

MRSA/CDI Prevention Initiative

Summary Report May 1, 2012 – April 30, 2013

**Surveillance for Healthcare-Associated & Resistant Pathogens (SHARP) Unit
Michigan Department of Community Health**

Issued: January 2014

The MRSA/CDI Prevention Initiative is funded by the Patient Protection and Affordable Care Act, Epidemiology and Laboratory Capacity for Infectious Diseases (ELC): Building and Strengthening Epidemiology, Laboratory and Health Information Systems Capacity in State and Local Health Departments Grant from the Centers for Disease Control and Prevention, Cooperative Agreement Number 3U50CI000895-02S2

Background

The Michigan Department of Community Health (MDCH) Surveillance for Healthcare-Associated and Resistant Pathogens (SHARP) Unit began a Methicillin-resistant *Staphylococcus aureus* (MRSA) and *Clostridium difficile* Infection (CDI) Prevention Initiative in July of 2011. Per the Communicable Disease Rules (R 325.171-3, 333.5111), MRSA and CDI should be reported by facilities or laboratories as an 'unusual occurrence' when three or more culture-confirmed, epidemiologically-linked cases occur; subsequent individual cases are not reportable.

The MRSA/CDI Prevention Initiative is a model to prevent and reduce the number of MRSA and CDI infections along the continuum of patients' and residents' healthcare services. This initiative is guided and supported by the MRSA/CDI Collaborative group. The Collaborative is comprised of healthcare professionals working in the fields of acute care, long term care, public health, and infection prevention and control. This collaborative group supports 13 acute care and 12 skilled nursing facilities throughout the state, and their interventions, as follows:

- Projects to integrate evidence-based best practices to reduce and eliminate the occurrence of MRSA and CDI among Michigan citizens
- Facility-specific action plans to improve MRSA and CDI infection prevention and control
- MRSA/CDI Prevention Initiative Coordinator site visits to all regions
- Quarterly conference calls to share best practices and engage in discussion
- Monthly submission of MRSA and CDI LabID event data
- Train the Trainer MRSA and CDI prevention education targeted for use by local public health and long term care health professionals
- Monthly facility-specific feedback reports

Participants

On January 6, 2012, invitations to join the MDCH SHARP MRSA/CDI Prevention Initiative were mailed to all licensed Michigan acute care hospitals and skilled nursing facilities. One hundred and eighty four hospitals received application packets and the MRSA/CDI evaluation/assessment tools. Additionally, 484 skilled nursing facility received application packets and infection prevention baseline assessment tools. The deadline to return packets was Friday, February 3, 2012. MDCH SHARP received 100 applications; all completed packets contained the "CDC Baseline Prevention Practices Assessment Tools for States Establishing HAI Prevention Collaborative Using ARRA Funds". The information from the assessment tools was analyzed and used to provide a clearer understanding of prevention and control measures being used in our state.

On February 14th, the MRSA/CDI Collaborative Committee selected 13 hospitals and 12 skilled nursing facilities to participate in the MRSA/CDI prevention initiative. Facilities were chosen from all eight Michigan Public Health Preparedness Regions, making it a truly state-wide initiative. Criteria for facility selection included acute care and skilled nursing facilities in the same community of care, burden of MRSA and CDI, and mix of urban/rural and large/small facilities. All facilities were required to designate a MRSA/CDI prevention initiative “Champion”. This champion serves as the primary liaison to the Prevention Initiative Coordinator and to facilitate communication and foster regional partnerships.

Time Frame

The MRSA/CDI Prevention Initiative spans 24 months. Baseline data collection began May 1, 2012, and ended October 31, 2012 (6 months). The intervention data collection period began November 1, 2012. Enrolled facilities will continue to report data until April 30, 2014.

Methods

MDCH partnered with the Michigan Society for Infection Prevention and Control (MSIPC) to award all selected facilities a scholarship certificate toward MSIPC-sponsored educational conferences and workshops.

A MRSA/CDI Prevention Initiative Kick Off Conference was held on Friday, April 20, 2012, at Lansing Community College West Campus. Over 110 participants attended this conference. Invited guests also included the Livingston County Demonstration Project, funded by the National Association of County and City Health Officials (NACCHO). Selected facilities were allowed to send 2-4 staff to this kick off. Champions from all selected facilities attended the conference. Topics and presentations included Implementing Safety and High Reliability in Infection Prevention, Champion Leadership, the Role of Environmental Cleaning and Disinfection in Preventing Healthcare-Associated Infections, Methicillin-Resistant *Staphylococcus aureus* 101, *Clostridium difficile* 101, Antimicrobial Stewardship, and a regional planning exercise at the end of the conference. The regional planning session divided the room into regional planning areas; champions and staff of selected facilities gathered to meet and discuss action plans with community health care partners. The action plans were turned in to the Prevention Initiative Coordinator. These plans are used to guide site visit discussions. Action plan progress is reviewed regularly throughout the initiative.

Data Use and Confidentiality Agreements were sent to all facilities for signature and returned to our office. On May 1st, 2012, all acute care facilities were required to begin entering MRSA and CDI laboratory-identified (LabID) events through the Centers for Disease Control and Prevention’s (CDC’s) National Health Safety Network (NHSN) on a monthly basis. Skilled nursing facilities submit data using a paper-based MRSA/CDI tool developed by the SHARP Unit. This form is faxed to the MRSA/CDI Prevention Initiative Data Analyst for each lab-confirmed case of MRSA and CDI identified at the facility. Both acute care and skilled nursing facilities are also required to submit denominator data, in the form of patient days, so MRSA and CDI rates can be calculated. MRSA and CDI LabID event data is collected

consistently and timely throughout the initiative period. The data analyst provides monthly reports to all facilities as well as incorporates this data into existing SHARP Unit quarterly newsletters.

The data gathered between May 1–October 31, 2012 serves as the baseline data for the initiative.

Figure 1. Methicillin-resistant *Staphylococcus aureus* (MRSA) Reporting Algorithm

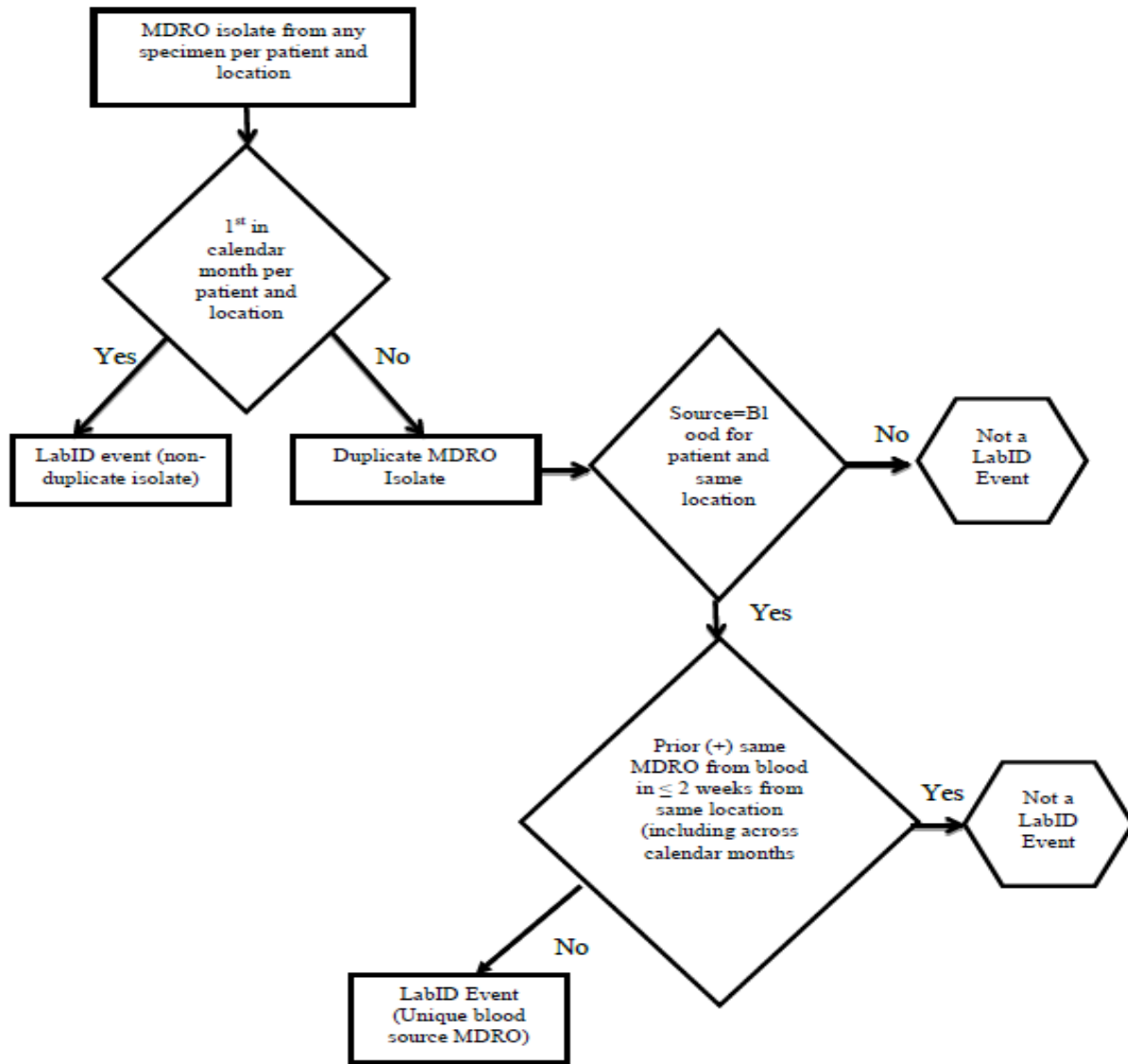
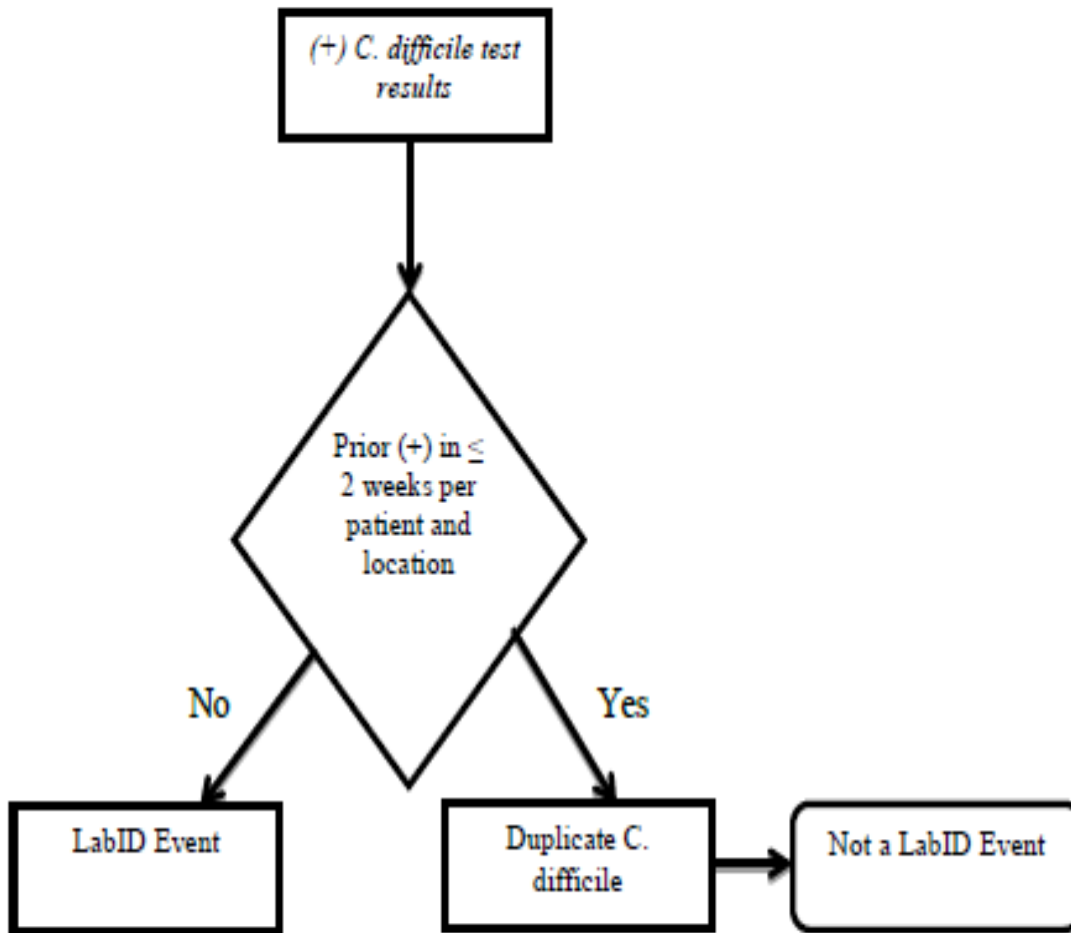


Figure 2. Clostridium difficile Infection (CDI) Reporting Algorithm



Results

The results summarize Patient Characteristics; Number of MRSA and CDI events By Facility Type; Rates; Onset Determination; and Infections by Cost. This report utilizes 12 months of data collected May 1, 2012–April 30, 2013 from 25 facilities (13 acute care facilities and 12 skilled nursing facilities). Within each results section, MRSA data is displayed first, followed by CDI data.

PATIENT CHARACTERISTICS

Table 1a. Patient characteristics for methicillin-resistant *Staphylococcus aureus* (MRSA) events reported from May 1, 2012–April 30, 2013 by acute care facilities (AC) and skilled nursing facilities (SNF)

Facility Type	Acute Care No. (%) events	Skilled Nursing No. (%) events	Total No. (%) events
Age (years)*			
<18	164 (12%)	0 (0%)	164 (12%)
18-40	236 (18%)	0 (0%)	236 (17%)
41-65	541 (40%)	4 (11%)	545 (39%)
>65	405 (30%)	33 (89%)	438 (32%)
Sex*			
Female	659 (49%)	20 (54%)	679 (49%)
Male	687 (51%)	17 (46%)	704 (51%)
Total events	1367	37	1404
*Only 1346 events (AC); 37 events (SNF) could be used due to missing data			

Table 1b. Patient characteristics for *Clostridium difficile* Infection (CDI) events reported from May 1, 2012–April 30, 2013 by acute care facilities (AC) and skilled nursing facilities (SNF)

Facility Type	Acute Care No. (%) events	Skilled Nursing No. (%) events	Total No. (%) events
Age (years)*			
<18	133 (8%)	0 (0%)	133 (7%)
18-40	211 (12%)	0 (0%)	211 (12%)
41-65	669 (38%)	0 (0%)	669 (37%)
>65	742 (42%)	41 (100%)	783 (44%)
Sex*			
Female	962 (55%)	27 (66%)	989 (55%)
Male	793 (45%)	15 (37%)	808 (45%)
Total events	1756	43	1799
*Only 1755 events (AC); 43 events (SNF) could be used due to missing data			

NUMBER OF METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS (MRSA) AND CLOSTRIDIUM DIFFICILE INFECTION (CDI) EVENTS BY FACILITY TYPE

Figure 3a. Number of methicillin-resistant Staphylococcus aureus (MRSA) LabID events reported per month stratified by acute care facilities (AC) and skilled nursing facilities (SNF)

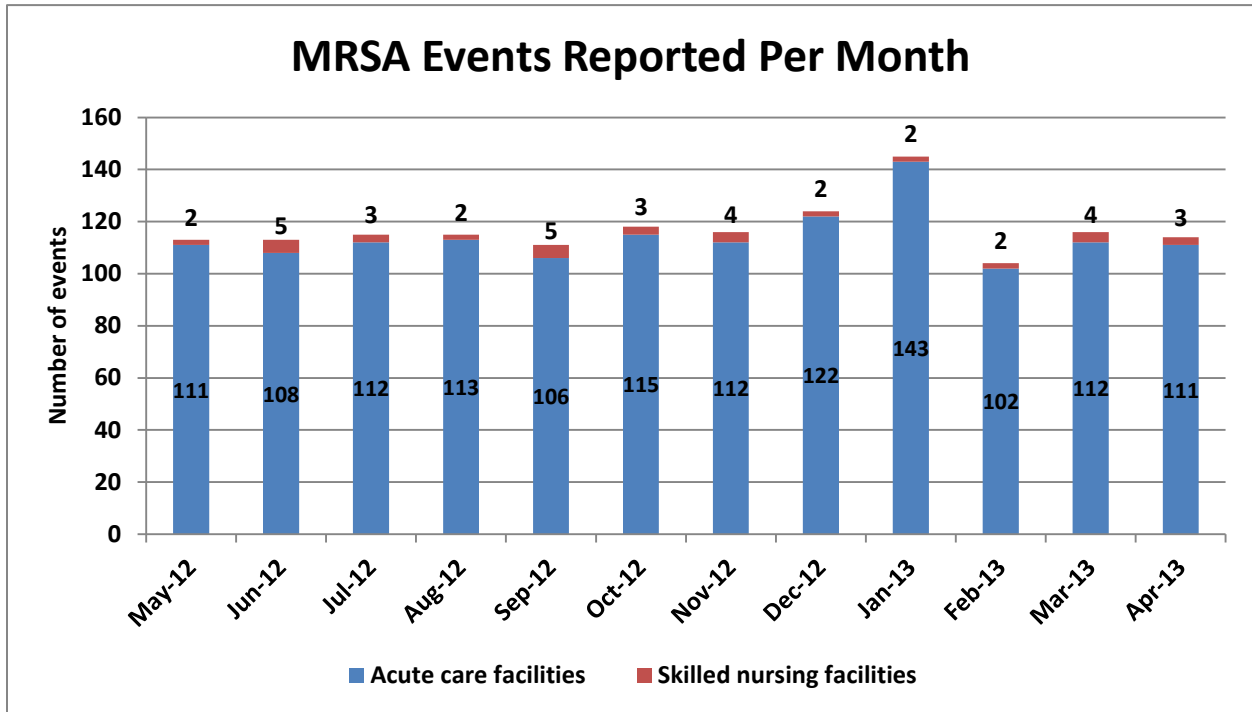
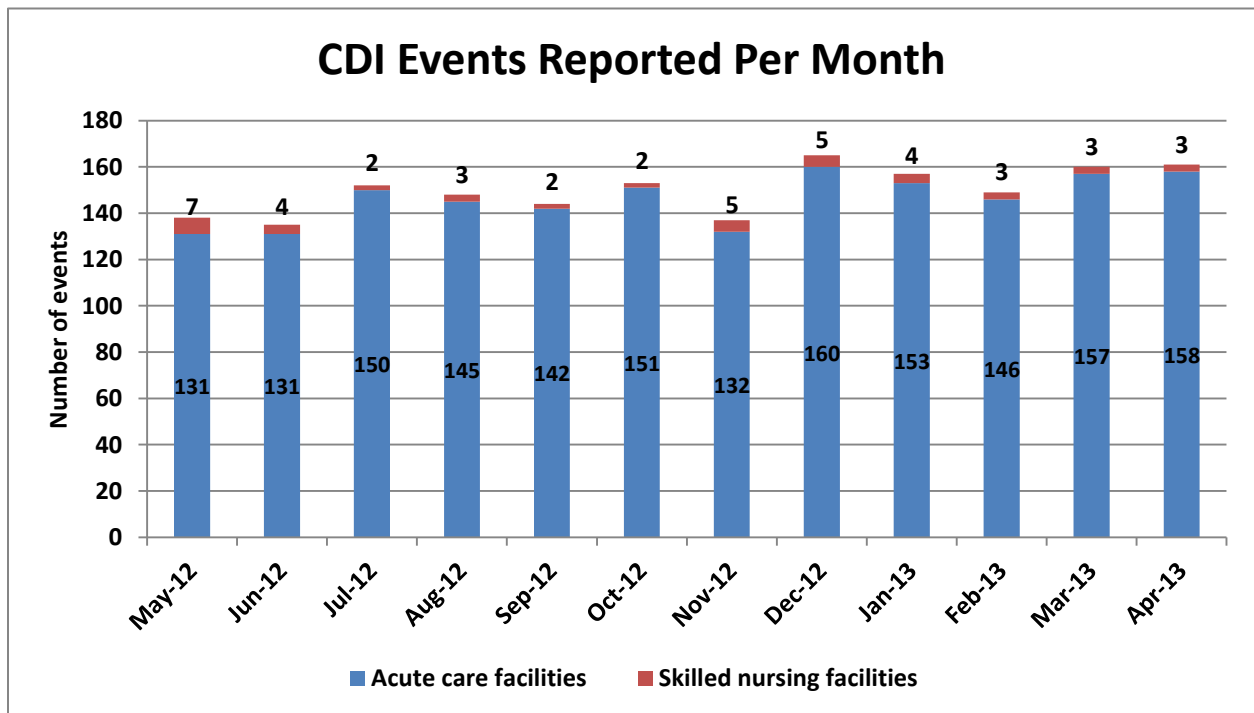


Figure 3b. Number of Clostridium difficile Infection (CDI) LabID events reported per month stratified by acute care facilities (AC) and skilled nursing facilities (SNF)



RATES

Table 2a. Number of methicillin-resistant *Staphylococcus aureus* (MRSA) and *Clostridium difficile* Infection (CDI) events, patient-days, and incidence rate (number of LabID Events per patient days) during baseline and intervention period for all facilities combined

Organism	Time period	Number of Events	Patient Days	Incidence Rate*	p-value [†]
MRSA	Baseline [‡]	685	739,023	0.93	0.0586
	Intervention [§]	719	730,125	0.98	
CDI	Baseline	870	764,323	11.38	0.0233
	Intervention	929	764,142	12.16	

* MRSA Incidence Rate per 1,000 patient days; CDI Incidence Rate per 10,000 patient days
[†]P-value indicates the level of significance when comparing the intervention period incidence rate to the baseline period rate, <0.05 is considered a statistically significant difference. **Bold font** indicates statistical significance.
[‡]Baseline period = May-October 2012
[§]Intervention period = November 2012-April 2013

Table 2b. Number of methicillin-resistant *Staphylococcus aureus* (MRSA) events, patient-days, and incidence rate (per 1,000 patient-days) per month during baseline and intervention period for acute care facilities (AC) and skilled nursing facilities (SNF)

Acute Care Facilities							
Baseline	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Overall
Number of Events	111	108	112	113	106	115	665
Patient-days	73,207	70,533	73,024	73,549	73,129	74,131	437,573
Incidence Rate	1.52	1.53	1.53	1.54	1.45	1.55	1.52
Intervention	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	Overall
Number of Events	112	122	143	102	112	111	702
Patient-days	71,252	72,751	78,023	70,792	75,698	74,023	442,539
Incidence Rate	1.57	1.66	1.83	1.44	1.48	1.50	1.59
p-value*	0.3732	0.1493	0.016	0.3163	0.4121	0.4688	0.1324
Skilled Nursing Facility							
Baseline	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Overall
Number of Events	2	5	3	2	5	3	20
Patient-days	50,200	49,038	50,649	50,661	49,246	51,656	301,450
Incidence Rate	0.04	0.10	0.06	0.04	0.10	0.06	0.07
Intervention	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	Overall
Number of Events	4	2	2	2	4	3	17
Patient-days	46,449	47,861	48,457	43,615	51,510	49,694	287,586
Incidence Rate	0.09	0.04	0.04	0.05	0.08	0.06	0.05
p-value	0.3711	0.3851	0.3769	0.4474	0.4455	0.581	0.2162

*P-value indicates the level of significance when comparing the intervention period monthly incidence rate to the overall baseline period rate, <0.05 is considered a statistically significant difference. **Bold font** indicates statistical significance.

Table 2c. Number of Clostridium difficile Infection (CDI) events, patient-days, and incidence rate (per 10,000 patient-days) per month during baseline and intervention period for acute care facilities (AC) and skilled nursing facilities (SNF)

Acute Care Facilities							
Baseline	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Overall
Number of Events	131	131	150	145	142	151	850
Patient-days	78,579	75,875	78,349	76,842	75,362	77,864	462,871
Incidence Rate	16.67	17.27	19.15	18.87	18.84	19.39	18.36
Intervention	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	Overall
Number of Events	132	160	153	146	157	158	906
Patient-days	76,497	77,892	82,189	75,200	82,782	78,996	473,556
Incidence Rate	17.26	20.54	18.62	19.41	18.97	20.00	19.13
p-value*	0.2529	0.0861	0.4439	0.2615	0.3537	0.1511	0.1119
Skilled Nursing Facility							
Baseline	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Overall
Number of Events	7	4	2	3	2	2	20
Patient-days	50,200	49,038	50,649	50,661	49,246	51,658	301,450
Incidence Rate	1.39	0.82	0.39	0.59	0.41	0.39	0.66
Intervention	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	Overall
Number of Events	5	5	4	3	3	3	23
Patient-days	46,715	47,861	48,457	43,615	51,510	49,694	287,586
Incidence Rate	1.07	1.04	0.83	0.69	0.58	0.60	0.72
p-value	0.2017	0.215	0.4008	0.5526	0.5545	0.581	0.2123

*P-value indicates the level of significance when comparing the intervention period monthly incidence rate to the overall baseline period rate, <0.05 is considered a statistically significant difference. **Bold font** indicates statistical significance.

Figure 4a. Methicillin-resistant Staphylococcus aureus (MRSA) incidence rate (number of MRSA LabID Events per 1,000 patient days) per month stratified by acute care facilities (AC), skilled nursing facilities (SNF) and all facilities combined (overall)

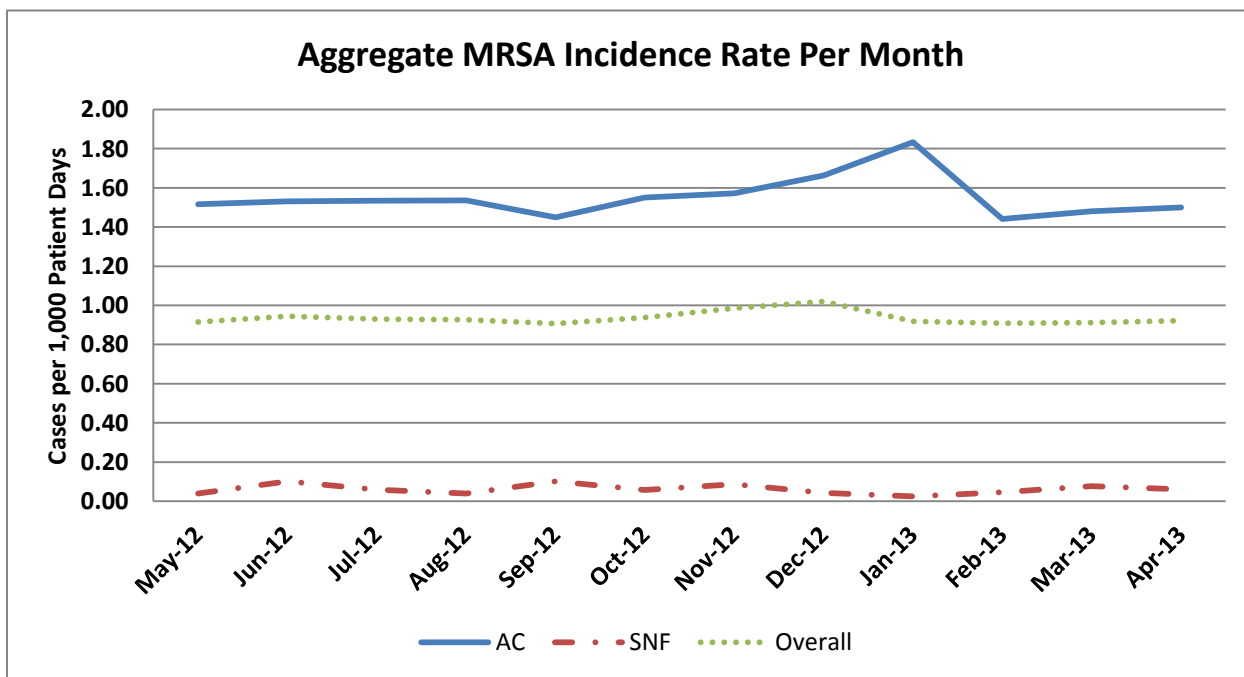


Figure 4b. Clostridium difficile Infection (CDI) incidence rate (number of CDI LabID Events per 10,000 patient days) per month stratified by acute care facilities (AC), skilled nursing facilities (SNF) and all facilities combined (overall)

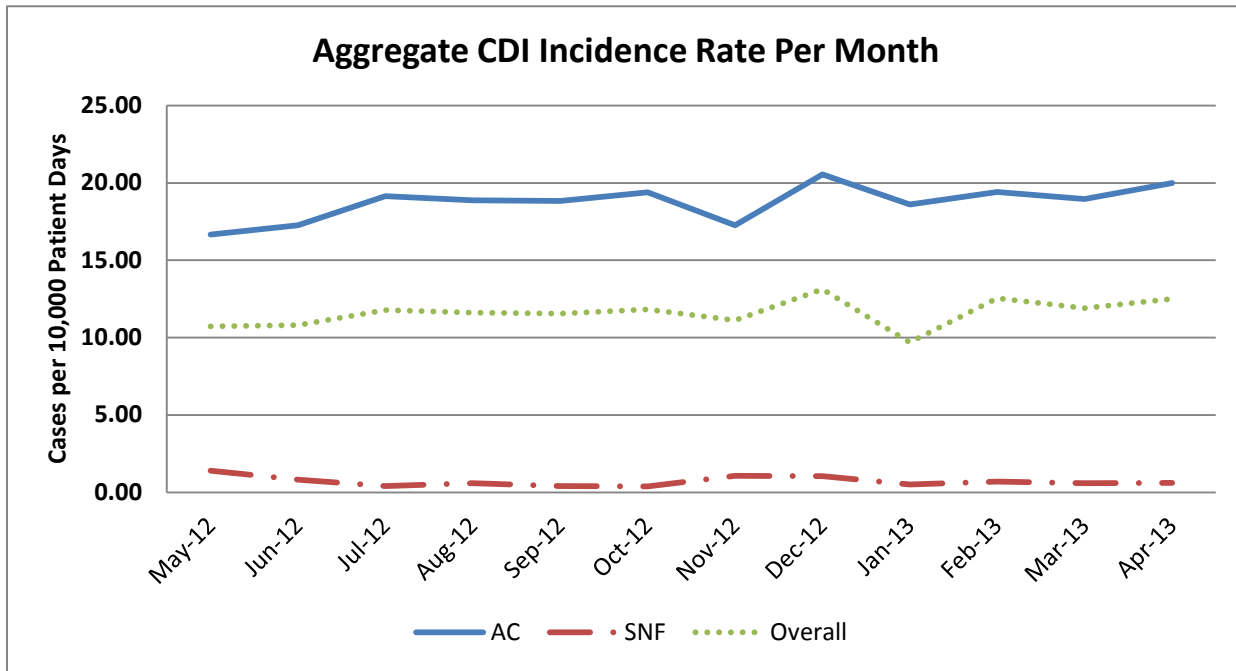


Table 3a. Number of facilities, (AC and SNF), patient-days, number of methicillin-resistant Staphylococcus aureus (MRSA) events and incidence rate (Per 1,000 patient-days) by geographic region.

Region	# facilities	Total # patient-days	# MRSA events (%)	Incidence rate
East	12	789,319	1013 (72%)	1.28
North	4	77,028	25 (2%)	0.32
South	5	200,800	308 (22%)	1.53
West	4	402,001	57 (4%)	0.14

East: Macomb, Oakland, Wayne, Washtenaw, St. Claire, and Monroe counties
North: Keweenaw, Houghton, Ontonagon, Gogebic, Baraga, Iron, Marquette, Dickinson, Alger, Menominee, Delta, Schoolcraft, Luce, Chippewa, Mackinac, Emmet, Cheboygan, Presque Isle, Charlevoix, Antrim, Otsego, Montmorency, Alpena, Kalkaska, Crawford, Roscommon, Missaukee, Wexford, Manistee, Benzie, Leelanau, and Grand Traverse counties
South: Eaton, Ingham, Livingston, Gratiot, Clinton, Shiawassee, Jackson, Lenawee, Allegan, Barry, Berrien, Van Buren, Cass, Kalamazoo, Calhoun, Branch, Hillsdale, and St. Joseph counties
West: Mason, Lake, Osceola, Clare, Oceana, Newaygo, Mecosta, Isabella, Muskegon, Ottawa, Kent, Ionia, and Montcalm counties

Table 3b. Number of facilities (AC and SNF), patient-days, number of Clostridium difficile Infection (CDI) events and incidence rate (Per 10,000 patient-days) by geographic region

Region	# facilities	Total # patient-days	# CDI events (%)	Incidence rate
East	12	887,280	1122 (62%)	12.65
North	4	77,345	41 (2%)	5.30
South	5	186,093	172 (10%)	9.24
West	4	37,4745	464 (26%)	12.38

East: Macomb, Oakland, Wayne, Washtenaw, St. Claire, and Monroe counties
North: Keweenaw, Houghton, Ontonagon, Gogebic, Baraga, Iron, Marquette, Dickinson, Alger, Menominee, Delta, Schoolcraft, Luce, Chippewa, Mackinac, Emmet, Cheboygan, Presque Isle, Charlevoix, Antrim, Otsego, Montmorency, Alpena, Kalkaska, Crawford, Roscommon, Missaukee, Wexford, Manistee, Benzie, Leelanau, and Grand Traverse counties
South: Eaton, Ingham, Livingston, Gratiot, Clinton, Shiawassee, Jackson, Lenawee, Allegan, Barry, Berrien, Van Buren, Cass, Kalamazoo, Calhoun, Branch, Hillsdale, and St. Joseph counties
West: Mason, Lake, Osceola, Clare, Oceana, Newaygo, Mecosta, Isabella, Muskegon, Ottawa, Kent, Ionia, and Montcalm counties

ONSET DETERMINATION

MRSA events were categorized as Community-Onset or Healthcare-Onset based upon the date admitted to facility and date the specimen was collected. Per the CDC NHSN Lab ID event definition, a **Community-Onset (CO)** event is one in which the positive specimen was collected as an outpatient or an inpatient ≤3 days after admission to the facility (i.e., days 1, 2, or 3 of admission). A **Healthcare-Onset (HO)** event is one in which the positive specimen was collected >3 days after admission to the facility (i.e., on or after day 4).

Figure 5a. Methicillin-resistant Staphylococcus aureus (MRSA) events stratified by onset type by month - Acute Care

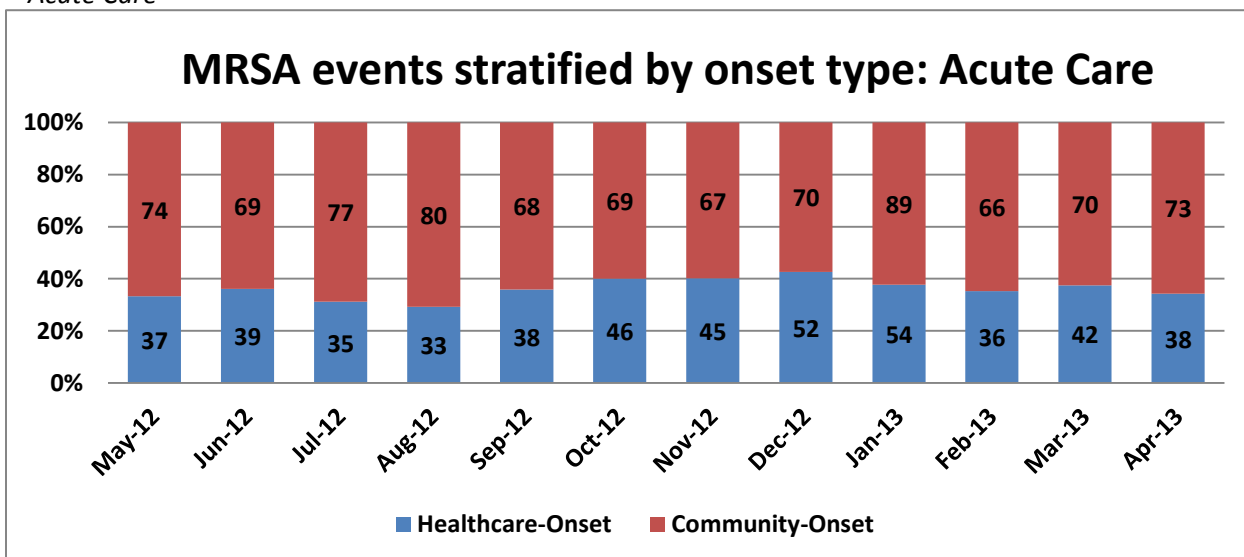
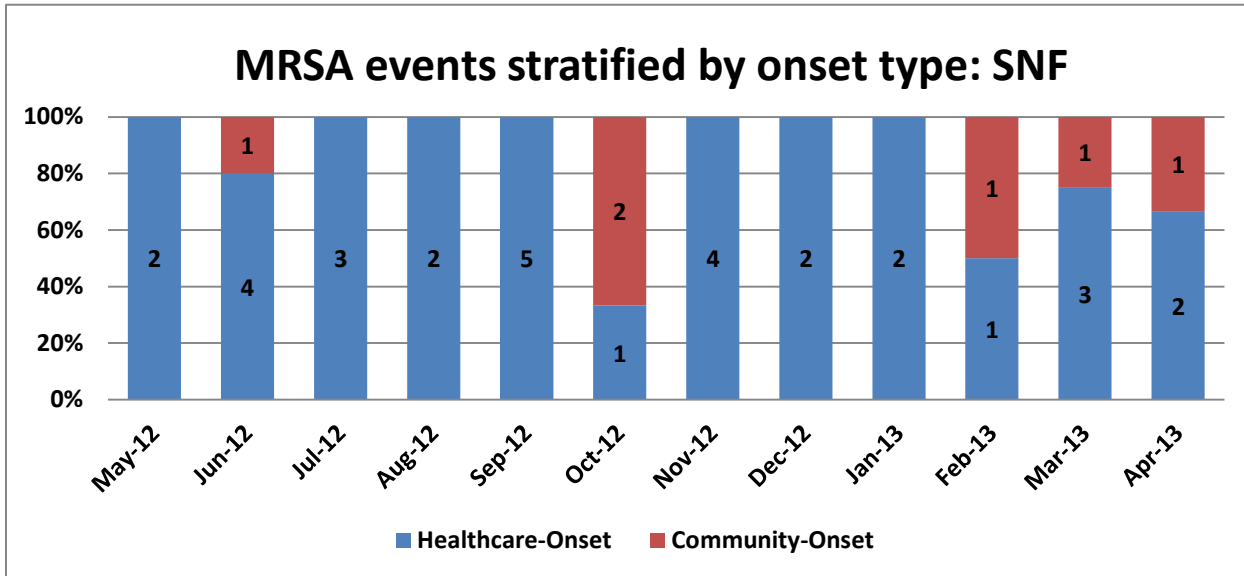


Figure 5b. Methicillin-resistant Staphylococcus aureus (MRSA) events stratified by onset type by month – skilled nursing facility (SNF)



Categorizing CDI events follow the same CDC NHSN Lab ID event definitions as MRSA with the addition of the Community Onset Healthcare Facility-Associated (CO-HCFA) classification for events which are CO LabID Events, and collected from a patient who was discharged from the facility ≤4 weeks prior to current date of stool specimen collection.

Figure 5c. Clostridium difficile Infection (CDI) events stratified by onset type by month - Acute Care

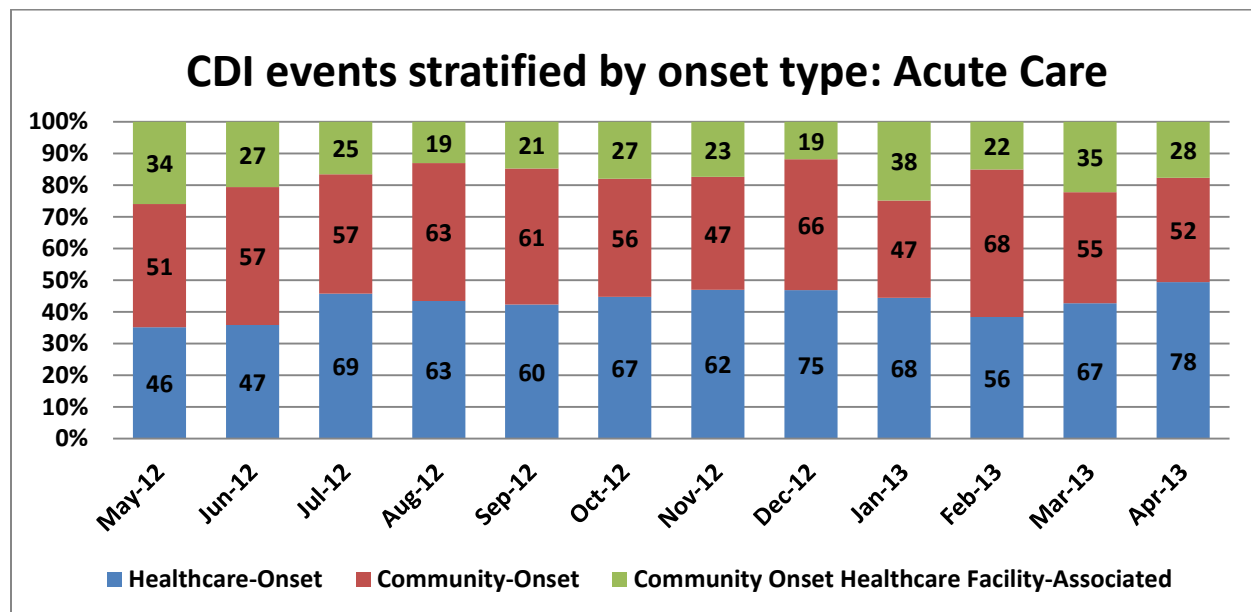
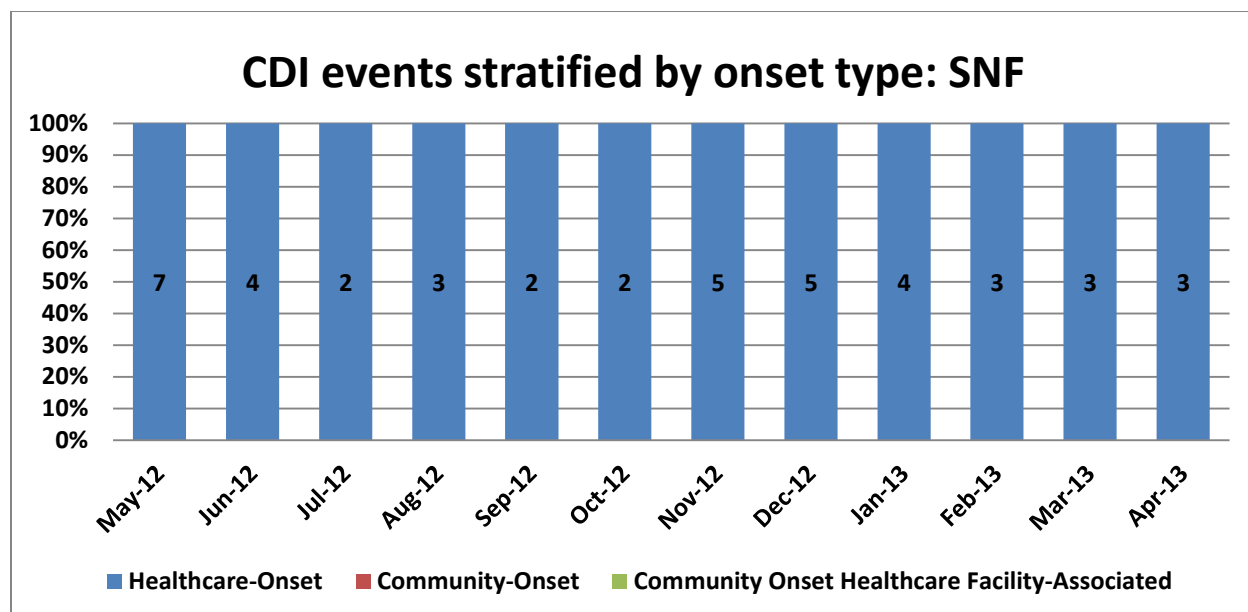


Figure 5d. Clostridium difficile Infection (CDI) events stratified by onset type by month – skilled nursing facility (SNF)



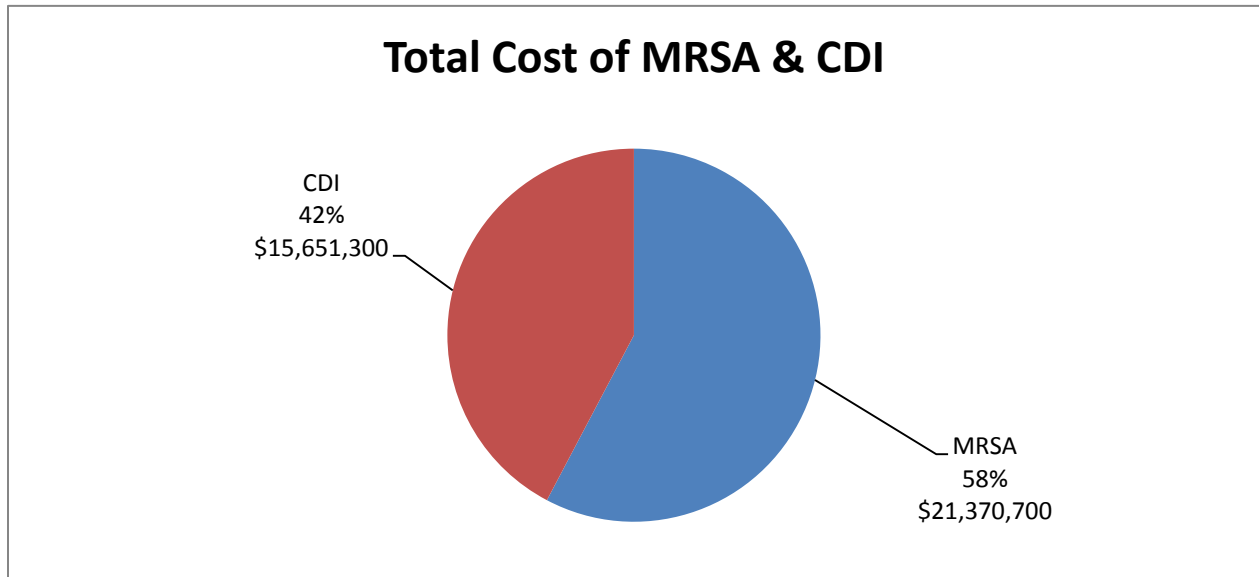
COST OF INFECTIONS

This is an estimation of the costs of MRSA and CDI based upon the International Classification of Diseases, Ninth Revision ICD-9 codes and the Agency for Healthcare Research and Quality (AHRQ) Healthcare Cost and Utilization Project (HCUP) database. For information on calculation methods, see www.ahrq.gov/data/hcup. MRSA events were categorized into 3 groups: Unspecified/Other; Pneumonia; and Septicemia.

Table 4. Use of ICD-9 Codes in determining the cost of each infection type

Healthcare -Associated Infection Type	ICD-9 Code	Cost, \$ (Mean)	Standard Error, \$
Clostridium difficile Infection (CDI)			
Intestinal infections due to C. diff	008.45	\$ 8,700	\$ 200
Methicillin-resistant Staphylococcus aureus (MRSA)			
Septicemia	038.12	\$ 25,800	\$ 1,200
Pneumonia	482.42	\$ 17,900	\$ 800
Other MRSA infections	041.12	\$ 9,100	\$ 1,200

Figure 6: The total cost of both, methicillin-resistant *Staphylococcus aureus* (MRSA) and *Clostridium difficile* Infection (CDI) for all facilities combined.



On Figures 7a and 7b below, the percentage of HO events is shown transposed on the overall cost of MRSA. The lighter bars represent the overall MRSA cost and the darker bars represent the Healthcare-Onset cost only.

Figure 7a. Acute Care Facilities: Cost of methicillin-resistant *Staphylococcus aureus* (MRSA) infections by type

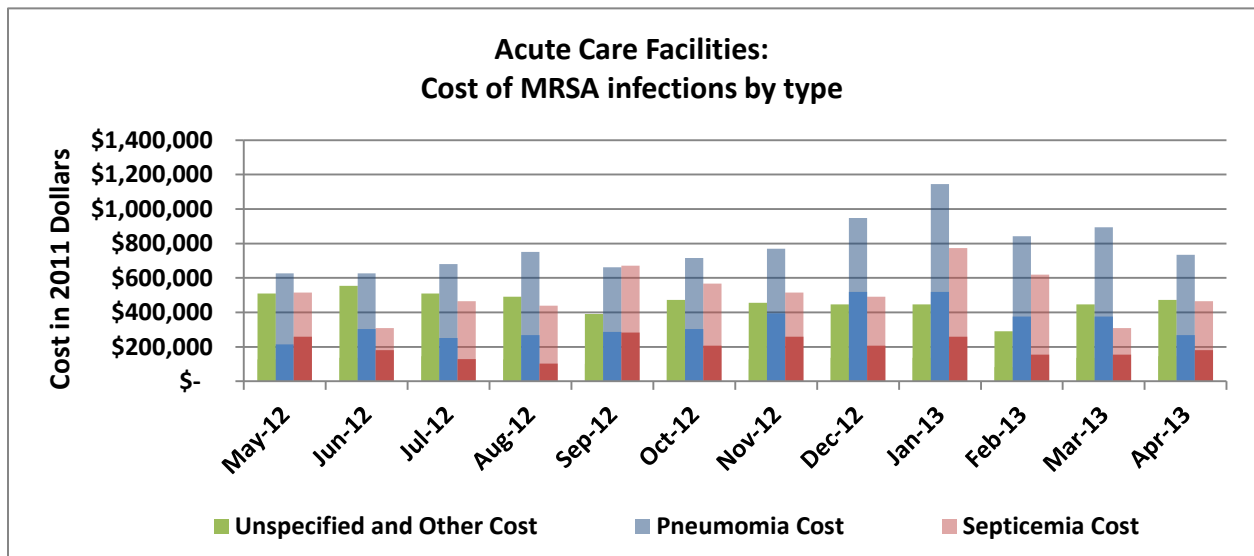


Figure 7b. Skilled Nursing Facilities: Cost of methicillin-resistant Staphylococcus aureus (MRSA) infections by type

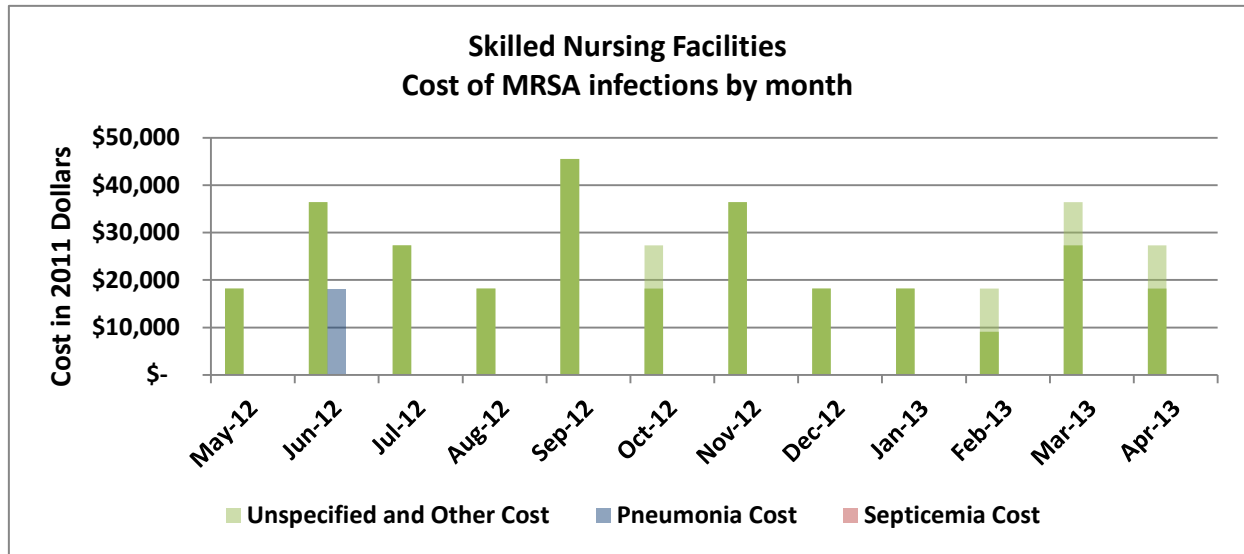


Figure 7c. Acute Care Facilities: Cost of Clostridium difficile Infection (CDI) infections by onset

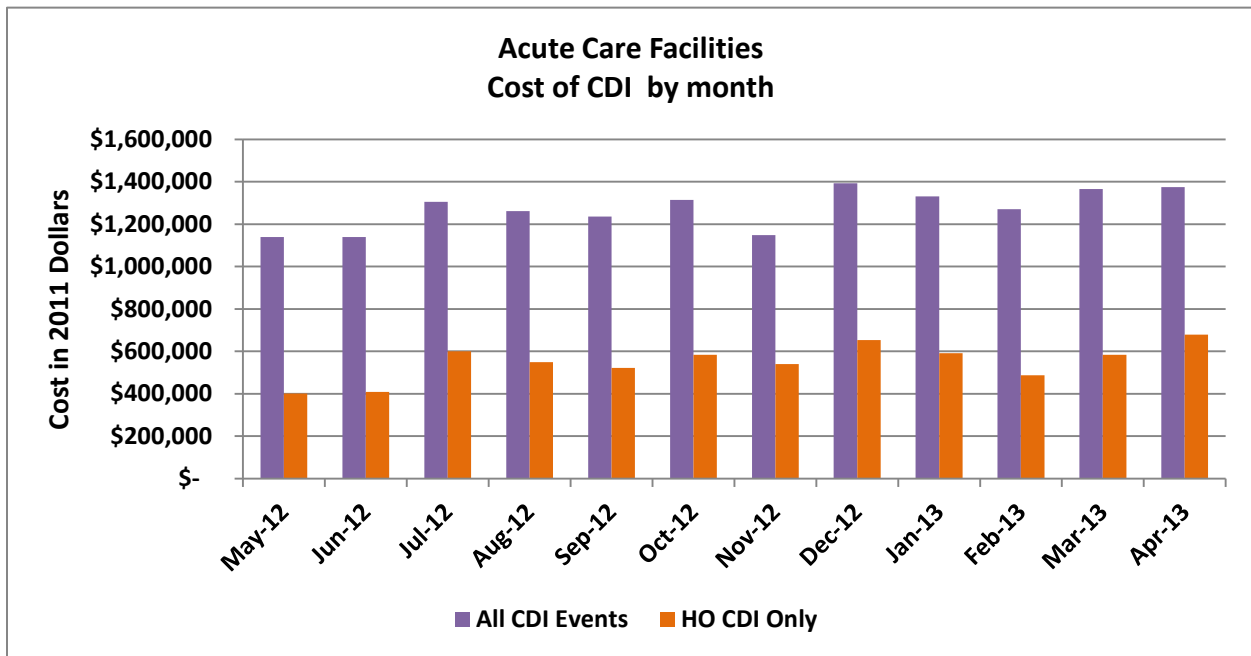
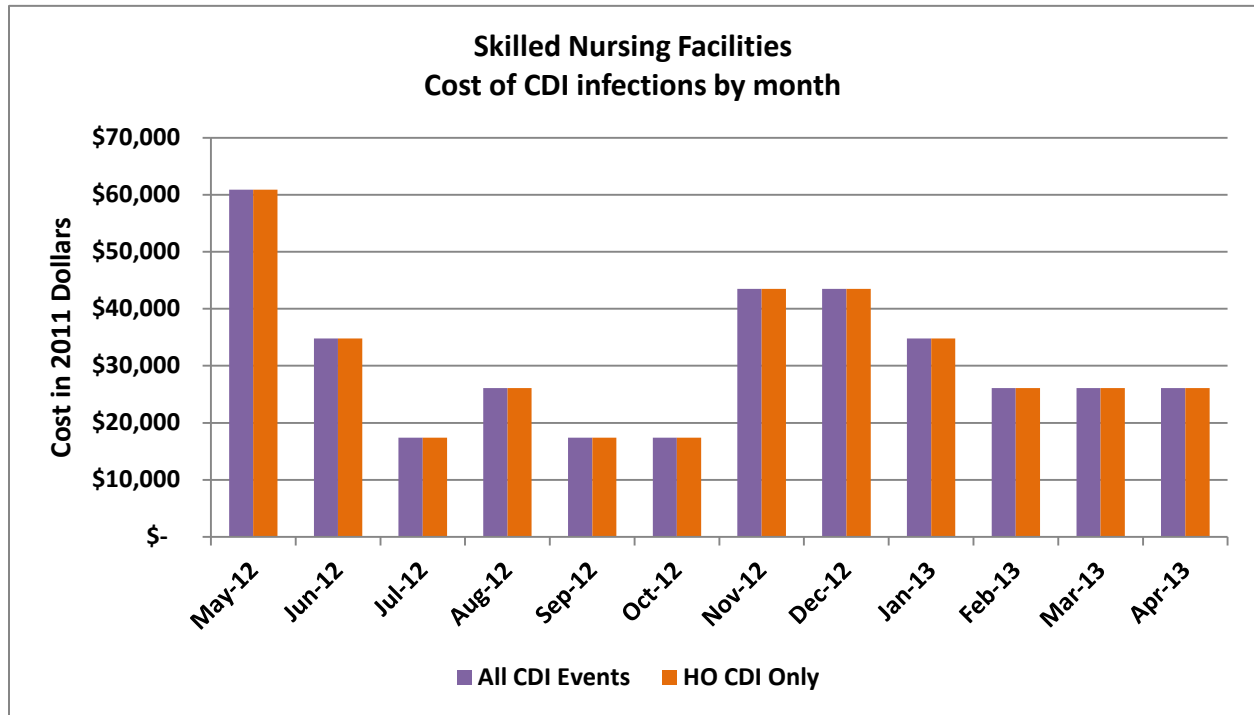


Figure 7d. Skilled Nursing Facilities: Cost of Clostridium difficile Infection (CDI) infections by onset



Education

As of November 1, 2013, 97% of the Michigan Society of Infection Prevention and Control (MSIPC) scholarships for conferences and basic infection control trainings were utilized.

A MRSA/CDI Train the Trainer education program was created at the request and under the direction of the Collaborative group. This education program is targeted learning for local public health professionals, and long term care professionals. It is posted on the www.michigan.gov/hai website.

Champion Assessment Survey

A 25 question survey for MRSA/CDI champion feedback was developed and emailed to all 25 facility champions plus a local public health demonstration project. There was an 88.5% response rate to this survey which investigated involvement, training and education, operation, communication and monitoring.

Champions indicated that staff and departments included in their prevention and education efforts were nursing, environmental services, nursing assistants, physician groups, and administration. Policy and procedures which had been updated since joining the initiative included healthcare worker education, cleaning and disinfection of patient/resident equipment, and contact precautions.

Respondents indicated that they most often work with acute care facilities, nursing homes, physician offices, home health agencies, and local public health departments in their communities.

Trainings focused on MRSA and CDI contact precautions, hand hygiene, cleaning, terminal cleaning, isolation, and gowning and gloving. When asked about the MRSA/CDI Train the Trainer education program and its use, 45.5% indicated that they had utilized the program, 36.4% didn't know the education program existed, 4.5% do not perform training, and 9.1% indicated that they had a better resource. We clearly recognize the need to market and promote more consistent and routine use of the MRSA/CDI Train the Trainer education product.

304 trainings and educational sessions were provided by our facilities since June 1, 2011. The most consistent methods of training were lecture, handouts, and power point presentations.

MRSA/CDI Feedback Reports were used an average of 7.5 times per respondent. These reports on initiative progress were shared with infection control committees, administration, medical directors, directors of nursing, and patient safety committees.

A majority of our participants, 61%, indicated that they have an antibiotic stewardship program, 39% do not.

When the facilities were asked to describe what they found to be the most beneficial aspect of participation in the MRSA/CDI Prevention Initiative they indicated information, collaboration, networking, sharing of information, resources, educational opportunities and data sharing. One of the strongest testimonial comments was: "This has driven home the fact that we are not competitors but colleagues, and our inter-connectivity can serve to better our practices".

Summary

This report summarizes actions and data collected as part of a statewide MRSA/CDI Prevention Initiative. Twenty-five facilities voluntarily report MRSA and CDI events to MDCH. Thirteen acute care facilities reported using NHSN, and the 12 skilled nursing facilities used a paper form of the NHSN reporting form. We retained 24 of the original selected sites. We recruited 1 new, and absorbed 1 site that was originally an alternate choice in selection, but they consistently and routinely provided us data reports so we included them in the initiative.

Interestingly, the rates of MRSA and CDI were higher during the intervention time period than baseline (see Tables 2a and 2b). This may be a result of improved awareness and reporting by the facilities. However, when we look at incidence rates by facility type, there was not a statistical difference between the baseline and intervention periods

Although some differences in rate by region are evident (see Tables 3a and 3b), we suspect that these differences are largely due to population density and variances in access to care. The counties on the east side of state are population dense areas, with a high number of healthcare facilities across the region in an urban area. The north, south, and west regions of the state have lower numbers of healthcare facilities and lower density of residents residing in those counties. The southern region is a combination of urban and rural areas showing an incidence rate that is higher than the most urban, east region.

MRSA Data

In total, 1404 events over 1,469,148 patient-days were reported, resulting in an incidence rate of 0.95 (per 1,000 patient-days). On average, 114 events from acute care facilities and 3 events from skilled nursing facilities which met the MRSA surveillance definition were reported per month. Seventy percent of the total cases reported occurred in patients over the age of 41 years. Sixty-four percent of MRSA LabID events were categorized as Community-Onset (CO). The highest number of events were reported in the East region (12 facilities, 789,319 patient-days, 1013 events, and incidence rate 1.28 events per 1,000 patient days). However, the highest incidence rate was reported from the South region (5 facilities, 200,800 patient-days, 308 events, and incidence rate 1.53 events per 1,000 patient days). Respiratory MRSA infection had the highest associated cost at \$9,415,400 out of the total MRSA cost of \$21,370,700 among participating facilities.

CDI Data

In total, 1799 CDI LabID events over 1,525,463 patient-days were reported, resulting in an incidence rate of 11.79 (per 10,000 patient-days). On average, 146 events from acute care facilities and 4 events from skilled nursing facilities which met the CDI surveillance definition were reported per month. Eighty-one percent of the total cases reported occurred in patients over the age of 41 years. Thirty-eight percent of CDI LabID events were categorized as Community-Onset (CO) and eighteen percent as Community Onset Healthcare-facility Associated (CO-HCFA). The highest number of events was reported in the East region (12 facilities, 887,280 patient-days, 1122 events, and incidence rate 12.65 events per 10,000 patient days). However, the highest incidence rate was reported from the West region (4 facilities, 374,745 patient-days, 464 events, and incidence rate 12.38 events per 10,000 patient days). The total estimated cost of CDI among participating facilities during the first year of the initiative was \$6,968,700.

Next Steps

Our data indicates that we still have much work to do to accomplish our goal of reducing MRSA and CDI. We have identified the following possible reasons our facilities did not show more improvement and we will adjust our strategy to address these issues:

- Our facilities self-selected their interventions to reduce MRSA and CDI. All selected facilities submitted individual and customized action plans. Most facilities were already high performing in regard to infection prevention and control systems. Each action plan was individual to the facility by design, keeping in mind that facilities had varying needs, resources, staff, and support.
- We are concerned about the high number of community onset MRSA and CDI being reported. More education and health literacy at the local public health and community level needs to be done.
- The high turn-over of staff serving as the MRSA/CDI Champion hindered the advancement of the facility action plan in some sites. Often times, the new person designated to carry through with the prevention initiative was unfamiliar with the role of a champion and our expectations for

them to implement the action plan items. Most times, they believed their only responsibility was to submit monthly reports.

- Many champions reported that it took several months to plan, organize, and implement their action plan. It is possible that the relatively short period for facilities to implement their action plans did not allow sufficient time for follow up to measure the impact of their plans.

We plan to move forward with some new strategies and ideas to reduce MRSA and CDI, and continue our work with facility champions. We will add new facilities to our initiative. We will continue to allow self-selected action plans by facilities. We are very cognizant of the limited resources present in many facilities. Further, participants have indicated that they appreciate the flexibility and control they have over action plans. They feel empowered to provide an action plan that is designed around their unique size, location, and community resources. Currently enrolled facilities will be offered continuation with our project. New action plan templates will be sent to all facilities, which must select a new intervention. All facilities will be encouraged to include a community education component in their new action plans.

For uniformity of data submission we will also encourage all facilities to utilize NHSN for electronic reporting. Skilled nursing facilities will be supported by training and assistance with the NHSN Long Term Care Component.

The MRSA/CDI Collaborative will continue to provide input, guidance, and support for the prevention initiative. The MRSA/CDI Prevention Initiative will continue to receive monthly data reports, prepare and coordinate quarterly champion conference calls, provide all participating facilities monthly feedback reports as well as a quarterly, special edition cost analysis report. We will continue our commitment to provide support, education, and guidance so that participating facilities can move forward to reduce the number patients and residents in their communities harmed by MRSA and CDI.

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