

Antimicrobial Resistance Surveillance for Human Health in Michigan

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Antimicrobial Resistance Surveillance Data Sources at MDHHS

- Mandatory Public Health Communicable Disease Reporting
- Voluntary Reporting Initiatives and Isolate Submission

Mandatory Public Health Communicable Disease Reporting

Reportable Conditions in Michigan

- Reporting is required by Michigan law
 - Michigan Public Health Act No. 368
Communicable Disease Rules: R 325.171-3, 333.5111
- 80+ conditions/organisms
- Plus the unusual occurrence, outbreak, or epidemic of any disease, condition, or healthcare-associated infection
- Some conditions/organisms require an isolate or specimen submission to MDHHS Bureau of Laboratories
- Reports can be made using the web-based Michigan Disease Surveillance System (MDSS)

2019 REPORTABLE DISEASES IN MICHIGAN – BY CONDITION

A Guide for Physicians, Health Care Providers and Laboratories

Report the following conditions to the Michigan Disease Surveillance System (MDSS) or local health department (see reverse) within 24 hours (unless otherwise noted) if the agent is identified by clinical or laboratory diagnosis.

Report the unusual occurrence, outbreak or epidemic of any disease or condition, including healthcare-associated infections.

<p>Acute flaccid myelitis (1)</p> <p>Anaplasmosis (<i>Anaplasma phagocytophilum</i>)</p> <p>Anthrax (<i>Bacillus anthracis</i> and <i>B. cereus</i> serovar anthracis) (4)</p> <p>Arboviral encephalitides, neuro- and non-neuroinvasive: Chikungunya, Eastern Equine, Jamestown Canyon, La Crosse, Powassan, St. Louis, West Nile, Western Equine, Zika (6)</p> <p>Babesiosis (<i>Babesia microti</i>)</p> <p>Blastomycosis (<i>Blastomyces dermatitidis</i>)</p> <p>Botulism (<i>Clostridium botulinum</i>) (4)</p> <p>Brucellosis (<i>Brucella</i> species) (4)</p> <p>Campylobacteriosis (<i>Campylobacter</i> species)</p> <p>Candidiasis (<i>Candida auris</i>) (4)</p> <p>Carbapenemase Producing – Carbapenem Resistant Enterobacteriaceae (CP-CRE): <i>Klebsiella</i> spp., <i>Enterobacter</i> spp., and <i>Escherichia coli</i> (5)</p> <p>Chancroid (<i>Haemophilus ducreyi</i>)</p> <p>Chickenpox / Varicella (<i>Varicella-zoster virus</i>) (6)</p> <p>Chlamydial infections (including trachoma, genital infections, LGV) (<i>Chlamydia trachomatis</i>) (3, 6)</p> <p>Cholera (<i>Vibrio cholera</i>) (4)</p> <p>Coccidioidomycosis (<i>Coccidioides immitis</i>)</p> <p>Cryptosporidiosis (<i>Cryptosporidium</i> species)</p> <p>Cyclosporiasis (<i>Cyclospora</i> species) (5)</p> <p>Dengue Fever (<i>Dengue virus</i>)</p> <p>Diphtheria (<i>Corynebacterium diphtheriae</i>) (5)</p> <p>Ehrlichiosis (<i>Ehrlichia</i> species)</p> <p>Encephalitis, viral or unspecified</p> <p><i>Escherichia coli</i>, O157:H7 and all other Shiga toxin positive serotypes (5)</p> <p>Giardiasis (<i>Giardia</i> species)</p> <p>Glanders (<i>Burkholderia mallei</i>) (4)</p> <p>Gonorrhoea (<i>Neisseria gonorrhoeae</i>) (3, 6)</p> <p>Guillain-Barre Syndrome (1)</p> <p><i>Haemophilus influenzae</i>, sterile sites only- submit isolates for serotyping for patients < 15 years of age (5)</p> <p>Hantavirus</p> <p>Hemolytic Uremic Syndrome (HUS)</p> <p>Hemorrhagic Fever Viruses (4)</p> <p>Hepatitis A virus (Anti-HAV IgM, HAV genotype)</p> <p>Hepatitis B virus (HBsAg, HBeAg, anti-HBc IgM, HBV NAAT, HBV genotype; report all HBsAg and anti-HBs (positive, negative, indeterminate) for children ≤ 5 years of age) (6)</p> <p>Hepatitis C virus (all HCV test results including positive and negative antibody, RNA, and genotype tests) (6)</p> <p>Histoplasmosis (<i>Histoplasma capsulatum</i>)</p> <p>HIV (tests including reactive immunoassays (e.g., Ab/Ag, TD1/TD2, WB, EIA, IA), detection tests (e.g., VL NAAT, p24, genotypes), CD4 counts/percents, and all tests related to perinatal exposures) (2,6)</p> <p>Influenza virus (weekly aggregate counts) Pediatric influenza mortality, report individual cases (5) Novel influenza viruses, report individual cases (5,6)</p> <p>Kawasaki Disease (1)</p> <p>Legionellosis (<i>Legionella</i> species) (5)</p> <p>Leprosy or Hansen's Disease (<i>Mycobacterium leprae</i>)</p> <p>Leptospirosis (<i>Leptospira</i> species)</p>	<p>Listeriosis (<i>Listeria monocytogenes</i>) (5,6)</p> <p>Lyme Disease (<i>Borrelia burgdorferi</i>)</p> <p>Malaria (<i>Plasmodium</i> species)</p> <p>Measles (<i>Measles/Rubeola virus</i>)</p> <p>Melioidosis (<i>Burkholderia pseudomallei</i>) (4)</p> <p>Meningitis: bacterial, viral, fungal, parasitic and amebic</p> <p>Meningococcal Disease (<i>Neisseria meningitidis</i>, sterile sites) (5)</p> <p>Middle East Respiratory Syndrome (MERS-CoV) (5)</p> <p>Mumps (Mumps virus)</p> <p>Orthopox viruses, including: Smallpox, Monkeypox (4)</p> <p>Pertussis (<i>Bordetella pertussis</i>)</p> <p>Plague (<i>Yersinia pestis</i>) (4)</p> <p>Polio (Poliovirus)</p> <p>Prion disease, including CJD</p> <p>Psittacosis (<i>Chlamydophila psittaci</i>)</p> <p>Q Fever (<i>Coxiella burnetii</i>) (4)</p> <p>Rabies: (<i>Rabies virus</i>) (4)</p> <p>Rabies: potential exposure and post exposure prophylaxis (PEP)</p> <p>Rubella (<i>Rubella virus</i>) (6)</p> <p>Salmonellosis (<i>Salmonella</i> species) (5)</p> <p>Severe Acute Respiratory Syndrome (SARS) (5)</p> <p>Shigellosis (<i>Shigella</i> species) (5)</p> <p>Spotted Fever (<i>Rickettsia</i> species)</p> <p><i>Staphylococcus aureus</i>, vancomycin intermediate/resistant (VISA) (5)/VRSA (4))</p> <p><i>Streptococcus pneumoniae</i>, sterile sites</p> <p><i>Streptococcus pyogenes</i>, group A, sterile sites, including Streptococcal Toxic Shock Syndrome (STSS)</p> <p>Syphilis (<i>Treponema pallidum</i>) (6)</p> <p>Tetanus (<i>Clostridium tetani</i>)</p> <p>Toxic Shock Syndrome (non-streptococcal) (1)</p> <p>Trichinellosis (<i>Trichinella spiralis</i>)</p> <p>Tuberculosis (<i>Mycobacterium tuberculosis</i> complex); report preliminary and final rapid test and culture results (4)</p> <p>Tularemia (<i>Francisella tularensis</i>) (4)</p> <p>Typhoid Fever (<i>Salmonella typhi</i>) and Paratyphoid Fever (serotypes Paratyphi A, Paratyphi B (tartrate negative), and Paratyphi C) (5)</p> <p>Vibriosis (Non-cholera vibrio species) (5)</p> <p>Yellow Fever (Yellow Fever virus)</p> <p>Yersiniosis (<i>Yersinia enterocolitica</i>)</p>
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LEGEND

(1) Reporting within 3 days is required.

(2) Reporting within 7 days is required.

(3) Sexually transmitted infection for which expedited partner therapy is authorized. See www.michigan.gov/hivstd for details.

(4) A laboratory shall immediately submit suspect or confirmed isolates, subcultures, or specimens from the patient being tested to the MDHHS Lansing laboratory.

(5) Isolate requested. *Entero*: If an isolate is not available from non-culture based testing, the positive broth and/or stool in transport medium must be submitted to the MDHHS Lansing laboratory. *Respiratory*: Submit specimens, if available.

(6) Report pregnancy status, if available.

Blue Bold Text = Category A bioterrorism or select agent, notify the MDHHS Laboratory immediately: (517) 335-8063

Antimicrobial Resistant Reportable Conditions

- Vancomycin Intermediate/Resistant *Staphylococcus aureus* (VISA/VRSA)
- Carbapenem-producing, carbapenem-resistant *Enterobacteriaceae* (CP-CRE)
- *Candida auris*
- Unusual occurrence, outbreak, or epidemic

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Report the following conditions to the Michigan Disease Surveillance System (MDSS) or local health department (see reverse) within 24 hours (unless otherwise noted) if the agent is identified by clinical or laboratory diagnosis.

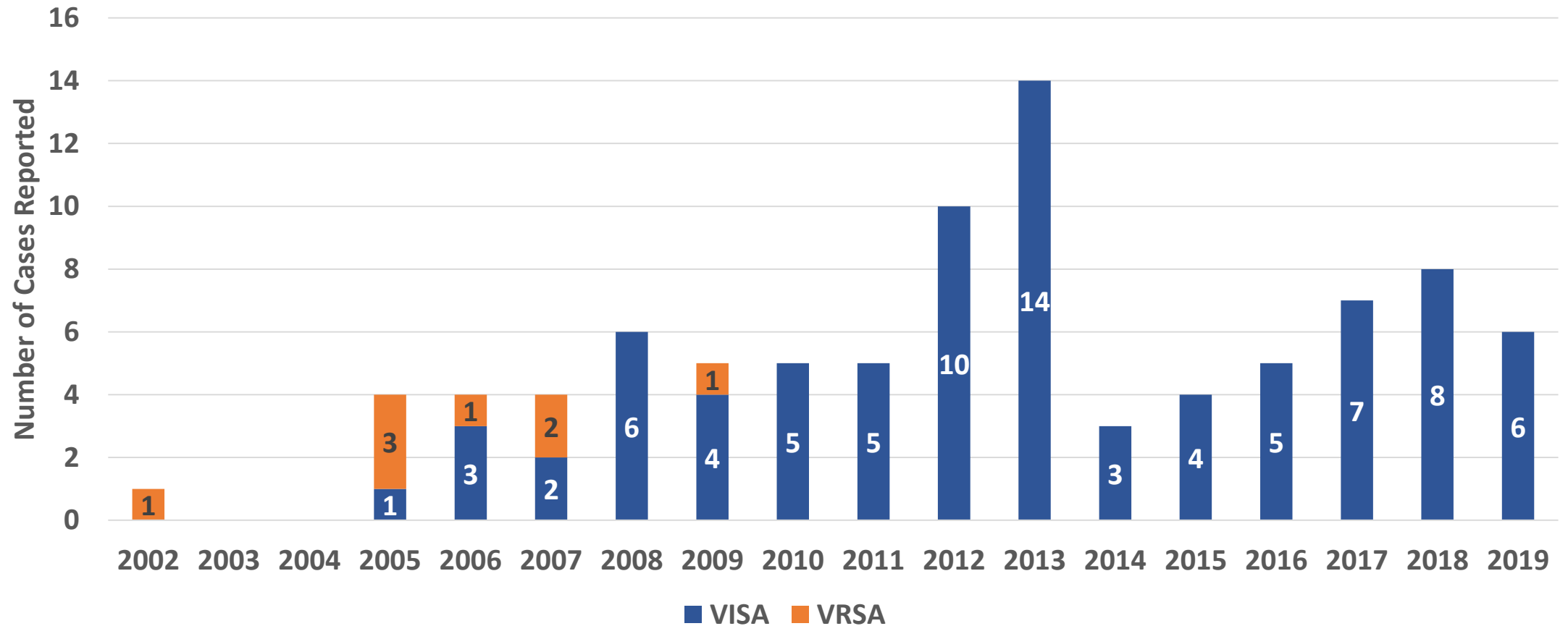
Report the unusual occurrence, outbreak or epidemic of any disease or condition, including healthcare-associated infections.

Acute flaccid myelitis (1)	Listeriosis (<i>Listeria monocytogenes</i>) (5,6)
Anaplasmosis (<i>Anaplasma phagocytophilum</i>)	Lyme Disease (<i>Borrelia burgdorferi</i>)
Anthrax (<i>Bacillus anthracis</i> and <i>B. cereus</i> serovar anthracis) (4)	Malaria (<i>Plasmodium</i> species)
Arboviral encephalitides, neuro- and non-neuroinvasive:	Measles (<i>Measles/Rubeola virus</i>)
Chikungunya, Eastern Equine, Jamestown Canyon, La Crosse, Powassan, St. Louis, West Nile, Western Equine, Zika (6)	Melioidosis (<i>Burkholderia pseudomallei</i>) (4)
Babesiosis (<i>Babesia microti</i>)	Meningitis: bacterial, viral, fungal, parasitic and amebic
Blastomycosis (<i>Blastomyces dermatitidis</i>)	Meningococcal Disease (<i>Neisseria meningitidis</i> , sterile sites) (5)
Botulism (<i>Clostridium botulinum</i>) (4)	Middle East Respiratory Syndrome (MERS-CoV) (5)
Brucellosis (<i>Brucella</i> species) (4)	Mumps (Mumps virus)
Campylobacteriosis (<i>Campylobacter</i> species)	Orthopox viruses, including: Smallpox, Monkeypox (4)
Candidiasis (<i>Candida auris</i>) (4)	Pertussis (<i>Bordetella pertussis</i>)
Carbapenemase Producing – Carbapenem Resistant	Plague (<i>Yersinia pestis</i>) (4)
Enterobacteriaceae (CP-CRE): <i>Klebsiella</i> spp., <i>Enterobacter</i> spp., and <i>Escherichia coli</i> (5)	Polio (Poliovirus)
Chancroid (<i>Haemophilus ducreyi</i>)	Prion disease, including CJD
Chickenpox / Varicella (<i>Varicella-zoster virus</i>) (6)	Psittacosis (<i>Chlamydia psittaci</i>)
Chlamydial infections (including trachoma, genital infections, LGV) (<i>Chlamydia trachomatis</i>) (3, 6)	Q Fever (<i>Coxiella burnetii</i>) (4)
Cholera (<i>Vibrio cholera</i>) (4)	Rabies: (<i>Rabies virus</i>) (4)
Coccidioidomycosis (<i>Coccidioides immitis</i>)	Rabies: potential exposure and post exposure prophylaxis (PEP)
Cryptosporidiosis (<i>Cryptosporidium</i> species)	Rubella (<i>Rubella virus</i>) (6)
Cyclosporiasis (<i>Cyclospora</i> species) (5)	Salmonellosis (<i>Salmonella</i> species) (5)
Dengue Fever (<i>Dengue virus</i>)	Severe Acute Respiratory Syndrome (SARS) (5)
Diphtheria (<i>Corynebacterium diphtheriae</i>) (5)	Shigellosis (<i>Shigella</i> species) (5)
Ehrlichiosis (<i>Ehrlichia</i> species)	Spotted Fever (<i>Rickettsia</i> species)
Encephalitis, viral or unspecified	<i>Staphylococcus aureus</i> , vancomycin intermediate/resistant (VISA) (5)/VRSA (4)
<i>Escherichia coli</i> , O157:H7 and all other Shiga toxin positive serotypes (5)	<i>Streptococcus pneumoniae</i> , sterile sites
Giardiasis (<i>Giardia</i> species)	<i>Streptococcus pyogenes</i> , group A, sterile sites, including Streptococcal Toxic Shock Syndrome (STSS)
Glanders (<i>Burkholderia mallei</i>) (4)	Syphilis (<i>Treponema pallidum</i>) (6)
Gonorrhea (<i>Neisseria gonorrhoeae</i>) (3, 6)	Tetanus (<i>Clostridium tetani</i>)
Guillain-Barre Syndrome (1)	Toxic Shock Syndrome (non-streptococcal) (1)
<i>Haemophilus influenzae</i> , sterile sites only- submit isolates for serotyping for patients < 15 years of age (5)	Trichinellosis (<i>Trichinella spiralis</i>)
Hantavirus	Tuberculosis (<i>Mycobacterium tuberculosis</i> complex); report preliminary and final rapid test and culture results (4)
Hemolytic Uremic Syndrome (HUS)	Tularemia (<i>Francisella tularensis</i>) (4)
Hemorrhagic Fever Viruses (4)	Typhoid Fever (<i>Salmonella typhi</i>) and Paratyphoid Fever (serotypes Paratyphi A, Paratyphi B (tartrate negative), and Paratyphi C) (5)
Hepatitis A virus (Anti-HAV IgM, HAV genotype)	Vibriosis (Non-cholera vibrio species) (5)
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Hepatitis C virus (all HCV test results including positive and negative antibody, RNA, and genotype tests) (6)	Yersiniosis (<i>Yersinia enterocolitica</i>)
Histoplasmosis (<i>Histoplasma capsulatum</i>)	
HIV (tests including reactive immunoassays (e.g., Ab/Ag, TD1/TD2, WB, EIA, IA), detection tests (e.g., VL NAAT, p24, genotypes), CD4 counts/percents, and all tests related to perinatal exposures) (2,6)	
Influenza virus (weekly aggregate counts)	
Pediatric influenza mortality, report individual cases (5)	
Novel influenza viruses, report individual cases (5,6)	
Kawasaki Disease (1)	
Legionellosis (<i>Legionella</i> species) (5)	
Leprosy or Hansen's Disease (<i>Mycobacterium leprae</i>)	
Leptospirosis (<i>Leptospira</i> species)	

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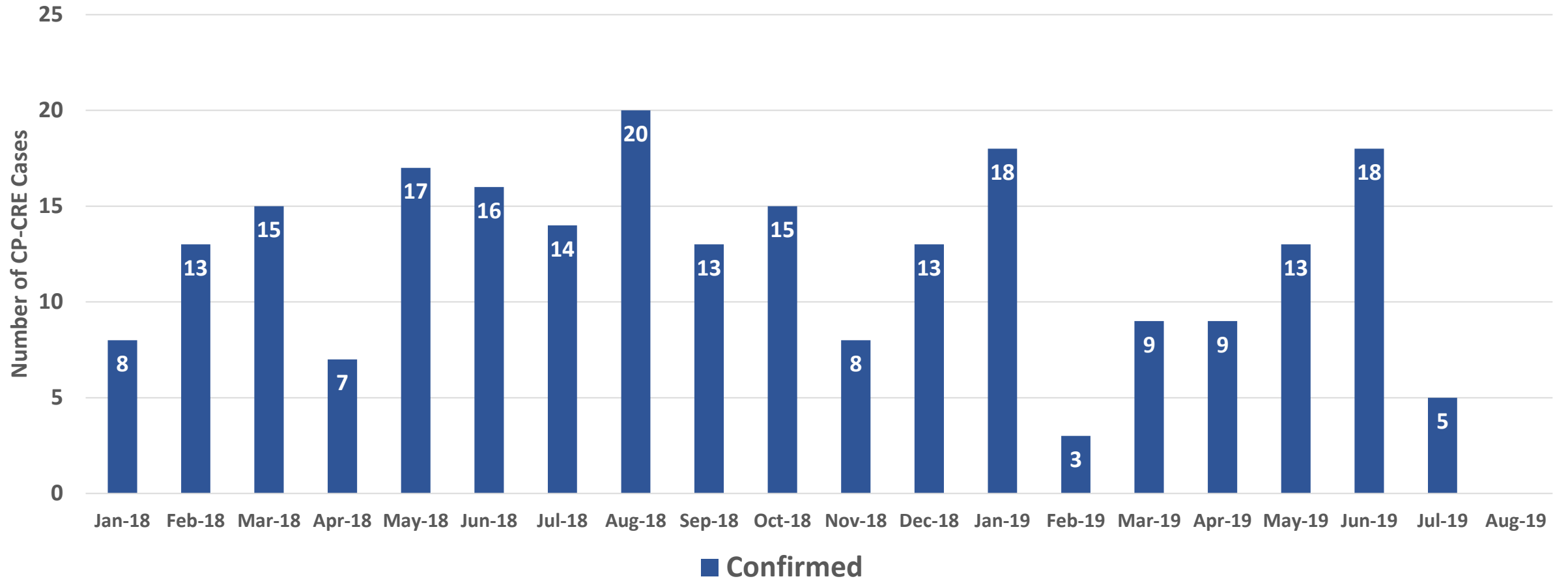
VISA and VRSA Cases Reported to MDSS



*by year of case referral

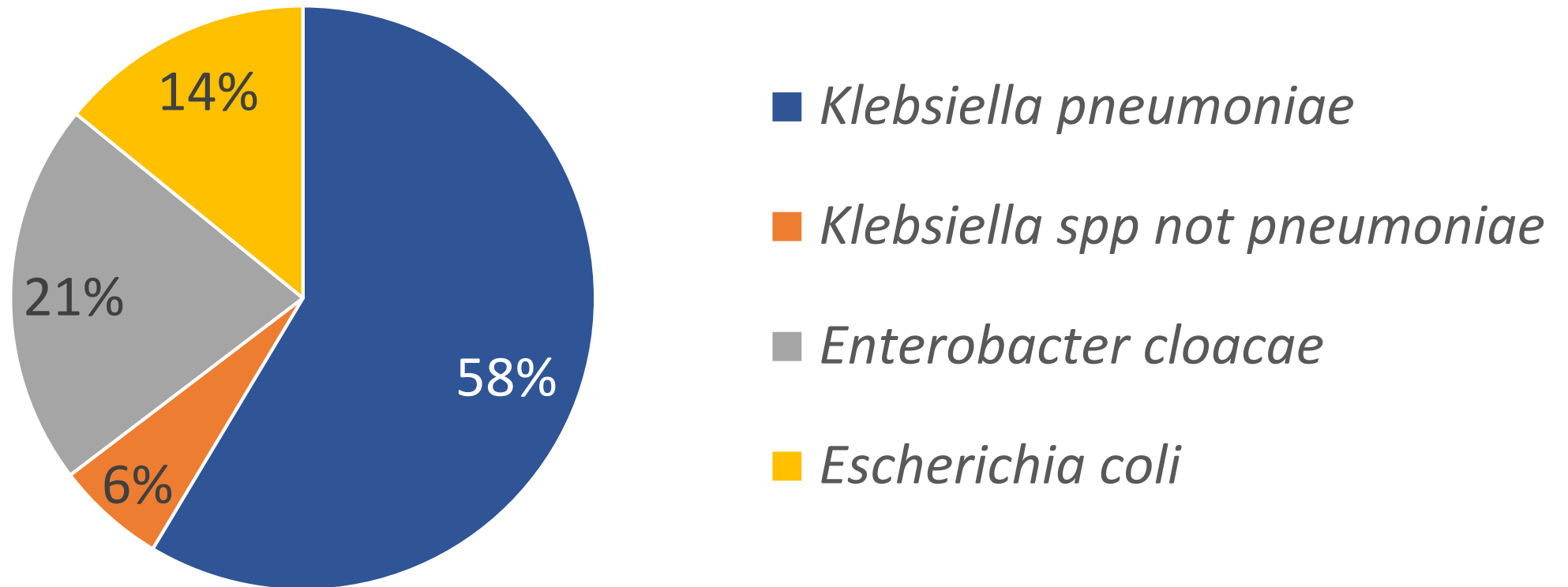
Confirmed CP-CRE Cases Reported to MDSS

Jan 2018 – Aug 6, 2019



Confirmed CP-CRE by Species

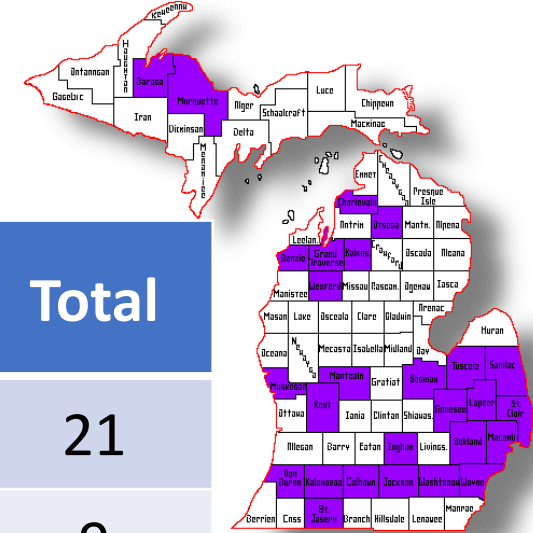
Jan 2018 – Aug 6, 2019



Voluntary Reporting Initiatives & Isolate Submission

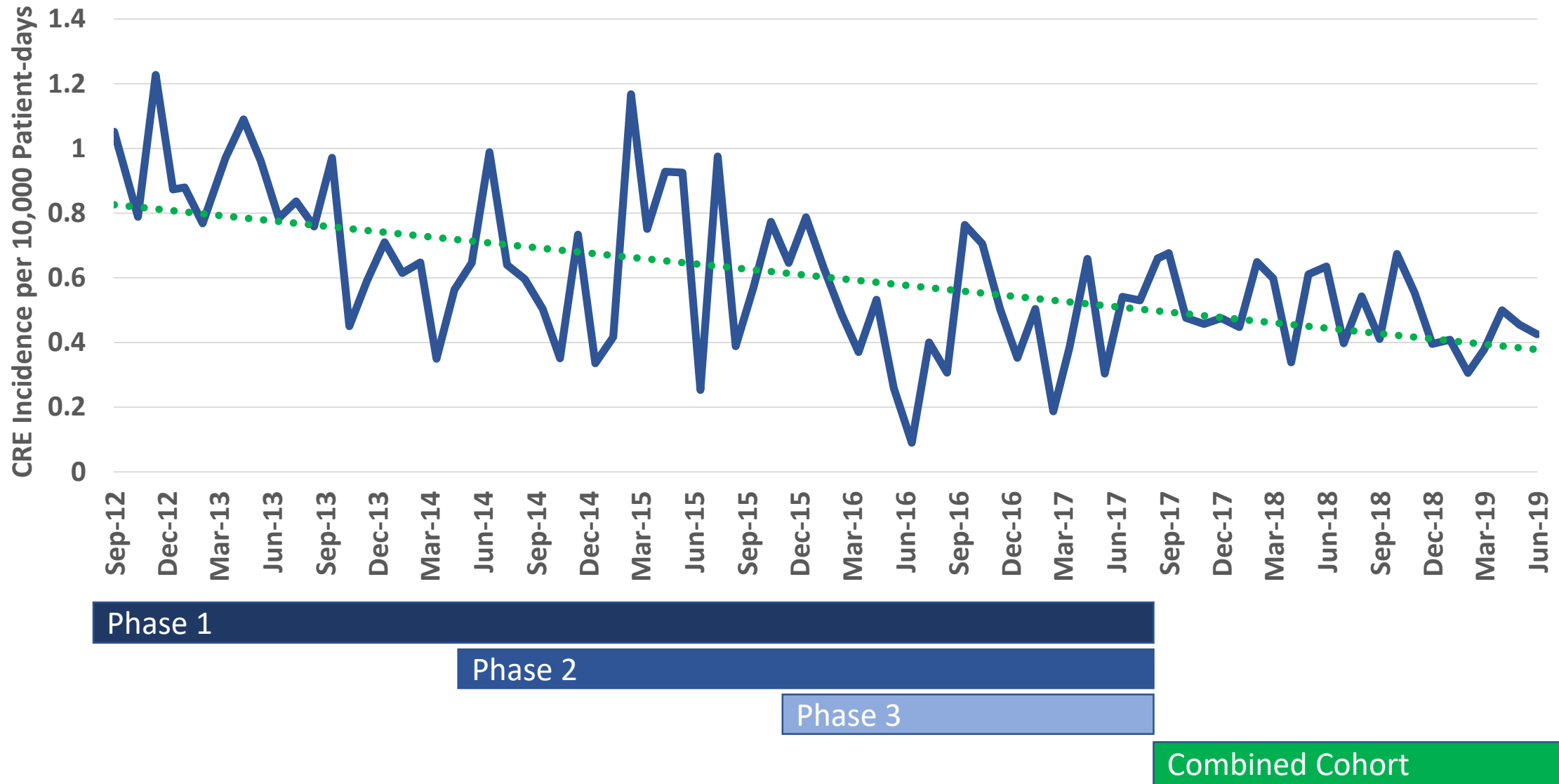
CRE Surveillance and Prevention Initiative

Voluntary Participation



	Beginning	End	Acute Care	LTAC	LTC/SNF	Total
Phase 1	Sept 2012	Aug 2014	17	4	0	21
Phase 2	Mar 2014	Feb 2016	7	2	0	9
Phase 3	Sept 2015	Aug 2017	4	4	2	10
New facilities	Sept 2017	Aug 2019	14	7	0	21
Combined Cohort	Sept 2017	Aug 2019	42	17	2	61

CRE Incidence – All Facilities

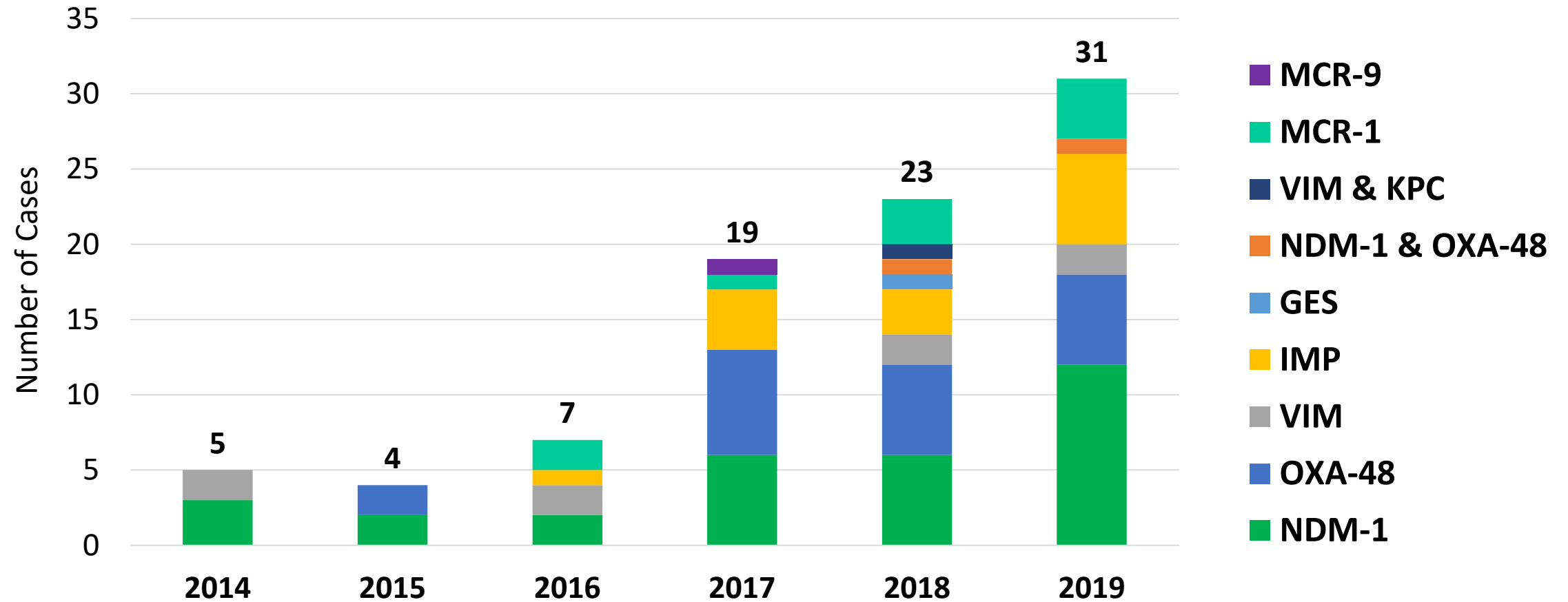


Antimicrobial Resistant Isolate Submission

MDHHS Bureau of Laboratories

- Laboratories are *strongly encouraged* to voluntarily submit isolates of *Enterobacteriaceae, Pseudomonas aeruginosa, and Acinetobacter spp.* that are:
 - Non-susceptible to carbapenems
 - Resistant to colistin
 - Pan non-susceptible

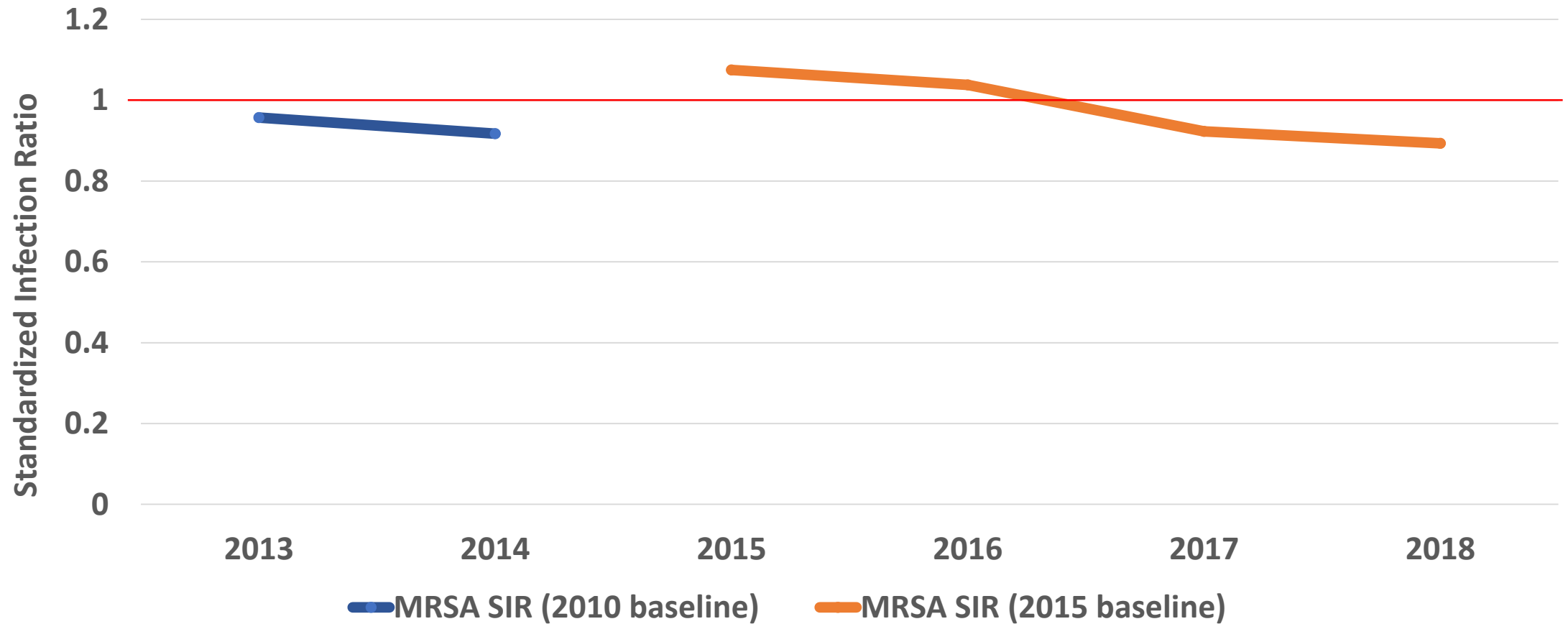
Confirmed Unusual Resistance Cases



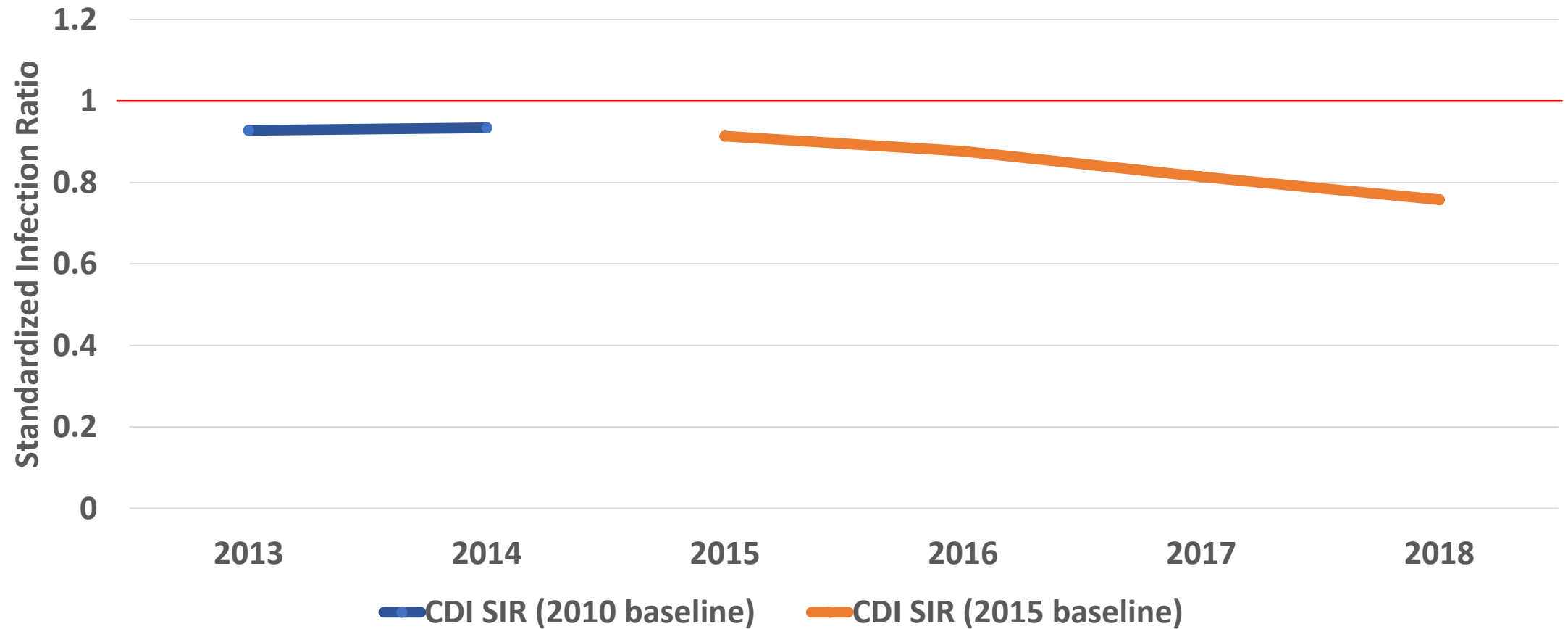
National Healthcare Safety Network Healthcare-Associated Infection Reporting

- NHSN is CDC's web-based surveillance program for HAI tracking
- Healthcare facilities can voluntarily share the following data with SHARP:
 - Central Line-Associated Blood Stream Infection (CLABSI)
 - Surgical Site Infection (SSI)
 - Catheter-Associated Urinary Tract Infection (CAUTI)
 - Ventilator-Associated Events (VAE)
 - **MRSA LabID surveillance**
 - ***Clostridioides difficile* LabID surveillance**
 - **Antimicrobial Use** and Antimicrobial Resistance

Laboratory Identified MRSA Bacteremia Standardized Infection Ratios

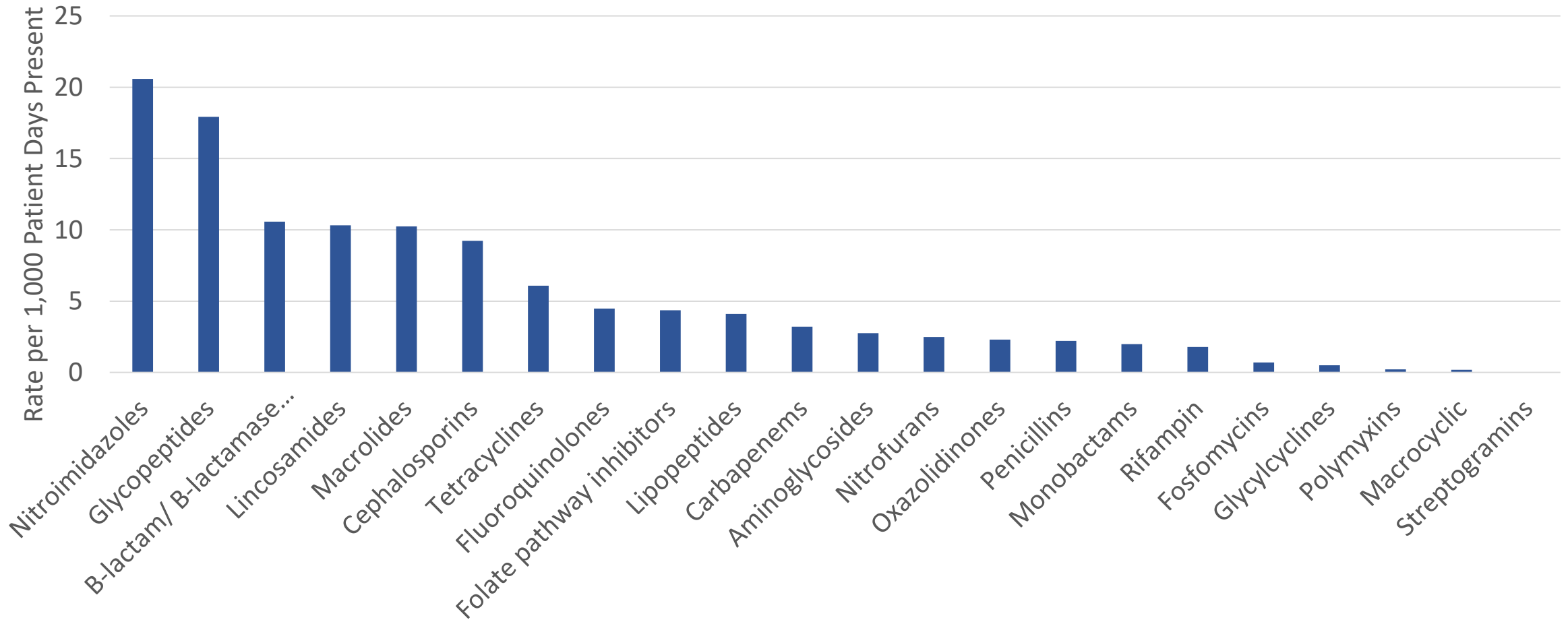


Laboratory Identified *Clostridioides difficile* (CDI) Standardized Infection Ratios (SIR)



NHSN Antimicrobial Use Rates by Class

Inpatient Antimicrobial Use, Jan - July 2019



Thank You

**Surveillance for Healthcare Associated and Resistant Pathogens (SHARP) Unit
Michigan Department of Health and Human Services (MDHHS)
(517) 335-8165**

