Issue 13
Summer 2016
www.michigan.gov/hai

SHARP: Bringing HAIs into Focus

Surveillance for Healthcare-Associated and Resistant Pathogens Unit
Michigan Department of Health and Human Services

In this Issue

What's New with the SHARP Unit

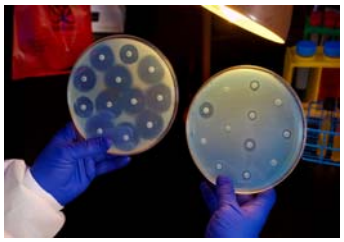
We would like to thank our summer University of Michigan School of Public Health Certificate in Healthcare Infection Prevention & Control (CHIP) intern, Kirtana Ramadugu, for all her work this summer. She was involved in many projects, including NHSN data analysis and report generation, NHSN CAUTI and CLABSI data validation, Infection Control Assessment and Response (ICAR) visits, and CRE Prevention Progress report generation. Good luck Kirtana!

Upcoming SHARP Presentations:

MSIPC Fall Conference, October 6-7
Allie: NHSN Updates and TAP Reports

Plasmid-mediated Colistin Resistance in U.S.

In early May 2016, the Department of Defense released a report detailing the discovery of the *mcr-1* gene in *E.coli* isolated from the urine of a 49-year old woman presenting with urinary tract infection (UTI) symptoms in Pennsylvania. The *mcr-1* gene is a plasmid-mediated gene which confers resistance to colistin, a broad-spectrum antibiotic which targets Gram-negative bacteria and the most effective tool available for treating multidrug-resistant organisms (MDROs). The full report can be found here: http://aac.asm.org/content/early/2016/05/25/AAC.01103-16.full.pdf+html.



The *mcr-1* gene itself is not a novel finding; it was first discovered in *E.coli* from meat, animal, and human samples in China in November 2015. Some reports speculate that plasmid-mediated colistin resistance existed in chickens as far back as the 1980s. However, this new case is noteworthy as it is the first time the gene has been isolated from a human sample in the United States. Even more noteworthy is that at the time of specimen collection, the patient in question had no history of travel in the previous 5 months.

Multiple media outlets have covered this report, characterizing its role in the emerging and urgent public health problem of antibiotic resistant bacteria. Thomas Frieden, director of the U.S. Centers for Disease Control and Prevention (CDC), said that this case "shows us that the end of the road isn't very far for antibiotics — that we may be in a situation where we have patients in our intensive care units, or patients getting urinary-tract infections for which we do not have antibiotics." Public health officials worry that the plasmid-mediated *mcr-1* gene will soon spread to other MDROs due to the high transmission rate of plasmids be-tween organisms. If colistin-resistance were added to already highly resistant CRE, op-tions for treatment will become further limited or eliminated.

Articles on this topic from the New York Times and Washington Post can be found here: http://www.nytimes.com/2016/05/27/health/infection-raises-specter-of-superbugs-resistant-to-all-antibiotics.html and here: https://www.washingtonpost.com/news/to-your-health/wp/2016/05/26/the-superbug-that-doctors-have-been-dreading-just-reached-the-u-s/, respectively.

Recent SHARP Investigation —

Burkholderia cepacia:

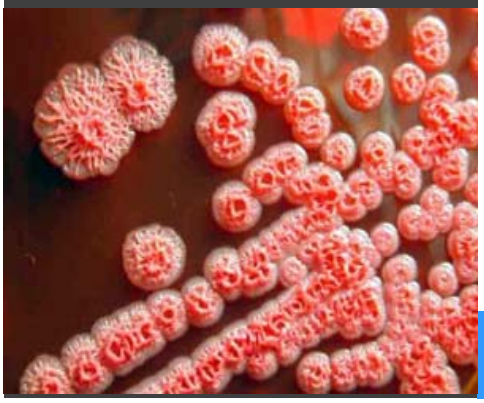
FDA and CDC continue to recommend that clinicians and patients not use *any* liquid docusate sodium product as a stool softener or for any other medical purpose. On July 16 FDA issued a voluntary recall of certain liquid docusate products. On August 9, this recall was broadened to all liquid products manufactured by PharmaTech and distributed by Rugby, Major, Bayshore, Metron, Centurion, or Virtus distributors. Ongoing updates are posted at: http://www.fda.gov/Drugs/DrugSafety/ucm511527.htm

Additionally, Sage Products is voluntarily initiating a nationwide recall of certain lots of Comfort Shield Barrier Cream Cloths. The full FDA alert can be found here: http://www.fda.gov/Safety/MedWatch/SafetyInformation/SafetyAlertsforHumanMedicalProducts/ucm514375.htm

Administration of a product with *B. cepacia* may cause serious infections in immunocompromised or hospitalized patients, as well as certain other patient groups.

The extent of this issues remains under investigation. To date, Michigan does not have any confirmed cases linked to this outbreak. We are working with CDC to investigate 14 suspect cases.

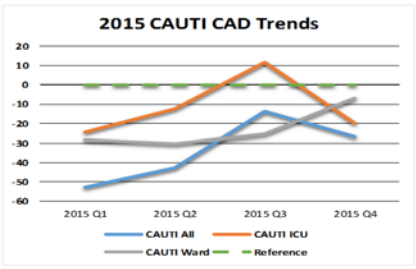
-Noreen Mollon,
MollonN@michigan.gov

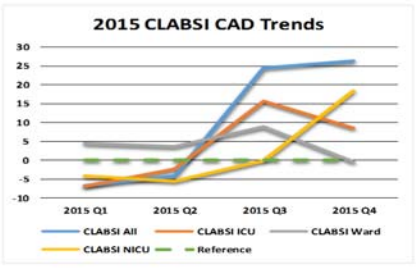


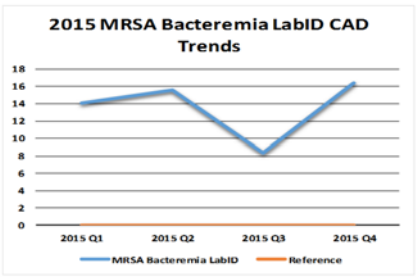
NHSN Surveillance

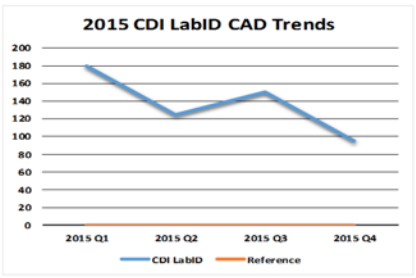
2015 Michigan Cumulative Attributable Difference (CAD) Trends

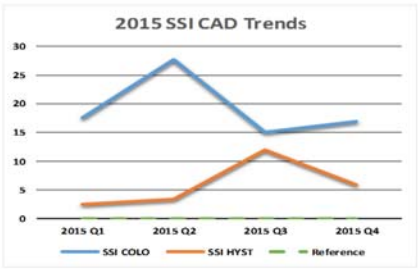
The CAD is the number of infections that must be prevented within a group, facility, or unit to achieve an HAI reduction goal. The CAD is calculated by subtracting a numerical prevention target from an observed number of HAIs. The prevention target is the product of the predicted number of HAIs and a standardized infection ratio goal (SIR_{goal}). The following graphs represent data from the facilities sharing data with the MDHHS SHARP Unit.











Currently, 105 facilities in Michigan voluntarily report data via NHSN to MDHHS SHARP. The SIR_{goal} used in these calculations are the HHS national goals set for 2013 (which have not been updated), available at https://health.gov/hcq/prevent-hai-measures.asp. The graphs display the quarterly, aggregate CAD for SHARP-participating hospitals in 2015. A reference line of 0 is available in each graph. CAD values greater than 0 represent the number of infections needed to prevent to reach the SIR_{goal}. CAD values less than 0 represent the number of infections prevented beyond the SIR_{goal}.

Calculate your own CAD!

CAD = observed – (predicted * SIR_{goal})

-Allison Murad, MuradA@michigan.gov

2016 NHSN Validation Project

Background and Goals: The SHARP unit is currently conducting an audit of surveillance practices and reporting of healthcare-associated infections through NHSN in multiple hospitals statewide. Facility participation in the audit is completely voluntary. MDHHS is using the standardized "CDC NHSN External Validation and Guidance Toolkit 2014" to complete the validation.

MDHHS SHARP ultimately wishes to ensure:

- Michigan facilities are accurately reporting NHSN events
- The impact of Michigan HAI prevention strategies can be better quantified

Progress to Date: Validation of central line-associated bloodstream infections (CLABSI) and catheter-associated urinary tract infections (CAUTI) began in April 2016. Participating facilities supplied MDHHS with line listings of all positive blood and urine cultures from all ICU wards reporting to NHSN in 2014. Positive records were randomly selected and the entire admission period was reviewed using the toolkit. Up to 60 records per infection type per facility were reviewed.

Total Records Reviewed to Date	**519**
CAUTI	279
CLABSI	240
Total Finalized Records	**185**
CAUTI	101
CLABSI	84
Total Problem Records Detected	**1**
CAUTI	0
CLABSI	1
Average Record Review Time	**8 min**
CAUTI Record Review Time	8 min
CLABSI Record Review Time	7 min
CAUTI Max Record Review Time	67 min
CLABSI Max Record Review Time	53 min

Over 519 records from five facilities have been fully validated to date, with 185 records from 2 facilities having been finalized in conjunction with facility staff. Of the 185 finalized records, only 1 blood infection (0.5%) was found that met the NHSN CLABSI definition, but was not reported.

Upcoming Work: Three additional facilities are preparing to be validated in the coming weeks. SHARP will reach out to the remaining facilities that expressed interest soon and begin scheduling their audits. SHARP is aiming to have at least 12 facilities fully validated by the conclusion of the validation in Winter 2016/17. A final aggregated report of the validation findings will be released at that time.

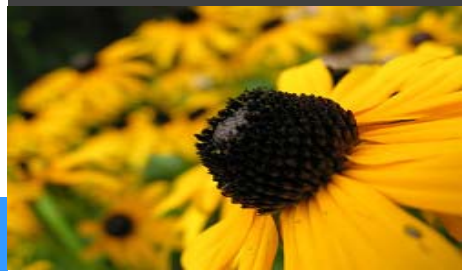
-Michael Balke, BalkeM@michigan.gov

Infection Control and Response (ICAR):

We are still seeking volunteers to participate in our Infection Control Assessment and Response (ICAR) program. All facility types are welcome to participate. We are particularly interested in outpatient clinics and long term care facilities that would be interested in allowing MDHHS SHARP to perform an evaluation of their infection control program. Assessments are conducted using tools provided by CDC. All facility types are encouraged to have on-site review of their IC programs, but the in-person visit is considered optional for LTC and acute care. These evaluations are not regulatory in nature, merely consultative. We will provide a summary report to each facility following each visit highlighting strengths and areas for opportunity. Facility identity and findings of the evaluation will not be shared with CDC nor other outside parties. Aggregate findings will be compiled statewide and nationally to direct training efforts.

Participation in these IC evaluations is completely voluntary. In coming years as we conduct additional evaluations, we may target specific facilities in areas with high rates of healthcare-associated infections (HAIs) in the community or at neighboring acute care facilities, facilities in areas with a high burden of Ebola or Special Pathogen travelers, or facilities with histories of outbreaks. Please contact Noreen Mollon (mollonn@michigan.gov) if your facility would like an ICAR evaluation.

-Noreen Mollon,
MollonN@michigan.gov



Events/Calendar

Please visit our SHARP Unit Calendar, found on the SHARP Unit homepage. If you would like to add an event to this calendar, please email: MDHHS-SHARP@michigan.gov

Helpful Links

www.michigan.gov/hai

www.mhakeystonecenter.org

www.mpro.org

www.mi-marr.org

www.msipc.org

www.apic.org

www.hhs.gov/ash/initiatives/hai/

www.hospitalcompare.hhs.gov

www.cdc.gov/nhsn

www.cdc.gov/HAI/prevent/prevention.html

www.cdc.gov/HAI/organisms/cre

www.cdc.gov/HAI/organisms/cdiff/Cdiff_infect.html

CRE Surveillance and Prevention Initiative

CRE Surveillance and Prevention Initiative

The CRE Surveillance and Prevention Initiative currently has 40 acute care, long-term acute care, and long-term care facilities participating across the state. We now have representation from facilities in all 8 Public Health Emergency Preparedness Regions. Facilities continue to receive monthly reports illustrating their CRE incidence rates and data for all facilities in the initiative. Prevention Progress Reports were recently distributed to Phase 2 facilities, highlighting their progress over the last 2 years. Prevention Progress Reports for Phase 1 facilities, highlighting 4 years of CRE prevention, will be distributed soon.

Regional Incidence Reports and Prevention Progress Reports

CRE Regional Incidence Reports (2015 Quarter 3, Quarter 4 and 2016 Quarter 1) were developed and available! Reports are distributed through various email groups and regional epidemiologists (for distribution at local Infection Prevention meetings). These reports are a way to communicate CRE incidence as well as novel carbapenemase activity around the state to individuals who may not participate in the initiative but are interested in learning more about our regional CRE activity. If you would like to receive this report, please contact Brenda.

CRE Confirmatory Testing — MDHHS Bureau of Laboratories expands capacity

The MDHHS Bureau of Laboratories continues to offer CRE confirmatory testing, and recently expanded molecular testing to include markers for KPC, NDM, VIM, and OXA-48 in *Enterobacteriaceae*, *Acinetobacter*, and *Pseudomonas aeruginosa*. For testing criteria and submissions guidance, please go to www.michigan.gov/mdhhs and go to Lab Services, A-Z Testing, and select CRE Confirmatory Testing.

Link to MDHHS Bureau of Laboratories A-Z Testing: http://www.michigan.gov/mdhhs/0,5885,7-339-71551_2945_5103-15179--,00.html#C

CRE Incidence in Michigan

575 inpatient cases (474 Phase 1, 86 Phase 2, and 15 Phase 3) have been reported since September 2012. The baseline rate for all facilities combined is 0.91 cases per 10,000 patient-days, and our intervention rate is 0.69 cases per 10,000 patient-days (*p-value* 0.001 — statistically significant). Since September 2012, participating facilities have prevented 225 infections of CRE (37 of those in LTACs).

-Brenda Brennan, BrennanB@michigan.gov

Jennie Finks DVM, MVPH
SHARP Unit Manager and HAI Coordinator, Michigan Department of Health and Human Services
333 S. Grand Ave., Third Floor
Lansing, Michigan 48913
Phone: (517) 284-4953
Fax: (517) 335-8263
E-mail: FinksJ@michigan.gov