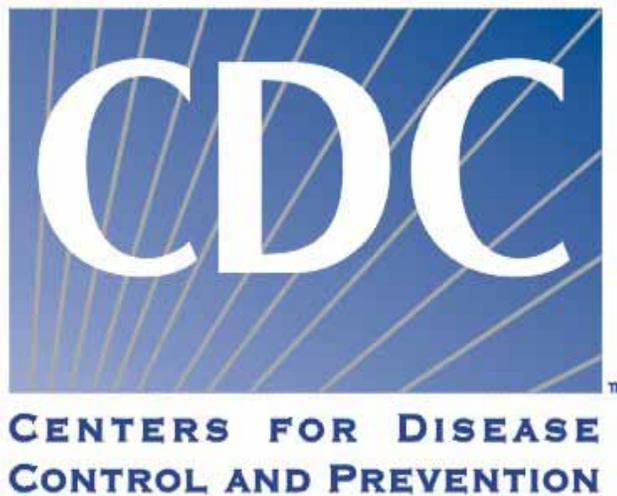


CENTERS FOR DISEASE CONTROL AND PREVENTION
National Center for Preparedness, Detection and
Control of Infectious Diseases
Division of Healthcare Quality Promotion



External Peer Review of the
Division of Healthcare Quality Promotion Surveillance Branch
May 13-14, 2008
Atlanta, Georgia

FINAL Record of the Proceedings

ATTACHMENT 1

List of Participants

External Peer Review Panel

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EXTERNAL PEER REVIEW OF THE
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FINAL Report of the External Peer Review

The Centers for Disease Control and Prevention (CDC) National Center for Preparedness, Detection, and Control of Infectious Diseases (NCPDCID) convened an External Peer Review of the Division of Healthcare Quality Promotion (DHQP) Surveillance Branch. The proceedings were held on May 13-14, 2008 in Building 1, Room 2043 at the CDC Roybal Campus in Atlanta, Georgia. The list of participants is appended to the report as [Attachment 1](#).

Executive Summary

The primary focus of this external peer review of the Surveillance Branch of the Division of Healthcare Quality Promotion (DHQP) was the National Healthcare Safety Network (NHSN) surveillance system. Before the 1.5-day on-site review, two conference calls were held and material was provided to the members of the External Peer Review Panel to aid the deliberations. Proceedings and final recommendations from the Panel are provided in this report.

In recent years, interest in healthcare-associated infections (HAIs) has grown steadily in the United States among consumers, legislators, providers, payers, regulatory/accreditation organizations, and organizations that focus on patient safety and performance improvement. HAIs are now a major clinical and public health problem across the spectrum of healthcare settings, not just acute-care hospitals, that results in high morbidity, mortality, and costs. Given their impact, there has been a rising chorus of calls for the elimination of HAIs.

Surveillance systems must be able to document the impact of HAIs, monitor trends, and evaluate the effectiveness of prevention efforts. There are notable examples of reductions in HAIs through prevention and control efforts. These success stories are predicated on surveillance data collected using sound epidemiologic principles, are scientifically credible and validated. The predecessor of NHSN, the National Nosocomial Infections Surveillance (NNIS) System, was built on these attributes. DHQP developed NHSN on the same principles.

The Panel was provided a comprehensive overview of the current landscape of HAI surveillance as well as the current status and future plans for NHSN. Legislative mandates to use NHSN as

a foundation for HAI reporting in a growing number of states have resulted in logarithmic growth in the number of enrollees, placing significant challenges on the system. Other external forces such as the Centers for Medicare and Medicaid Services' (CMS) Value-Based Purchasing initiatives, health informatics, and increasing incorporation of processes and outcomes involving HAIs by performance improvement collaboratives are also having a significant impact on NHSN.

The Panel felt not only CDC but also the broader universe of stakeholders must address these challenges. The Panel expressed concerns that continued growth will be difficult for DHQP to support administratively, financially, and scientifically. For NHSN to meet the challenge and remain the standard for HAI surveillance, it must be adequately supported and viewed as an essential surveillance activity of CDC as an agency. This includes staffing, training, and incorporation of emerging information technologies.

Other major themes identified by the Panel included external perception that data collection and entry into NHSN is labor-intensive and demanding especially for settings with limited infrastructure dedicated to infection prevention and control. Efficient and effective monitoring of HAIs is therefore an area DHQP needs to address. NNIS was very acute-care hospital focused. Today the direction of healthcare delivery is moving rapidly away from hospitals towards venues such as ambulatory care, long-term-care, etc. NHSN must adapt to these realities, and it needs to be flexible and scalable to address a patient-centric focus.

The Panel's recommendation included the following high-level summary points:

- ◆ CDC as an agency needs to recognize NHSN as a high priority, core surveillance activity and assure adequate support for this program. While there may be awareness and recognition of the importance and value of NHSN within DHQP and the National Center for Preparedness, Detection, and Control of Infectious Diseases, this is not evident externally, e.g. in the agency's' strategic plans and directions. The Panel encourages both increasing visible recognition of NHSN and tangible infrastructure to support NHSN be established. Advocacy for dependable budgetary support by advisory groups such as the Healthcare Infection Control Practices Advisory Committee (HICPAC) and other external stakeholders will be essential.
- ◆ NHSN should be recognized as the expert entity for setting the standard(s) for surveillance of HAIs and should be utilized throughout the healthcare delivery system. DHQP should set ambitious goals to incorporate as many healthcare facilities into NHSN as possible without sacrificing data integrity or quality. To do this will require embracing innovative technology solutions.
- ◆ The Panel had several recommendations for HICPAC given its role is to advise the Secretary on matters related to prevention of HAIs. These included:
 - HICPAC should explicitly endorse NHSN as the standard for surveillance of HAIs and reinforce this endorsement in relevant Guidelines and other communications it produces.
 - HICPAC should facilitate linkages between NHSN and evidence-based guidelines, new contributions to the scientific literature, etc., towards development of a fully functional, real-time knowledge network.
 - HICPAC, in collaboration with DHQP, should develop a facility-based and/or a care setting-based risk assessment template for application by infection

control professionals to surveillance system(s) they develop for their affiliates. NNIS and now NHSN offer a rich resource for indicating appropriate directions for surveillance and HICPAC, their liaisons, and DHQP can apply epidemiologic and analytical skills to development of a template.

- HICPAC needs to assist DHQP-CDC with development of a vibrant, diverse constituency that support the aims and goals of NHSN as the premier source of information on HAIs.

- ◆ The rapid growth in number of enrollees in NHSN will require both short-term and long-term strategic planning. For example, training, data audits and quality control will be an important priority for NHSN to maintain its current high-level performance. Possible strategies for sustaining performance may include but not be limited to automating quality control for data entered into NHSN plus tools to assist in validation of data by enrollees.
- ◆ Attention must be paid to lessening the burden of surveillance and developing efficient, user-friendly data collection especially with the move to a patient-centric healthcare delivery system. The Panel felt strongly that NHSN build in scalable levels of enrollment, facilitated perhaps by automation, that offers 'permissible' downsizing of effort for HAI surveillance commensurate with the enrollee's infrastructure and population needs, as opposed to forcing institutions to decide that the burden of surveillance too onerous to accomplish.
- ◆ There are existing examples of collaboration between CDC and other HHS agencies, around topics such as outbreak investigations, collaboration on value-based purchasing, and national estimates of prevalence of infections caused by *Clostridium difficile* and methicillin-resistant *Staphylococcus aureus* (MRSA), but the Panel concluded there is much more potential and value with collaborative analysis/sharing of the NHSN database that can be brought to bear on prevention of HAI. The Panel encourages more of this consistent with Government Accountability Office (GAO) Report recommendations.
- ◆ Continue to develop and enhance the use of NHSN's eSurveillance project.
- ◆ Continue to expand collection of metrics on processes of care that support prevention of HAIs.
- ◆ CDC needs to increase visibility and awareness of the value of NHSN and channel findings from surveillance to groups such as consumers using media that will reach a wider audience.

Final Recommendations of the External Peer Review Panel

The CDC staff returned to the meeting room at the conclusion of the Panel's closed deliberations. Mr. Russell Olmsted, of St. Joseph Mercy Health System, served as the Panel Chair. He conveyed that the Panel commended the leadership of Drs. Khabbaz and Cardo as well as the diligent efforts of Surveillance Branch staff in making the transition from NNIS to

NHSN. The Panel was particularly impressed by the staff's performance because DHQP was given virtually no additional resources to support this major transition.

Mr. Olmsted explained that the majority of the closed deliberations were devoted to formulating preliminary recommendations on key question 1 because the Panel provided initial feedback on key questions 2 and 3 on the previous day. Mr. Olmsted's summary of the Panel's recommendations and key issues that were raised during the closed deliberations is outlined below.

KEY QUESTION 1: *Did the Surveillance Branch's presentations omit important scientific, technical or policy features of the current landscape of HAI surveillance in the United States, including antimicrobial resistance?*

Response: The Surveillance Branch discussed all of the major issues of relevance to the landscape of HAI surveillance in the United States, and the Branch appreciates the factors and forces shaping the health care environment of today. The Panel makes the following recommendations to help prioritize the activities within the Branch

Recommendation 1: Greater emphasis needs to be placed on developing information on HAIs that occur outside of acute-care facilities. NHSN remains heavily focused on the acute care in-patient setting, while the healthcare system is increasingly moving to alternative settings for healthcare provision, such as ambulatory surgical centers, long-term care, home healthcare, etc. While collection of data from such settings is technically possible in NHSN, the methodologies, definitions, and mechanisms for this to occur are not well suited to the current iteration of NHSN. The Branch should "catch the wave" of these developments in healthcare rather than passively respond to these changes. New concepts such as the "Medical Home" are evidence of the move to a patient-centric health system. Subject matter experts from non-acute care settings should be engaged in an effort to develop appropriate modules within NHSN PSC, or if premature, within the Research & Development component to address settings other than acute care hospitals.

Recommendation 2: The Surveillance Branch needs to conduct a formalized study to determine the impact of state and federal legislation mandating HAI reporting on all aspects of NHSN, including data integrity, confidentiality, data usage, data interpretation, data reporting, and system maintenance/performance.

Recommendation 3: More emphasis should be placed on the behavioral aspects of adherence to infection prevention interventions. NHSN should consider incorporating AHRQ "Culture of Safety" metrics into NHSN to study correlation between culture of safety and HAI prevention

Recommendation 4: There is growing evidence that organized performance improvement collaboratives are an effective platform for improving patient safety. NNIS and now NHSN are in many ways PI collaboratives. The Panel felt more networking between NHSN and these others, e.g. Institute for Healthcare Improvement (IHI), MI

Keystone Center for Patient Safety & Quality, Vermont Oxford Network, etc., could prove worthwhile. The Panel cited a review by Aboelala SW, 2007 as a reference that examined published evidence on efficacy of PI collaboratives.³

Recommendation 5: DHQP should continue to collaborate with AHRQ as has been accomplished with recent additional appropriations to AHRQ for FY08 to support research at academic institutions related to prevention and control of MRSA. This is consistent with recent recommendations from the Government Accountability Office (GAO). The goals of this grant are for AHRQ to determine current knowledge of epidemiology of MRSA, state of the science, ongoing MRSA prevention activities, identify gaps in the science and implementation of effective interventions, and optimal allocation of resources to address these gaps. NHSN should consider key roles they could play to compliment this project such as survey of intervention practices NHSN participants and then examine if there is correlation with proxy or outcome metrics involving HAIs caused by MRSA.

Recommendation 6: HICPAC and its liaisons, in collaboration with DHQP, should jointly develop and/or refine existing resources to create a risk assessment template for facility-based and or care-setting based application. The Joint Commission is a key stakeholder and should be engaged in this effort. Facility-specific risk assessment (RA) is an essential foundation upon which HAI surveillance, prevention, and control activities are built. This risk assessment, on an annual – or more often as needed- basis is a requirement of accreditation by the Joint Commission. DHQP's NHSN provides its participants essential epidemiological data that is incorporated into the RA and the Panel felt this knowledge and experience would be valuable to all hospitals and other care settings. New modules within NHSN's PSC on MDROs, by example, will assist with identification of priorities captured in a facility's RA and its infection prevention plan.

KEY QUESTION 2: *Are the Surveillance Branch's current capacity, priorities and plans for the NHSN PSC on target with respect to the current landscape of HAI surveillance?*

The Surveillance Branch's activities and planning for NHSN are appropriate, but there are concerns about that the Branch and Division do not have the capacity to carry out these plans. In particular, 5-year targets for utilization of NHSN by hospitals and long-term care facilities seem unambitious, and the e-surveillance initiative needs more resources to harness technologic advances and to automate data capture. The Panel is concerned that NHSN does not have the financial or technical resources to carry through on commitments.

Recommendation 7: CDC as an agency needs to recognize the healthcare system as a core target for disease surveillance and provide NHSN the priority it needs to serve as

the standard for monitoring of healthcare-associated infections. The Panel was concerned that NHSN has been given neither the visibility nor the resources to meet current and future demands. The perception of NHSN as an isolated activity must be changed and the agency must view NHSN as pivotal to addressing patient safety and providing the information needed to control and prevent HAIs.

Recommendation 8: In addition to surveillance data, NHSN should collect information associated with HAIs, e.g., processes of care aimed at their prevention. The following sub-recommendation is a relevant example of the need for NHSN as the point of development of standards –

- a. DHQP/CDC must develop reference standards such as an implementation guide or Continuity of Care Document (CCDs).

Rationale: The CCD will describe how to implement the Continuity of Care Record dataset with the standard architecture for clinical records developed by HL7. This interoperability standard enables clinical data to be transportable, resulting in improved quality, enhanced patient safety, and increased efficiency to move information about patients' clinical encounters from one provider/point of care to another.

Recommendation 9: The Surveillance Branch's 5-year goals for NHSN, especially for utilization by hospitals and long-term care facilities, are set too low. If NHSN is to be the standard for monitoring HAIs and to be as representative as possible of the healthcare system, the targets must be to integrate as many healthcare facilities into NHSN as possible. The ultimate goal should be universal participation among facilities in the United States. To accomplish this, there must be a planning process to meet current needs as well as future needs.

Recommendation 10: CDC should automate data collection in NHSN. There are efforts underway to allow information to be extracted from commercial systems, but these efforts have not been given the priority or resources necessary to move forward in priority fashion. This is a critical need if expansion of NHSN is to occur. These commercial systems have different architectures and in some instances use different definitions. Failure to move forward in this area could jeopardize NHSN's position as the standard for HAI reporting. Similar efforts need to be undertaken for non-acute care settings and facilities with limited resources and infrastructure. The following need to be kept in mind regarding this Recommendation -

- a. CDC tends to underestimate the burden on end-users in NHSN data collection and reporting.
- b. NHSN will not have adequate capacity to maintain pace with increased volume of the system without automated data collection, particularly in complex health networks that provide a high volume of services to populations with high acuity.
- c. CDC should use CDA to interface with vendors in developing common formats and systems with a broader focus. CDC should develop specifications for NHSN and then contract commercial vendors to develop a system that meet the needs of NHSN users.
- d. CDC should establish a non-acute care agenda or risk the possibility of another

entity undertaking this effort. CDC must become more proactive in this arena and become a major player in the non-acute care arena.

Recommendation 11: As the number of NHSN users increases, CDC must pay more attention to assuring the quality of the data in the system. At present, the Surveillance Branch takes a relatively ad hoc approach to monitoring data quality or in providing feedback. A more systematic approach is needed, and consideration should be given to regular analysis to identify unusual data patterns from institutions, automated feedback or alerting, and potentially periodic auditing (in partnership with states and localities).

Recommendation 12: DHQP/CDC should give priority to development of training, education, and ongoing certification of current and new users of NHSN to assure high-level performance of the system. DHQP should look for innovative ways to accomplish this, including partnerships with outside entities or organizations. Sub-recommendations:

- a. CDC should expand the NHSN train-the-trainer model employed in successful state-based initiatives in NY and SC to other large groups that might enroll simultaneously due to public reporting mandates.
- b. CDC should engage professional societies that represent infection control professionals (ICPs), state hospital associations, and other appropriate organizations to assist with training. DHQP Surveillance Branch personnel cannot continue to serve as the sole training source for NHSN unless this activity is given significantly more resources.
- c. CDC should consider outsourcing user support. This activity currently siphons off enormous staff time that can better be devoted to R&D, system development, data analysis, and other high-priority activities.

Recommendation 13: CDC should more fully embrace partnerships with other HHS agencies, e.g. CMS, AHRQ, as well as other groups such as the Joint Commission, and CSTE related to NHSN, without diluting the core purpose of NHSN as the primary system for collection of high-quality information on the patterns of HAIs in the United States.

Recommendation 14: DHQP has accumulated significant and unique expertise and skill held by its current roster of personnel. The Division needs to mentor others to develop a broader base of individuals with these skills in anticipation of growth and of this system and to assure continuity of same with changes in personnel in the future.

- a. DHQP leadership is also responsible for and is to be commended in its stewardship of this skill and expertise. The planning for continuity applies to this component as well.

KEY QUESTION 3: *What directions, strategies, and steps are most important for the Surveillance Branch to meet new opportunities and challenges in HAI*

surveillance?

Recommendation 15: A target(s) for sufficient level of appropriations to support NHSN must be identified, communicated, and advocacy should be established to realize this target. The Panel did not feel it has the expertise to identify a specific budget for this but felt it should reflect the directions expressed in these other final recommendations.

Recommendation 16: CDC should build a constituency of partners to support the aims and goals of NHSN as the premier source of data on epidemiologic trends, new findings, etc. on HAIs. This would include healthcare groups, professional societies, consumer groups, informatics organizations, foundations, and the private sector. Such groups could assist DHQP in accruing the resources necessary to support NHSN and carry out future plans.

Recommendation 17: DHQP/CDC should encourage and promote the use of NHSN data by outside researchers. DHQP should also develop a standard policy regarding access to this data, including the specific purpose of the request, what data are needed, and how the information will be used. At present, such requests are reviewed or approved on an ad hoc basis. As the information in the system increases, its value to outside investigators will become more valuable. DHQP needs to avoid the perception that NHSN is a CDC-only system where the information is available only to CDC investigators or can be manipulated only by CDC personnel. It is tempting for CDC to monopolize the information and be the only beneficiaries of scientific analysis and publication. Standards for access and use are necessary.

Recommendation 18: HICPAC should explicitly endorse NHSN as the standard for surveillance of HAIs and reinforce this endorsement in relevant Guidelines and other communications it produces. Sub-recommendations -

- a. HICPAC should assist DHQP and the Secretary by taking a proactive role in determining appropriate actions that should be taken when existing surveillance data are insufficient or conflicting. By example, HICPAC should establish a position on value and efficacy of interventions related to HAIs, such as active surveillance detection for presence of MDROs.
- b. HICPAC, in collaboration with DHQP and others should develop and publish a HAI Surveillance Guide that includes an overview of application of risk assessment methodology that uses HAI data upon which a facility can plan interventions to prevent HAIs. HICPAC and DHQP should consider extension of the risk assessment to site-specific application, e.g., related to surgical site infection (SSI).

Recommendation 19 : HICPAC, in collaboration with DHQP, should establish linkages between NHSN and evidence-based guidelines, new contributions to the scientific literature, and information generated by other divisions within CDC and other HHS agencies to create a fully functional knowledge network. Technology-based media such as blogs, or an “e-network” might be considered as a platform for facilitating access to resources such as health alert network and epi-X.

Recommendation 20: DHQP/CDC should first develop or refine NHSN as an “ideal” system aimed at the goals, expectations and future direction of NHSN and then assess available resources and infrastructure to achieve the ideal system. Sub-recommendations -

- a. CDC should create a visible migration pathway to the future of NHSN to address the increasing demands on DHQP Surveillance Branch staff. For example, CDC could redesign NHSN with a series of products and modules that would be specific to a certain facility based on its location, local problems and needs.
- b. The Surveillance Branch should consider multiple tiers of participation for facilities submitting data to NHSN. The Branch should define “minimal standards for participation in NHSN” (e.g. the economy version) and then have a premium or enhanced version for institutions that may be able to provide higher quality information or data over and above core needs.

Recommendation 21: CDC should improve the practical application of NHSN.

Background & Rationale: DHQP/CDC should address the operational realities of NHSN being used as the primary tool for mandatory public reporting in the United States. DHQP should avoid pressure to create a “perfect” tool that responds to all requests, rather it should stay true to the core mission and vision of NHSN as the system expands.

Recommendation 22: The eSurveillance Initiative is an important direction for NHSN. DHQP/CDC should maintain and enhance the development and application of eSurveillance.

Recommendation 23: CDC should address the scalability and information technology (IT) needs of NHSN in lieu of dramatic expansion of the pool of enrollees. Sub-recommendation -

- a. CDC should take a proactive approach in anticipating NHSN’s upcoming needs. A solid plan should be developed to account for additional resource requirements as the NHSN volume increases. CDC should explore the possibility of engaging BioSense hospitals and existing NHSN enrollees to assist in this effort.

Recommendation 24: CDC should explore the possibility of charging a fee to NHSN members for elements such as annual digital certificates, user training and support, and other NHSN costs. Sub-recommendations-

- a. CDC should determine whether the CDC Foundation could be used as a “pass-through” entity to collect fees from NHSN members. For example, a hospital with three NHSN users would only pay \$300 annually to renew its digital certificates. This would distribute this cost across a large universe of NHSN members rather than concentrate this annual cost into the CDC budget.
- b. CDC should determine whether fees from institutions could be incorporated into emerging federal legislation.
- c. CDC should determine whether a vendor could be contracted to invoice

institutions for the use of NHSN.

Recommendation 25: CDC should review the literature and network with other HHS agencies, professional organizations, and SMEs to identify additional structure and process measures that support prevention of HAIs.

Background & Rationale: The new CLIP module in NHSN is a good direction. Consider similar approaches for other sites such as CAUTI that targets optimizing appropriate utilization of urinary catheters through mechanisms such as automated reminders to clinicians prompting removal of indwelling urinary catheters that are no longer needed.

Recommendation 26: CDC should launch a marketing campaign to broadly share success stories that showcase the efficacy and value of NHSN. Sub-recommendation-

a. DHQP should partner with the CDC National Center for Health Marketing to place articles on NHSN in media channels that reach a wide audience, e.g., *USA Today* or feature NHSN on the Today Show.

Recommendation 27: CDC should take a multifaceted approach to improve the communication and timely output of NHSN data while increasing the visibility of NHSN analytic products. Sub-recommendation -

a. CDC should use innovative communication mechanisms to disseminate data to the public, such as developing and releasing a consumer version of NHSN and posting user-friendly information on web sites.

Background and Rationale: CDC's articles, papers, and special reports that are published in peer-reviewed journals are outstanding but are not effective in reaching consumer groups and the lay public. CDC should strengthen its marketing efforts to disseminate data to the public.

The current window of opportunity, brought on by intense attention to HAIs, to market NHSN will not stay open indefinitely. CDC should engage dynamic techniques that draw on SMEs such as those in public relations and marketing to take advantage of current opportunities in the existing environment.

In addition to formulating preliminary recommendations on the three key questions, the Panel also provided input on logistical and programmatic components that should be retained in future external peer reviews of other DHQP programs.

- DHQP should continue to provide future panels with preparatory materials and opportunities to pose questions to staff in advance of the peer review.
- DHQP should continue to convene "informal" peer reviews for future panels to ask questions and make comments during rather than after the presentations.
- DHQP should maintain a 1.5-day schedule for future peer reviews. The current agenda was organized, efficient and productive. The times allotted for staff presentations, discussion periods, closed deliberations of the Panel, and breaks were well timed.