septicemia due to gram-negative organism, <em>E. coli</em></td>
</tr>
<tr>
<td>38.43</td>
<td>Septicemia due to gram-negative organism, <em>Pseudomonas</em></td>
</tr>
<tr>
<td>38.49</td>
<td>Septicemia due to gram-negative organism, <em>other</em></td>
</tr>
<tr>
<td>38.9</td>
<td>Septicemia, unspecified</td>
</tr>
<tr>
<td>54.00</td>
<td>Incision and drainage of abdominal wall</td>
</tr>
<tr>
<td>54.12</td>
<td>Reopening of recent laparotomy site</td>
</tr>
<tr>
<td>54.19</td>
<td>Drainage of intraperitoneal abscess or hematoma</td>
</tr>
<tr>
<td>54.91</td>
<td>Percutaneous abdominal drainage</td>
</tr>
<tr>
<td>70.12</td>
<td>Culdotomy</td>
</tr>
<tr>
<td>70.14</td>
<td>Other vaginotomy</td>
</tr>
</tbody>
</table>
# Infection codes for all procedure types

<table>
<thead>
<tr>
<th>ICD-9-CM</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>998.31</td>
<td>Disruption or dehiscence of closure of internal operation (surgical wound)</td>
</tr>
<tr>
<td>998.32</td>
<td>Disruption or dehiscence of closure of external operation (surgical wound)</td>
</tr>
<tr>
<td>998.5</td>
<td>Postoperative infection</td>
</tr>
<tr>
<td>998.51</td>
<td>Infected postoperative seroma</td>
</tr>
<tr>
<td>998.59</td>
<td>Other postoperative infection</td>
</tr>
<tr>
<td>998.6</td>
<td>Non-healing surgical wound, persistent post operative fistula</td>
</tr>
<tr>
<td>998.83</td>
<td>Non-healing surgical wound</td>
</tr>
<tr>
<td>998.9</td>
<td>Unspecified complication of procedure, not elsewhere classified</td>
</tr>
</tbody>
</table>
## Infection codes for specific procedure types

<table>
<thead>
<tr>
<th>ICD-9-CM</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>711.05</td>
<td>Pyogenic arthritis pelvic region, thigh</td>
</tr>
<tr>
<td>711.06</td>
<td>Pyogenic arthritis lower leg</td>
</tr>
<tr>
<td>995.91</td>
<td>Sepsis without acute organ dysfunction</td>
</tr>
<tr>
<td>995.92</td>
<td>Severe sepsis</td>
</tr>
<tr>
<td>996.6</td>
<td>Infection and inflammatory reaction due to internal prosthetic device, implant, and graft</td>
</tr>
<tr>
<td>996.61</td>
<td>Infection and inflammatory reaction due to cardiac device, implant, graft</td>
</tr>
<tr>
<td>996.66</td>
<td>Infection and inflammatory reaction due to internal joint prosthesis</td>
</tr>
<tr>
<td>996.67</td>
<td>Infection and inflammatory reaction due to internal orthopedic device, implant</td>
</tr>
<tr>
<td>997.49</td>
<td>Complication of internal anastomosis of : gastrointestinal tract</td>
</tr>
</tbody>
</table>