Healthcare Associated Infections

2011 Report to the Washington State Legislature

June 2011

Division of Epidemiology, Health Statistics, and Public Health Laboratories

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List of Abbreviations

APIC	Association for Professionals in Infection Control and Epidemiology, Inc.
ARRA	American Reinvestment and Recovery Act
CAUTI	Catheter-associated urinary tract infection
CDAD	*Clostridium difficile* associated disease
CDC	Centers for Disease Control and Prevention
CLABSI	Central line-associated bloodstream infection
CMS	Centers for Medicare and Medicaid Services
CSTE	Council of State and Territorial Epidemiologists
ESBL	Expanded-spectrum beta-lactamase
HAC	Hospital-acquired condition
HAI	Healthcare associated infection
HHS	U.S. Department of Health and Human Services
HICPAC	Healthcare Infection Control Practices Advisory Committee
ICU	Intensive care unit
IHI	Institute for Healthcare Improvement
IPPS	Inpatient Prospective Payment System
MDRO	Multiple-drug-resistant organisms
MRSA	Methicillin-resistant Staphylococcus aureus
NHSN	National Healthcare Safety Network
NQF	National Quality Forum
RCW	Revised Code of Washington
SCIP	Surgical Care Improvement Project
SHEA	Society for Healthcare Epidemiology of America
SORCE	Surgical Outcomes Research Center
SSI	Surgical site infection
TJC	The Joint Commission
VAP	Ventilator-associated pneumonia
VRE	Vancomycin-resistant enterococci

Executive Summary

In 2007, the Washington State Legislature passed Second Substitute House Bill (2SHB) 1106. Codified as RCW 43.70.056, this law requires acute care hospitals to report certain healthcare-associated infections to the Centers for Disease Control and Prevention's (CDC) National Healthcare Safety Network (NHSN). As a result, hospitals are now required to report central line-associated bloodstream infections and ventilator-associated pneumonia. The Washington State Department of Health publicly reports hospital infection rates through its Healthcare Associated Infections website. The reporting of surgical site infections to NHSN is expected to begin by 2013. In the meantime, hospitals are reporting surgical site infection rates to the Washington State Hospital Association.

Healthcare associated infections (HAI) are infections that develop during, or soon after, care in a hospital, clinic, doctor's office, or home-visit by a health professional. These types of infections have long been recognized as a serious and preventable problem. According to the CDC, there are 1.7 million healthcare associated infections every year. These infections affect 5 percent of all patients admitted to a hospital, add $26 billion to $33 billion in excess costs, and contribute to 99,000 associated deaths annually.

During the past few years, state and federal programs have begun new strategies to advance efforts toward preventing HAI. The U.S. Department of Health and Human Services (HHS) has a national HAI Action Plan. The CDC recently identified healthcare associated infections as one of six "winnable battles." As a leader among state programs, Washington has addressed key aspects of these recommended federal initiatives and, in addition, has successfully completed all requirements outlined in our state law.

Under RCW 43.70.056, the department is required to submit a report to the legislature that addresses additional HAI reporting requirements and Methicillin-resistant *Staphylococcus* aureus (MRSA) presurgical screening. The report is based on the recommendations of the department's HAI Advisory Committee, current literature, and the methodologies and practices of nationally recognized organizations. It addresses the infections and prevention issues raised by CDC and HHS. Based on a thorough review and analysis of this information, the department has compiled the following recommendations to the legislature. The rationale behind these is detailed in Section II of this report. A summary of recommendations that require legislative changes is contained in the following table.

Recommendations That Require Change in RCW 43.70.056		
TOPIC	**ACTION**	**RATIONALE**
1. Ventilator-associated pneumonia (VAP)	Remove from list of state required infections for reporting.	It is not possible to validate the accuracy of reporting. The surveillance definitions cannot reliably distinguish VAP from other medical conditions.
2. Central line-associated bloodstream infections (CLABSI)	Expand scope of reporting to include all in-patient areas of the hospital.	A large number of CLABSI occur outside intensive care units. Expanding the scope of CLABSI reporting is essential to monitor the entire picture and is consistent with emerging directions in CDC and The Joint Commission (TJC) reporting measures.
3. Surgical Site Infection (SSI)	Delete the listing of specific surgical procedures within the RCW; instead, align state law with the federal mandate by referring to Centers for Medicare and Medicaid Services (CMS) list of procedures.	This will simplify reporting for hospitals and avoid duplication of effort.
4. Revision to the HAI Grant Account: RCW 43.70.323	Expand third sentence to add to the scope of how funds in a special account may be used, specifically for evaluating the impact of public reporting on safety and healthcare quality.	This would enable us to support studies on the effectiveness of public reporting and improve our chances of attracting foundation or private sector donations. Expanding the scope as recommended would still permit us to support hospital infection control programs.
5. Revision to the Reporting Requirement in RCW 43.70.056(3)(b)	Replace the annual reporting requirement on MRSA presurgical screening with a biennial reporting requirement to the legislature on the status of mandatory public reporting of healthcare associated infections.	A biennial report schedule will allow the department to keep the legislature informed of current and emerging issues in healthcare associated infections. Our advisory committee noted the value of continuing to keep the legislature informed of advances in scientific knowledge and changing federal initiatives concerning infection prevention.

Presurgical Screening for MRSA

RCW 43.70.056 requires that the HAI Advisory Committee recommend to the department whether current science supports expanding the practice of presurgical screening for MRSA. The committee recommends against mandating such screening because the scientific literature does not support making presurgical screening for MRSA a universal requirement at this time. The department concurs with the committee's recommendations.

I. Background

Healthcare associated infections (HAI) have long been recognized as a serious problem. These infections develop during, or soon after, care in a hospital, clinic, doctor's office, or home-visit by a health professional. At the Centers for Disease Control and Prevention's (CDC) Grantee Meeting in 2009, Dr. Arjun Srinivasan said 1.7 million healthcare associated infections occur every year. These infections affect 5 percent of all patients admitted to hospitals, add $26 billion to $33 billion in excess costs, and contribute to 99,000 deaths annually.

In 2007, the Washington State Legislature passed Second Substitute House Bill (2SHB) 1106. Codified as RCW 43.70.056, this law requires acute care hospitals to report certain healthcare-associated infections to the CDC's National Healthcare Safety Network (NHSN). NHSN is a secure data sharing network specifically used to report healthcare associated infections. It provides users with standardized case definitions and methods that CDC has been refining for more than 40 years. The majority of state programs use NHSN to obtain publicly reported infection rates. In addition, NHSN has been used as an international model for creating reporting systems, and was recently chosen by the Centers for Medicare and Medicaid Services (CMS) as their source for obtaining infection rates for the CMS Hospital Compare website.

Washington hospitals are now required to report central line-associated bloodstream infections that occur in intensive care units and ventilator-associated pneumonia to NHSN. The Washington State Department of Health publicly reports these infection rates through its Healthcare Associated Infections website.

Substitute House Bill 2828, a 2010 amendment to RCW 43.70.056, postpones the reporting of surgical site infections (SSI) to NHSN until hospitals are able to align with the standards set by NHSN. Hospitals have until 2013 to obtain software capable of automating the reporting of SSI data elements to NHSN. In the meantime, hospitals are reporting abridged surgical site infection data to the Washington State Hospital Association through its Quality Benchmarking System. Those rates are available on the Washington State Hospital Association website.

Over the past few years, state and federal programs have begun new strategies to advance efforts toward preventing HAI. The U.S. Department of Health and Human Services (HHS) has a national HAI Action Plan. CDC recently identified healthcare associated infections as one of six "winnable battles" on which to focus its efforts. As a leader among state programs, Washington has successfully completed all aspects required by 2007 legislation and addressed key aspects of recommended federal initiatives.

RCW 43.70.056 requires the department to submit a report to the legislature in 2011 on additional mandated infection reporting requirements. The report is based on the recommendations of our HAI Advisory Committee, the findings of recent scientific and medical publications and the current methodologies of national organizations. The RCW also requires us to make a recommendation on whether current science supports expanding presurgical screening for methicillin-resistant *Staphylococcus aureus* (MRSA) prior to certain elective surgical procedures. To accomplish this, we convened an expert task force with representation of infectious disease specialists, clinical pharmacy, and surgeons. The task force reviewed the pertinent technical literature and its findings were reported back to our advisory committee.

HAI Advisory Committee

The HAI Advisory Committee comprises individuals representing:

- Health professions (hospital epidemiology and infection control, infectious diseases and other physician specialties, nursing, hospital administration and healthcare quality improvement)
- Rural, urban, and teaching hospitals
- Associations (hospital, medical, nursing, infection control professionals, patient safety and community health alliance)
- Third-party payers
- Public consumer advocates
- A list of the members of the committee appears in Appendix A

The HAI Advisory Committee met on June 18, 2010, September 30, 2010, and December 1, 2010, to discuss potential changes to the HAI reporting requirements in RCW 43.70.056. In preparation, the department:

- Convened an expert task force to analyze the scientific literature on presurgical screening for MRSA and shared the task force findings with the advisory committee.
- Provided committee members with a review of the relevant literature on HAI prevention and reporting (shown in section II-IV of this report), as well as information on HAI surveillance requirements of federal agencies and accreditation organizations.
- Developed criteria by which to judge the merits of any proposed reporting item.

Membership of our advisory committee and our task force is listed in Appendix A and B of this report.

Initial committee discussion noted that many hospitals struggle to support current reporting requirements because of limited staff and technical resources. Mandating additional reporting measures will increase the burden on these hospitals; especially those that don't have automated reporting. Generally, support centered on hospitals continuing their focus on current reporting measures and using the data to strengthen infection prevention activities. The committee pointed out that there is no evidence yet that public reporting has a positive effect on preventing infections.[1, 2] Rather than add additional requirements, hospitals should develop infection reduction plans based on current data. The committee agreed that the highest priority is to implement effective prevention methods. Members expressed concern that hospitals may not have the resources necessary to accommodate additional reporting requirements and to continue conducting actual prevention activities.

The committee also thought a worthwhile addition would be to incorporate ambulatory surgical facilities into the HAI legislation. However, specific reporting requirements for ambulatory surgical facilities were not discussed. Subsequent advisory committee discussions included a broad range of proposed changes to hospital public reporting measures.

National Activity

The introduction of state HAI reports is the newest addition to a growing number of public information resources about hospital performance.[3] These reports started appearing in the past several years in response to states' legislative action. Several states started reporting just one or two types of infections, while others started with more comprehensive plans.[4] Some consumer advocates for patient safety want an even wider range of information as quickly as possible, such as the Consumers Union Safe Patient Project or CDC Safe Healthcare web forum[*].

The National Quality Forum (NQF) is a nonprofit organization that works to improve the quality of American healthcare. NQF includes infection reporting as an accountability measure.[5] NQF has its own technical panels and sets cutting-edge standards that may be adopted by federal organizations such as CMS. However, some of its accountability measures are considered insufficiently proven by other expert groups. For example, ventilator-associated pneumonia rate is an NQF-endorsed measure considered by other groups as unreliable for use as an accountability measure. State reporting requirements should align as closely as possible with guidance by national experts in hospital epidemiology and infection control, as is provided by CDC's Healthcare Infection Control Practices Advisory Committee (HICPAC).[6] HICPAC is a select group of experts in hospital epidemiology and infection control. They provide advice and

[*] See https://secure.consumersunion.org/site/Advocacy?page=UserActionInactive&id=2073 and http://blogs.cdc.gov/safehealthcare/?p=704.

guidance to CDC and the Secretary of HHS that is used to develop national prevention strategies and guidelines. HICPAC also includes representation from professional associations that focus efforts toward the prevention of healthcare associated infections. With the advent of mandatory public reporting through state health departments, the Council of State and Territorial Epidemiologists (CSTE) is one such association that has emerged as an important influence on healthcare associated infections initiatives.

We also recognize that federal agencies and national consumer advocacy groups are expecting more, not less, as state government HAI programs mature, as is noted in the HHS Action Plan[†]. HHS has said that state HAI programs are the foundation of its plans; with an expectation that states will move beyond rate reporting to promote and coordinate regional prevention activities in their action plans. CMS recently announced that central line associated bloodstream and surgical site infection reporting through NHSN will be added to the list of other quality measures that hospitals participating in its Inpatient Prospective Payment System (IPPS) must report in order to receive full reimbursement. CDC recently identified HAI as one of six "winnable battles" and wants leading states to help move forward a "scorecard" for measuring factors related to progress.

The Washington HAI Program has made a strong start. We have:

- Met the requirements of RCW 43.70.056.
    - Enrolled all eligible hospitals in a reporting network on schedule
    - Ensured they are reporting all required information
    - Created a website to report hospital rates to the public
    - Began a program to validate the accuracy of hospital reports
- Gained favorable recognition at a national level.
    - Our grant application was ranked No, 1 in its category among states and territories applying through CDC for an American Reinvestment and Recovery Act (ARRA) grant specifically targeted at reinforcing HAI prevention efforts. The money enabled us to ensure the accuracy of infection surveillance practices in Washington hospitals. As a result of our ARRA funding, all hospitals reporting central line-associated infection rates were eligible to receive contract funding to strengthen their infection control program, and to measure the accuracy of their surveillance program.

[†]The HHS Action Plan is available at http://www.hhs.gov/ash/initiatives/hai/infection.html.

- We developed a unique method to measure the quality and accuracy of infection reporting. Many state programs have struggled to find a practical and affordable way to do this. Our program works with all applicable hospitals in Washington to ensure the rates they are reporting are as accurate as possible. This method was accepted for presentation at the Decennial International Conference on Healthcare-Associated Infections and the Council of State and Territorial Epidemiologists annual conference in 2010.
- The HHS technical review of our state action plan stated, "Your plan demonstrates an excellent understanding of the necessary scope for an effective and ambitious prevention program. Your website with infection data posted is a useful tool for the public."
- Our evaluation studies on several aspects of the NHSN metrics have been reported in papers accepted for presentation in major conferences and publication in leading journals. (See Appendix C.)
- Six other states have asked for our assistance in establishing a validation process with their hospitals. The validation technical reference manual, which documents our methods to confirm accuracy of hospital reporting, was distributed by NHSN to HAI program coordinators in all other states. We are now working on addressing important knowledge gaps that face all state programs. Our approach has attracted collaboration from faculty members at nine prominent universities across North America.

II. Review and Recommendations That Require Change in RCW 43.70.056

This section describes the department's HAI recommendations based on federal and other state government agencies, review of the pertinent scientific literature, and our HAI Advisory Committee.

Recommendation 1: Delete the ventilator-associated pneumonia (VAP) rate reporting requirement from the HAI law.

Ventilator-associated Pneumonia (VAP)

The current law requires Washington hospitals to report VAP. Very few other states report this infection.[7] It was originally proposed by NQF; however, its technical advisory panel determined too many other conditions also fit the definition of VAP. No specific laboratory test can identify VAP. Patients with other conditions (e.g. congestive heart failure, chest trauma, etc.) often show very similar signs and symptoms as patients with VAP.[5] The most reliable methods for VAP diagnosis are invasive procedures that may be too dangerous and or may be considered unnecessary in most circumstances. As such, there are too many variations in accuracy of diagnostic practices from hospital to hospital to make VAP rates a reliable statistic for comparing hospitals against each other. No other professional bodies have included it as a quality metric because the frequency of wrong diagnosis is well recognized. Researchers have shown that many other common conditions render the VAP rate estimates widely inaccurate.[8, 9] If more objective signs and quantitative respiratory therapy and laboratory values are substituted for the subjective criteria now used by NHSN, it might become possible to perform more meaningful surveillance in the future. However, further evaluation studies and adoption of electronic medical record systems are needed to make this feasible. The cost-effectiveness and workload of producing and gathering such data must be evaluated first.[10] There is a widespread feeling that risk of this infection has decreased over the years, but also that current surveillance definitions are unworkable.[11]

The department, in accord with its advisory committee, recommends deleting the ventilator-associated pneumonia rate reporting requirement from the HAI law on the grounds that it is not a sufficiently reliable measure for inter-hospital comparison.

Recommendation 2: Expand the scope of central line-associated bloodstream infections (CLABSI) reporting to include all in-patient areas of the hospital.

Central Line-associated Bloodstream Infections

Washington's legislated mandate requires hospitals to report central line infections that occur in intensive care units. This is a widely reported HAI measure required in many states. CMS recently passed new rules requiring Inpatient Prospective Payment System (IPPS) hospitals to start reporting CLABSI through NHSN in order to qualify for reimbursement.

Published studies indicate there are more CLABSI outside than inside intensive care units.[12, 13, 14] Once patients with central lines transfer from a critical care status to a lower level of care, they disappear from the view of our existing surveillance program. We therefore see early-onset CLABSI cases arising inside or very soon after transfer from an ICU, but not the late-onset cases. Our data indicates late-onset CLABSI accounts for a large share of the total number of CLABSI cases. At least one study suggests that line care deficiencies (e.g. failure to remove central lines as soon as they are not medically needed, failure to take all necessary precautions when manipulating line components that need to remain sterile, etc.) also may be more frequent outside the intensive care unit setting.[15] In Washington hospitals, we do not know if more CLABSI are also found outside of the intensive care units. In order to understand the full extent of CLABSI, we need to establish in-patient surveillance to determine the number of infections that arise in patients who still have a line in place after they transfer out of intensive care units.

The Joint Commission (TJC) expects surveillance of these infections throughout the hospital under its new 2010 goal .07.04.01 EP 5 (personal communication, Barbara M. Soule, RN, MPA, CIC, Practice Leader, Infection Prevention and Control, Joint Commission Resources Inc.), so hospitals accredited by TJC will conduct broader surveillance for their own use.

Our advisory committee acknowledged the benefit of expanding CLABSI reporting to all in-patient areas and said that many hospitals were already collecting this type of data. Hospital representatives on our advisory committee thought the law should allow hospitals one year to begin this type of reporting in order to prepare for the additional work load. Others, consumer advocates, spoke in favor of requiring it within six months of legislation being adopted. The department, in accord with its advisory committee, recommends that the HAI law be changed to expand central line-associated bloodstream infection surveillance.

Recommendation 3: Delete the listing of specific surgical procedures within the RCW and instead, align state law with the federal mandate by referring to CMS list of procedures.

Surgical Site Infection (SSI)

Our current legislated mandate is to report rates for "deep sternal wound for cardiac surgery, including coronary artery bypass graft; total hip and knee replacement surgery; and

hysterectomy, abdominal and vaginal." Implementation of reporting SSI to the department through NHSN was postponed for up to three years by legislation passed in 2010.

Guidelines on public reporting from the national Healthcare-Associated Infection Working Group of the Joint Public Policy Committee[‡] list coronary artery bypass surgery, colon resection, total hip arthroplasty, total knee arthroplasty, laminectomy and total abdominal hysterectomy as examples of reasonable options.[21] NQF offers a similar but not identical list, which includes coronary artery bypass graft and cardiac surgery, hip or knee arthroplasty, colon surgery, hysterectomy (abdominal and vaginal), and vascular surgery along with a recommendation toward including cesarean section infections.[5] The CMS final rule requires hospitals to report CLABSI and SSI data through NHSN. The CMS list of surgical procedures matches the NQF list, and, as a result, the list of federally-required surgical procedures is longer than what is currently reportable under our Washington State law. CMS intends to add the information obtained through NHSN to what is already reported publicly on its Hospital Compare website.

At its 2010 annual meeting, CSTE approved a position statement advocating a CSTE-CDC workgroup to develop national standards that would guide states toward more uniform choices in what they individually report. It is difficult to evaluate and compare the progress of hospitals in each state when state programs do not report on the same conditions. The establishment of a national standard would provide a platform to monitor the progress toward eliminating infection risk on both a state-by-state and national level. NHSN already provides a way for people to share information in a well-established manner, and the new CSTE-CDC workgroup could also provide a way to share infection information on the same conditions. This new committee could reconcile differences of opinion as to which surgical procedures provide the best accountability measure for public reporting.

Recognizing the CMS list as the national standard would limit deep sternal wound cardiac surgery to only coronary artery bypass surgery (removing implied inclusion of heart transplant); may or may not eliminate vaginal hysterectomy (it now remains on draft NQF standards that will be voted and ratified between February and April 2011); and add colon resection.

The department recommends that the list of specific surgical procedures be removed from the current HAI reporting law. Instead, the state law should align with federal rules. CMS lists which surgical procedures to report and the state HAI law should match it. We recommend that this change start when SSI reporting reverts back to the department through NHSN (by no later

[‡] An expert working group representing the Association for Professionals in Infection Control and Epidemiology, Inc. (APIC), CDC, the Council of State and Territorial Epidemiologists (CSTE) and the Society for Healthcare Epidemiology of America (SHEA).

than 2013). The advisory committee unanimously agreed with aligning the state law with the federal mandate.

Grant and Reporting Recommendations

In addition to the above recommendations based on the department's literature review and consultation with our advisory committee, the department also recommends the following grant and reporting changes to sections of RCW 43.70.056.

Recommendation 4: Expand the third sentence of RCW 43.70.323 to add to the scope of how funds in a special account may be used, specifically for evaluating the effect of public reporting on safety and healthcare quality.

Revision to the HAI Grant Account RCW (43.70.323)

Expanding the activities that could be funded through the HAI grant account would enable us to support studies on the effectiveness of public reporting and improve our chances of attracting foundation or private sector donations. The advisory committee noted that Washington has been a state "ahead of the curve" on HAI mandatory public reporting and agreed that it is productive to evaluate and refine the content of our program. There is a need to also study the relevance of what we are reporting to the wide public audience, and how to tailor it to achieve maximum value. To date, no contributions have been made to this grant account. Expanding permitted uses of the hospital infection control grant account may attract funding that could be used to support these activities, as well as efforts to strengthen infection control programs within our healthcare facilities. (See Appendix D to read RCW 43.70.323 as currently written.)

Current law limits expenditures to establishing and supporting infection control and surveillance programs. The department recommends revising the third sentence to read:

> "Expenditures from the account may be used only for awarding hospital ~~infection control~~ epidemiology grants to hospitals, universities and public agencies for establishing and maintaining ~~hospital~~ infection ~~control and surveillance~~ surveillance and control programs, for providing support for such programs, for evaluating the impact of public reporting on patient safety and healthcare quality, and for the administrative costs associated with the grant program."

Recommendation 5: Replace the annual reporting requirement on MRSA presurgical screening with a biennial reporting requirement to the legislature on the status of mandatory public reporting of healthcare associated infections. This would include an update on needs for mandatory public reporting in additional healthcare settings (e.g. ambulatory surgical facilities,

kidney dialysis centers, long term care) and state-of-the-art issues concerning infection prevention (e.g. evidence concerning presurgical screening for MRSA).

Replacing Annual Report Concerning Presurgical MRSA Screening with a Biennial Report to the Legislature in RCW 43.70.056 (3)(b)

Our advisory committee noted the value of continuing to keep the legislature informed of advances in scientific knowledge and changing federal initiatives concerning infection prevention. The department is currently required to prepare only one comprehensive report to the legislature, but annually consider whether current science supports expanding the practice of presurgical screening for MRSA. We think a more comprehensive, biennial reporting requirement will better allow us to keep the legislature and the public informed on new and emerging evidence related to infection prevention. The biennial report can include information on the need for presurgical screening of MRSA to ensure that this area of infection prevention is examined on a regular basis. (See Appendix E to read RCW 43.70.056 as currently written.)

III. Topics Evaluated and Not Recommended for Action

Methicillin-resistant *Staphylococcus aureus* (MRSA) Presurgical Screening

The department and its advisory committee agree with the findings of the expert task force that the scientific literature does not support making presurgical screening for MRSA prior to open chest cardiac, total hip, and total knee elective surgeries in all hospitals a legislative requirement.

In 2009, Engrossed Substitute House Bill 1123 amended RCW 43.70.056 to add a requirement that the HAI Advisory Committee annually make a recommendation to the department regarding whether current science supports expanding the practice of pre-surgical screening for MRSA before open chest cardiac, total hip, and total knee elective surgeries. To facilitate this, the department convened a task force with expertise in surgery, clinical pharmacy and infectious diseases.

Published studies and CDC data were reviewed by our expert task force regarding the cost and accuracy of current technologies for screening, the cost and effectiveness of decolonization treatment options, and the effect of screening on surgical site infection rates reported from hospitals that have published their experience. Screening one or more parts of the body simply determines whether MRSA is present; treatment is then needed prior to surgery to remove the MRSA, also known as decolonization. The task force did not find that the benefits of screening patients would outweigh the costs. The findings of the task force were presented to the advisory committee for further discussion and to develop a recommendation on this issue.

- The goal is to reduce all surgical site infection risk, not just MRSA infections. Information provided to the committee estimated that even if screening and decolonization were completely effective at preventing MRSA infections, which it is not, it would still prevent only about one-fourth of surgical site infections. The task force findings determined that most surgical site infections are not the result of MRSA. MRSA screening and decolonization of those positive on screening is too narrow an approach to reach our goal.
- Each facility is required by existing law (House Bill 1123 from 2009, codified as RCW 70.41.430) to conduct an annual risk assessment, and on that basis determine whether additional measures should be added to control MRSA among other pathogens. The effect of MRSA in individual facilities can vary drastically from hospital to hospital. Requiring all facilities to adopt the same screening approach could be beneficial in some hospitals, but unlikely to produce as much benefit in others, while diverting limited resources everywhere.

- Hospital licensing survey checks are used to ensure that an appropriate risk assessment and subsequent action occurs in all facilities.
- Adding presurgical patient screening might provide an incremental value in some hospitals where MRSA accounts for a high proportion of surgical site infections, but the scientific evidence seems to favor universal use of other measures to prevent surgical infections with all pathogens.
- There is an important role for prevention collaboratives dedicated to ensuring hospitals share and adapt "best practices" consistent with the scientific evidence and their own local situation, above and beyond the role of inspection and enforcement.

Catheter-associated Urinary Tract Infection (CAUTI)

The most common type of hospital-acquired infection is urinary tract infections. They have not attracted as much attention as more lethal infections, but research shows that this is an area where simple measures could have a major effect on the frequency of infections.[22, 23] The vast majority of catheter-associated urinary tract infections produce no symptoms, do not require treatment, spontaneously resolve after the catheter is removed, and have no noticeable effect on additional hospital cost or length of stay. A small number of these infections produce pain or fever that requires treatment. An even smaller number extend to produce bloodstream infection.

CMS will require federal reporting of CAUTI as a hospital-acquired condition (HAC),[24, 25] but this does not necessarily make CAUTI a meaningful metric for our state mandate. There are two major components to the CMS action for prevention of CAUTI:

- As an incentive to put more emphasis on prevention, CMS announced in 2008 that it would no longer pay costs associated with complications they deem preventable. This includes several types of infections, including CAUTI.
- The 2010 rules indicate that CMS plans to publish CAUTI information as one of a number of HACs on its Hospital Compare website.

The difficulty this presents is that currently, there is no way to efficiently and meaningfully summarize CAUTI data. Unlike other infections reported by CMS, the CAUTI HAC information will be obtained through its Hospital Inpatient Quality Reporting Program, not through NHSN. This source of information has historically been far less accurate than conventional infection surveillance programs, like those that report to NHSN.[26, 27] However; NHSN recently limited its case definitions to include only CAUTI as serious enough to require treatment. This narrower new definition excludes most of these infections, which makes it difficult to compare hospitals where there may be differences in the types of patients, and urine culture clinical practices.

As an alternative to reporting CAUTI, some members of the advisory committee thought adding hospital compliance with CAUTI prevention practices would be more beneficial. This approach is consistent with the limited research related to preventing CAUTI. However, a nationally accepted set of prevention practices has not yet been defined. We could consider adding compliance with prevention practices for CAUTI in the future once a national standard for this is available.

The department, in agreement with its advisory committee, does not recommend requiring hospitals to report CAUTI.

IV. Topics for Future Study and Consideration

Multiple-Drug-Resistant Organisms (MDRO)

Methicillin-resistant *Staphylococcus aureus* (MRSA), vancomycin-resistant enterococci (VRE), expanded-spectrum beta-lactamase (ESBL) enteric bacteria and other emerging drug-resistant pathogens like *Acinetobacter* spp. are a recognized public health concern.[16] Recently, a hospital in this state provided care for a patient infected by *Klebsiella pneumoniae* resistant to all antibiotics usually used to treat such infections; this case involved a resistance mechanism not previously reported in the United States.[17] Recognizing the importance of tracking these potentially dangerous MDROs, many Washington hospitals already keep lists of MDRO infected patients but do not report these infections in a manner that allows sharing of information among healthcare facilities, NHSN, and public health agencies. As expressed by hospital representatives on our advisory committee, this is partly because reporting MDRO data to NHSN is more burdensome than other infections and may also require manually entering the same data twice into different systems.

NHSN offers two surveillance options: a traditional "surveillance" reporting option that requires more data input and a streamlined "labID Event" option that requires less input. The NHSN MDRO reporting system also contains an option to record *Clostridium difficile* associated disease (CDAD). The department considered recommending that the HAI reporting law be changed to include hospital use of NHSN's facility-wide labID Event-reporting-option for MDRO/CDAD as an efficient measure to monitor these organisms. However, without the support of our advisory committee, it is not feasible to add MDRO reporting at this time.

Hospitals are currently working toward acquiring computer systems capable of automating the transfer of information to NHSN, specifically related to surgical site infections. As mentioned previously, hospitals have been given until 2013 to accomplish this. Computer systems capable of providing surgical site infection data should also be capable of providing MDRO data to NHSN. As a result, we should revisit the benefits of reporting MDROs once hospitals have the technology to do so.

Clostridium difficile associated disease (CDAD)

Updating surveillance systems to streamline reporting MDRO data to NHSN will also allow hospitals to more easily monitor CDAD. This disease is caused by a pathogen that has become a more serious concern in healthcare facilities and in the community with the emergence of a particularly dangerous new form (the hyper-virulent "NAP 1" strains).[18] Formerly affecting only debilitated patients and extended care facility residents, changes in the genes of some circulating strains have made these infections an even greater public health threat.[19] Our state laboratory

lacks capacity to do the genetic fingerprinting to identify whether NAP 1 strains are occurring here, and there is no organized statewide monitoring of the number of CDAD infections. Prevention strategies focus on fundamental aspects of personal hygienic precautions (proper use of gloves, gowns, hand washing) and patient area housekeeping, along with prompt recognition of cases and implementation of additional infection control measures.[18] Outbreak control strategies sometimes involve closing hospital units for more thorough disinfection. Because disease onset often occurs in people who are colonized and then are exposed to antibiotics, HAI surveillance is challenged by the fact that colonization is usually not detected prior to disease onset. This makes it difficult to identify which cases are truly hospital-acquired versus those that are community-acquired versus those that are acquired in healthcare facilities prior to hospitalization. However, surveillance methods have been recommended.[20] As described in the MDRO section above, NHSN offers a reporting method that minimizes the amount of data entry required. It is reasonable to expect that all hospitals are collecting the medically indicated specimens required by NHSN as part of the normal diagnostic work-up when there is clinical suspicion of CDAD. It is also reasonable to assume that all hospitals monitor these data in their own surveillance practices. As with MDRO, CDAD should be evaluated as a future reporting requirement once hospitals are fully capable of doing so.

Genetic Fingerprinting Capability

Infection prevention and control decisions rest on knowing whether organisms infecting two or more patients at a time are related or unrelated to each other. If they are related, then emphasis tends to shift toward reinforcing ways to stop cross-infection from patient to patient (e.g. better hand hygiene, better compliance with special precautions, investigating whether equipment is disinfected properly). If they are unrelated, then emphasis tends to focus on making invasive procedures as safe as possible and antimicrobial drug stewardship as strong as possible (e.g. on individual patient preparation and treatment decisions). Identifying organisms to a genus and species level, or as drug resistant (e.g. as *Staphylococus aureus*, or as MRSA) does not go far enough. Powerful microbiology methods exist that can determine whether organisms causing infections came from the same ancestral cells or from different ancestral lineages, but these genetic fingerprinting methods are typically not available in clinical laboratories. These methods also can be used to determine, from the genes inside a microbe, whether particularly dangerous strains are present (e.g. whether *Clostridium difficile* from a sick patient is the so-called NAP-1 strain of *Clostridium difficile* that produces much more toxin than other strains). Unfortunately, our Public Health Laboratories do not have the funding necessary to provide genetic fingerprinting services to infection control professionals. This limits our understanding of disease transmission patterns, emerging pathogens including MDRO, and makes investigation of outbreaks more difficult. Hospitals have expressed the need for this type of support from the Public Health Laboratories.

Prevention Practices in Ambulatory Surgery Facilities, Long Term Care (Extended Care and Nursing Homes) and Hospitals

Compliance with basic infection prevention measures applies to all settings, including ambulatory surgical facilities, home care services and long term care facilities. The increasing federal emphasis on prevention collaboratives (groups of facilities pooling their efforts to define, evaluate and implement best practices) supports adding a mix of best practice prevention compliance measures that would be pertinent to safe care in all settings.

Focusing on prevention practices is consistent with addressing the following issues:

- Most of our hospitals are already using the Institute for Healthcare Improvement (IHI) "bundles" approach. "Bundles" are sets of prevention practices that when used together have been proven to reduce the occurrence of specific types of infections.
- Hand hygiene (hand washing, hand sanitizer rubs and appropriate glove use) is important in all settings. Direct observation of compliance with those measures is recognized as the "gold standard" measure. Self-reporting of hand hygiene compliance is noted as having "poor validity in several studies"; similarly, monitoring the use of hand hygiene product per patient-day "…does not capture the appropriate denominator… cannot provide information about which indications for hand hygiene are being followed, or which types of staff members are in best/worst compliance. Not able to assess technique…").[28] The most effective way to monitor compliance with hand hygiene practices is direct observation. However, many infection control programs lack the staffing necessary to conduct observations.
- Influenza and pneumococcal immunization strategies have shifted to emphasize patient and employee vaccination in healthcare facilities that serve high-risk segments of the population.
- CMS conducts intensive survey activity in long term care facilities and some clinic facilities. Following recent newspaper reports of disease exposures and outbreaks due to negligent practices, CMS recently increased support for infection control guidelines and inspection activity to include ambulatory surgery facilities.
- Several other states are directing the attention of their health department toward HAI prevention needs of their long term care facilities. Some, for example, are launching initiatives to combat emerging drug resistance on a regional basis (instead of only within individual institutions) because they recognize that long term care facilities provide a reservoir through which colonized patients bring resistant organisms to and from hospitals during acute care episodes.

- Recent legislation in Washington has required licensing surveys of ambulatory surgery facilities. Monitoring and reporting of best practice prevention compliance measures may support licensing survey efforts.
- If ambulatory surgery facilities perform any of the procedures identified by CMS for public reporting, then they should be subject to the same reporting requirements as hospitals.

The national Surgical Care Improvement Project (SCIP) is a set of prevention practices that are intended to lower the risk of surgical site infections. SCIP reports a set of individual "best practice" statements. Compliance scores for each individual practice item are commonly shown on public reports. However, SCIP needs reconsideration as a useful prevention measure. A recent study found that only compliance with the complete set of prevention practices is associated with lower infection risk.[29] The SCIP set of prevention practices should be considered as an all or none (rather than a single-items) rating for hospitals and ambulatory surgery facilities. The University of Washington's Surgical Outcomes Research Center (SORCE) has the expertise and data necessary to further evaluate SCIP as a suitable measure. We need to work closely with the SORCE team to identify the benefit of requiring compliance with a set prevention practices.

The department recognizes the potential value of adding injection safety, asepsis, antisepsis, and immunization reportable measurement. Public confidence has been affected by news reports from other states concerning inappropriate injection needle and single-patient drug vial reuse, faulty instrument disinfection, and low immunization rates. However, it is too early at this time to recommend specific measures for public reporting related to these practices. There are several possible directions we need to explore with a wider group of stakeholders. For example, we need to consider compliance with IHI "bundles" as a possible metric for preventing ventilator-associated pneumonia, surgical site infection, and central line-associated bloodstream infection wherever such care is provided. We also should consider use of patient and staff annual influenza immunization rates as a metric for hospitals, clinics and long term care facilities.

We acknowledge that our advisory committee does not currently include representation from ambulatory surgery facilities or long term care facilities. However, we thought reporting requirements for these types of facilities should be explored further. This would allow us to review the most current evidence related to ambulatory surgical facilities and long term care facilities, and provide that information to the legislature. It would also signal clear intention that the law is meant to continue examining the range of health care settings where HAI may be a concern, and further justify a need for mandatory public reporting.

Extending CLABSI Surveillance to Out-patient and Home-care Settings

As explained in the CLABSI section above, to provide the full picture of these healthcare-associated infections it may be necessary to expand surveillance first beyond the intensive care unit to include all hospital in-patient care areas and eventually beyond hospitals to include all settings where patients have central lines. An ever-increasing number of services are being provided in out-patient and home-care settings. In the future, CLABSI reporting of healthcare-associated community-onset infections among those receiving out-patient or home intravenous therapy care of central lines might be considered to provide the most complete picture, but it is not feasible to implement at this time. The department will identify and meet with stakeholders who provide these home-care services in order to investigate and reach an appropriate recommendation.

The advisory committee discussion noted that the HAI reporting law pertains to healthcare, which extends the scope of the program to other settings. However, our present committee does not have representation of those types of facilities. As a result, it would be premature to recommend a reporting requirement without appropriate discussion with the necessary stakeholders.

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VI. Appendix

Appendix A

Healthcare Associated Infections (HAI) Advisory Committee Membership List

Roy Almeida, DrPH, MT(ASCP) Director, Epidemiology & Infection Control Providence Sacred Heart Medical Center & Children's Hospital Spokane, WA	**John Barnett** President AARP Washington State Kirkland, WA
Brooke Bascom Communications Director King County's Health Reform Initiative Seattle, WA	**Penny Becker, PhD** Infection Control Coordinator Olympic Medical Center Port Angeles, WA
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Nancy Hite, LVN, MSBN Director of Contracted Health Quality Washington Health Care Authority Lacey, WA	**Howard E. Jeffries, MD, MBA, MPH** Medical Director, Continuous Performance Improvement Seattle Children’s Hospital Seattle, WA
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Miriam Marcus-Smith, RN, MHA Program Director, Washington Patient Safety Coalition Foundation for Health Care Quality Seattle, WA	**Anthony Marfin, MD, MPH, MA** State Epidemiologist, Communicable Diseases Department of Health Olympia, WA
Michael Matlock, MD Medical Consultant to Epidemiology Providence St. Peter Hospital Olympia, WA	**Marcia Patrick, RN, MSN, CIC** Director of Infection Prevention and Control MultiCare Health Systems Tacoma, WA
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Jeffery Thompson, MD Chief Medical Officer Washington State Medicaid Olympia, WA	**Carol Wagner, RN** Vice President, Patient Safety Washington State Hospital Association Seattle, WA
Sally Watkins, PhD, RN Assistant Executive Director, Nursing Practice, Education and Research Washington State Nurses Association Seattle, WA	**Nancy Whittington, RN CIC** Lead Clinical Healthcare Epidemiologist University of Washington Medical Center Seattle, WA

Appendix B

Surgical Site Infections (SSI) Task Force Membership List

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Carol Wagner, RN Vice President, Patient Safety Washington State Hospital Association Seattle, WA	**Jeri Winters** Infection control coordinator Wenatchee Valley Medical Center Wenatchee, WA

Appendix C

Recent Conference and Journal Papers Accepted from our Program

- Zarate R, Cummings MJ, Birnbaum D. A practical method to validate the accuracy of state-wide hospital infection surveillance. 2010 Decennial International Conference on Healthcare Associated Infections poster #842, 2010 Council of Sate & Territorial Epidemiologists Annual Conference poster #4391.

- Zarate R, Birnbaum D. Validity of Self-Declared Teaching Status in Mandatory Public Reporting. INFECT CONTROL HOSP EPIDEMIOL 2010; 31(12):1310-1311.

- Birnbaum D, Zarate R, Marfin A. SIR, You've Led Me Astray! 2010 Decennial International Conference on Healthcare Associated Infections poster #849, INFECT CONTROL HOSP EPIDEMIOL *in press*

Appendix D

RCW 43.70.323

Hospital infection control grant account

The hospital infection control grant account is created in the custody of the state treasury. All receipts from gifts, grants, bequests, devises, or other funds from public or private sources to support its activities must be deposited into the account. Expenditures from the account may be used only for awarding hospital infection control grants to hospitals and public agencies for establishing and maintaining hospital infection control and surveillance programs, for providing support for such programs, and for the administrative costs associated with the grant program. Only the secretary or the secretary's designee may authorize expenditures from the account. The account is subject to allotment procedures under chapter 43.88 RCW, but an appropriation is not required for expenditures.

Appendix E

RCW 43.70.056

Health care-associated infections - Data collection and reporting - Advisory committee - Rules.

(1) The definitions in this subsection apply throughout this section unless the context clearly requires otherwise.

(a) "Health care-associated infection" means a localized or systemic condition that results from adverse reaction to the presence of an infectious agent or its toxins and that was not present or incubating at the time of admission to the hospital.

(b) "Hospital" means a health care facility licensed under chapter 70.41 RCW.

(2)(a) A hospital shall collect data related to health care-associated infections as required under this subsection (2) on the following:

(i) Beginning July 1, 2008, central line-associated bloodstream infection in the intensive care unit;

(ii) Beginning January 1, 2009, ventilator-associated pneumonia; and

(iii) Beginning January 1, 2010, surgical site infection for the following procedures:

(A) Deep sternal wound for cardiac surgery, including coronary artery bypass graft;

(B) Total hip and knee replacement surgery; and

(C) Hysterectomy, abdominal and vaginal.

(b)(i) Except as required under (b)(ii) and (c) of this subsection, a hospital must routinely collect and submit the data required to be collected under (a) of this subsection to the national healthcare safety network of the United States centers for disease control and prevention in accordance with national healthcare safety network definitions, methods, requirements, and procedures.

(ii) Until the national health care safety network releases a revised module that successfully interfaces with a majority of computer systems of Washington hospitals required to report data under (a)(iii) of this subsection or three years, whichever occurs sooner, a hospital shall monthly submit the data required to be collected under (a)(iii) of this subsection to the Washington state hospital association's quality benchmarking system instead of the national health care safety network. The department shall not include data reported to the quality benchmarking system in reports published under subsection (3)(d) of this section. The data the hospital submits to the quality benchmarking system under (b)(ii) of this subsection:

(A) Must include the number of infections and the total number of surgeries performed for each type of surgery; and

(B) Must be the basis for a report developed by the Washington state hospital association and published on its web site that compares the health care-associated infection rates for surgical site infections at individual hospitals in the state using the data reported in the previous calendar year pursuant to this subsection. The report must be published on December 1, 2010, and every year thereafter until data is again reported to the national health care safety network.

(c)(i) With respect to any of the health care-associated infection measures for which reporting is required under (a) of this subsection, the department must, by rule, require hospitals to collect and submit the data to the centers for

medicare and medicaid services according to the definitions, methods, requirements, and procedures of the hospital compare program, or its successor, instead of to the national healthcare safety network, if the department determines that:

(A) The measure is available for reporting under the hospital compare program, or its successor, under substantially the same definition; and

(B) Reporting under this subsection (2)(c) will provide substantially the same information to the public.

(ii) If the department determines that reporting of a measure must be conducted under this subsection (2)(c), the department must adopt rules to implement such reporting. The department's rules must require reporting to the centers for medicare and medicaid services as soon as practicable, but not more than one hundred twenty days, after the centers for medicare and medicaid services allow hospitals to report the respective measure to the hospital compare program, or its successor. However, if the centers for medicare and medicaid services allow infection rates to be reported using the centers for disease control and prevention's national healthcare safety network, the department's rules must require reporting that reduces the burden of data reporting and minimizes changes that hospitals must make to accommodate requirements for reporting.

(d) Data collection and submission required under this subsection (2) must be overseen by a qualified individual with the appropriate level of skill and knowledge to oversee data collection and submission.

(e)(i) A hospital must release to the department, or grant the department access to, its hospital-specific information contained in the reports submitted under this subsection (2), as requested by the department.

(ii) The hospital reports obtained by the department under this subsection (2), and any of the information contained in them, are not subject to discovery by subpoena or admissible as evidence in a civil proceeding, and are not subject to public disclosure as provided in RCW 42.56.360.

(3) The department shall:

(a) Provide oversight of the health care-associated infection reporting program established in this section;

(b) By January 1, 2011, submit a report to the appropriate committees of the legislature based on the recommendations of the advisory committee established in subsection (5) of this section for additional reporting requirements related to health care-associated infections, considering the methodologies and practices of the United States centers for disease control and prevention, the centers for medicare and medicaid services, the joint commission, the national quality forum, the institute for healthcare improvement, and other relevant organizations;

(c) Delete, by rule, the reporting of categories that the department determines are no longer necessary to protect public health and safety;

(d) By December 1, 2009, and by each December 1st thereafter, prepare and publish a report on the department's web site that compares the health care-associated infection rates at individual hospitals in the state using the data reported in the previous calendar year pursuant to subsection (2) of this section. The department may update the reports quarterly. In developing a methodology for the report and determining its contents, the department shall consider the recommendations of the advisory committee established in subsection (5) of this section. The report is subject to the following:

(i) The report must disclose data in a format that does not release health information about any individual patient; and

(ii) The report must not include data if the department determines that a data set is too small or possesses other characteristics that make it otherwise unrepresentative of a hospital's particular ability to achieve a specific outcome;

and

(e) Evaluate, on a regular basis, the quality and accuracy of health care-associated infection reporting required under subsection (2) of this section and the data collection, analysis, and reporting methodologies.

(4) The department may respond to requests for data and other information from the data required to be reported under subsection (2) of this section, at the requestor's expense, for special studies and analysis consistent with requirements for confidentiality of patient records.

(5)(a) The department shall establish an advisory committee which may include members representing infection control professionals and epidemiologists, licensed health care providers, nursing staff, organizations that represent health care providers and facilities, health maintenance organizations, health care payers and consumers, and the department. The advisory committee shall make recommendations to assist the department in carrying out its responsibilities under this section, including making recommendations on allowing a hospital to review and verify data to be released in the report and on excluding from the report selected data from certified critical access hospitals. Annually, beginning January 1, 2011, the advisory committee shall also make a recommendation to the department as to whether current science supports expanding presurgical screening for methicillin-resistant staphylococcus aureus prior to open chest cardiac, total hip, and total knee elective surgeries.

(b) In developing its recommendations, the advisory committee shall consider methodologies and practices related to health care-associated infections of the United States centers for disease control and prevention, the centers for medicare and medicaid services, the joint commission, the national quality forum, the institute for healthcare improvement, and other relevant organizations.

(6) The department shall adopt rules as necessary to carry out its responsibilities under this section.