

Michigan Department of Health and Human Services

CRE Surveillance and Prevention Initiative Educational Conference

June 25, 2015



Welcome!

Who we are...

- Michigan Department of Health and Human Services (MDHHS)
 - Bureau of Disease Control, Prevention, and Epidemiology
 - Communicable Disease Division
 - Surveillance and Infectious Disease Epidemiology Section
 - Surveillance for Healthcare-Associated and Resistant Pathogens **(SHARP)** Unit

SHARP Mission

- Coordinate activities related to Healthcare-Associated Infections (HAI) surveillance and prevention in Michigan
- Improve surveillance and detection of antimicrobial-resistance and HAIs
- Identify and respond to disease outbreaks
- Support the implementation of best-practice infection prevention recommendations across the healthcare continuum

CRE Surveillance and Prevention Initiative

2011

- Awarded ELC funding
- Hired CRE Coordinator

2012

- Met with 8 healthcare systems across the state
- Developed detection and infection prevention practices survey
- Formed Collaborative group
- Recruited 21 facilities
- Surveillance began September 1, 2012
- CRE Educational Conference Kick-off!

2013

- Baseline surveillance ends February 28, 2013
- CRE Prevention Plans implemented March 1, 2013

2014

- Recruited 9 new facilities and maintained all current facilities for Phase 2
- Phase 1 ends August 31, 2014
- Phase 2 begins September 1, 2014 - all CRE Prevention Plans implemented

2015

- Surveillance continues
- Prevention continues
- Confirmatory testing, regional incidence, geography, and interest will drive recruitment for Phase 3 in early 2016...

CRE Collaborative Group

- The **CRE Collaborative** helps direct surveillance and prevention efforts
 - **Organizations**
 - Detroit Medical Center, Spectrum Health, University of Michigan Health System, Bronson Methodist Hospital, St. Joseph Mercy, Select Specialty Hospital, and MDHHS
 - **Disciplines**
 - Infection Prevention, Epidemiology, Clinical Microbiology, Antimicrobial Stewardship, Infectious Disease Physicians, Pharmacy, Quality Management, and Public Health

Active CRE Collaborative Members

- Keith Kaye
- Jason Pogue
- Anurag Malani
- Joe Coyle
- Christy Scipione
- Carol Young
- Kerrie VerLee
- Richard VanEnk
- Jennie Finks

Data Highlights

September 2012 – August 2014

Participants

- **21 Facilities**
 - 17 acute care facilities
 - 4 long-term acute care facilities
- **Facilities across Michigan**
 - East (11)
 - West (4)
 - Mid-North (2)
 - LTACs (4)

Surveillance

- **Baseline Period**
 - September 1, 2012 – February 28, 2013
- **CRE Prevention Plans Implemented**
 - March 1, 2013
- **Intervention Period**
 - March 1, 2013 – August 31, 2014

Surveillance

- **Surveillance Definition**
 - *Klebsiella pneumoniae* or *Escherichia coli*
 - Reported as non-susceptible (R or I) to **ANY** carbapenem
 - Yes – case reported
 - No – check MICs of carbapenems

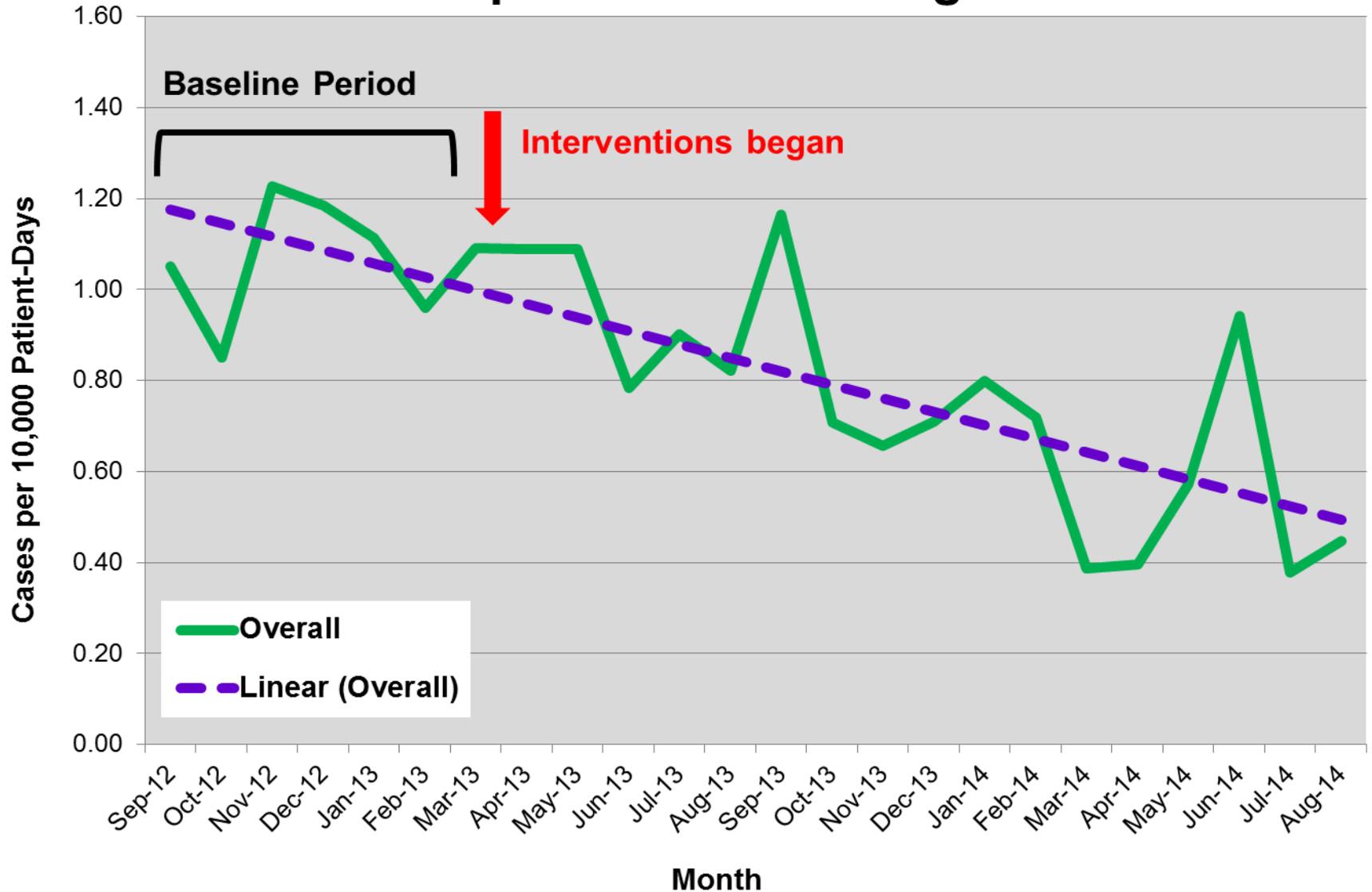
Patient Demographics

- **Total of 327 cases reported**
- **Age**
 - Median: 66 y/o
 - Range: 1-98 y/o
- **Sex**
 - 53% Female
- **Patient Type**
 - Inpatient ICU: 125 (38%)
 - Inpatient Non-ICU: 159 (49%)
 - Outpatient: 37 (11%)
 - Referral patient: 6 (2%)

CRE Incidence in Michigan

- **327 total cases – 284 inpatients**
- **Baseline (Sept 2012 – Feb 2013)**
 - 102 cases (89 inpatients)
 - 957,220 patient-days
 - 0.93 cases per 10,000 p-d
- **Intervention (March 2013 – August 2014)**
 - 225 cases (195 inpatients)
 - 2,791,350 patient-days
 - 0.70 cases per 10,000 p-d

CRE Incidence - All Facilities September 2012 - August 2014



	No. of cases	Total no. of patient-days	Crude incidence rate, 95%CI	p-value*
Acute care	271	3,640,049	0.75 (0.66–0.84)	0.13
Baseline	81	931,782	0.87 (0.69–1.08)	---
Intervention	190	2,708,267	0.70 (0.61–0.81)	---
LTAC	13	110,364	1.18 (0.63–2.01)	0.01
Baseline	8	27,281	2.93 (1.26–5.78)	---
Intervention	5	83,083	0.60 (0.19–1.40)	---
Overall	284	3,750,413	0.76 (0.67–0.85)	0.03
Baseline	89	959,063	0.93 (0.75–1.14)	---
Intervention	195	2,791,350	0.70 (0.67–0.85)	---

Laboratory Testing and Micro

- **Organism**

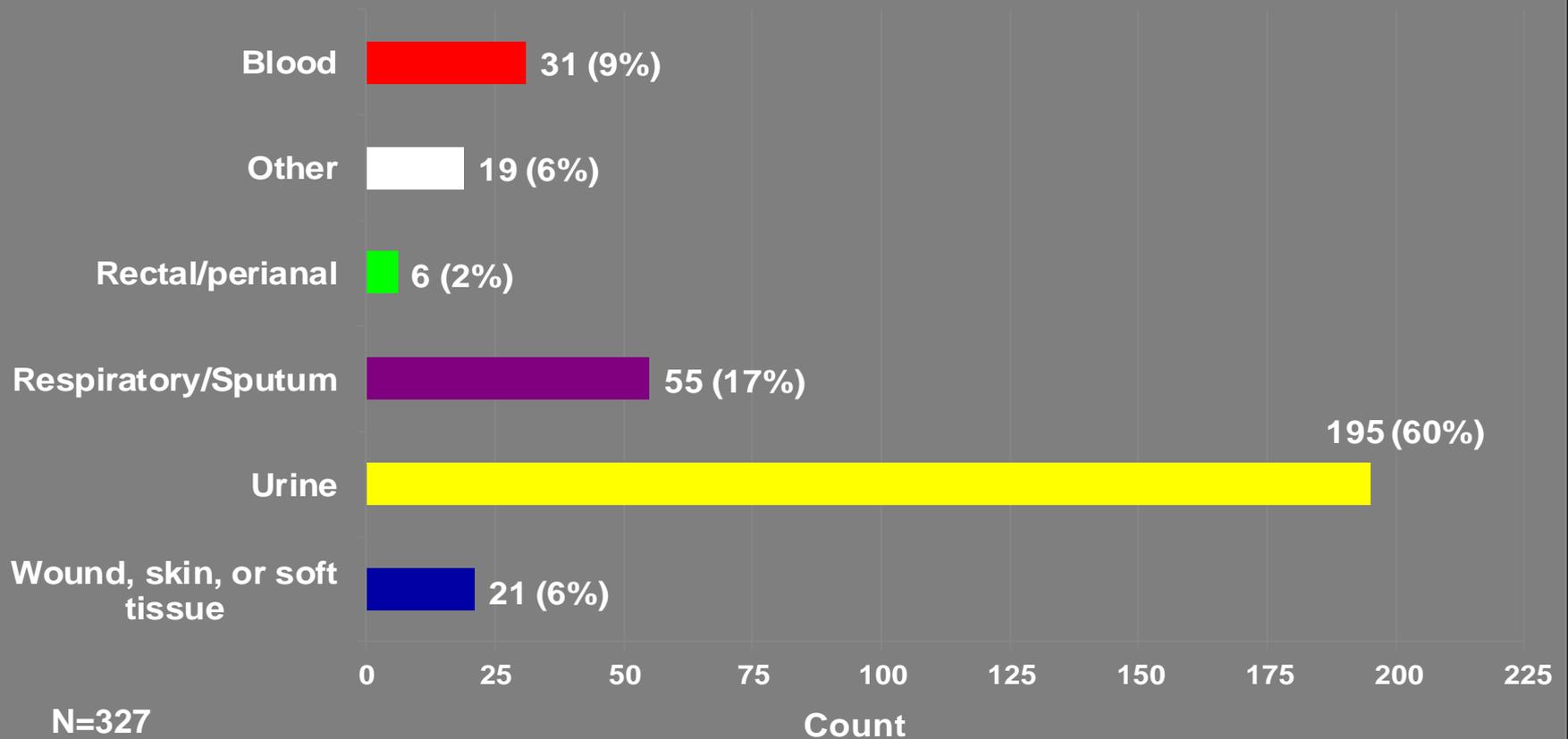
- *Klebsiella pneumoniae*: 91%
- *Escherichia coli*: 9%

- **Specimen Type**

- Clinical culture: 97%
- Surveillance culture or screen: 3%

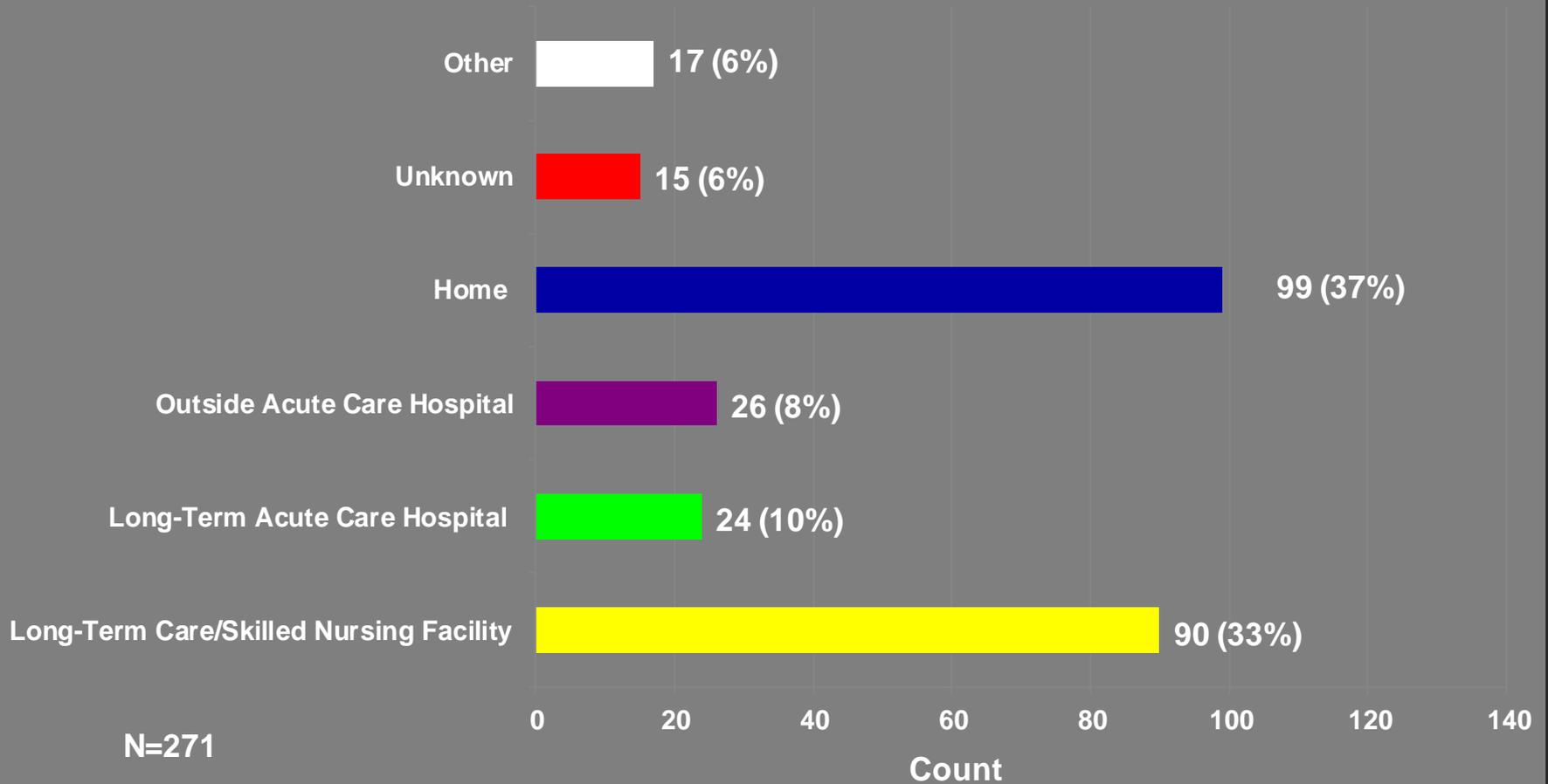
Laboratory Testing – Specimen Source

Specimen Source



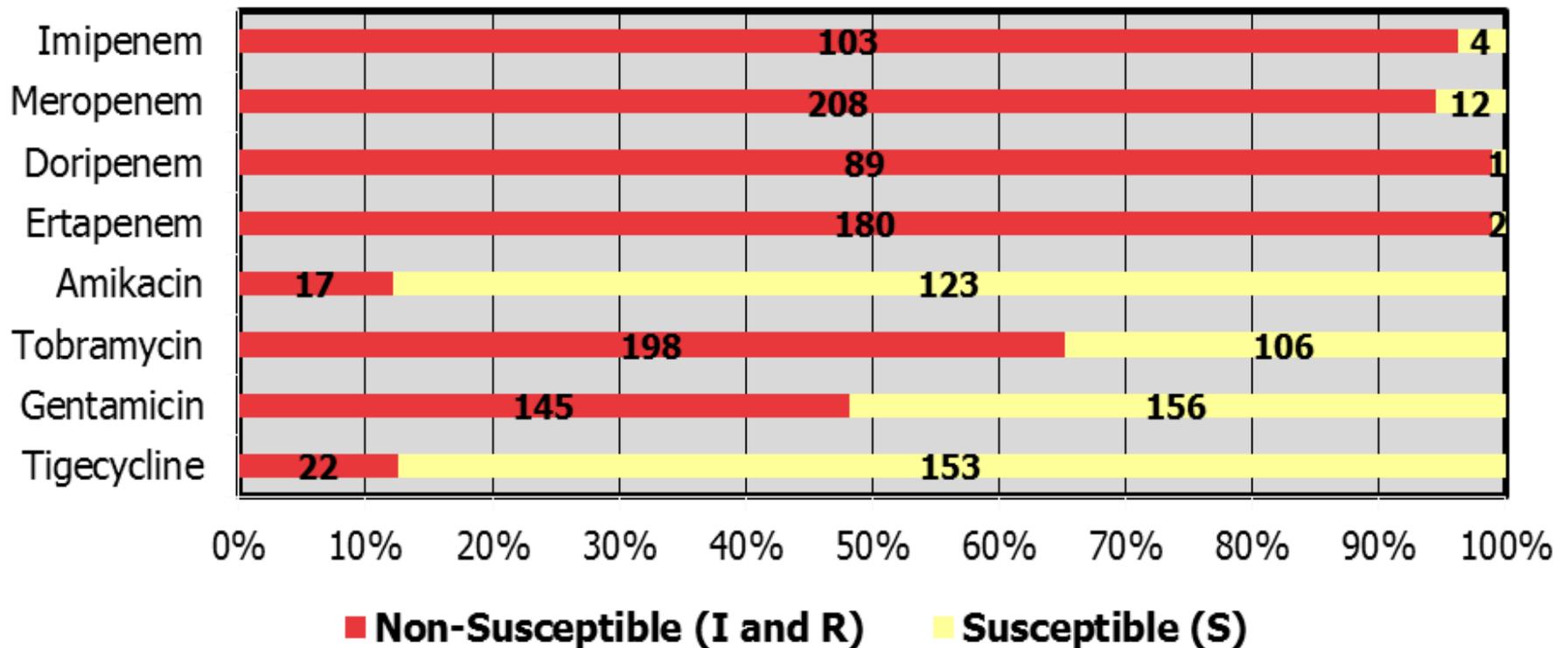
Location Patient Admitted From

Location Patient Admitted From

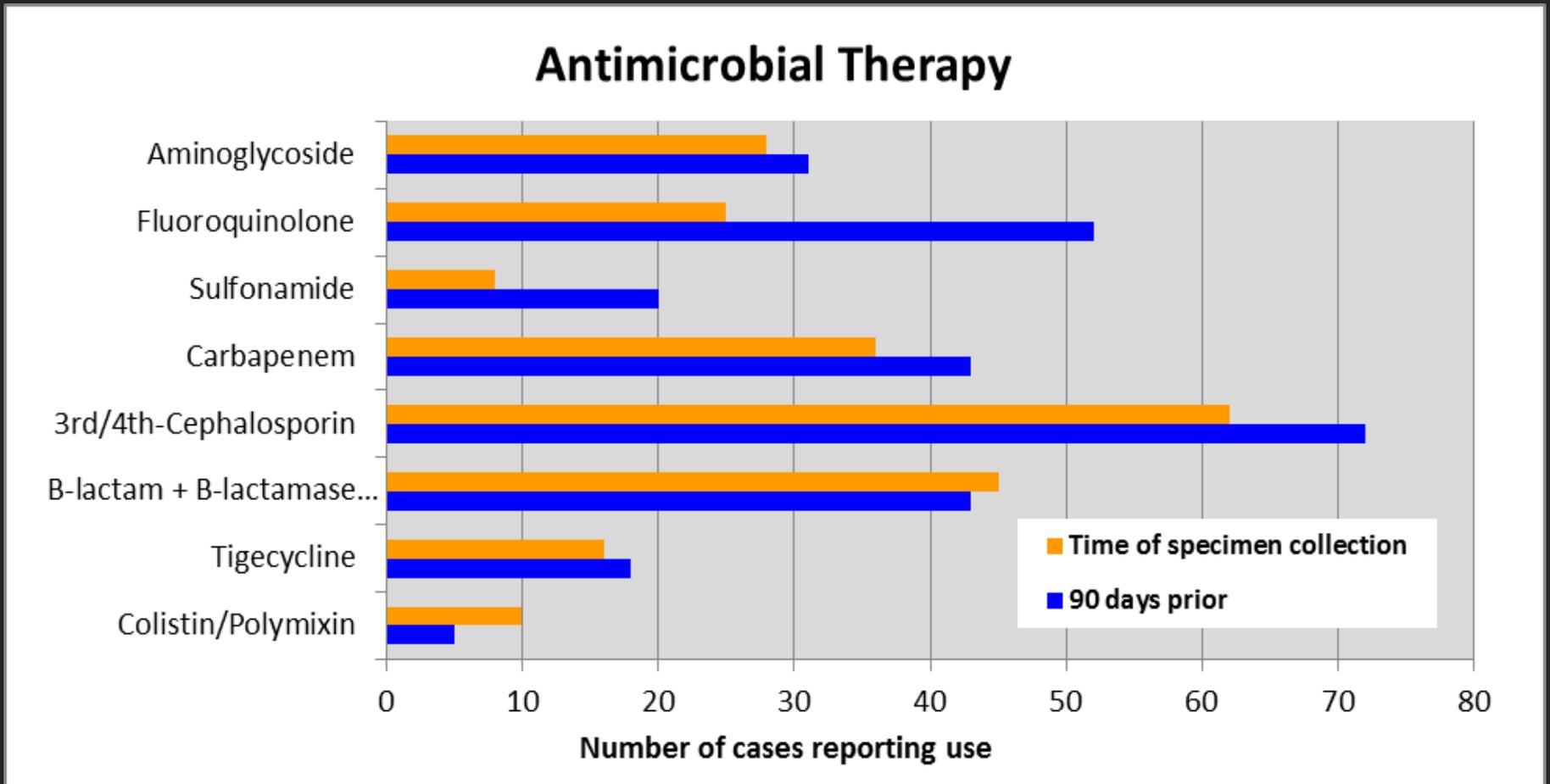


Antimicrobial Susceptibility Testing Results Phase 1

Antimicrobial Susceptibility



Antimicrobial Therapy Phase 1



CRE Prevention

8 Core Prevention Measures

- Hand Hygiene
- Contact Precautions
- Healthcare Personnel Education
- Minimize the Use of Invasive Devices
- Patient and Staff Cohorting
- Laboratory Notification
- Promote Antimicrobial Stewardship
- CRE Screening

CRE Prevention Plans

- **34 different interventions**
 - Communication (3)
 - Compliance (1)
 - Education (14)
 - Procedures (16)

Successes the first 2 years

- Established a baseline incidence rate for CRE
 - September 2012 – February 2013
 - 0.93 cases per 10,000 p-d
- CRE incidence rate decreased during intervention period
 - March 2013 – August 2014
 - 0.70 case per 10,000 p-d
 - Statistically significant ($p=0.03$)
- Michigan prevented **86** infections of CRE
 - **26** infections of CRE prevented in LTACs

CRE Surveillance & Prevention Initiative

Phase 2

- **Baseline Period**
 - March 1, 2014 – August 31, 2014
- **CRE Prevention Plans Implemented**
 - September 1, 2014
- **Intervention Period**
 - September 1, 2014 – February 28, 2016

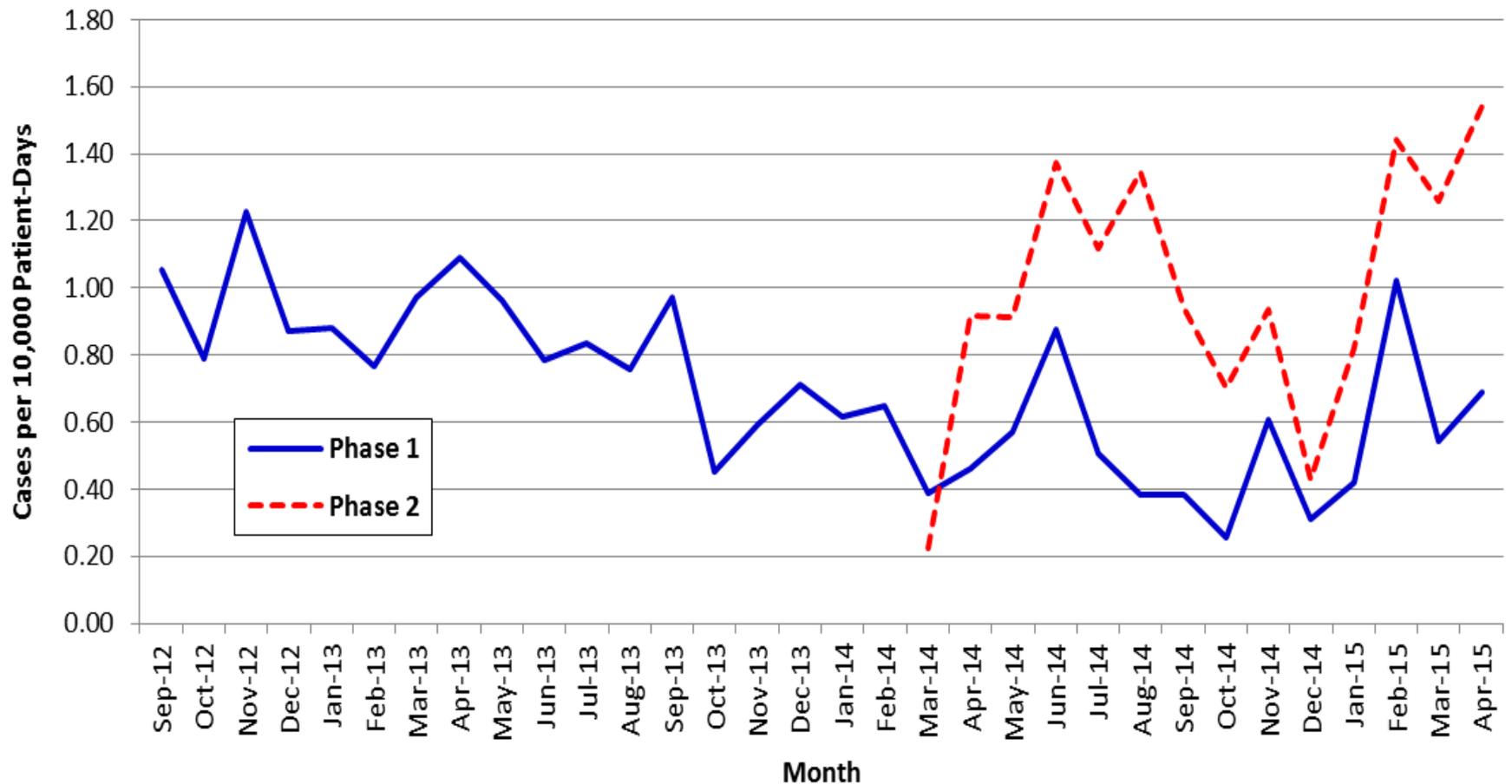
CRE Prevention Plans

Phase 2

- **30 facilities**
 - 24 acute care facilities
 - 6 LTAC facilities
- **43 different interventions**
 - Procedures (19)
 - Education (14)
 - Compliance (5)
 - Communication (3)
 - Pilot project (1)
 - System analysis (1)

CRE Incidence September 2012 — current

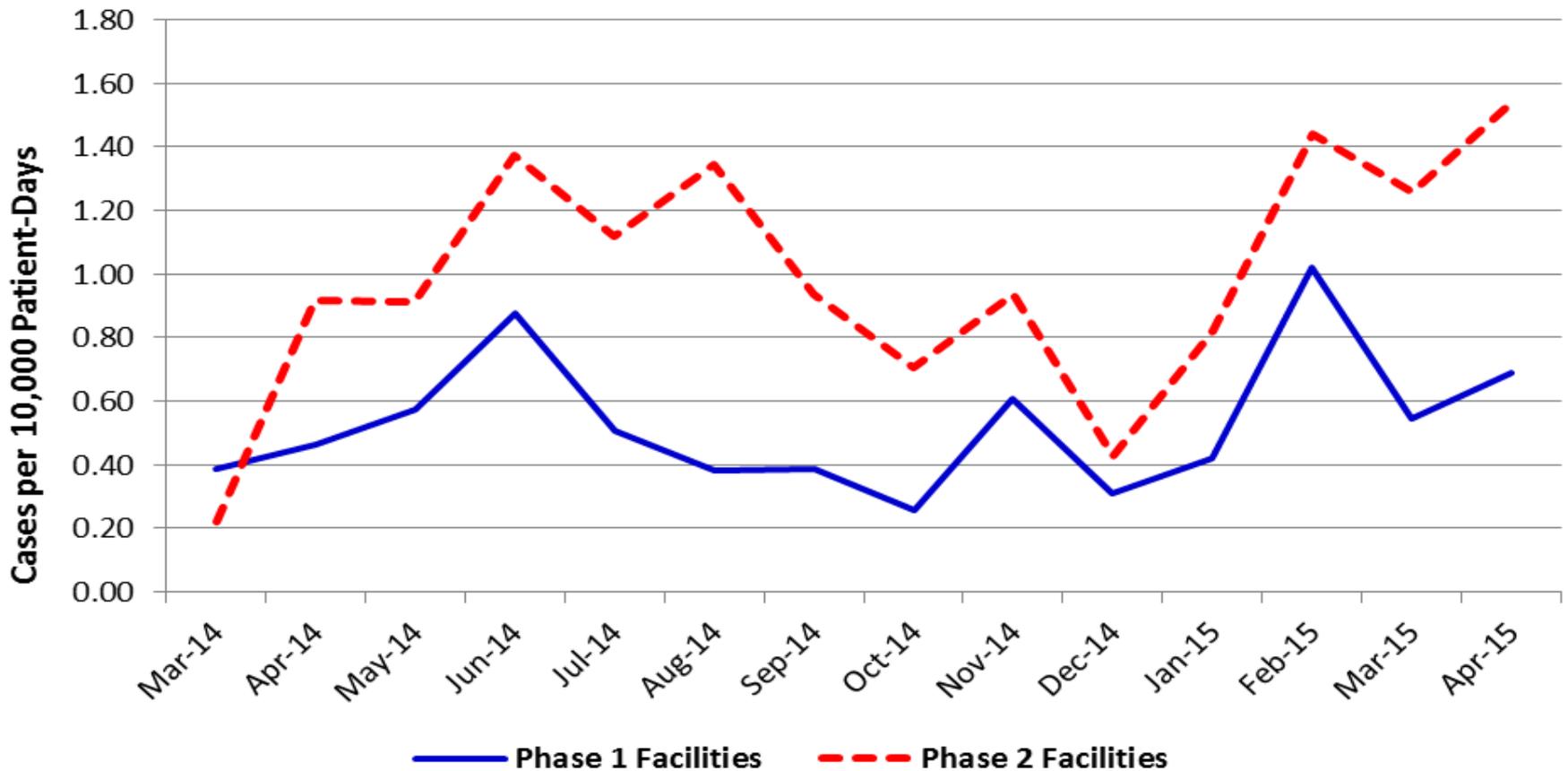
CRE Incidence - All Facilities



CRE Incidence

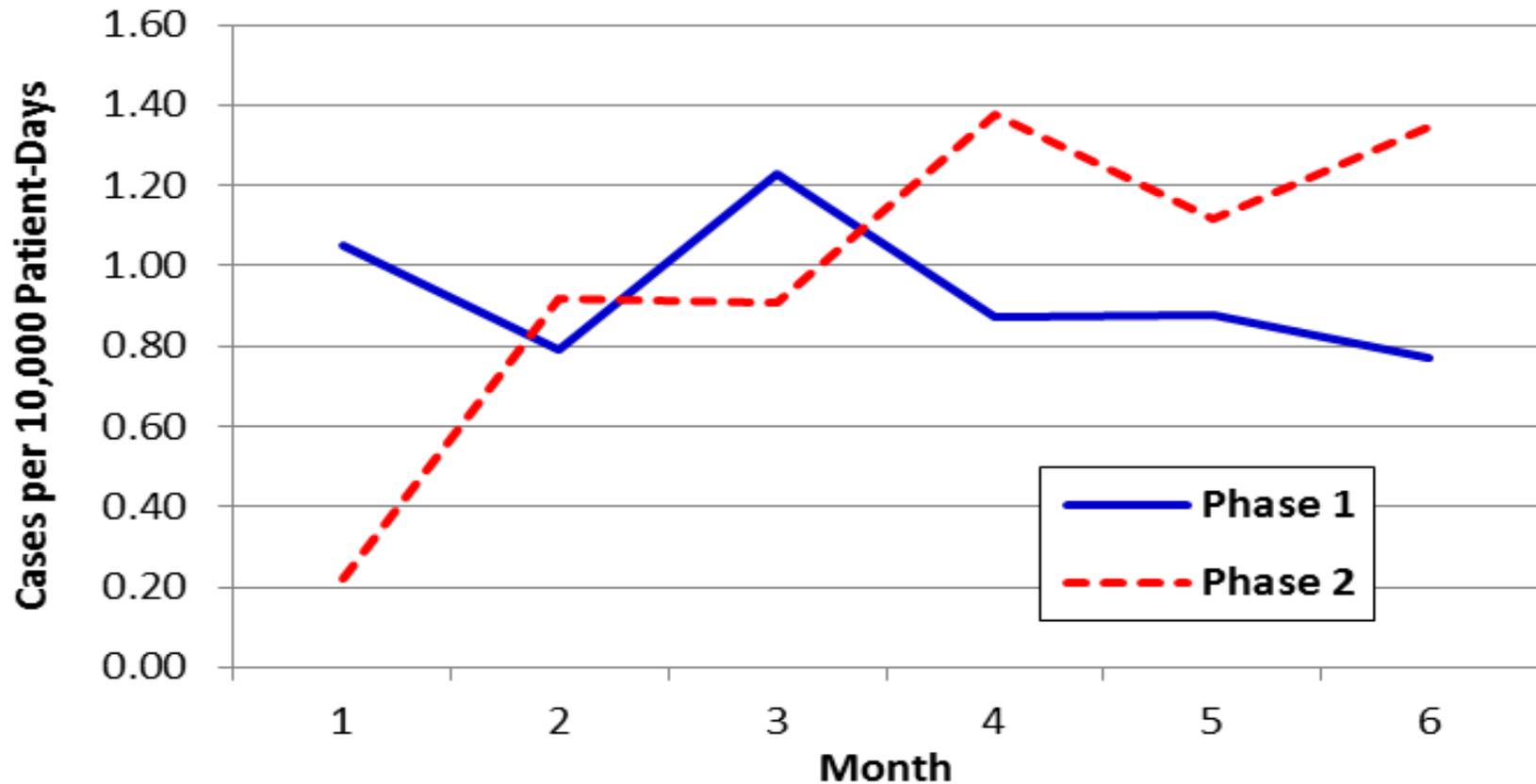
March 2014 — current

CRE Incidence - All Facilities



Comparing Baseline Data first 6 months of each phase

Baseline Incidence



Past, Present, and Future

	Phase 1	Phase 2	Phase 3
Time Period	September 2012 – August 2014	March 2014 – February 2016	September 2015– August 2017
# Acute Care Facilities	17	24	
# Long-Term Acute Care Facilities	4	6	
# CRE Prevention Plans	34	43	
Baseline Incidence Rate	0.93	0.94	
Post-Intervention Incidence Rate	0.70	0.73	
# Infections Prevented	86 (26 in LTACs)	* 55 (8 in LTACs)	

Infection Prevention

- Michigan has prevented **141** infections of CRE
 - **34** infections of CRE were prevented in LTACs

Next Steps

- Write up 2-year findings
- Develop regional incidence reports
 - Regional Epis at ICP meetings / LHDs
- Compare each facility's baseline and intervention rates and what was implemented as their prevention plan, # of infections prevented
 - Analyze trends in prevention category (if any)
- Recruit new facilities for Phase 3
 - Early 2016

Acknowledgements

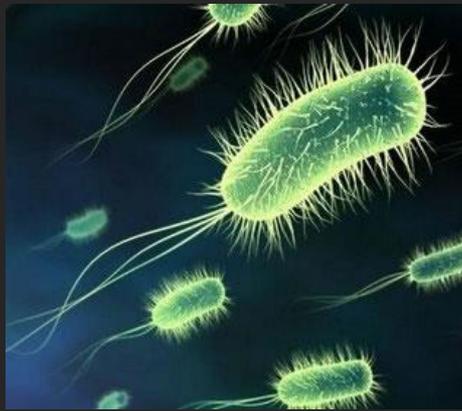
- **All participating facilities**
 - CRE Prevention Teams and administration
- **Today's speakers**
 - Thank you for traveling and sharing your experiences with us!
- **SHARP Unit**
- **Jason Pogue, Allison Chan and Katrina Espiritu**
- **Joe Coyle and Keith Kaye**

For more information

- Visit website for presentations, updates and training opportunities
 - www.michigan.gov/hai
 - Scroll down to the green banner boxes
 - MDCH SHARP HAI Prevention Initiatives
 - CRE
 - MRSA/CDI

Materials for today

- **Folder**
 - Agenda
 - Presentations
 - Antibiotic classes chart
 - Evaluation Form
- Please set cell phones to silent / vibrate



Enjoy the conference!

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