## Draft work plan for HCAIAC June-September 2008

<table>
<thead>
<tr>
<th>Month</th>
<th>Tasks to start</th>
<th>Task to complete</th>
<th>Who</th>
</tr>
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</table>
| June    | 1. Hearings officer report  
2. Revise work plan  
3. Content development for trainings  
4. Development of document to send to OAHHS and all hospitals outlining training requirements for NHSN | 1. Hearings Office Report  
2. All  
3. Staff, TAG, OAHHS  
4. All | 1. Staff, All  
2. All  
3. Staff, TAG, OAHHS  
4. All |
| July    | 1. Communication strategy finalized  
2. Distribute information about CDC/NHSN webinar to appropriate contacts at hospitals (Leadership, ICPs)  
3. Training for hospitals to begin  
4. Introductory webinar (CDC)  
5. Develop implementation/training strategy  
   a. In-person user group trainings  
   b. Peer groups (grouped by scope and geography)-look to OAHHS for guidance  
   c. Small, non-NHSN hospitals first then Large, NHSN hospitals  
6. Training materials | 1. Introductory webinar  
2. “NHSN” communication document to hospitals | 1. Staff, All, OAHHS  
2. Staff |
| August  | 1. Implementation/training strategy  
2. Training materials | 1. Implementation/training strategy  
2. In-person training materials | 3. Staff, TAG, OAHHS  
4. Staff |
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<th>Month</th>
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</table>
| September| 1. Report on Vermont Oxford reporting system for NICU  
2. Report on Nursing facility CMS reporting requirements  
3. Update on training of hospitals  
a. Challenges/Concerns | 1. Staff, All  
2. Staff, TAG                 |
| October  | 1. Dialysis center NHSN module  
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
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**

<table>
<thead>
<tr>
<th>2. INFECTIONS</th>
<th>(If none apply, CHECK the NONE OF ABOVE box)</th>
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<tbody>
<tr>
<td>Antibiotic resistant infection (e.g., Methicillin resistant staph)</td>
<td>Septicemia</td>
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<tr>
<td>Clostridium difficile (c. diff.)</td>
<td>a. Sexually transmitted diseases</td>
</tr>
<tr>
<td>Conjunctivitis</td>
<td>b. Tuberculosis</td>
</tr>
<tr>
<td>HIV infection</td>
<td>c. Urinary tract infection in last 30 days</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>d. Viral hepatitis</td>
</tr>
<tr>
<td>Respiratory infection</td>
<td>e. Wound infection</td>
</tr>
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<td></td>
<td>f. NONE OF ABOVE</td>
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<tr>
<th>3. OTHER CURRENT OR MORE DETAILED DIAGNOSES AND ICD-9 CODES</th>
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<tbody>
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<td>a.</td>
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<td>b.</td>
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<td>c.</td>
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<tr>
<td>d.</td>
<td></td>
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<tr>
<td>e.</td>
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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.
<table>
<thead>
<tr>
<th>I2. INFECTIONS</th>
<th>Urinary tract infection in last 30 days</th>
<th>j.</th>
<th>NONE OF ABOVE</th>
<th>m.</th>
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<th>I3. OTHER CURRENT DIAGNOSES AND ICD-9 CODES</th>
<th>(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)</th>
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<tbody>
<tr>
<td>a.</td>
<td></td>
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<tr>
<td>b.</td>
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</table>
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

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Institution</th>
<th>Join Date</th>
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</thead>
<tbody>
<tr>
<td>Audrey Adams, R.N., M.P.H, CIC</td>
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<td>Eileen Graffunder, B.A.</td>
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<tr>
<td>Linda Greene, R.N., M.P.S.</td>
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<tr>
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<td>Lisa Saiman, M.D., M.P.H.</td>
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<td>Kent Sepkowitz, M.D.</td>
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<td>Rhonda Susman, R.N., B.S.N., CIC</td>
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<tr>
<td>Michael Tapper, M.D.</td>
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<tr>
<td>Mary Therriault, R.N., M.S.</td>
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<tr>
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<td>Infection Control Coordinator</td>
<td>Strong Memorial Hospital</td>
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Central Line Associated Bloodstream Infections in Adult/Pediatric ICUs
Central Line Associated Bloodstream Infections in Neonatal ICUs

STRENGTHS AND WEAKNESSES OF USING NHS FOR MANDATORY REPORTING

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BRIEF SUMMARY

In 2007, 187 New York hospitals reported hospital-acquired infections (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: surgical site infections, coronary artery bypass graft surgical site infections, central line associated bloodstream infections in adults/pediatric intensive care units, and central line associated bloodstream 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.

A HAI is defined as an infection that develops as a result of a hospital intervention or associated with the hospitalization. At least 80% 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 hospital's infection data;
  - Allow for recommendations to improve the accuracy of data; and
  - Modify the system to ensure that 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 HAI s.
- Working with technical advisors, DOH shall develop statistical methods to adjust for patient 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 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 bloodstream 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 are required to report on these infections and to provide information on the number of infections, the source of the infections, and the outcome of the infections.

- Hospitals are also required to provide information on the implementation of infection control practices and the effectiveness of those practices in reducing the rate of infections.

- Hospitals are required to maintain records of all infections and to report these records to DOH on a regular basis.

- Hospitals are required to implement infection control policies and procedures to prevent infections and to report any violations of these policies and procedures.

- Hospitals are required to conduct surveillance and reporting of infections and to provide information on the number of infections, the source of the infections, and the outcome of the infections.

- Hospitals are required to maintain records of all infections and to report these records to DOH on a regular basis.

- Hospitals are required to implement infection control policies and procedures to prevent infections and to report any violations of these policies and procedures.
Hospital need to report infections acquired in the hospital, not infections that we 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

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 DOH. The workgroup was also responsible for deciding which HAI's would be selected for the pilot phase, evaluating risk factors and risk adjustment methods.

Although the laws state 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.
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 recommendation of the Commission on Healthcare 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 procedure, guidelines for surveillance, standard definitions, use of the NHSN and reporting indicators. GNYHA videotaped the presentations and 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
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 1 in Appendix D).

- The only risk factor not currently collected by NHS N found to increase the risk of colon SSI 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 SSI, methicillin-resistant Staphylococcus aureus (MRS A) 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 NHS N risk factors (emergency/treatment 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 overview and regulatory procedures.

**Next Steps:**

- Continue to monitor all hospitals for the completeness, timeline 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 Group.

**Coronary Artery Bypass Graft (CABG) Surgical Site Infections**

Coronary artery bypass graft (CABG) surgery often involves two 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 as few as 65 CABG 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 0 to 4.0 percent, and from 0 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 incision sites include: female gender, emergency procedure, obesity, diabetes, chronic lung disease, immunodeficiency, and postoperative complications including renal failure, gastrointestinal bleeding, and reoperation for bleeding.
For CABG chest wound infections, MRS A was associated with 17 percent of infections and was the third most common organism, after other microorganisms.

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

Recommendations:

- HAI program staff 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 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 submission, 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 preventions, hospital epidemiologists, surgeons, and the Cardiac Advisory Committee to identify possible strategies to reduce CABG SSIs.

Develop methods and formats for public reporting of identified hospital infection rates in collaboration with the Technical Advisory Group.

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 CLABSIs 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 CLABSIs rates in cardiothoracic, 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 CLABSIs 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 interventions using 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, timeline and accuracy of data submission, 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 CLABSI in adult and pediatric ICUs.
- Continue to monitor the distribution and role of various microbes associated with CLABSI in adult and pediatric ICUs.

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 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 bloodstream 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 a 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 CLABSI is in neonatal ICU patients, 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 interventions using 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 CLABSI in neonatal ICUs.
- Conduct surveys or additional audits to evaluate the effectiveness of prevention strategies to reduce CLABSI 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.
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 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 NHS N’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, gastrointestinal 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 hospital to detect data entry errors. These reports are reviewed by the regional HAI program staff, 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 on-site visits in 95% (183) of the hospitals between July 2007 and January 2008. The other 5% 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 HAI's.
The major weaknesses of using NHS 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 avoided 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 NHS, 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 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 staff turnover, prolonged vacancies, and the need for education and training to comply 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 site 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 HAI's.
- Continue to evaluate the effectiveness of various post-discharge methods.
- In conjunction with the Technical Advisory Group, 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 public reports.
- Collaborate with other DOH staff to investigate outbreaks, evaluate emerging trends and/or provide regulatory action for non-compliance with legislative mandates.
- 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.
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 HAI reporting data.

- Hospitals need to provide backup personnel to ensure compliance with reporting requirements and patient safety. Timely and complete data submission was often affected by infection control staff 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 SSI 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 Group.

DOH needs to begin monitoring HAI prevention projects for compliance with program objectives, fiscal responsibility and potential applicability to other hospitals or health care 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 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 demonstration 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:

19
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 (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

Greater New York Hospital Association is coordinating the development, implementation, and evaluation of comprehensive evidence-based practices to prevent and control Clostridium difficile (C. difficile) infections. C. difficile 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 concurrent 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 multi-drug-resistant or 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 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 focus of many prior initiatives has been on critical care unit patients.

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.
CONCLUSION

Westchester County Healthcare Corporation, Valhalla - $199,991

This project is designed to reduce the incidence of hospital-associated bloodstream 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 bloodstream 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 bloodstream 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

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.

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

http://www.nyhealth.gov/professionals/diseases/reporting/communicable/index.htm
Hospital-acquired infection associated with another hospital to the originating hospital.

The department may, from time to time, require the tracking and reporting of other types of hospital-acquired infections (e.g., ventilator-associated pneumonias) that occur in hospitals in their sector. Consultation with technical advisors who are regionally or nationally recognized experts in the identification and control of hospital-acquired infections and the public reporting of hospital infections should be maintained for a minimum of six years.

SUSPECTED OR CONFIRMED infections shall be reported, as permitted in this section, hospitals shall be required to report a suspected or confirmed hospital infection. The department shall solicit and consider public comment prior to such establishment.

Infections that occur in critical care units to include surgical wound infections and central line-related infections, that occurred subsequent to the initial requirements identified in paragraph (d) of this sub-division shall, for the purpose of public reporting under this section and quality improvement.

Hospital-acquired infection reporting. For the purposes of this section, “hospital-acquired infection” shall mean any localized or systemic patient condition that:

* (f) Subsequent to the initial requirements identified in paragraph (d) of this sub-division the infection was not found to be present or incubating at the time of admission unless the infection resulted from the presence of an infectious agent or agents, or its toxin or toxins as determined by clinical examination or laboratory testing; and

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

* (f) Subsequent to the initial requirements identified in paragraph (d) of this sub-division the infection was not found to be present or incubating at the time of admission unless the infection resulted from the presence of an infectious agent or agents, or its toxin or toxins as determined by clinical examination or laboratory testing; and

APPENDIX A
other individual hospitals as well as regional and statewide averages and, where available, required to be more frequently than once every six months, and reports shall be submitted not accepted standards for validity and reliability. In no case shall the frequency of reporting be collected. The department shall establish data collection and analytical methodologies that meet more than sixty days after the close of the reporting period.

The frequency of reporting shall be monthly, and the commissioner shall submit a report to the governor and the legislature, which shall limit to, hospital acquired infection rates adjusted for the potential differences in risk factors for simultaneously be published in its entirety on the department’s website, that include, but is not aggregate or otherwise de-identified data may be included.

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 provide guidance for improving the accuracy of hospital acquired infection reporting. The department shall issue a report to hospitals assessing the overall accuracy of the data submitted in purpose of comparing individual hospital performance, and a narrative describing lessons for data reported during the pilot phase, hospital identifiers shall be encrypted by the department in 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 hospital for (c)(i) No later than July first, two thousand six, the department shall establish a hospital used for public reporting.

Hospitals shall begin to submit such reports as directed by the commissioner but in no (b) The commissioner shall consult with technical advisors who have regionally or nationally

5. (a) Subject to paragraph (c) of this subdivision, on or before May first of each year the (ii) The first year of data submission under this section shall be considered the “pilot phase” of

*3. Each hospital shall regularly report to the department the hospital infection data it has (ii) * Effective until January 1, 2008

*NB Effective January 1, 2008
After the pilot phase is completed, all data submitted under this section and compiled in the state wide hospital acquired infection database established here in 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 website. 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.
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 blood stream 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 blood stream infection that is associated with the presence of an umbilical catheter.
APPENDIX C

ABBREVIATIONS

BSI – Blood Stream Infection

CABG – Coronary Artery Bypass Surgery

CBGB – Coronary Bypass with Chest and Separate Donor Site

CBGC – Coronary Bypass with Chest Incision Only

CDC – Centers for Disease Control and Prevention

C. diff – Clostridium difficile

CL – Central Line

CLABS I – Central Line Associated Blood Stream Infection

DOH – New York State Department of Health

GNYHA – Greater New York Hospital Association

HAI – Hospital-Associated Infection

HANYS – Health Care Association of New York State

HHC – Health and Hospitals Corporation

HERF – Health Care Educational and Research Fund

ICU – Intensive Care Unit

MDROs – Multidrug-Resistant Organisms

MRS A – Methicillin-Resistant Staphylococcus aureus

NI CU – Neonatal Intensive Care Unit

NHSN – National Healthcare Safety Network

NYC – New York City

NYS – New York State

NYS DOH – New York State Department of Health

PHL – Public Health Law

RP C – 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
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 \times \frac{\text{Number of CLABSI}}{\text{Number of Central Line Days}}

\*H = \text{NYC significantly higher than \textit{Upstate}}

\*L = \text{NYC significantly lower than \textit{National Data}}

2007 NYC data reported as of April 3, 2008 vs. 2006 \textit{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 = \text{Upstate significantly higher than NYC}

Mean rate = 1000 \times \frac{\text{Number of CLABSI}}{\text{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

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

*H = NYS significantly higher than national data
Mean rate = $1000 \times \frac{\text{Number of CLABSI}}{\text{Number of Central Line Days}}$
2007 NYS data, reported as of April 1, 2008 vs. 2006 National data

*H = significantly higher than National Data
Mean rate = $1000 \times \frac{\text{Number of uCABS}}{\text{Number of umbilical catheter days}}$
2007 NYS data, reported as of April 1, 2008 vs. 2006 National Data
REFERENCES
