
HEALTHCARE-ASSOCIATED INFECTIONS IN MICHIGAN HOSPITALS

**Quarterly Report of Healthcare-Associated Infection
Surveillance Activities**

October 1, 2010–December 31, 2010

Michigan Department of Community Health

**Surveillance for Healthcare-Associated & Resistant Pathogens
(SHARP) Unit**

Introduction

The Surveillance of Healthcare-Associated & Resistant Pathogens (SHARP) Unit within the Bureau of Epidemiology at the Michigan Department of Community Health (MDCH) will quarterly provide an update on healthcare-associated infection (HAI) surveillance activities funded under the American Recovery and Reinvestment Act (ARRA). This report will include Centers for Disease Control and Prevention (CDC) National Healthcare Safety Network (NHSN) data from Michigan hospitals who have agreed to share their data with MDCH/SHARP. The main surveillance foci for the SHARP Unit are methicillin-resistant *Staphylococcus aureus* (MRSA) and *Clostridium difficile* reports collected through the multidrug-resistant organism and *Clostridium difficile*-associated disease (MDRO/CDAD) module of NHSN. However, data from other NHSN modules will also be analyzed. Aggregated data will be used to show infection rates and trends in the incidence of specific healthcare-associated infections (HAIs) and multidrug-resistant organisms (MDROs). Previous quarterly reports for fiscal year 2009-2010 are posted on the Michigan HAI website at www.michigan.gov/hai. As additional Michigan hospitals agree to participate in this surveillance initiative, the information and data will become more reliable and complete from quarter to quarter.

Additional background information on HAIs, pertinent definitions related to HAIs, Michigan's HAI Surveillance and Prevention Plan, Michigan's HAI Prevention Advisory Group, and Michigan's prevention collaboratives supported under ARRA, can be found at www.michigan.gov/hai.

Acronyms Used in Quarterly Reports

| | |
|--------|---|
| ARRA | American Recovery and Reinvestment Act |
| CAUTI | Catheter-Associated Urinary Tract Infection |
| CDC | Centers for Disease Control & Prevention |
| CDAD | <i>Clostridium difficile</i> -Associated Disease |
| CLABSI | Central Line-Associated Bloodstream Infection |
| DUA | Data Use Agreement |
| HAI | Healthcare-Associated Infection |
| ICU | Intensive Care Unit |
| LabID | Laboratory-Identified Event |
| MDCH | Michigan Department of Community Health |
| MDRO | Multidrug-Resistant Organism |
| MHA | Michigan Health & Hospital Association |
| MPRO | Michigan's Quality Improvement Organization |
| MRSA | Methicillin-Resistant <i>Staphylococcus aureus</i> |
| NHSN | National Healthcare Safety Network |
| SCA | Specialty Care Area |
| SHARP | Surveillance of Healthcare-Associated & Resistant Pathogens |
| SSI | Surgical Site Infection |
| VAP | Ventilator-Associated Pneumonia |

Surveillance Initiative Statistics

Between October 1 and December 31, 2010, a cumulative total of thirty-five (35) Michigan hospitals were participating in the SHARP Unit HAI surveillance initiative. Nineteen (19) of these hospitals were monitoring MRSA and *C. difficile* using the laboratory-identified (LabID) Event option of the MDRO/CDAD module and sharing their data with SHARP. Areas of surveillance within the hospital varied between the participating hospitals and included the intensive care/critical care unit (ICU/CCU), specialty care areas, medical/surgical wards, or other, dependent upon individual hospital choice. Data from this quarter, as well as from the four previous quarters in fiscal year 2009-10, are being used to establish aggregated infection rates in Michigan participating hospitals and to monitor quarterly trends.

Of the thirty-five (35) participating hospitals during this quarter, most were also collecting other NHSN module data as indicated in Table 1. The table also indicates the number of facilities sharing NHSN module data with MDCH SHARP. As additional hospitals participate with the SHARP Unit and confer rights to these modules, analysis of the data will become more complete and reliable for each module.

| Table 1. | | |
|--|--|--|
| National Healthcare Safety Network (NHSN) Modules in Use, as Reported by Facility October 1, 2010 through December 31, 2010 | | |
| NHSN Module | Number of Facilities Using Module | Number of Facilities Sharing Data |
| Central Line-Associated Bloodstream Infection (CLABSI) | 31 | 18 |
| Ventilator-Associated Pneumonia (VAP) | 21 | 10 |
| Catheter-Associated Urinary Tract Infection (CAUTI) | 14 | 8 |
| Surgical Site Infection (SSI) | 17 | 7 |
| Methicillin-Resistant <i>Staphylococcus aureus</i> (MRSA) Laboratory-identified (LabID) Event | 20 | 19 |
| Methicillin-Resistant <i>Staphylococcus aureus</i> (MRSA) Infection Surveillance | 13 | 11 |
| <i>Clostridium difficile</i> -Associated Disease (CDAD) Laboratory-identified (LabID) Event | 19 | 19 |
| <i>Clostridium difficile</i> -Associated Disease (CDAD) Infection Surveillance | 6 | 6 |

MRSA Data

Table 2 indicates that between October 1, 2010 and December 31, 2010, 671 isolates of MRSA were reported from nineteen participating hospitals who use the LabID Event option of the MDRO/CDAD module. Six of nineteen (31.6%) participating hospitals did not report any MRSA LabID events during this quarter. LabID Events for MRSA are defined by NHSN as all first positive MRSA clinical specimens for each calendar month for each unique patient, regardless of specimen source. Specimens must be collected for clinical purposes and not for the purpose of active surveillance testing or screening. Additionally, testing protocol and type of test used (i.e. PCR, assay, culture) vary by facility. Note that data from the LabID Event option of the MDRO/CDAD module are considered proxy measures of MDRO exposure burden, and do not distinguish between patient colonization and infection.

| Table 2. MRSA Characteristics | Annual Oct 1, 2009 – Sept 30, 2010 | Oct – Dec 2010 |
|---|---|---------------------------|
| Frequency, Number | | |
| <i>Hospitals with DUA¹</i> | 26 | 35 |
| <i>Hospitals Reporting MRSA LabID²</i> | 10 | 19 |
| <i>Aggregated isolates</i> | 706 | 671 |
| Onset, Number (%) | | |
| <i>Healthcare-Onset (HO)</i> | 123 (17) | 104 (16) |
| <i>Community-Onset (CO)</i> | 583 (83) | 567 (84) |
| Specimen Source, Number (%HO) | | |
| <i>Wound</i> | 304 (6) | 202 (5) |
| <i>Sputum</i> | 187 (41) | 115 (37) |
| <i>Blood</i> | 43 (23) | 42 (33) |
| <i>Skin</i> | 24 (0) | 76 (1) |
| <i>Abscess</i> | 27 (0) | 79 (3) |
| <i>Urine</i> | 37 (3) | 59 (8) |
| <i>Other</i> | 84 (20) | 98 (29) |
| Surveillance Location, Number (%) | | |
| <i>Intensive/Critical Care Unit</i> | 253 (36) | 130 (19) |
| <i>Specialty Care Area</i> | - | - |
| <i>Wards</i> | 142 (20) | 184 (27) |
| <i>Outpatient</i> | 311 (44) | 349 (52) |
| <i>Other</i> | - | 8 (1) |
| ¹ DUA: Data Use Agreement | | |
| ² LabID: Laboratory Identification Event | | |

One hundred and four (16%) of all MRSA specimens for this quarter were determined to be healthcare-onset (HO), and the remainder (567, or 84%) were determined to be community-onset (CO). NHSN defines ‘healthcare-onset’ as a ‘LabID Event specimen collected >3 days after admission to the facility (i.e., on or after day 4).’ ‘Community-onset’ is defined by NHSN as a ‘LabID Event specimen collected as an outpatient or an inpatient ≤3 days after admission to the facility (i.e., days 1, 2, or 3 of admission).’

For this quarter, sputum again accounted for the majority (37%) of all MRSA **healthcare-onset** specimens, blood (33%), urine (8%), wound (5%), abscess (3%), skin (1%), and other (29%). Conversely, the majority of **community-onset** specimens were from wounds (34%) followed by abscesses (14%), sputum (13%), skin (13%), other (12%), urinary (10%), and blood (5%). The majority of all MRSA specimens were collected from outpatient locations (349 or 52%), followed by patient wards (184 or 27%), and intensive/critical care units (130 or 19%).

Clostridium difficile Data

As shown in Table 3 (below), for this quarter there were 215 reports of *C. difficile* identified by nineteen hospitals which used the LabID Event option of the MDRO/CDAD module. Six of nineteen (31.6%) participating hospitals had no *C. difficile* LabID events during this quarter. A LabID *C. difficile* event is defined as “all non-duplicate *C. difficile* positive laboratory assays.”

| Table 3. <i>C. difficile</i> Characteristics | Annual Oct 1, 2009 – Sept 30, 2010 | Oct – Dec 2010 |
|---|---|---------------------------|
| Frequency, Number | | |
| <i>Hospitals with DUA</i> ¹ | 26 | 35 |
| <i>Hospitals Reporting CDAD LabID</i> ² | 8 | 19 |
| <i>Aggregated isolates</i> | 184 | 215 |
| Onset, Number (%) | | |
| <i>Healthcare-Onset (HO)</i> | 76 (41) | 62 (29) |
| <i>Community-Onset Healthcare-Assoc (COHA)</i> | 34 (19) | 53 (25) |
| <i>Community-Onset (CO)</i> | 74 (40) | 100 (46) |
| Surveillance Location, Number (%) | | |
| <i>Intensive/Critical Care Unit</i> | 60 (33) | 41 (19) |
| <i>Specialty Care Area</i> | 8 (4) | 1 (0) |
| <i>Wards</i> | 78 (42) | 85 (40) |
| <i>Outpatient</i> | 38 (21) | 83 (39) |
| <i>Other</i> | - | 5 (2) |
| ¹ DUA: Data Use Agreement | | |
| ² LabID: Laboratory Identification Event | | |

Sixty-two or 29% of the reports were considered to be **healthcare-onset**. Fifty-three or 25% were considered to be **community-onset healthcare-facility associated (COHA)**, and 100 or 46% were reported to be **community-onset**. *Community-onset healthcare facility-associated* is defined as a ‘community-onset LabID Event collected from a patient who was discharged from the facility ≤ 4 weeks prior to date stool specimen collected. (Healthcare-onset and community-onset are defined under the MRSA data heading.) Looking at location of *C. difficile* specimens, 85 (40%) were reported from patient wards, 83 (39%) from outpatient locations, 41 (19%) from intensive/critical care, 1 (0.5%) from a specialty care area, and 5 (2.5%) from other locations of the hospitals.

Conclusions

Aggregated data from this quarter for both MRSA and *C. difficile* appear to be fairly stable and consistent with statistics from the previous year. The overall percentage of healthcare-onset LabID events, as determined by NHSN, also appears to be comparable to last year’s cumulative data. Note that throughout the current fiscal year (October 1, 2010 through September 30, 2011) data from previous quarters will not be updated as additional hospitals are added each quarter, even though these additional hospitals may provide back data to the SHARP Unit. At the end of the 2010-11 fiscal year, a final cumulative report will be provided with data collected from all participating hospitals for the entire year. This final report will include updated data for each quarter.