Healthcare-Associated Infections
Surgical Site Infections (SSI) Pilot Project, Data Presentation Collaborative, and SSI Mini-Grant Program
2010-2011

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BACKGROUND

The Virginia Department of Health (VDH) received funding under the American Reinvestment and Recovery Act (ARRA) to broaden the capacity and scope of the Virginia Department of Health's (VDH) Healthcare-Associated Infections (HAI) Program by enhancing surveillance for HAIs and building prevention collaboratives. To address these objectives, three surgical site infection-related projects were conducted in 2010 and 2011 and are described in this report: (1) a surgical site infection surveillance pilot; (2) a data presentation collaborative among the facilities participating in the SSI pilot; and (3) a SSI mini-grant program to continue to improve SSI reporting capabilities among all hospitals in the Commonwealth.

Following the implementation of the 2005 state legislation to mandate reporting of central line-associated bloodstream infections (CLABSIs) in hospital adult intensive care units, it was generally expected and expressed by elected and appointed officials that more HAI measures would become reportable in the future. To align with action plans and reporting requirements established by national organizations such as the Centers for Disease Control and Prevention (CDC) and the Centers for Medicare and Medicaid Services (CMS), VDH identified surgical site infections (SSIs) as a surveillance priority. SSI surveillance can be burdensome due to the manual entry of surgical procedure data and lack of integration of various electronic systems that house the data elements required by the Procedure-Associated Module of the National Healthcare Safety Network (NHSN), CDC's online HAI surveillance system. Accordingly, VDH was considering adding a SSI reporting measure but before officially proposing a new state regulation, the HAI Program decided to conduct a project to pilot surveillance following coronary artery bypass graft (CABG), hip arthroplasty, and knee arthroplasty surgeries. These procedures were selected because they are common, pose a potential high risk for infection, and other states that had recently adopted SSI reporting regulations recommended pilot testing before implementing new reporting requirements.

In addition to tracking HAI outcome measures (e.g., SSIs, CLABSIs), hospitals also monitor compliance with process measures. Hand hygiene and central line insertion practices are two examples. Surgical Care Improvement Project (SCIP) measures are processes of care that should be done before, during, or after surgery to reduce the risk of infection or complication. These indicators address the use of antibiotics and other prescription drugs, maintenance of proper blood glucose and body temperature, removal of urinary catheters after surgery, and appropriate hair removal. Hospitals abstract information from patient records to determine compliance with SCIP measures and submit these data to CMS on a quarterly basis. However, the SCIP data that are currently available to the public on CMS's Hospital Compare website are aggregated for all surgical procedure types. VDH thought that having procedure-specific data would add value to the consumer. When designing the SSI surveillance pilot, VDH decided to include testing of hospitals' ability to report procedure-specific SCIP measures focused on appropriate antibiotic use (timely receipt of antibiotic prior to surgery, receipt of appropriate antibiotic, and timely discontinuation of antibiotic after surgery).

Surgical Site Infection Surveillance Pilot
To assess the feasibility of adding selected measures to HAI reporting, VDH partnered with 18 hospitals and their infection preventionist (IP) to conduct a surgical site infection (SSI) pilot project. The goals of the SSI pilot project were to:
- collect best practices for the surveillance and reporting of surgical site infections, including tips for developing the functionality to electronically import data into NHSN;
- quantify the time and effort associated with conducting surveillance following selected surgical procedures and on submitting procedure-specific Surgical Care Improvement Project (SCIP) antibiotic measures; and
- determine if adding one or more SSI measures and/or SCIP procedure-specific antibiotic measures would be feasible and valuable for HAI surveillance in Virginia.

Data Presentation Collaborative
VDH received ARRA funds to implement and coordinate two prevention collaboratives and elected to center one collaborative in long-term care and one in acute care. After receiving feedback about the multitude of initiatives already in existence in acute care hospitals, VDH chose not to implement a formal large-scale collaborative. Instead, the acute care collaborative took an already defined group working together (the hospitals participating in the SSI surveillance pilot) and sharing information about SSIs. In the collaborative, a short survey was implemented in each facility to assess the baseline of knowledge regarding data presentation practices targeted to direct care staff. Subsequent activities focused on how to build upon that baseline.

Successful prevention collaboratives are dependent upon mechanisms to facilitate sharing of information and data among participating facilities. This prevention collaborative was designed to stimulate conversations between hospitals about data presentation strategies and to develop tools to share with collaborative participants as well as other hospitals and healthcare facilities that are interested in communicating surveillance data with their facility staff and administrators.

Data presentation was chosen as the topic for the collaborative because it was an issue that had been raised by both administrators and infection preventionists. The underlying assumption is that increased awareness of data improves conscious adoption of behaviors to prevent infections. At a state conference in fall 2009, an infection preventionist gave a presentation highlighting the importance of how and where to present data. VDH staff had heard in other meetings and committees that administrators are very interested in data presentation. Nearly half (46%) of the administrators who responded to the VDH acute care infection prevention needs assessment in 2010 indicated that they thought the health department could support acute care infection prevention activities by helping feed data back to clinicians. Nearly three-quarters (71%) of infection preventionists who responded to the needs assessment said that VDH could support infection prevention activities by connecting facilities with resources. The collaborative then focused on giving infection prevention staff resources to help feed data back to clinicians in an effective way.

SSI Mini-Grant Program
To support the implementation of the NHSN Procedure-Associated Module to help hospitals prepare for CMS surgical site infection reporting requirements in 2012, the Virginia Hospital & Healthcare Association (VHHA) in partnership with VDH, offered acute care hospitals and critical access hospitals the opportunity to apply for a mini-grant ranging between $2,500 and $25,000. To apply, each hospital submitted a proposal and budget outlining how the mini-grant funds were to be spent. Any activities that supported implementation of the Procedure-Associated Module were considered, including but not limited to:
- **Equipment and services**, such as administrative and informatics costs related to upgrading or modifying internal systems
- **Training and education**, such as training for staff responsible for collecting and/or entering surgical site infection surveillance data
- **Consultative and technical assistance**, such as programmer support to help create an electronic file to upload surgical procedure data directly into NHSN

METHODS

Surgical Site Infection Surveillance Pilot
The Virginia Department of Health was considering adding a surgical site infection measure to HAI reporting requirements and had conversations with other states and stakeholders within Virginia about which surgeries may be of greatest interest to healthcare consumers. Based on the experience of other states and the morbidity associated with these surgeries, coronary artery bypass graft (CABG), hip arthroplasty, and knee arthroplasty procedures were chosen for the pilot procedures.

Hospital discharge data from Virginia Health Information (VHI) were reviewed to identify hospitals that performed CABG, hip arthroplasty, and/or knee arthroplasty procedures in the previous year. Once identified, hospitals were categorized by licensed bedsize (≤ 200 beds, 201 to 500 beds, and >500 beds). Facilities were then randomly selected to conduct surveillance; the CABG hospitals were selected first because only a small subset of hospitals performs that procedure. Three large (>500 beds) and three medium (201-500 beds) hospitals were selected to conduct surveillance following CABG surgeries. Next, six facilities (two in each bedsize category) were selected to conduct surveillance following hip arthroplasty procedures. Finally, six other facilities (two in each bedsize category) were randomly chosen to conduct surveillance following knee arthroplasty procedures.

Participation in the project was voluntary. The VDH HAI Program Coordinator discussed the process and expectations of the project with the infection preventionist at each selected facility to ensure a solid understanding of what would be required by participating in the project and followed up with a letter outlining the project's purpose and expectations (Appendix A). Next, consent was obtained from a hospital administrator prior to the project's initiation (Appendix B). Each pilot facility identified two contacts; an IP contact to coordinate surveillance and submission of time and effort for SSI data collection and reporting; and a contact responsible for obtaining facility consent to share Surgical Care Improvement Project (SCIP) measures with VDH, and submitting the quarterly SCIP data and time and effort for SCIP reporting. One facility conducting surveillance following knee arthroplasty procedures elected not to participate in the SCIP part of the surveillance pilot.

On June 9, 2010, an in-person training for the SSI pilot project was provided in conjunction with the Association for Professionals in Infection Control and Epidemiology, Virginia Chapter (APIC-VA) and staff from the CDC Division of Healthcare Quality Promotion (DHQP) (Appendix C). VDH staff provided an overview of the project. Members of APIC-VA created case studies and led discussions on how to apply surveillance definitions to various clinical scenarios. Maggie Dudeck, an epidemiologist from CDC DHQP, fielded questions from the pilot participants via conference line to clarify the surveillance definitions and address unanswered issues.

ARRA grant funds were used to provide a $1,500 financial incentive to each participating facility to be used for a subscription to a professional journal and/or other educational activities related to infection prevention. These incentives were distributed through the Virginia Hospital & Healthcare Association.

Data requirements:
- Completion of a pre-pilot survey to assess familiarity with SSI surveillance and NHSN definitions, information technology (IT) infrastructure that could facilitate electronic data import into NHSN, and perceived benefits and barriers to the surveillance pilot. (Appendix D)
- Use of the CDC National Healthcare Safety Network (NHSN) to conduct surveillance on the pilot procedure for surgeries occurring July to December 2010. This included following each procedure for six months to determine if an infection developed following hospital discharge.

- Submission of monthly time and effort associated with SSI surveillance, including number of hours spent and number of staff members involved. (Appendix E)
- Submission of percent compliance with antibiotic-related SCIP measures (SCIP 1 - timely receipt of antibiotic prior to surgery; SCIP 2 - receipt of appropriate antibiotic and; SCIP 3 - timely discontinuation of antibiotic after surgery) related to the pilot procedure for two quarters prior to the pilot (2010Q1-Q2) and during the pilot period (2010Q3-Q4) to determine if compliance with these prevention measures changed during the pilot. (Appendix F)
- Submission of quarterly time and effort associated with reporting the SCIP data, including number of minutes spent and number of staff members involved. (Appendix E)
- Completion of an import/upload survey to identify successes and challenges associated with establishing electronic import of SSI data into NHSN (if a facility was able to complete the upload during the pilot). (Appendix G)
- Completion of a post-pilot survey to assess changes in IT infrastructure or perceptions of SSI surveillance, including benefits and barriers to surveillance. (Appendix H)

Basic descriptive statistical analysis was conducted for the pre-pilot and post-pilot surveys. Monthly conference calls were facilitated by the VDH HAI Team and served as a forum to discuss surveillance questions, the process of working with information technology staff to enable electronic import into NHSN, and feedback of data to pilot participants. Between conference calls, VDH staff including the HAI Epidemiologist, were available to lend technical assistance with data entry or reporting questions.

Pilot data were fed back to participating facilities on a monthly basis. Initially, monthly SSI rates for each procedure were computed and shared during the monthly conference calls. After NHSN added functionality to calculate the standardized infection ratio (SIR) for SSIs and enough data were collected to generate the metric, NHSN was used to produce an SIR for each procedure type and time period with a 95% confidence interval and p-value to test for significance. Time and effort data were analyzed and stratified by time period (pilot – July to December 2010 and post-discharge – January to June 2011). ANOVA and the F-ratio were used to test for significant differences between the average amount of time spent conducting surveillance per facility and per staff member for each procedure, with the critical alpha level set at 0.05. If significant, post-hoc t-tests were completed to examine the differences between groups.

For each procedure, compliance with the SCIP antibiotic measures (individually and in aggregate) from the pre-pilot quarters (January-June 2010) was compared to the pilot period quarters (July-December 2010) using a two sample t-test to determine if there was a significant difference between the pre-pilot and post-pilot period. ANOVA and the F-ratio were used to test for significant differences between the average amount of time spent reporting SCIP data per facility for each procedure, with the critical alpha set at 0.05. If significant, post-hoc t-tests were completed to examine the differences between groups.

After analyzing the data from the pilot period, recommendations were made regarding which measures (SCIP and/or SSIs following the pilot procedures) were most feasible, if any, to include in the state regulations for HAI surveillance.

Data Presentation Collaborative
SSI surveillance pilot participants were invited to participate in a data presentation collaborative, where the VDH HAI program and hospital infection preventionists would work together to develop/enhance strategies to share collected HAI data with various audiences in and out of the hospital (e.g., clinicians, nurses, administrators, Board of Directors, etc.). The collaborative began in June 2010 and ended in August 2011. Infection preventionists shared their current data presentation practices by providing templates of how data

were displayed and specifying the target audience(s). In addition, monthly conference calls were used as a forum to discuss best practices for data feedback and common challenges that are encountered when preparing and presenting data to stakeholder groups.

In February 2012, each participating facility completed two sets of data presentation surveys; one for a unit or team within the hospital that is currently receiving HAI data (Appendix J) and one for the infection preventionist (Appendix K).   Instructions for completing the surveys are outlined in Appendix I. Every hospital selected a unit, team, or group of at least 5 clinical staff who receive HAI data tailored to that audience and distributed the unit survey to those staff. The purposes of the surveys were to find out what types of HAI data were being presented to unit staff, what the staff members' perceptions of those data were, what types of data were of greatest interest to unit staff, and what measures and strategies were easiest to understand and considered most useful. After analyzing the responses, the VDH HAI Epidemiologist led discussions about the results and provided a template with one way for facilities to share standardized infection ratio data.

Surgical Site Infection Mini-Grant Program
To help hospitals prepare for surgical site infection reporting requirements to the Centers for Medicare and Medicaid Services (CMS), the Virginia Department of Health and the Virginia Hospital & Healthcare Association (VHHA) implemented a mini-grant program. Hospitals were invited to apply for a mini-grant between $5,000 and $25,000 to fund activities that supported implementation of the National Healthcare Safety Network (NHSN) Procedure-Associated Module including equipment and services (such as administrative or informatics costs associated with upgrading or modifying electronic systems), training and education (such as training for staff responsible for collecting and/or entering SSI surveillance data), and consultative and technical assistance (such as programmer support to create an electronic file to directly upload surgical data into NHSN). Mini-grant guidelines are outlined in Appendix L and include the project purpose, target audience, grant timeline, eligible expenses, and application requirements. The application included an award notice and acceptance attestation for facilities to propose how the funds were to be spent (Appendix M), a notice of completion to be filled out at the conclusion of the project to itemize expenditures (Appendix N), and a budget form (Appendix O).

Funds were awarded to hospitals meeting the application requirements on a first-come, first-served basis. The amount of funding awarded was contingent upon:
- The application's strength
- The ability of the applicant to specify the funds needed
- The ability of the hospital to spend the funds in the time allotted
- Timely submission of the completed application
- Funding availability

VDH and VHHA staff reviewed applications jointly to determine which proposals were to be funded. Hospitals were notified in May 2011 about the status of their grant application and the amount of funding that was awarded. In June and July 2011, VHHA distributed funds to hospitals.

RESULTS

SSI Pilot
Pre-Survey
All 18 pilot facilities responded to the pre-survey. Approximately three-quarters (72%) indicated that surgical site infections were a significant problem (16%) or somewhat of a problem (56%). Half of the facilities perceived that SSI surveillance related to the pilot procedure was or would be somewhat difficult (39%) or very difficult (11%). The average number of staff involved with SSI surveillance was two (range: 1-6; median: 1).

Half of the pilot facilities experienced between one and five SSIs in 2009; three facilities (17%) had no infections and two (11%) had more than 10 SSIs. Surgical volume of the pilot procedure varied greatly between facilities. Just over one quarter (28%, n=5) of facilities conducted 201-300 pilot procedures in 2009, but 22% performed <100 procedures and one facility performed 801-900 procedures.

The pilot participants were well prepared for SSI surveillance in some respects but less prepared in others.
- Examples of how participants were well prepared:
    - 100% of participating facilities were already enrolled in NHSN.
    - 100% were also using NHSN definitions for surgical site infection events (numerator) and surgical procedures (denominator) related to the selected pilot procedure.
    - 94% calculated SSI rates on a regular basis and all used surgical procedures as the denominator.
    - All facilities but one had already been conducting SSI surveillance for one or more years.
- Relatively well prepared:
    - 2/3 currently collected patient-level information such as wound class and other risk factors.
    - 61% of facilities had studied all of the NHSN SSI materials, and an additional 11% had studied some of the materials.
    - Prevention efforts were already underway.
    - The majority of facilities deemed SSI surveillance related to the pilot procedure to be high (78%) or medium (11%) priority.
- Not well prepared:
    - One facility was currently entering data into NHSN for the pilot procedure.
    - No facilities currently uploaded denominator data into NHSN.
        - 61% believed that it was possible for their facility to upload denominator data.
    - There was limited communication between the surgical and infection databases.
        - 39% said that the two systems did not communicate.
        - 33% said that they did not have a surgical database and/or infection prevention database.

Several perceived benefits and barriers to participation were noted by the pilot facilities in the pre-survey. Perceived benefits included:
- Increasing awareness of SSIs in the hospital
    - Ensuring physicians have NHSN definitions of SSIs
    - More focus on prevention and implementing best practices
    - Continuous monitoring of outcomes associated with procedure
- Addressing high profile, high risk, high priority procedures – knowing rates will help provide excellent care
    - Aligning with risk assessment priorities
- Providing benchmark data (with other like facilities) to support improvement initiatives
    - Using a standardized reporting system for comparison

- Preparing for future reporting requirements
  - Gaining more experience in NHSN data entry
  - Automating data upload and/or increasing electronic capabilities
  - Showing how much time is associated with HAI surveillance to find ways to decrease burden on workload
  - Facilitating process regarding the acquisition of resources needed to meet pilot demands and future reporting
- Feeding data back to those who can make a difference
  - Ability to impact decision making in reference to policy development at the state level
- Reviewing data in a different way

Perceived barriers included:
- Time/resources (most common barrier - noted by 56% of facilities)
  - Data entry
  - Not enough staff (number of staff or time able to be dedicated to SSI surveillance and reporting)
  - Duplication of data input
- Learning curve
  - Software
  - Import
  - Data entry specific to procedure
- Physicians
  - Not returning surveillance in timely manner
  - Surgeons not accepting the data as credible
  - Physicians reporting SSIs after learning about pilot
- Post-discharge surveillance
  - Not knowing when patients come back to clinic with an infection that does not require readmission
- Consistency between facilities

Surveillance Discussions
During the pilot project conference calls, there were a few issues that arose pertaining to surveillance definitions.
- It is important to remember that SSIs are attributed to the date of the operation and not the date of symptom onset or identification. For SSIs identified on readmission:
  - On the event form, the date of admission will be the admit date for the visit when the surgery was performed, not the re-admit date
  - Similarly, the discharge date will be the discharge for the visit when the surgery was performed
- The group had some discussion about the difference between deep incisional and organ space infections. Some facilities had been classifying infections differently than the NHSN definitions, and we discussed that NHSN definitions are to be applied consistently across facilities in order to do meaningful surveillance.
- Unlike central line-associated bloodstream infections, all surgical procedures must be entered into NHSN with the patient's risk factors to ensure the optimal risk adjustment.
- A few field-specific notes:
  - Facilities only need to report the required sensitivities for identified pathogens, even if the laboratory has reported more

- How to report a pathogen that is not on the list of common pathogens:
  - Right-click in pathogen field
  - Type first letter or scroll to find pathogen
- A knee that has never been operated on before is always a *primary* regardless of whether it is a total or partial surgery
- A blood transfusion is *not* considered a transplant within the NHSN system

Data Import Discussions and Successes and Challenges Survey

At the beginning of the pilot, no facilities were electronically uploading data into NHSN. By the end, half of the facilities (n=9) had the ability to import/upload data into NHSN.

Data import discussions
- When import works properly, it is very helpful to quickly get SSI data into NHSN; however, many facilities continue to struggle with issues even after import is established with their IT department or vendor.
- Most facilities use a combination of inpatient medical records and operating room (OR) records. Some facilities have found that their OR system does not collect all the required NHSN fields which complicates the import process.
  - Example: One pilot hospital relied on cardiac abstractors to find information that was not contained in the OR record.
  - Some facilities may be able to work with their OR system to add required NHSN fields.
- Validation of data is important to make sure what is being entered into NHSN (either electronically or manually) is complete and accurate.
  - One facility's time and effort is consistently higher than the other hospitals because before they import the data electronically, it goes through two validations. In addition, they can only pull the data after patient discharge.
  - Another facility that manually enters data has a denominator line list to assure all of the procedures have been entered accurately. They also do a query of SSIs by surgeon and procedure.

Results from the *Data Import Successes and Challenges* survey

Six facilities submitted feedback on the upload process
- Four hospitals used Clinical Document Architecture (CDA) technology, a format of messaging that some types of software vendors have established
  - 3 BD/AICE, 1 unspecified vendor
  - Decreases in monthly surveillance effort after implementing CDA
    - 8 hours to 2 hours
    - 8 hours to 1 hour
  - Time required to set up import averaged several months
- Two used .CSV file
  - Decreased monthly surveillance effort in one hospital from 5 hours to 1 hour
  - Took 2 months for one hospital to set up its file transmission
- Two hospitals used DICON to help with their electronic import
- Four of these hospitals used Meditech for their patient medical records
- Electronic medical record system (EMR) is necessary for the electronic upload and any movement towards increased use of EMR would be of help to the facility
- Helpful to talk to other facilities using the same systems and see if they have been able to set up a file transfer

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- o Sometimes easier for facility IT staff to talk to each other rather than the IP trying to explain to the IT staff what is needed
- Important to monitor all exported data for quality
- Operating room system capability and compatibility can be an asset – if the OR system already collects the variables required for NHSN and is compatible with infection prevention software or other data systems, the facility will likely have greater success electronically importing data
- Writing the data dictionaries can present a challenge
  - o Concern was expressed about changing dictionaries/remapping elements if NHSN amends definitions or changes required fields
- Team approach required (quality, IT, other departments)
  - o Establish importance of support of the infection prevention program on a local level first
  - o IT support is critical for implementation and to address data quality
- Vendor representatives can play a beneficial role

SSIs Identified

Table 1. Surgical Site Infections (SSIs) and Standardized Infection Ratio (SIR), Virginia SSI Pilot Facilities, July-December 2010

Time Period	Number of SSIs	Number of Procedures	SIR	95% Confidence Interval for SIR	P-value
July – December 2010	25	2,388	0.72	0.46, 1.07	0.052
July – September 2010	16	1,172	0.92	0.52, 1.50	0.426
October – December 2010	9	1,216	0.52*	0.24, 0.98	0.022

*statistically significant

In all, 2,388 procedures were performed and 25 SSIs were included in the SIR calculation (Table 1). The SIR of 0.52 for October to December 2010 means that during that time period, the participating pilot facilities identified 48% *fewer* SSIs than predicted based on the national experience. This SIR was statistically significant, meaning that the finding was significantly different from the predicted SIR of 1. The SIR from procedures conducted July to December 2010 (0.72) was not statistically significantly different from the predicted SIR of 1.

Table 2. Surgical Site Infections (SSIs) and Standardized Infection Ratio (SIR) by Procedure Type, Virginia SSI Pilot Facilities, July-December 2010

Procedure Type	Number of SSIs	Number of Procedures	SIR	95% Confidence Interval for SIR	P-value
CABG	16	836	0.87	0.49, 1.43	0.87
HPRO	3	531	0.49	0.10, 1.42	0.49
KPRO	6	1,021	0.59	0.22, 1.28	0.59

CABG = coronary artery bypass graft; HPRO = hip arthroplasty; KPRO = knee arthroplasty

Table 2 describes the number of SSIs and SIR by procedure type for the entire pilot period (July to December 2010). Of the SSIs, 64% were CABG, 24% knee arthroplasty (KPRO), and 12% hip arthroplasty (HPRO). None of the procedure-specific SIRs were statistically significant, indicating that the number of infections identified by the pilot hospitals was similar to what was predicted based on the national experience. The ASA score and duration of procedure was highest for the CABG SSIs. Three of the infections occurred more than 30 days after the procedure; all of these were associated with knee arthroplasty surgeries. Five secondary infections

occurred (all following CABG surgeries); these infections were not included in the SIR calculation as dictated by NHSN protocols.

SCIP Data

Table 3. Surgical Care Improvement Project (SCIP) Data by Procedure Type and Time Period, Virginia SSI Pilot Facilities, 2010

Procedure	SCIP 1 (%)		SCIP 2 (%)		SCIP 3 (%)		Total (%)	
	Jan-June 2010	July-Dec 2010	Jan-June 2010	July-Dec 2010	Jan-June 2010	July-Dec 2010	Jan-June 2010	July-Dec 2010
CABG	98.4	99.2	100	100	96.9	98.7	98.4*	99.3*
HPRO	100*	96.9*	100	100	96.4	96.3	98.8	97.7
KPRO	97.7	98.5	99.9	100	97.3	96.6	98.3	98.4

CABG = coronary artery bypass graft; HPRO = hip arthroplasty; KPRO = knee arthroplasty
SCIP 1: Timely receipt of antibiotic *prior to surgery*
SCIP 2: Receipt of *appropriate* antibiotic
SCIP 3: Timely *discontinuation* of antibiotic *after surgery*
* significant difference between pre-pilot and pilot time periods

Table 3 describes the percentage of pilot facilities that were compliant with each SCIP (Surgical Care Improvement Project) measure, stratified by procedure type and time period [pre-pilot (January-June 2010) or pilot (July-December 2010)]. Performance on each of the SCIP measures was very high (96% or greater) for all three pilot procedures. Significant differences in SCIP compliance were observed between the pre-pilot and pilot periods for timely receipt of antibiotic prior to hip arthroplasty surgery (decrease in compliance) and for the aggregate of all three antibiotic measures for CABG hospitals (increase in compliance).

Time and Effort Analyses

Figure 1. Average Number of Hours Spent Monthly on SSI Surveillance Per Facility by Pilot Procedure and Month, Virginia SSI Pilot Facilities, July 2010 – June 2011
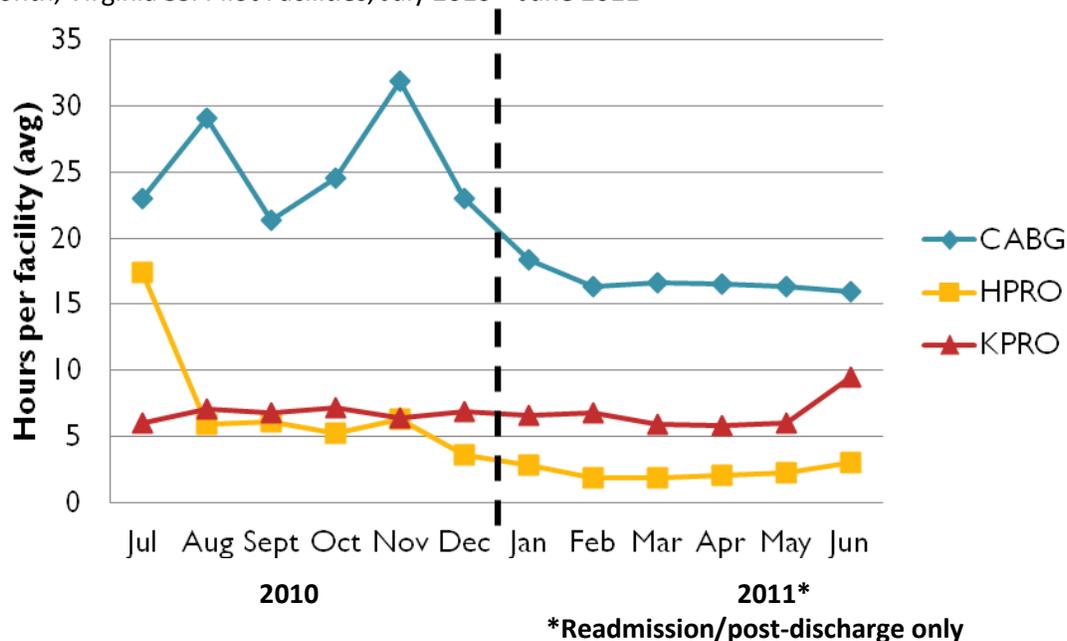

Figure 1 depicts the average number of surveillance hours per month spent <u>per facility</u> for each of the pilot procedures. Separate lines of the graph show the trends for coronary artery bypass graft (CABG), hip arthroplasty (HPRO), and knee arthroplasty (KPRO) surgeries. The vertical dotted line differentiates the two phases of the pilot – when the procedures were conducted (July 2010-December 2010) and the period with post-discharge surveillance only (January-June 2011). All procedures were followed for 6 months to see if a post-discharge infection was identified.

Surveillance time and effort per facility differed significantly between procedures in 2010 (F=44.4, p<0.001). CABG facilities spent a significantly higher number of hours per month (25.5 hours) than hip arthroplasty or knee arthroplasty hospitals, although this was due to the substantial time and effort of one outlier hospital that performed a large number of procedures and had significant information technology barriers. When the outlier was removed, the average number of surveillance hours among CABG facilities was under 10 hours per month and there was no significant difference between procedures (p=0.51). Hip arthroplasty and knee arthroplasty hospitals spent a similar number of hours on surveillance in 2010 (about 7 hours), with one outlier among the hip arthroplasty hospitals where it took the facility some additional time to establish surveillance procedures in the first month.

In the period with post-discharge surveillance only, there were also statistically significant procedure-specific differences (F=363.1, p<0.001) in the number of surveillance hours per facility each month. Hip arthroplasty hospitals spent significantly fewer hours on surveillance (~2 hours) compared to knee arthroplasty (~7 hours) or CABG hospitals (~17 hours), and knee arthroplasty hospitals spent significantly fewer hours on surveillance than CABG hospitals. When the CABG outlier hospital was removed from analyses, the number of surveillance hours dropped to approximately 5 hours per month. However, there were still significant differences overall (F=9.2, p=0.03), between CABG and hip arthroplasty hospitals, and between hip arthroplasty and knee arthroplasty hospitals.

Figure 2. Average Number of Hours Spent Monthly on SSI Surveillance Per Staff Member by Pilot Procedure and Month, Virginia SSI Pilot Facilities, July 2010 – June 2011

2010   **2011***
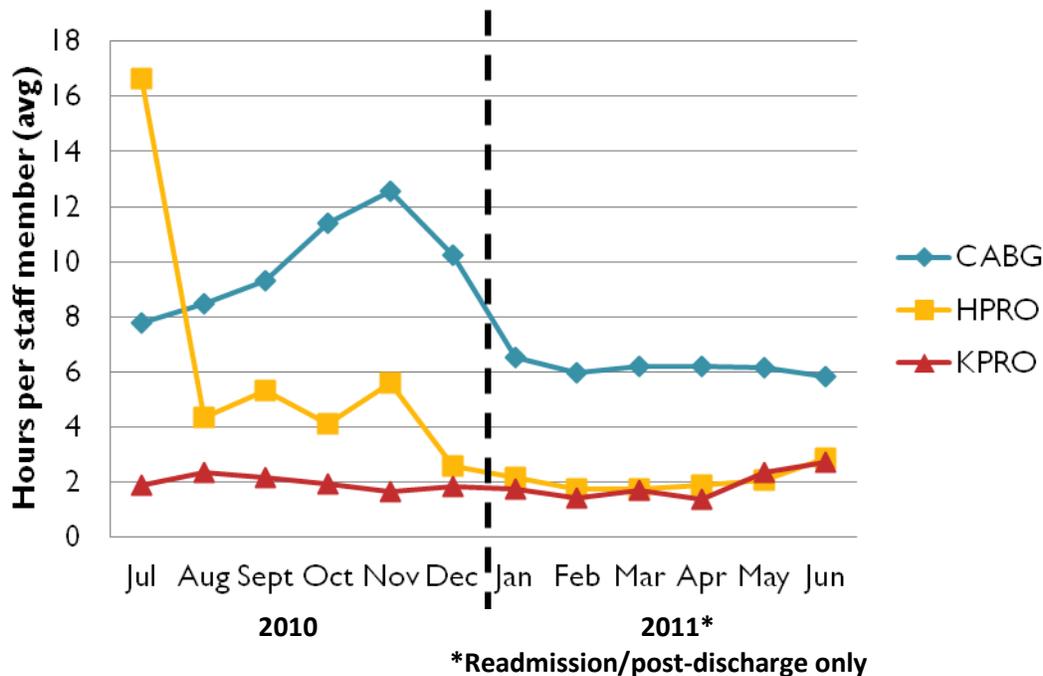***Readmission/post-discharge only**

Figure 2 depicts the average number of surveillance hours per month spent per staff member for each of the pilot procedures. Separate lines of the graph show the trends for coronary artery bypass graft (CABG), hip arthroplasty, and knee arthroplasty surgeries. As in the prior figure, the vertical dotted line differentiates the two phases of the pilot – when the procedures were conducted (July 2010-Dec 2010) and the period with post-discharge surveillance only (January-June 2011). All procedures were followed for 6 months to see if a post-discharge infection was identified. In 2010, surveillance time and effort per staff member significantly differed between procedures (F=8.3, p=0.004). Knee arthroplasty hospitals spent significantly less time per staff member conducting surveillance (2 hours) than hip arthroplasty hospitals (6.6 hours per person) or CABG hospitals (10 hours per person). In one hip arthroplasty hospital, it took the facility some additional time to establish surveillance procedures in the first month, which accounted for the high average number of hours per staff member (~17) in July 2010.

Significant differences between procedures in surveillance time and effort were also observed in the post-discharge period (F=198.1, p<0.001). Hip arthroplasty and knee arthroplasty hospital staff spent similar amounts of time conducting surveillance for their pilot procedure (2 hours per month), whereas staff in the CABG hospitals spent significantly more time (about 6 hours per month) than either hip arthroplasty or knee arthroplasty hospitals.

Table 4. Surgical Care Improvement Project (SCIP) Time and Effort by Procedure Type, Virginia SSI Pilot Facilities, 2010

Procedure	Minutes Per Facility Per Quarter		Number of Facilities Reporting
	Average	Minimum, Maximum	
CABG	18.5	5, 60	6
HPRO	8.1	5, 20	6
KPRO	11.6	5, 30	5

CABG = coronary artery bypass graft; HPRO = hip arthroplasty; KPRO = knee arthroplasty

Depending on the surgical procedure and facility, SCIP reporting took between 5 and 60 minutes per quarter, with CABG reporting requiring the most time (nearly 20 minutes on average) (Table 4). There were no statistically significant differences in SCIP reporting time and effort between procedure types (F=3.0, p=0.08).

Post-Pilot Survey

Fourteen facilities (78%) responded to the post-survey conducted at the end of the pilot project. Some of the responses indicated that there were changes to attitudes, practices, or technology as a result of the pilot or after the pilot period.
- 100% of respondents had studied some (28%) or all (71%) of the NHSN SSI training materials. In contrast, in the pre-pilot period, 11% had studied some and 61% had studied all of the materials.
- More than half of respondents (57%) indicated that the amount of time spent on SSI surveillance changed between the pre-pilot and post-pilot period.
  - One-third (36%) noted a decrease in time spent because of a streamlined process for downloading data, or because of improvement in staff familiarity with data entry and how to find the required information.
  - One-fifth (21%) noted an increase in time spent because of data entry or extra time needed for the pilot project.
- Staff were noted to review SSI definitions more closely than before.
- Responding facilities increased their ability to collect patient-level information on variables such as wound class, duration, and ASA score. In the pre-survey, two-thirds of facilities collected this information on the pilot procedure, but in the post-survey, 83%-93% of facilities collected the patient-level variables (ranged from 83% for trauma status to 93% for procedure date, duration, wound class, and ASA score).
  - Fewer facilities currently collected these variables for colon and abdominal hysterectomy surgeries (ranged from 62% for emergency status and trauma status to 71% for procedure date, duration, wound class, and ASA score).
- A major change between the pre-pilot and post-pilot period was the ability of half of the facilities to electronically upload data into NHSN (see results from the *Data Import Successes and Challenges* survey).
  - Just under half (43%) of post-survey respondents indicated they imported/uploaded denominator data directly into NHSN, compared to none in the pre-survey.
  - Among the facilities that have not yet established this upload, 43% said they thought an automated upload was possible in the facility. To accomplish this, changes in software design (such as through a redesign of the documentation screen in the operating room system or the existing infection prevention software) would be necessary to allow the facility to be able to collect the required data elements.
- Nearly two-thirds of respondents (64%) said their facility will be changing software vendors in the near future; it was not clear if any of these decisions were as a result of the pilot project.

In a few areas, there was not much change between the pre-pilot and post-pilot periods.
- The difficulty of conducting surveillance for the selected pilot procedure was classified similarly in the pre-survey and post-survey. Before the pilot, 50% said surveillance would be somewhat difficult (39%) or very difficult (11%) and after the pilot, 42% said surveillance was somewhat difficult and none indicated that surveillance was very difficult.
- Four facilities indicated that there were changes to their facility administration's priorities of SSIs, but most of these changes were due to new federal reporting requirements, not as a result of the SSI pilot.

- Only two respondents said that there were changes to the number of staff members involved with SSI surveillance; both of these facilities were able to add staff time.
- None of the infection preventionists who responded to the post-survey indicated that they had changed their perspective of how much of a problem SSIs are in their facility.
- Review of surgical procedure databases and individual electronic charts remained useful methods for collecting denominator data.
- While there was increase in communication between facility-specific infection prevention databases and NHSN, there was not much change in the percentage of facilities where the infection prevention software and operating room software communicates (28% in pre-survey, 38% in post-survey).

Post-survey respondents noted several ways that the health department can support SSI surveillance efforts in hospitals. These included advocacy at the state level for funding, especially for validation and networking with surveillance vendors to import directly into NHSN, education in the form of case studies or training sessions on NHSN definitions, information on SSI prevention strategies, implementation of validation projects, and continued collaborations with healthcare facilities to keep HAIs in the spotlight.

Pilot facilities expressed several benefits to participating in the project. Nearly all (93%) indicated the pilot helped them to prepare for future reporting requirements by gaining more experience in NHSN data entry, facilitating the process needed to meet the demands of future reporting, demonstrating how much time was associated with surveillance to find ways to decrease the burden on the infection prevention team's workload, and/or automating data upload processes and increasing electronic capabilities. Nearly half of respondents (43%) noted they had a greater awareness of SSIs in their facility, which included increased attention on high-profile, high-risk, high-priority procedures, continuous monitoring of outcomes associated with the pilot procedure, more focus on prevention and implementation of best practices, and/or increased physicians' understanding of NHSN SSI definitions. More than one-third (36%) mentioned data feedback as a benefit. Providing benchmark data to support improvement initiatives (29%) and the ability to impact state-level policy decision-making (21%) were other benefits expressed. One respondent noted that the pilot prompted her facility to start building a business case for a data mining company to be able to meet the reporting requirements.

Nearly one-third of respondents (29%) did not experience any barriers to participating in the SSI pilot. The most common barrier was the learning curve (50%) associated with data entry for the pilot procedure or for the data import. Time/resource limitations were a barrier for 43% of respondents; this included data entry and/or not having enough staff. Post-discharge surveillance and consistency between facilities were each noted to be barriers by 14% of respondents. One facility noted that surgeons questioning the credibility of the data was a challenge. Another facility indicated that the SSI project took time away from other infection prevention activities.

Data Presentation Collaborative

All 18 hospitals participated in the data presentation collaborative. Nearly all (94%) facilities completed the infection preventionist (IP) survey and 89% surveyed at least one staff member, with an average of 5.25 staff responses per hospital (range: 2 – 8). The majority of staff surveyed were nurses (65%).

Table 5. Infection preventionist (IP) and staff perceptions of HAI data presentation and infection prevention, Virginia data presentation collaborative hospitals, 2011

Questions about the designated area/unit	IP % (n=17)	Staff % (n=84)
Awareness of HAI data promotes dialogue among staff	94	87
Area/unit-specific HAI data are presented	94	81
Awareness of HAI data impacts infection prevention compliance	88	92
If staff improve their infection prevention practices, lower HAI rates will result	88	80
If I improve my infection prevention practices, lower HAI rates will result	76	82
Surgical site infection rates are improving	65	48
Other healthcare-associated infections (HAIs) are a problem	53	48
Surgical site infections are a problem	29	30

Table 5 describes infection preventionist (IP) and staff perceptions of data presentation, infection prevention practices, and healthcare-associated infections (HAIs) on the surveyed area/unit. Most respondents perceived that awareness of HAI data promotes dialogue among staff and impacts infection prevention compliance. The majority of respondents of both types also noted that area/unit-specific HAI data are presented; however, a higher percentage of IPs (94% vs. 81%) perceived that the data were presented.

Approximately 70% of all respondents did not believe SSIs were a problem, and about half of respondents did not believe other types of HAIs were a problem. Despite not viewing HAIs as a problem in their facilities, most respondents believed that if staff improve their infection practices, lower HAI rates will result (88% IP, 80% staff).

The largest difference between IP and staff perceptions was that more IPs than other respondents thought that SSI rates were improving (65% vs. 48%).

Table 6. Infection preventionist (IP) and staff perceptions of characteristics of HAI data presented to the surveyed area/unit, Virginia data presentation collaborative hospitals, 2011

Of those who reported that they receive area/unit-specific HAI data , respondents reported that the area/unit-specific HAI data are:	IP % (n=16)	Staff % (n=68)
Valid and reliable	94	88
Easy to understand	88	81
Timely	81	79
Shared at least once per quarter	81	84

Over three-fourths of both the IP and other staff group thought that area-specific HAI data were valid and reliable, easy to understand, timely, and shared at least quarterly (Table 6). The largest percentage of both groups perceived the area-specific data to be valid and reliable.

Infection preventionists discussed validity and timeliness further on a conference call among data collaborative participants. Regarding validity, some hospital IPs have received pushback from clinicians about the validity of the National Healthcare Safety Network (NHSN) surveillance definitions, especially for surgical site infections. Clinical definitions and/or those established by other organizations such as the Society of Thoracic Surgeons (STS) differ from surveillance definitions. While clinical definitions allow some subjectivity and directly affect treatment, surveillance definitions are standardized to be consistent across time and place and are not meant to be used to direct an individual's treatment. Examples of areas where NHSN's SSI surveillance definitions differ from clinical or STS definitions include: which infection types are included (e.g., whether to include or exclude graft site wounds for infections related to CABG procedures), when the infection was detected (e.g., whether to include or exclude infections that were detected on readmission), and how various graft sites are defined. A few of the collaborative facilities described how they have been proactive in engaging their surgeons to educate them about the importance of using standardized definitions for HAI surveillance and to describe how they differ from clinical definitions. It has helped to review the CMS reporting requirements to get the surgeons' attention. A successful strategy described by one facility involved stratifying their SSI data by surgeon and feeding those data back to the surgeons with the overall facility SSI rate and the NHSN definitions.

IPs agreed that staff want real time, up-to-the-minute HAI data and that it is challenging to keep the data timely, specific, and concise. The realities are that data are difficult to collect quickly and continuously. In addition, IPs have competing priorities that do not necessarily allow them to constantly focus on data and the customization of those data for each area/unit or selected audience. Raw numbers of HAIs were noted to be the type of data that are easiest to report quickly and may be more fitting for units with small numbers. When reporting rates, it is important to consider the time period; to have some stability to the number, the denominator needs to be large enough to make the rate meaningful. For example, in some smaller units/hospitals, quarterly data may be more appropriate than monthly data.

Table 7. Perceived awareness of area/unit HAI data and compliance with infection prevention practices by staff role, Virginia data presentation collaborative hospitals, 2011

Type of area/unit personnel	Perceived awareness of area/unit HAI data		Perceived compliance with infection prevention practices	
	IP %	Staff %	IP %	Staff %
Nurses	100	82	94	85
Nursing leadership	94	90	82	86
Respondent	NA	81	NA	76
Physicians	47	74	53	50

NA – not applicable. Question not asked of infection preventionists.

Nursing leadership and unit nurses were perceived to be most aware of unit-specific HAI data and compliant with infection prevention practices while physicians were perceived to be the group least aware of data and least compliant with prevention practices (Table 7). Physicians were perceived by three-fourths of staff respondents to be aware of unit HAI data whereas only half of the staff respondents perceived physicians to be compliant with infection prevention practices. About half of respondent IPs thought physicians were both aware of the data and compliant with the appropriate practices. Even nurses, who had the highest perceived compliance with infection prevention practices, have room for improvement.

During collaborative conference calls, IPs discussed how they share data with different audiences and types of staff members. Many IPs present HAI data at committee meetings and expect that attendees not only pay attention to the information, but also distribute the information to their areas/units after each meeting. From the responses to the data presentation survey, it seemed that some of the data may not be reaching the front-

line staff. It is not feasible for IPs to be responsible for ensuring every provider has an opportunity to view the most recent HAI data, so they rely on meeting attendees (such as unit directors and physicians) to communicate the information to their teams in an effective and timely manner. Some IPs were surprised that the perceived awareness of physicians was so low since much of the time the data are presented directly to them. It may be that physicians are too busy to share the data or are not as interested in the data as other groups. After the conference call, one IP investigated how the data were distributed in her facility and found that staff at the bedside were not receiving the HAI data. Further, on unit bulletin boards there were very old data. She also identified other data presentation challenges including a lack of color copiers in the facility, prohibiting her graphs from being displayed and interpreted accurately, and hesitance to share unit-specific HAI data with vendors and other visitors. To address all of these issues, the IP decided to focus more on e-mail distribution of the data and found it to be successful.

Table 8. Usefulness, ease of understanding, and current data presentation practices of types of HAI data presentation metric/strategies, Virginia data presentation collaborative hospitals, 2011

HAI data presentation metric/strategy	Useful (%)	Easy to understand (%)	Presented (%)	
	Staff	Staff	Staff	IP
Color coding to help identify problem areas	64	64	36	53
Comparison (to average, benchmark, etc.)	61	61	45	82
HAI rates	56	64	55	71
Number of HAIs	56	61	49	65
Number of days since last infection	49	55	37	47
Percent compliance (i.e., with process measures)	51	40	37	59
Standardized infection ratio (SIR)	38	26	19	12

Table 8 describes seven types of data presentation metrics or strategies and how useful and easy to understand staff members perceived them to be. In addition, staff and infection preventionist respondents noted if those types of measures/strategies were presented in their facility. The most useful types of HAI data to staff respondents were color coding and comparison data (such as to a state or national average). More than half of the staff respondents thought color coding, comparisons, HAI rates, number of HAIs, and the number of days since last infection were easy to understand. IPs respondents indicated that they presented HAI data most often using comparisons and HAI rates, while HAI rates and number of HAIs were reported to be presented by the highest percentage of staff respondents.   Although staff found HAI comparison data to be useful and easy to understand, fewer staff indicated those data were presented to their area/unit. The standardized infection ratio (SIR) was the measure presented least often (<20%) and the lowest percentage of respondents indicated the measure was useful (38%) or easy to understand (26%).

In conference call discussions, IPs noted that presenting both a count of infections and an infection rate can help personalize the information. Number of days since last infection is a metric that can help enhance competition and is liked by some administrators for that reason.

Table 9. Staff interest in receipt of selected HAI process or outcome measures and current data presentation practices, Virginia data presentation collaborative hospitals, 2011

HAI process or outcome measures	Want to know about (%)	Provided to area (%)	
	Staff	Staff	IP
Environmental cleaning compliance	54	46	24
Clostridium difficile infections	52	46	65
Methicillin-resistant *Staphylococcus aureus* (MRSA)	50	61	71
Urinary tract infections (UTIs)	49	57	82
Surgical site infections (SSIs)	48	55	76
Bloodstream infections (BSIs)	49	63	88
Surgical Care Improvement Project (SCIP) measures	44	55	47
Ventilator-associated pneumonia (VAP) infections	42	58	82
Hand hygiene (HH)	40	65	88

In general, there was a lack of interest in HAI data among the staff surveyed. Compared to other HAI process or outcome measures, staff respondents were least interested in receiving data on Surgical Care Improvement Project (SCIP) measures, ventilator-associated pneumonia infections, and hand hygiene compliance (Table 9). The majority of IPs reported providing data on bloodstream infections (88%), hand hygiene (88%), or urinary tract infections (82%). Environmental cleaning compliance and *Clostridium difficile* infections were perceived by responding staff as being reported to the surveyed area/unit least often. However, respondents wanted to know about these two measures the most of all the specified process or outcome measures on the survey, but it is important to note that only 52-54% of respondents indicated they wanted to see these measures.

Table 10. Types of HAI process measures, outcome measures, and data presentation strategies, audience receiving the data, and level of data presented, Virginia data presentation collaborative hospitals, 2011

	Area/Unit		ICC*	Admin %
Outcome measures presented	Area/Unit %	Facility-wide %	Facility-wide %	Facility-wide %
Bloodstream infections (BSIs)	88	53	82	71
Urinary tract infections (UTIs)	82	47	82	71
Ventilator-associated pneumonia (VAP) infections	82	47	82	59
Surgical site infections (SSIs)	76	47	82	71
Methicillin-resistant *Staphylococcus aureus* (MRSA)	71	53	82	65
Clostridium difficile infections	65	53	71	53
Process measures presented				
Hand hygiene (HH)	88	59	82	65
Surgical Care Improvement Project (SCIP) measures	47	35	41	53
Environmental cleaning compliance	24	18	29	18
Data presentation metrics/strategies				
Comparison (to average, benchmark, etc.)	82	41	76	65
HAI rates	71	35	71	65
Percent compliance (i.e., with process measures)	59	35	53	35
Number of HAIs	54	35	47	47
Color coding to help identify problem areas	53	18	47	41
Number of days since last infection	47	18	24	12
Standardized infection ratio (SIR)	12	6	18	12

*ICC = Infection Control Committee

On the survey, IPs described which HAI outcomes, process measures, and metrics/strategies are currently used to present data to three audiences: area/unit staff, the hospital Infection Control Committee (ICC), and hospital administrators (Table 10). Comparison data and HAI rates were the most common data presentation metrics/strategies for all three audiences. In general, staff from the surveyed area/unit were more likely to receive unit-specific data rather than facility-wide data. Device-associated infections [bloodstream infections (BSIs), urinary tract infections (UTIs), ventilator-associated pneumonia (VAP)], surgical site infections, MRSA, and hand hygiene data were most often presented to the Infection Control Committee. Administrators received a subset of these data, with BSIs, UTIs, SSIs, and hand hygiene data shared in the largest percentage of facilities.

Templates for sharing HAI data and overall successful strategies for presenting data
Several of the data presentation collaborative participants shared data templates with VDH in an effort to help VDH create standardized templates that other facilities can use to present their data. However, there was such wide variability in the data needs and presentation limitations of facilities that VDH decided to focus on sharing successful strategies for data presentation instead. In some hospitals, facility or corporate policies dictate how data can be shared, which may limit the flexibility to customize reports or the data presentation methods that may be used.

Although the IPs participating in the collaborative noted that HAI data presentation is usually a role of infection preventionists, the ability to partner with other departments or types of staff members such as quality

improvement staff, can be a significant asset to help divide responsibility or standardize the way data are being shared within the facility. For specific departments or units that may be experiencing increases in their HAI-related measures, it may be useful for the IP to invite her/himself to a staff meeting and share data. In addition to an Infection Control Committee or Board of Directors meetings, a Patient Care Committee may be another forum where HAI data may be impactful.

Targeting presentations to the audience is a key component of successful data presentation. One facility described its "Biggest Loser Report" that was implemented when its hand hygiene compliance had reached a plateau. The staff members needed some additional motivation to continue to improve the compliance rate. Hand hygiene data were stratified by discipline and department and sent to administration each month. Specific goals were set and the color red was used to highlight areas for improvement. Within a short time, hand hygiene rates improved.

How and where HAI data are presented differed between facilities. Some hospitals used bulletin boards or white boards outside of patient care units to post unit-specific data. Others used Powerpoint presentations to make more formal data presentations to various audiences. Some hospitals were able to have screensavers or dedicated computer monitors that displayed HAI data to staff. Lastly, one large hospital system had a comprehensive infection control electronic dashboard that contained numerous HAI outcome and process measures.

Presentation of the standardized infection ratio (SIR) was also discussed among the collaborative participants. There are no current requirements to use or report SIR data within Virginia facilities or in publicly available reports, so VDH began the conversation by sharing examples from other states to show the current variety of options that are in published reports. As evidenced by the finding that 12% of IPs who responded to the data presentation survey share SIR data, many Virginia facilities are not yet presenting that measure with internal or external stakeholder groups. To provide one example of how hospitals could share these data, VDH created a horizontal bar graph template for displaying SSI SIR data, permitting a visual comparison of data between time periods and SSI procedures using colored bars to represent statistical significance of the SIR (Figure 3). This template and the SIR measure itself was confusing to some IPs and emphasizes the importance of continued education on how to define, display, and discuss the SIR.

Figure 3. Standardized infection ratio (SIR) template showing surgical site infection (SSI) SIRs by time period and surgical procedure, Virginia SSI pilot hospitals, June-December 2010
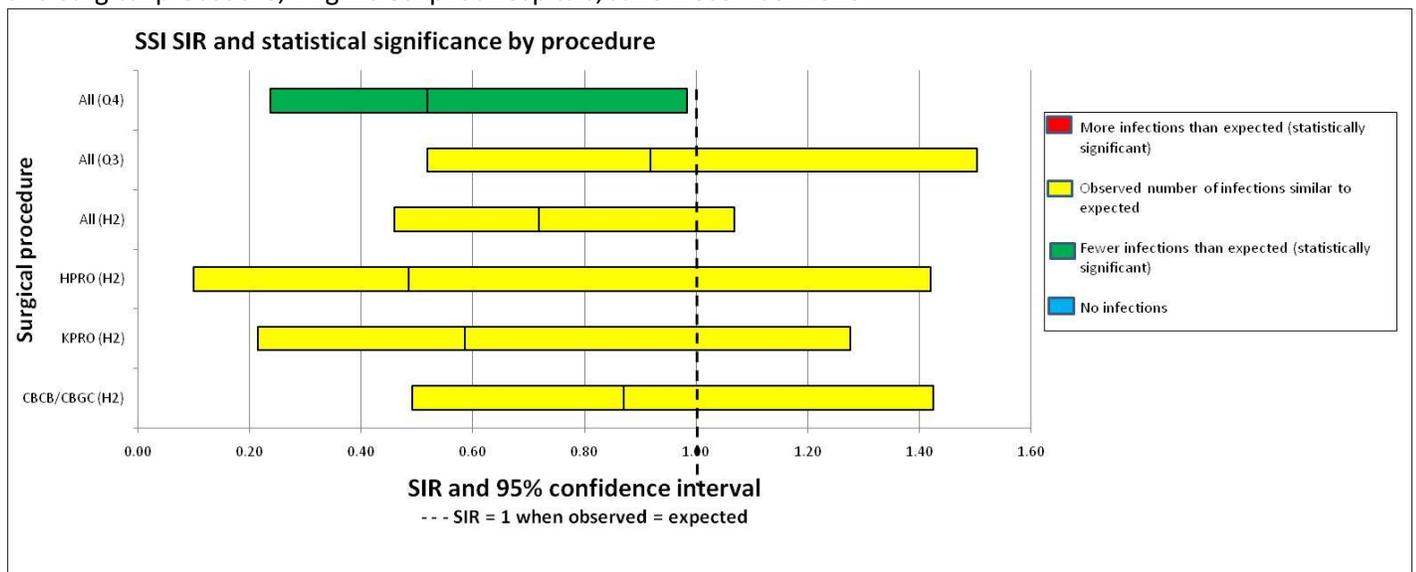
SSI Mini-Grant Program Results

In all, $289,252 was distributed to 22 hospitals. Eighteen of the 22 hospitals were a part of a hospital system and the facilities ranged in size from 25 licensed beds to 731 licensed beds. Mini-grant activities were completed in November 2011 and each grantee submitted documentation outlining how the funds were spent. If any portion of the mini-grant was not used, the monies were returned to VHHA; 9 hospitals returned unspent funds totaling $136,981.

Fifteen hospitals (68%) used funds to train hospital staff. Infection preventionists were the most common recipient of training, using the educational funds to enhance their knowledge of NHSN, SSI surveillance definitions, and documentation requirements for SSI reporting.

- Several hospitals used funds to support travel to educational conferences/trainings that addressed SSI topics, such as the Virginia chapter of Association for Professionals in Infection Control and Epidemiology (APIC) Annual Meeting (n=7), the national APIC Annual Meeting (n=5), the VDH/APIC-VA conference (n=3), or other infection prevention educational courses (n=2).
- Three hospitals conducted trainings on the electronic data system that will be used for electronic reporting into NHSN.
- Ten hospitals trained other staff members about SSI surveillance or NHSN definitions. This included training clinical operating room staff regarding NHSN definitions of data elements to ensure accurate data collection (n=4) or an infection control assistant to enter data into NHSN (n=2). One hospital facilitated team meetings within the facility for education and process improvement related to SSI reporting. Another facility convened its Infection Control Committee to discuss the plan for surveillance and review definitions, case studies, and NHSN reporting requirements. One hospital trained nurses about documentation protocols to assure that new fields are being filled out appropriately.

Fifteen hospitals (68%) used funds to build information technology (IT) infrastructure or enhance SSI reporting capabilities by creating electronic files. These activities included:

- Development and implementation of an electronic upload for reporting surgical procedure data directly into the NHSN database (n=4).
  - One of the hospitals noted that to create the interface between its electronic medical record, OR database, and other software to produce an output file for the infection control database and meet requirements to create a text file for upload into NHSN, it required the OR analyst and OR clinical coordinator to define new fields.
- Use of the IT team to customize screens in the operating room (OR) information system to capture required NHSN data elements. Validation reports were created to ensure data capture. OR data were imported to the data warehouse and extraction files were created to be uploaded to NHSN. Quality and IP staff analyzed OR procedure and SSI data, mapped OR procedures to NHSN procedure codes, and revised an internal NHSN assignment management application.
- Development of a program for reporting SSIs to the Infection Control Department from surgeon/physician offices.
- IT support to create electronic files and data collection systems for loading the appropriate information into infection control software interface.
- Travel to another hospital within corporation to meet with IT staff for technical support related to SSI reporting.
- General IT staff technical assistance and support of SSI surveillance requirements.

One hospital used funds to participate in an antibiotic stewardship quality improvement initiative that included information and actions directed toward appropriate antibiotic use pre- and post-surgery to prevent SSIs.

DISCUSSION

The lessons learned from the SSI surveillance pilot project, data presentation collaborative, and SSI mini-grant program are applicable to facilities throughout Virginia, especially those that conduct SSI surveillance. One of the goals of the SSI surveillance pilot was to quantify the time burden of SSI and SCIP reporting and evaluate the feasibility and value of reporting these data to the health department. Although SCIP reporting did not require much time (<20 minutes per quarter), hospital performance on these measures was nearly at 100% and thus there was little room for improvement. Of the three surgeries piloted, CABG procedures required the most time for surveillance (over 25 hours per month). At 7 hours per month, surveillance for infections following hip arthroplasty and knee arthroplasty procedures also involved a significant amount of effort.

It is important to consider that some or all of these surgical procedures may not rank highly on an individual facility's infection control risk assessment. Each hospital conducts a risk assessment, which takes into account the types of procedures performed, services provided, geography, diseases/conditions in the community, surveillance data, and other factors specific to that facility, and uses the results to prioritize infection prevention efforts. Infection control standards from The Joint Commission require hospitals to focus on the indicators that rank highly on the risk assessment, including setting goals and developing improvement strategies for those indicators. Diverting critical staff time to conduct surveillance for infections that are not identified priorities for the facility could become an unintended consequence of state and national reporting requirements.

Comments received on the measures proposed to the Board of Health in April 2010 were not supportive of the additions of CLABSI in two adult inpatient units, *Clostridium difficile* LabID event, or SCIP antibiotic measures following CABG, hip arthroplasty, and knee arthroplasty procedures. In August 2011, CMS published a rule outlining the reporting requirements for hospitals participating in the Inpatient Quality Reporting Program. For 2012, acute care hospital requirements included surgical site infections following colon surgery and abdominal hysterectomy procedures and catheter-associated urinary tract infections in adult and pediatric intensive care units. VDH withdrew its proposal and is now planning to align state HAI reporting requirements directly with CMS to reduce the surveillance burden on facilities.

Although VDH has not chosen to add any of the pilot procedures to SSI reporting at this time, there were several benefits to participating facilities and to the health department. Participants were able to reduce the learning curve required for colon and abdominal hysterectomy reporting to CMS. SSI surveillance pilot infection preventionists attended a training at the beginning of the project and several SSI mini-grantees used funds to attend conferences or trainings to become skilled at NHSN Procedure-Associated Module data entry, reporting, and analysis and able to use the CDC SSI surveillance definitions appropriately and consistently. Leading the surveillance pilot also helped the VDH HAI staff become more knowledgeable about the Procedure-Associated Module and able to promptly provide high-quality technical assistance for any SSI NHSN questions. Nearly half of the IPs in SSI pilot hospitals who responded to the post-survey noted they had an increased awareness of SSIs in their facility.

NHSN protocols for surgeries involving implants (which apply to all three pilot procedures) include a full year of post-discharge surveillance. However, to complete the project in a shorter time period while still including some post-discharge surveillance in the pilot methodology, participating facilities followed surgical patients for six months to determine if an infection occurred. As a result, the true occurrence of CABG, hip arthroplasty, and knee arthroplasty SSIs in the pilot hospitals during this time period may have been underestimated. However, it is worthy to note that most (22/25) of the SSIs identified during the pilot occurred within the first 30 days following the procedure, which suggests that many infections may not have been missed. Additionally, because there are no standardized procedures for post-discharge follow-up, post-discharge practices between

facilities differed. Pilot facilities recognized this potential bias and noted the lack of standardized post-discharge procedures to be a barrier. CDC is aware of this issue and is currently working toward developing guidance for facilities conducting post-discharge SSI surveillance.

In addition to increasing familiarity with surveillance definitions and data entry into NHSN, the other major benefit of the SSI surveillance pilot and mini-grant program was enhancing facilities' ability to electronically upload data into NHSN. Before the pilot, 0 of 18 hospitals could import data into NHSN and by the end of the pilot, 50% of the participants had the ability to do so. Two-thirds of mini-grant participants used some or all of their funds to build technical infrastructure to support data upload into NHSN. For facilities that would like to establish this import functionality, there are some documents on the NHSN website that provide information on the procedure import process, including the required file specifications (http://www.cdc.gov/nhsn/psc_pa.html). If a facility elects to import procedure data into NHSN using an ASCII comma delimited text file format, information technology support will be needed to correctly map the required variables from the appropriate data sources. The quality of these data is an important issue to consider in this process; one mini-grant recipient noted that electronic medical records have been very useful in her facility but present major documentation challenges that can affect whether the required variables are available in a format that is accepted by NHSN. Records are only as accurate as what is written on flowsheets in her hospital; reports cannot be written from free text and if staff do not enter the flowsheet fields appropriately, important information may be missed.

As Meaningful Use and other high-level informatics initiatives arise on the agenda of information technology departments, it may be more difficult to get electronic reporting of HAIs high on the list of IT priorities. Nearly $130,000 of the ~$137,000 unspent mini-grant funds were from one hospital system where major system-wide electronic medical record development and implementation diverted IT staff time and resources away from building the HAI technical infrastructure to import data into NHSN. Obtaining administrative buy-in for the importance of infection prevention electronic resources can help assure that other technical projects do not usurp the IT resources required for importing data into NHSN.

The major lesson learned regarding surgical site surveillance and electronic import of the data was that hospitals have a variety of systems and programs that collect the required NHSN variables for the SSI events and procedure data; these systems may not necessarily be compatible with one another or define variables in the same way because they collect data for different purposes. To combat the challenge of administrative codes (ICD-9-CM) not directly matching surgical codes (CPT) and prevent each facility from going through the task of individually mapping the codes to each other, NHSN published a crosswalk in Chapter 9 of the January 2012 NHSN Manual/Patient Safety Component Protocol (http://www.cdc.gov/nhsn/TOC_PSCManual.html). This document contains the operative procedure name, description, ICD-9-CM code(s) for all procedures, and CPT code(s) for the 8 NHSN procedures that are most frequently mandated by states for reporting from the hospital outpatient department or ambulatory surgery center settings (BRST, CHOL, COLO, FX, HER, HPRO, HYST, KPRO). If data systems (such as the infection prevention software system and the surgical database) are not compatible, a facility may elect to research other data collection and reporting options and purchase new infection prevention software instead of resigning to manual NHSN data entry. During the consultative and technical assistance portion of attempting to create an electronic file for uploading surgical procedure data into NHSN, one SSI mini-grant recipient realized that directly importing from the current electronic system was unrealistic. This led the hospital IP to begin exploring other data collection and reporting options and the facility was able to put the mini-grant funds toward the purchase of new infection control software.

Furthermore, since the SSI projects and data presentation collaborative has ended, the VDH HAI team has continued to share surveillance lessons learned throughout the state to increase facilities' readiness for CMS reporting, improve data quality, and promote the use of electronic means to upload data into NHSN. VDH staff prepared a business plan with talking points for infection preventionists to use when talking to administrators

about the importance of harnessing electronic information systems to collect and report HAI data. This plan included: (1) a crosswalk of current state and national voluntary and mandatory reporting requirements from agencies such as VDH, CMS, Joint Commission, the Leapfrog Group and others; (2) a list of software vendors used and lessons learned from SSI pilot hospitals who were able to successfully establish electronic import capabilities into NHSN; (3) a list of required variables and ICD-9 codes used to identify colon and abdominal hysterectomy procedures under surveillance in NHSN; (4) a summary of the time and effort analyses from the SSI surveillance pilot; and (5) an overview of the utility of electronic data import. In November 2011, VDH organized a conference in partnership with the Virginia chapter of the Association for Professionals in Infection Control and Epidemiology (APIC-VA) to address numerous HAI topics. One of the breakout sessions focused on NHSN SSI surveillance definitions and was led by three experienced hospital infection preventionists. The HAI Program Coordinator and another infection preventionist led a second breakout session that provided an overview of the SSI pilot, data presentation collaborative, and mini-grant program. APIC-VA has discussed developing SSI case studies for IPs to apply surveillance definitions in practical situations; VDH supports this initiative, as case studies have been demonstrated to be a valuable teaching tool when preparing for central line-associated bloodstream infection reporting and the SSI surveillance pilot. In the future, VDH will look to provide surveillance updates via the monthly HAI program newsletter or webinars to help hospitals learn how to improve data quality by identifying common errors found during file import or customize NHSN reports to utilize the system better and save time. VDH will also help advertise NHSN training opportunities sponsored by CDC.

Results from the data presentation collaborative have implications for healthcare facilities across the continuum of care, as data feedback is an important component of driving change within the facility. One of the key messages was that one data template or method of data presentation does not fit all; each infection preventionist must find what works in his/her facility. Although there are substantial limitations on the IP's time, there may be ways that administration can help support and promote the communication of data that are collected, analyzed, and distributed. Several IPs participating in the collaborative found that the data were not reaching their intended audiences. Follow-up may be necessary to assure that data are being received by frontline clinical staff in the manner they were intended.

The survey developed during the collaborative was a useful tool to assess IP and staff perceptions of HAI data presentation and may be tailored by facilities for use within their setting. There were some limitations identified that are important to consider. Because the surveys were paper-based and not face-to-face, it was difficult to assess if the terminology was interpreted correctly. It is possible that some of the terms on the survey such as "environmental cleaning compliance" or "color coding" may not have been familiar to the respondent. Lastly, when staff were asked what types of outcome and process measures they wanted to know about, some respondents only indicated they wanted to know about the measure(s) if the data were not already provided, potentially underestimating the true interest in receiving data on these measures.

The SIR was noted to be least easy to understand and least useful when compared with other HAI metrics assessed in the data presentation survey, likely due to the fact that only 20% of facilities surveyed were currently using the measure. The SIR was made available in NHSN in 2010, so it was not surprising that many IPs were not yet analyzing and presenting their data in that way. Although the SIR is a complicated measure to accurately explain and calculate, several entities that report data to the public including CMS (and in the near future VDH) are transitioning to the SIR for CLABSI and/or SSI reporting because of the metric's ability to more accurately risk-adjust and present data on varying scales (e.g., unit-specific, facility-specific, statewide, national). During the data presentation collaborative, the SIR was discussed and a template was shared for facilities to present their SSI SIR data. Mini-grant recipients who attended NHSN trainings also received some introduction to the use of the SIR for data reporting. VDH plans to continue to provide guidance and education about how to calculate, interpret, and display the SIR measure by providing two webinars in April and May 2012. The second session will emphasize how facilities can use NHSN's reporting features to monitor data

quality and customize SIR reports for various audiences in and out of their facility. VDH will continue to be an SIR resource to provide further guidance and technical assistance as needed.

The SSI surveillance pilot, data presentation collaborative, and mini-grant program were three key activities conducted by the VDH HAI program in partnership with other organizations (APIC-VA and VHHA) that were funded by the American Recovery and Reinvestment Act (ARRA). Although these initiatives were conducted in acute care hospitals, some of the lessons learned, especially regarding data presentation, are applicable to other settings. Although surgical site infections are not currently mandated for HAI reporting in Virginia, participation in the SSI projects has helped prepare hospitals for CMS reporting requirements that began in January 2012 and VDH aims to continue to support facilities by providing NHSN technical assistance and educational opportunities.

Appendix A: SSI Surveillance Pilot Expectations Letter for Infection Preventionists

COMMONWEALTH of VIRGINIA
Department of Health

KAREN REMLEY, MD, MBA, FAAP   P O BOX 2448   TTY 7-1-1 OR
STATE HEALTH COMMISSIONER   RICHMOND, VA 23218   1-800-828-1120

April 28, 2010

Dear Infection Prevention Colleague,

Over the last few weeks I have had the opportunity to speak with you and discuss your much needed participation in the SSI Pilot Project. The HAI Team would like to thank you for your cooperation, participation, and support in this project. The purpose of this letter is to review the elements of the SSI Pilot Project that were discussed on that telephone call and to reiterate the goals, objectives, and expectations of the pilot project more in depth.

Eighteen hospitals were selected to participate in the SSI Pilot Project; six for CABG, six for hip replacement, and six for knee replacement surgeries. The aim was to have equal representation from all bed sizes. For hip and knee replacement, 2 hospitals from each of these bed sizes were chosen: ≤ 200 beds, 201 to 500 beds, >500 beds. For CABG, 3 hospitals from each of these bed sizes were chosen: 201 to 500 beds and > 500 beds.

The goal of the SSI Pilot Project is to determine what would be feasible for public reporting and how best to accomplish the mandated public reporting of healthcare-associated infections (HAIs) in the Commonwealth of Virginia. In order to achieve this goal, certain expectations will need to be met. I have attempted to list these expectations for all participants in the pilot project: partner hospitals, VDH HAI Team and APIC-VA. You will find that some of the expectations cross over to all involved while others are specific to the partner. As we proceed, these expectations may change and adjustments may need to be made as the project evolves.

Expectations of the participating partner hospitals are as follows:
- Complete a survey about surveillance activities and data feedback during the SSI training. Topics may include:
    - Baseline surveillance activities
        - Challenges and barriers
        - Usefulness
        - Facility support
    - Prevention practices associated with the chosen procedure
    - Estimated number of procedures and infections annually
    - Data feedback
        - Who makes data feedback decisions
        - Who puts the data together and how do they work together—IP, QI
        - Who receives the data

- - Location and format
  - Frequency
  - What kind of data
  - Utility (success stories, benefits to the bedside)
- Attend the SSI surveillance training, scheduled for June 9th, 2010 in Richmond, VA (more details to follow)
- Conduct continuous surveillance on the one surgical procedure designated for the facility for 6 months followed by 6 months of post-discharge surveillance using NHSN software and definitions
  - Confer rights for surgical site infection and selected surgical procedure denominator data to VDH group in NHSN
- Provide ongoing communication and troubleshooting with VDH and other pilot hospitals
- Obtain facility approval to share SCIP date monthly—June 2010 through July 2011
- Provide feedback and evaluation via a survey to be conducted in the post-pilot period. Topics may include:
  - Administration support
  - Can this be continued if becomes publicly reportable
  - Burden
  - Challenges and barriers
  - Usefulness—were surveillance data used in the hospital and if so how
- Work together with other hospitals and VDH to feedback SSI pilot data and prevention messages
  - Participation in periodic conference calls
    - Discussion of what does and does not work based on prior experiences
    - Share how data were used
    - What type of information was found to be useful
    - Facility feedback – what do clinicians, administrators, other groups think of data feedback?
    - What are the benefits to the bedside?

Expectations of VDH and HAI Team are as follows:
- Provide a primary point of VDH HAI Program point of contact—Deb Kalunian, VDH HAI Program Coordinator
- Provide SSI Pilot Project training site and assist with development of training materials—done in conjunction with APIC-VA and CDC (NHSN)
- Provide general overview of HAI program to IPs during initial phone call and training to frame context and purpose of pilot
- Provide incentives for participation
  - Stipend to attend an APIC educational offering of choice or for use in support of SSI Pilot Project activities and professional journal subscription
    - Distribution of incentives through the Virginia Hospital and Healthcare Association
- Provide ongoing VDH HAI program/pilot updates to APIC-VA via APIC-VDH HAI Taskforce and APIC-VA website/newsletter
- Create, administer, and analyze SSI Pilot Project surveys to assist with the evaluation of the pilot project
- Assist hospitals with conferring rights to VDH (NHSN)
- Develop and make available an EXCEL file template to report SCIP data in a standardized format
- Provide list of hospitals participating in the SSI Pilot Project
- Consult or problem solve with hospitals as needed
- Initiate IT support to determine how to assist partner hospitals with data upload to NHSN
- Data feedback component

- o Provide SSI rates to the hospitals
- o Provide template options for data presentation
- o Work together with hospitals to develop/enhance strategies to feed data back to various audiences such as clinicians, nurses, administrators, Board of Directors
- o Participate in periodic conference calls—same as listed above
- o Evaluate and report how data feedback strategies affect the bedside
- o Compile and disseminate best practices of data feedback strategies
- Analyze quarterly SCIP data and monthly SSI surveillance data to assist with the formation of the surgical site infection surveillance regulations for the Commonwealth of Virginia and propose HAI measures to the state legislation
- **Use data for internal use only; data will not be publicly reported**

Expectations of APIC-VA are as follows:
- Assist with the training and education by compiling SSI case studies
- Maintain communication with APIC-VA membership through posting of updates on the website and dissemination of the VDH HAI newsletter

I know these expectations look very daunting, but I felt it was important to include some of the various components related to these expectations.

A letter describing the SSI Pilot Project and requesting your participation will be sent to you, the Infection Preventionist and the hospital administrator. In order that the letter reaches the most appropriate administrator, I am asking that you **e-mail me the name of that administrator**. We will be asking that you fax to us your agreement to participate in the SSI Pilot Project. Once we have received your faxed agreement, information on the SSI training will be sent to you. This training has been scheduled for June 9th, 2010 in Richmond.   The pilot project will begin on July 1st, 2010; surveillance will be conducted for 6 months of surgeries, followed by 6 months of post-discharge surveillance.

Given the recent healthcare climate, it is of the utmost importance that the Infection Preventionist is on the forefront of healthcare-associated infection prevention and mandated public reporting. By participating and supporting the SSI Pilot Project, the Infection Preventionist will have a significant voice in determining the most appropriate course of action that should be taken.

The VDH HAI Team looks forward to our collaborative efforts in regards to this exciting pilot project. Please do not hesitate to contact me with any questions or concerns.

Thank you for your continued support of VDH.

Deborah Kalunian, RN, BSN
Virginia Department of Health
Healthcare-Associated Infections Program Coordinator

Appendix B: SSI Surveillance Pilot Letter for Administrators with Agreement to Participate

COMMONWEALTH of VIRGINIA
Department of Health

KAREN REMLEY, MD, MBA, FAAP	P O BOX 2448	TTY 7-1-1 OR
STATE HEALTH COMMISSIONER	RICHMOND, VA 23218	1-800-828-1120

May 6, 2010

Dear Administrator,

The Virginia Department of Health (VDH) has received funding under the American Reinvestment and Recovery Act (ARRA) to broaden the capacity and scope of the healthcare-associated infections (HAI) program. In order to strengthen the HAI program VDH would like to partner with your institution and with your Infection Preventionist to conduct a Surgical Site Infection (SSI) Pilot Project. The goals of the SSI Pilot Project are to develop best practices for the prevention of healthcare-associated surgical site infections, to determine what would be feasible for public reporting, and how best to accomplish the mandated public reporting of healthcare-associated infections (HAIs) in the Commonwealth of Virginia. In order to achieve these goals and make the pilot project a success, your facility's contribution to this venture is vital.

Eighteen hospitals were selected to participate in the SSI Pilot Project; six for coronary artery bypass graft (CABG), six for hip replacement and six for knee replacement. The aim was to have equal representation from all bed sizes. For hip and knee replacement, 2 hospitals from each of these bed sizes were chosen: ≤ 200 beds, 201 to 500 beds, and > 500 beds. For CABG, 3 hospitals from each of these bed sizes were chosen: 201 to 500 beds and > 500 beds. The SSI data will be collected for one year using the National Healthcare Safety Network (NHSN) definitions for SSI. The data collected will be reviewed and analyzed with periodic feedback to the hospital Infection Preventionists. Then based upon this data and analysis, recommendations will be made regarding what HAIs are most feasible to include in the state regulations for public reporting.

The Infection Preventionist from each hospital selected was contacted via telephone to discuss participation in the SSI Pilot Project. The process and expectations of the SSI pilot project were discussed in detail with the Infection Preventionist to ensure a solid understanding of what would be required from all partners. Training for the SSI Pilot Project will be provided in conjunction with the Association for Professionals in Infection Control and Epidemiology, Virginia Chapter (APIC-VA) and the Centers for Disease Control and Prevention (CDC). Through the ARRA grant funding, incentives consisting $1500.00 to be used for an infection prevention activity and a subscription to a professional journal will be given to each participating facility's Infection Preventionist. All Infection Preventionists have agreed to participate in the pilot project pending approval of their respective Administrator.

The Virginia Department of Health Healthcare-associated Infections (VDH HAI) Team would like to thank you in advance for agreeing to participate in the Surgical Site Infections (SSI) Pilot Project. Your institution's

partnership and input into this project are of utmost importance in making an impact on the prevention of healthcare-associated infections in the Commonwealth of Virginia.

Enclosed is a statement of agreement. Please sign the agreement statement and fax to 804-864-8139 by Wednesday, May 19th, 2010.

Please do not hesitate to contact me should you have any questions or concerns. The VDH HAI Team stands ready to assist in any way we can.

Thank you,

Deborah Kalunian, RN, BSN
Virginia Department of Health
Healthcare-Associated Infections Program Coordinator

▪▪

DATE:

TO: Deborah Kalunian, RN, BSN

                Virginia Department of Health

                Healthcare-Associated Infections Program Coordinator

RE: Surgical Site Infections Pilot Project Confirmation

FROM:

_____ agrees to participate in the Virginia

        (Name of healthcare facility)

Department of Health Healthcare-associated Infections Surgical Site Infections Pilot Project to begin July

1st, 2010. The hospital infection preventionist will be the designated point of contact during

this pilot project.

Appendix C: SSI Surveillance Pilot Training Agenda

APIC-VA / VDH SSI Surveillance Pilot Training Agenda
June 9, 2010
Richmond, VA 23233

I.	Registration			9:00 – 9:30
II.	Housekeeping and Introductions	Deb Kalunian	VDH	9:30 – 9:35
III.	Overview of the Pilot Project	Deb Kalunian	VDH	9:35 – 10:00
IV.	Conferring Rights to VDH	Andrea Alvarez	VDH	10:00 – 10:15
V.	NHSN SSI Module	Maggie Dudeck	CDC	10:15 – 12:00
VI.	Lunch	Provided		2:00 – 12:30
VII.	Putting It Together: (Practice Makes Perfect)	Janis Ober	APIC-VA	12:30 – 3:15
VIII.	Wrap-up	Deb Kalunian	VDH	3:15 – 3:30

Appendix D: SSI Surveillance Pilot Pre-Survey

General information
1. Facility name: _____
2. Job title: _____
3. Number of licensed beds: _____
4. Number of staffed beds: _____
5. Number of IPs in facility: _____

Estimated number of procedures and infections
6. Estimated number of coronary artery bypass graft (CABG) procedures _____
   performed in 2009
7. Estimated number of hip replacements performed in 2009 _____
8. Estimated number of knee replacements performed in 2009 _____
   (if both knees replaced, count as 2)
9. Estimated number of surgical site infections (SSIs) _____
   related to the selected pilot procedure in 2009

Surveillance
10. How long has your facility been conducting surveillance for the selected pilot procedure? _____ years

11. Estimated amount of time *your facility* spent doing surveillance for the selected pilot procedure per
    week in 2009: _____ hours
    11a. How many staff members were involved with surveillance for the selected pilot procedure?
         _____
    11b. What were the roles of the staff members involved with surveillance for the selected pilot
         procedure? _____

Use of NHSN
12. Who is or will be responsible for SSI data entry or upload using the National Healthcare Safety Network
    (NHSN) at your facility? (circle all that apply)
    I will   Quality improvement staff members
    Information technology staff   Other (please specify):
    Other infection prevention staff members   _____

13. Have you studied the NHSN SSI training materials (read Procedure-Associated Module NHSN chapter
    and listened to Procedure-Associated Module webinar)? (circle one answer)
    Yes, all of it   No, haven't had time
    Yes, but not all of it   No, can't access it
    Yes, but I need further training/clarification   No, not applicable

14. Does your facility use NHSN definitions for surveillance of all SSIs related to the selected pilot
    procedure? (circle one answer)
    Yes, for numerator   Yes, for numerator and denominator
    Yes, for denominator   No (please specify which definition is used):

15. Does your facility currently enter SSI data related to the selected pilot procedure into NHSN? (circle
    answer)   Y   N

15a.   If **yes** to 15, how long has your facility been entering SSI data into NHSN for this surgical procedure?   _____ months   _____ years

Data collection and entry - numerator

16.   In your facility, how much time in an average <u>week</u> is spent <u>collecting</u> numerator (infection event) data for all SSIs related to the selected pilot procedure?   _____ hours

17.   In your facility, how much time in an average <u>week</u> is spent <u>entering</u> numerator (infection event) data into NHSN or another database for all SSIs related to the selected pilot procedure?   _____ hours

Data collection and entry - denominator

18.   Does your facility collect patient-level information (wound class, risk factors, etc.) for the selected pilot procedure? (information from all surgeries of the pilot procedure, not just those who develop an infection) (circle answer)   Y   N
   18a.   If **yes** to 18, what method does your facility use to collect patient-level denominator information for the selected pilot procedure? (check all that apply)
            Review of individual electronic charts
            Review of individual paper charts
            Review of surgical procedure database
            Other (please specify): _____

19.   Does your facility calculate SSI rates for the selected pilot procedure? (circle answer)   Y   N
   19a.   If **yes** to 19, which denominator does your facility use to calculate rates for the selected pilot procedure? (circle one answer)
            Number of inpatient days
            Number of surgical procedures
            Other (please specify): _____
   19b.   If **yes** to 19, how does your facility identify denominators for the selected pilot procedure? (circle all that apply)
            Billing/administrative database
            Operating room scheduling/tracking software
            Other (please specify): _____

20.   Does your facility upload denominator data for the selected pilot procedure into NHSN? (circle answer)   Y   N
   20a.   If **yes** to 20, how much time was needed to set up the denominator import?
            _____ months
            20a1.   What contributed to the success of setting up the denominator import?
            20a2.   How much time is needed per month to import (electronically upload files and troubleshoot problems with IT department/vendor) the data?
                    _____ hours

   20b.   If **no** to 20, how much time in an average <u>week</u> is spent <u>collecting</u> denominator data for the selected pilot procedure?   _____ hours
            20b1.   How much time in an average <u>week</u> is spent <u>entering</u> denominator data for the selected pilot procedure into NHSN or another database?   _____ hours
            20b2.   Do you think automated upload into NHSN is possible for your facility? (circle answer)   Y   N
                    20b2a. If **yes** to 20b2, what would be required to make this happen?

Surgical software vendor/database

21.	What surgical software vendor does your facility use?	_____

22.	Does the surgical database communicate with the infection prevention database?
	(circle one answer)
		Yes – same system
		Yes – different systems
		No – no surgical database and/or infection prevention database
		No – different systems, no communication

Perceptions of SSI surveillance

23.	Rank how your facility's administration views the following: (check the appropriate box)

	Low priority	Medium priority	High priority
Prevention of HAIs in general			
Prevention of SSIs in general			
Surveillance for SSIs in general			
Surveillance for SSIs related to pilot procedure			

	23a.	If surveillance for SSIs related to the pilot procedure is of low priority, what other
		procedure(s)/infections are of higher priority?

24.	From your perspective, how much of a problem are SSIs at your facility? (circle one answer)
		Not a problem
		Somewhat of a problem
		Significant problem

25.	What do you perceive to be the <u>benefits</u> of surveillance for infections associated with the pilot
	procedure?

26.	What do you perceive to be the <u>barriers</u> of surveillance for infections associated with the pilot
	procedure?

27.	How difficult do you think SSI surveillance for the selected pilot procedure is or will be?
	(circle one answer)
	Very difficult		Somewhat difficult		Somewhat easy		Very easy

Prevention efforts

28.	Is your facility involved in VHQC's SCIP project? (circle answer)		Y			N

29.	Are there any other efforts underway at your facility that target SSI prevention for the selected pilot
	procedure?

30.	Part of this surveillance pilot will involve the transmission of SCIP data to the Virginia Department of
	Health. Please provide contact information for the person who will likely be responsible for sending
	these data on a monthly basis.
	30a.	Name: _____
	30b.	Position: _____
	30c.	Phone number: _____
	30d.	E-mail address: _____

Appendix E: Time and Effort Data Collection Forms: SSI Surveillance and SCIP Measures

Time and Effort – SSI Surveillance (Monthly)

Month	
Hospital Name	
Number of hours spent on SSI surveillance (include data collection, entry, and reporting where applicable)	
Number of staff members responsible for hours above	

Time and Effort – SCIP Measures (Quarterly)

Quarter	
Hospital Name	
Beyond the time required for submission to other agencies (e.g. CMS): **Number of hours** spent on collection, entry, and reporting of SCIP data (measures 1,2,3) <u>related to pilot procedure</u> to VDH	
Beyond the time required for submission to other agencies (e.g. CMS): **Number of staff members** responsible for hours above related to collection/entry/reporting to VDH	
If any of these staff members are not involved in the usual SCIP submissions to CMS or other agencies, please **indicate their positions** (e.g. infection preventionist, administrative assistant, etc.)	

Appendix F: Quarterly Data Collection Form: Surgical Care Improvement Process Measures

	Quarter:	
	Hospital Name:	
SCIP Measure	**Patients Meeting the Measure**	**Total Eligible Patients**
Patients having **coronary artery bypass graft surgery** who received medicine to prevent infection (an antibiotic) within one hour before the skin was surgically cut		
Patients having **coronary artery bypass graft surgery** who received the appropriate medicine (antibiotic) which is shown to be effective for this type of surgery		
Patients who had **coronary artery bypass graft surgery** and received appropriate medicine that prevents infection (antibiotic) and the antibiotic was stopped within 48 hours after the surgery ended		
Patients having **hip joint replacement surgery** who received medicine to prevent infection (an antibiotic) within one hour before the skin was surgically cut		
Patients having **hip joint replacement surgery** who received the appropriate medicine (antibiotic) which is shown to be effective for this type of surgery		
Patients who had **hip joint replacement surgery** and received appropriate medicine that prevents infection (antibiotic) and the antibiotic was stopped within 24 hours after the surgery ended		
Patients having **knee joint replacement surgery** who received medicine to prevent infection (an antibiotic) within one hour before the skin was surgically cut		
Patients having **knee joint replacement surgery** who received the appropriate medicine (antibiotic) which is shown to be effective for this type of surgery		
Patients who had **knee joint replacement surgery** and received appropriate medicine that prevents infection (antibiotic) and the antibiotic was stopped within 24 hours after the surgery ended		

Appendix G: SSI Surveillance Pilot Survey: Data Import Successes and Challenges

1) Describe the database systems used to capture surgical data in your facility, including: name, length of time facility has been using system(s), integration with operating room system database(s) and infection prevention database(s):

_____
_____
_____
_____
_____
_____

2) How are you importing data into NHSN?
_____   CSV file (spreadsheet) created by hospital IT department
_____   CDA import directly from vendor
         (please specify vendor name: _____)

3) How much time was needed to set up the denominator import?
_____   days / weeks / months (choose appropriate time period)

4) Average time spent on data collection/entry **prior to import**:
_____   hours per month

5) Average time spent on data collection/import/quality assurance **using import**:
_____   hours per month

6) What contributed to the success of setting up the import? (examples: administrative or IT support, electronic medical records, integration with other databases, OR system has NHSN-required variables)

_____
_____
_____
_____

7) Describe the challenges encountered when setting up the import:

_____
_____
_____
_____

8) Please share any additional comments about the import process (lessons learned, tips for other facilities):

_____
_____
_____
_____
_____

Appendix H: SSI Surveillance Pilot Post-Survey

Facility name: _____ Job title: _____

NHSN and surveillance
1. Have you studied the NHSN SSI training materials (read Procedure-Associated Module NHSN chapter and listened to Procedure-Associated Module webinar)? (circle one answer)

Yes, all of it	No, haven't had time
Yes, but not all of it	No, can't access it
Yes, but I need further training/clarification	No, not applicable

2. Describe any *changes* in time spent in an average week <u>collecting</u> and/or <u>entering</u> **numerator** data related to the selected pilot procedure *since the beginning of the pilot project*.

3. Describe any *changes since the beginning of the pilot study* of staff members involved in SSI data collection, entry, or upload (ex. how it has affected your job and/or quality of the data).

Data collection and entry – denominator
4. Indicate which of the following **denominator** patient-level information is collected for the following types of surgeries that can be used in NHSN:

Required data fields for NHSN SSI denominator	For your pilot procedure	For COLO	For HYST
Date of procedure	Y / N	Y / N	Y / N
Duration	Y / N	Y / N	Y / N
Wound class	Y / N	Y / N	Y / N
ASA class	Y / N	Y / N	Y / N
Emergency	Y / N	Y / N	Y / N
Trauma	Y / N	Y / N	Y / N
Endoscope	Y / N	Y / N	Y / N

    a. What method does your facility use to collect patient-level denominator information for the selected pilot procedure? (check all that apply)
        1. Import/upload directly into NHSN
        2. Review of individual electronic charts
        3. Review of individual paper charts
        4. Review of surgical procedure database
        5. Other (please specify): _____

    b. If your facility has not completed the ***SSI Import Successes and Challenges*** (originally distributed in January) please complete it and send with this document.

    c. If **your** facility does not currently upload the denominator data**,** do you think automated upload into NHSN is possible for your facility? (circle answer) Y / N

       If **yes**, what would be required to make this happen?

5. Indicate with software vendors you currently use: (check/write one response per cell)

	Infection surveillance software	Operating room management software	Other database(s)/software necessary for infection prevention
Software vendor	__ 3M ClinTrack __ BD Protect/AICE __ Cardinal Health MedMined __ Cerner __ EPIC __ EpiQuest __ Infection MonitorPro Software __ Midas __ Premier SafetySurveillor __ rL Solutions' Infection MonitorPro __ Theradoc __ Other __No vendor → hospital created	__ Cerner (SurgiNet) __ Eclipsys (Sunrise Surgical) __ EPIC (OPTime) __ IPATH/GE Medical (Centricity) __ IDX Systems (Carecast OR) __ McKesson (Horizon) __ MEDITECH __ Picis (Caresuite) __ Other __ No vendor → hospital created __ Do not know	

    a. Indicate if the software/databases you indicated above communite with one another and/or with NHSN: (circle one response per white cell)

	Infection surveillance software	Operating room management software	Other database/software
Operating room management software	Y / N		
Other database/ software	Y / N	Y / N	
NHSN	Y / N	Y / N	Y / N

    b. With the new upcoming CMS incentives and other reporting requirements, do you think you are going to change vendors? If so, which ones are you considering?

Perceptions of SSI surveillance

6. Describe any *changes since the beginning of the pilot study* of staff members involved in SSI data collection, entry, or upload and any positives or negative associated with it.

7. Has your facility administration's priorities of SSIs and your pilot procedure *changed since the beginning of the pilot study*? If so, how and why?

8. Has your perspective of how much of a problem SSIs are at your facility *changed since the beginning of the pilot study*? If so, how and why?

9. What did you perceive to be the <u>benefits</u> of the pilot project? (check all that apply)
   - ☐ Increased awareness of SSIs
     - ☐ More focus on prevention and implementing best practices
     - ☐ Continuous monitoring of outcomes associated with procedure
     - ☐ Increased physicians' understanding of use of NHSN SSI definitions
     - ☐ Increased attention on high-profile, high-risk, high-priority procedures
   - ☐ Knowing rates helped providers focus on better practices
   - ☐ Aligned with risk assessment priorities
   - ☐ Provided benchmark data (with other like facilities) to support improvement initiatives
     - ☐ Standardized reporting system for comparison
   - ☐ Helped to prepare for future reporting requirements
     - ☐ Gained more experience in NHSN data entry
     - ☐ Automated upload and/or increased electronic capabilities
     - ☐ Demonstrated how much time was associated with HAI surveillance to find ways to decrease burden on workload
     - ☐ Facilitated process needed to meet pilot demands and future reporting
   - ☐ Data feedback to those who can make a difference
     - ☐ Ability to impact decision making in reference to policy development at the state level
   - ☐ Different way of reviewing data
   - ☐ Other(s):

10. What did you perceive to be the <u>barriers</u> of surveillance for infections associated with the pilot procedure? (check all that apply)
    - ☐ Time/resource limitations
      - ☐ Entering data
      - ☐ Not enough staff
      - ☐ Duplication of effort
    - ☐ Learning curve
      - ☐ Software
      - ☐ Import
      - ☐ Data entry specific to procedure
    - ☐ Physician related issues
      - ☐ Not returning surveillance data in timely manner
      - ☐ Surgeons not accepting the data as credible
      - ☐ MD reporting SSIs after learning about pilot
    - ☐ Post-discharge surveillance
    - ☐ Consistency between facilities
    - ☐ Other(s):

11. How difficult do you think SSI surveillance was for the selected pilot procedure? (circle one answer)
    Very difficult   Somewhat difficult   Somewhat easy   Very easy

Other
12. Are there any **new** efforts underway at your facility that target SSI prevention since the beginning of this pilot project?

13. How can VDH best support you moving forward regarding SSI surveillance?

Comments:

Appendix I: Data Presentation Area/Unit Surveys: Instructions

Purposes:
1. To provide a baseline of knowledge regarding data presentation practices targeted to direct care staff
2. To help the Virginia Department of Health (VDH) Healthcare-Associated Infections (HAI) Program develop data presentation templates and recommendations for hospitals, long-term care facilities, and other healthcare facilities
3. To provide a flexible tool that IPs can customize and use in their facility
4. To fulfill the ARRA grant requirement of participating in a prevention collaborative while placing a minimal amount of time and burden on IPs

How to use for SSI pilot collaborative:
1. Designate an area/unit that receives area/unit-specific HAI data and write it on the top of all surveys in the space provided.
   a. Our first preference would be a surgical team, followed by a team of direct care staff in an ICU. If neither of these options pertains to your facility, you can survey a group similar to your Infection Control Committee.
2. Complete the 1-page IP Data Presentation Area/Unit Survey
3. Make copies of the 1-page Data Presentation Area/Unit Survey, distribute to appropriate staff, and collect surveys
   a. **At least five** surveys must be completed by area/unit staff.
4. Send all completed surveys via fax (804) 864-8139 to Dana Burshell before **March 15, 2011.**

Additional uses: An adaptable tool for IPs
1. This survey can be used and customized by IPs for areas of interest in your facilities.
   a. For example, you can conduct a pre-survey before you share a different kind of data with a unit or share area/unit-specific data for the first time with a unit followed by a post-survey.
   b. This may help IPs identify types of data (e.g. certain outcome or process measures) that are of interest to various audiences and ways to present the data that are easily comprehended by those audiences (e.g. rates vs. days since last infection).
2. If you do use this tool in the future, we would be grateful if you could notify us. If you are comfortable sharing your results, we would also be very interested to learn what you have found.
                              Thank you very much for your participation and efforts!

Contact Dana Burshell (804-864-7550 or Dana.Burshell@vdh.virginia.gov) with any questions or concerns.

Appendix J: Data Presentation Area/Unit Surveys: Staff Survey

Instructions: Please fill out this short survey about healthcare-associated infection (HAI) data presentation. Because there are a variety of ways to share data with different groups, the Virginia Department of Health (VDH) would like your help in identifying methods currently used and recommendations for effective presentation. Please write any comments on the back.

Survey area/unit (The IP will designate the area/unit for this survey here): _____
Respondent staff position: _____
Number of years in area/unit: _____

1. Do you agree with the following statements **about the designated area/unit**:
   Circle the best answer
   > Y/N   Surgical site infections are a problem (*Skip if does not apply*)
   > Y/N   Other healthcare-associated infections (HAIs) are a problem
   > Y/N   Surgical site infection rates are improving (*Skip if does not apply*)
   > Y/N   If I improve my infection prevention practices, lower HAI rates will result
   > Y/N   If staff improve their infection prevention practices, lower HAI rates will result
   > Y/N   Awareness of HAI data impacts infection prevention compliance
   > Y/N   Awareness of HAI data promotes dialogue among staff
   > Y/N   Area/unit-specific HAI data are presented (*If Y, then complete Y/N. If N, skip to #2*)
   >> Y/N   Presented HAI data are easy to understand
   >> Y/N   Presented HAI data are valid and reliable
   >> Y/N   Presented HAI data are timely
   >> Y/N   HAI data are presented at least once per quarter

2. In your opinion, which groups are aware of **area/unit-specific HAI data** and compliant with prevention practices?
   Place an X in all boxes that apply.

Area/unit personnel	Which groups are aware of area/unit-specific HAI data?	Which groups are compliant with infection prevention practices in the area/unit?
Respondent		
Area/unit nursing leadership		
Most area/unit nurses		
Most area/unit physicians		
Other staff: - _____		

3. Indicate which types of infection-specific data and formats you find easy to understand, are useful, and/or are incorporated into data **presented to your area/unit**. *Place an X in all boxes that apply*.

Data presented to your area/unit	Easy to understand	Useful	Presented
Color coding to help identify problem areas			
Comparison (to average, benchmark, etc.)			
HAI rates (e.g. CLABSI rate, SSI rate, overall HAI rate)			
Number of days since last infection			
Number of HAIs (either by type or overall)			
Percent compliance (e.g. with process measures)			
Standardized infection ratio (SIR)			

4. Indicate which outcome and process measures you want data about and are provided to **your area/unit**. *Place an X in all boxes that apply*.

Outcome measures	Want to know about	Provided to area/unit
Bloodstream infections (BSIs)		
Clostridium difficile infections		
Methicillin-resistant *Staphylococcus aureus* (MRSA) infections		
Surgical site infections (SSIs)		
Urinary tract infections (UTIs)		
Ventilator-associated pneumonia (VAP) infections		
Other (please specify:_____ _)		
Process measures		
Hand hygiene		
Environmental cleaning		
Surgical Care Improvement Project (SCIP) measures		
Other (please specify:_____ __)		

Appendix K: Data Presentation Area/Unit Surveys: Infection Preventionist (IP) Survey

Instructions: Please fill out this short survey about healthcare-associated infection (HAI) data presentation. Because there are a variety of ways to share data with different groups, the Virginia Department of Health (VDH) would like your help in identifying methods currently used and recommendations for effective presentation. Thank you for your time.

Survey area/unit (Designate the area/unit for this survey here): _____
Infection preventionist: _____
 Hospital: _____

1. Do you agree with the following statements **about the designated area/unit**: *Circle the best answer*
    - Y/N   Surgical site infections are a problem (*Skip if does not apply*)
    - Y/N   Other healthcare-associated infections (HAIs) are a problem
    - Y/N   Surgical site infection rates are improving (*Skip if does not apply*)
    - Y/N   If I improve my infection prevention practices, lower HAI rates will result
    - Y/N   If staff improve their infection prevention practices, lower HAI rates will result
    - Y/N   Awareness of HAI data impacts infection prevention compliance
    - Y/N   Awareness of HAI data promotes dialogue among staff
    - Y/N   Area/unit-specific HAI data are presented (*If Y, then complete Y/N. If N, skip to #2*)
        - Y/N   Presented HAI data are easy to understand
        - Y/N   Presented HAI data are valid and reliable
        - Y/N   Presented HAI data are timely
        - Y/N   HAI data are presented at least once per quarter

2. In your opinion, which groups are aware of **area/unit-specific HAI data** and compliant with prevention practices?
    Place an X in all boxes that apply.

Area/unit personnel	Which groups are aware of area/unit-specific HAI data?	Which groups are compliant with infection prevention practices in the area/unit?
Area/unit nursing leadership		
Most area/unit nurses		
Most area/unit physicians		
Other staff: - _____		

3. Indicate which measures are presented and the strategies used to present the data to each of the following groups.

   Place an X in all boxes that apply.

	Chosen area/unit		Infection Control Committee	Admin
	Area/unit - specific data	Facility-wide data	Facility-wide data	Facility-wide data
Outcome measure / process measure				
Bloodstream infections				
Clostridium difficile infections				
Hand hygiene compliance				
Environmental cleaning compliance				
Methicillin-resistant *Staphylococcus aureus* infections				
SCIP compliance				
Surgical site infections (SSIs)				
Urinary tract infections (UTIs)				
Ventilator-associated pneumonia (VAP) infections				
How data are presented				
Color coding to help identify problem areas				
Comparison (to average, benchmark, etc.)				
HAI rates (e.g. CLABSI rate, SSI rate, overall HAI rate)				
Number of days since last infection				
Number of HAIs (either by type or overall)				
Percent compliance (e.g. with process measures)				
Standardized infection ratio (SIR)				

Comments (*Use the back if needed*):

Appendix L: SSI Mini-Grant Award Guidelines for the Implementation of the National Healthcare Safety Network Procedure-Associated Module

Virginia Department of Health
American Recovery and Reinvestment Act (ARRA)
2011 Hospital Mini-Grant Award Guidelines for the Implementation of the
National Healthcare Safety Network (NHSN) Procedure-Associated Module

In partnership with the Virginia Hospital and Healthcare Association (VHHA), the Virginia Department of Health (VDH) is offering mini-grants to acute care hospitals and critical access hospitals to support implementing the NHSN's Procedure-Associated Module. This module is a part of the Patient Safety Component of NHSN and the Centers for Medicare and Medicaid Services (CMS) will be requiring use of this module for infection surveillance following selected surgical procedures beginning January 1, 2012. These mini-grants are to assist with implementation efforts. Examples of activities that will qualify for a grant are programmer support to help create an electronic file to upload surgical procedure data, surveillance staff training, or modification of internal systems.

The Procedure-Associated Module includes instructions for performing surgical site infection and post-procedure pneumonia surveillance following inpatient and outpatient surgical procedures. For more information and training for this module, visit: http://www.cdc.gov/nhsn/psc_pa.html.

Purpose:
The Virginia Department of Health's Healthcare-Associated Infections (HAI) Program is dedicated to supporting HAI surveillance and prevention activities. To align with action plans and reporting requirements established by national organizations such as the Centers for Disease Control and Prevention (CDC) and the Centers for Medicare and Medicaid Services (CMS), VDH has identified **surgical site infections** as a surveillance priority.

VDH applied for and received an ARRA grant to build and sustain state programs to prevent healthcare-associated infections. In an effort to implement the NHSN Procedure-Associated Module and collect and analyze information related to surgical site infections, VDH has contracted with VHHA to disseminate mini-grants of **$2,500 to $25,000** to hospitals with these ARRA funds. Surgical site infection (SSI) surveillance can be burdensome due to the manual entry of surgical procedure data and disintegration of various electronic systems that house the data elements required by the Procedure-Associated Module. **In 2012, to be eligible to receive the Medicare Payment Update as part of the CMS Inpatient Prospective Payment System, facilities will be required to use NHSN to conduct surveillance on several surgical procedures, which may include but are not limited to: coronary artery bypass graft surgery, other cardiac surgeries, hip arthroplasty, knee arthroplasty, abdominal hysterectomy, vaginal hysterectomy, and/or colon surgery.**

To receive a mini-grant, acute care hospitals must apply for the mini-grant as directed in this notice, and meet and comply with the mini-grant requirements. The eligible dollar amount awarded shall be contingent upon the strength of the hospital's proposal and budget outline, the ability to meet all participation requirements, and the availability of funds. Award notices will be distributed to eligible hospitals on a first-come, first-serve basis. VDH and VHHA will review applications jointly and determine which proposals are to be funded.

Target Audience:
The following hospital staff positions are encouraged to participate in infection prevention and surveillance education and implementation activities related to the Procedure-Associated Module:
- Infection Preventionists
- Nursing Staff, including Director of Nursing/Assistant Director of Nursing
- Administrative Support Staff
- Medical Staff
- Quality Improvement Staff
- Information Technology Staff

Grant Requirements and Timeline:
- Hospitals must submit Attachment A by **April 15, 2011**. Attachment A must include a plan for spending the funds. **All applications are to be received online**.
- Hospitals receiving mini-grants will receive an electronic notification from VHHA by **May 1, 2011** indicating mini-grant application and spending plan approval or disapproval (tentative). *Award date pending VDH administrative approval.*
- Mini-grant funds will be dispersed to grantees by **June 1, 2011**.
- Hospitals receiving mini-grants shall implement the Procedure-Associated Module no later than **November 1, 2011**.
- Hospitals receiving mini-grants must confer rights to all eligible procedures required by the CMS Inpatient Prospective Payment System (IPPS) to the VDH group in NHSN by **November 1, 2011**.
- Mini-grant funds must be spent on activities that support implementation of the Procedure-Associated Module. Expenditures must be completed by **November 1, 2011**.
- Hospitals shall be required to share 'lessons learned' with the VDH and other facilities and may be asked to present them at a statewide meeting in **November 2011**.
- Hospitals must submit Attachment B and required documentation to VHHA by **November 15, 2011**.
- Any unspent funds are to be returned to VHHA by **November 15, 2011**.

Eligible Expenses:
Mini-grant funds may be used for:
- Any activities that support implementation of the Procedure-Associated Module, including but not limited to:
    - Equipment and services, such as administrative and informatics costs
        - Example: upgrading or modifying internal systems
    - Training and education
        - Example: training for staff responsible for collecting and/or entering surgical site infection surveillance data
    - Consultative and technical assistance
        - Example: programmer support to help create an electronic file to upload surgical procedure data directly into NHSN
    - Administrative support

Application Requirements:

To be eligible for a mini grant, the applicant shall:
   a) Be licensed as an acute care hospital in the Commonwealth of Virginia.
   b) Submit electronic copy of the completed original Hospital Mini-Grant Award Notice and Acceptance Attestation (Attachment A) and the budget form to the Virginia Hospital & Healthcare Association by **April 15, 2011,** to the attention of Dr. Barbara Brown at bbrown@vhha.com. For questions, she can be reached at the listed email or by phone at 804-965-5722. **No hard copy applications will be accepted.**

Award notices are contingent upon the availability of funding and will be awarded to eligible hospitals on a first-come, first-serve basis. Any applications received after the deadline may be awarded if funding is still available.

Funding will be awarded to acute care hospitals meeting the application requirements on a first-come, first-serve basis. The amount of funding awarded is contingent upon: 1) the strength of the application, 2) ability of the applicant to specify the funds needed, 3) the ability to spend the funds in the time allotted, 4) the timely submission of the completed application, and 5) the availability of funding.

All mini-grant applicants will be notified by **May 1, 2011** of mini-grant award approval or disapproval (tentative). *Award date pending VDH administrative approval*. Notification of award approval will be an electronic notice to the hospital contact person listed on the application form with a copy to the hospital CEO.

After receiving mini-grant funds, the hospital will be required to confer rights to the VDH group in NHSN for all of the surgical procedures conducted by the hospital that are required to be received as part of the CMS Inpatient Prospective Payment System. These rights are to be conferred by **November 1, 2011** and will affect procedures conducted from January 2012 onward.

Mini-grant award documents to be submitted:
The following instructions apply to completing the attachments:

1. **Attachment A ,** "Hospital Mini-Grant Award Notice and Acceptance Attestation":
   Hospitals applying for a mini-grant award must complete and electronically submit Attachment A as part of the application. Incomplete applications will not be accepted. Upon submitting Attachment A, the hospital CEO agrees to spend the mini-grant funds as stated in the grant requirements and in the eligible expenses portion of this notice and to submit Attachment B with all required documentation by the **November 15, 2011** deadline.

2. **Budget form**:
   Hospitals submit the budget form with Attachment A. The budget demonstrates how the mini-grant funds are to be spent in accordance with the grant requirements.

3. **Attachment B,** "Hospital Mini-Grant Award Notice of Completion"
   All receipts and documentation supporting the expenditures must be submitted on Attachment B. As such, Attachment B is to be submitted AFTER the grant is awarded and is not part of the initial submission.

   A hospital that does not submit Attachment B by November 15, 2011 or submits Attachment B that is inconsistent with the approved budget shall be required to return all or any unspent or unaccounted for grant funds.

   Please note that grantees shall be audited to verify that the mini-grant funds were spent appropriately.

Appendix M. SSI Mini-Grant Award Notice and Acceptance Attestation

VDH VIRGINIA DEPARTMENT OF HEALTH
Protecting You and Your Environment

Attachment A

Healthcare Associated Infection Prevention
Hospital Mini-Grant Notice and Acceptance Attestation
2011 Hospital Mini-Grant Award

Mini-Grant Information:

I, _____, am providing the following information for
(Hospital CEO)

release of the mini-grant award for the implementing the NHSN Procedure-Associated Module:

1. Name of Hospital (as it appears on license issued by the Office of Licensure and Certification):
    _____

2. License Number of Hospital (as it appears on license issued by the Office of Licensure and Certification):
    _____

3. Mailing Address: _____

    _____

5. Mini-Grant Amount Requested: $_____

6. Contact Person Name: _____

7. Contact Person Telephone Number: (_____)_____

8. Contact Person Fax Number: (_____)_____

9. Contact Person E-mail Address: _____

10. Hospital CEO Name: _____

11. Hospital CEO E-Mail Address: _____

12. Is your facility currently participating in the Virginia Department of Health's Surgical Site Infection Surveillance Project?   _____YES   _____NO

13. Approximately how many hours per month does your facility currently spend on surgical site infection surveillance and reporting? _____

14. Which of the following surgical procedure types are under surveillance at your facility? *Check all that apply*:

Surgical procedure	Currently	2012 (Projected)	N/A (Procedure not performed)
Abdominal hysterectomy			
Colon surgery			
Coronary artery bypass graft surgery			
Gastric surgery			
Hernia repair			
Hip arthroplasty			
Knee arthroplasty			
Refusion of spine			
Spinal fusion			
Vaginal hysterectomy			
Other cardiac surgery			
Other			

15. Plan for spending the Hospital Mini-Grant Award (*Please identify how the hospital plans to spend these funds in implementing the Procedure-Associated Module):*

16. Fill out budget form and submit with application.

I, the undersigned, have read the mini-grant eligibility requirements. I acknowledge that the funds are to be used for the purpose of the implementation of the NHSN Procedure-Associated Module and spent consistent with the provisions outlined in the "2010-2011 Hospital Mini-Grant Award Guidelines for the NHSN Procedure-Associated Module Implementation" and as proposed on the budget form that accompanies this application. Additionally, I agree to submit a copy of all expenses and documentation supporting those expenditures, and a copy of the Notice of Completion (Attachment B) by **November 15, 2011**. I understand failure to submit Attachment B by November 15, 2011, means the hospital must return the mini-grant money in full to the Commonwealth. I further understand that any portion of the mini-grant that is not accounted for on Attachment B must also be returned to the Commonwealth.

_____   _____
      Hospital CEO Signature   Date

_____
      Printed Name

This Attachment must be **received**
by the Virginia Hospital & Healthcare Association by **April 15, 2011 via email**.

Email all correspondence to:

Dr. Barbara Brown at bbrown@vhha.com

Appendix N: SSI Mini-Grant Notice of Completion

VDH VIRGINIA DEPARTMENT OF HEALTH
Protecting You and Your Environment

Attachment B

Healthcare-Associated Infection Prevention
Hospital Mini-Grant Notice of Completion
2011 Hospital Mini-Grant Award

I, _____, Administrator at _____
             (Hospital CEO Name)   (Hospital License Number)

_____
            (Name of Hospital)

am providing copies of all related expenses as a result of the implementation of the NHSN Procedure-Associated Module obtained from the 2011 Hospital Mini-Grant Award. Itemize all training and related expenses below.

Invoice Amounts	
1. _____	= $ _____
2. _____	= $ _____
3. _____	= $ _____
4. _____	= $ _____
5. _____	= $ _____
6. _____	= $ _____
7. _____	= $ _____
8. _____	= $ _____
9. _____	= $ _____
10. _____	= $ _____
TOTAL =	**$**

Please describe how these funds were used to implement the Procedure-Associated Module:

_____
_____
_____
_____
_____
_____
_____

_____   _____
              Hospital CEO Signature   Date

One original and one copy of this attachment must be **received** by VHHA by
November 15, 2011.

Email all correspondence and attachments to:

Dr. Barbara Brown at bbrown@vhha.com

Appendix O: SSI Mini-Grant Budget Form

<div align="center">

PROPOSED BUDGET

</div>

REQUIRED FUNDS				TOTAL
I. PERSONNEL				
Position	Salary	Benefits	% FTE	
I. SUBTOTAL	$	$		
II. OTHER PROJECT COSTS (IT/vendor costs, programming, training, etc)			$	
II. SUBTOTAL				
TOTAL PROJECT COSTS (SALARY AND OTHER PROJECT COSTS)			$	