Values.Execution.Results.

MARYLAND HEALTH CARE COMMISSION
(MHCC 11-016)
HEALTHCARE-ASSOCIATED INFECTIONS (HAI)
DATA QUALITY REVIEW FINDINGS
SFY 2016 (2015 DATA)

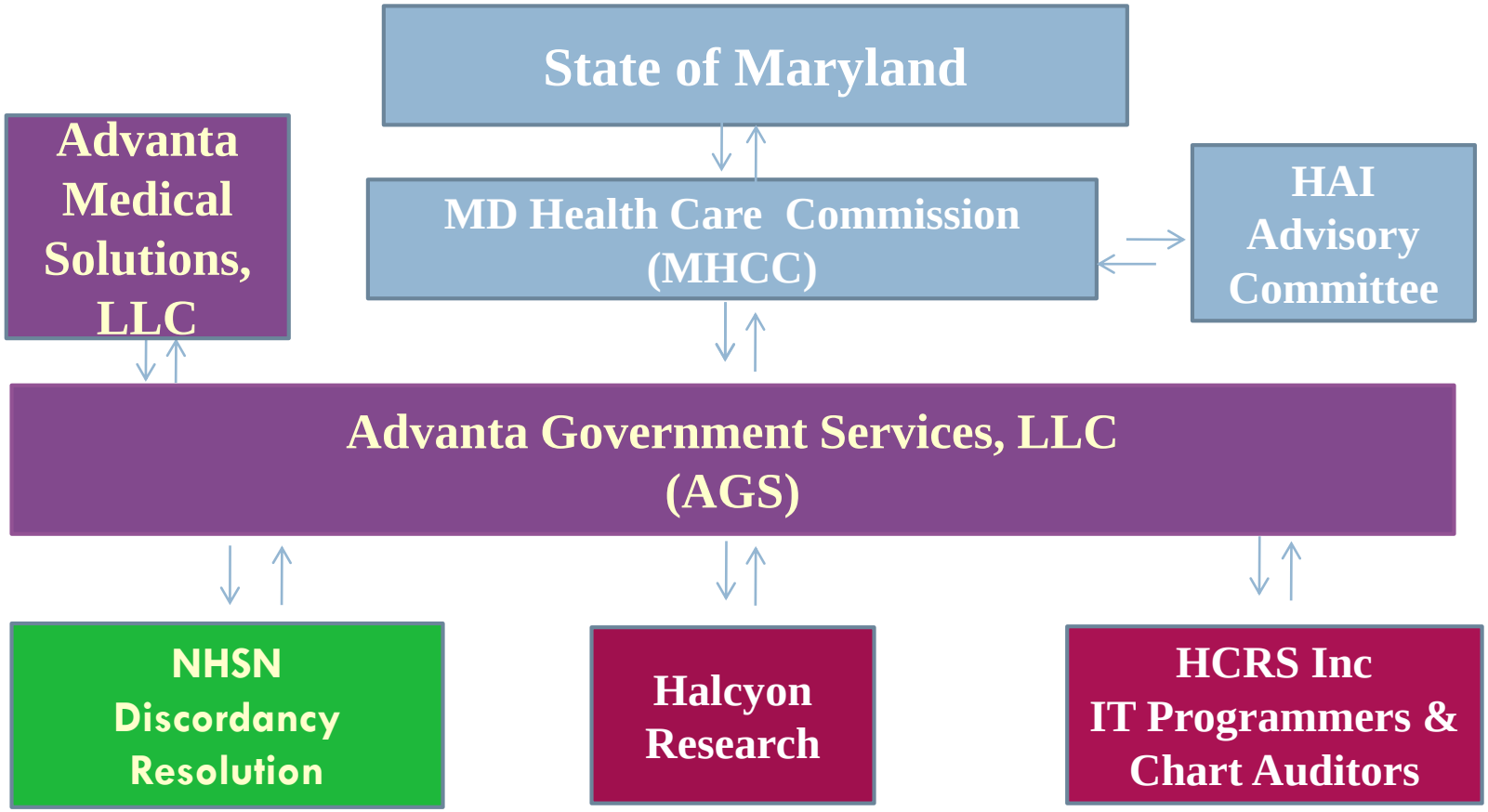
SSI Operative Procedures & CAUTI Audit Findings Webinar

June 21, 2016

Presentation Outline

- Introduction/Objective/Overview
- SSI Inpatient Operative Procedure Review
  - Statewide Findings
  - Recommendations
  - Q&A
- CAUTI Targeted Audit
  - Findings
  - Recommendations
  - Q&A
- Conclusion
- Appendices

Introduction – Project Structure



Project Objectives

- To review the completeness & accuracy of HAI data collected from non-federally owned Maryland hospitals via the CDC's NHSN surveillance system.

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-** Limited SSI Inpatient Operative Procedure data review- September 2015 NHSN data, targeted CAUTI audit with on-site reviews 2Q 2015 data, education, and foster collaborative process improvement

HAI Data Quality Review

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

Surgical Site Infection (SSI) Reporting

- SSI Surveillance for Acute Care Hospitals
- Denominator reporting
  - NHSN defined operative procedures performed in any setting
    - Inpatient
    - Outpatient
  - The setting does not determine the NHSN defined procedure status
    - 2015 NHSN reporting instructions for reporting Outpatient Y:
    - Check Y if the NHSN operative procedure was performed on a patient whose date of admission to the healthcare facility and date of discharge are the same calendar day, otherwise check N.
- Numerator reporting
  - Subsequent SSIs that occur as a result of the procedures reported

SSI Operative Procedure Reporting (cont.)

- Denominator Collection
  - Labor intensive
  - NHSN provides list of ICD & CPT codes
  - NHSN procedure code mapping
    - Identify cases by procedure groups for NHSN users to facilitate reporting
    - Standardize surgical procedure reporting for facilities participating in NHSN reporting

SSI Operative Procedure Reporting (cont.)

- NHSN SSI Inpatient Operative Procedures
  - SSI denominator
  - CBGB, CBGC
  - COLO
  - HPRO & KPRO
  - HYST
  - At least one incision (including laparoscopic) through skin or mucous membrane, or reoperation via an incision that previously left open
  - Takes place in an operating room that meets defined standards
  - ASA of <6

Statewide Findings Over-Reporting

- 2,312 SSI procedure cases were reported to NHSN
  - 2,182 (94.38%) reported correctly
  - 130 (5.92%) over-reported
    - 92 NHSN Procedure codes not found in HSCRC data
    - 38 HSCRC record not found
      - Inpatient discharge data was not reviewed past Oct. 31, 2015
      - Outpatient discharge data was not reviewed past Sept. 30, 2015
      - May not be true over-reports

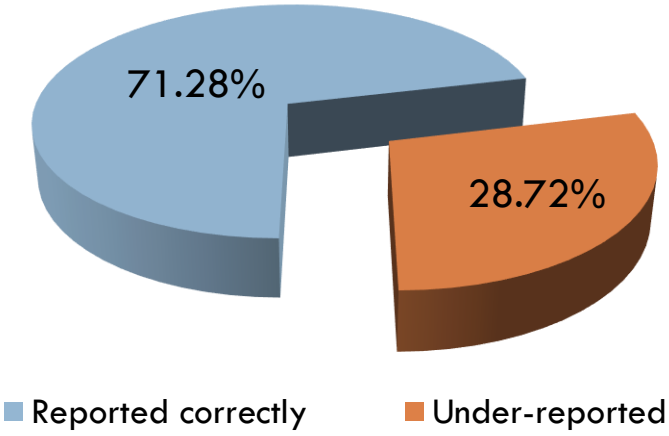
Statewide Findings Over-Reporting (cont.)

- Inpatient Operative Procedures Sept 2015

Inpatient Operative Procedures Q2 2015			
NHSN SSI Reporting	Reported to NHSN	Procedure Code Match	Procedure Code No Match (Over-Reported)
Qualifying Operative Procedures	2,312	2,182 (94.38%)	130 (5.62%)

Statewide Findings Under-Reporting

- 3,061 True NHSN procedure cases
  - 2,182 (71.28%) reported correctly to NHSN
    - Reported cases with procedure code match in HSCRC
  - 879 (28.72%) under-reported
    - Cases with operative procedure coding in HSCRC but not reported to NHSN



Statewide Findings Under-Reporting (cont.)

- True NHSN inpatient operative procedures

True Operative Procedures Q2 2015		
True NHSN Procedures	Procedure Code NHSN/HSCRC Match	Procedure Code in HSCRC Not Reported NHSN (Under-Reported)
3,061	2,182 (71.28%)	879 (28.72%)

SSI Denominator Findings

- SSI procedure findings by type

SSI Operative Procedure Findings for September 2015							
	Total	CBGB	CBGC	COLO	HPRO	HYST	KPRO
NHSN Reported Procedures	2,312	200	5	371	586	290	860
Over-reported	130	27	0	46	12	34	11
Correctly Reported NHSN	2,182	173	5	325	574	256	849
Under-reported*	879	40	7	123	203	239	267
True NHSN Procedures	3,061	213	12	448	777	495	1,116
* Based on procedures reported to NHSN by December 9, 2015							

SSI Denominator Data Quality

- How do we achieve SSI denominator data quality?
  - Leadership
  - Ownership & accountability
    - Coding Managers
    - Surgical Services
    - Surgeons

- 100% of key elements in SSI denominator reporting
  - Medical record documentation
    - Accurate, complete, archived, & retrievable

ICD-10 PCS

- Number of procedure codes increased dramatically
  - Automated system to capture procedures
  - Detailed operative reports required
  - May lead to increase in reporting errors
- NHSN Procedure Codes are updated as needed
  - Updates are posted on the SSI webpage
    - Emails notifying NHSN users and vendors of updates
      - Details of where the updates are posted and a summary

Lessons Learned

- SSI inpatient operative procedure findings
  - State
    - MHCC
      - Identified ongoing challenges with SSI procedure reporting
  - Facility
    - Identify electronic surveillance vulnerabilities
    - Need for internal procedure coding audits
    - Validate electronic data

Recommendations

- Multidisciplinary & interdepartmental review of NHSN SSI operative procedure reporting processes
  - Responsibility/Accountability
  - Internal procedure coding audits by coding manager
- NHSN on-line HAI educational resources
  - IP, Surgical Services and Coding managers
    - Initial & Ongoing education

Recommendations (cont.)

- Respond to missing data alerts displayed upon log-in to NHSN
- Incorporate new NHSN procedure code updates
  - Query NHSN for rationale if procedure code not included in procedure category mapping
    - NHSN welcomes input: inclusion & exclusion errors have occurred

NHSN
National Healthcare Safety Network

Recommendations (cont.)

- SSI operative procedure reporting
  - Most recent list of ICD-10-PSC & CPT codes
  - Information Technology expert/electronic surveillance system rep
    - Develop reports to capture required procedures
    - Demonstrate the reports follow NHSN reporting guidelines
  - Surgical Services should become a primary stakeholder
    - Denominator accuracy
    - Assume the role of NHSN denominator submission
      - Allows for monitoring of procedure coding, pre-intra & post perioperative documentation

Potential Coding Discrepancy

- Open reduction of synthetic joints
  - CPT code: 27253: Open treatment of hip dislocation, traumatic, without internal fixation
    - Open reduction CPT codes not included in NHSN CPT mapping
  - ICD-10 code assigned 0SW90JZ: Revision of Synthetic Substitute in Right Hip Joint, Open Approach
    - ICD-10 translation is included in NHSN HPRO mapping
  - If using ICD-10 to screen
    - Will need to filter Revisions by CPT

NHSN Response

- Full ICD-10 & CPT code mapping available
  - Facilities select the procedure code system that offers the best representation of procedures occurring within their facility
- Follow up with their facility's coding professionals to make sure that the procedure was correctly coded
  - Many facilities are encountering the steep learning curve of the ICD-10 code system
- Open reductions should not be included in the HPRO category

Impact

- This type of ICD-10/ CPT mismatch
  - Could result in denominator over-reporting when only ICD 10-codes are used
  - Decreases the accuracy ICD-10 procedure codes in HSCRC administrative data
    - Tool for identifying potential and probable reporting errors

Questions

- SSI September 2015 operative procedures

CAUTI Validation Audit

- Why CAUTI event audit?
  - Data had not been validated
  - Reporting of this event type extended beyond ICU
- Sample size not to exceed 120 cases
  - On-site reviews would be required

Methodology

- Targeted facility selection: 12 facilities
  - Cost-effective option for on-site reviews
  - NHSN/CDC External Validation Toolkit methodology
    - Ranking facilities based on SIR
      - Evaluate facilities where no SIR is calculated
    - Top 33% sorted into 3 strata
    - Selections from each strata until max selected – 10 facilities
    - Facilities not selected 5% random selected – 2 facilities

Methodology (cont.)

- Data request from facilities
  - Positive urine cultures
    - Match specimen to reported NHSN CAUTI
      - Unmatched to be investigated as potential over-reported cases
    - Select cases for investigation of potential CAUTI events
  - ICU admission records
    - Resource for selecting cases
    - Patients with ICU admission during stay
      - Increased potential of urinary catheter use after d/c from ICU
  - NHSN to lab collection location crosswalk
    - Verify location reporting in NHSN database

Data Submission Challenges

- NHSN/CDC data request templates
  - Some facilities unable to submit using templates
  - Future MHCC or CMS audits may require a set format
- Some facilities submitted partial or no data to AGS
- MRN incorrect in positive culture data
- Crosswalk
  - Not reviewed and updated
  - Lab data did not have same lab locations as crosswalk

Data Analysis

- NHSN CAUTI data analysis Q2 2015
  - 106 CAUTI Events reported
  - 75 of these 106 events (70.75%) were reported by 10 of the 12 selected facilities
    - 2 of the selected facilities reported no CAUTI events
- NHSN CAUTI data/HSCRC Data
  - Verified admission
  - Unverified admission
    - Identified potential over-reported events

Data Analysis (cont.)

- NHSN CAUTI data/Positive urine culture analysis
  - AGS did not receive all positive specimens reported to NHSN as part of CAUTI reporting
- Positive urine culture data analysis
  - Specimens reported to NHSN were identified
    - Assess for specimens occurring in RIT
  - Collection locations
  - Collection date
  - Number of organisms, organism type, colony counts

Targeted Facility Findings

- NHSN CAUTI/HSCRC & Lab data

CAUTI Q2 2015 Targeted Facilities				
Total NHSN	NHSN/HSCRC Match	NHSN/HSCRC No Match	NHSN/Lab Match	NHSN/Lab No Match
75	73 (97.33%)	2 (2.67%)	61 (81.33%)	14 (18.67%)

On-Site Review Sample Selection

- Sample for each facility included:
  - CAUTI events (if reported)
  - Positive urine culture specimens (if submitted to AGS)
- Sample set included 115 cases
  - 39 NHSN CAUTI Events
    - Potential over-reported specimens included
  - 76 positive urine cultures
  - Cases were reviewed in a blinded manner
    - Audit tool developed based on 2015 reporting guidelines

On-Site Review Findings

- 12 Targeted facilities

CAUTI Q2 2015 On-Site Review Findings 12 Targeted Facilities				
Case Type	Cases Reviewed	CAUTI Over-reported	CAUTI Under-reported	CAUTI Confirmed
Reported CAUTI	39	6 (15.38%)	N/A	33 (84.62%)
Positive Urine Culture	76	N/A	6 (7.89%)	6 (7.89%)
Total	**115**	**6**	**6**	**39**

On-Site Review Findings (cont.)

- Over-reported CAUTI Events

CAUTI Q2 2015: Over-Reported Locations		
Over-Reported CAUTI Events	Intensive Care	Medical-Surgical
6	2 (33.33%)	4 (66.67%)

CAUTI Q2 2015: Reasons Over-Reported				
Over-Reported CAUTI Events	DOE Within POA timeframe	S/S or Matching Blood Culture Not Present	Catheter <2 days	RIT of POA CAUTI
6	3 (50.00%)	1 (16.67%)	1 (16.67%)	1(16.67%)

On-Site Review Findings (cont.)

- NHSN reporting guidelines and definitions
  - DOE-Date of Event
    - The Date of Event is the date the **first** element used to meet an NHSN site-specific infection criterion occurs for the **first time** within the seven-day infection window period.
      - Positive culture is the 4th day of the 7 day infection window
      - DOE only if no S/S was present in first three days of infection window

On-Site Review Findings (cont.)

- RIT- Repeat Infection Timeframe-CAUTI 14 days
  - DOE is Day 1 of RIT
  - Foley placement during RIT
    - Does not change the RIT
    - Does not restart an infection window
- Reliable medical record documentation is essential
  - Signs and symptoms reporting
  - Foley insertion and removal verification

On-Site Review Findings (cont.)

- Reported and Confirmed CAUTI findings

CAUTI Q2 2015: NHSN Reporting			
CAUTI NHSN Reported & Confirmed	Organism Match/Partial Match	Date of Event Match	Location Match
33	33 (100%)	24 (72.73%)	27 (81.82%)

On-Site Review Findings (cont.)

- Under-reported CAUTI Events

Q2 2015 CAUTI Under-Reported Locations		
Under-Reported CAUTI Events	Intensive Care	Medical-Surgical
6	5 (83.33%)	1 (16.67%)

- CAUTI criteria not met in cases with positive urine culture

Positive Urine Cultures: CAUTI Criteria Not Met							
Positive Urine Culture No CAUTI	No Catheter	Catheter <2 days	No S/S or Matching Blood Culture	Present on Admission (POA)	RIT of POA CAUTI	Outpatient Location	>2 Organisms
70	28	5	24	6	1	1	5

Incidental Finding

- Inclusion of positive culture data from "off-plan" units
  - A positive culture case reviewed met CAUTI criteria
  - During exit discussion facility provided an Event ID #
  - Case was not in NHSN data available to MHCC/AGS
  - Facility noted event occurred in an "off plan" unit
    - Did not meet Medical-Surgical location criteria
    - Identified a potential need for location designation validation
    - Infections occurring in "off-plan" units are not disclosed to MHCC

Limitations

- Targeted review
  - Findings limited to 12 facilities
- CAUTI denominator collection and NHSN location mapping process were not validated
- Unreliable and inconsistent documentation
  - Urinary catheters insertion and removal
  - Genitourinary symptomology and assessment

Limitations

- Logistical
  - Lack of independent access to
    - All computer systems where medical record information stored
    - Views of medical record used by nursing and IP
  - Unable to print all screens
  - Scanned documents
    - Out of order
    - Missing dates, patient identifiers, and page numbers

Recommendations

- NHSN definitions and reporting guidelines
- 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
    - Investigate 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

Recommendations (cont.)

- CAUTI reduction
  - Unit-based ownership
    - Infection rates & utilization ratios posted
    - Rates above NHSN pooled mean
      - Corrective action plan
      - Measureable goals

Recommendations (cont.)

- Unit Managers/Educators
  - Reinforce best practice protocols
    - Monitor compliance
    - Engage clinicians
  - Medical record documentation audits
    - Device insertion/removal retrievable
    - GU assessment & S/S consistent documentation
      - Understanding of canned text descriptors

Recommendations (cont.)

- Staff Education by unit Manger/ Educator
  - Best practice protocols
    - CAUTI education survey
  - CAUTI risk factors
  - Urine culture collection
  - Bladder scan use
  - Bladder training/removal readiness

Questions

Summary

- MHCC intends to
  - Monitor HAI data quality
  - Promote facility-level interdepartmental involvement in HAI surveillance and reporting
  - Foster collaboration among facilities to share best practice processes

Conclusion

MHCC and AGS would like to thank you for your support of this five year HAI validation project.

Appendices Index

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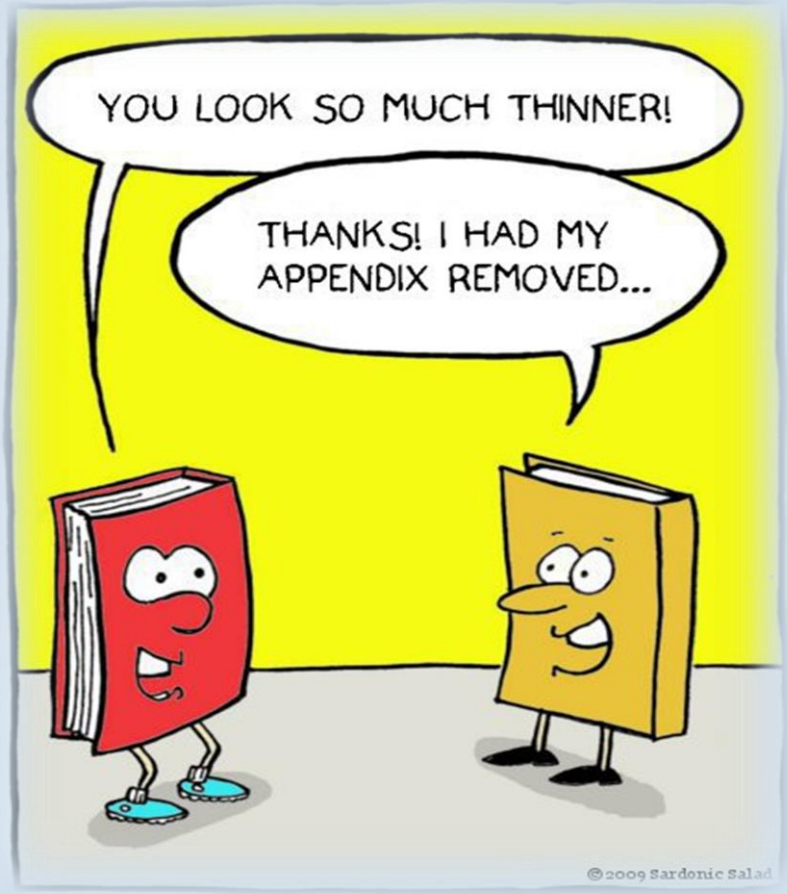
- Appendix 2
  - Hysterectomy Resources
- Appendix 3
  - 2016 NHSN Resources
- Appendix 4
  - HAI Data Quality Pie Chart



Appendix 1: Abbreviations (cont.)

- 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
- CDC-Centers for Disease Control and Prevention
- CMS-Centers for Medicare & Medicaid Services
- COLO-Colon Surgery
- CPT-Current Procedural Terminology
- DOE-Date of Event
- HAI-Healthcare-Associated Infection

Appendix 1 (cont.)

- HPRO-Hip Prosthesis Surgery
- HSCRC-Health Services Cost Review Commission
- HYST-Abdominal Hysterectomy
- ICD-9 CM-International Classification of Disease, Ninth Revision, Clinical Modification
- ICD-10 PCS-International Classification of Disease, Tenth Revision, Procedure Coding System
- ICU- Intensive Care Unit
- IP-Infection Preventionist

Appendix 1 (cont.)

- KPRO-Knee Prosthesis Surgery
- MHCC-Maryland Health Care Commission
- NHSN-National Healthcare Safety Network
- POA- Present on Admission
- SIR-Standardized Infection Ratio
- S/S-Signs and Symptoms
- UTI-Urinary Tract Infection

Appendix 2: Hysterectomy Resources

- NHSN 2015
  - **Laparoscopic hysterectomy – HYST or VHYS:** When assigning the correct ICD-9-CM hysterectomy procedure code, a trained coder must determine what structures were detached and how they were detached based on the medical record documentation. The code assignment is based on the surgical technique or approach used for the detachment of those structures, not on the location of where the structures were physically removed from the patient's body.
- NHSN 2016
  - **Laparoscopic hysterectomy – HYST or VHYS:** When assigning the correct ICD-10-PCS or CPT hysterectomy procedure codes, a trained coder must determine what structures were detached and how they were detached based on the medical record documentation. The code assignment is based on the surgical technique or approach used for the detachment of those structures, not on the location of where the structures were physically removed from the patient's body.

Hysterectomy Resources (cont.)

- http://www.cdc.gov/nhsn/pdfs/commup/coding-guidance-lap-hyst-april2012.pdf
- *AHA Coding Clinic for ICD-9-CM*, Vol. 29, No. 1. First Quarter 2012, pages 3-5.

Total Laparoscopic Abdominal Hysterectomy and Laparoscopically Assisted Vaginal Hysterectomy

The Central Office on ICD-9-CM has recently received questions related to the differences in code assignment between total laparoscopic abdominal hysterectomy (TLH) procedures and laparoscopically assisted vaginal hysterectomy procedures (LAVH). Effective October 1, 2006, new procedure codes were created to distinguish between laparoscopic hysterectomies that utilize tiny incisions and traditional hysterectomies that require a large incision. For additional information on the other types of laparoscopic hysterectomy procedures, please refer to *Coding Clinic*, Fourth Quarter 2006, pages 130-134.

An important factor in assigning the correct ICD-9-CM hysterectomy procedure code is to determine what structures were detached and how they were detached based on the medical record documentation. The focus should be on the surgical technique or approach used for the detachment of those structures. Code assignment should not be based on the location of where the structures were physically removed from the patient's body.

Hysterectomy Resources (cont.)

A total *laparoscopic* abdominal hysterectomy (TLH) involves detachment of the entire uterus and cervix from the surrounding supporting structures via the *laparoscopic technique*. The uterus is then removed through the vagina or abdomen. It may include bivalving, coring, or morcellating the excised tissues, as required. The procedure concludes with suturing of the vaginal cuff, removal of instruments and closure of the incisions.

The fact that the uterus is removed through the vagina does not indicate that the procedure performed was a laparoscopically assisted vaginal hysterectomy. For ICD-9-CM coding purposes, the key is that the structures were detached from surrounding structures or tissues laparoscopically via the abdomen.

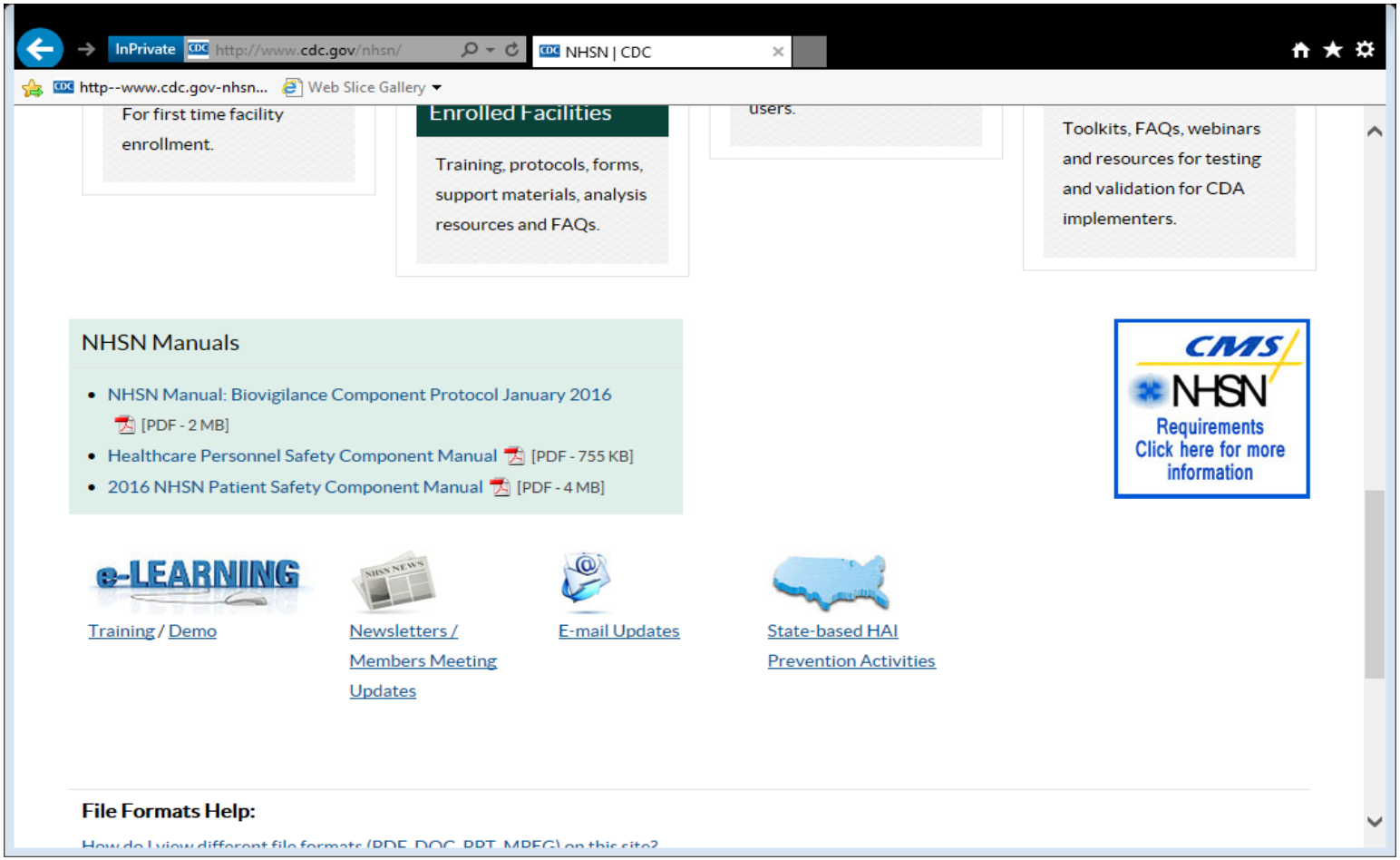
A *laparoscopically assisted* vaginal hysterectomy involves use of the *laparoscope* to guide the procedure and visualize structures in addition to detaching the uterine body from the surrounding upper supportive structures (such as the infundibular pelvic and round ligaments), while the vaginal portion of the procedure involves an *incision being made within the vagina to detach the cervix and uterus from the remaining supporting structures*. The uterus is then removed through the vagina. The procedure concludes with the top part of the vagina being sutured, removal of instruments and closure of the incisions.

Hysterectomy Resources (cont.)

- **Question:**
  - What is the procedure code assignment for a laparoscopic total abdominal hysterectomy when the uterus is pulled out through the vagina?
- **Answer:**
  - Assign code 68.41, Laparoscopic total abdominal hysterectomy. In a laparoscopic totally hysterectomy, the uterine attachments are ligated and transected via a laparoscopic approach. The uterus and cervix are then removed intact through the vagina. Occasionally, the uterus is enlarged and cannot be taken out through the vagina. The surgeon can then morcellate the uterus and remove it via the port incision.
- **Question:**
  - How should a laparoscopically assisted vaginal hysterectomy (LAVH) with bilateral laparoscopic salpingo-oophorectomy be coded?
- **Answer:**
  - Assign codes 68.51, Laparoscopically assisted vaginal hysterectomy; and 65.63, Laparoscopic removal of both ovaries and tubes at same operative episode. In contrast to the laparoscopic total abdominal hysterectomy, the LAVH involves making an incision within the vagina to detach the cervix and uterus and removing the organs through the vagina.

Appendix 3: NHSN Resources

- http://www.cdc.gov/nhsn/



Appendix 3 (cont.)

- Current NHSN Patient Safety Component Manual

http://www.cdc.gov/nhsn/PDFs/pscManual/pcsManual_current.pdf

Chapters

1-Overview

2-Identifying Healthcare-associated Infections for NHSN Surveillance

3-Monthly Reporting Plans and Annual Surveys

4-Bloodstream Infection Event (CLABSI and Non-CLABI)

5-Central Line Insertion Practices (CLIP) Adherence Monitoring

6-Pneumonia (VAP and non-VAP) Event

7-UTI (CAUTI, non-CAUTI) &Other Urinary System Infection Events

9-SSI Event

10-Ventilator-Associated Event (VAE)

12-MDRO & CDI Module

15-CDC Locations & Descriptions & Instructions for Mapping Patient Care Locations

16- General Key Terms

17-Surveillance Definitions for Specific Types of Infections

Appendix 3 (cont.)

- Acute Care Hospital Surveillance
  - Can access training and resources for all event types from this page

http://www.cdc.gov/nhsn/acute-care-hospital/index.html

Appendix 4: HAI Data Quality Pie Chart

- Multidisciplinary approach not just for HAI prevention