

HEALTHCARE-ASSOCIATED INFECTIONS IN MICHIGAN HOSPITALS

Quarterly Summary Report of Participating Hospitals September 1 – December 31, 2009

Michigan Department of Community Health Surveillance of 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 activities funded under the American Recovery and Reinvestment Act (ARRA) to address the surveillance and prevention of healthcare-associated infections in participating hospitals in Michigan. Contained within this report are definitions and acronyms for frequently used terms. This report also includes data that will be used to show trends in the incidence of specific multiple antibiotic-resistant organisms in participating hospitals. As additional hospitals agree to participate in these activities, the information and data will vary from quarter to quarter.

Acronyms

APIC	Association of Professionals in Infection Control & Epidemiology
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
HAI	Healthcare-Associated Infection
HHS	Health & Human Services
MDCH	Michigan Department of Community Health
MDRO	Multi-Drug 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
SHARP	Surveillance of Healthcare-Associated & Resistant Pathogens Unit
SSI	Surgical Site Infection
VAP	Ventilator-Associated Pneumonia

Background

Healthcare-associated infections (HAIs) are infections that are acquired while a patient is in the hospital (or other healthcare facility), and which are not present or incubating at the time of the patient's admission to the facility. The most common types of HAIs are catheter-associated urinary tract infections (CAUTIs), surgical site infections (SSIs), central line-associated blood stream infections (CLABSIs), and ventilator-associated pneumonias (VAPs). At least 1.7 million patients in the United States acquire an HAI every year, and annually up to 99,000 patients die from these infections. The added financial burden attributable to these infections is estimated to be \$33 billion.

HAI's are important because they contribute both to the number of persons becoming ill and to the number of deaths in the U.S. Septicemias, or blood stream infections, many of which are healthcare-associated, have been reported by the CDC to be the 10th leading cause of all deaths in the United States. HAI's also contribute to increased length of hospital stay, thereby increasing healthcare costs.

In recent years, a number of states have passed legislation to mandate the reporting of HAI's in hospital settings to their state health department or other governmental agency. Currently at least 26 states have mandatory reporting laws, many of which require that the agencies release individual hospital names and their HAI rates to the public. These reports are usually published on state agency websites.

Although Michigan has no current legislation requiring mandatory reporting of HAI's, much work has already been done in Michigan to reduce the number of HAI's occurring in hospitals and other healthcare settings. The Michigan Health and Hospital Association (MHA), through their Keystone Center for Patient Safety and Quality, has won national recognition for the work they have done with Michigan hospital intensive care units to bring the number of catheter-associated bloodstream infections to zero. [Other Michigan-based agencies and organizations](#), including the Michigan Society for Infection Prevention & Control (MSIPC), the Greater Detroit Chapter of the Association of Professionals in Infection Control and Epidemiology (APIC - GD), and MPRO — Michigan's Quality Improvement Organization, have for many years been providing infection preventionists training on infection control standards, evidence-based best practices, and elimination of healthcare-associated infections. Their goals are to increase compliance with national HAI recommendations to reduce infections. Compliance with these standards has led to decreased numbers of HAI's; however, there are increasing reports of multi-drug-resistant organisms causing HAI infections in hospitals, as well as in long-term care facilities, ambulatory surgical care centers, and in the community.

In early 2009, the federal government approved funding through the American Recovery and Reinvestment Act (ARRA) for HAI surveillance and prevention activities. In Michigan, these funds are being used to improve state infrastructure to identify HAI issues through surveillance activities, and also to increase prevention initiatives through HAI prevention collaboratives with healthcare partners.

Prior to September 1, 2009, the Michigan Department of Community Health had already established an [HAI Prevention Advisory Group](#). Between September 1 and December 31, 2009, this Michigan HAI Prevention Advisory Group evaluated, approved, and submitted a Michigan-specific [HAI Surveillance and Prevention Plan](#) to the Centers for Disease Control and Prevention (CDC), Department of Health and Human Services (HHS). This quarterly report will focus on some of the early accomplishments of the Advisory Group and the Surveillance of Healthcare-Associated & Resistant Pathogens (SHARP) Unit funded under the ARRA grant.

Michigan HAI Prevention Advisory Group and Surveillance & Prevention Plan

Michigan's [HAI Prevention Advisory Group](#) was formed in July 2009 and is composed of representatives from many healthcare-associated organizations and agencies including hospitals, infection preventionists, professional associations, physicians, public health, and laboratories, as well as consumers. One of the first tasks of the Advisory Group was to develop a [Michigan HAI Surveillance and Prevention Plan](#). The CDC/HHS provided a template for developing this Plan. The Plan was completed and submitted before the January 1, 2010 deadline. The Plan targets 4 basic areas: a) Development and/or Enhancement of the HAI Program Infrastructure; b)

Surveillance, Detection, Reporting, and Response; c) Prevention of HAI Infections; and d) Evaluation, Oversight, and Communications. The Plan also strives to meet recommendations provided in the *HHS Action Plan to Prevent Healthcare-Associated Infections*.

Michigan Surveillance Initiative

With ARRA funding, Michigan is currently recruiting hospitals to voluntarily participate with SHARP on the surveillance of HAIs. Initial surveillance efforts are focusing on methicillin-resistant *Staphylococcus aureus* (MRSA) and *Clostridium difficile* (*C. difficile*) infections acquired within the hospital. Surveillance data is collected using the National Healthcare Safety Network (NHSN), an online reporting system developed and implemented by the CDC. Hospitals wishing to participate in this surveillance initiative can voluntarily agree to share their NHSN data with SHARP through use of a data use agreement.

SHARP is requesting that participating hospitals share their data on MRSA and *C. difficile* infections using the Multidrug-Resistant Organism/*Clostridium difficile*-associated disease (MDRO/CDAD) module, Lab ID Event reporting option of NHSN. SHARP's goal is to have 30 hospitals sharing their data with MDCH by October 2010, and 50 hospitals by October 2011. Infection reports shared with SHARP will be de-identified by patient and hospital name. As of December 31, 2009, SHARP had 4 hospitals who had agreed to share their NHSN data with MDCH/SHARP through the MDCH/SHARP Data Use Agreement and who had conferred rights within NHSN. Reports of this data will be published quarterly, and will provide a means to monitor HAI trends over time.

Michigan Collaborative Initiatives

SHARP will also participate as a partner in the activities of existing prevention collaboratives in Michigan. The two agencies that have agreed to work with SHARP on this are the MHA Keystone Center for Patient Safety and Quality, and MPRO — Michigan's Quality Improvement Organization. MHA *Keystone: HAI* focuses, in part, on reducing catheter-associated urinary tract infections (CAUTIs) in Michigan hospitals. The focus of the MPRO Initiative is the reduction of MRSA in specific Units within participating facilities. The goal of both of these collaboratives is to work with hospitals to educate about best practices, identify and implement best practices, and to impact infection rates over time.

Summary Data

Between September 1 and December 31, 2009, four Michigan hospitals signed data use agreements with MDCH/SHARP and conferred rights to SHARP to access the hospitals' data within NHSN. During this time, three of the four hospitals were doing surveillance for MRSA and *C. difficile* through use of the MDRO/CDAD module of NHSN. Areas of surveillance varied between the hospitals but included the intensive care unit, labor and delivery, and/or medical/surgical units of the hospital.

Data from this quarter will be used to establish baselines of infection for MRSA and *C. difficile* infection in participating hospitals. For this quarter, both MRSA and *C. difficile* were reported from the participating hospitals with 71 isolates of MRSA and 18 isolates of *C. difficile* identified, using the Lab ID Event option of the MDRO/CDAD module. Wounds were the predominant site for MRSA (73%), followed by sputum (20%), and blood (7%). Only 11% of MRSA isolates were reported to be healthcare-associated, and the remainder (89%) were reported to be community-associated and/or present on admission. All *C. difficile* isolates were from stool

specimens, and all were reported to be community-associated and/or present on admission to the hospital.

As additional hospitals agree to participate in this surveillance initiative, additional detail on aggregated data will be provided.

Glossary

Antibiotic	An antibiotic is a drug that is used to treat an infection in a person. There are many types of antibiotics available from pharmacies today, and most can only be obtained by means of a prescription from a physician.
Bacteria	One-celled organisms that can only be seen with a microscope. Everyone carries bacteria on and in their bodies, however, some bacteria can invade the body and cause infections in the person. Methicillin-resistant <i>Staphylococcus aureus</i> and <i>Clostridium difficile</i> are the names of two important bacteria that can cause serious illness in persons.
Bacterium	Word used to denote one bacteria.
<i>Clostridium difficile</i>	Bacterium that can cause diarrhea and intestinal problems in an individual. Persons who have other illnesses or conditions requiring prolonged use of antibiotics are at greatest risk of acquiring this bacterium and becoming ill from it.
Collaborative	Group of individuals or agencies working together for a common purpose or goal.
Healthcare-associated infection (HAI)	Infection that a person develops during hospitalization or during a patient's stay within another healthcare facility, and that was not present or incubating at the time of admission to the facility.
Mandatory Reporting	Required reporting or notification to an authorized agency or person.
Methicillin-resistant	Refers to the ability of some bacteria to withstand or resist treatment with use of the named antibiotic (methicillin), thus resulting in continuation of the infection.
Multidrug-resistant	Refers to bacteria that have become resistant to many types of antibiotics. This resistance limits the ability of the bacteria to be killed and thus a patient with one of these types of bacteria will be more difficult to treat, and may possibly die as a result of their infection.

Public Reporting	Refers to the release of hospital names and their infection rates to the public. In states with mandatory reporting laws, this is usually done by the state health department or other state-level agency.
Septicemia	Presence of disease-causing bacteria, or their toxins, in the blood.
<i>Staphylococcus aureus</i>	Type of bacterium that is commonly found on the skin of persons. If it gets into the body of a person through a cut, open wound, or through a medical procedure, the bacterium can easily cause an infection in a person with a weakened immune system.
Surgical site infection	Infection that occurs at the site of an operative procedure. Some of these infections are minor and only involve the skin or layers of tissue under the skin. Others may be deeper and more serious, even life-threatening.
Ventilator-associated pneumonia	Infection that occurs in the lungs of a patient who is, or has been, on a ventilator within 48 hours prior to onset of the infection.