# Draft work plan for HCAIAC June-September 2008

| Month | Tasks to start | Task to complete | Who |
|---|---|---|---|
| June | 1. Hearings officer report<br>2. Revise work plan<br>3. Content development for trainings<br>4. Development of document to send to OAHHS and all hospitals outlining training requirements for NHSN | 1. Hearings Office Report | 1. Staff, All<br>2. All<br>3. Staff, TAG, OAHHS<br>4. All |
| July | 1. Communication strategy finalized<br>2. Distribute information about CDC/NHSN webinar to appropriate contacts at hospitals (Leadership, ICPs)<br>3. Training for hospitals to begin<br>4. Introductory webinar (CDC)<br>5. Develop implementation/training strategy<br>a. In-person user group trainings<br>b. Peer groups (grouped by scope and geography)-look to OAHHS for guidance<br>c. Small, non-NHSN hospitals first then Large, NHSN hospitals<br>6. Training materials | 1. Introductory webinar<br>2. "NHSN" communication document to hospitals | 1. Staff, All, OAHHS<br>2. Staff |
| August | 1. Implementation/training strategy<br>2. Training materials | 1. Implementation/training strategy<br>2. In-person training materials | 3. Staff, TAG, OAHHS<br>4. Staff |

| | | | |
|---|---|---|---|
| September | 1. Report on Vermont Oxford reporting system for NICU<br>2. Report on Nursing facility CMS reporting requirements<br>3. Update on training of hospitals<br>a. Challenges/Concerns | | 1. Staff, All<br>2. Staff, TAG |
| October | 1. Dialysis center NHSN module<br>2. Investigate ASC module for NHSN | | 1. Staff |

# M.D.S. 2.0
## SECTION I

## Coding Conventions

# M.D.S. 2.0

- A standardized data collection/screening tool
  - Used for all residents of LTC nursing facilities certified to participate in Medicaid &/or Medicare.
  - Oregon licensed only facilities are not required to transmit M.D.S. data.

# Comprehensive M.D.S. Schedule

- Upon Admission (Within 14 days)
- Annually (Every 366 days)
- Upon Significant Change in Status (Within 14 days of being identified)
  - Note: Submission of data are required by day 31 after M.D.S. completion.

# Quarterly M.D.S. Schedule

- An abbreviated quarterly M.D.S. assessment form is used to track each resident's status between comprehensive assessments (every 92 days).

# ARD- Assessment Reference Date

- A specific end-point (the last day) of a common observation period, used by all persons completing M.D.S. sections

# Data Capture
# Look-back Periods

- Each section of the M.D.S. identifies the number of days prior to and including the ARD that data may be coded.

# Full M.D.S.
# Section I- Infections

- Section I 2 & 3

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 2. | INFECTIONS | *(If none apply, CHECK the NONE OF ABOVE box)* | | | | | |
| | | Antibiotic resistant infection (e.g., Methicillin resistant staph) | a. | Septicemia | g. | | |
| | | | | Sexually transmitted diseases | h. | | |
| | | Clostridium difficile (c. diff.) | b. | Tuberculosis | i. | | |
| | | Conjunctivitis | c. | Urinary tract infection in last 30 days | j. | | |
| | | HIV infection | d. | Viral hepatitis | k. | | |
| | | Pneumonia | e. | Wound infection | l. | | |
| | | Respiratory infection | f. | NONE OF ABOVE | m. | | |
| 3. | OTHER CURRENT OR MORE DETAILED DIAGNOSES AND ICD-9 CODES | a. | | | | | |
| | | b. | | | | | |
| | | c. | | | | | |
| | | d. | | | | | |
| | | e. | | | | | |

# Data Capture
# Look-Back Periods

- Coding Section I-2 is based upon a **7 day** look-back period for all infections
  -except -
  - Urinary Tract infections which have a

**30 day** look-back period**.**

# When to Code

- Coded infections must have a physician diagnosis/supporting documentation in the clinical record

# Infections Coded include:

- a. Antibiotic Resistant Infections
  - MRSA (Methicillin Resistant Staphylococcus Aureus)
  - VRE (Vancomycin Resistant Enterococcus)
  - Methycillin Amnioglycocite Resistant Staphylococcus Aureus
  - Extended Spectrum Beta-Lactalase Organisms

# Infections Coded include:

- b. C. diff. (Clostridium Difficile)
- c. Conjunctivitis –bacterial, viral, allergic or traumatic
- *d. HIV Infection (data unavailable-Oregon's policy to omit transmission of HIV information supersedes the MDS requirement)*
- e. Pneumonia- bacterial or viral
- f. Respiratory infection- upper or lower other than pneumonia

# Infections Coded include:

- g. Septicemia- based upon blood culture or physician's working diagnosis
- *h. Sexually Transmitted Diseases (data unavailable-Oregon's policy to omit transmission of HIV information supersedes the MDS requirement)*
- i. Tuberculosis- includes those with active TB or those who have converted PPD positive TB status and are currently receiving drug treatment

# Infections Coded include:

- j. Urinary Tract Infection- Chronic and acute **symptomatic** infection in last 30 days. May be coded only if supporting documentation and significant laboratory findings are documented in the clinical record

# Infections Coded include:

- k. Viral Hepatitis – Hepatitis A, B, non-A, non-B, C & E
- l. Wound Infection- infection of any wound type including postoperative, pressure, or traumatic, on any area of the body
- m. None of the Above

# I-3 Detailed Diagnoses
# ICD-9 Codes

- Used to record specific designations for the general diagnosis &/or infection categories captured under items I1 & I2
  - Only conditions/diagnoses which affect the resident's **current** ADL status , cognitive status , mood & behavior status, medical treatment, nursing monitoring or risk of death may be coded.

# Quarterly M.D.S. – Section I

| | | | | | |
|---|---|---|---|---|---|
| I2. | **INFECTIONS** | Urinary tract infection **in last 30 days** | j. | *NONE OF ABOVE* | m. |
| I3. | **OTHER CURRENT DIAGNOSES AND ICD-9 CODES** | (*Include* ***only those diseases diagnosed in the last 90 days that have a relationship*** *to current ADL status, cognitive status, mood or behavior status, medical treatments, nursing monitoring, or risk of death*)<br>a. _____ \| \| \| \| • \| \|<br>b. _____ \| \| \| \| • \| \| | | | |

# Quarterly M.D.S. – Section I

- **Coded items limited to:**
- **I2- Urinary tract infections - 30 day look-back period**

&

- **I3- A limited # of spaces provided to enter ICD-9 code for diagnoses identified in the last 90 days** which affect the resident's **current** ADL status , cognitive status , mood & behavior status, medical treatment, nursing monitoring or risk of death may be coded.

# Data Limitations

- Not all infections will be captured
  - Most infections coded on full MDS are based upon a 7-day look-back period. Infections which occurred during the last quarter but prior to the 7 day look-back are not captured.
  - Use by providers of I-3 ICD-9 Coding Section is inconsistent.
  - Forms have limitation on # of ICD entries that can be made.

# Data Limitations

- Supporting documentation unavailable to the facility at the time of the assessment may result in some urinary tract infections not being coded

# Data Limitations

- MDS 2.0 will be replaced by MDS 3.0 in October 2009. The newly proposed draft tool reduces infections tracked from 12 to 8 categories.

# NEW YORK STATE

# HOSPITAL-ACQUIRED INFECTION REPORTING SYSTEM

## PILOT YEAR – 2007

## REPORT TO THE GOVERNOR AND LEGISLATURE

**NEW YORK STATE DEPARTMENT OF HEALTH**
**JULY 2008**

# Members of the New York State Hospital-Acquired Infection Technical Advisory Workgroup

**Audrey Adams, R.N, M.P.H, CIC**
Administrative Nurse Manager
Montefiore Medical Center
Bronx, NY
Date joined: May 2006

**Donna Armellino, R.N., M.P.A, CIC**
Infection Control Coordinator
North Shore University Hospital
Manhasset, NY
Date joined: May 2006

**Kathleen Ciccone, R.N., M.B.A.**
Vice President
Quality & Research Initiatives
Healthcare Association of New York State
Rensselaer, NY
Date joined: May 2006
Date ended: May 2007

**Elizabeth Coughlin, R.N., M.S.**
Director of Infection Control
New York Westchester Square Medical Center
Bronx, NY
Date joined: May 2006

**Consuelo Dungca, R.N., Ed. D.**
Senior Assistant Vice President
NYC Health & Hospitals Corporation
New York, NY
Date joined: May 2006

**Sarah Elmendorf, M.D.**
Infectious Disease Specialist
Department of Epidemiology
Albany Medical Center Hospital
Albany, NY
Date joined: May 2006

**Christine Gagnon, R.N., B.S.N., CIC**
MRSA Prevention Coordinator
VA Medical Center
Albany, NY
Date joined: May 2006

**Lorri Goergen, R.N., B.S.N., CIC**
Infection Control Coordinator
United Memorial Medical Center
Batavia, NY
Date joined: May 2006

**Eileen Graffunder, B.A.**
Department of Epidemiology
Albany Medical Center Hospital
Albany, NY
Date joined: May 2006

**Paul Graman, M.D.**
Clinical Director,
Infectious Disease Division
Strong Memorial Hospital
Rochester, NY
Date joined: May 2006

**Linda Greene, R.N., M.P.S.**
Director of Infection Prevention
Via Health Rochester General Hospital
Rochester, NY
Date joined: May 2006

**Janet Haas, R.N., D.N.Sc., CIC**
Associate Director,
Infection Prevention & Control
New York University
New York, NY
Date joined: May 2006

**Linda Kokoszki, R.N., B.S.N., CIC**
Infection Control Coordinator
St. Elizabeth Medical Center
Utica, NY
Date joined: May 2006

**Brian Koll, M.D.**
Chief of Infection Control
Department of Medicine,
Division of Infectious Disease
Beth Israel Medical Center, Petrie Campus
New York, NY
Date joined: May 2006

**Art Levin, M.P.H.**
Director, Center for Medical Consumers
New York, NY
Date joined: May 2006

**John McNelis, M.D., FACS**
Associate Attending
Long Island Jewish Medical Center
Division of General Surgery
Hyde Park, NY
Date joined: May 2006

**Marisa Montecalvo, M.D.**
Infectious Disease Specialist
Westchester Medical Center,
Division of Infectious Disease
Valhalla, NY
Date joined: May 2006

**Nancy Pelham**
Kaleida Health
Buffalo, NY
Date joined: May 2007
Date ended: May 2008

**Lisa Saiman, M.D., M.P.H.**
Professor of Clinical Pediatrics
Pediatric Infectious Diseases
Morgan Stanley Children's Hospital
Columbia University Medical Center
New York, NY
Date joined: March 2008

**Kent Sepkowitz, M.D.**
Infectious Disease
Memorial Sloan-Kettering Cancer Center
New York, NY
Date joined: May 2006

**Terri Straub, R.N., M.B.A.**
Vice President, Quality & Patient Safety
Greater New York Hospital Association
New York, NY
Date joined: May 2006

**Rhonda Susman, R.N., B.S.N., CIC**
Infection Control Department
Crouse Hospital
Syracuse, NY
Date joined: May 2006

**Michael Tapper, M.D.**
Director, Department of Medicine
Division of Infectious Disease
Lenox Hill Hospital
New York, NY
Date joined: May 2006

**Mary Therriault, R.N., M.S.**
Director for Quality & Research Initiatives
Healthcare Association of New York State
Rensselaer, NY
Date joined: September 2007

**Gianna Zuccotti, M.D.**
Memorial Sloan-Kettering Cancer Center
New York, NY
Date joined: Sept. 2007
Date ended: May 2008

# TABLE OF CONTENTS

## BRIEF SUMMARY

In 2007, 187 New York hospitals reported hospital-acquired infection (HAI) rates to the New York State Department of Health (DOH). DOH compiled this data and the results are presented in the New York State Hospital-Acquired Infection Reporting System Report to Hospitals. To view the full text of this report, please visit:

**http://www.nyhealth.gov/professionals/diseases/reporting/communicable/index.htm**

The data focus on the following infection sites: colon surgical site infections, coronary artery bypass graft surgical site infections, central line associated blood stream infections in adults/pediatric intensive care units and central line associated blood stream infections in neonatal intensive care units. Data for this report were collected during a one-year pilot period (2007).

This report has been generated as required by Public Health Law. The goals of the HAI reporting legislation are to provide consumers with fair, accurate and reliable HAI data to compare hospitals, as well as to ensure that the data can be used by hospitals to support quality improvement and infection control activities. The purpose of the pilot year was to ensure the accuracy and completeness of the data reported by the hospitals. After the pilot year, the HAI information reported by the hospitals will be made available to the public for comparison purposes.

Also during the pilot year, DOH provided more than $1.2 million in funding for demonstration projects that focus on the prevention of infections acquired in hospitals. The purpose of these projects is to promote additional knowledge and experience with prevention and control strategies to reduce and eliminate hospital-acquired infections.

## BACKGROUND

In July 2005, the Legislature passed and the Governor signed into law Chapter 284 of 2005, requiring hospitals to report certain hospital-acquired infections (HAIs) to DOH. This action was in response to increasing public concern about hospital infections. This concern is highlighted by federal Centers for Disease Control and Prevention (CDC) statistics, which estimated that there were 1.7 million HAIs and 99,000 deaths from these infections in 2002.[1]

A HAI is defined as an infection that develops as a result of a hospital intervention or associated with the hospitalization. At least 80 percent of HAIs are caused by organisms normally found on a patient's body.

**Brief Overview of Specific Requirements of the Law:**

Chapter 284 of 2005 amended Public Health Law to include Section 2819 on HAI reporting. (The full text of the law, including subsequent amendments, can be found in Appendix A.)

Public Health Law Section 2819 requires that a one-year "pilot phase" be conducted to:

- Develop a HAI reporting system;
- Train hospitals on how to use the reporting system;
- Standardize definitions, methods of surveillance and reporting;
- Audit and validate the hospitals' infection data;
- Allow for recommendations to improve the accuracy of data; and
- Modify the system to ensure that the hospital-specific infection rates, when released, would be fair, accurate, reliable and comparable across all hospitals.

In addition, the law states that during the pilot phase, hospital identifiers and hospital-identifiable data are to be encrypted by DOH in all public reports. Future reports will include hospital identifiers that will be made public.

DOH Responsibilities under Public Health Law Section 2819:

- DOH shall establish guidelines, definitions, criteria, standards and coding for hospital identification, tracking and reporting of HAIs.

- Working with technical advisors, DOH shall develop statistical methods to adjust for patients' risk differences to make the information fair, reliable and comparable across all hospitals.

- To ensure the accuracy of the hospital data, DOH shall develop and implement an audit process.

- No later than 180 days after the conclusion of the pilot phase, DOH shall issue a report to hospitals assessing the overall accuracy of the data submitted and provide guidance for improving the accuracy of HAI reporting.

Hospital Responsibilities under Public Health Law Section 2819:

- Hospitals are initially required to identify, track and report infections associated with critical care units, central line-associated blood stream infections (CLABSIs) and select surgical site infections (SSIs). (A central line is an IV that is placed into a major vessel or into the heart – usually via the subclavian, jugular, or femoral veins – for long periods of time to deliver medicine and monitor a patient's condition.)

- Hospitals need to report infections acquired in the hospital, not infections that were present or incubating when the patient was admitted.

****It is important to note that under this law, individual patient-identifying information reported to DOH is protected by Public Health Law and cannot be released.*

## PILOT PHASE DEVELOPMENT AND IMPLEMENTATION

### The Role of the Technical Advisory Workgroup

The pilot phase, as required by Chapter 284 of 2005, began on January 1, 2007 and concluded on December 31, 2007.

Before the implementation of the pilot phase, DOH was required by law to meet with technical advisors, referred to as the Technical Advisory Workgroup, who are experts in the prevention and control of hospital-acquired infection and infectious diseases. (See the opening page for the list of Technical Advisory Workgroup members.)

The charge of this workgroup was to provide guidance on the development and implementation of a valid, useful HAI reporting system for the public, the hospitals, and the DOH. The workgroup was also responsible for deciding which HAIs would be selected for the pilot phase, evaluating risk factors and risk adjustment methods.

Although the law states that HAI reporting needed to begin with the initial starter set of central line associated blood stream infections and infections associated with surgical procedures in intensive care units (ICUs), it was up to the workgroup to decide specific surgical infections to monitor. To comply with the law, the Technical Advisory Workgroup selected surgical site infections associated with coronary artery bypass procedures and colon surgical procedures due to the frequency of these infections, severity of infection-related complications, potential for risk adjustment and potential for quality improvement.

In addition, the Technical Advisory Workgroup agreed with DOH's recommendation to utilize the CDC's National Healthcare Safety Network (NHSN) for HAI reporting – which made New York the first state in the nation to do so. [2] A major objective of the pilot phase was to evaluate the strengths and weaknesses of using the NHSN for mandatory reporting purposes in order to determine whether the state should continue to use the NHSN reporting system and recommend changes or modifications for 2008.

The Technical Advisory Workgroup met for the first time on May 5, 2006 and conducted four more meetings during the pilot phase. DOH continues to meet with the Technical Advisory Workgroup semi-annually, and its input has been invaluable.

### Hospital Participation

All New York State hospitals with intensive care units or that perform the surgical procedures selected for monitoring were required to participate. As a result, there were 187 hospitals that participated in the 2007 pilot phase.

Hospitals that were not required to participate did not have ICUs and did not perform the surgical procedures analyzed in the pilot phase. DOH will continue to work closely with these hospitals to provide regulatory oversight and ensure that they institute best practices. In addition, as DOH expands the program to additional procedures, more of these hospitals might be required to participate.

Also, some hospitals subject to recommendations of the Commission on Health Care Facilities in the 21st Century provided data on a voluntary basis, but were not required to participate.

To successfully implement the pilot phase, DOH worked in collaboration with other health care associations, including the Greater New York Hospital Association (GNYHA). GNYHA worked collaboratively with DOH to promote the pilot phase and facilitate their members' required participation.

### Training Hospitals to Use NHSN

After selecting the CDC's NHSN as the reporting mechanism, all hospital CEOs were informed of the reporting requirements and training opportunities. DOH held nine regional training sessions throughout the state in late 2006 on the NHSN enrollment procedures, guidelines for surveillance, standard definitions, use of the NHSN and reporting indicators. GNYHA videotaped the presentations and has made them accessible as training materials.

As of October 2007, 96 percent of the 187 hospitals had complied with the 2007 reporting requirements for the initial six-month reporting period. The eight facilities that did not comply were cited by DOH and provided a plan of correction. Although all eight facilities are now reporting, one of these eight facilities had not fulfilled the reporting requirements in time for the results to be included in this report.

## FINDINGS

### 2007 HAI Infection Rate Findings

Below are summarized results broken down by type of infection:

Colon Surgical Site Infections

*Results:*

- The SSI rates for patients undergoing colon procedures in New York hospitals in 2007 ranged from 4.5 infections per 100 procedures in the lowest-risk patients to 9.4 per 100 procedures in the highest-risk group. National colon SSI rates ranged from 4.0 to 11.3 for the lowest- and highest-risk patients, respectively.

*Lessons Learned:*

- New York State rates appeared higher than national rates in the lowest risk groups and lower in the highest risk groups. But the only difference that was statistically significant was in the medium-low risk category (See Chart 1in Appendix D).

- The only risk factor not currently collected by NHSN found to increase the risk of colon SSIs was increased body mass index (obesity). In addition, patients undergoing chemotherapy within the previous six months appeared to be at significantly lower risk of infection.

- For colon SSIs, methicillin-resistant *Staphylococcus aureus* (MRSA) was associated with 10 percent of the infections and was the third most-common organism, after other microorganisms.

*Recommendations:*

- HAI program staff members will evaluate facilities with the highest and lowest infection rates, determining whether there are surveillance and reporting differences, assessing trends, risk factors and interventions to reduce infections.

- DOH will share lessons learned with all hospitals and work aggressively with poor performers to ensure they implement best practices.

- DOH will evaluate the need for further risk adjustment due to obesity and other NHSN risk factors (emergency/trauma procedures) prior to releasing hospital-specific infection rates with identifiers.

- In 2008, DOH will continue to work with technical advisors to determine whether further risk adjustment is needed to establish fair and comparable hospital-specific colon infection rates.

- Hospitals must closely monitor infection rates, implement prevention and control measures, and measure effectiveness of the interventions using the HAI reporting data.

- DOH will integrate HAI reporting and infection data into overall oversight and regulatory procedures.

*Next Steps:*

- Continue to monitor all hospitals for the completeness, timeliness and accuracy of data submissions, discuss findings and ensure corrective action is taken.

- Continue to identify and evaluate hospitals with the lowest and highest infection rates to determine whether reported data are reliable and, if so, attempt to identify reasons for the differences. Regulatory action will be taken if hospitals do not report reliable data.

- Conduct surveys or additional audits to evaluate the effectiveness of prevention strategies to reduce colon SSIs.

- Continue to monitor the distribution and role of various microorganisms associated with colon SSIs.

- Continue to develop methods and format for public reporting of identified hospital infection rates in collaboration with the Technical Advisory Workgroup.

Coronary Artery Bypass Graft (CABG) Surgical Site Infections

Coronary artery bypass graft (CABG) surgery most often involves two surgical sites: a chest incision and a separate site to harvest donor vessels. Because infections can occur at either incision site, the infection rates are presented separately.

*Results:*

- Individual hospitals reported performing as few as 65 CBGB procedures and as many as 1,065. Half the hospitals reported less than one chest or donor site infection per month. The donor vessel site infection rates ranged from zero to 4.0 percent, and from zero to 5.3 percent for chest incision sites.

*Lessons Learned:*

- *New York State's donor vessel site infection rate was significantly lower than national rates across the majority of risk categories (Chart 2).* Chest site infection rates were slightly higher than national rates, but the differences were not statistically significant (Chart 3).

- Risk factors for chest site incisions include: female gender, emergency procedure, obesity, diabetes, chronic lung disease, immunodeficiency, and postoperative complications including renal failure, gastro-intestinal bleeding and re-operation for bleeding.

- For CABG chest wound infections, MRSA was associated with 17 percent of infections and was the third most-common organism, after other microorganisms.

- For CABG donor site infections, MRSA was associated with 10 percent of infections and was the fourth most-common organism, after other microorganisms.

*Recommendations:*

- HAI program staff members will evaluate facilities with the highest and lowest infection rates, determining whether there are surveillance and reporting differences, assessing trends, risk factors and interventions to reduce infections.

- DOH will share lessons learned with all hospitals and work aggressively with poor performers to ensure they implement best practices.

- DOH will evaluate the need for further risk adjustment due to female gender, emergency procedure, obesity, diabetes, chronic lung disease, immunodeficiency, and postoperative complications prior to releasing hospital-specific infection rates with identifiers.

- In 2008, DOH will continue to work with technical advisors to determine whether further risk adjustment is needed to establish fair and comparable hospital-specific CABG infection rates.

- Hospitals must closely monitor infection rates, implement prevention and control measures, and measure effectiveness of the interventions using the HAI reporting data.

- DOH will integrate HAI reporting and infection data into overall oversight and regulatory procedures.

*Next Steps:*

- Continue to monitor all hospitals for the completeness, timeliness and accuracy of data submissions, discuss findings and ensure corrective action is taken.

- Continue to identify and evaluate hospitals with the lowest and highest infection rates to determine whether reported data are reliable and, if so, attempt to identify reasons for the differences. Regulatory action will be taken if hospitals do not report reliable data.

- Conduct surveys or additional audits to evaluate the effectiveness of prevention strategies to reduce CABG SSIs.

- Continue to monitor the distribution and role of various microorganisms associated with CABG SSIs.

- Consult with infection preventionists, hospital epidemiologists, surgeons and the Cardiac Advisory Committee to identify possible strategies to reduce CABG SSIs.

- Develop methods and format for public reporting of identified hospital infection rates in collaboration with the Technical Advisory Workgroup.

Central Line Associated Blood Stream Infections (CLABSIs) in Adult/Pediatric ICUs

*Results:*

- The ICU-specific rates vary from a low of 2.0 infections per 1,000 central line days in cardiothoracic ICU patients to 4.0 infections per 1,000 central line days in pediatric ICU patients.

*Lessons Learned:*

- New York State CLABSI rates in coronary and pediatric ICUs were significantly lower than national data but higher in surgical ICUs (Chart 4).

- Within the state, New York City facilities had lower CLABSI rates in cardio-thoracic, medical and surgical intensive care units than the rest of the state (Chart 5). This difference may be attributable to a major regional collaborative to reduce CLABSI rates that began in 2006 in the New York City area, sponsored by GNYHA and United Hospital Fund. This possible explanation will be further evaluated during 2008 audits.

- For CLABSIs in adult and pediatric ICU patients, MRSA was associated with six percent of infections and was the fifth most-common organism following yeast and other microorganisms.

*Recommendations:*

- Hospitals must closely monitor infection rates, implement prevention and control measures, and measure effectiveness of the interventions using the HAI reporting data.

- DOH will share lessons learned with all hospitals and work aggressively with poor performers to ensure they implement best practices.

- DOH will integrate HAI reporting and infection data into overall oversight and regulatory procedures.

*Next Steps:*

- Continue to monitor all hospitals for the completeness, timeliness and accuracy of data submissions, discuss findings and ensure corrective action is taken.

- Continue to identify and evaluate hospitals with the lowest and highest infection rates to determine whether reported data are reliable and, if so, attempt to identify reasons for the differences. DOH will take regulatory action if hospitals do not report reliable data.

- Conduct surveys or additional audits to evaluate the effectiveness of prevention strategies to reduce CLABSIs in adult and pediatric ICUs.

- Continue to monitor the distribution and role of various microorganisms associated with CLABSIs in adult and pediatric ICUs.

<u>Central Line Associated Blood Stream Infections (CLABSIs) in Neonatal ICUs</u>

*Results:*

- Newborns under one year of age in the lowest birth weight categories had the highest CLABSI rates. Newborns weighing less than 750 grams had 7.5 infections per 1,000 central line days whereas neonates weighing more than 2,500 grams had 4.0 infections per 1,000 central line days. State rates were higher than the national rates, but this difference was only statistically significant in one birth weight category (751-1,000 grams) (Chart 6).

- Similar trends were seen for newborns with umbilical catheters. Infants weighing less than 750 grams had the highest umbilical catheter-associated blood stream infection rates (12.2 infections per 1,000 umbilical catheter days). The lowest rates were detected in infants weighing between 1,501-2,500 grams (1.7) and more than 2,500 grams (2.2/1,000 umbilical catheter days) (Chart 7).

(Umbilical catheters are the first type of central line used following birth if an infant's health is unstable. Their use is appropriate only for a limited time. If a central line is still necessary following removal of the umbilical catheter, a new central line is placed in a different site.)

*Lessons Learned:*

- State infection rates were higher than national rates in the highest and lowest birth weight categories.

- Only 2 percent of CLABSIs in neonatal ICU patients were associated with MRSA, which was the seventh most-common organism following yeast and other microorganisms.

*Recommendations:*

- Hospitals must closely monitor infection rates, implement prevention and control measures, and measure effectiveness of the interventions using the HAI reporting data.

- DOH will share lessons learned with all hospitals and work aggressively with poor performers to ensure they implement best practices.

- DOH will continue to work with hospitals with the highest CLABSI rates to explore possible explanations, provide recommendations and implement corrective measures if necessary.

- In addition, DOH will work with neonatologists across the state on collaborative projects to reduce CLABSI rates in neonatal intensive care units.

- DOH will integrate HAI reporting and infection data into overall oversight and regulatory procedures.

*Next Steps:*

- Continue to monitor all hospitals for the completeness, timeliness and accuracy of data submissions, discuss findings and ensure corrective action is taken.

- Continue to identify and evaluate hospitals with the lowest and highest infection rates to determine whether reported data are reliable and, if so, attempt to identify reasons for the differences. Regulatory action will be taken if hospitals do not report reliable data.

- Continue to monitor the distribution and role of various microorganisms associated with CLABSIs in neonatal ICUs.

- Conduct surveys or additional audits to evaluate the effectiveness of prevention strategies to reduce CLABSIs in neonatal ICUs.

**Microorganisms Associated with HAIs – Particularly MRSA**

DOH will continue to monitor the distribution and role of various microorganisms associated with HAIs in the state's hospitals – including MRSA. MRSA is a type of bacteria that is resistant to certain antibiotics. These antibiotics include methicillin and other more common antibiotics such as oxacillin, penicillin and amoxicillin.

Although MRSA infections received a great deal of media attention during 2007, MRSA was ***not*** the predominant organism associated with the infections monitored during 2007.

***It is important to note that at least 80 percent of HAIs are caused by organisms which are normally found on a patient's body. The term HAI does not mean that a patient acquired the microorganism in the hospital, but that a patient developed an infection associated with a hospital intervention or while in the hospital.***

- For colon SSIs, MRSA was associated with 10 percent of the infections and was the third most-common organism, after other microorganisms.

- For CABG chest wound infections, MRSA was associated with 17 percent of infections and was the third most-common organism, after other microorganisms.

- For CABG donor site infections, MRSA was associated with 10 percent of infections and was the fourth most-common organism following other microorganisms.

- For CLABSIs in adult and pediatric ICU patients, MRSA was associated with only 6 percent of infections and was the fifth most-common organism following yeast and other microorganisms.

- For CLABSIs in neonatal ICU patients, only 2 percent of infections were associated with MRSA, which was the seventh most-common organism following yeast and other microorganisms.

DOH continues to be committed to the reduction and elimination of all hospital-associated infections, not just a single pathogen.

**Surgical Procedure Risk Adjustment**

During 2007, DOH discovered some risk factors, not currently in NHSN's risk stratification methodology, linked to the development of an HAI. These factors may or may not affect the hospital-specific rates. Further analyses will be conducted during 2008 to evaluate the influence of these factors.

- Colon SSI risk factors included male gender, multiple procedures, emergency and trauma cases, and obesity.

- CABG SSI risk factors included female gender, emergency procedure, obesity, diabetes, chronic lung disease, immunodeficiency, and postoperative complications including renal failure, gastro-intestinal bleeding and re-operation for bleeding.

During 2008, DOH will continue to work with technical advisors to determine whether further risk adjustment is needed to establish fair and comparable hospital-specific infection rates. This assessment cannot be performed until sufficient data is accumulated.

**Accuracy of Reporting Data Findings**

The DOH HAI reporting program generates bi-weekly reports by region and by hospital to detect data entry errors. These reports are reviewed by the regional HAI program staff members, and hospitals are given the opportunity to verify and/or correct the data.

Audits of a sample of medical records were conducted by DOH to assess compliance with reporting requirements. HAI program staff conducted onsite visits in 95 percent (183) of the hospitals between July 2007 and January 2008. The other 5 percent of hospitals were not required to report data because they were scheduled to be closed as recommended by the Commission on Health Care Facilities in the 21st Century. Data submitted to NHSN for the first quarter of 2007 were used to select medical records for review.

The purposes of the audit were to:

- Determine the reliability and consistency in applying the surveillance definitions.
- Evaluate the adequacy of surveillance methods to detect infections.
- Evaluate current risk adjustment methods and determine whether additional factors need to be considered for public reporting purposes.
- Evaluate intervention strategies designed to reduce or eliminate specific infections.

**Strengths and Weaknesses of Using NHSN for Mandatory Reporting**

A major focus of the pilot phase was to evaluate the strengths and weaknesses of using NHSN for mandatory reporting purposes, determining whether the state should continue to use the NHSN reporting system and recommend changes or modifications for 2008.

After conducting the pilot phase, DOH reports that the major strengths of using NHSN were:

- Standard definitions had been developed and could be applied consistently.
- These definitions are used throughout the United States and in other countries.
- CDC served as a valued partner, was available to assist and support DOH, clarified the interpretation of data elements and definitions, and provided information technology support.
- Hospitals could immediately use the information they reported, calculate trends over time and compare their infection rates with national rates.
- Hospitals began to use the system for collaborative intervention initiatives to reduce HAIs.

The major weaknesses of using NHSN were:

- Due to confidentiality agreements, hospitals had to take additional steps to confer rights to grant the state permission to view and analyze their data. These steps could have been averted or minimized if DOH had been able to make this modification internally.

- To make system changes or collect additional information, DOH had to ask all hospitals to create the same customized data entry fields in the same way.

- DOH could not modify definitions unilaterally; CDC had to make these changes.

**System Reporting Adjustments**

- CDC and DOH worked together to make changes to NHSN, or DOH developed custom data entry fields to collect additional information.

- DOH worked closely with CDC to modify the case definitions and/or systematically collect additional data to enhance the definitions and make the results more meaningful.

- To ensure timely reporting and the collection of actionable data, the legislation was amended to require monthly reporting within 60 days of the end of the surveillance month, effective January 1, 2008.

**Additional Lessons Learned**

- In general, hospitals that perform very few procedures or have ICUs with few patients with central lines usually have infection rates that fluctuate greatly over time.

- Strict adherence to the surveillance definitions is critical to provide consistency and comparability of data across hospitals. Clinical findings are appropriate for treatment decisions but are not appropriate for mandatory reporting purposes because there is significant variability between providers and different institutions.

- Timely and complete data submission was often affected by infection control staffing turnover, prolonged vacancies and the need for education and training to comply with the legislative mandate. Hospitals need to provide back-up personnel to ensure compliance with reporting requirements and patient safety.

- Very few facilities made use of electronic data transfer and therefore relied on cumbersome manual data collection and entry. Hospitals need to integrate information systems to support infection prevention and reporting efforts.

- The original legislative language prohibited DOH from receiving timely, actionable data from the hospitals. The law was amended in 2007 to require HAI reporting within 60 days of the end of the surveillance month.

- Post-discharge surveillance methods are highly variable, dependent upon allocated resources and integration of information systems. In addition, the majority of severe infections were detected during the initial hospitalization or upon readmission.

**Additional Next Steps**

- Continue to monitor the accuracy and timeliness of data being submitted, discuss findings and ensure corrective action is taken.

- Conduct onsite audits to evaluate surveillance methods, interpretation of surveillance definitions, and completeness of reporting.

- Continue to monitor the distribution and role of various microorganisms associated with HAIs.

- Continue to evaluate the effectiveness of various post-discharge methods.

- In conjunction with the Technical Advisory Workgroup, continue to determine whether further risk adjustment is needed to establish fair and comparable hospital-specific infection rates and, if deemed necessary, to integrate into the public reports.

- Collaborate with other DOH staff to investigate outbreaks, evaluate emerging trends and/or provide regulatory action for non-compliance with the legislative mandates.

- Continue to evaluate NHSN's relevance to the New York State mandatory HAI reporting requirements.

- Develop methods and format for public reporting of identified hospital infection rates in collaboration with the Technical Advisory Workgroup.

- Consult with infection preventionists, hospital epidemiologists, surgeons and the Cardiac Advisory Committee to identify possible strategies to reduce CABG SSIs.

- Monitor infection control resources to evaluate the impact of public reporting on other infection prevention and control responsibilities.

- Monitor HAI prevention projects for compliance with program objectives, fiscal responsibility and potential applicability to other hospitals or health care settings.

- Continue to provide education, training and ongoing support to hospital infection reporting staff.

## RECOMMENDATIONS FOR IMPROVEMENT

**Recommendations for Hospitals:**

- Hospitals must strictly adhere to the surveillance definitions to provide consistency and comparability of data across hospitals.

- Hospitals must closely monitor infection rates, implement prevention and control measures, and measure effectiveness of the interventions using the HAI reporting data.

- Hospitals need to provide back-up personnel to ensure compliance with reporting requirements and patient safety. Timely and complete data submission was often affected by infection control staffing turnover, prolonged vacancies and the need for education and training of new personnel in order to comply with the legislative mandate.

- Hospitals need to develop, enhance and integrate electronic information systems to support infection prevention and reporting efforts. Very few facilities made use of electronic data transfer and therefore relied on cumbersome manual data collection and entry.

- A uniform post-discharge methodology to identify and report SSIs recognized in patients not readmitted to a hospital is not mandated at this time.

**Recommendations for DOH:**

- DOH will share lessons learned with all hospitals and work with them to ensure they implement best practices.

- DOH will integrate HAI reporting and infection data into overall oversight and regulatory procedures.

- DOH must continue to audit the hospitals to ensure complete, accurate and timely reporting.

- DOH must continue to monitor all hospitals for the completeness, timeliness and accuracy of data submissions, discuss findings and ensure corrective action is taken.

- DOH should continue to identify and evaluate hospitals with the lowest and highest infection rates to determine whether reported data are reliable and, if so, attempt to identify reasons for the differences. Regulatory action will be taken if hospitals do not report reliable data.

- DOH should conduct surveys or additional audits to evaluate the effectiveness of prevention strategies to reduce HAIs.

- DOH should continue to consult with infection preventionists, hospital epidemiologists, surgeons and the Cardiac Advisory Committee to identify possible strategies to reduce HAIs.

- DOH should continue to develop methods and format for public reporting of identified hospital infection rates in collaboration with the Technical Advisory Workgroup.

- DOH needs to begin monitoring HAI prevention projects for compliance with program objectives, fiscal responsibility and potential applicability to other hospitals or healthcare settings.

**Additional Recommendations for Consideration:**

- Increase the number of HAI staff to evaluate additional prevention strategies to further prevent HAIs and ensure patient safety.

- Increase funding for additional HAI prevention initiatives so that New York can become a leader in identifying and carrying out patient safety prevention initiatives.

- Provide permanent funding to sustain collaborative HAI prevention initiatives into the future.

## DEMONSTRATION PROJECTS TO REDUCE HOSPITAL-ACQUIRED INFECTIONS

In addition to the data gathered during the pilot phase, DOH is taking steps to prevent and reduce infections in hospitals across the state. In May 2008, DOH selected seven non-profit health organizations to share $1.2 million in funding for demonstrations projects. The demonstration projects will identify potential quality-of-care improvement strategies, systematically implement them, and measure their effectiveness in reducing targeted infections.

The following contractors were selected to receive funds for collaborative projects to reduce transmission of hospital-associated infections:

**Hospital Association of New York State (HANYS), 53 hospitals statewide - $105,023**

The Healthcare Educational and Research Fund (HERF), a non-profit subsidiary of HANYS, is providing comprehensive educational programs and monitoring the systematic implementation of evidence-based control measures to reduce ventilator-associated pneumonia infections (VAP) in critical care patients. Morbidity and mortality associated with the development of VAP are high, with mortality rates ranging from 20 percent to 41 percent.

**Greater New York Hospital Association, 30 hospitals - $174,860**

GNYHA is coordinating the development, implementation, and evaluation of comprehensive evidence-based practices to prevent and control *Clostridium difficile* (C.diff) infections. C.diff is a multi-drug resistant, toxin-producing bacterium that is responsible for most cases of antibiotic-associated diarrhea. This collaborative initiative is one of the first in the nation to specifically target these infections.

**Beth Israel Medical Center, New York City - $199,941**

This project is designed to evaluate the impact of obtaining MRSA cultures on patients admitted to critical care units in five hospitals. Although the ultimate goal is reducing MRSA transmission and infection, other objectives include measuring the costs and effectiveness of this strategy, determining whether there is a concomitant reduction in the length of stay in the critical care unit or reduction in mortality, and measuring the indirect effects on the incidence of other antibiotic resistant organisms.

**New York City Health & Hospitals Corporation (HHC), New York City - $200,000**

The HHC project is designed to implement and evaluate multiple strategies to decrease the incidence of hospital-acquired infections associated with multidrug-resistant organisms (MDROs) in intensive care patients in six municipal hospitals. Active surveillance cultures, instituting central line protocols and antimicrobial catheters, are among the interventions being evaluated.

**North Shore University Hospital, Manhasset - $199,996**

This project is designed to evaluate MRSA transmission and infection in ICUs by using rapid MRSA detection technology and strain typing of isolates. These new molecular techniques will be used to provide timely and accurate case management of patients with MRSA, determine if and to what extent transmission is occurring, and ultimately to measure the impact on the reduction of MRSA infection in participating ICUs.

**University of Rochester School of Medicine & Dentistry, Rochester - $192,573**

This project is designed to reduce central line-associated bloodstream infections outside the intensive care unit setting using evidence-based protocols for central line insertion and care. The focus of many prior initiatives has been on critical care unit patients. The

institution of facility-wide integration and measurement poses multiple challenges. It is hoped that this project will provide reproducible methods and outcomes similar to those seen in critical care units.

**Westchester County Healthcare Corporation, Valhalla - $199,991**

This project is designed to reduce the incidence of hospital-associated blood stream infections in intensive care and respiratory care patients. These infections have been found to extend the length of stay and increase costs by up to $40,000 per survivor. Intensive care unit patients are at particularly high risk for hospital-associated blood stream infections due to factors including the frequency of central line use and underlying disease state. It is hoped that the use of topical antimicrobial agents will reduce the microbial load on the skin, minimize acquisition of new organisms, and reduce blood stream infections due to skin flora. Participating hospitals will collect pre-intervention data, educate practitioners to ensure proper use of the antimicrobial, assess skin tolerability, and measure the impact on infection rates.

The Hospital-Acquired Infection Reporting Program is responsible for the evaluation, selection and oversight of the projects. Projects will be funded for one year, with the possibility of funding renewal for some projects up to four additional years.

## CONCLUSION

The pilot phase was used to establish and integrate mandatory reporting of HAIs in New York hospitals. All but one hospital participated in the DOH HAI Reporting Program training sessions, enrolled in the National Healthcare Safety Network, and conducted surveillance using the standard definitions and protocols. Ninety-six percent of facilities complied with the 2007 reporting requirements. The eight facilities that did not comply were cited and subsequently provided a plan of correction.

Hospitals will continue to monitor and report colon SSIs, CABG SSIs and CLABSIs in adult, pediatric and neonatal ICUs during 2008. In addition, hip replacement surgical site infections will be monitored and reported. DOH held thirteen regional training programs in the fall of 2007 to update HAI reporting mandates, system changes, definition changes, and the use of customized data fields to enhance data quality.

Before the public reporting of hospital-identified HAI rates in 2009, DOH will need to further evaluate the influence of hospital size, patient population characteristics and other risk factors to determine whether further adjustment is needed. DOH will continue to work closely with its technical advisors and consumers to develop meaningful, credible HAI rates by hospital.

Although the goal of this report is to develop and implement an accurate reporting system, DOH is committed to ensuring the system is used to reduce infections – not merely count them.

**The full New York State Hospital-Acquired Infection Reporting System Report is available at:**

**http://www.nyhealth.gov/professionals/diseases/reporting/communicable/index.htm**

**APPENDIX A**

PUBLIC HEALTH LAW 2819

§ 2819. Hospital acquired infection reporting. 1. For the purposes of this section, "hospital acquired infection" shall mean any localized or systemic patient condition that:

(a) resulted from the presence of an infectious agent or agents, or its toxin or toxins as determined by clinical examination or by laboratory testing; and

* (b) was not found to be present or incubating at the time of admission unless the infection was related to a previous admission to the same setting.

* NB Effective until January 1, 2008

* (b) was not found to be present or incubating at the time of admission unless the infection was related to a previous admission.

* NB Effective January 1, 2008

2. (a) Each general hospital shall maintain a program capable of identifying and tracking hospital acquired infections for the purpose of public reporting under this section and quality improvement.

(b) Such programs shall have the capacity to identify the following elements: the specific infectious agents or toxins and site of each infection; the clinical department or unit within the facility where the patient first became infected; and the patient's diagnoses and any relevant specific surgical, medical or diagnostic procedure performed during the current admission.

(c) The department shall establish guidelines, definitions, criteria, standards and coding for hospital identification, tracking and reporting of hospital acquired infections which shall be consistent with the recommendations of recognized centers of expertise in the identification and prevention of hospital acquired infections including, but not limited to the National Health Care Safety Network of the Centers for Disease Control and Prevention or its successor. The department shall solicit and consider public comment prior to such establishment.

(d) Hospitals shall be initially required to identify, track and report hospital acquired infections that occur in critical care units to include surgical wound infections and central line related bloodstream infections.

* (e) Subsequent to the initial requirements identified in paragraph (d) of this subdivision the department may, from time to time, require the tracking and reporting of other types of hospital acquired infections (for example, ventilator-associated pneumonias) that occur in hospitals in consultation with technical advisors who are regionally or nationally-recognized experts in the prevention, identification and control of hospital acquired infection and the public reporting of performance data.

* NB Effective until January 1, 2008

* (e) For hospital acquired infections for which the department requires tracking and reporting as permitted in this section, hospitals shall be required to report a suspected or confirmed hospital-acquired infection associated with another hospital to the originating hospital. Documentation of reporting should be maintained for a minimum of six years.

* NB Effective January 1, 2008

* (f) Subsequent to the initial requirements identified in paragraph (d) of this subdivision the department may, from time to time, require the tracking and reporting of other types of hospital acquired infections (for example, ventilator-associated pneumonias) that occur in hospitals in consultation with technical advisors who are regionally or nationally-recognized experts in the prevention, identification and control of hospital acquired infection and the public reporting of performance data.

* NB Effective January 1, 2008

* 3. Each hospital shall regularly report to the department the hospital infection data it has collected. The department shall establish data collection and analytical methodologies that meet accepted standards for validity and reliability. In no case shall the frequency of reporting be required to be more frequently than once every six months, and reports shall be submitted not more than sixty days after the close of the reporting period.

* NB Effective until January 1, 2008

* 3. Each hospital shall regularly report to the department the hospital infection data it has collected. The department shall establish data collection and analytical methodologies that meet accepted standards for validity and reliability. The frequency of reporting shall be monthly, and reports shall be submitted not more than sixty days after the close of the reporting period.

* NB Effective January 1, 2008

4. The commissioner shall establish a state-wide database of all reported hospital acquired infection information for the purpose of supporting quality improvement and infection control activities in hospitals. The database shall be organized so that consumers, hospitals, healthcare professionals, purchasers and payers may compare individual hospital experience with that of other individual hospitals as well as regional and state-wide averages and, where available, national data.

5. (a) Subject to paragraph (c) of this subdivision, on or before May first of each year the commissioner shall submit a report to the governor and the legislature, which shall simultaneously be published in its entirety on the department's web site, that includes, but is not limited to, hospital acquired infection rates adjusted for the potential differences in risk factors for each reporting hospital, an analysis of trends in the prevention and control of hospital acquired infection rates in hospitals across the state, regional and, if available, national comparisons for the purpose of comparing individual hospital performance, and a narrative describing lessons for safety and quality improvement that can be learned from leadership hospitals and programs.

(b) The commissioner shall consult with technical advisors who have regionally or nationally acknowledged expertise in the prevention and control of hospital acquired infection and infectious disease in order to develop the adjustment for potential differences in risk factors to be used for public reporting.

(c)(i) No later than July first, two thousand six, the department shall establish a hospital acquired infection reporting system capable of receiving electronically transmitted reports from hospitals. Hospitals shall begin to submit such reports as directed by the commissioner but in no case later than January first, two thousand seven.

(ii) The first year of data submission under this section shall be considered the "pilot phase" of the statewide hospital- acquired infection reporting system. The purpose of the pilot phase is to ensure, by various means, including any audit process referred to in subdivision seven of this section, the completeness and accuracy of hospital acquired infection reporting by hospitals. For data reported during the pilot phase, hospital identifiers shall be encrypted by the department in any and all public databases and reports. The department shall provide each hospital with an encryption key for that hospital only to permit access to its own performance data for internal quality improvement purposes.

(iii) No later than one hundred eighty days after the conclusion of the pilot phase, the department shall issue a report to hospitals assessing the overall accuracy of the data submitted in the pilot phase and provide guidance for improving the accuracy of hospital acquired infection reporting. The department shall issue a report to the governor and the legislature assessing the overall completeness and accuracy of the data submitted by hospitals during the pilot phase and make recommendations for the improvement or modification of hospital acquired infection data reporting based on the pilot phase as well as share lessons learned in prevention of hospital acquired infections. No hospital identifiable data shall be included in the pilot phase report, but aggregate or otherwise de-identified data may be included.

(iv) After the pilot phase is completed, all data submitted under this section and compiled in the statewide hospital acquired infection database established herein and all public reports derived therefrom shall include hospital identifiers.

6. Subject to subdivision five of this section, a summary table, in a format designed to be easily understood by lay consumers, that includes individual facility hospital acquired infection rates adjusted for potential differences in risk factors and comparisons with regional and/or state averages shall be developed and posted on the department's web site. The commissioner shall consult with consumer and patient advocates and representatives of reporting facilities for the purpose of ensuring that such summary table report format is easily understandable by the public, and clearly and accurately portrays comparative hospital performance in the prevention and control of hospital acquired infections.

7. To assure the accuracy of the self-reported hospital acquired infection data and to assure that public reporting fairly reflects what actually is occurring in each hospital, the department shall develop and implement an audit process.

8. For the purpose of ensuring that hospitals have the resources needed for ongoing staff education and training in hospital acquired infection prevention and control, the department may make such grants to hospitals within amounts appropriated therefore.

9. Individual patient identifying information reported to the department under this section shall be subject to paragraph (j) of subdivision one of section two hundred six of this chapter. Regulations under this section shall include standards to assure the protection of patient privacy in data collected and released under this section and standards for the publication and release of data reported under this section.

**APPENDIX B**

## DEFINITIONS

**Central line:** A long, soft, hollow tube that is inserted into one of the large veins that feed the heart. A central line is used to measure blood pressure or to give fluids or medications.

**Central Line Associated Blood Stream Infection (CLABSI):** A bloodstream infection that is associated with the presence of a central line.

**Central line days:** The total number of days a central line is in place for patients in Intensive Care Units.

**Coronary Artery Bypass Graft Surgery (CABG):** A type of surgery called revascularization, used to improve blood flow to the heart in patients with severe coronary artery disease.

**Coronary Bypass Graft with Chest and Separate Donor Site (CBGB):** Coronary bypass graft surgery with both chest and graft incisions.

**Coronary Bypass Graft with Chest Incision Only (CBGC):** Coronary bypass graft surgery using a chest incision only.

**Hospital-Acquired Infection (HAI):** An infection that develops as a result of a hospital intervention or associated with the hospitalization.

**Methicillin-Resistant *Staphylococcus aureus* (MRSA):** A bacterium that is resistant to certain antibiotics. These antibiotics include methicillin and other more common antibiotics such as oxacillin, penicillin and amoxicillin.

**Surgical Site Infection (SSI):** An infection that develops at a surgical site**.**

**Umbilical Catheter:** A long, soft, hollow tube that is inserted into the umbilicus and is used to continuously monitor a baby's blood pressure and to give fluids or medications.

**Umbilical Catheter-Associated Bloodstream Infection (UCAB):** A bloodstream infection that is associated with the presence of an umbilical catheter.

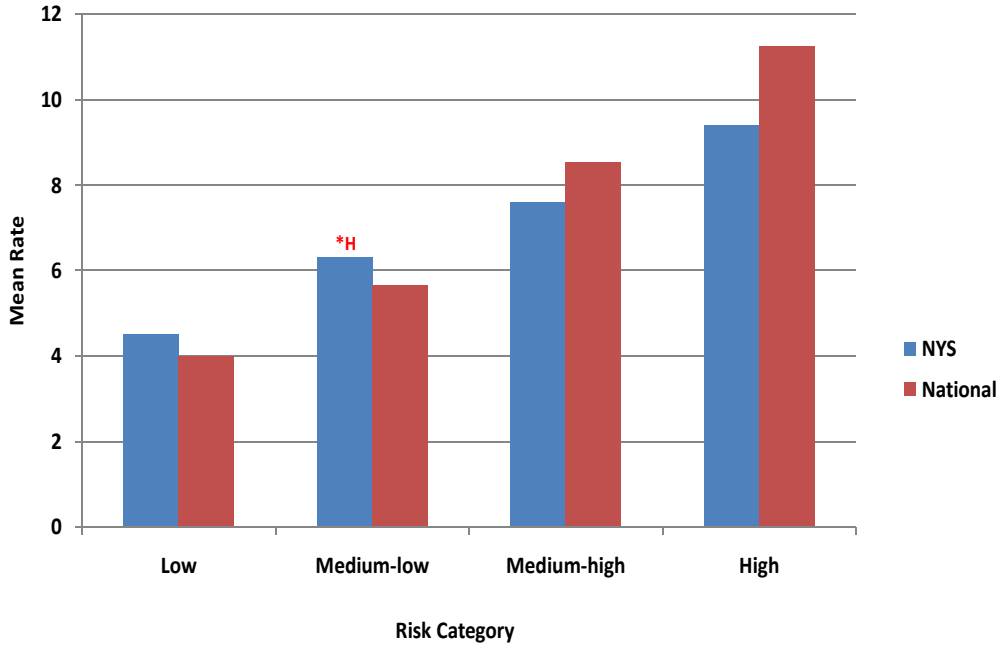
**APPENDIX C**

## ABBREVIATIONS

BSI – Blood Stream Infection
CABG – Coronary Artery Bypass Graft Surgery
CBGB – Coronary Bypass Graft with Chest and Separate Donor Site
CBGC – Coronary Bypass Graft with Chest Incision Only
CDC – Centers for Disease Control and Prevention
C.diff – *Clostridium difficile*
CL – Central Line
CLABSI – Central Line Associated Blood Stream Infection
DOH – New York State Department of Health
GNYHA – Greater New York Hospital Association
HAI – Hospital-Acquired Infection
HANYS – Healthcare Association of New York State
HHC – Health and Hospitals Corporation
HERF – Healthcare Educational and Research Fund
ICU – Intensive Care Unit
MDROs – Multidrug-Resistant Organisms
MRSA – Methicillin-Resistant *Staphylococcus aureus*
NICU – Neonatal Intensive Care Unit
NHSN – National Healthcare Safety Network
NYC – New York City
NYS – New York State
NYSDOH – New York State Department of Health
PHL – Public Health Law
RPC – Regional Perinatal Center (Level IV – highest level of NICU care)
SSI – Surgical Site Infection
UCAB – Umbilical Catheter Associated Blood Stream Infection
VAP – Ventilator-Associated Pneumonia Infections

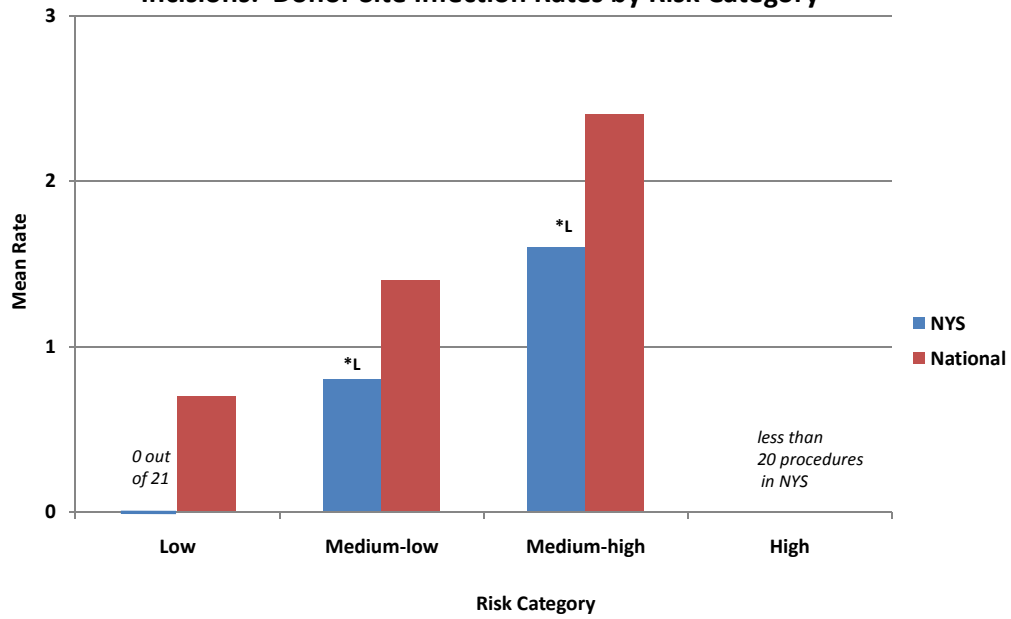
**APPENDIX D**

**Chart 1**
**Colon Surgical Site Infection Rates**
**by Risk Category**



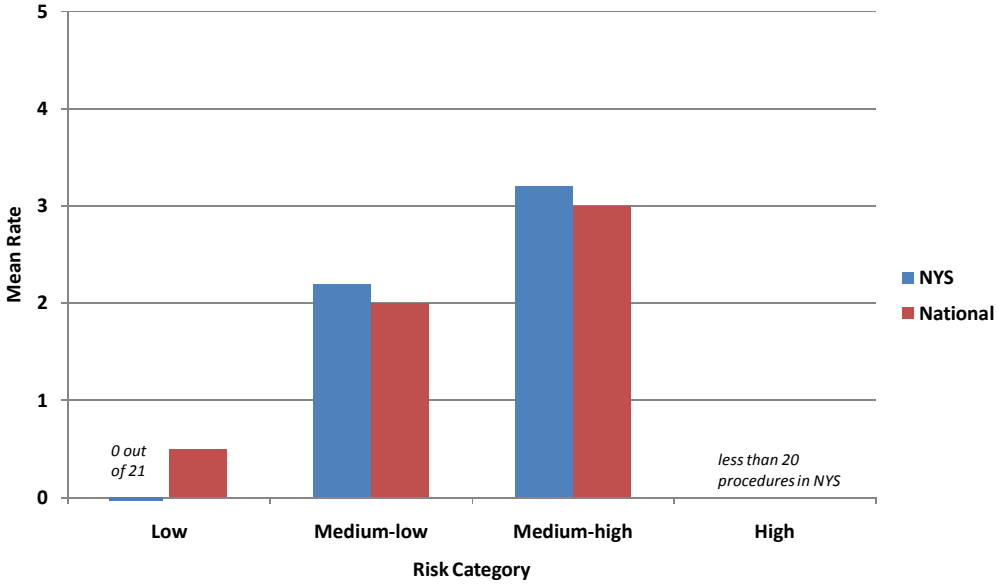

*H = NYS significantly higher than National rate for risk category
2007 NYS Data reported as of April 1, 2008 vs. National Data 2002-2004

## Chart 2
## Coronary Artery Bypass Graft with Chest and Donor Site Incisions: Donor Site Infection Rates by Risk Category



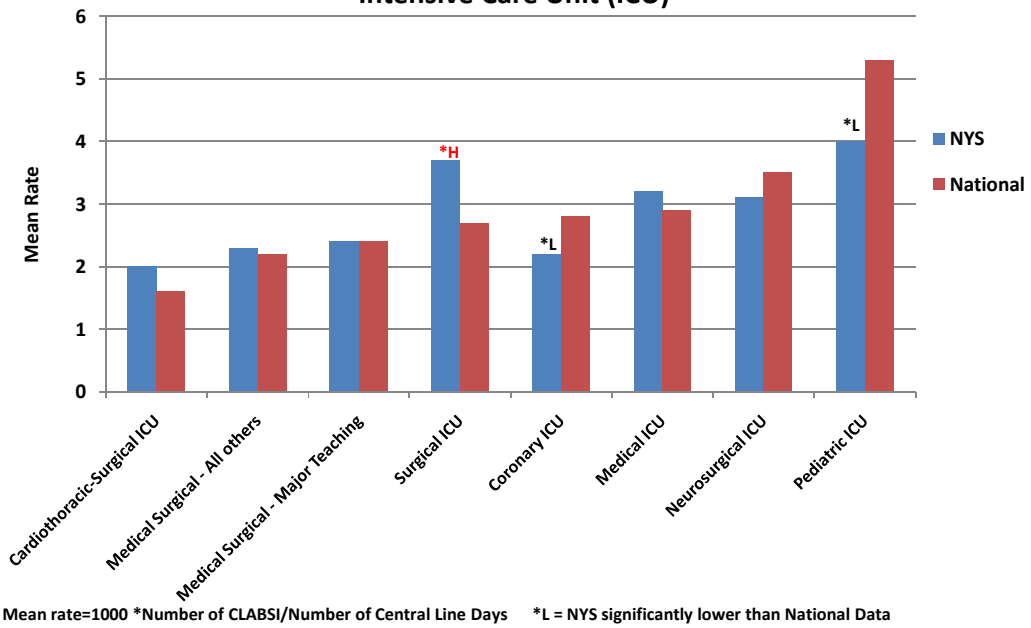

***L = NYS rate significantly lower than National rate**
**2007 NYS data reported as of April 1, 2008 vs. National data for 1992-2004**

## Chart 3
## Coronary Artery Bypass Graft with Chest and Donor Site Incisions: Chest Site Infection Rates by Risk Category




**No significant differences between New York State and National rates**
**2007 NYS data reported as of April 1, 2008 vs. National data for 1992-2004**

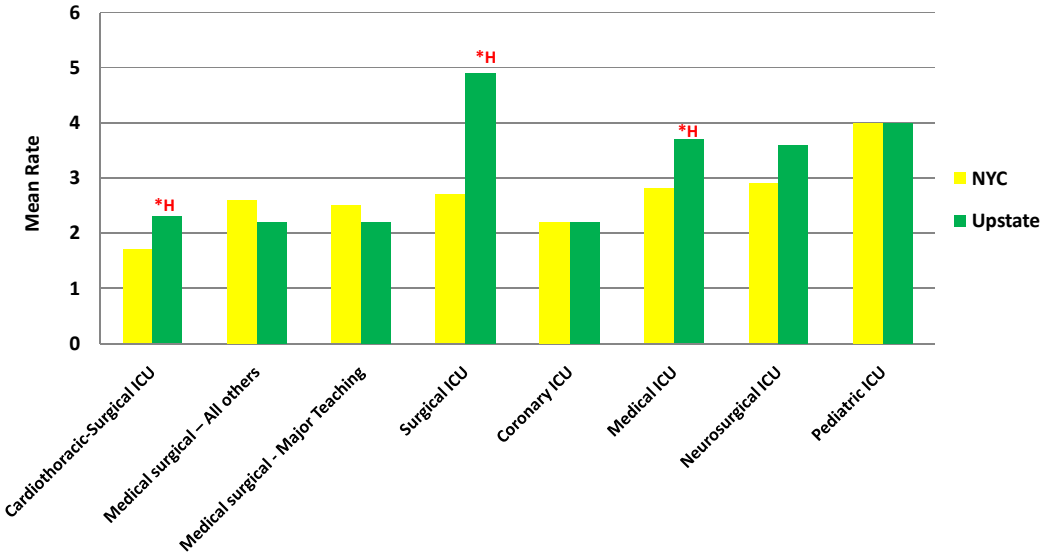
## Chart 4
## Central Line-Associated Blood Stream Infection (CLABSI) Rates by Type of Adult or Pediatric Intensive Care Unit (ICU)




Mean rate=1000 *Number of CLABSI/Number of Central Line Days
2007 NYS data, reported as of April 1, 2008 vs. 2006 National Data

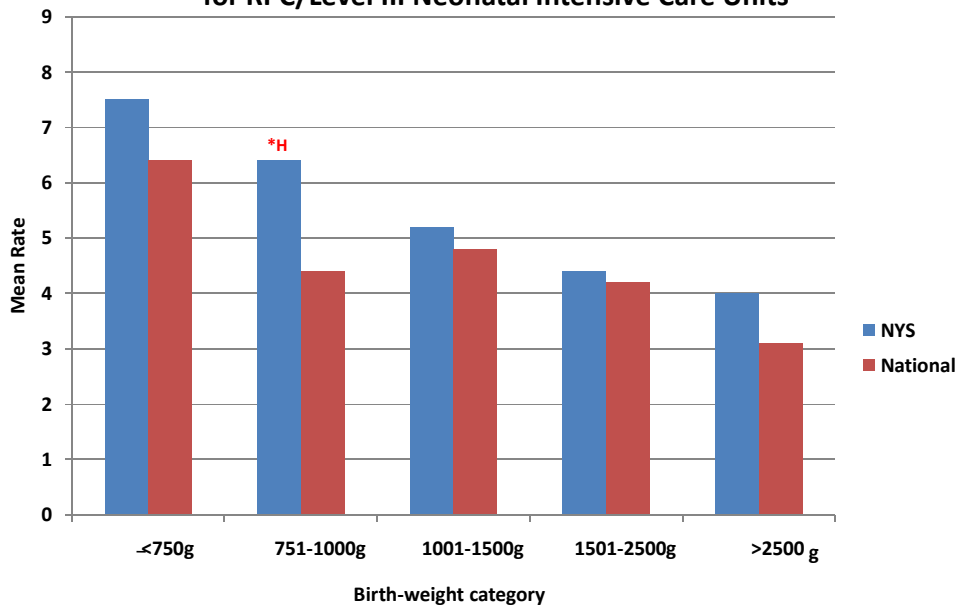
*L = NYS significantly lower than National Data
*H= NYS significantly higher than National Data

## Chart 5
## Central Line-Associated Blood Stream Infection (CLABSI) Rates by Type of Adult or Pediatric Intensive Care Unit (ICU), New York State



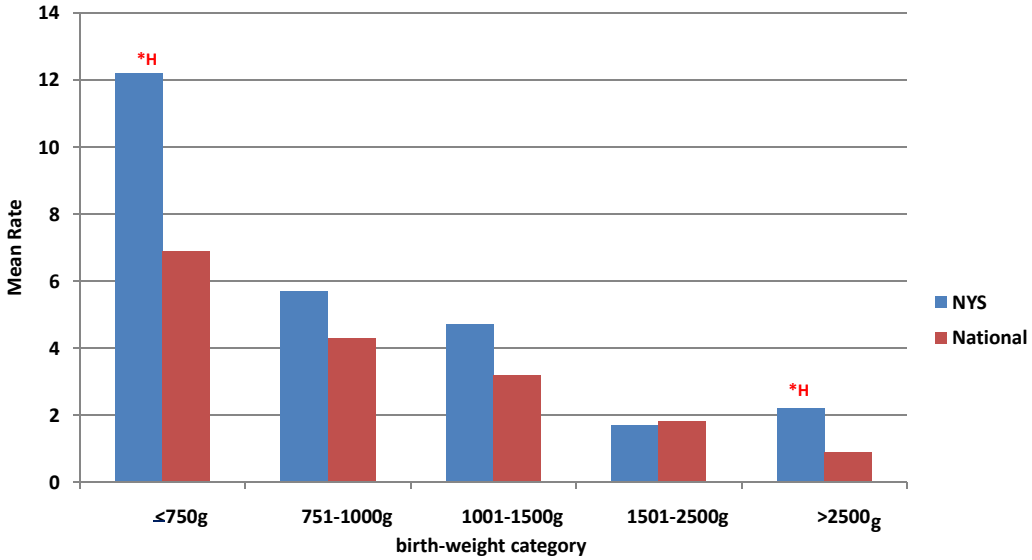

*H = Upstate significantly higher than NYC
Mean rate = 1000 * Number of CLABSI/Number of Central Line Days
2007 data reported as of April 1, 2008

## Chart 6
## Central Line-Associated Blood Stream Infection (CLABSI) Rates for RPC/Level III Neonatal Intensive Care Units




*H = NYS significantly higher than National data
Mean rate = 1000 * Number of CLABSI/Number of Central Line Days
2007 NYS data, reported as of April 1, 2008 vs. 2006 National data

## Chart 7
## Umbilical Catheter-Associated Blood Stream Infection Rates for RPC/Level III Neonatal Intensive Care Units




*H=significantly higher than National Data
Mean rate = 1000* Number of UCABSI/Number of umbilical catheter days
2007 NYS data, reported as of April 1, 2008 vs. 2006 National Data

## REFERENCES


1. Klevens RM, Edwards JR, Horan TC, Gaynes RP, Pollack DA, Cardo DM. Estimating health care-associated infections and deaths in U.S. hospitals, 2002. *Public Health Reports* 2007;122:160-166.
2. Centers for Disease Control and Prevention's Division of Healthcare Quality Promotion. National Healthcare Safety Network (NHSN) Manual (cited May 2008) URL: http://www.cdc.gov/ncidod/dhqp/pdf/nhsn/NHSN_Manual_PatientSafetyProtocol_CURRENT.pdf