Role of CDC in Monitoring and Preventing Healthcare-associated Infections

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CDC is working to improve patient safety

Patient Safety

- Healthcare-associated Infections
- Adverse Drug Events
- Transfusion/Transplant Safety
- Antimicrobial Resistance
- Device/Procedure-related
- Settings/Practices-related
- MRSA
- C. Difficile
- Acinetobacter

- Outbreak Investigations
- Surveillance
- Prevention Recommendations
- Intervention Implementation
- Extramural Research
- Laboratory Research and Support
Following CDC Guidelines Reduces Healthcare-associated Infections

FIGURE. Central line–associated bloodstream infection rate* in 66 intensive care units (ICUs), by ICU type and semianual period — southwestern Pennsylvania, April 2001–March 2005

- All other unit types
- Medical/surgical units

Surgical ICU at Johns Hopkins Hospital, 5 years

MMWR 2005;54:1013-16

BSIs/1,000 catheter days


- ICUs at 103 Michigan hospitals, 18 months

Common Elements for Successful Infection Prevention

- Simple, the only option
- Patient-centered, integrated with care
- Evidence-based recommendations
- Part of a “package” for prevention
- Engaging and empowering clinicians
- Protocols and systems in place
- Standardized ways for recording information about infections
- Regular feed-back of information to providers
States with Legislation to Report HAIs

- Mandates Public Reporting, Using NHSN
- Mandates Public Reporting
- Pending Legislation

* Voluntary reporting using NHSN

3/26/2008
Number of hospitals using National Healthcare Safety Network (NHSN) has tripled in the last year

April 2007
- 491 facilities enrolled
  - 44% had 201-500 beds
  - 80% were general, acute care hospitals
  - 39% were non-major teaching hospitals
- 398 actively reporting data
- 8 States using or planning to use NHSN for mandatory reporting

May 2008
- 1470 facilities enrolled
  - 34% have 201-500 beds (56% have ≤ 200 beds)
  - 91% are general, acute-care hospitals
  - 61% are non-major teaching hospitals
- 1145 actively reporting data
- 17 States using or planning to use NHSN for mandatory reporting
17 states use NHSN for public reporting

<table>
<thead>
<tr>
<th>Year</th>
<th>CLABSI</th>
<th>CAUTI</th>
<th>SSI</th>
<th>VAP</th>
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<tr>
<td>Jan 2008</td>
<td></td>
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<tr>
<td>Jan 2009</td>
<td></td>
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<tr>
<td>Dialysis events</td>
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<td>PA</td>
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<tr>
<td>MDRO*</td>
<td>CA, MD, NJ, PA</td>
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<td></td>
<td></td>
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<tr>
<td>Process measures</td>
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<td>CA, DE, MD, NJ, PA, VT</td>
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*Preliminary Information

As of 5/12/2008
NHSN Components
and Modules

NHSN

Component
Patient
Safety

Events Modules
- Device Associated
- Procedure Assoc.
- Medication Assoc.
- MDRO and CDAD
- High Risk Inpatient Influenza Vaccination

Component
Healthcare
Personnel Safety

Modules
- Blood/Body Fluid Exposure
- Vaccination

Component
Biovigilance

Modules
- Hemovigilance

Component
Research and Development

eSurveillance
- HL7 Messages
- HL7 CDA
Prevention research

Data Transmission Standards
- Messages for laboratory results, admission/discharge/transfer, and pharmacy data
- Structured documents for infection reports, denominators, and process of care measures

MDRO = Multidrug-resistant organism
CDAD = Clostridium difficile associated disease
HL7 = Health Level Seven
CDA = Clinical Document Architecture
Current CDC Activities to Enhance Use of Electronic Data Sources

- **E-surveillance**
  - Clinical Document Architecture
  - Health Level 7 messaging
  - HAI detection

![Graph showing BSI detection, Chicago Antimicrobial Resistant Project]
Hospitals Participating in NHSN are Preventing Bloodstream Infections

Trends in Bloodstream Infections* by ICU Type, United States, 1997–2007

*Central line–associated bloodstream infections
Example of potential impact of reducing one type of healthcare-associated infection: Bloodstream infections

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost/Percentage</th>
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<tbody>
<tr>
<td>Extra healthcare costs for a bloodstream infection</td>
<td>$36,441</td>
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<tr>
<td></td>
<td>$9 billion nationally</td>
</tr>
<tr>
<td>Reductions of bloodstream infections in NHSN hospitals</td>
<td>Up to 70%</td>
</tr>
<tr>
<td><em>Potential savings</em> if reductions in NHSN hospitals expanded nationally</td>
<td>Up to $6 billion</td>
</tr>
<tr>
<td>Estimate of impact on Medicare costs</td>
<td>Up to $2 billion</td>
</tr>
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</table>
NHSN Vision

- Extensible to other healthcare settings
- Outcome measures of healthcare-associated infections
- Process of care measures
- Standards-based reporting tool
- Knowledge system
Changing World of Patient Safety

- MRSA
- C. difficile
- Acinetobacter
- Antimicrobial resistance
- Multi-drug resistant gram negative
- Increased use of ambulatory care settings
- Public reporting
Current Healthcare System

- Acute Care Facility
- Outpatient/Ambulatory Facility
- Long Term Care Facility
- Home Care
Keys for the Elimination of Healthcare-associated Infections

- Full adherence to recommendations
- Collect data and disseminate results
  - Communication with consumers
  - Evaluate how we’re doing
- Recognize excellence
- Identify and respond to emerging threats
- Improve science for prevention through research