Antimicrobial Stewardship: A How-To Guide for MTFs

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Attendance Code

To obtain CPE credit for this activity, you are required to actively participate in this session. You will need this attendance code in order to access the evaluation and CPE form for this activity. Your CPE must be filed by **18 November 2020** in order to receive credit.

CPE Information and Disclosures

I, Brian White, “declare no conflicts of interest, real or apparent, and no financial interests in any company, product, or service mentioned in this program, including grants, employment, gifts, stock holdings, and honoraria.”

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CPE Information

Target Audience: Pharmacists and Pharmacy Technicians

ACPE#:

0575-0000-20-100-L01-P

0575-0000-20-100-L01-T

Activity Type: Knowledge

Woman dies of superbug no antibiotic could treat

Rob Quinn, Newser staff , WHAS 5:53 PM. EST January 15, 2017

(Photo: WHAS)

(NEWSER) – This is the kind of case researchers warned about for years: A Nevada woman in her 70s died months ago from an infection that no antibiotic in America could have defeated, according to a Centers for Disease Control and Prevention report released Thursday.

The woman was hospitalized in August last year after she returned from an extended trip to India. Doctors discovered that she was suffering from a carbapenem-resistant Enterobacteriaceae (CRE) infection, which she had apparently contracted after being treated for a broken right hip in India, the Las Vegas Review-Journal reports.

Learning Objectives

Describe the concerns of rising rates of antimicrobial resistance

Discuss methods to prevent the development and spread of antimicrobial resistance

Understand the process and key components for initiating and implementing a multidisciplinary, effective antimicrobial stewardship program that fulfills the core elements of antimicrobial stewardship as defined by the Centers for Disease Control and Prevention (CDC) and the relevant medication management standards as defined by the Joint Commission (TJC)

Antimicrobial Stewardship

Definitions

- Why stewardship? What is stewardship? Who is involved? How do we do it?

Data

- What data do we need? How do we get it? What do we do with it?

Decisions

- How do we get the right diagnosis, drug selection, dose, and duration?

Why have an ASP?

Regulations—executive order, DoD-I, DHA-PI, TJC

Safety/quality

Trusted care = HRO

AIR FORCE MEDICINE
TRUSTED CARE...ANYWHERE

Goals:

1. Slow the emergence of resistant bacteria and prevent spread
2. strengthen one-Health surveillance
3. Advance rapid diagnostics
4. Accelerate dev't new antibiotics
5. Improve international collaboration

NATIONAL ACTION PLAN FOR COMBATING ANTIBIOTIC-RESISTANT BACTERIA

MARCH 2015

THE WHITE HOUSE
WASHINGTON

NATIONAL ACTION PLAN FOR COMBATING ANTIBIOTIC-RESISTANT BACTERIA

Progress Report: Year 4

September 2019

Prepared by the United States Taskforce for Combating Antibiotic Resistant Bacteria

DHA-PI 6025.09 and DoD-I 6025.26 meet requirements in Goal 1

ARMoR: MRSN, WRAIR, EDC, PVC→ASPWG -progress on Goals 2, 3, 4

Funding & Grants

- Funding Opportunity Announcements
- Research Policies
- Funding Priorities
- Training & Education Funding
- Grant Application, Review & Award Process
- **Post-Award Grant Management**
  - **AHRQ Grantee Profiles**
  - Getting Recognition for Your AHRQ-Funded Study

Decreasing Inappropriate Antibiotic Prescribing to Improve Patient Safety and Care

"Inappropriate antibiotic prescribing exposes patients unnecessarily to the adverse effects of these medications and contributes to the creation of drug-resistant bacteria. Thanks to funding from AHRQ, we're able to better understand clinician prescribing and develop interventions that improve antibiotic use."

Consequences of Antimicrobial Use

C. difficile infections—more than 500,000 patients and 15,000 deaths per year in US

More than 2 million patients are infected with organisms that cannot be treated by the recommended antibiotic, more than 20,000 die each year in the US

Loss of effective antibiotics also impairs our ability to deliver life saving medical care like surgery and cancer chemotherapy

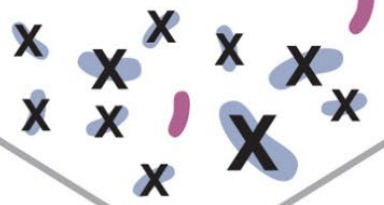
Antimicrobial Utilization

Antimicrobial Resistance

How Antibiotic Resistance Happens

1.
Lots of germs.
A few are drug resistant.

2.
Antibiotics kill bacteria causing the illness, as well as good bacteria protecting the body from infection.

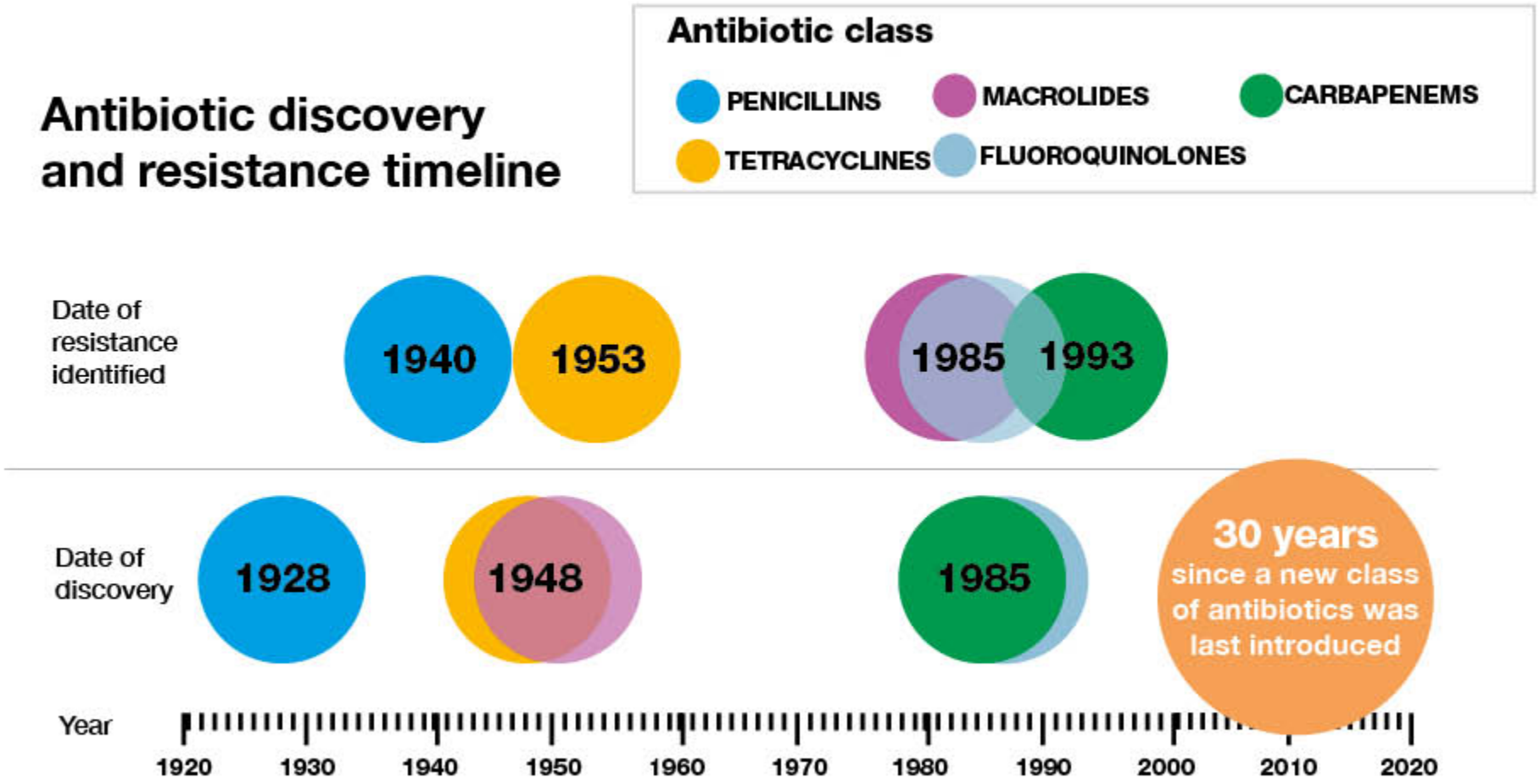


3.
The drug-resistant bacteria are now allowed to grow and take over.

4.
Some bacteria give their drug-resistance to other bacteria, causing more problems.

GET SMART
About Antibiotics Week
WWW.CDC.GOV/GETSMART

Antibiotic discovery and resistance timeline



https://www.gov.uk/government/publications/health-matters-antimicrobial-resistance/health-matters-antimicrobial-resistance

'The time may come when penicillin can be bought by anyone in the shops. Then there is the danger that the ignorant man may easily underdose himself and by exposing his microbes to non-lethal quantities of the drug make them resistant. Here is a hypothetical illustration. Mr X has a sore throat. He buys some penicillin and gives himself, not enough to kill the streptococci but enough to educate them to resist penicillin. He then infects his wife. Mrs X gets pneumonia and is treated with penicillin. As the streptococci are now resistant to penicillin the treatment fails. Mrs X dies. Who is primarily responsible for Mrs X's death?'

Sir Alexander Fleming,
Nobel Lecture, 1945

What is an ASP?

"Antimicrobial stewardship is coordinated interventions designed to improve and measure the appropriate use of antibiotic agents by promoting the selection of the optimal antibiotic drug regimen including dosing, duration of therapy and route of administration."

-consensus statement from IDSA, SHEA, PIDS

-Infect Control Hosp Epidemiol 2012; 33:322-7

CDC Antibiotic Stewardship Core Elements

- Leadership support
- Accountability
- Drug expertise
- Actions to support optimal antibiotic use
- Tracking: monitoring antibiotic prescribing, use, and resistance
- Reporting information to staff on improving antibiotic use and resistance
- Education

ECRI Institute
The Discipline of Science. The Integrity of Independence.

Source: CDC "Core elements"
https://www.cdc.gov/getsmart/healthcare/pdfs/checklist.pdf

How does an ASP work?

Depends

- Location—inpatient vs. outpatient
- Resources—ID, Pharmacy?

Some things are the same

- Data
- Interventions:
  - Decision to start
  - Dosing
  - Duration

Who is involved in an ASP?

Physicians
- ID, ED, Primary Care, Surgeons

Pharmacists

Nurses

Patients

What Data is needed?

Antibiotic use data

Resistance data

Other adverse effects of antimicrobial use

- ED visits due to adverse reactions
- *C. difficile* infection rates

70%

of antibiotic prescriptions are likely necessary.

(Improvement still needed in drug selection, dose and duration)

At least

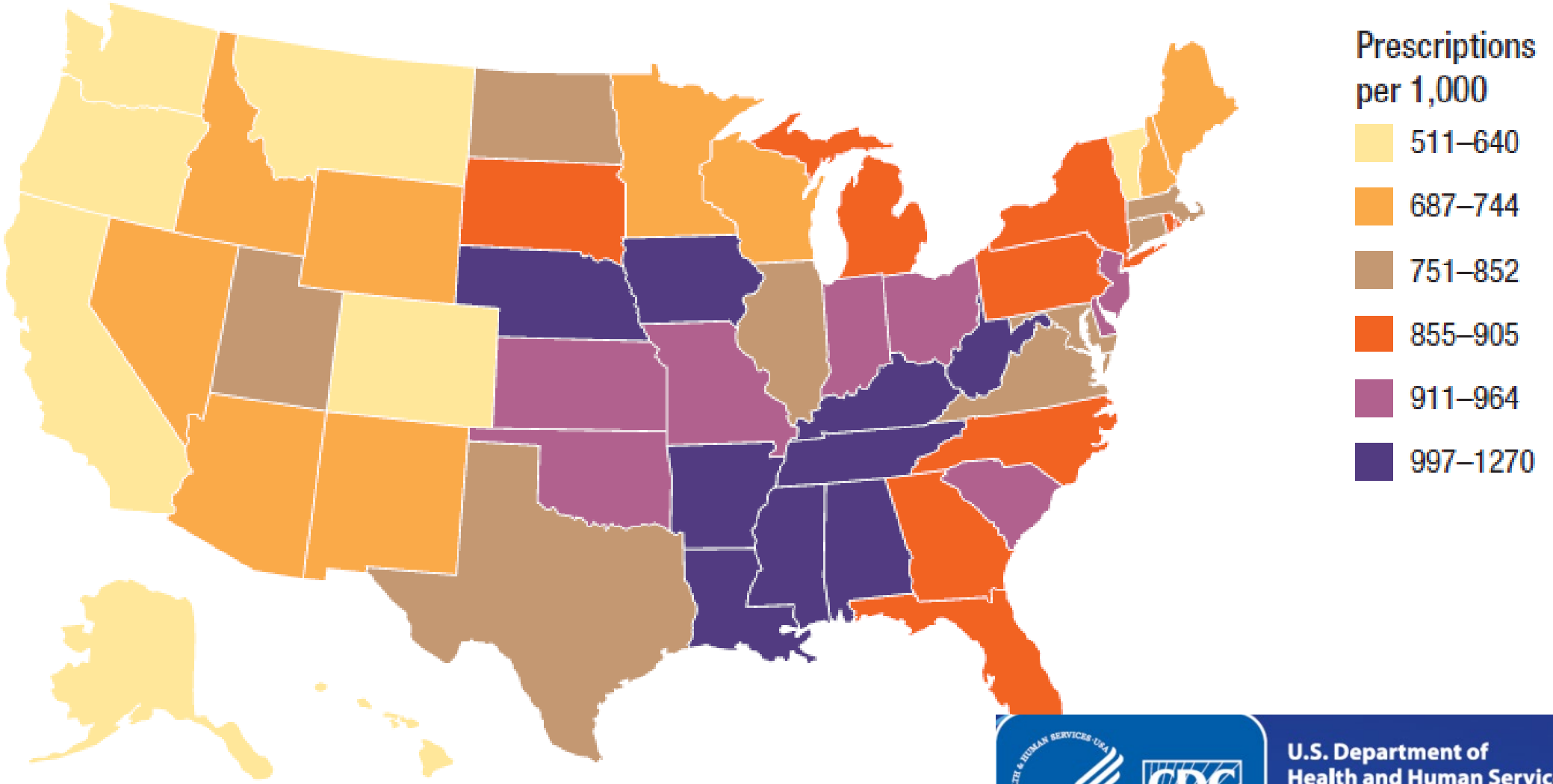
30%

of antibiotic prescriptions are unnecessary.

In U.S. Doctor's Offices and Emergency Departments

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

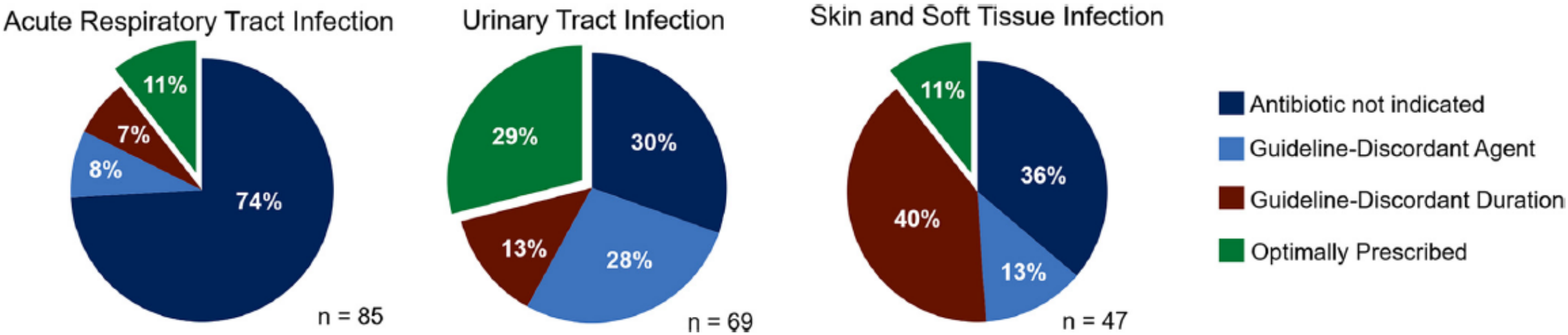
Community Antibiotic Prescriptions by State—2016



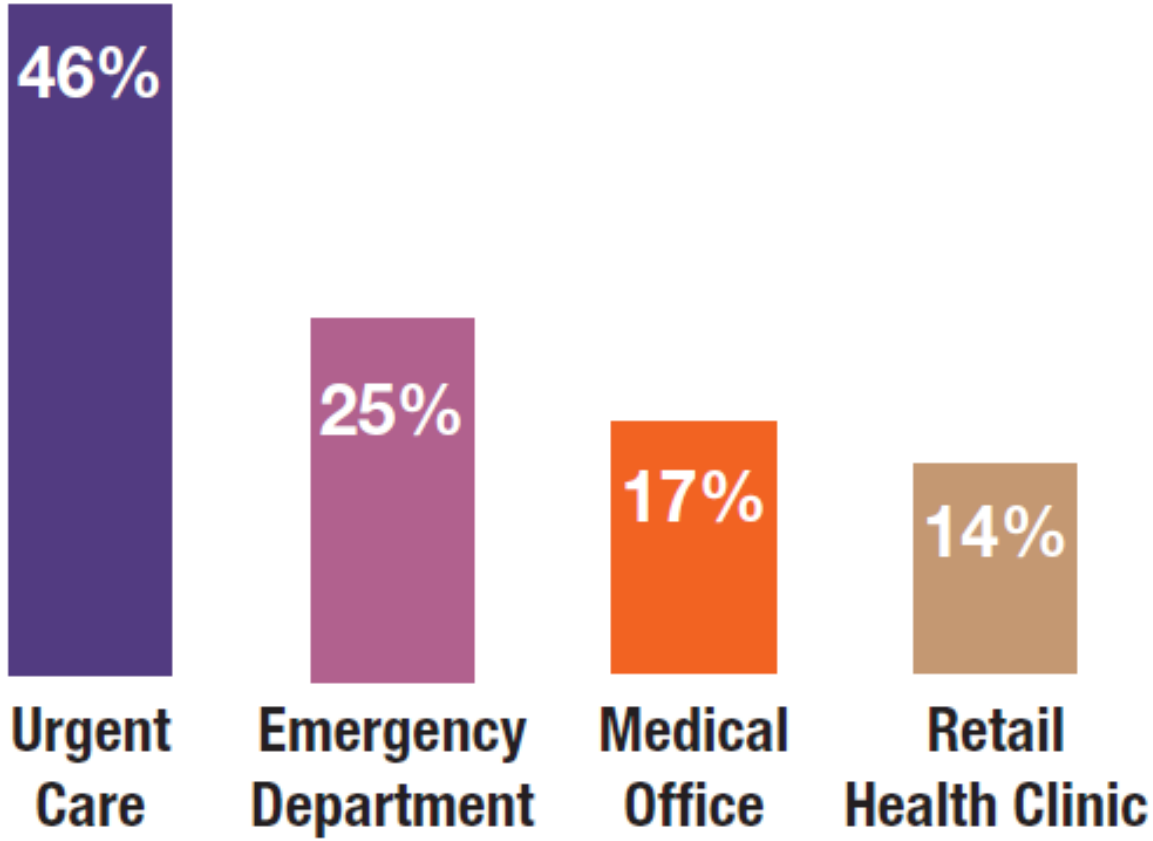
U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

Prevalence of Inappropriate Antibiotic Prescribing in Primary Care Clinics within a Veterans Affairs Health Care System

Nathan R. Shively,[a*] Deanna J. Buehrle,[b] Cornelius J. Clancy,[a,b] Brooke K. Decker[a,b]



Percent of Visits for Respiratory Illnesses With an Unnecessary Antibiotic Prescription



Open Forum Infectious Diseases

BRIEF REPORT

Outpatient Antibiotic Prescribing Among United States Nurse Practitioners and Physician Assistants

Guillermo V. Sanchez,[1] Adam L. Hersh,[2] Daniel J. Shapiro,[3] James F. Cawley,[4] and Lauri A. Hicks[1]

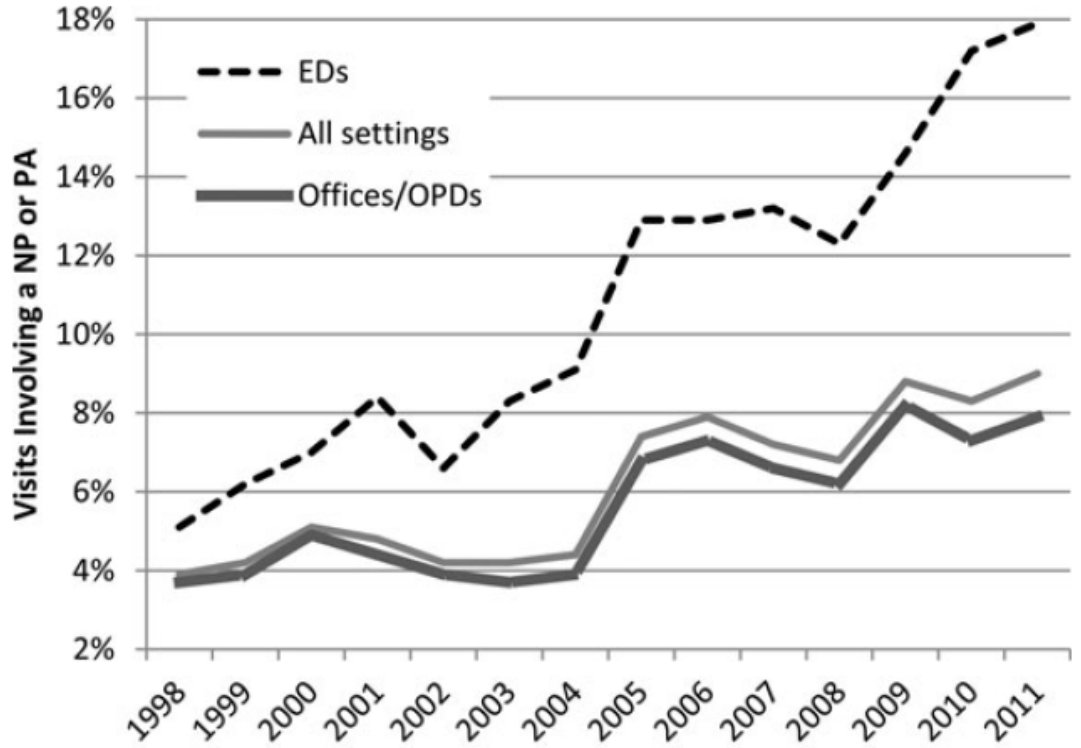


Table 1. Antibiotic Prescribing by Condition and Provider-Type for Adult Ambulatory Visits, 2006–2011[a]

Diagnoses	Proportion of Visits in Which Antibiotics Were Prescribed			Proportion of Antibiotics That Were Broad-Spectrum Antibiotics[b]		
Visit diagnosis	Physician-only	NP/PA	$P(\chi^2)$	Physician-only	NP/PA	$P(\chi^2)$
All ambulatory visits	12%	17%	<.0001	57%	57%	.61
ARTI	54%	61%	<.001	56%	53%	.10

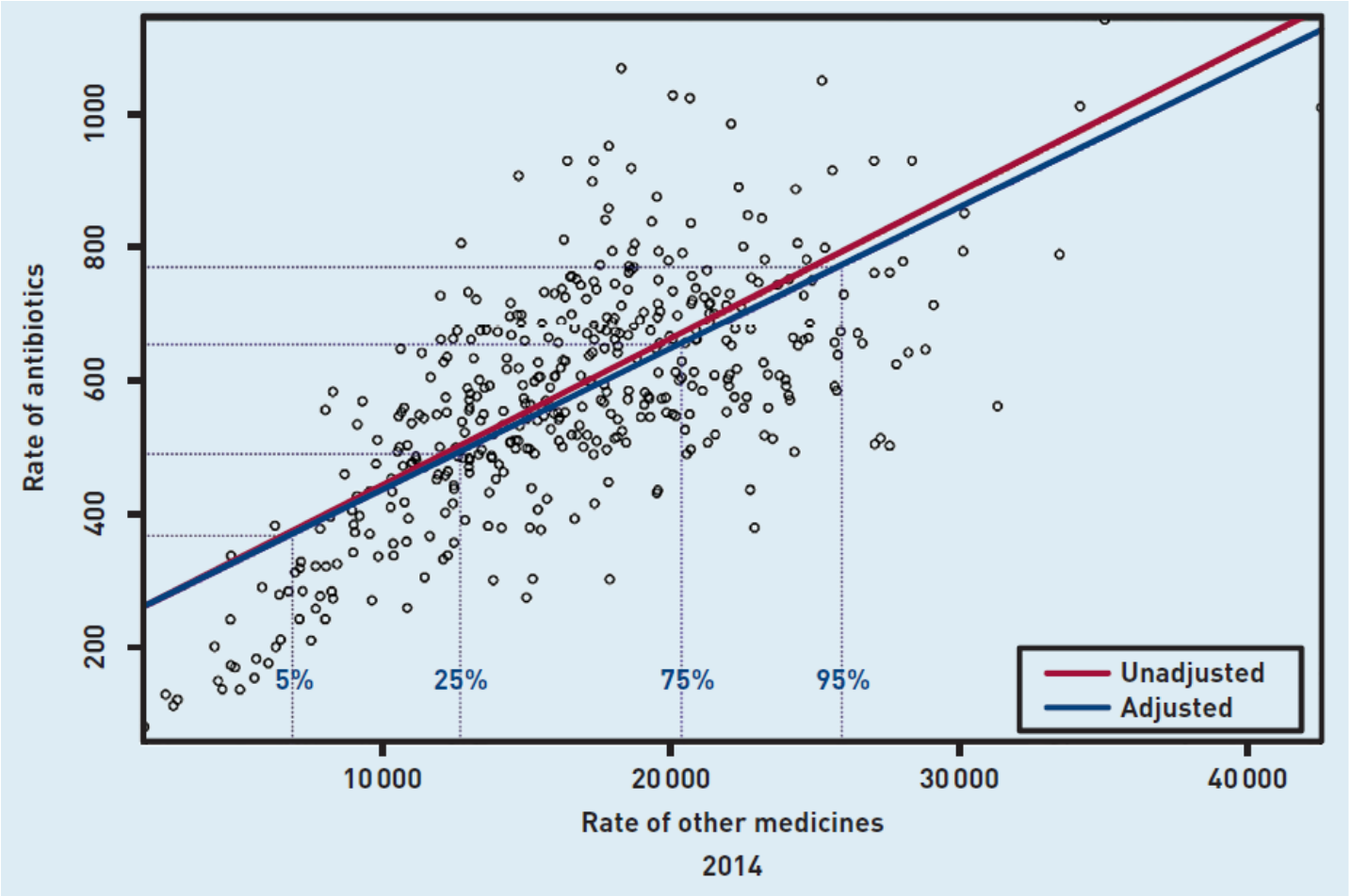
Abbreviations: ARTI, acute respiratory tract infection; ED, emergency department; NP, nurse practitioner; PA, physician' assistant.

[a] Total sample of respiratory visits in which antibiotics were prescribed included 52, 438 physician-only visits, and 9284 NP/PA visits. The NP/PA data includes NPs, PAs, and midwives. Midwives were not present in ED settings. Visits in which a comorbid illness was diagnosed were excluded.

[b] Broad-spectrum antibiotic drug classes were defined as quinolones, macrolides, broad-spectrum cephalosporins (second, third, or fourth generation), broad-spectrum penicillins (amoxicillin/

Relationship between prescribing of antibiotics and other medicines in primary care:

a cross-sectional study



British Journal of General Practice, January 2019

How do we get the Data?

Resistance
- NHSN-AR Module
- NHSN - CDI LabID Event (Fac WideIN)
- NHSN MDRO LabID Module (Coming Soon!)
- Monthly, quarterly, and annual facility reporting
- Epi Data Center
  - Uzo.chukwuma.civ@mail.mil
  - ASHIPS Dashboard: https://nmcpeh-hpwebsvr.med.navy.mil/ASHIPS/Default.aspx

Antimicrobial Utilization
- NHSN-AU Module
- Pharmacovigilance Center
  - Michelle.j.lacour.civ@mail.mil
  - Carepoint https://carepoint.health.mil

CDI
- Local infection prevention

What do we do with the data?

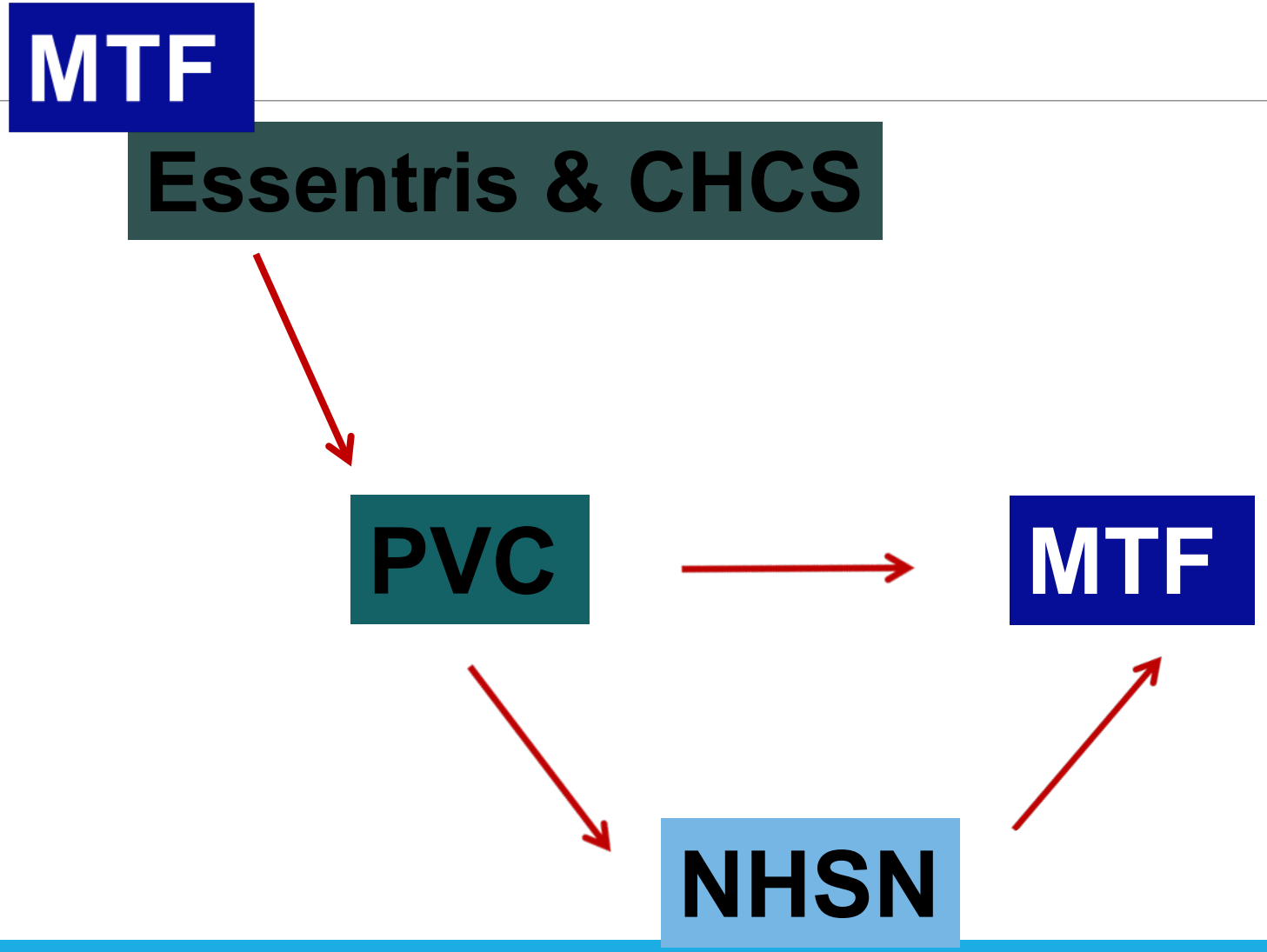
High volume bugs
- E coli

High volume drugs
- cefazolin

High risk bugs
- MDRO—ESBL, CRE, MRSA, VRE

High risk drugs
- Adverse effects
- C diff risk—Clindamycin!
- Driving resistance

Antimicrobial Utilization Data



https://carepoint.health.mil/SitePages/Detail.aspx?detailId=7236

Search...

404 - File or directory not ... | Carepoint Portal | Carepoint Portal | Carepoint Portal | Carepoint Portal | Carepoint Portal | Carepoint Portal | Carepoint Portal | Carepoint Portal | CarePoint Tableau Viewer

This page contains dynamic content -- Highest Possible Classification is UNCLASSIFIED/FOR OFFICIAL USE ONLY

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Individual MTF Inpatient ABX Utilization Report FY2019Q3

Tableau

Summary

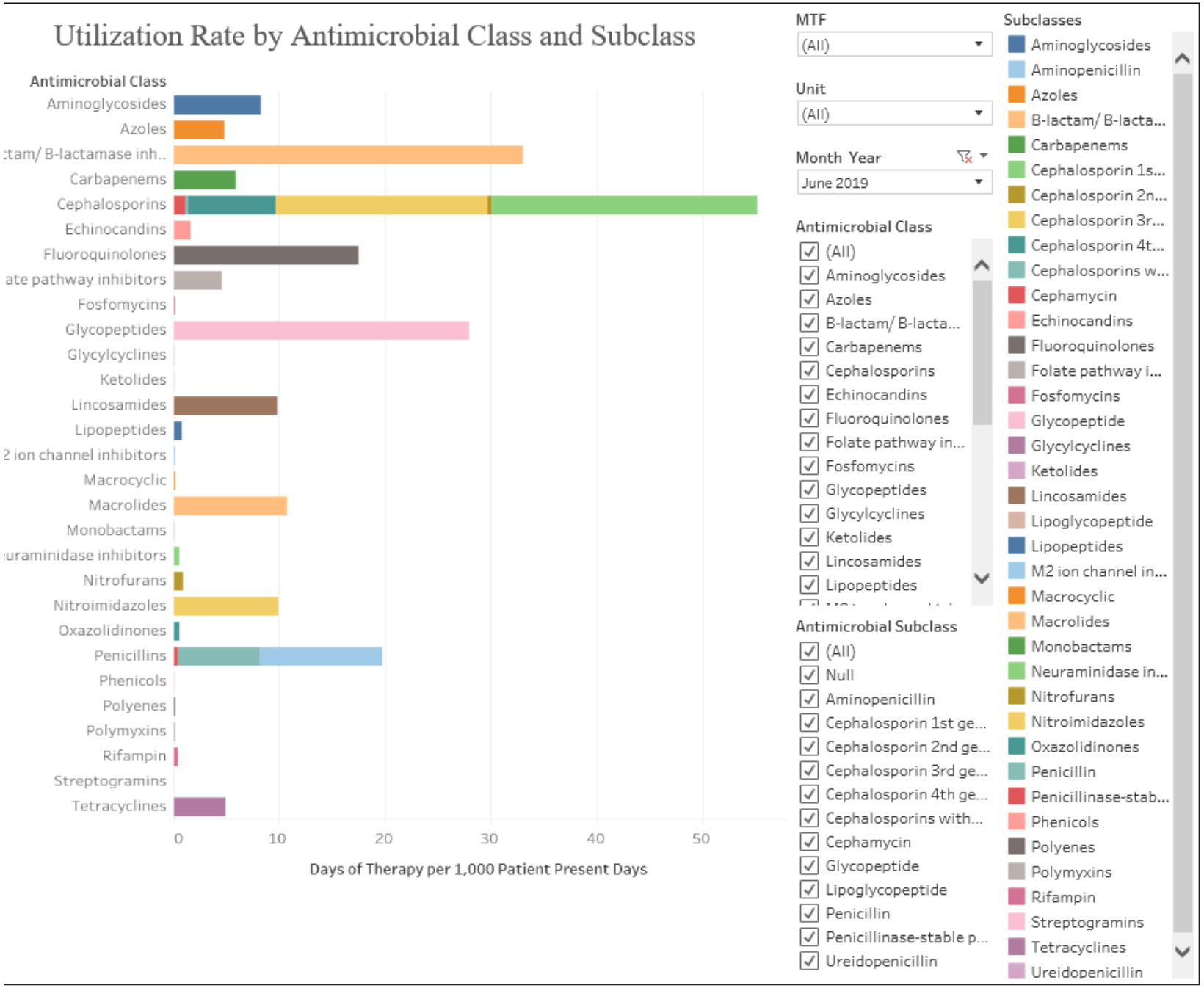
Monthly inpatient antibiotic use data for MTFs reporting to NHSN AU module

Favorite | Subscribe

Meta Data | Version History

Program	PVC Antibiotics Usage Reporting for ASP
Author	Rosenie Thelus
Contact Name	Michelle Lacour
Contact Email	michelle.j.lacour.mil@mail.mil

ntDoT | TdaysVsPdays | PredominantUse | PredominantUse2 | AbxRate | MonthlyClassRate | MonthlySubclassRate | RouteAbx | RouteAbx2



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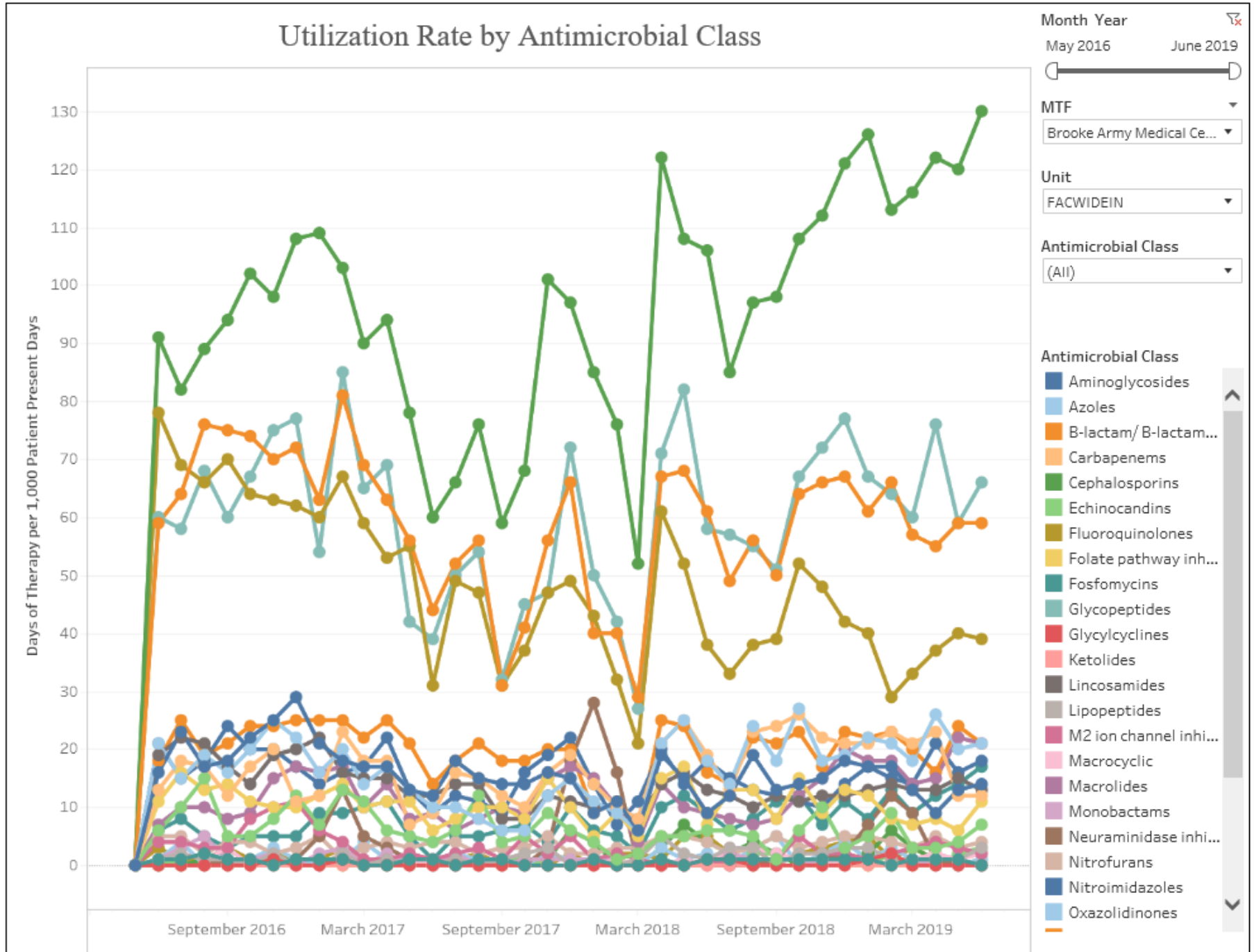
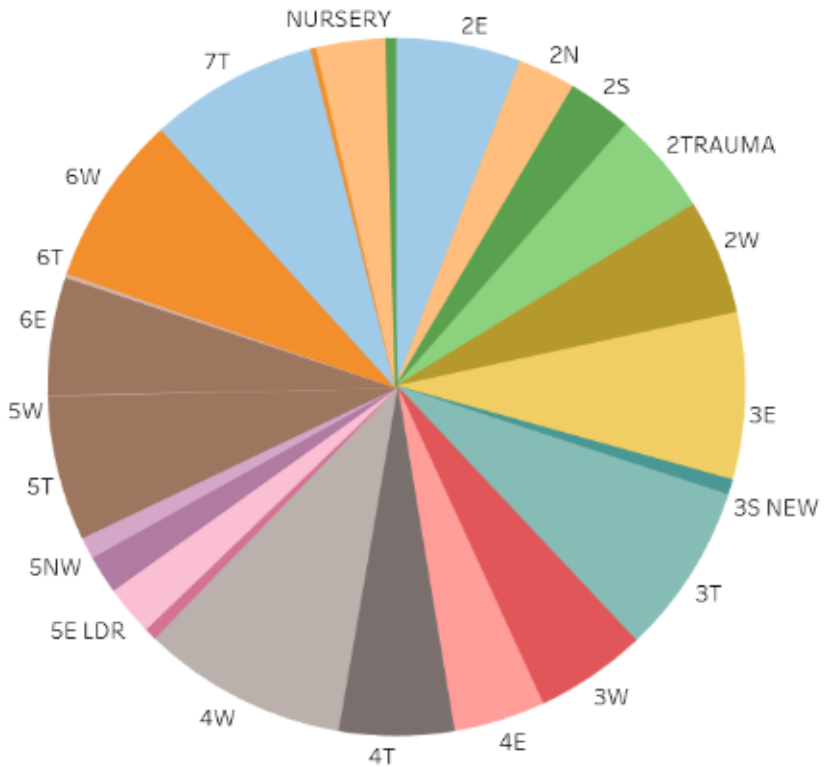


Days of Therapy Contribution by Unit

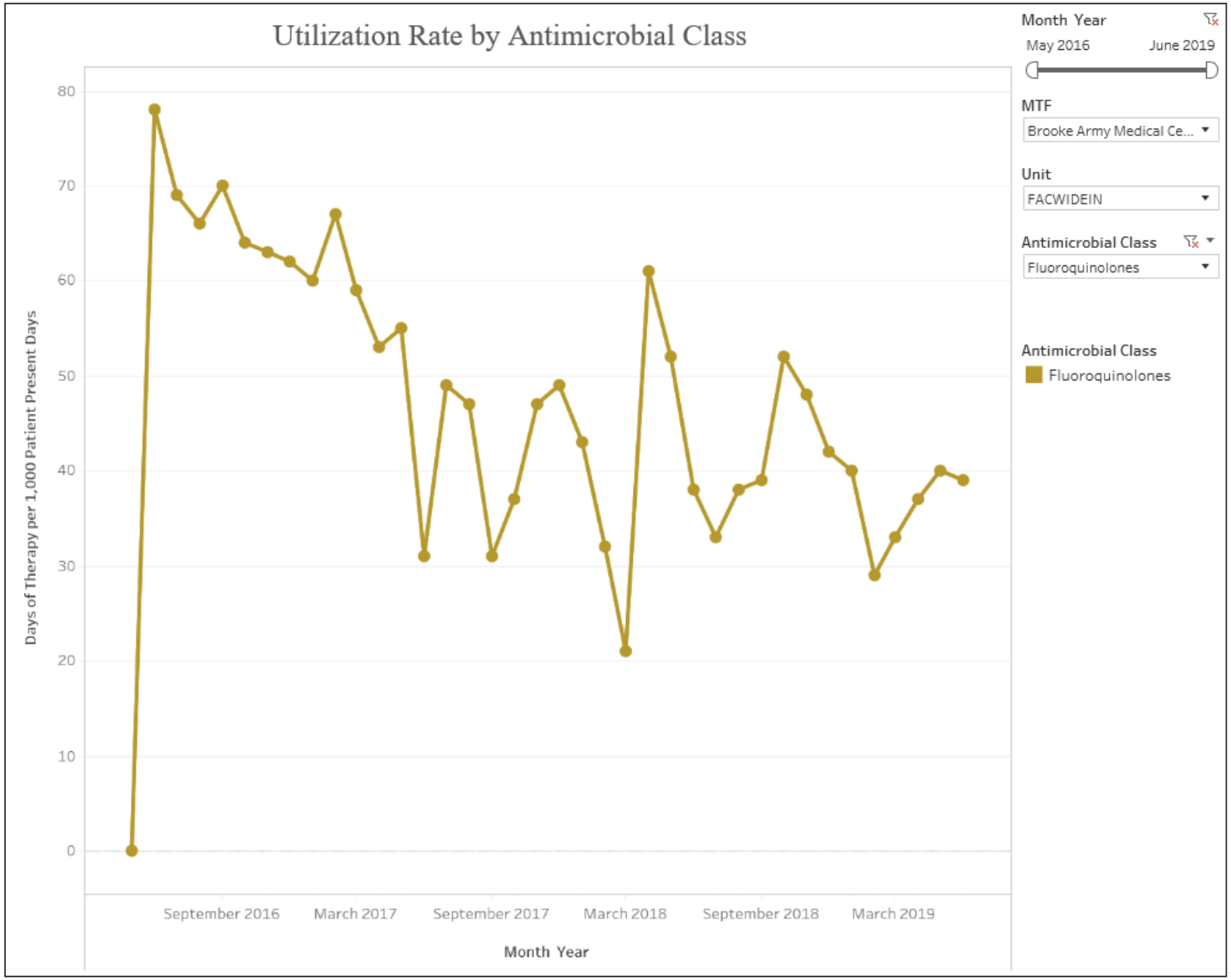


MTF
Brooke Army Medical...

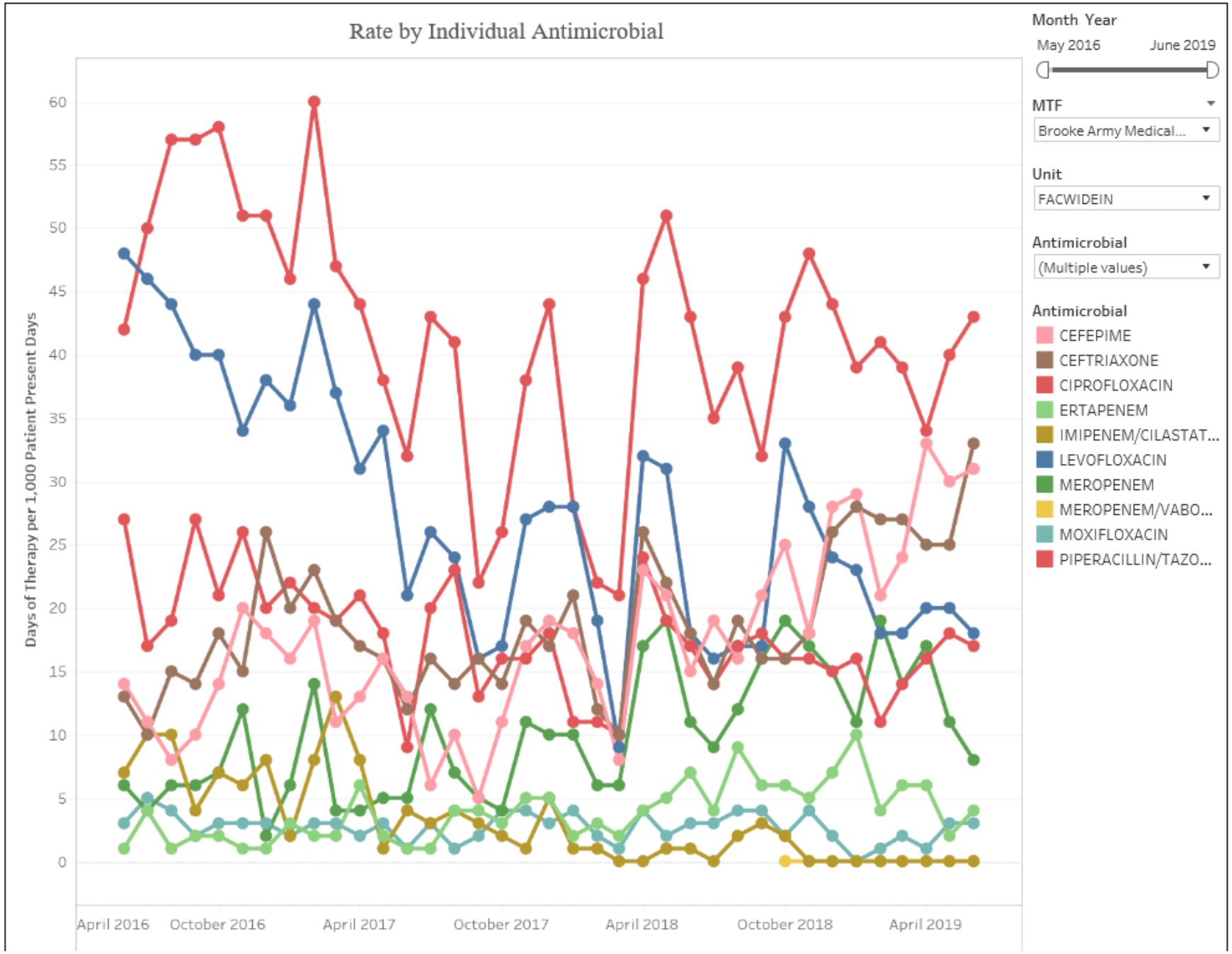
Month Year
June 2019

Unit
- 2E
- 2N
- 2S
- 2TRAUMA
- 2W
- 3E
- 3S NEW
- 3T
- 3W
- 4E
- 4T
- 4W
- 5E
- 5E LDR
- 5N
- 5NW
- 5T
- 5W
- 6E
- 6T
- 6W
- 7T
- DEM
- NICU
- NURSERY

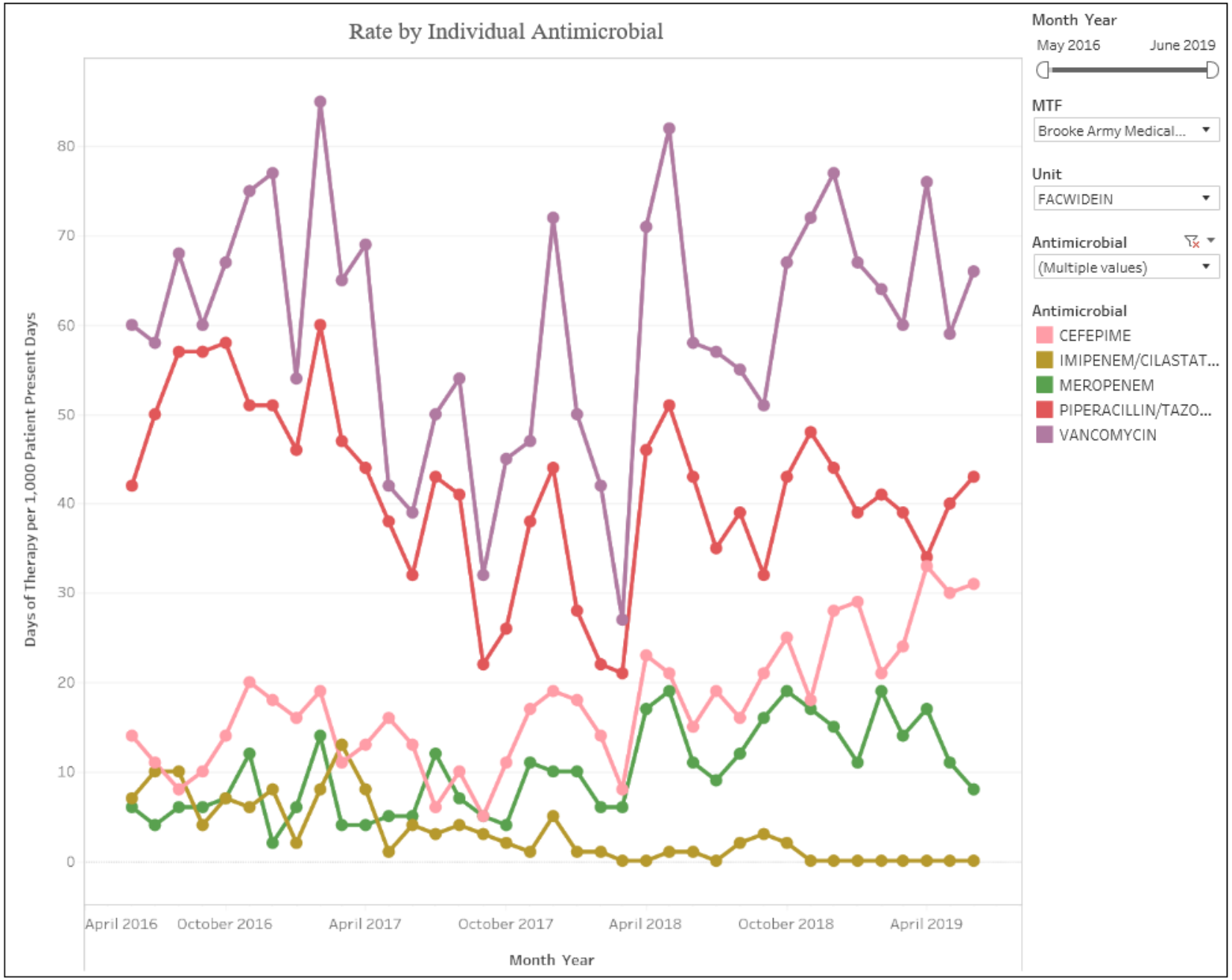
ntDoT | TdaysVsPdays | PredominantUse | PredominantUse2 | AbxRate | MonthlyClassRate | MonthlySubclassRate | RouteAbx | RouteAbx2

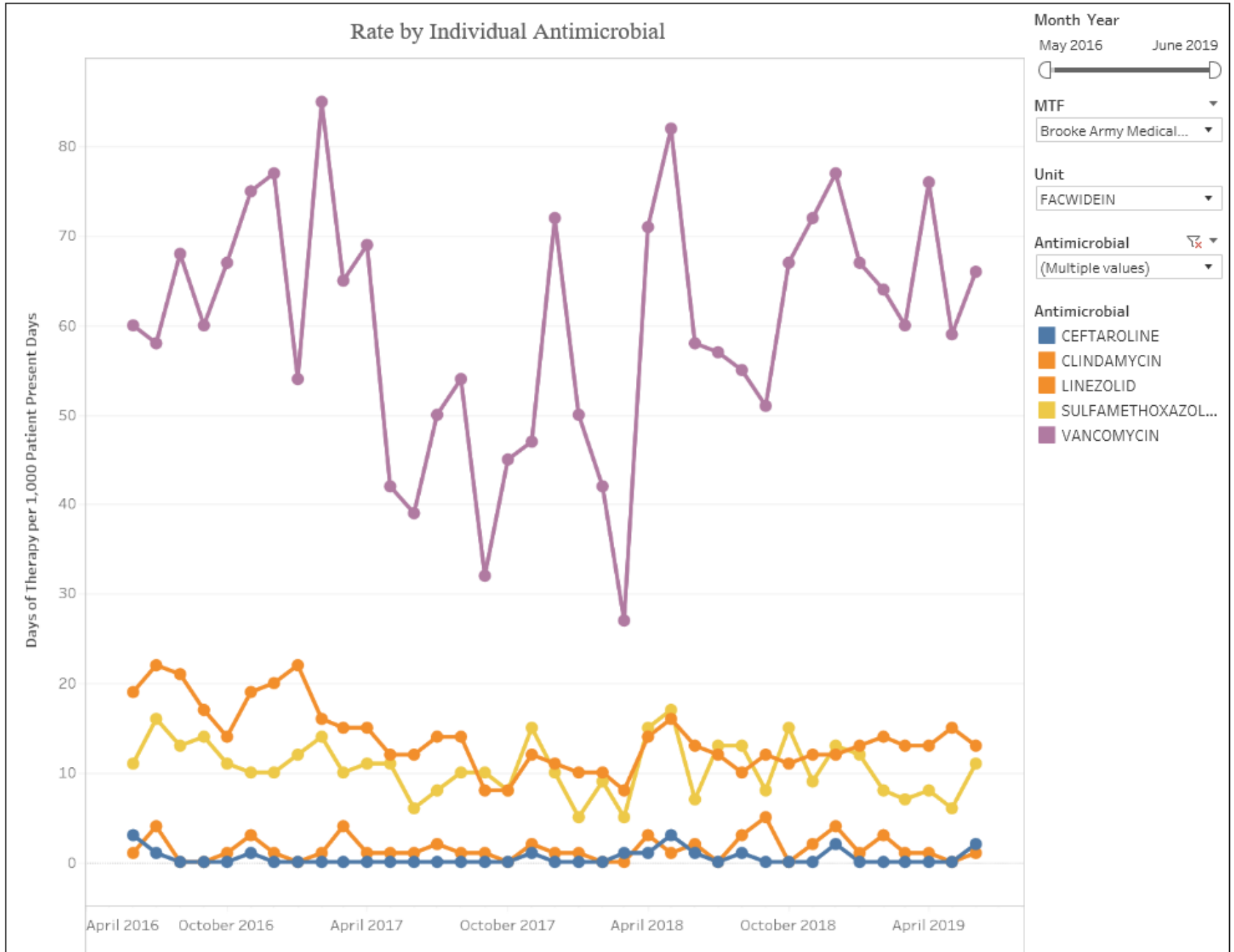


Reference | MonthlyUnitRate1 | MonthlyUnitRate2 | PercentDoT | TdaysVsPdays | PredominantUse | PredominantUse2 | AbxRate | Monthly

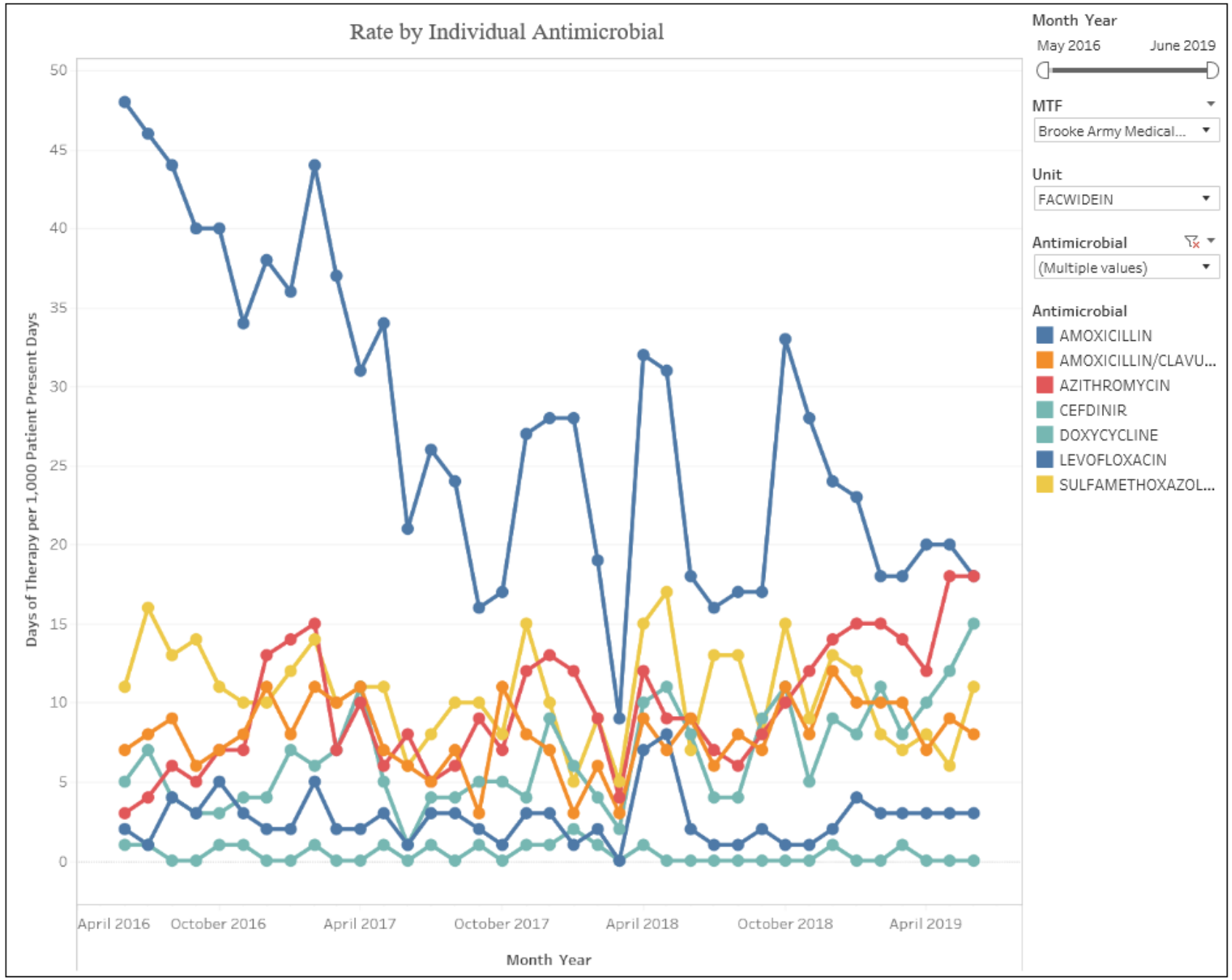


Reference | MonthlyUnitRate1 | MonthlyUnitRate2 | PercentDoT | TdaysVsPdays | PredominantUse | PredominantUse2 | AbxRate | Monthly

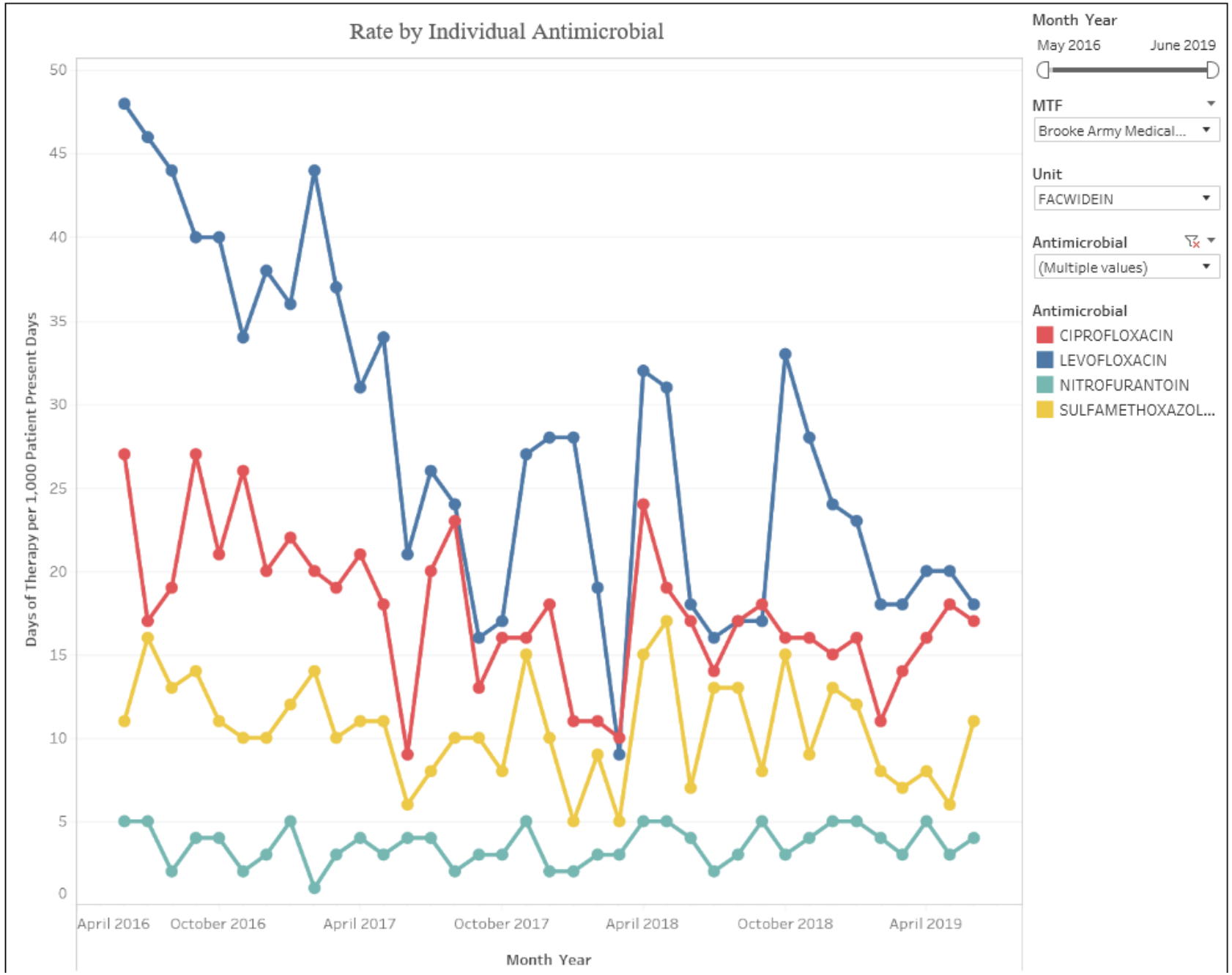



Rate by Individual Antimicrobial
Days of Therapy per 1,000 Patient Present Days
0
10
20
30
40
50
60
70
80
April 2016
October 2016
April 2017
October 2017
April 2018
October 2018
April 2019
Month Year
May 2016
June 2019
MTF
Brooke Army Medical...
Unit
FACWIDEIN
Antimicrobial
(Multiple values)
Antimicrobial
CEFTAROLINE
CLINDAMYCIN
LINEZOLID
SULFAMETHOXAZOL...
VANCOMYCIN

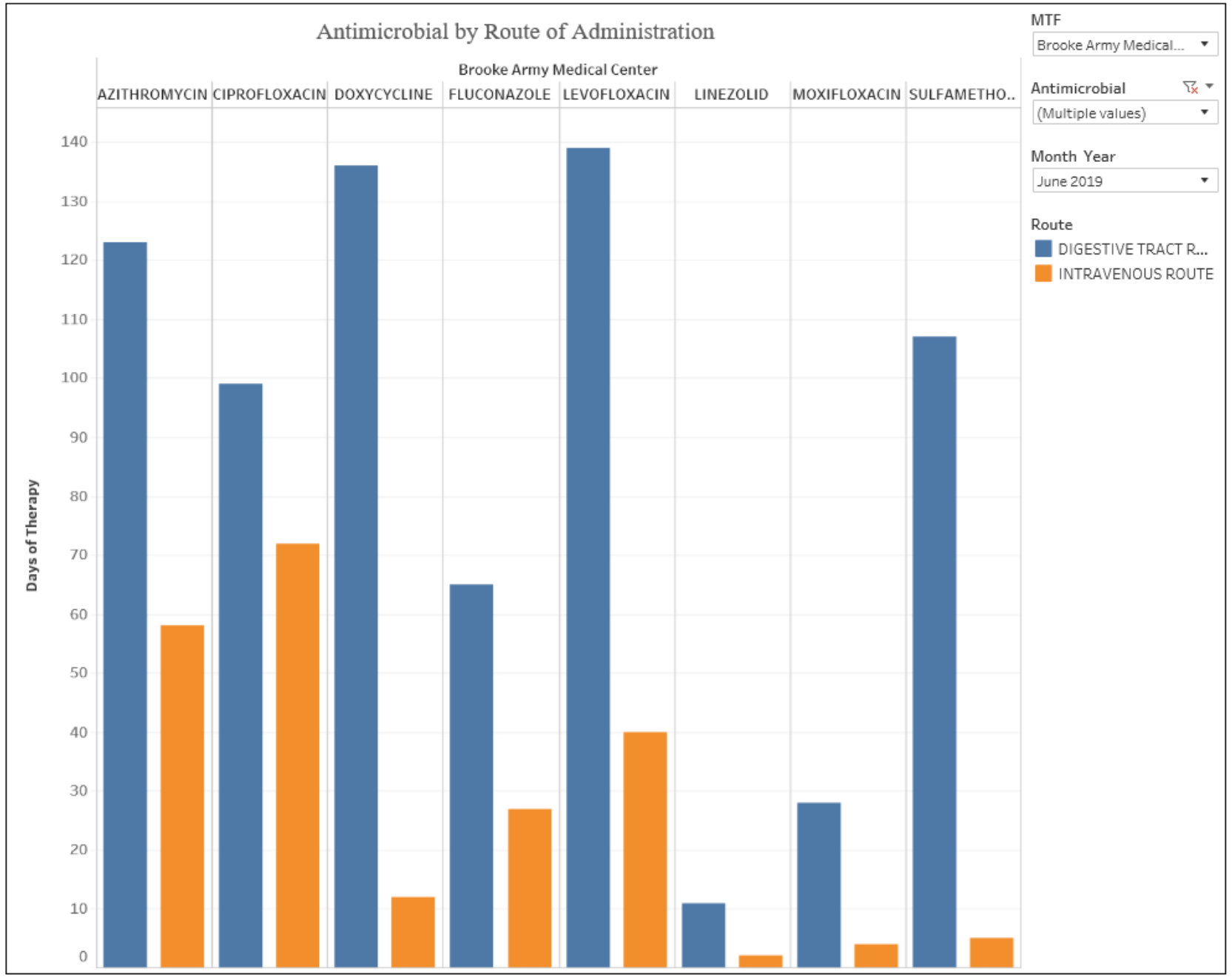
Reference | MonthlyUnitRate1 | MonthlyUnitRate2 | PercentDoT | TdaysVsPdays | PredominantUse | PredominantUse2 | AbxRate | Monthly



Reference | MonthlyUnitRate1 | MonthlyUnitRate2 | PercentDoT | TdaysVsPdays | PredominantUse | PredominantUse2 | AbxRate | Monthly



ntDoT | TdaysVsPdays | PredominantUse | PredominantUse2 | AbxRate | MonthlyClassRate | MonthlySubclassRate | RouteAbx | RouteAbx2



Outpatient Abx-WHASC IM Clinic

MEPRS3 Description	Provider Name		2018Q1			2018Q2			2018Q3			2018Q4		
		ABX/100 PT	Count ABX	Count PT	ABX/100 PT	Count ABX	Count PT	ABX/100 PT	Count ABX	Count PT	ABX/100 PT	Count ABX	Count PT	ABX/100 PT
NTERNAL MEDICINE CLINIC														
												1	130	0.77
												4	302	1.32
		2.34	4	238	1.68	8	254	3.15				4	358	1.12
		2.37	23	409	5.62	22	421	5.23	23	429	5.36	12	401	2.99
		0.77	11	336	3.27	4	211	1.90	2	234	0.85			
		2.13	1	23	4.35	1	46	2.17	3	58	5.17			
						2	36	5.56						
			2	143	1.40	6	275	2.18	4	302	1.32	2	156	1.28
		8.33	1	23	4.35									
		6.88							4	242	1.65	4	271	1.48
						3	44	6.82						
		3.04	20	383	5.22	18	371	4.85	24	458	5.24	10	508	1.97
		0.69	5	302	1.66	5	190	2.63	1	106	0.94			
		1.67	1	51	1.96	1	58	1.72	3	53	5.66			
		2.44				1	35	2.86	1	32	3.13	1	22	4.55
									1	57	1.75			
			2	48	4.17	1	49	2.04						
		2.43	7	282	2.48	3	225	1.33	1	150	0.67			
		1.49	1	75	1.33	1	87	1.15				4	339	1.18
												6	321	1.87
		3.49	36	261	13.79	33	222	14.86	22	235	9.36	17	331	5.14
		0.74	2	250	0.80	6	152	3.95	6	244	2.46			

Outpatient Abx—WHASC FP Clinic

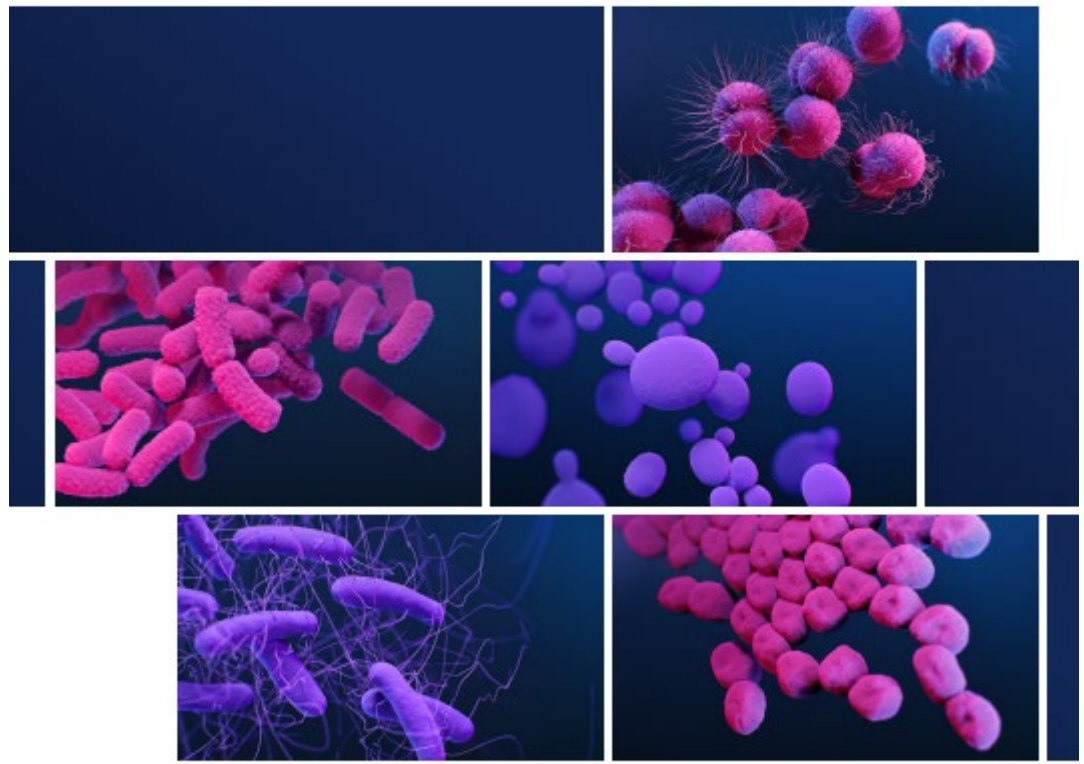
ode	MEPRS3 Description	Provider Name		2018Q1			2018Q2			2018Q3			2018Q4		
			ABX/100 PT	Count ABX	Count PT	ABX/100 PT	Count ABX	Count PT	ABX/100 PT	Count ABX	Count PT	ABX/100 PT	Count ABX	Count PT	ABX/100 PT
	FAMILY PRACTICE MEDICINE														
		[redacted]					1	56	1.79	2	21	9.52			
							6	128	4.69	13	690	1.88	10	474	2.11
							4	38	10.53	19	439	4.33	35	618	5.66
			2.30	13	597	2.18	24	819	2.93	13	722	1.80	21	738	2.85
			7.47	82	701	11.70									
			4.00	50	768	6.51	8	237	3.38	23	516	4.46	39	643	6.07
			3.65												
			6.49												
			4.59	34	624	5.45	29	695	4.17	17	585	2.91	4	124	3.23
			2.83	38	510	7.45	20	511	3.91				4	35	11.43
							1	2	50.00						
				3	7	42.86									
			4.52	24	473	5.07	16	265	6.04						
			5.50												
			13.85	5	58	8.62									
										1	8	12.50			
										46	3	1533.33			
			2.76	4	316	1.27	20	833	2.40	18	742	2.43			
							12	121	9.92						
			6.46	45	551	8.17									
			1.60	27	587	4.60									
													12	109	11.01
				1	4	25.00	1	4	25.00	27	10	270.00			
							4	45	8.89	2	54	3.70			
			18.92	18	100	18.00	22	103	21.36	6	40	15.00	2	20	10.00
			3.75	30	655	4.58	15	762	1.97	14	768	1.82	19	647	2.94
			4.55												
										9	83	10.84			
										30	575	5.22	18	578	3.11

Outpatient Abx—WHASC ED

Provider Name	2018Q1			2018Q2			2018Q3			2018Q4		
	ABX/100 PT	Count ABX	Count PT	ABX/100 PT	Count ABX	Count PT	ABX/100 PT	Count ABX	Count PT	ABX/100 PT	Count ABX	Count PT	ABX/100 PT
[redacted]					1	13	7.69						
		4	29	13.79	10	52	19.23						
		46	202	22.77	35	172	20.35	27	136	19.85	23	145	15.86
		19	111	17.12	22	139	15.83						
											2	32	6.25
		1	4	25.00	7	44	15.91						
											3	33	9.09
		34	256	13.28	16	122	13.11						
											3	23	13.04
											25	103	24.27
		239	850	28.12	178	606	29.37	76	283	26.86	55	173	31.79
		63	331	19.03	93	653	14.24	74	453	16.34	88	479	18.37
											7	37	18.92
					3	12	25.00						
		174	670	25.97	153	616	24.84	152	489	31.08			
					18	137	13.14				9	65	13.85
											21	183	11.48
		29	220	13.18	3	46	6.52						
											18	93	19.35
		140	762	18.37	102	617	16.53	81	446	18.16	62	375	16.53
								13	85	15.29	119	457	26.04
		20	102	19.61	17	142	11.97	24	111	21.62	6	28	21.43
					57	337	16.91	70	328	21.34			
					2	16	12.50						
		54	418	12.92	18	104	17.31	4	26	15.38			
		39	196	19.90	4	21	19.05						
					35	465	7.53	79	623	12.68	76	567	13.40
					10	95	10.53	9	128	7.03	11	104	10.58
											3	16	18.75
					29	97	29.90	45	154	29.22	16	78	20.51
								1	3	33.33	1	2	50.00
					35	213	16.43	101	548	18.43	110	655	16.79
		21	92	22.83				10	81	12.35	13	86	15.12

ANTIBIOTIC RESISTANCE THREATS IN THE UNITED STATES

2019



U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

New National Estimate*

Each year, antibiotic-resistant bacteria and fungi cause at least an estimated:

2,868,700 infections

35,900 deaths

+

***Clostridioides difficile* is related to antibiotic use and antibiotic resistance:**

223,900 cases

12,800 deaths

New Antibiotic Resistance Threats List

Updated urgent, serious, and concerning threats—totaling 18

5 urgent threats

2 new threats

NEW: Watch List with **3** threats

Antibiotic resistance remains a significant One Health problem, affecting humans, animals, and the environment. Data show infection prevention and control is saving lives—especially in hospitals—but threats may undermine this progress without continued aggressive action now.

Learn more: www.cdc.gov/DrugResistance/Biggest-Threats

Urgent Threats

- Carbapenem-resistant *Acinetobacter*
- *Candida auris*
- *Clostridioides difficile*
- Carbapenem-resistant Enterobacteriaceae
- Drug-resistant *Neisseria gonorrhoeae*

Serious Threats

- Drug-resistant *Campylobacter*
- Drug-resistant *Candida*
- ESBL-producing Enterobacteriaceae
- Vancomycin-resistant *Enterococci*
- Multidrug-resistant *Pseudomonas aeruginosa*
- Drug-resistant nontyphoidal *Salmonella*
- Drug-resistant *Salmonella* serotype Typhi
- Drug-resistant *Shigella*
- Methicillin-resistant *Staphylococcus aureus*
- Drug-resistant *Streptococcus pneumoniae*
- Drug-resistant Tuberculosis

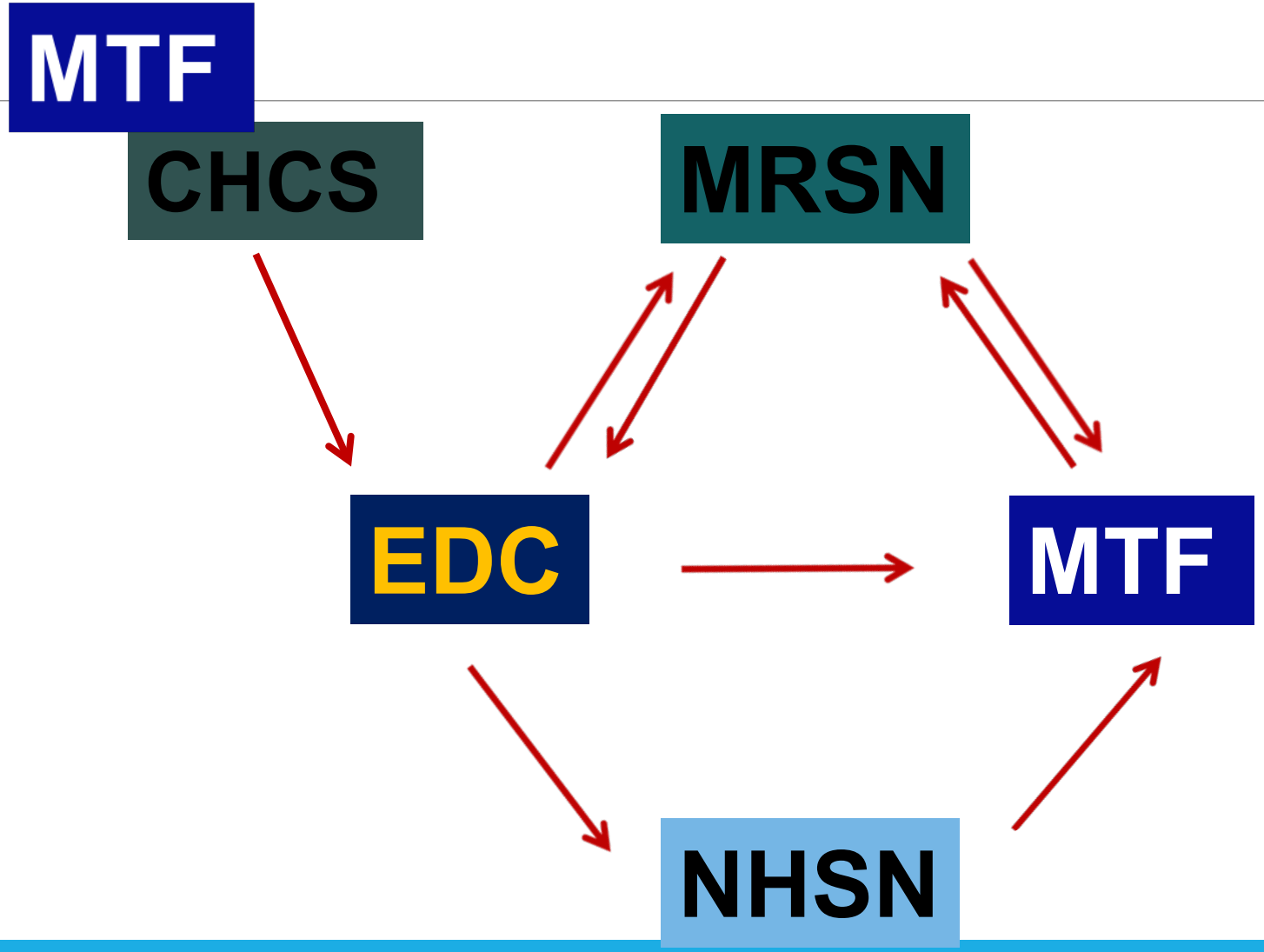
Concerning Threats

- Erythromycin-resistant group A *Streptococcus*
- Clindamycin-resistant group B *Streptococcus*

Watch List

- Azole-resistant *Aspergillus fumigatus*
- Drug-resistant *Mycoplasma genitalium*
- Drug-resistant *Bordetella pertussis*

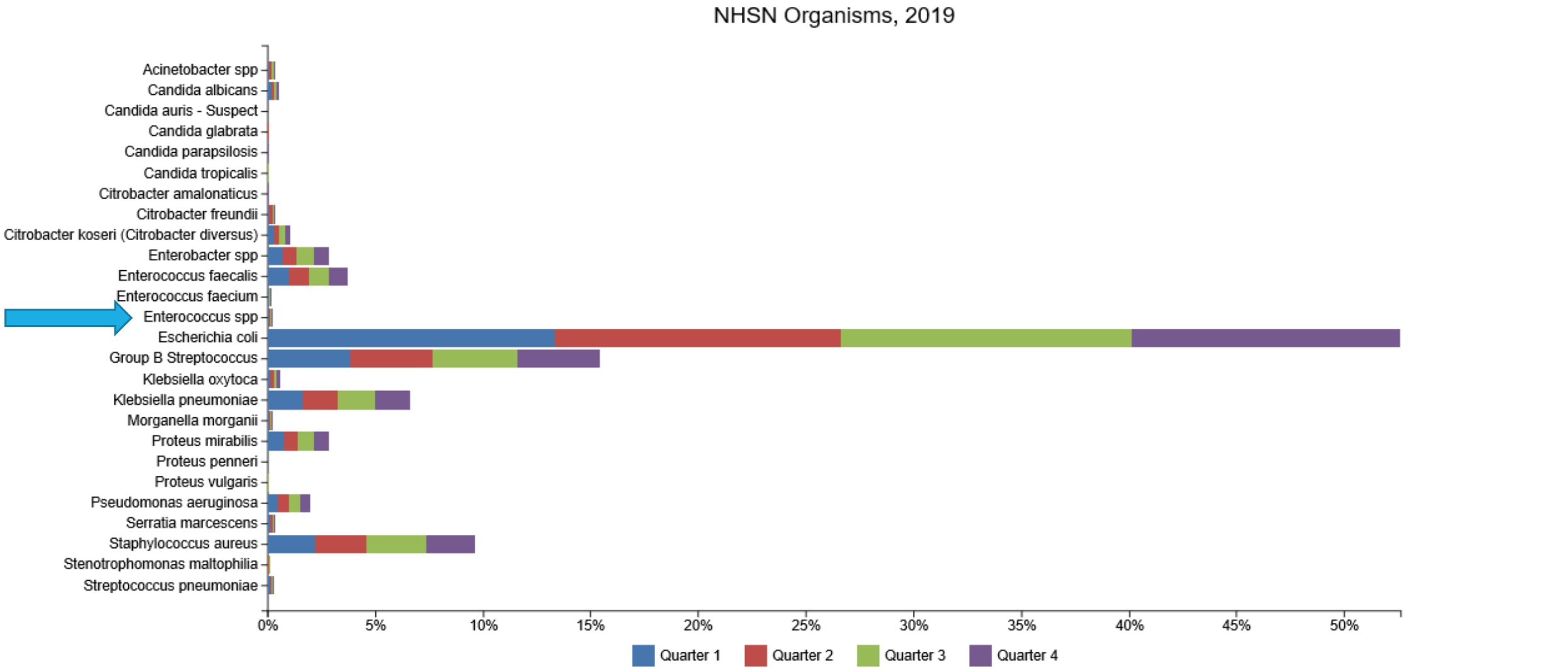
Antimicrobial Resistance Data



Antimicrobial Stewardship, Hospital Infections, and Patient Safety Surveillance (ASHIPS)

DOD Isolates, 2019

STAR Stewardship Antibiotic Report



Stewardship Antibiotic Report

STAR

Detailed Summary, Top 5 Organisms

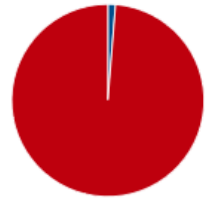
	Escherichia coli		Group B Streptococcus		Staphylococcus aureus		Klebsiella pneumoniae		Enterococcus faecalis	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Total	15,261	53.4	4,364	15.3	2,535	8.9	1,846	6.5	1,146	4
Facility Service										
Air Force	3,376	22.1	649	14.9	392	15.5	340	18.4	184	16.1
All Services	0	0	0	0	0	0	0	0	0	0
Army	5,988	39.2	1,707	39.1	1,083	42.7	808	43.8	478	41.7
Capital Region	2,015	13.2	695	15.9	347	13.7	277	15	164	14.3
Navy	3,881	25.4	1,312	30.1	713	28.1	421	22.8	320	27.9
Unknown	1	0	1	0	0	0	0	0	0	0
Facility Region										
OCONUS	1,509	9.9	258	5.9	240	9.5	117	6.3	61	5.3
US Midwest	920	6	226	5.2	190	7.5	101	5.5	78	6.8
US Northeast	175	1.1	28	0.6	29	1.1	12	0.7	14	1.2
US South	3,384	22.2	793	18.2	550	21.7	490	26.5	275	24
US South Atlantic	5,499	36	1,910	43.8	990	39.1	717	38.8	398	34.7
US West	3,774	24.7	1,149	26.3	536	21.1	409	22.2	320	27.9
Specimen Location										
Inpatient	385	2.5	91	2.1	304	12	125	6.8	143	12.5
Outpatient	14,876	97.5	4,273	97.9	2,231	88	1,721	93.2	1,003	87.5
Unknown	0	0	0	0	0	0	0	0	0	0
Gender										
Female	13,874	90.9	3,972	91	928	36.6	1,482	80.3	688	60
Male	1,387	9.1	392	9	1,607	63.4	364	19.7	458	40
Unknown	0	0	0	0	0	0	0	0	0	0
Beneficiary Category										
Active Duty	3,274	21.5	1,210	27.7	762	30.1	269	14.6	148	12.9
Dependent	9,892	64.8	2,738	62.7	987	38.9	1,173	63.5	579	50.5
Other	884	5.8	190	4.4	321	12.7	148	8	137	12
Recruit	115	0.8	63	1.4	107	4.2	14	0.8	4	0.3
Retired	1,096	7.2	163	3.7	358	14.1	242	13.1	278	24.3
Unknown	0	0	0	0	0	0	0	0	0	0
Age (in years)										
0-4	433	2.8	28	0.6	198	7.8	25	1.4	81	7.1

Specimen Sources

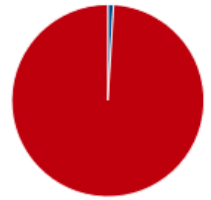
Invasive vs. Non-Invasive

Enterococcus faecalis

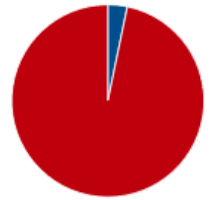
Escherichia coli



Group B Streptococcus



Klebsiella pneumoniae



Monthly MDRO Surveillance Summaries (DOD)

MDRO

Department of Defense Unique MDRO Isolate Counts, 2020

MDRO	Quarter 1					
	Jan	Feb	Mar	Total	Apr	M
MRSA	260			260		
MSSA	521			521		
VISA	0			0		
VRSA	0			0		
VRE	11			11		
C. difficile	133			133		
CNS P. aeruginosa	26			26		
CNS Acinetobacter	1			1		
CephR Klebsiella	2			2		
CRE Enterobacteriacae	3			3		
MDR Acinetobacter	1			1		
MDR P. aeruginosa	9			9		
MDR S. pneumoniae	0			0		
ESBL E. coli	195			195		
ESBL E. aerogenes	15			15		
ESBL E. cloacae	5			5		
ESBL K. pneumoniae	30			30		
S. maltophilia	17			17		
Burkholderia cepacia	1			1		
TOTAL	1230			1230		

33% of *S. Aureus* is MRSA

Monthly MDRO Surveillance Summaries (DOD)

MDRO

Department of the Air Force Unique MDRO Isolate Counts, 2020

MDRO	Quarter 1				Quart		
	Jan	Feb	Mar	Total	Apr	May	
MRSA	47			47			
MSSA	83			83			
VISA	0			0			
VRSA	0			0			
VRE	1			1			
C. difficile	40			40			
CNS P. aeruginosa	6			6			
CNS Acinetobacter	0			0			
CephR Klebsiella	0			0			
CRE Enterobacteriacae	0			0			
MDR Acinetobacter	0			0			
MDR P. aeruginosa	3			3			
MDR S. pneumoniae	0			0			
ESBL E. coli	43			43			
ESBL E. aerogenes	1			1			
ESBL E. cloacae	2			2			
ESBL K. pneumoniae	9			9			
S. maltophilia	5			5			
Burkholderia cepacia	0			0			
TOTAL	240			240			

36% MRSA

Monthly MDRO Surveillance Summaries (DOD)

MDRO

Lackland AFB Unique MDRO Isolate Counts, 2020

MDRO	Quarter 1			
	Jan	Feb	Mar	Total
MRSA	5			5
MSSA	6			6
VISA	0			0
VRSA	0			0
VRE	0			0
C. difficile	2			2
CNS P. aeruginosa	0			0
CNS Acinetobacter	0			0
CephR Klebsiella	0			0
CRE Enterobacteriacae	0			0
MDR Acinetobacter	0			0
MDR P. aeruginosa	0			0
MDR S. pneumoniae	0			0
ESBL E. coli	5			5
ESBL E. aerogenes	0			0
ESBL E. cloacae	0			0
ESBL K. pneumoniae	2			2
S. maltophilia	0			0
Burkholderia cepacia	0			0
TOTAL	20			20

Monthly MDRO Surveillance Summaries (DOD)

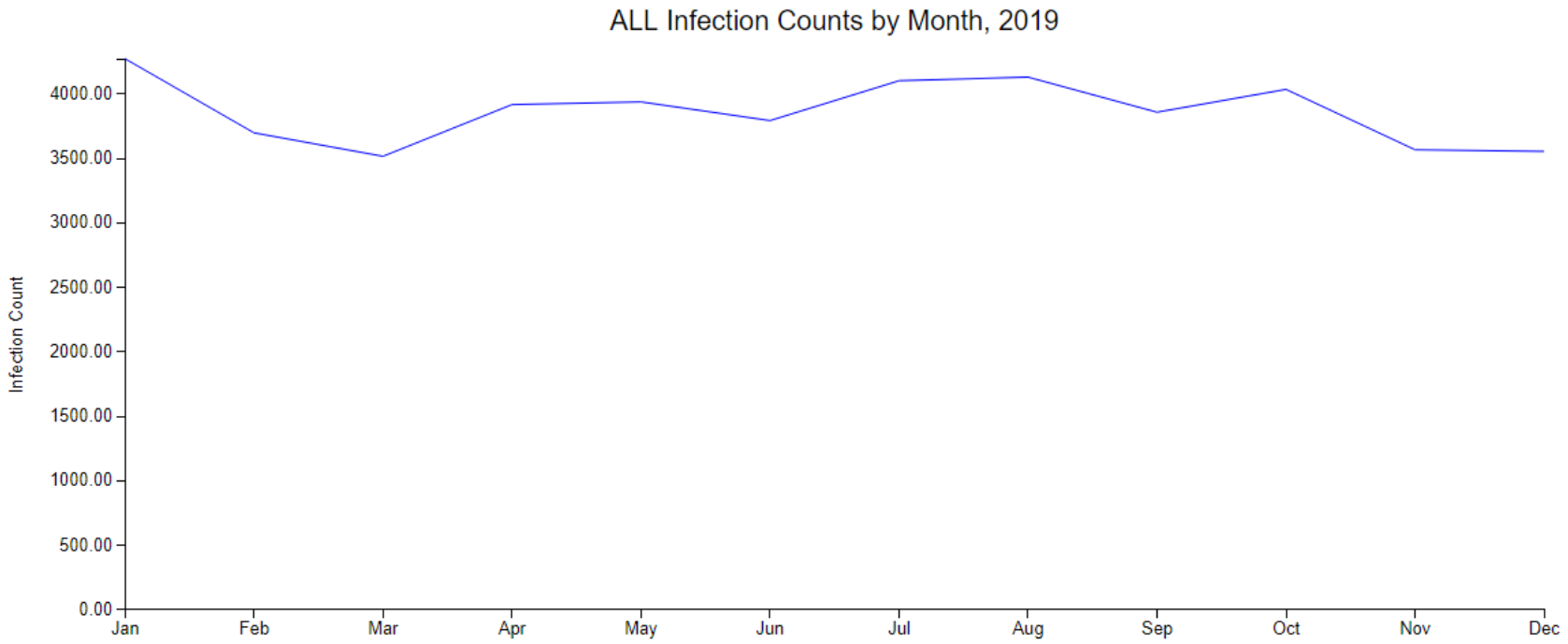
MDRO

Brooke AMC Unique MDRO Isolate Counts, 2020

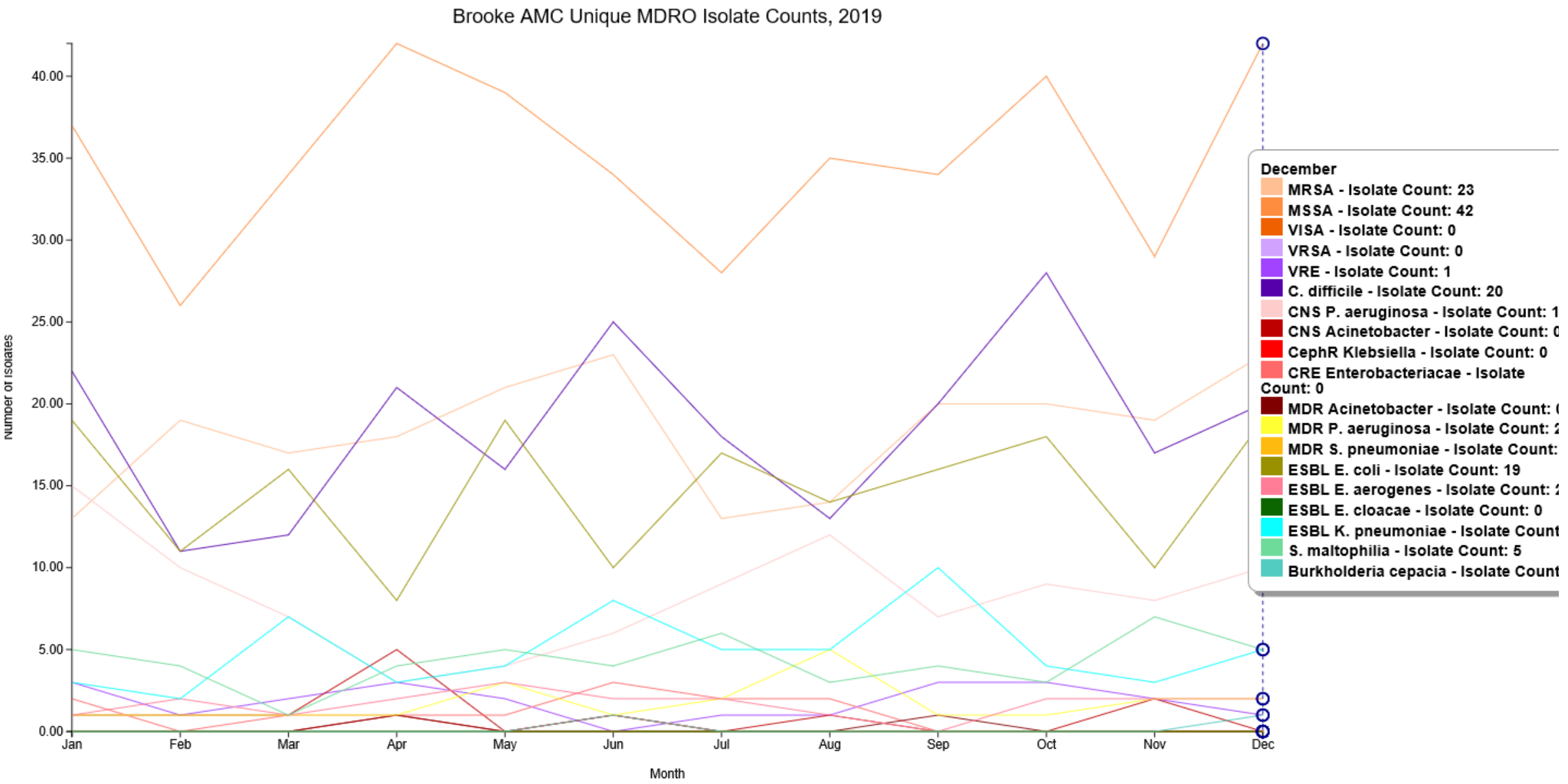
MDRO	Quarter 1			
	Jan	Feb	Mar	Total
MRSA	27			27
MSSA	31			31
VISA	0			0
VRSA	0			0
VRE	1			1
C. difficile	16			16
CNS P. aeruginosa	10			10
CNS Acinetobacter	1			1
CephR Klebsiella	1			1
CRE Enterobacteriacae	1			1
MDR Acinetobacter	1			1
MDR P. aeruginosa	2			2
MDR S. pneumoniae	0			0
ESBL E. coli	20			20
ESBL E. aerogenes	1			1
ESBL E. cloacae	0			0
ESBL K. pneumoniae	6			6
S. maltophilia	5			5
Burkholderia cepacia	1			1
TOTAL	124			124

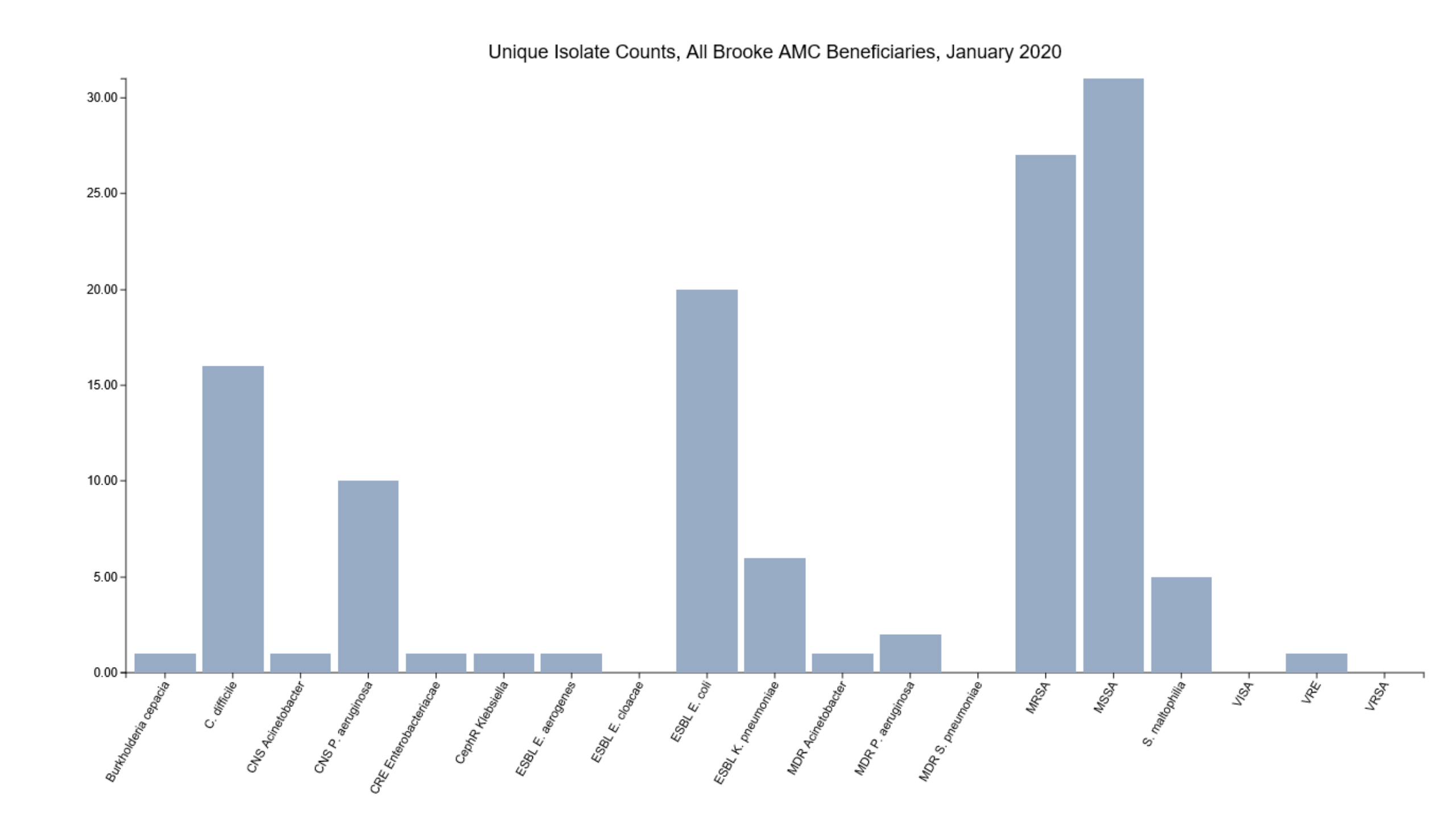
46% MRSA

Stewardship: Quarterly (ASHIPS)



Infection Counts, Army, 2019											
		Quarter 1		Quarter 2		Quarter 3		Quarter 4		Annual Total	
		Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Total Number of Infections		11,490	100	11,651	100	12,093	100	11,159	100	46,393	100
Total Number of IP Infections		660	5.7	660	5.7	611	5.1	678	6.1	2,609	5.6
	INTERNAL MEDICINE	283	42.9	268	40.6	261	42.7	284	41.9	1,096	42
	GENERAL SURGERY	152	23	158	23.9	162	26.5	158	23.3	630	24.1
Total Number of ER Infections		2,825	24.6	2,874	24.7	3,173	26.2	3,036	27.2	11,908	25.7
	GENERAL EMERGENCY ROOM	2,606	92.2	2,656	92.4	2,969	93.6	2,827	93.1	11,058	92.9
	PEDIATRIC EMERGENCY ROOM	219	7.8	218	7.6	204	6.4	209	6.9	850	7.1

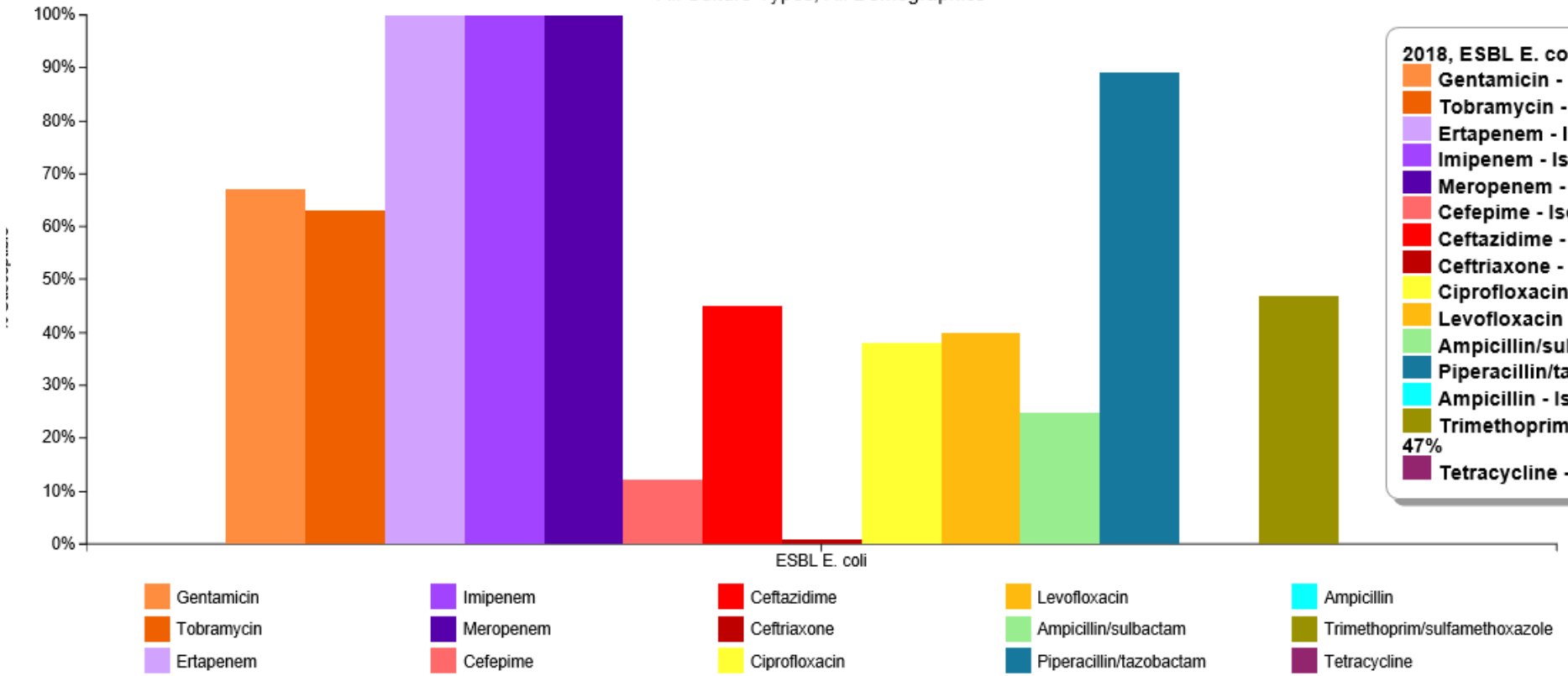

Brooke AMC Unique MDRO Isolate Counts, 2019
Number of Isolates
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
December
MRSA - Isolate Count: 23
MSSA - Isolate Count: 42
VISA - Isolate Count: 0
VRSA - Isolate Count: 0
VRE - Isolate Count: 1
C. difficile - Isolate Count: 20
CNS P. aeruginosa - Isolate Count: 1
CNS Acinetobacter - Isolate Count: 0
CephR Klebsiella - Isolate Count: 0
CRE Enterobacteriacae - Isolate Count: 0
MDR Acinetobacter - Isolate Count:
MDR P. aeruginosa - Isolate Count: 2
MDR S. pneumoniae - Isolate Count:
ESBL E. coli - Isolate Count: 19
ESBL E. aerogenes - Isolate Count: 2
ESBL E. cloacae - Isolate Count: 0
ESBL K. pneumoniae - Isolate Count
S. maltophilia - Isolate Count: 5
Burkholderia cepacia - Isolate Count


Unique Isolate Counts, All Brooke AMC Beneficiaries, January 2020
30.00
25.00
20.00
15.00
10.00
5.00
0.00
Burkholderia cepacia
C. difficile
CNS Acinetobacter
CNS P. aeruginosa
CRE Enterobacteriacae
CephR Klebsiella
ESBL E. aerogenes
ESBL E. cloacae
ESBL E. coli
ESBL K. pneumoniae
MDR Acinetobacter
MDR P. aeruginosa
MDR S. pneumoniae
MRSA
MSSA
S. maltophilia
VISA
VRE
VRSA

ASPP Antibiotic Susceptibility Data

Antibiotic Susceptibility in Texas for MHS Beneficiaries, 2018

All Culture Types, All Demographics



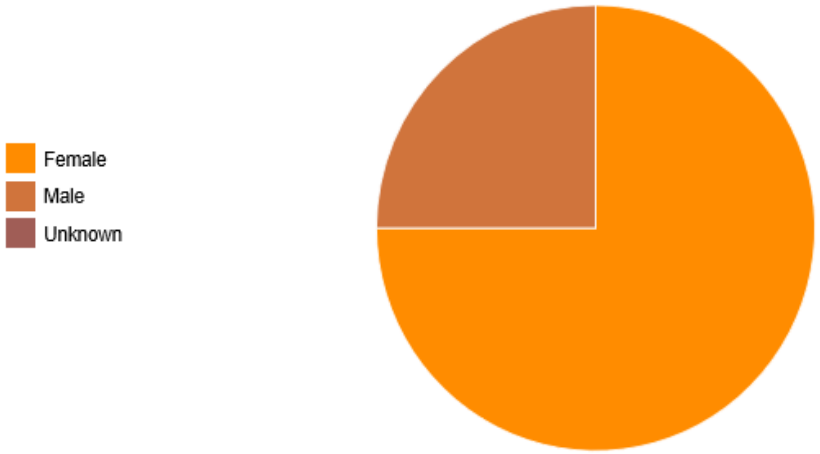
2018, ESBL E. coli, Total Patients: 411

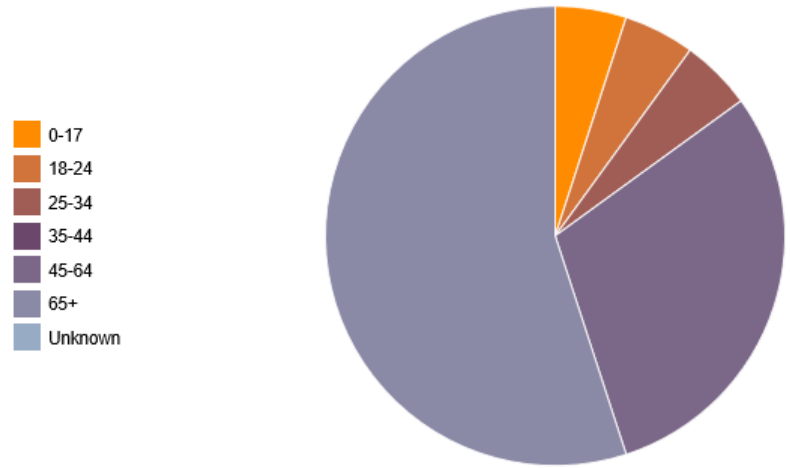
- **Gentamicin - Isolates Tested: 409; Susceptible: 67%**
- **Tobramycin - Isolates Tested: 193; Susceptible: 63%**
- **Ertapenem - Isolates Tested: 161; Susceptible: 100%**
- **Imipenem - Isolates Tested: 98; Susceptible: 100%**
- **Meropenem - Isolates Tested: 158; Susceptible: 100%**
- **Cefepime - Isolates Tested: 191; Susceptible: 12%**
- **Ceftazidime - Isolates Tested: 154; Susceptible: 45%**
- **Ceftriaxone - Isolates Tested: 328; Susceptible: 1%**
- **Ciprofloxacin - Isolates Tested: 409; Susceptible: 38%**
- **Levofloxacin - Isolates Tested: 255; Susceptible: 40%**
- **Ampicillin/sulbactam - Isolates Tested: 330; Susceptible: 25%**
- **Piperacillin/tazobactam - Isolates Tested: 400; Susceptible: 89%**
- **Ampicillin - Isolates Tested: 402; Susceptible: 0%**
- **Trimethoprim/sulfamethoxazole - Isolates Tested: 411; Susceptible: 47%**
- **Tetracycline - Data Suppressed - Isolates Tested < 30**

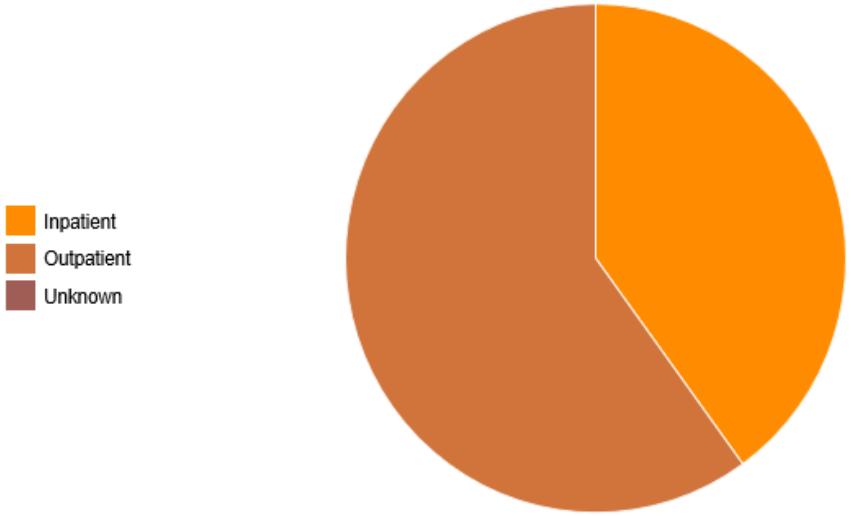
Antibiogram data includes the first isolate per person and organism for each year and state. Please refer to Methodology for a more detailed description.

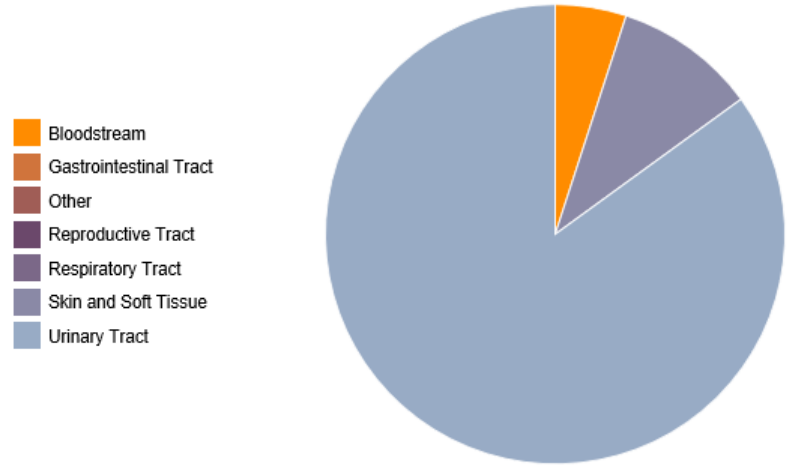
Produced by the EpiData Center, Navy and Marine Corps Public Health Center, 2020.

BAMC ESBL E. Coli, January 2020 (n=20)

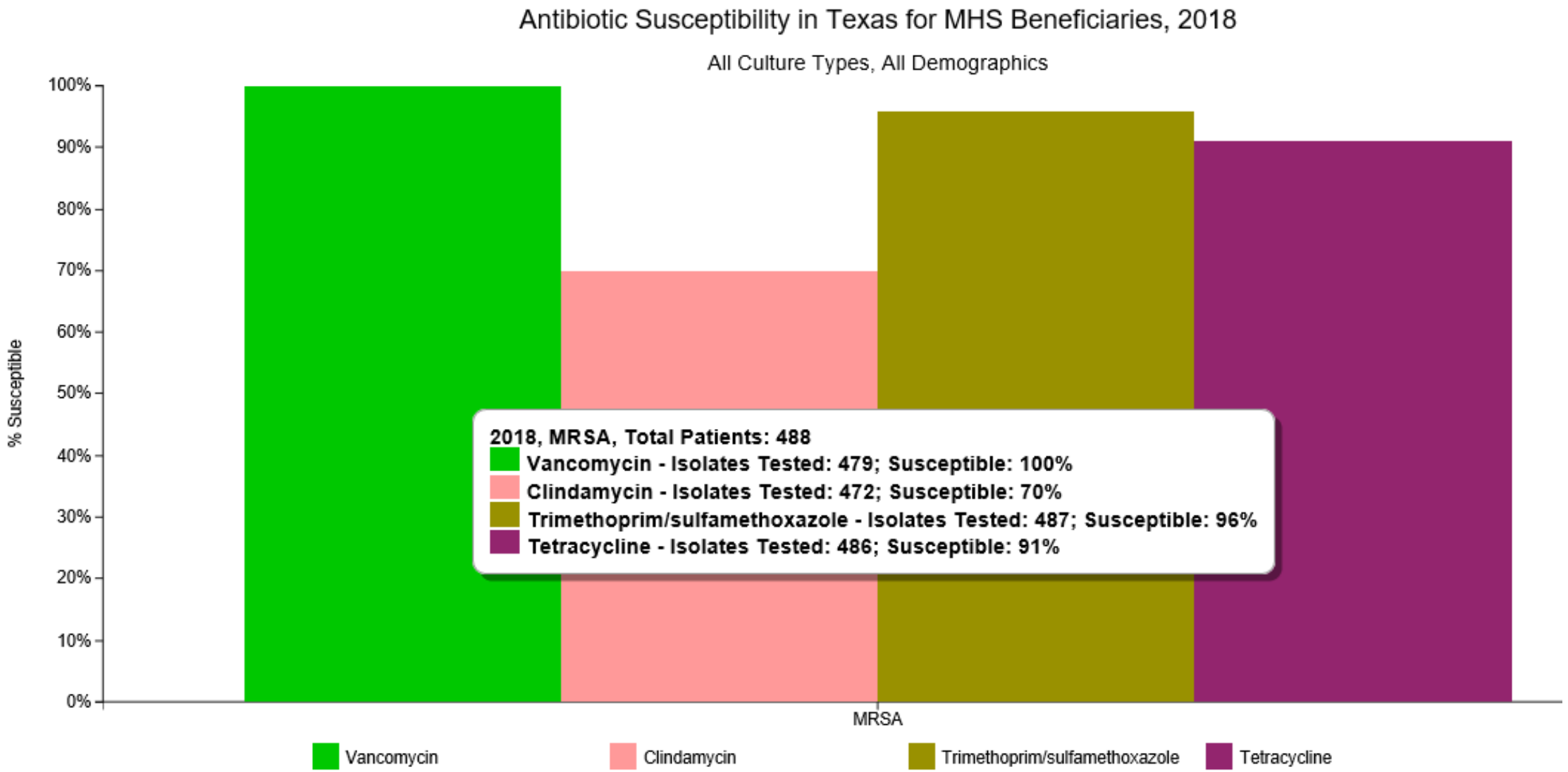








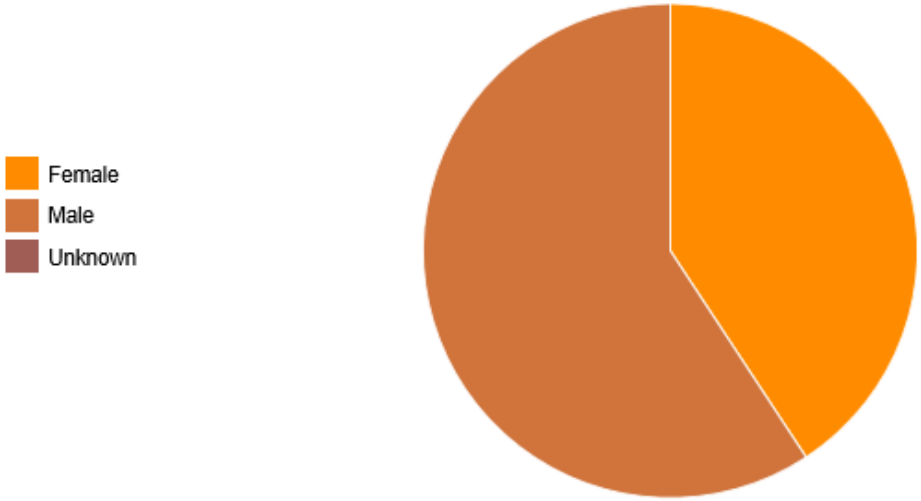
ASPP Antibiotic Susceptibility Data

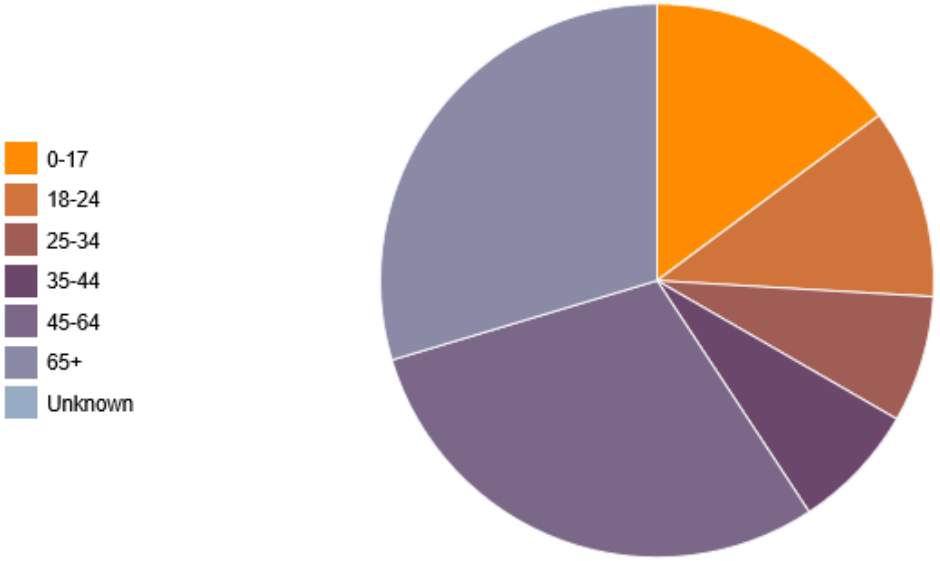


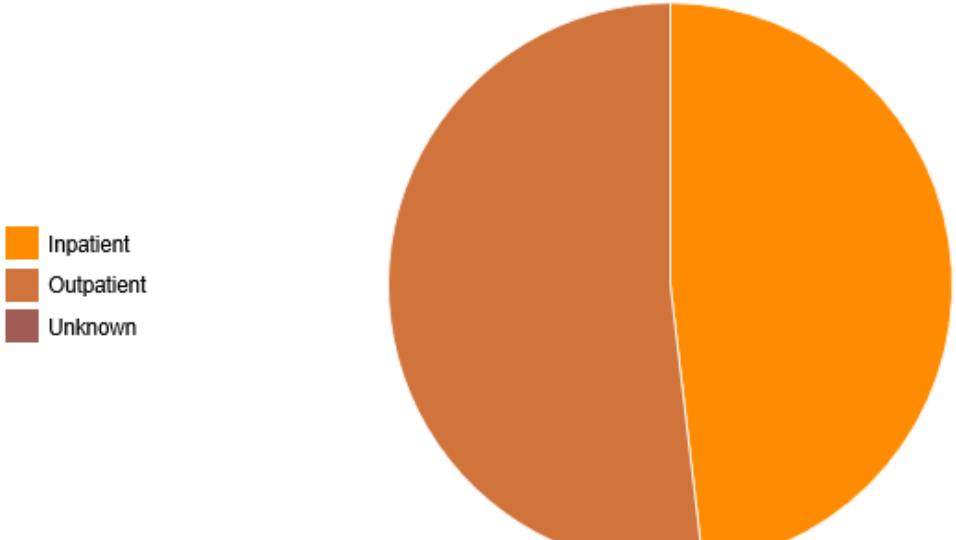
Antibiogram data includes the first isolate per person and organism for each year and state. Please refer to Methodology for a more detailed description.

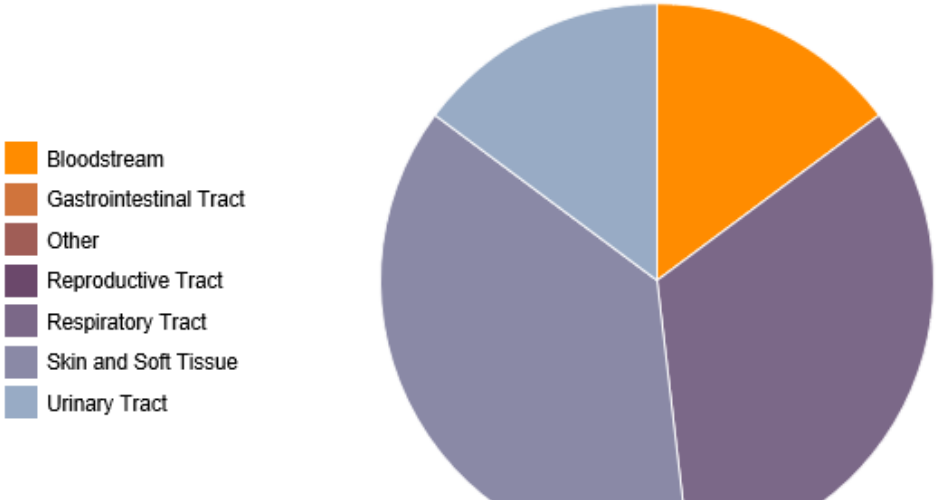
Produced by the EpiData Center, Navy and Marine Corps Public Health Center, 2020.

BAMC MRSA, January 2020 (n=27)



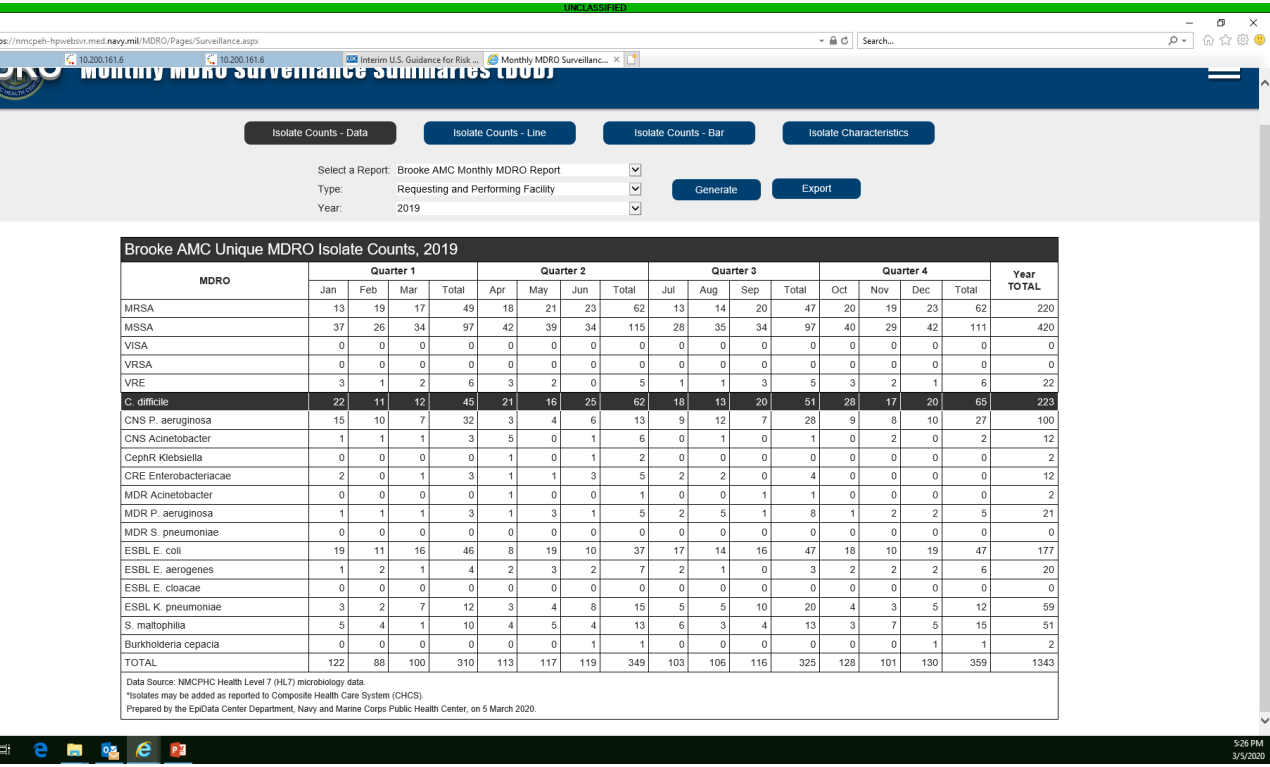






U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

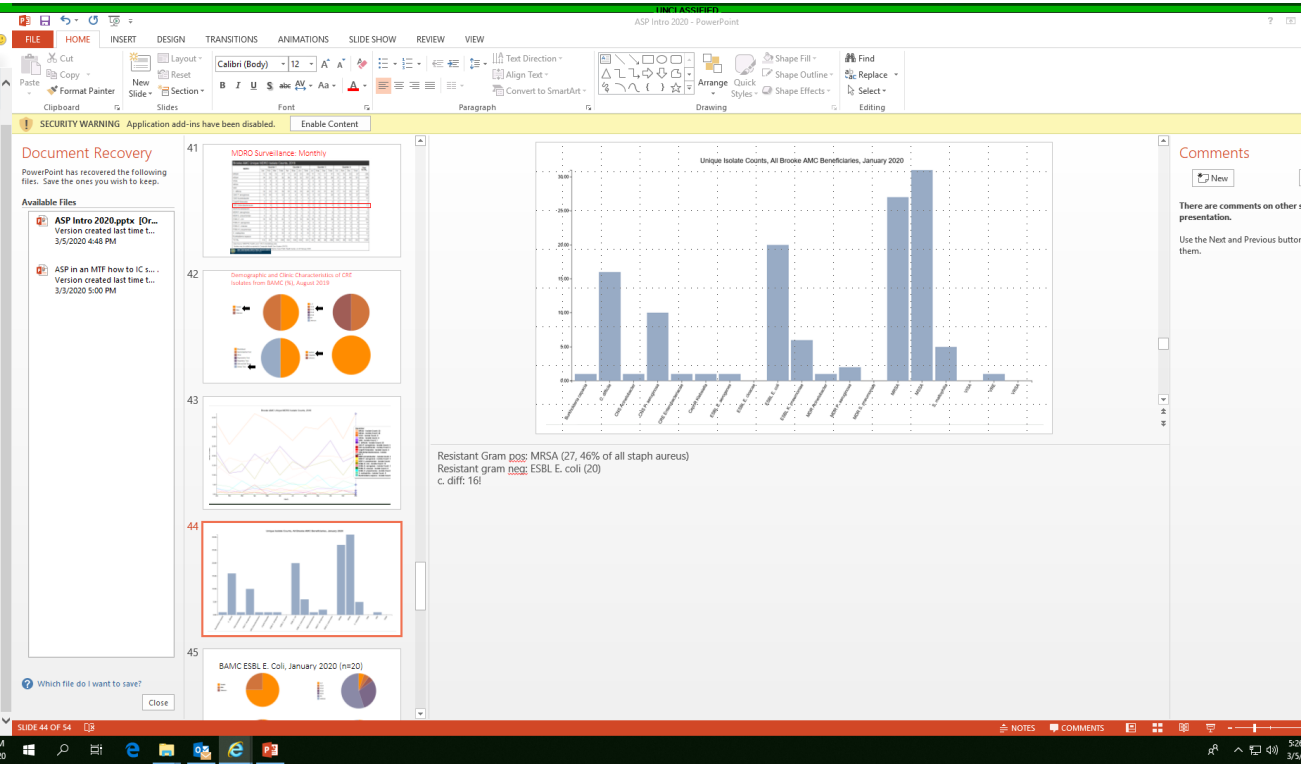
C. Difficile at BAMC, 2019: 223!

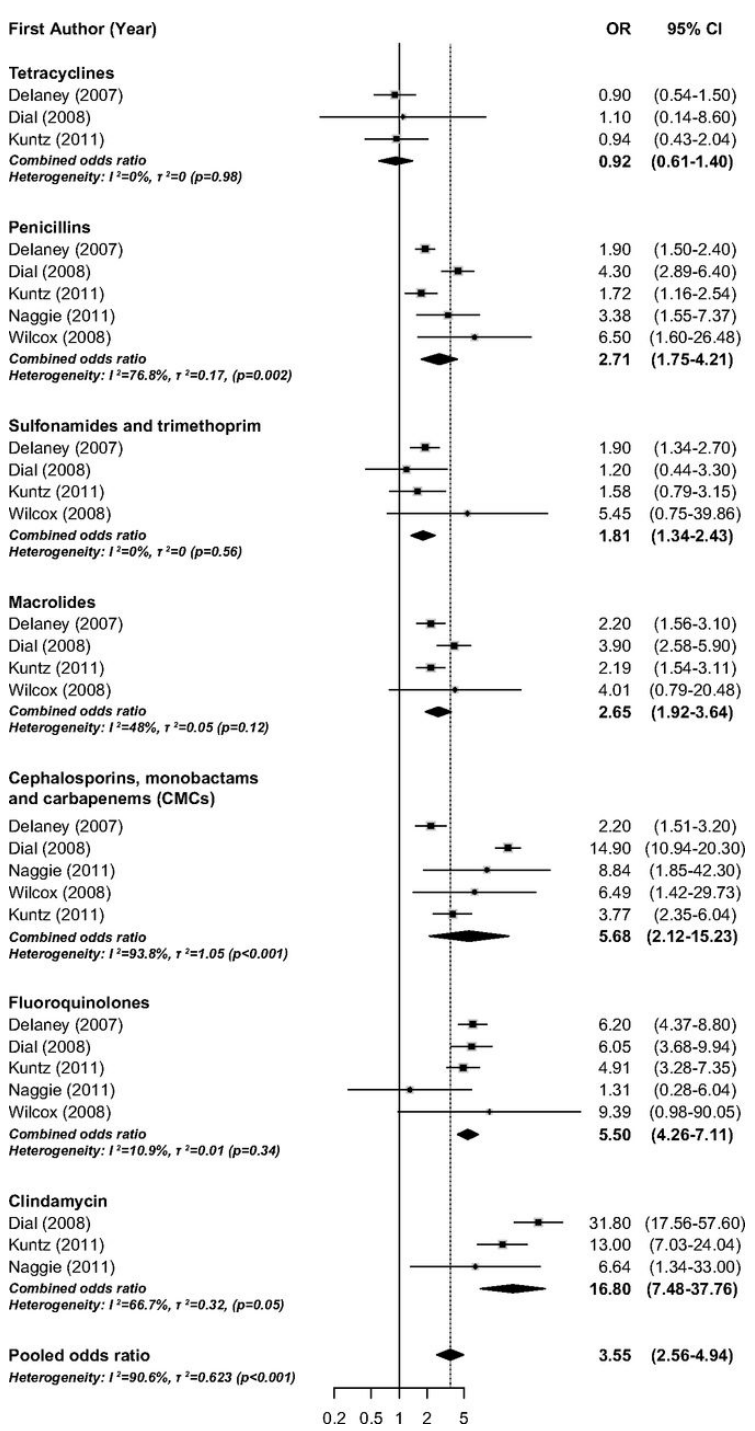


Brooke AMC Unique MDRO Isolate Counts, 2019

MDRO	Quarter 1				Quarter 2				Quarter 3				Quarter 4				Year TOTAL
	Jan	Feb	Mar	Total	Apr	May	Jun	Total	Jul	Aug	Sep	Total	Oct	Nov	Dec	Total	
MRSA	13	19	17	49	18	21	23	62	13	14	20	47	20	19	23	62	220
MSSA	37	26	34	97	42	39	34	115	28	35	34	97	40	29	42	111	420
VISA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VRSA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VRE	3	1	2	6	3	2	0	5	1	1	3	5	3	2	1	6	22
C. difficile	22	11	12	45	21	16	25	62	18	13	20	51	28	17	20	65	223
CNS P. aeruginosa	15	10	7	32	3	4	6	13	9	12	7	28	9	8	10	27	100
CNS Acinetobacter	1	1	1	3	5	0	1	6	0	1	0	1	0	2	0	2	12
CephR Klebsiella	0	0	0	0	1	0	1	2	0	0	0	0	0	0	0	0	2
CRE Enterobacteriacae	2	0	1	3	1	1	3	5	2	2	0	4	0	0	0	0	12
MDR Acinetobacter	0	0	0	0	1	0	0	1	0	0	1	1	0	0	0	0	2
MDR P. aeruginosa	1	1	1	3	1	3	1	5	2	5	1	8	1	2	2	5	21
MDR S. pneumoniae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ESBL E. coli	19	11	16	46	8	19	10	37	17	14	16	47	18	10	19	47	177
ESBL E. aerogenes	1	2	1	4	2	3	2	7	2	1	0	3	2	2	2	6	20
ESBL E. cloacae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ESBL K. pneumoniae	3	2	7	12	3	4	8	15	5	5	10	20	4	3	5	12	59
S. maltophilia	5	4	1	10	4	5	4	13	6	3	4	13	3	7	5	15	51
Burkholderia cepacia	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	1	2
TOTAL	122	88	100	310	113	117	119	349	103	106	116	325	128	101	130	359	1343

Data Source: NMCPHC Health Level 7 (HL7) microbiology data.
*Isolates may be added as reported to Composite Health Care System (CHCS).
Prepared by the EpiData Center Department, Navy and Marine Corps Public Health Center, on 5 March 2020.





Odds Ratio of Antibiotics risk for CDI:

- Clindamycin 16.8
- Cephalosporins-monobactams-carbapenems 5.7
- Fluoroquinolones 5.5
- Macrolides 2.7
- Tmp/Smx 1.8
- Tetracyclines 0.9

Kevin A. Brown et al. Antimicrob. Agents Chemother. 2013;57:2326-2332

4 Rights of Antimicrobial Stewardship

Right **Diagnosis**

Right Drug

Right Dose

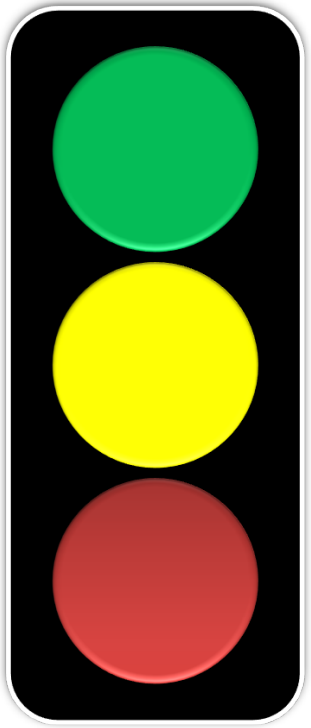
Right Duration

Interventions

Decision to start

Dosing

Duration



Decision to Start

Education

- Patients—posters, videos
- Providers—Grand Rounds
- Website

Right Diagnosis!

Evidence Based Decision Support

- Facility specific guidelines based on antibiogram

Protected Formulary*

PCN Allergy De-labelling

*May work best in facilities with ID docs or ID pharmacists

Right Diagnosis

Rapid diagnostics
- Multiplex PCR
- Rapid flu

Biomarkers
- Procalcitonin
- Presepsin
- Galectin-3
- sST2
- CRP
- MxA

Open Forum Infectious Diseases

MAJOR ARTICLE

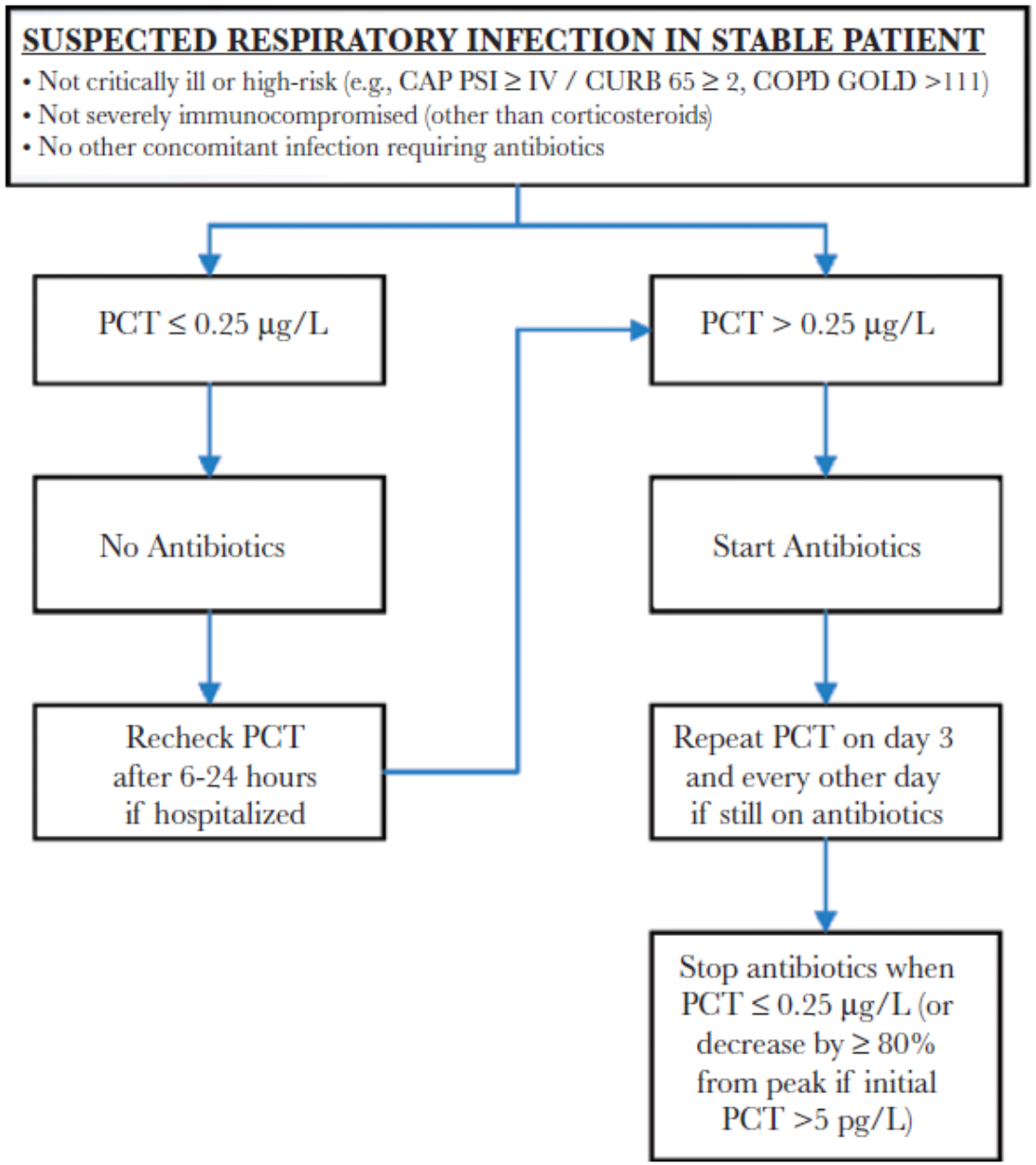
Outpatient Antibiotic Stewardship: A Growing Frontier—Combining Myxovirus Resistance Protein A With Other Biomarkers to Improve Antibiotic Use

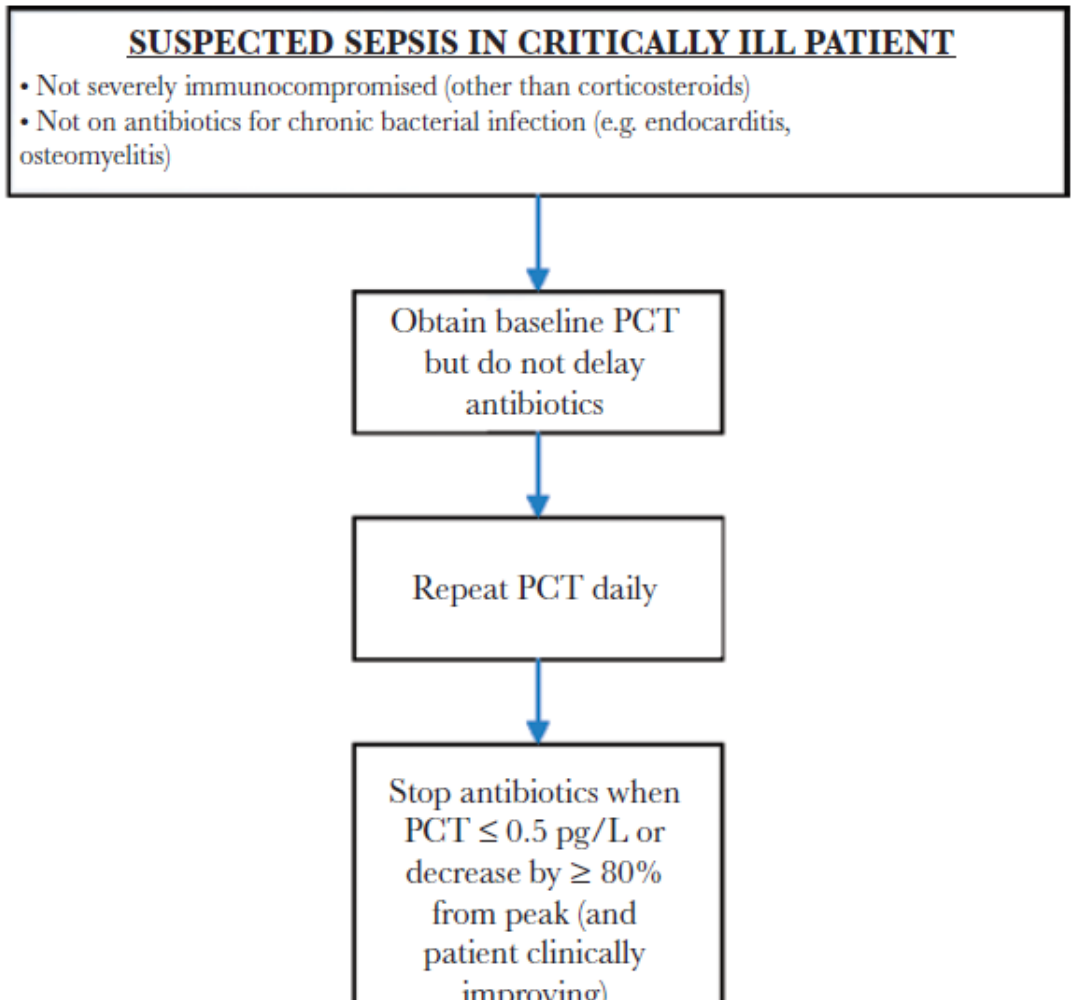
Patrick Joseph[1] and Eliot Godofsky[2]

Use of procalcitonin as a tool for antibiotic stewardship

Rita Murri[1], Eleonora Taddei[1], Roberto Cauda*,[1] & Massimo Fantoni[1]

10.2217/fmb-2018-0326 © 2019 Future Medicine Ltd **Future Microbiol.** (2019) 14(2), 77–79





Notes:

- *If PCT levels do not decline despite therapy, consider treatment failure (e.g., inadequate antibiotic therapy*
- *PCT algorithms apply to patients with clinically confirmed infections as well as those in whom infection was never proven*
- *PCT algorithms can be used as a clinical decision aid but should never override clinical judgment*

Open Forum Infectious Diseases

REVIEW ARTICLE

IDSA Infectious Diseases Society of America

Using Procalcitonin to Guide Antibiotic Therapy

Chanu Rhee[1,2]

Table 3. Antimicrobial stewardship considerations for optimal implementation of FDA-approved RDTs for non-blood culture identification.

Syndrome	Example systems (manufacturer)	Implementation and ASP considerations
ARI	FilmArray® RP[a] (BioFire Diagnostics)	• Implementation may be favorable if institution has high rates of inappropriate antimicrobial prescribing for ARIs
	ePlex Respiratory Pathogen Panel (GenMark Diagnostics)	• May be costly
		• Helpful in ruling viral infections, including influenza, in or out
		• May consider utilizing in conjunction with PCT assay to differentiate between viral and bacterial ARIs
CNS	FilmArray ME (BioFire Diagnostics)	• Implementation may be favorable for high prevalence units (e.g., pediatrics, neonates)
		• Associated with faster time to diagnosis of viral infections
		• Cannot replace traditional CSF testing for the diagnosis of ME
GI	xTAG® GPP (Luminex Corporation)	• Consider implementing in high prevalence units (e.g., pediatrics)
		• Associated with higher rates of positive tests than conventional methods
	FilmArray GI (BioFire Diagnostics)	• May be instrumental in de-escalation efforts for ASPs
		• Rapid identification has benefit of rapid infection control and isolation adjustments

[a]Respiratory panel.

Viruses or Bacteria
What's got you sick?

Antibiotics only treat bacterial infections. Viral illnesses cannot be treated with antibiotics. When an antibiotic is not prescribed, ask your healthcare professional for tips on how to relieve symptoms and feel better.

Common Condition: What's got you sick?	Common Cause			Are antibiotics needed?
	Bacteria	Bacteria or Virus	Virus	
Strep throat	✓			Yes
Whooping cough	✓			Yes
Urinary tract infection	✓			Yes
Sinus infection		✓		Maybe
Middle ear infection		✓		Maybe
Bronchitis/chest cold (in otherwise healthy children and adults)*		✓		No
Common cold/runny nose			✓	No
Sore throat (except strep)			✓	No
Flu			✓	No

* In some cases, acute bronchitis is caused by bacteria, but even in these cases antibiotics still do not help.

Antibiotics Aren't Always the Answer

www.cdc.gov/getsmart

GET SMART
Know When Antibiotics Work

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

Nov. 16, 2016
CS272279B

SpeakUp™: Antibiotics

Know the facts

- Antibiotics are life-saving drugs when used wisely.
- Antibiotics treat infections caused by bacteria. They do not work on viruses that cause colds and flu.
- Each year, almost 2 million people in the U.S. become infected with bacteria that antibiotics can't treat. These bacteria no longer respond to antibiotics. At least 23,000 people die each year from these infections.
- A reaction to an antibiotic may require a visit to the ER, especially for kids.
- Antibiotics also kill good bacteria in your body. This may lead to other problems like diarrhea or yeast infections.

life-saving

treat infections

use wisely

Taking antibiotics when you don't need them doesn't make sense!

- How you use antibiotics today will affect how well the drugs work tomorrow for everyone.
- It takes many years to develop new antibiotics. We need to improve the use of the drugs currently available.
- One of the world's biggest health threats is from bacterial infections that no longer respond to antibiotics. Everyone must work together to use antibiotics wisely.

The Joint Commission

For more information

Association for Professionals in Infection Control and Epidemiology (APIC)

Centers for Disease Control and Prevention (CDC)

The goal of Speak Up™ is to help patients and their advocates become active in their care.

2/17

Antibiotics – handle with care!

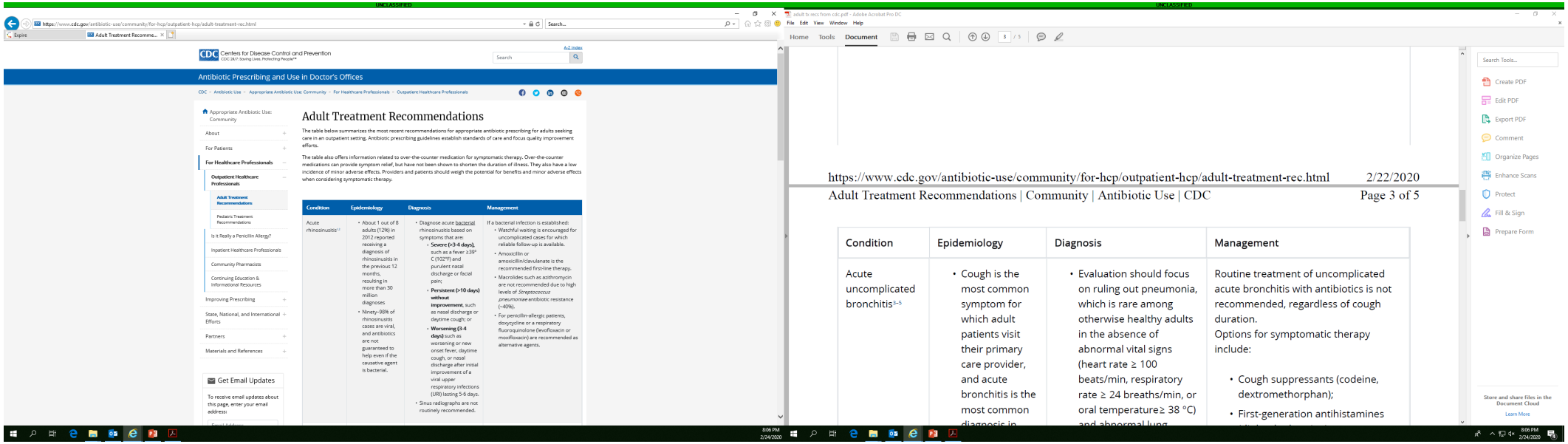
Antibiotic Prescribing – A Checklist of Reminders

- ☐ Have the appropriate cultures been collected before starting antibiotic therapy?
- ☐ Do the culture results necessitate starting antibiotic therapy or modifying ongoing the current antibiotic therapy?
- ☐ What is the optimal duration of antibiotic therapy for treating this type of infection in this patient?
- ☐ What is the appropriate antibiotic dose for treating this kind of infection in this patient?
- ☐ Does the choice of antibiotic therapy comply with your hospital's antibiotic resistance patterns (antibiogram)?
- ☐ Have you consulted your infectious disease physicians, microbiologists or pharmacists?

ecdc
EUROPEAN CENTRE FOR DISEASE PREVENTION AND CONTROL

CDC Centers for Disease Control and Prevention
CDC 24/7: Saving Lives, Protecting People™

Antibiotic Prescribing and Use in Doctor's Offices



Selected Susceptibilities

Staphylococcus aureus

- Resistance: TMP/SMX, 2%; Doxycycline, 6%; **Clindamycin, 31%**
- **40% MRSA**; if serious infection, Choose Vancomycin!

Enterococcus spp.

- 8% resistant to Ampicillin; 7% are VRE

E. coli

- 19% is resistant to FQ; 23% is resistant to TMP/SMX

BAMC 2019 Antibiogram - All
Values expressed are % susceptible from January 1, 2019 to December 31, 2019

	Number of Isolates	AMIKACIN	GENTAMICIN	GENTAMICIN HIGH LEVEL (SYNERGY)	TOBRAMYCIN	AMPICILLIN/SULBACTAM	PIPERACILLIN-TAZOBACTAM	CEFAZOLIN	CEFEPIME	CEFTAZIDIME	CEFTRIAXONE	CEFTRIAXONE (MENINGITIS)	CEFTRIAXONE (NON-MENINGITIS)	TRIMETHOPRIM/SULFAMETHOXAZOLE	FOSFOMYCIN	VANCOMYCIN	CLINDAMYCIN	DAPTOMYCIN	ERYTHROMYCIN	AZTREONAM	NITROFURANTOIN	LINEZOLID	ERTAPENEM	IMIPENEM	MEROPENEM	AMPICILLIN	OXACILLIN
Gram (-) Organisms																											
ACINETOBACTER SPECIES	39		92			77	76			52															76		
CITROBACTER FREUNDII	54	100	98			R		R		76	74			86							94		100			R	
CITROBACTER KOSERI	95	100	100				98		100	98	96			98							79		95		100	R	
ENTEROBACTER SPECIES	147	100	99				89		100	87	88			93						94	26		95		97		
ESCHERICHIA COLI	3402	100	92			63	97	92	97	97	95			78						96	96		99		99	56	
KLEBSIELLA AEROGENES	126	100	100			R	86	R	98	87	85			97						91	10		100		98	R	
KLEBSIELLA PNEUMONIAE	716	100	96			83	94	91	97	94	93			87						95	27		99		99	R	
MORGANELLA MORGANII	46		93			R	97	R		89	93			80							R					R	
PROTEUS MIRABILIS	369	100	94			90	100	93	99	99	98			90						100	R		85		100	87	
PSEUDOMONAS AERUGINOSA	397	R	R		R	R	88		90	89	R			R						80			R	87	88	R	
SERRATIA MARCESCENS	68	100	98			R		R		96	97			98							R		97		97	R	
STENOTROPHOMONAS MALTOPHILIA	40	R	R		R	R	R				R			95	R					R			R	R	R	R	
Gram (+) Organisms																											
COAGULASE NEGATIVE STAPHYLOCOCCI	492		91											78		100	61		43		99						43
ENTEROCOCCUS FAECALIS	394	R	R		R			R	R	R	R			R		99	R		3		99					99	
ENTEROCOCCUS FAECIUM	43	R	R		R			R	R	R	R			R		44	R									38	
GROUP A STREPTOCOCCUS	13																										

Facility Specific Guidelines

Evidence Based

Based on local susceptibility pattern

Assist in utilization of microbiologic diagnostics and biomarkers

Can be assessed via tracers, peer review

Examples:

- Syndromic treatment guidelines
- High Yield advice: do not treat asymptomatic bacteruria, do not ‘double cover’ anaerobes

~~Restricted~~ Formulary

Protected

IMMEDIATE ID APPROVAL

Ambisome

Caspofungin, Micafungin

Voriconazole

Daptomycin

Ceftaroline

Linezolid

Colistin

Non-formulary
- Posaconazole
- Avycaz, Zerbaxa

APPROVAL AFTER 72 HOURS

Carbapenems
- Ertapenem
- Imipenem
- Meropenem

Aminoglycosides
- Tobramycin
- Amikacin

Aztreonam

IV fluconazole

Dosing

IV→PO transitions
- If taking regular diet, meds with good bioavailability (FQ) should be dosed orally

Dose for the infected space

Dose for the resistant/partially resistant organism

Optimize pharmacokinetics/pharmacodynamics
- Extended infusions*

Other PK/PD Considerations
- Obesity
- CKD, CRRT
- Cirrhosis
- ECMO

*May work best in facilities with ID docs or ID pharmacists

Duration

Time-Out at 48-72 hrs!

De-escalate as soon as possible

- Work with micro lab to get rapid diagnostic studies
  - Multiplex PCR—BioFire ME/GI/RVP
  - Verigene, BCiD
- Shorter is Better!

Educate on typical duration based on syndrome

Prospective Audit and Feedback*

- Effective, but labor intensive

*May work best in facilities with ID docs or ID pharmacists

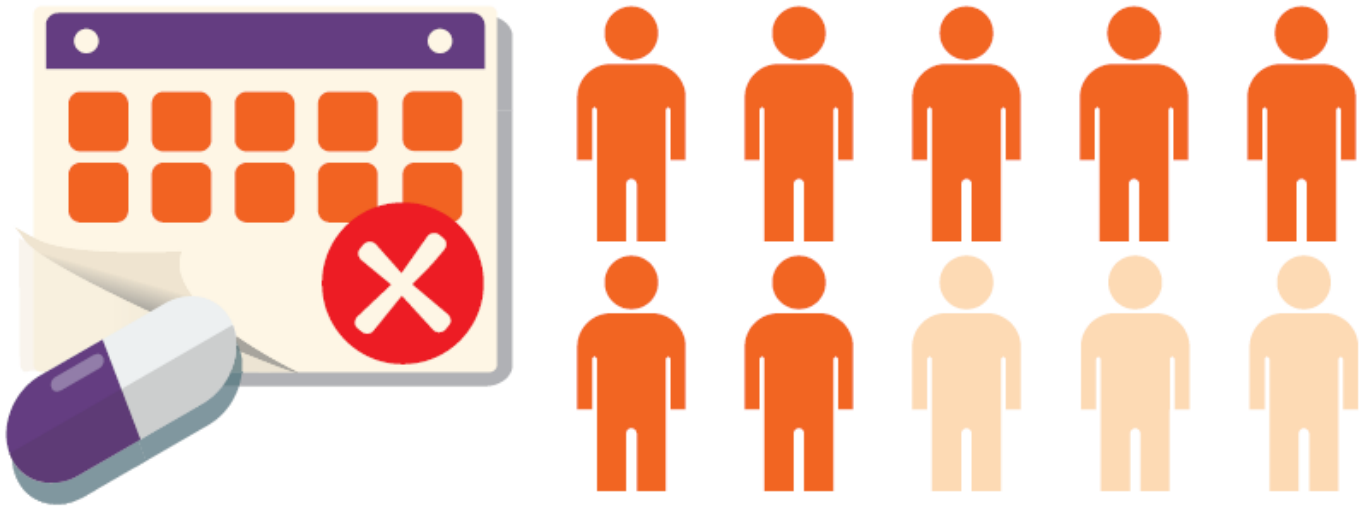
Guidelines recommend **five to seven days** of antibiotic treatment for most sinus infections in adults.

However, **almost 70%** of antibiotic prescriptions for sinus infections are for **10 days.**

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

Most adults patients need **five days** of antibiotic therapy for community-acquired pneumonia.

However, **70%** of adult patients hospitalized for community-acquired pneumonia receive almost **10 days** of therapy.



U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

Limit Duration of Therapy

Infection	Duration
Pneumonia	
Community-acquired	5 days
Hospital-acquired	7 days
Urinary tract infection	
Uncomplicated cystitis	3-5 days
Complicated cystitis	7 days
Pyelonephritis	7-14 days
Intra-abdominal infection	4 days after source control
Skin and soft tissue infection	5-7 days
Traumatic wound infection (Not prophylaxis)	7-10 days
Bloodstream infection	7-14 days (Longer durations may be needed for for *Staphylococcus aureus*, *Enterococcus* species, and *Pseudomonas aeruginosa*)
Clostridium difficile	10 days

J Hosp Med. 2018 May 01; 13(5): 361.362. doi:10.12788/jhm.2904.

The Maturing Antibiotic Mantra: "Shorter Is Still Better"

Brad Spellberg, MD[1,2,*]

J Hosp Med. 2018 May 01; 13(5): 361.362. doi:10.12788/jhm.2904.

The Maturing Antibiotic Mantra: "Shorter Is Still Better"

Brad Spellberg, MD[1,2,*]

TABLE.

Infections for which Short-Course Antibiotic Therapy Is Equivalent in Efficacy to Longer Therapy[1]

Disease	Short Course Studied (days)	Long Course Studied (days)	Result
Acute bacterial sinusitis	5	10	Equal
Acute exacerbation of chronic bronchitis and obstructive pulmonary disease	≤5	≥7	Equal
Intraabdominal infection	4	10	Equal
Osteomyelitis	42	84	Equal
Pneumonia, community-acquired	3-5	7–10	Equal
Pneumonia, nosocomial (including ventilator-associated)	≤8	10–15	Equal
Pyelonephritis	5–7	10–14	Equal
Skin infections (cellulitis, major abscesses, wound infections)	5–6	10–14	Equal

Conclusions

Use ASHIPS to see how the EDC is tracking resistance

Use Carepoint to see how the PVC is tracking antimicrobial use

Work with your pharmacy

Work with your micro lab to implement rapid diagnostics

Identify the highly utilized/high risk medications and choose an intervention

Get baseline data and repeat after the intervention

Clinical Infectious Diseases

IDSA GUIDELINE

Implementing an Antibiotic Stewardship Program: Guidelines by the Infectious Diseases Society of America and the Society for Healthcare Epidemiology of America

Tamar F. Barlam,[1,a] Sara E. Cosgrove,[2,a] Lilian M. Abbo,[3] Conan MacDougall,[4] Audrey N. Schuetz,[5] Edward J. Septimus,[6] Arjun Srinivasan,[7] Timothy H. Dellit,[8] Yngve T. Falck-Ytter,[9] Neil O. Fishman,[10] Cindy W. Hamilton,[11] Timothy C. Jenkins,[12] Pamela A. Lipsett,[13] Preeti N. Malani,[14] Larissa S. May,[15] Gregory J. Moran,[16] Melinda M. Neuhauser,[17] Jason G. Newland,[18] Christopher A. Ohl,[19] Matthew H. Samore,[20] Susan K. Seo,[21] and Kavita K. Trivedi[22]

Clinical Infectious Diseases® 2016;62(10):e51–e77

IDSA Guideline Recs

Preauthorization and/or prospective audit and feedback

Do not rely solely on didactic educational materials

- Passive educational activities (lectures, pamphlets) should be used to complement other stewardship activities

Develop facility specific guidelines

Interventions should target specific clinical syndromes or **antibiotics at high risk for CDI**

Use antibiotic time outs or stop orders

Table 1. Comparison of Preauthorization and Prospective Audit and Feedback Strategies for Antibiotic Stewardship

Preauthorization	Prospective Audit and Feedback
Advantages	
• Reduces initiation of unnecessary/ inappropriate antibiotics • Optimizes empiric choices and influences downstream use • Prompts review of clinical data/ prior cultures at the time of initiation of therapy • Decreases antibiotic costs, including those due to high-cost agents • Provides mechanism for rapid response to antibiotic shortages • Direct control over antibiotic use	• Can increase visibility of antimicrobial stewardship program and build collegial relationships • More clinical data available for recommendations, enhancing uptake by prescribers • Greater flexibility in timing of recommendations • Can be done on less than daily basis if resources are limited • Provides educational benefit to clinicians • Prescriber autonomy maintained • Can address de-escalation of antibiotics and duration of therapy
Disadvantages	
• Impacts use of restricted agents only • Addresses empiric use to a much greater degree than downstream use • Loss of prescriber autonomy • May delay therapy • Effectiveness depends on skill of approver • Real-time resource intensive • Potential for manipulation of system (eg, presenting request in a biased manner to gain approval) • May simply shift to other antibiotic agents and select for different antibiotic-resistance patterns	• Compliance voluntary • Typically labor-intensive • Success depends on delivery method of feedback to prescribers • Prescribers may be reluctant to change therapy if patient is doing well • Identification of interventions may require information technology support and/or purchase of computerized surveillance systems • May take longer to achieve reductions in targeted antibiotic use

IDSA Guideline Recs

Incorporate computerized decision support at the time of prescribing

Do not use antibiotic cycling as a stewardship strategy

Use PK monitoring for **aminoglycosides** and vancomycin

Consider dosing/administration strategies for optimized PK/PD

Transition IV to oral dosing

Consider evaluation to confirm/deny reported PCN allergy

Implement CPGs to reduce abx duration to shortest effective

IDSA Guideline Recs

Stratified antibiograms (by demographics) can be helpful

Labs should use selective antibiotic susc testing reports

Labs should incorporate rapid viral testing on respiratory specimens and rapid diagnostics on blood cultures

In adults in the ICU, serial PCT can decrease abx use

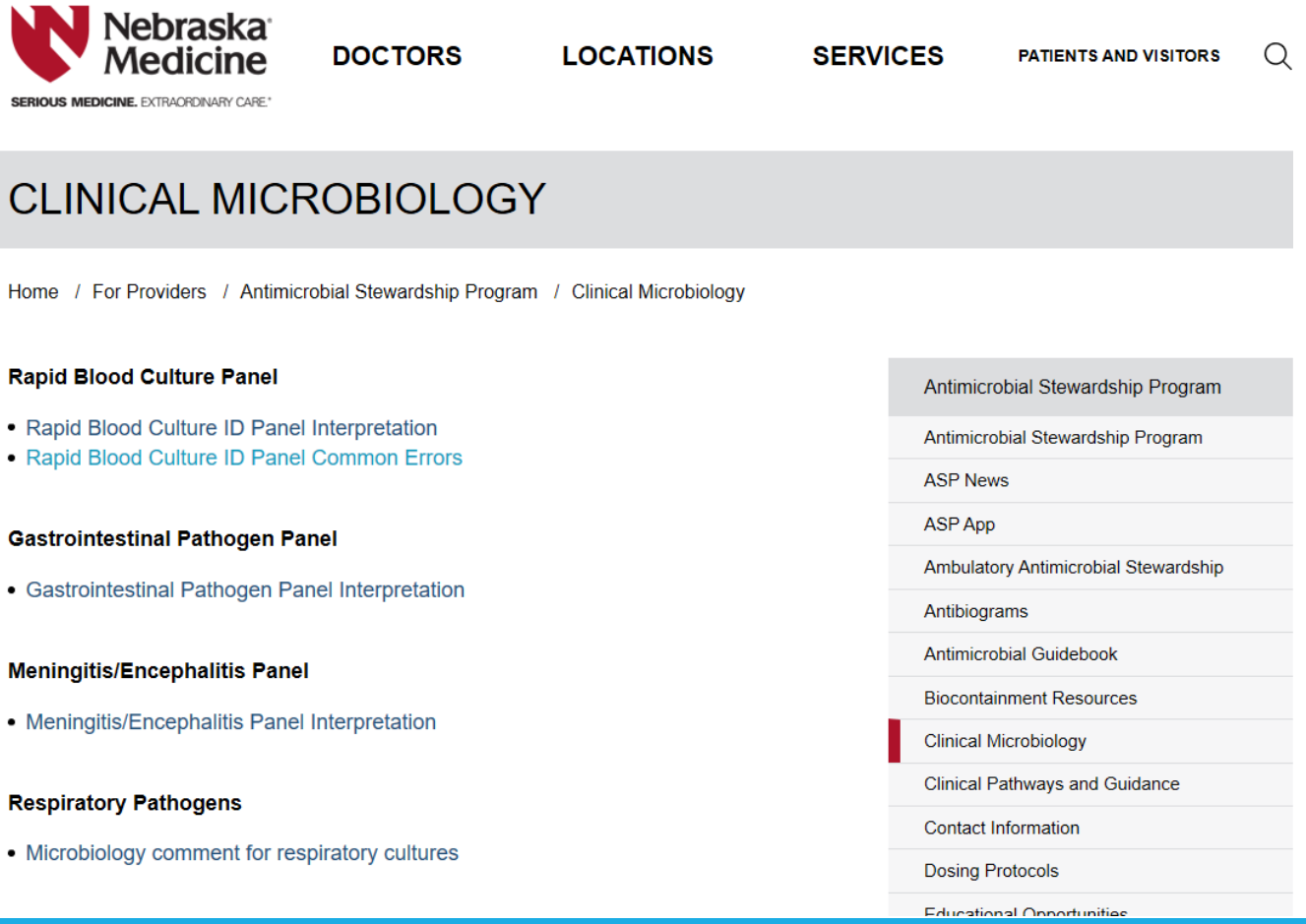
In pts with hem malignancy at risk for IFD, use nonculture based fungal markers

Monitor abx use by DOT rather than DDD

Monitor cost based on prescriptions rather than purchasing data

Clinical Infectious Diseases® 2016;62(10):e51–e77

Resources



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DOCTORS LOCATIONS SERVICES PATIENTS AND VISITORS

CLINICAL MICROBIOLOGY

Home / For Providers / Antimicrobial Stewardship Program / Clinical Microbiology

Rapid Blood Culture Panel

- Rapid Blood Culture ID Panel Interpretation
- Rapid Blood Culture ID Panel Common Errors

Gastrointestinal Pathogen Panel

- Gastrointestinal Pathogen Panel Interpretation

Meningitis/Encephalitis Panel

- Meningitis/Encephalitis Panel Interpretation

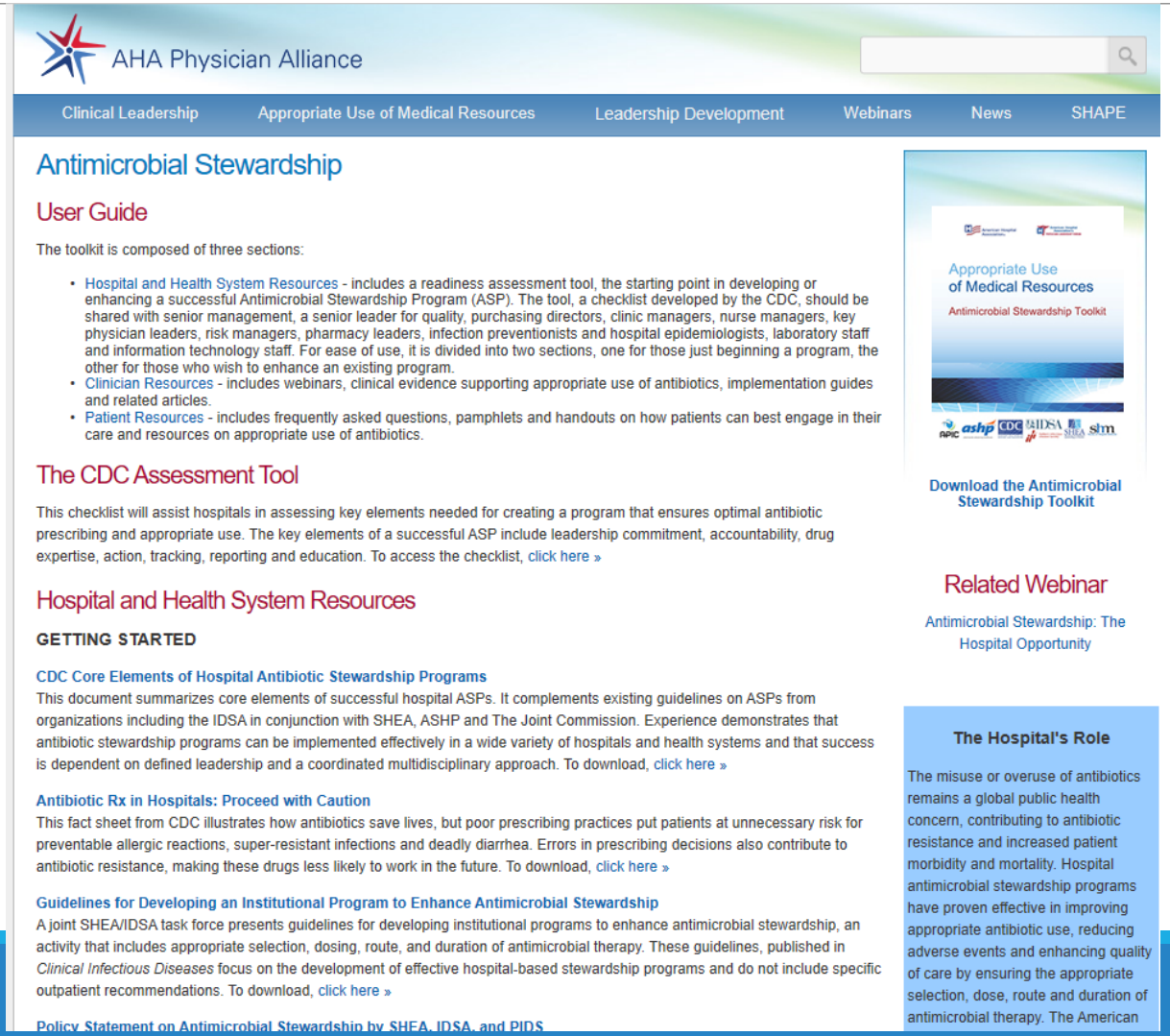
Respiratory Pathogens

- Microbiology comment for respiratory cultures

Antimicrobial Stewardship Program

- Antimicrobial Stewardship Program
- ASP News
- ASP App
- Ambulatory Antimicrobial Stewardship
- Antibiograms
- Antimicrobial Guidebook
- Biocontainment Resources
- Clinical Microbiology
- Clinical Pathways and Guidance
- Contact Information
- Dosing Protocols
- Educational Opportunities

Resources



AHA Physician Alliance

Clinical Leadership | Appropriate Use of Medical Resources | Leadership Development | Webinars | News | SHAPE

Antimicrobial Stewardship

User Guide

The toolkit is composed of three sections:

- Hospital and Health System Resources - includes a readiness assessment tool, the starting point in developing or enhancing a successful Antimicrobial Stewardship Program (ASP). The tool, a checklist developed by the CDC, should be shared with senior management, a senior leader for quality, purchasing directors, clinic managers, nurse managers, key physician leaders, risk managers, pharmacy leaders, infection preventionists and hospital epidemiologists, laboratory staff and information technology staff. For ease of use, it is divided into two sections, one for those just beginning a program, the other for those who wish to enhance an existing program.
- Clinician Resources - includes webinars, clinical evidence supporting appropriate use of antibiotics, implementation guides and related articles.
- Patient Resources - includes frequently asked questions, pamphlets and handouts on how patients can best engage in their care and resources on appropriate use of antibiotics.

The CDC Assessment Tool

This checklist will assist hospitals in assessing key elements needed for creating a program that ensures optimal antibiotic prescribing and appropriate use. The key elements of a successful ASP include leadership commitment, accountability, drug expertise, action, tracking, reporting and education. To access the checklist, click here »

Hospital and Health System Resources

GETTING STARTED

CDC Core Elements of Hospital Antibiotic Stewardship Programs
This document summarizes core elements of successful hospital ASPs. It complements existing guidelines on ASPs from organizations including the IDSA in conjunction with SHEA, ASHP and The Joint Commission. Experience demonstrates that antibiotic stewardship programs can be implemented effectively in a wide variety of hospitals and health systems and that success is dependent on defined leadership and a coordinated multidisciplinary approach. To download, click here »

Antibiotic Rx in Hospitals: Proceed with Caution
This fact sheet from CDC illustrates how antibiotics save lives, but poor prescribing practices put patients at unnecessary risk for preventable allergic reactions, super-resistant infections and deadly diarrhea. Errors in prescribing decisions also contribute to antibiotic resistance, making these drugs less likely to work in the future. To download, click here »

Guidelines for Developing an Institutional Program to Enhance Antimicrobial Stewardship
A joint SHEA/IDSA task force presents guidelines for developing institutional programs to enhance antimicrobial stewardship, an activity that includes appropriate selection, dosing, route, and duration of antimicrobial therapy. These guidelines, published in *Clinical Infectious Diseases* focus on the development of effective hospital-based stewardship programs and do not include specific outpatient recommendations. To download, click here »

Policy Statement on Antimicrobial Stewardship by SHEA, IDSA, and PIDS

Download the Antimicrobial Stewardship Toolkit

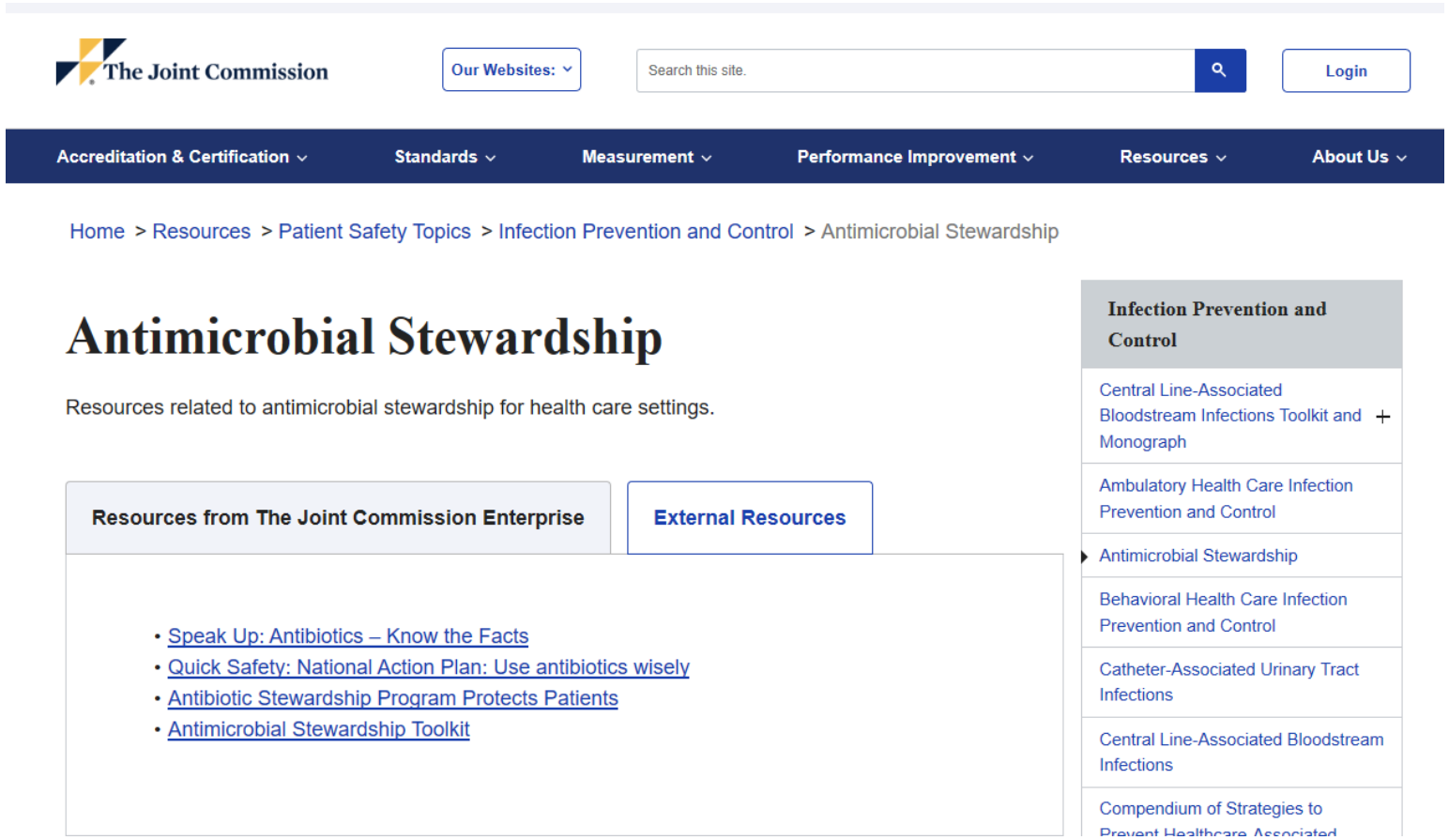
Related Webinar

Antimicrobial Stewardship: The Hospital Opportunity

The Hospital's Role

The misuse or overuse of antibiotics remains a global public health concern, contributing to antibiotic resistance and increased patient morbidity and mortality. Hospital antimicrobial stewardship programs have proven effective in improving appropriate antibiotic use, reducing adverse events and enhancing quality of care by ensuring the appropriate selection, dose, route and duration of antimicrobial therapy. The American

Resources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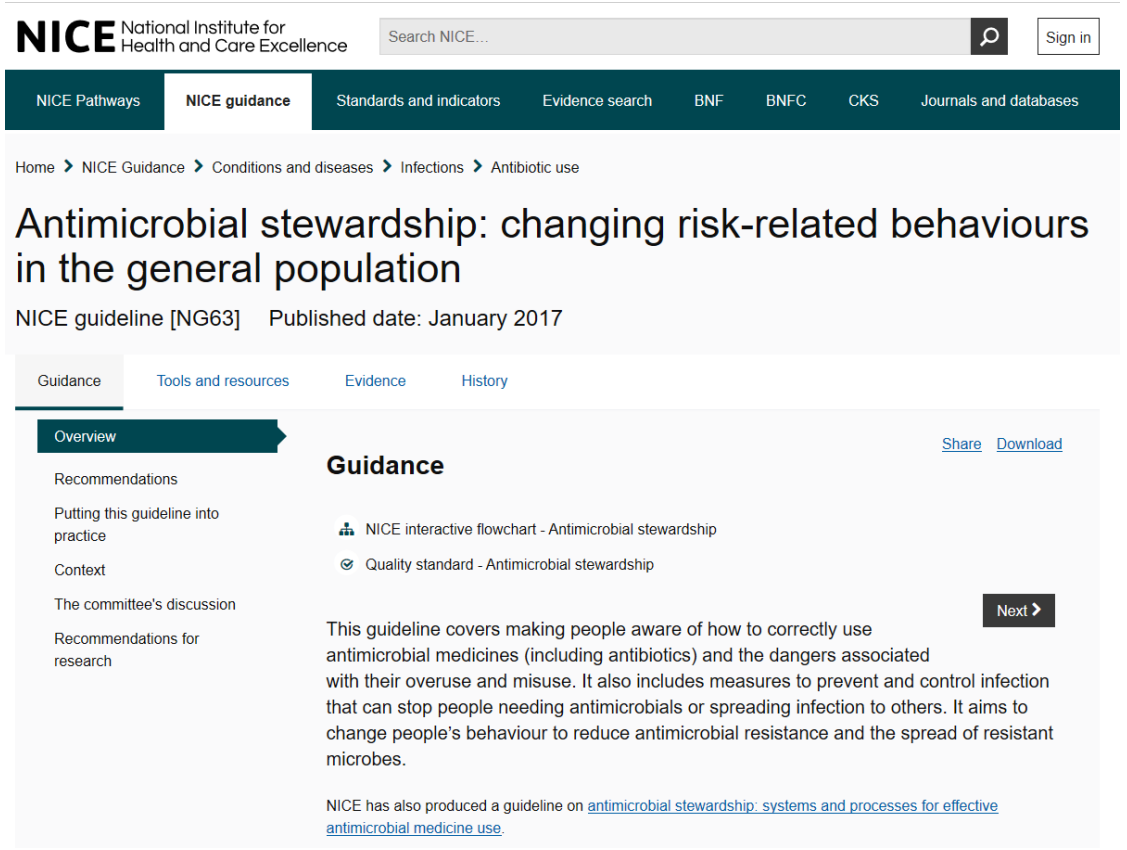
Home > Resources > Patient Safety Topics > Infection Prevention and Control > Antimicrobial Stewardship
Antimicrobial Stewardship
Resources related to antimicrobial stewardship for health care settings.
Resources from The Joint Commission Enterprise
External Resources
• Speak Up: Antibiotics – Know the Facts
• Quick Safety: National Action Plan: Use antibiotics wisely
• Antibiotic Stewardship Program Protects Patients
• Antimicrobial Stewardship Toolkit
Infection Prevention and Control
Central Line-Associated Bloodstream Infections Toolkit and Monograph
Ambulatory Health Care Infection Prevention and Control
Antimicrobial Stewardship
Behavioral Health Care Infection Prevention and Control
Catheter-Associated Urinary Tract Infections
Central Line-Associated Bloodstream Infections
Compendium of Strategies to

Resources


NICE National Institute for Health and Care Excellence
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Sign in
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Standards and indicators
Evidence search
BNF
BNFC
CKS
Journals and databases
Home › NICE Guidance › Conditions and diseases › Infections › Antibiotic use
Antimicrobial stewardship: changing risk-related behaviours in the general population
NICE guideline [NG63] Published date: January 2017
Guidance
Tools and resources
Evidence
History
Overview
Recommendations
Putting this guideline into practice
Context
The committee's discussion
Recommendations for research
Share
Download
Guidance
NICE interactive flowchart - Antimicrobial stewardship
Quality standard - Antimicrobial stewardship
Next ›
This guideline covers making people aware of how to correctly use antimicrobial medicines (including antibiotics) and the dangers associated with their overuse and misuse. It also includes measures to prevent and control infection that can stop people needing antimicrobials or spreading infection to others. It aims to change people's behaviour to reduce antimicrobial resistance and the spread of resistant microbes.
NICE has also produced a guideline on antimicrobial stewardship: systems and processes for effective antimicrobial medicine use.

ASP Haiku

Sick? Get Cultures First!

Two Days? Narrow Coverage

Don’t Treat Viruses

Attendance Code

To obtain CPE credit for this activity, you are required to actively participate in this session. You will need this attendance code in order to access the evaluation and CPE form for this activity. Your CPE must be filed by **18 November 2020** in order to receive credit.