

Antibiotic Guidelines

Joanne Huang



Outpatient antimicrobial resources

- VMC Clinics Antibigram (updated 2024) – [VMC Clinic Antibigram.pdf](#)
- Ambulatory care guidelines (updated 2024) – [Valley Ambulatory Antibiotic Guidelines.pdf](#)
- Beta lactam allergy pathway (new 2024) – [Penicillin and cephalosporin hypersensitivity pathway.pdf](#)
- Pediatric guidelines (update in process) – [Valley Pediatric Antibiotic Guidelines.pdf](#)
- Penicillin allergy report – EPIC wrench-in

Antibiogram – Gram-positive (all sources)

Antibiotic Susceptibility Report 2023 (Valley Medical Center Clinic Network) Gram Positive Isolates Percent susceptible <i>(Shading indicates not tested, intrinsic resistance, or non-preferred therapy)</i>											
Organism	No. of Isolates	Ceftriaxone	Clindamycin	Daptomycin	Levofloxacin	Linezolid	Oxacillin	Penicillin ^a	Tetracycline	Trimeth/Sulfa	Vancomycin
MSSA	397		83		92	100	100		91	95	100
MRSA	198		74		24	100			80	80	100
Enterococcus faecalis	306	R	R					98	27	R	99
Coagulase negative staphylococcus	193		67			100			79	75	100
Streptococcus spp. ^{b,c}											
Streptococcus pneumoniae ^{b,d} (meningitis/non-meningitis)	29 ^e	100/100			100			100/100	92		100
Streptococcus Viridans Group ^{b,d}	53	100	91		98			86			100
R – Intrinsic resistance. ^a Ampicillin is predicted from penicillin. ^b No susceptibilities available for 2023. ^c Susceptibilities are not performed on group A (<i>S. pyogenes</i>) and group B (<i>S. agalactiae</i>) for non-blood/non-sterile cultures. Susceptibilities are performed on Viridans group (<i>S. mutans</i> , <i>S. salivarius</i> , <i>S. bovis</i> , <i>S. anginosus</i> (previously known as <i>S. milleri</i>), <i>S. mitis</i>) from non-sterile sites (if pure/predominant). Using inpatient 2023 inpatient data, group A and group B strep penicillin susceptibility is ≥95%. Viridans group streptococcus penicillin susceptibility is 76%. ^d Data from 2022. No data available for 2023. ^e Calculated from fewer than the standard recommendation of 30 isolates and may not reflect accurate susceptibility trends.											

Green: generally effective

Yellow: effective in certain circumstances

Red: not encouraged for use empirically

Antibiogram – Gram-negative (all sources)

Gram Negative Isolates																	
Percent susceptible <i>(Shading indicates not tested, intrinsic resistance, or non-preferred therapy)</i>																	
Organism	No. of Isolates	Amoxicillin/Clavulanate	Ampicillin	Ampicillin/Sulbactam	Cefepime	Ceftazidime	Ceftriaxone	Cefturoxime	Ciprofloxacin	Gentamicin	Levofloxacin	Meropenem	Minocycline	Tetracycline	Piperacillin/tazo	Tobramycin	Trimethoprim/Sulfa
Acinetobacter species	44	R	R	90	90	80	65		90	93	93	97		86	95	93	88
Citrobacter spp.	129	54	R		100		92	39	99	99	99	100		94	100	100	98
Enterobacter spp.	66		R		96				95	98	95	100		92		96	92
Escherichia coli	3036	89	62		95		93	88	86	92	85	100		80	98	92	81
Klebsiella spp.	497	84	R		97		94	79	96	98	96	100		87	97	99	95
Morganella morganii ^a	57	R	R		NR ^b		NR ^b		82	87	82	100	R	R	98		80
Proteus spp.	234	≥78 ^c	78		98		97	93	91	92	91	100	R	R	99	95	86
Providencia spp. ^a	35	R	R	R	94			80	77	R	77	100	R	R	97	R	NR ^b
Pseudomonas aeruginosa	214	R	R	R	94	95	R		92	NR ^d	87	94	R	R	96	98	R
Serratia spp.	41	R	R	R	97		94		100	100	97	97		51		97	100
Stenotrophomonas maltophilia ^a	46	R	R	R		28	R			R	80	R					95

NR – Not reported.
R – Intrinsic resistance.
^a Data from 2022. No data available for 2023.
^b Product limitation of testing method (ie. test is inaccurate – no result available).
^c Due to testing limitation, results obtained for amoxicillin-clavulanate are not available for select intermediate/resistant results. % susceptible predicted from ampicillin and assumes that additional untested isolates are likely susceptible though exact number of additional susceptible isolates is unknown.
^d No longer recommended due to removal of breakpoints. Tobramycin does not predict gentamicin susceptibility. Consider tobramycin if aminoglycoside is used.

Antibiogram – Gram-negative (urine only)

Gram Negative Isolates URINE Only Percent susceptible <i>(Shading indicates not tested, intrinsic resistance, or non-preferred therapy)</i>											
Organism	No. of Isolates	Amoxicillin/Clavulanate	Cefepime	Ceftriaxone	Cefuroxime	Ciprofloxacin	Gentamicin	Levofloxacin	Nitrofurantoin	Tobramycin	Trimethoprim/Sulfa
Citrobacter spp.	108	53	100	90	38	99	100	98	93	100	100
Enterobacter spp.	43		95		0	95	97	95	46	97	95
Escherichia coli	2963	89	95	93	88	86	92	85	97	92	82
Klebsiella spp.	441	84	98	94	79	96	99	96	34	99	95
Pseudomonas aeruginosa	92	R	93	R	R	94	NR ^b	89	R	98	R
Proteus spp.	198	≥79 ^a	98	97	95	92	92	92	R	95	86

NR – Not reported.

R – Intrinsic resistance.

^a Due to testing limitation, results obtained for amoxicillin-clavulanate are not available for select intermediate/resistant results. % susceptible predicted from ampicillin and assumes that additional untested isolates are likely susceptible though exact number of additional susceptible isolates is unknown.

^b No longer recommended due to removal of breakpoints. Tobramycin does not predict gentamicin susceptibility. Consider tobramycin if aminoglycoside is used.

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Ambulatory and pediatric guidelines

2024 Empiric Antimicrobial Therapy For Commonly Encountered Infections FOR PEDIATRIC USE

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Antimicrobial Stewardship Team

These recommendations are based on local microbiology, antimicrobial resistance patterns and current IDSA guidelines. They should not replace clinical judgement and may be modified depending on individual patient presentation. Consult pharmacy for aminoglycoside, vancomycin and renal dosing as needed.

Revised: June 2024

Frank Bell MD, Cameron Buck MD, Toby Cohen MD, Rachyl Fornaro PharmD, Alison Houg PharmD, Joanne Huang PharmD, Sean Lawler MD, Christina Long MD, Tanya Rizzo MD, Andy Tsai PharmD and the Antimicrobial Stewardship Committee

INFECTIONS		
ACUTE OTITIS MEDIA	PNEUMONIA	PHARYNGITIS
UTI	SSTI	NEONATAL FEVER
PENICILLIN ALLERGIES	PEDIATRIC ANTIBIOTIC DOSING	

- PNA: can be treated for 3 days
- Atypical PNA is uncommon and may not need routine treatment

2024 Outpatient Empiric Antimicrobial Therapy For Commonly Encountered Infections FOR ADULT USE

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Antimicrobial Stewardship Team

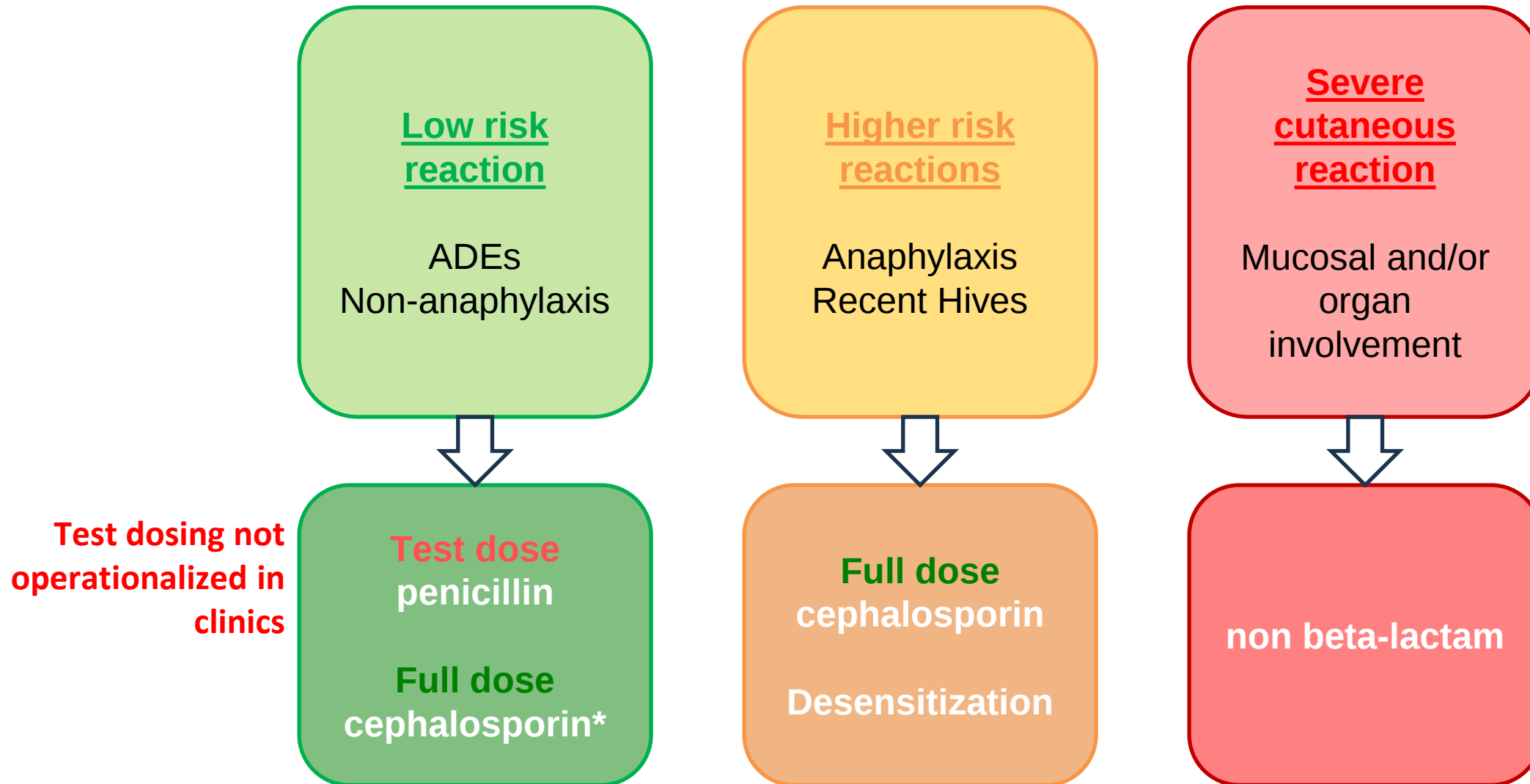
These recommendations are based on local microbiology, antimicrobial resistance patterns and current IDSA guidelines. They should not replace clinical judgement and may be modified depending on individual patient presentation. Consult pharmacy for aminoglycoside, vancomycin and renal dosing as needed.

Revised: May 2024

Mike Hori MD, Tanya Rizzo MD, Yilin Zhang MD, Taylor Mitsuuchi PharmD, Joanne Huang PharmD, and the Antimicrobial Stewardship Committee

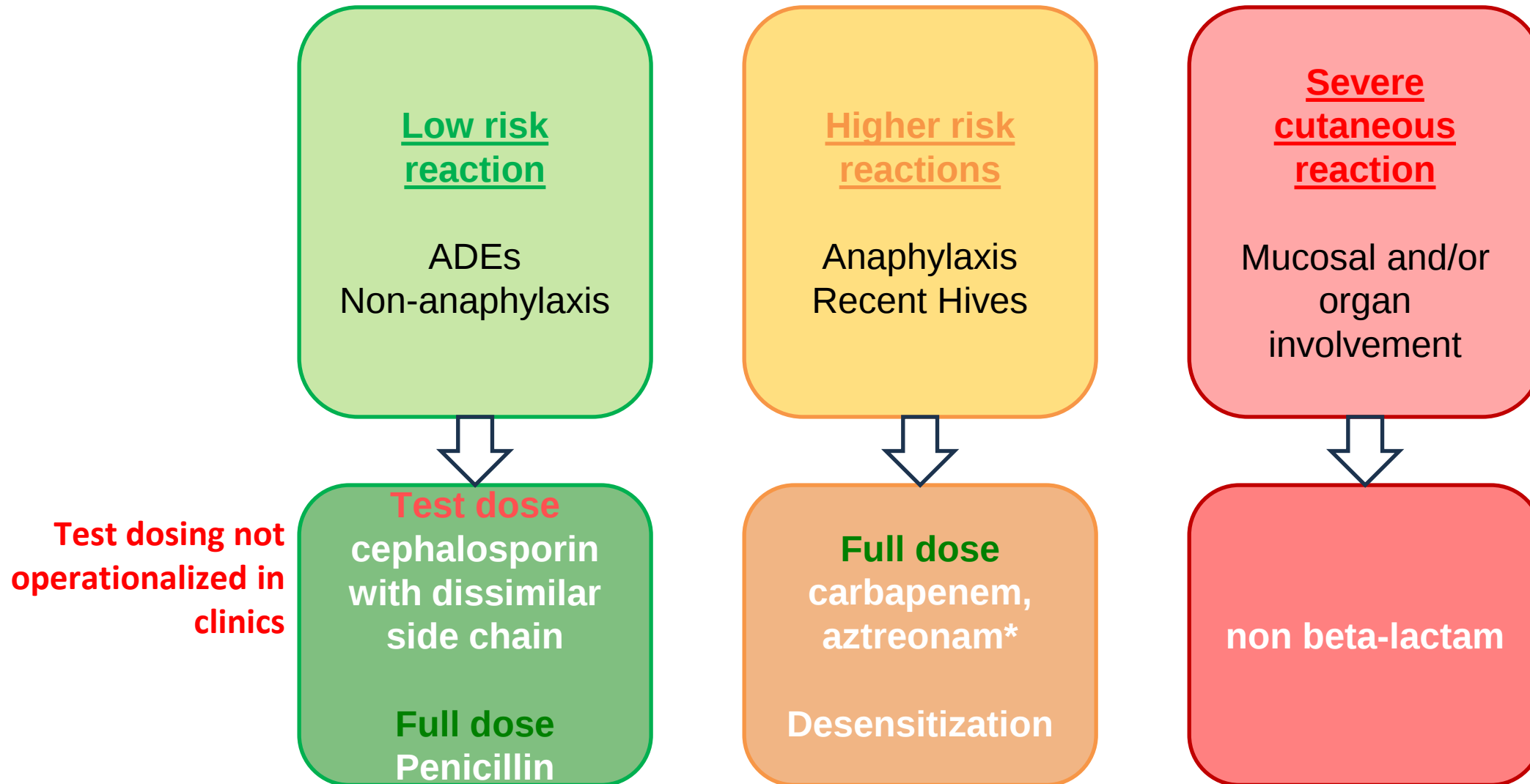
INFECTIONS		
PNEUMONIA	BRONCHITIS	SINUSITIS
PHARYNGITIS	UTI	SSTI
INTRA-ABDOMINAL	BLEPHARITIS	CONJUNCTIVITIS
OTITIS EXTERNA	OTITIS MEDIA	PENICILLIN ALLERGIES

Beta-lactam allergies: Penicillin allergy



*1st generation PO and select 2nd generation cephalosporins can cross react due to identical R1 sidechains

Cephalosporin allergy



*Unless reaction was to ceftazidime or other cephalosporin with identical R1 side chains

Cross reactivity (X = similar or identical side chain, avoid)

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β-Lactam Side Chain Cross Reactivity Chart

W	β-Lactams in UW Medicine formulary	PEN					1st GEN			2nd GEN					3rd GEN						4th	5th	N	CARB	M					
		Amoxicillin	Ampicillin	Nafcillin	Penicillin G/V	Piperacillin	Cefadroxil	Cefazolin*	Cephalexin	Cefaclor	Cefamandole	Cefotetan	Cefoxitin	Cefprozil	Cefuroxime	Cefoperazone	Cefdinir	Cefixime	Cefotaxime	Cefpodxime	Ceftazidime	Ceftibuten	Ceftriaxone	Cefepime	Ceftaroline	Ceftolozane	Cefiderocol	Ertapenem	Meropenem	Aztreonam
β-Lactams most commonly used in ambulatory settings	PEN	Amoxicillin	X				X		X	X			X																	
		Penicillin G/V							X				X																	
	1st GEN	Cefadroxil	X	X			X		X	X	X		X																	
		Cephalexin	X	X		X	X			X	X			X																
	2nd GEN	Cefaclor	X	X			X	X		X				X																
		Cefprozil	X	X			X	X		X	X																			
		Cefuroxime											X						X	X	X	X		X	X		X			
	3rd GEN	Cefdinir																X												
		Cefixime													X		X		X	X	X		X	X		X				
		Cefpodxime													X			X	X		X		X	X		X				
		Ceftibuten																												
		Ceftriaxone													X			X	X	X	X			X		X				

Allergy guidance available in Ambulatory/Pediatric guidelines

PENICILLIN ALLERGIES

- >90% of those labeled allergic can tolerate the antibiotic
- Prescription costs of penicillin alternatives are 30-40% higher
- Patients with the following reactions may be safely administered penicillin or amoxicillin: Diarrhea, vomiting, runny nose, cough, family history of allergy

Nonimmediate/mild reaction to penicillin (ex. rash not hives)	OK to administer cephalosporins INCLUDING first generation PO cephalosporins (cephalexin, cefadroxil)
Mild to high-risk reaction to penicillin (ex. hives, anaphylaxis)	Ok to administer cephalosporin (AVOID first generation PO cephalosporins: cephalexin, cefadroxil)
Severe reaction to penicillin (ex. DRESS, SJS) OR reaction to cephalosporin	Avoid beta-lactam agents

Penicillin allergy report

[Index](#) [Rx Snapshot](#) [ADT Events](#) [Treatment Team](#) [Labs](#) [Penicillin Allergy Report](#)

Penicillin Allergy Report

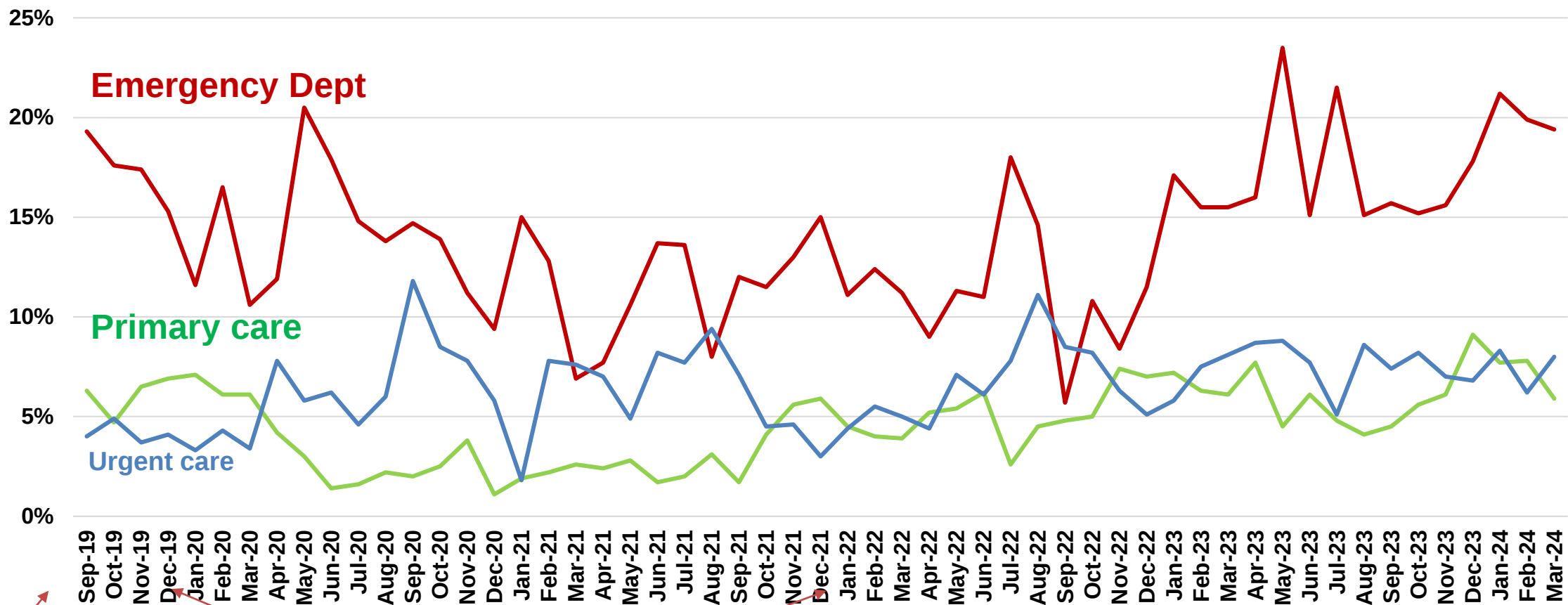
Allergies
Ceftriaxone
Penicillin V
Cortisone

Historical Beta-Lactam Administration
The 3 most recent administrations are shown below each listed medication.

Order	Rate	Dose	Action	Date
ceFAZolin (ANCEF) IVPB (premix) 1 g	100 mL/hr	1 g	▣ New Bag	09/19/2023
cefepime (MAXIPIME) 1 g in sodium chloride 0.9 % 100 mL minibag plus IVPB	200 mL/hr	1 g	▣ New Bag	09/13/2023
cephalexin (KEFLEX) capsule 1,000 mg		1,000 mg	▣ Given	08/14/2023
cefepime (MAXIPIME) 2 g in sodium chloride 0.9 % 100 mL minibag plus IVPB	200 mL/hr	2 g	▣ New Bag	07/16/2023
cefTRIAxone (ROCEPHIN) 2 g in sterile water for injection 20 mL IV syringe		2 g	▣ Given	12/17/2022
		2 g	▣ Given	12/16/2022
		2 g	▣ Given	12/15/2022
		2 g	▣ Given	12/14/2022
		2 g	▣ Given	12/13/2022
cefTRIAxone (ROCEPHIN) 2 g in sterile water for injection 20 mL IV syringe		2 g	▣ Given	12/12/2022
cefTRIAxone (ROCEPHIN) 1 g in sodium chloride 0.9 % 0.9 % 50 mL IVPB	100 mL/hr	1 g	▣ New Bag	07/14/2017
cefTRIAxone (ROCEPHIN) 1 g in sodium chloride 0.9 % 0.9 % 50 mL IVPB	100 mL/hr	1 g	▣ New Bag	07/04/2016
cefepime (MAXIPIME) 2 g in sodium chloride 0.9% 50 mL IVPB	100 mL/hr	2 g	▣ New Bag	11/08/2013

Outpatient Beta-Lactam Prescription History
No Outpatient Medications

MITIGATE 4-year post-implementation



Urgent care
feedback

Primary care
feedback

Feedback
stops

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Unnecessary prescribing rate by department

	Pre-intervention n (%)	2-year post-intervention w/ feedback, n (%)	P value
ED	429 (17.9)	1125 (13.4)	<0.001
Primary care	435 (9.8)	851 (4.3)	<0.001
Urgent care	471 (6.4)	930 (4.7)	<0.001
	Pre-intervention n (%)	2-year post-intervention w/o feedback, n (%)	P value
ED	429 (17.9)	1173 (14.3)	<0.001
Primary care	435 (9.8)	1144 (6.0)	<0.001
Urgent care	471 (6.4)	1892 (7.2)	0.015