

Essentials of Public Reporting of Healthcare-Associated Infections: A Tool Kit

Prepared by the Healthcare-Associated Infection Working Group of the Joint Public Policy Committee¹

Purpose:

This tool kit was created to assist states and healthcare facilities facing legislative mandates to publicly report healthcare-associated infections (HAIs) by providing guidance on components necessary for a meaningful reporting system. These components include the creation of an agency with the necessary expertise and resources to oversee the system; use of adequately trained and resourced data collectors; use standard case-finding methodologies, definitions, and risk-adjustment techniques of both outcome and process measures; and strategies to prevent unintended consequences of public reporting. The tool kit also includes recommendations for which indicator measures should be used for public reporting of HAIs.

The tool kit reaffirms the principles outlined in the Centers for Disease Control and Prevention's document, "Guidance on Public Reporting of Healthcare-Associated Infections: Recommendations of the Healthcare Infection Control Practices Advisory Committee" (<http://www.cdc.gov/ncidod/dhqp/pdf/hicpac/PublicReportingGuide.pdf>) and acknowledges the critical role of the CDC's National Healthcare Safety Network (NHSN), a web-based surveillance system for capturing data on adverse events (both infectious and noninfectious) associated with healthcare delivery. NHSN provides protocols, data collection forms, and data analysis comparing the user's rates with national aggregates. (http://www.cdc.gov/ncidod/dhqp/nhsn_members.html).

The working group did not address process measures and the reader is directed to organizations such as the CDC (<http://www.cdc.gov/ncidod/dhqp/index.html>), the Institute for Healthcare Improvement (<http://www.ihf.org>), and the National Quality Forum (<http://www.qualityforum.org/>) for additional information. The exception is a discussion on process measures that pertain to healthcare worker (HCW) vaccination rates.

Members of the working group considered strategies for public reporting of healthcare facility-associated *Clostridium difficile* associated disease (CDAD) since several states have or are recommending reporting to state health departments; however, the surveillance recommendations for CDAD have not yet been published and consequently this topic has not been discussed in this initial document.

The tool kit for public reporting of HAIs is a dynamic document and as the science unfolds and experience is gained, the tool kit will be updated as needed. For example, updating may be needed after the National Quality Forum releases recommendations from its project on National Voluntary Consensus Standards for the Reporting of Healthcare-associated Infection Data.

Background:

HAIs constitute a major public health problem in the United States affecting 5 to 10 percent of hospitalized patients annually, resulting in 2 million infections, 90,000 deaths and adding \$4.5 to \$5.7 billion in healthcare costs.

An increasing number of states have enacted legislation to mandate public reporting of HAIs and additional states continue to propose similar legislation (http://www.apic.org/Content/NavigationMenu/GovernmentAdvocacy/MandatoryReporting/state_legislation/state_legislation.htm). The legislative scope proposed by each state has varied and is not standardized. Therefore, we have developed this tool kit to address the need, for a standard approach for public reporting that could be adopted by all states. In addition, we refer the reader to model legislation prepared by SHEA and endorsed by APIC and the Infectious Disease Society of America (IDSA). (http://www.shea-online.org/Assets/files/model_Legislation_-_APIC_IDSA_SHEA.pdf)

The Tool Kit

It is the consensus of the working group that in order to achieve the intended goals of public reporting of HAIs, which are, to improve the quality of healthcare delivery by preventing infections and provide credible information to the consumer, states must ensure that essential components are in place before enacting legislation. These components and recommended indicator measures for inclusion in public reporting systems are described in the following sections.

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A. Identification or Creation of an Agency at the State Level

First and foremost, the enacted legislation must identify a responsible state-level agency or part of an agency with expertise in infection prevention, risk adjustment issues, healthcare epidemiology, and assessment of statistical relevance. Additionally, the agency responsible for collecting and analyzing the data must have appropriately trained staff to accomplish this task, as well as to assist hospitals and the public in interpreting the reported data. Prior to public disclosure, surveillance data should be submitted to and analyzed by this agency. To design and implement an effective public reporting system that encompasses all the recommendations of this working group, additional resources will likely be necessary at the state level (refer to the Missouri and Massachusetts legislation).

B. Personnel for Data Collection and Quality Improvement

There are substantive concerns in the data collection process and quality improvement efforts when these tasks are delegated to personnel with little or no training in infection surveillance and prevention. Studies have demonstrated that there is a significant discordance in the quality of data retrieved by those with training in infection prevention and control when compared to those with little or no training.² Persons supplying healthcare data should be able to consult with appropriate infection prevention and epidemiology personnel to assist them in data submission and to interpret data as needed. The working group recommends the engagement of personnel with appropriate training and/or certification in infection prevention and control for the purposes of collecting data on HAIs and discourages the use of administrative data alone to identify cases of HAIs because of the inherent inaccuracies.

Each institution must assess the scope of its infection prevention program to ensure that adequate resources are available for any additional surveillance activities needed to meet the legislative mandates of public reporting. In today's healthcare environment, in addition to their traditional roles, infection control professionals (ICPs) have expanded obligations in various aspects of healthcare delivery that include, but are not limited to, construction and renovation activities, employee and occupational health, bioterrorism and pandemic influenza preparation, disaster planning, and outpatient services. Therefore, additional personnel and resources must offset any further burden placed on ICPs by public reporting.

C. Strategies to Prevent Unintended Consequences of Public Reporting

The impact of public reporting of HAIs on the delivery of healthcare services is unknown. Proponents of public reporting of HAIs conclude that public reporting would promote competition that would stimulate process improvement efforts and result in optimal patient outcomes.

However, there are concerns that public reporting of HAIs may be associated with unintended consequences that include avoidance of sicker patients to improve outcomes and focusing on a "rate" rather than on prevention of HAIs.³ To avoid these unintended consequences and to facilitate meaningful comparisons, states and healthcare facilities that embark on public reporting of outcome measures must ensure that the data being collected meet standards set by persons knowledgeable in infection prevention and epidemiology, that the definitions of selected outcomes measures do not require subjective interpretation, and that the varying degrees of patient acuity is reflected by appropriate risk adjustment.

Moreover, some experts argue that public reporting of HAIs discourages internal notification of patient safety incidents and encourages lawsuits while having little or negative effect on patient safety.⁴ Therefore, the healthcare institution must protect the confidentiality of the private patient information collected by using a format for displaying outcome measures that does not permit individual patient identification but rather summary or aggregate rates.

It is essential that there be minimal lag time between the submission of data and the actual publication of the surveillance data to avoid the display of outdated reports that may not be indicative of the current status of the healthcare facility. If such delay is unavoidable, institutions must be afforded the opportunity to comment on remedial actions that have been put in place to address the suboptimal outcome and may have already had a favorable impact on the subsequent outcome.

Some have recommended that healthcare institutions report surveillance data quarterly rather than annually as a solution to assure timeliness of public disclosure; however, the working group recommends reporting outcome measures annually to assure robust denominators and stable rates. Another option to address the timeliness of public reporting is to develop a rolling 12-month reporting period. Entrusting an agency knowledgeable in epidemiology to oversee public reporting would help assess the appropriateness of releasing data prior to public disclosure and thus, decrease the risk of reporting bias.

²Sherman ER, Heydon KH, St John KH, Teszner E, Rettig SL, Alexander SK, Zaoutis TZ, Coffin SE. Administrative data fail to accurately identify cases of healthcare-associated infection. *Infect Control Hosp Epidemiol* 2006;27:332-337

³Werner RM, Asch DA. The unintended consequences of publicly reporting quality information. *JAMA* 2005;293:1239-1244

⁴Weissman JS, Annas CL, Epstein AM, Schneider EC, Clarridge B, Kirtle L, Gatsonis C, Feibelmann S, Ridley N. Error reporting and disclosure systems: views from hospital leaders. *JAMA* 2005;293:1359-1366

Finally, to assist the consumer in the interpretation of outcome data, the format developed for public reporting should be user friendly with the information clearly displayed and the limitations succinctly described.

D. Recommended Outcome Measures

1. Central Line-associated Bloodstream Infection (CLABSI) in the Intensive Care Unit

- a. Use NHSN definitions and methodology for rate determination (laboratory confirmed CLABSI, clinical case-finding methodology, definitions of central lines, and stratification by type of intensive care unit).
- b. When appropriate, collect demographics of the healthcare facilities that may be used to adjust for differences between at-risk populations and patient acuity between facilities. Inclusion of such data gives the reader the ability to better compare healthcare facilities. Such demographics could include:
 - Number of beds
 - Solid organ transplants
 - Oncology
 - Allogeneic bone marrow transplants
 - Trauma services
 - Cardiac surgery
 - Burn center
 - Neurosurgery services
 - Pediatric care exclusively

2. Surgical Site Infection (SSI)

The working group emphasizes the importance of definitions, of being consistent in case finding methodologies, of applying risk-adjustment strategies when comparing outcome data, and therefore, recommends the following:

- a. Each state should review the scope of surgical procedures performed by healthcare facilities and choose those surgical procedures for SSI surveillance that are performed with adequate frequency to permit meaningful comparisons between institutions.
- b. The following are examples of procedures that are reasonable options for public reporting of SSIs:
 - Coronary artery bypass surgery
 - Colon resection
 - Total hip arthroplasty
 - Total knee arthroplasty
 - Laminectomy
 - Total abdominal hysterectomy
- c. Use NHSN definitions to identify SSIs.
- d. Calculate and report SSI rates stratified according to the basic and/or modified NNIS Risk Index.⁵ The index includes the following elements: ASA⁶ score, wound class, duration of surgery, and use of laparoscope.
- e. The working group acknowledges that a comprehensive surveillance program for detection of SSIs may include post-discharge surveillance for identification of SSIs. However, there is significant variability in institutional methodology in obtaining data on patients who develop SSIs after discharge but who do not require rehospitalization for management of their SSIs (usually superficial infections), either at the original facility where the surgical procedure was performed or at another facility. Therefore, in order to improve the likelihood of having meaningful comparative data for public disclosure and until there is consensus on the optimal post-discharge surveillance methodology, the working group recommends that the initial scope of SSI surveillance for public reporting include both:
 - Patients who develop SSIs during initial hospitalization, and
 - Patients who develop SSIs following discharge and require readmission to the hospital. Such patients can be identified using the following techniques and data sources:
 - Review of operating room logs for debridement and surgical drainage of abscesses.
 - Review of interventional radiology logs for percutaneous drainage of abscesses.
 - Review of microbiology laboratory's daily log of positive cultures.
 - Notification of readmission for treatment of SSI by surgical staff to ICPs.

Not all patients who develop SSIs requiring hospitalization are readmitted to the same institutions where the surgical procedures were performed; therefore, institutions should have a process that enables personnel charged with data collection to inform the original facility where the patient's surgical procedure was performed of the development of SSI.

⁵NNIS, *National Nosocomial Infections Surveillance*

⁶ASA, *American Society of Anesthesiologists*

3. Ventilator-associated Pneumonia and Catheter-associated Urinary Tract Infection

The working group agrees with the CDC/HICPAC document, “*Guidance on Public Reporting of Healthcare-Associated Infections*” (referenced above) and recommends exclusion of outcome measures, but inclusion of process measures (see IHI, CDC), related to ventilator-associated pneumonia and catheter-associated urinary tract infection because the existing surveillance criteria are difficult to apply consistently making case counts unreliable.

E. Recommended Process Measure: Healthcare Worker Influenza Vaccination Rates

1. To refine the calculation of HCW influenza vaccination rates for a healthcare facility, use NHSN definitions of “healthcare workers with patient contact” (hands on, face-to-face contact with patients for the purpose of diagnosis, treatment, and monitoring). However, the working group recognizes the importance of vaccinating all HCWs independent of the degree of patient contact and that additional vaccination measurement rates are useful for healthcare organizations. (<http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5502a1.htm>).
2. To enable Employee/Occupational Health and Infection Prevention departments to target educational efforts, calculate HCW vaccination rates as stratified healthcare delivery groups or high-risk patient care areas. Examples include:
 - a. Physicians caring for patients in high-risk areas (emergency department, intensive care units, oncology units, and transplant units). This strategy may be helpful in private healthcare facilities where the majority of physicians are licensed independent practitioners.
 - b. Healthcare providers by discipline (nursing, respiratory care practitioners, occupational/physical/speech therapy or by unit (transplant, emergency department, intensive care units).
3. Follow CDC/HICPAC and SHEA recommendations to improve HCW influenza vaccination rates (<http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5502a1.htm>; http://www.shea-online.org/Assets/files/HCW_Flu_Position_Paper_FINAL_9-28.pdf):
 - a. Provide influenza vaccination to healthcare workers at the work site and at no cost during all work shifts of the healthcare facility.
 - b. Enhance educational opportunities.
 - c. Use strategies that have been demonstrated to increase influenza vaccination rates, such as vaccination clinics, mobile carts, vaccination access during all work shifts, and modeling and support by institutional leaders.
 - d. Incorporate a signed declination (from those who decline influenza vaccination for reasons other than medical contraindications) component into a comprehensive healthcare worker vaccination program when HCW vaccination rates remain below targeted institutional goals despite implementing evidence-based strategies as outlined in a-c.

Additional tools for guidance on surveillance:

The following documents are available at http://www.cdc.gov/ncidod/dhqp/nhsn_members.html :

1. NHSN definitions of surgical site infection and primary bloodstream infection.
2. NHSN Patient Safety Component Protocol for surveillance of device-associated, procedure-associated, and medication-associated events and patient care practices.
3. Outline for Healthcare-associated Infection Surveillance.

Research Needs

Research is needed to assess the impact that public disclosure of HAIs has on decreasing the risk of HAIs, meeting the public’s need for such data, and determining the cost to individual institutions and to the state of implementing such public reporting.