Print Instructions

DO NOT PRINT THIS PAGE

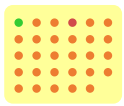
- Print in Portrait (not Landscape)
- Print on Both Sides starting page 2
- Print flipping on long side

DO NOT PRINT THIS PAGE

Penicillin VK (Penicillin G)

(penicillins)

PCN



Mechanism of Action: inhibits bacterial wall synthesis by binding penicillin binding proteins (PBPs).

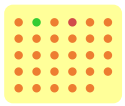
Most beta-hemolytic Strep remain uniformly susceptible to penicillin for which it remains the drug of choice.

Bioavailability: 67%

Amoxicillin (Ampicillin)

(aminopenicillins)

AMX



Mechanism of Action: inhibits bacterial wall synthesis by binding penicillin binding proteins (PBPs).

Better tasting and more conveniently dosed than penicillin, a slightly broader alternative to the classic.

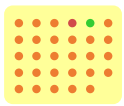
Also the drug of choice for Enterococci..

Bioavailability: 80%

Amoxicillin-Clavulanate

(Ampicillin-Sulbactam) *(aminopenicillins)*

A/C



Mechanism of Action: inhibits bacterial wall synthesis by binding penicillin binding proteins (PBPs).

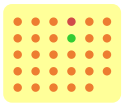
Ideal for odontogenic infections, animal bites, & most gastrointestinal disease. Let's stop using clinda already!

Bioavailability: 80%

Piperacillin-Tazobactam ☆

(an ureidopenicillin)

P/T



Mechanism of Action: inhibits bacterial wall synthesis by binding penicillin binding proteins (PBPs).

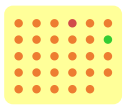
Also known as Zosyn and Vitamin Z, pip-tazo comes w/ a hefty dose of Na and is associated with higher rates of AKI if given w/ vancomycin.

Bioavailability: n/a

Meropenem ☆

(a carbapenem)

MER



Mechanism of Action: inhibits bacterial wall synthesis by binding penicillin binding proteins (PBPs).

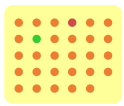
The original Bazookacillin, the last non-toxic line of defense against resistant gram negatives. Let's not abuse it.

Bioavailability: n/a

Aztreonam

(a monobactam)

AZT



Mechanism of Action: inhibits bacterial wall synthesis by binding penicillin binding proteins (PBPs).

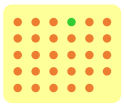
Safe to use in all patients with beta-lactam allergy (except maybe ceftazidime due to similar side chains).

Bioavailability: n/a

Cefazolin (Cephalexin)

(1st gen cephalosporins)

CFZ



Mechanism of Action: inhibits bacterial wall synthesis by binding penicillin binding proteins (PBPs).

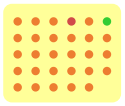
Convenient and effective for most skin and soft tissue infections if no MRSA risk factors.

Bioavailability: 90%

Ceftriaxone (Cefpodoxime)

(3rd gen cephalosporins)

CTX



Mechanism of Action: inhibits bacterial wall synthesis by binding penicillin binding proteins (PBPs).

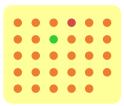
Usually sufficient for most community-acquired gram negative infections, leave the cefepime and pip-tazo for the Pseudomonas.

Bioavailability: 46%

Ceftazidime

(a 3rd gen cephalosporin)

CTZ



Mechanism of Action: inhibits bacterial wall synthesis by binding penicillin binding proteins (PBPs).

A gram-negative specialist, ceftazidime is great for targeted therapy to minimize collateral damage.

Bioavailability: n/a

Amox-Clav (A/C)

Amoxicillin (AMX)

Penicillin (PCN)

Aztreonam (AZT)

Meropenem (MER) ☆

Pip-Tazo (P/T) ☆

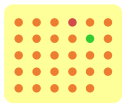
Ceftazidime (CTZ)

Ceftriaxone (CTX)

Cefazolin (CFZ)

Cefepime ☆
(a 4th gen cephalosporin)

CFP



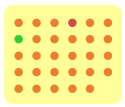
Mechanism of Action: inhibits bacterial wall synthesis by binding penicillin binding proteins (PBPs).

Cefepime is associated with encephalopathy at high doses in those with kidney dysfunction. Drug levels can help rule this out.

Bioavailability: n/a

Ceftaroline ☆
(a 5th gen cephalosporin)

CTR



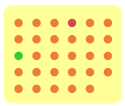
Mechanism of Action: inhibits bacterial wall synthesis by binding penicillin binding proteins (PBPs).

The only cephalosporin with MRSA-coverage. Probably also the safest anti-MRSA antibiotic.

Bioavailability: n/a

Vancomycin
(a glycopeptide)

V



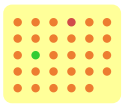
Mechanism of Action: inhibits bacterial wall synthesis by binding NAG & NAM preventing cross-linking

Higher troughs for severe MRSA infections may lead to better outcomes. Will definitely keep your interns busy either way.

Bioavailability: n/a

Daptomycin ☆
(a lipopeptide)

DAP



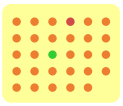
Mechanism of Action: forms pores in the cell membrane leading to depolarization

Can't be used for pneumonia because it's inactivated by surfactant. In case that wasn't obvious.

Bioavailability: n/a

Linezolid ☆
(an oxazolidinone)

LZD



Mechanism of Action: inhibits protein synthesis initiation by binding the 50S ribosomal subunit

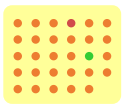
Marrow suppression increases with duration of use (usually >2 wks), dose, & underlying kidney / liver dysfunction

Use Tedizolid for less s/e & more $$$.

Bioavailability: 100%

Doxycycline (Minocycline)
(tetracyclines)

DXY



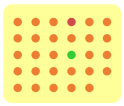
Mechanism of Action: inhibits protein synthesis elongation by binding the 30S ribosomal subunit

Doxycycline is the true broad spectrum antibiotic. Minocycline is probably better for Stenotrophomonas and Acinetobacter, though.

Bioavailability: 100%

Clindamycin
(a lincosamide)

CLI



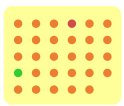
Mechanism of Action: inhibits protein synthesis elongation by binding the 30S ribosomal subunit

With the higher doses needed for bigger people for most Staphylococcal disease, more diarrhea with more drug, increased resistance rates, & increased C diff risk, why is Clinda so popular?

Bioavailability: 90%

Trimethoprim-Sulfamethoxazole
(sulfonamides)

T/S



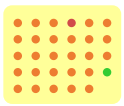
Mechanism of Action: inhibits folate metabolism by binding dihydrofolate reductase

TMP-SMX will artificially raise creatinine without actually impacting renal function. The increase in K+ in patients with underlying kidney disease, however, is real.

Bioavailability: 85%

Aminoglycosides

AG



Mechanism of Action: inhibits protein synthesis elongation by binding the 50S ribosomal subunit

Infrequent use has led to little resistance. Frequent oto-, vestibulo-, and nephrotoxicity has led to infrequent use.

Bioavailability: n/a

Vancomycin (V)

Ceftaroline (CFT) ☆

Cefepime (CFP) ☆

Doxycycline (DXY)

Linezolid (LZD) ☆

Dapto (DAP) ☆

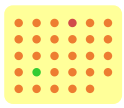
Aminoglycoside (AG)

Trim-Sulfa (T/S)

Clindamycin (CLI)

Ciprofloxacin
(a fluoroquinolone)

CIP



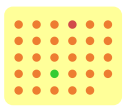
Mechanism of Action: inhibit DNA replication by binding typoisomerases II and IV and gyrase

Most active against gram-negatives of the fluoroquinolones. Least QTc prolongation risk of the fluoroquinolones. Most abused of the fluoroquinolones.

Bioavailability: 70%

Levofloxacin
(a fluoroquinolone)

LEV



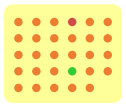
Mechanism of Action: inhibit DNA replication by binding typoisomerases II and IV and gyrase

A "respiratory fluoroquinolone" with moxifloxacin due to its S. pneumo coverage not lung penetration. All the FQs penetrate the lungs well.

Bioavailability: 99%

Moxifloxacin
(a fluoroquinolone)

MOX



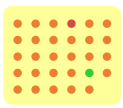
Mechanism of Action: inhibit DNA replication by binding typoisomerases II and IV and gyrase

The only fluoroquinolone with significant anaerobic coverage and the only fluoroquinolone without significant excretion in the urine. (Don't use for UTIs.)

Bioavailability: 89%

Azithromycin
(a macrolide)

AZ



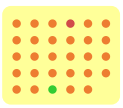
Mechanism of Action: inhibits protein synthesis elongation by binding the 50S ribosomal subunit

Azithromycin has a half life of 68 hours and a volume of distribution of 33 L/kg. Once it's inside you it becomes part of you forever.

Bioavailability: 37%

Metronidazole
(a nitroimidazole)

MET



Mechanism of Action: leads to DNA breakage by directly binding DNA when reduced in an anaerobic environment

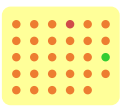
Pro: effective against anaerobes and various parasites

Con: worst tasting antibiotic and risk of peripheral neuropathy

Bioavailability: 100%

Ertapenem ☆
(a Carbapenem)

ERT



Mechanism of Action: inhibits bacterial wall synthesis by binding penicillin binding proteins (PBPs).

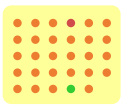
Pro: it's a once a day carbapenem. Very easy to use.

Con: it's a once a day carbapenem. Very easy to overuse.

Bioavailability: n/a

Tigecycline
(a glycylcycline)

TIG



Mechanism of Action: inhibits protein synthesis elongation by binding the 30S ribosomal subunit

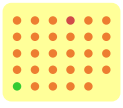
Tigecycline had promise until a meta-analysis showed greater mortality compared to all other antibiotics.

Also called puke-ecycline.

Bioavailability: n/a

Nitrofurantoin
(its own thing)

NIT



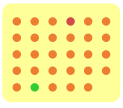
Mechanism of Action: multiple sites of action inhibiting aerobic metabolism and protein and cell wall synthesis

The perfect uncomplicated UTI drug. Cheap, minimal side effects, minimal collateral damage, beautiful smile. Perfect.

Bioavailability: n/a

Fosfomycin
(its own thing)

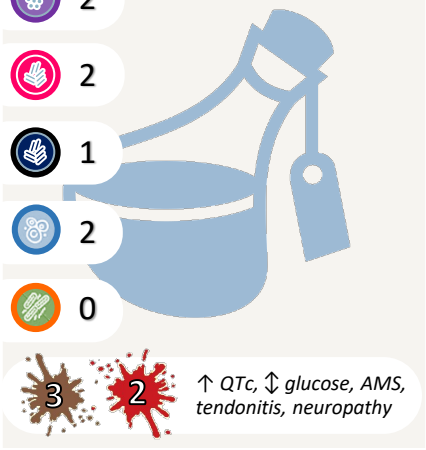
FOS



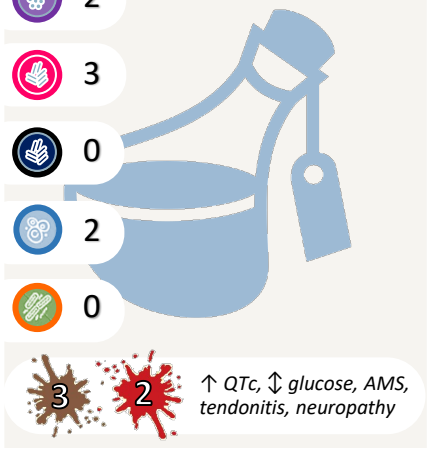
Mechanism of Action: inhibits bacterial wall synthesis by binding pyruvyl transferase

The oral UTI drug no one knows about. Comes in a little sachet you can mix with you favorite beverage. Possibly less effective than competitors, but not bad when there's nothing else.

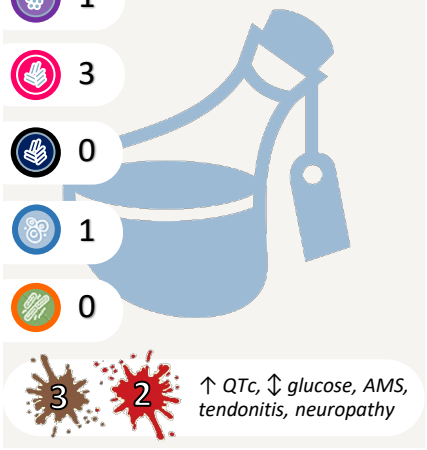
Bioavailability: n/a



Moxifloxacin (MOX)

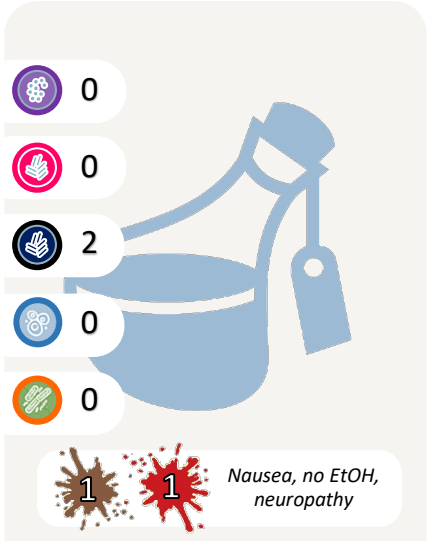


Levofloxacin (LEV)



Ciprofloxacin (CIP)

Ertapenem (ERT) ☆



Metronidazole (MET)

Azithro (AZ)

Fosfomycin (FOS)

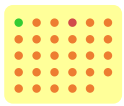
Nitrofurantoin (NIT)

Tigecycline (TIG)

Penicillin VK (Penicillin G)

(penicillins)

PCN



Mechanism of Action: inhibits bacterial wall synthesis by binding penicillin binding proteins (PBPs).

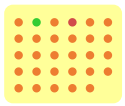
Most beta-hemolytic Strep remain uniformly susceptible to penicillin for which it remains the drug of choice.

Bioavailability: 67%

Amoxicillin (Ampicillin)

(aminopenicillins)

AMX



Mechanism of Action: inhibits bacterial wall synthesis by binding penicillin binding proteins (PBPs).

Better tasting and more conveniently dosed than penicillin, a slightly broader alternative to the classic.

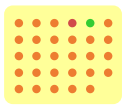
Also the drug of choice for Enterococci..

Bioavailability: 80%

Amoxicillin-Clavulanate

(Ampicillin-Sulbactam) *(aminopenicillins)*

A/C



Mechanism of Action: inhibits bacterial wall synthesis by binding penicillin binding proteins (PBPs).

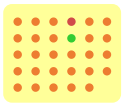
Ideal for odontogenic infections, animal bites, & most gastrointestinal disease. Let's stop using clinda already!

Bioavailability: 80%

Piperacillin-Tazobactam ☆

(an ureidopenicillin)

P/T



Mechanism of Action: inhibits bacterial wall synthesis by binding penicillin binding proteins (PBPs).

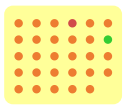
Also known as Zosyn and Vitamin Z, pip-tazo comes w/ a hefty dose of Na and is associated with higher rates of AKI if given w/ vancomycin.

Bioavailability: n/a

Meropenem ☆

(a carbapenem)

MER



Mechanism of Action: inhibits bacterial wall synthesis by binding penicillin binding proteins (PBPs).

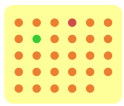
The original Bazookacillin, the last non-toxic line of defense against resistant gram negatives. Let's not abuse it.

Bioavailability: n/a

Aztreonam

(a monobactam)

AZT



Mechanism of Action: inhibits bacterial wall synthesis by binding penicillin binding proteins (PBPs).

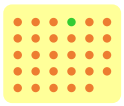
Safe to use in all patients with beta-lactam allergy (except maybe ceftazidime due to similar side chains).

Bioavailability: n/a

Cefazolin (Cephalexin)

(1st gen cephalosporins)

CFZ



Mechanism of Action: inhibits bacterial wall synthesis by binding penicillin binding proteins (PBPs).

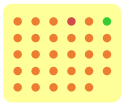
Convenient and effective for most skin and soft tissue infections if no MRSA risk factors.

Bioavailability: 90%

Ceftriaxone (Cefpodoxime)

(3rd gen cephalosporins)

CTX



Mechanism of Action: inhibits bacterial wall synthesis by binding penicillin binding proteins (PBPs).

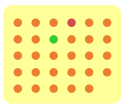
Usually sufficient for most community-acquired gram negative infections, leave the cefepime and pip-tazo for the Pseudomonas.

Bioavailability: 46%

Ceftazidime

(a 3rd gen cephalosporin)

CTZ



Mechanism of Action: inhibits bacterial wall synthesis by binding penicillin binding proteins (PBPs).

A gram-negative specialist, ceftazidime is great for targeted therapy to minimize collateral damage.

Bioavailability: n/a

Amox-Clav (A/C)

Amoxicillin (AMX)

Penicillin (PCN)

Aztreonam (AZT)

Meropenem (MER) ☆

Pip-Tazo (P/T) ☆

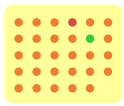
Ceftazidime (CTZ)

Ceftriaxone (CTX)

Cefazolin (CFZ)

Cefepime ☆
(a 4th gen cephalosporin)

CFP



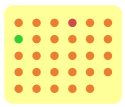
Mechanism of Action: inhibits bacterial wall synthesis by binding penicillin binding proteins (PBPs).

Cefepime is associated with encephalopathy at high doses in those with kidney dysfunction. Drug levels can help rule this out.

Bioavailability: n/a

Ceftaroline ☆
(a 5th gen cephalosporin)

CTR



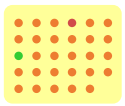
Mechanism of Action: inhibits bacterial wall synthesis by binding penicillin binding proteins (PBPs).

The only cephalosporin with MRSA-coverage. Probably also the safest anti-MRSA antibiotic.

Bioavailability: n/a

Vancomycin
(a glycopeptide)

V



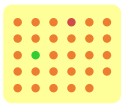
Mechanism of Action: inhibits bacterial wall synthesis by binding NAG & NAM preventing cross-linking

Higher troughs for severe MRSA infections may lead to better outcomes. Will definitely keep your interns busy either way.

Bioavailability: n/a

Daptomycin ☆
(a lipopeptide)

DAP



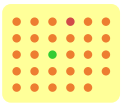
Mechanism of Action: forms pores in the cell membrane leading to depolarization

Can't be used for pneumonia because it's inactivated by surfactant. In case that wasn't obvious.

Bioavailability: n/a

Linezolid ☆
(an oxazolidinone)

LZD



Mechanism of Action: inhibits protein synthesis initiation by binding the 50S ribosomal subunit

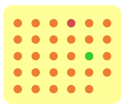
Marrow suppression increases with duration of use (usually >2 wks), dose, & underlying kidney / liver dysfunction

Use Tedizolid for less s/e & more $$$.

Bioavailability: 100%

Doxycycline (Minocycline)
(tetracyclines)

DXY



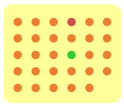
Mechanism of Action: inhibits protein synthesis elongation by binding the 30S ribosomal subunit

Doxycycline is the true broad spectrum antibiotic. Minocycline is probably better for Stenotrophomonas and Acinetobacter, though.

Bioavailability: 100%

Clindamycin
(a lincosamide)

CLI



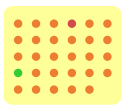
Mechanism of Action: inhibits protein synthesis elongation by binding the 30S ribosomal subunit

With the higher doses needed for bigger people for most Staphylococcal disease, more diarrhea with more drug, increased resistance rates, & increased C diff risk, why is Clinda so popular?

Bioavailability: 90%

Trimethoprim-Sulfamethoxazole
(sulfonamides)

T/S



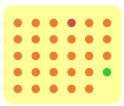
Mechanism of Action: inhibits folate metabolism by binding dihydrofolate reductase

TMP-SMX will artificially raise creatinine without actually impacting renal function. The increase in K+ in patients with underlying kidney disease, however, is real.

Bioavailability: 85%

Aminoglycosides

AG



Mechanism of Action: inhibits protein synthesis elongation by binding the 50S ribosomal subunit

Infrequent use has led to little resistance. Frequent oto-, vestibulo-, and nephrotoxicity has led to infrequent use.

Bioavailability: n/a

Vancomycin (V)

Ceftaroline (CFT) ☆

Cefepime (CFP) ☆

Doxycycline (DXY)

Linezolid (LZD) ☆

Dapto (DAP) ☆

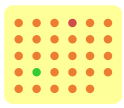
Aminoglycoside (AG)

Trim-Sulfa (T/S)

Clindamycin (CLI)

Ciprofloxacin
(a fluoroquinolone)

CIP



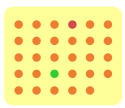
Mechanism of Action: inhibit DNA replication by binding typoisomerases II and IV and gyrase

Most active against gram-negatives of the fluoroquinolones. Least QTc prolongation risk of the fluoroquinolones. Most abused of the fluoroquinolones.

Bioavailability: 70%

Levofloxacin
(a fluoroquinolone)

LEV



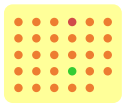
Mechanism of Action: inhibit DNA replication by binding typoisomerases II and IV and gyrase

A "respiratory fluoroquinolone" with moxifloxacin due to its S. pneumo coverage not lung penetration. All the FQs penetrate the lungs well.

Bioavailability: 99%

Moxifloxacin
(a fluoroquinolone)

MOX



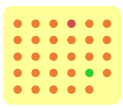
Mechanism of Action: inhibit DNA replication by binding typoisomerases II and IV and gyrase

The only fluoroquinolone with significant anaerobic coverage and the only fluoroquinolone without significant excretion in the urine. (Don't use for UTIs.)

Bioavailability: 89%

Azithromycin
(a macrolide)

AZ



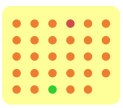
Mechanism of Action: inhibits protein synthesis elongation by binding the 50S ribosomal subunit

Azithromycin has a half life of 68 hours and a volume of distribution of 33 L/kg. Once it's inside you it becomes part of you forever.

Bioavailability: 37%

Metronidazole
(a nitroimidazole)

MET



Mechanism of Action: leads to DNA breakage by directly binding DNA when reduced in an anaerobic environment

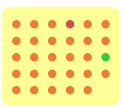
Pro: effective against anaerobes and various parasites

Con: worst tasting antibiotic and risk of peripheral neuropathy

Bioavailability: 100%

Ertapenem ☆
(a Carbapenem)

ERT



Mechanism of Action: inhibits bacterial wall synthesis by binding penicillin binding proteins (PBPs).

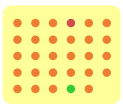
Pro: it's a once a day carbapenem. Very easy to use.

Con: it's a once a day carbapenem. Very easy to overuse.

Bioavailability: n/a

Tigecycline
(a glycylcycline)

TIG



Mechanism of Action: inhibits protein synthesis elongation by binding the 30S ribosomal subunit

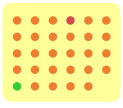
Tigecycline had promise until a meta-analysis showed greater mortality compared to all other antibiotics.

Also called puke-ecycline.

Bioavailability: n/a

Nitrofurantoin
(its own thing)

NIT



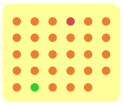
Mechanism of Action: multiple sites of action inhibiting aerobic metabolism and protein and cell wall synthesis

The perfect uncomplicated UTI drug. Cheap, minimal side effects, minimal collateral damage, beautiful smile. Perfect.

Bioavailability: n/a

Fosfomycin
(its own thing)

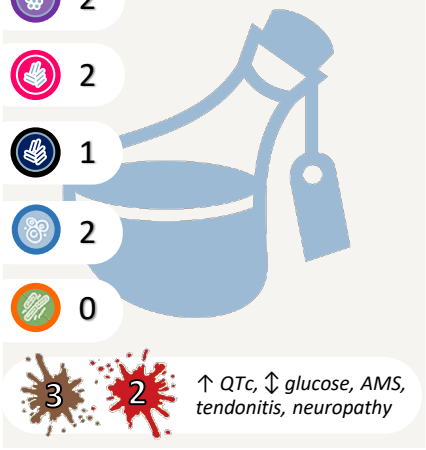
FOS



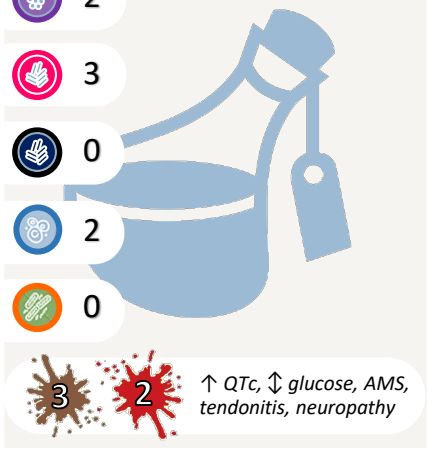
Mechanism of Action: inhibits bacterial wall synthesis by binding pyruvyl transferase

The oral UTI drug no one knows about. Comes in a little sachet you can mix with you favorite beverage. Possibly less effective than competitors, but not bad when there's nothing else.

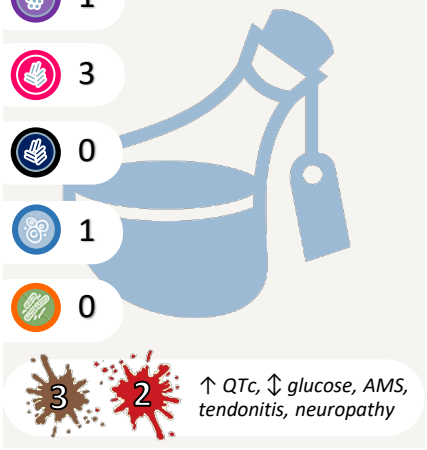
Bioavailability: n/a



Moxifloxacin (MOX)

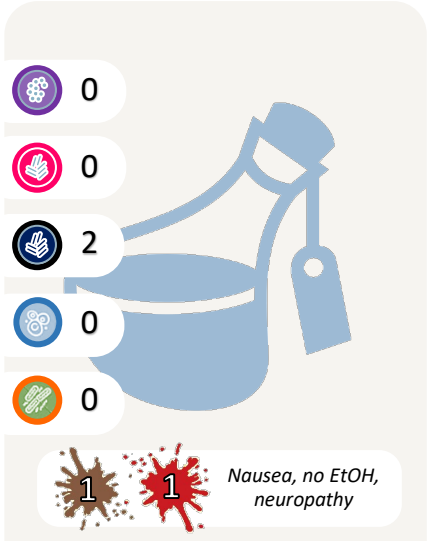


Levofloxacin (LEV)



Ciprofloxacin (CIP)

Ertapenem (ERT) ☆



Metronidazole (MET)

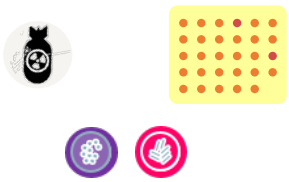
Azithro (AZ)

Fosfomycin (FOS)

Nitrofurantoin (NIT)

Tigecycline (TIG)

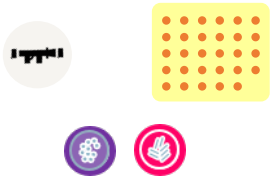
Bazookacillin ☆☆
(a "big gun")



Effective against all gram positive and gram negative organisms

Ceftazidime-avibactam, Ceftolozane-tazobactam, Meropenem-vaborbactam, Omadacycline, Eravacycline, Delafloxacin, Plazomicin. The list of new drugs goes on and on. They don't often do anything better than any other effective antibiotic, but when it comes to resistance they are keeping the "last line of defense" just one line ahead.

Bazookacillin ☆☆
(a "big gun")



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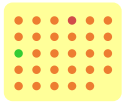
Vancomycin
(a glycopeptide)

V



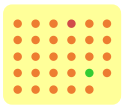
Mechanism of Action: inhibits bacterial wall synthesis by binding NAG & NAM preventing cross-linking

Higher troughs for severe MRSA infections may lead to better outcomes. Will definitely keep your interns busy either way.

Bioavailability: n/a

Azithromycin
(a macrolide)

AZ



Mechanism of Action: inhibits protein synthesis elongation by binding the 50S ribosomal subunit

Azithromycin has a half life of 68 hours and a volume of distribution of 33 L/kg. Once it's inside you it becomes a part of you forever.

Bioavailability: 37%

Cefuroxime
(a 2nd gen Cephalosporin)

An orphan class of antibiotics due to resistance, the 2nd gen cephalosporins are no longer 1st line for any condition. Except for maybe non-severe PCN allergy in pediatric otitis media.

Alternative

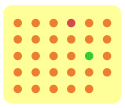
Stool Transplant
(a bag of poop)

May play to restore all Flora

Very gross, but very good.

Doxycycline (Minocycline)
(tetracyclines)

DXY



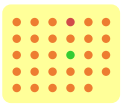
Mechanism of Action: inhibits protein synthesis elongation by binding the 30S ribosomal subunit

Doxycycline is the true broad spectrum antibiotic. Minocycline is probably better for Stenotrophomonas and Acinetobacter, though.

Bioavailability: 100%

Clindamycin
(a lincosamide)

CLI



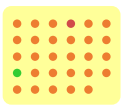
Mechanism of Action: inhibits protein synthesis elongation by binding the 30S ribosomal subunit

With the higher doses needed for bigger people for most Staphylococcal disease, more diarrhea with more drug, increased resistance rates, & increased C diff risk, why is Clinda so popular?

Bioavailability: 90%

Trimethoprim-Sulfamethoxazole
(sulfonamides)

T/S



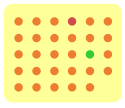
Mechanism of Action: inhibits folate metabolism by binding dihydrofolate reductase

TMP-SMX will artificially raise creatinine without actually impacting renal function. The increase in K+ in patients with underlying kidney disease, however, is real.

Bioavailability: 85%

Doxycycline (Minocycline)
(tetracyclines)

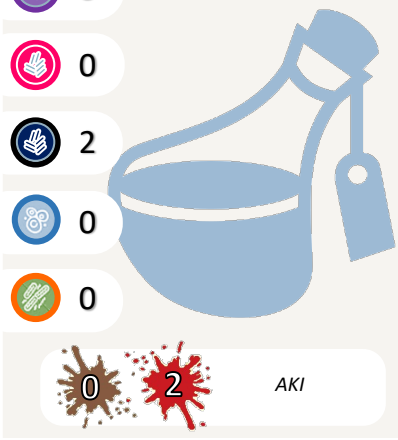
DXY



Mechanism of Action: inhibits protein synthesis elongation by binding the 30S ribosomal subunit

Doxycycline is the true broad spectrum antibiotic. Minocycline is probably better for Stenotrophomonas and Acinetobacter, though.

Bioavailability: 100%



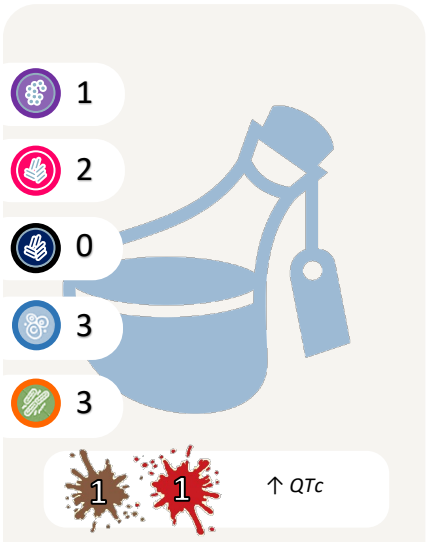
Vancomycin (V)

Bazookacillin ( ) ★★

Bazookacillin ( ) ★★

Doxycycline (DXY)

Cefuroxime ( )



Azithro (AZ)

Doxycycline (DXY)

Trim-Sulfa (T/S)

Clindamycin (CLI)

Mother-To-Be

Event

place in Bug Card play area
flip after Drug Card played

Medicating for two!

INTERN CHEAT SHEET

SET UP

I. SHUFFLE AND DEAL **DRUG** DECK

Deal 5 to each player

Vs & Co-op: Place 3 to right of the deck, image side up near play area

1P only: Place only the deck near play area

II. SHUFFLE AND PLACE **BUG** DECK

Vs only: Place 9 image side up in 3x3 square play area

1P & Co-op: Count out X cards for Bug Card deck per difficulty level
Place 3 image side up in 3x3 square
Place the deck near play area

III. ASSIGN FIRST PLAYER

Kiddo

Event

place in Bug Card play area
flip after Drug Card played

Kids are not little adults.

PLAYER SHEET

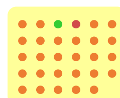
Round	Starting: Flora 10	Health 10	Expert Scoring	1st +1	DOC +2
1					
2					
3					
4					
5					
6					
7					

For Co-op: start 6 / 6 ☎ Pharm: ☐ ☐

Nafcillin (Dicloxacillin)

(anti-staphylococcal penicillins)

NAF



Mechanism of Action: inhibits bacterial wall synthesis by binding penicillin binding proteins (PBPs).

Designed to combat MSSA they're not good for much else. Thankfully there's a lot of MSSA in the world.

Bioavailability: 37%

C diff

Event

flip and play immediately

Code Brown.

PLAYER SHEET

Round	Starting: Flora 10	Health 10	Expert Scoring	1st +1	DOC +2
1					
2					
3					
4					
5					
6					
7					

For Co-op: start 6 / 6 ☎ Pharm: ☐ ☐

PLAYER SHEET

Round	Starting: Flora 10	Health 10	Expert Scoring	1st +1	DOC +2
1					
2					
3					
4					
5					
6					
7					

For Co-op: start 6 / 6 ☎ Pharm: ☐ ☐

PLAYER SHEET

Round	Starting: Flora 10	Health 10	Expert Scoring	1st +1	DOC +2
1					
2					
3					
4					
5					
6					
7					

For Co-op: start 6 / 6 ☎ Pharm: ☐ ☐

Kiddo

1

if Drug Card has: or

Higher Risk Antibiotics for Pediatrics

Fluoroquinolones	*??? MSK toxicity*
Ceftriaxone	*↑ bilirubin**
Trim-Sulfa	*↑ bilirubin**
Nitro	*↑ bilirubin**
Doxy	*Tooth staining***
Tigecycline	*Limited data*

** For neonates, jaundiced, & G6PD def*
*** With prolonged use*

INTERN CHEAT SHEET

TURN

I. TAKE 1 OF 2 ACTIONS

Play **1** or **2** Drug Cards to kill Bug Cards

- Pay Health and Flora costs
- 2nd card costs 1 less flora damage

Heal 3 total or (may mix)

II. DRAW DRUG CARDS TILL HAND FULL

1P only — May discard any prior unused cards

III. REFILL 3x3 BUG CARD PLAY AREA

1P & Co-op — Instead add X Bug Cards to play area per difficulty level

OFF TURN

I. PLAY DRUG CARDS FOR RESISTANCE

Mother-To-Be

1

if Drug Card has: or

FDA Pregnancy Class C & D Antibiotics

Aminoglycosides	*D*
Doxycycline	*D*
Fluoroquinolones	*C*
Linezolid	*C*
Metronidazole	*B**
Nitrofurantoin	*B***
Trim-Sulfa	*C*

** Metro is contraindicated in the 1st trimester*
*** Nitro has possibly ↑ risks in 1st trimester*

C diff

All players must count the <u>total</u> Flora damage from all Drug Cards in their discard pile.

Player with most: 1
ties = no penalty
1P: if total / # cards > 2

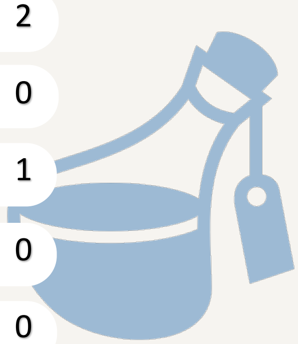
Anyone may discard Vancomycin or Metro to cancel

Antibiotics increase the risk of Clostridioides difficile infection, a recurrent diarrhea that can lead to toxic megacolon and death

Highest Risk
Clinda Fluoroquinolones 3rd gen Cephs

Lowest Risk
Doxy Aminoglycosides Trim Sulfa

2
0
1
0
0



1 1 *The usual, ↑ AST/ALT*

Nafcillin (NAF)

PLAYER SHEET

Round — Starting: Flora 10, Health 10 — Expert Scoring: 1st +1, DOC +2

1
2
3
4
5
6
7

For Co-op: start 6 / 6 — ☎ Pharm: ☐ ☐

PLAYER SHEET

Round — Starting: Flora 10, Health 10 — Expert Scoring: 1st +1, DOC +2

1
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5
6
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For Co-op: start 6 / 6 — ☎ Pharm: ☐ ☐

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Round — Starting: Flora 10, Health 10 — Expert Scoring: 1st +1, DOC +2

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PLAYER SHEET

Round — Starting: Flora 10, Health 10 — Expert Scoring: 1st +1, DOC +2

1
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3
4
5
6
7

For Co-op: start 6 / 6 — ☎ Pharm: ☐ ☐

Mother-To-Be

Event

place in Bug Card play area
flip after Drug Card played

Medicating for two!

INTERN CHEAT SHEET

SET UP

I. SHUFFLE AND DEAL **DRUG** DECK

Deal 5 to each player

Vs & Co-op: Place 3 to right of the deck, image side up near play area

1P only: Place only the deck near play area

II. SHUFFLE AND PLACE **BUG** DECK

Vs only: Place 9 image side up in 3x3 square play area

1P & Co-op: Count out X cards for Bug Card deck per difficulty level
Place 3 image side up in 3x3 square
Place the deck near play area

III. ASSIGN FIRST PLAYER

Kiddo

Event

place in Bug Card play area
flip after Drug Card played

Kids are not little adults.

PLAYER SHEET

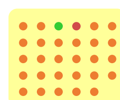
Round	Starting: Flora 10	Starting: Health 10	Expert Scoring	1st +1	DOC +2
1					
2					
3					
4					
5					
6					
7					

For Co-op: start 6 / 6 ☎ Pharm: ☐ ☐

Nafcillin (Dicloxacillin)

(anti-staphylococcal penicillins)

NAF



Mechanism of Action: inhibits bacterial wall synthesis by binding penicillin binding proteins (PBPs).

Designed to combat MSSA they're not good for much else. Thankfully there's a lot of MSSA in the world.

Bioavailability: 37%

C diff

Event

flip and play immediately

Code Brown.

PLAYER SHEET

Round	Starting: Flora 10	Starting: Health 10	Expert Scoring	1st +1	DOC +2
1					
2					
3					
4					
5					
6					
7					

For Co-op: start 6 / 6 ☎ Pharm: ☐ ☐

PLAYER SHEET

Round	Starting: Flora 10	Starting: Health 10	Expert Scoring	1st +1	DOC +2
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For Co-op: start 6 / 6 ☎ Pharm: ☐ ☐

PLAYER SHEET

Round	Starting: Flora 10	Starting: Health 10	Expert Scoring	1st +1	DOC +2
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3					
4					
5					
6					
7					

For Co-op: start 6 / 6 ☎ Pharm: ☐ ☐

Kiddo

1 if Drug Card has: 😐 or ☹

Higher Risk Antibiotics for Pediatrics

Fluoroquinolones	*??? MSK toxicity*
Ceftriaxone	*↑ bilirubin**
Trim-Sulfa	*↑ bilirubin**
Nitro	*↑ bilirubin**
Doxy	*Tooth staining***
Tigecycline	*Limited data*

** For neonates, jaundiced, & G6PD def*
*** With prolonged use*

INTERN CHEAT SHEET

TURN

I. TAKE 1 OF 2 ACTIONS

Play **1** or **2** Drug Cards to kill Bug Cards
- Pay Health and Flora costs
- 2nd card costs 1 less flora damage

Heal 3 total ❤ or ❤ (may mix)

II. DRAW DRUG CARDS TILL HAND FULL

1P only — May discard any prior unused cards

III. REFILL 3x3 BUG CARD PLAY AREA

1P & Co-op — Instead add X Bug Cards to play area per difficulty level

OFF TURN

I. PLAY DRUG CARDS FOR RESISTANCE

Mother-To-Be

1 if Drug Card has: 😐 or ☹

FDA Pregnancy Class C & D Antibiotics

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Doxycycline	*D*
Fluoroquinolones	*C*
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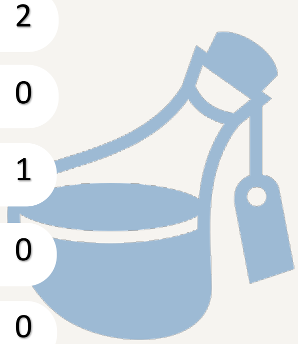
<u>Highest Risk</u>
Clinda   Fluoroquinolones   3rd gen Cephs

<u>Lowest Risk</u>
Doxy   Aminoglycosides   Trim Sulfa

Nafcillin (NAF)

2
0
1
0
0



1 1 *The usual, ↑ AST/ALT*

Nafcillin (NAF)

PLAYER SHEET

R o u n d

<u>Starting</u>: Flora 10, Health 10

<u>Expert Scoring</u>: 1st +1, DOC +2

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For Co-op: start 6 / 6

☎ Pharm: ☐ ☐

PLAYER SHEET

R o u n d

<u>Starting</u>: Flora 10, Health 10

<u>Expert Scoring</u>: 1st +1, DOC +2

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6
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For Co-op: start 6 / 6

☎ Pharm: ☐ ☐

PLAYER SHEET

R o u n d

<u>Starting</u>: Flora 10, Health 10

<u>Expert Scoring</u>: 1st +1, DOC +2

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5
6
7

For Co-op: start 6 / 6

☎ Pharm: ☐ ☐

PLAYER SHEET

R o u n d

<u>Starting</u>: Flora 10, Health 10

<u>Expert Scoring</u>: 1st +1, DOC +2

1
2
3
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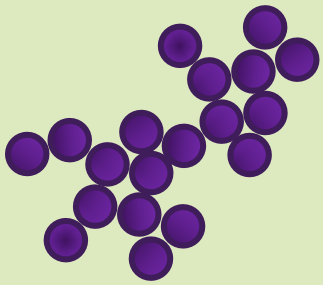
6
7

For Co-op: start 6 / 6

☎ Pharm: ☐ ☐

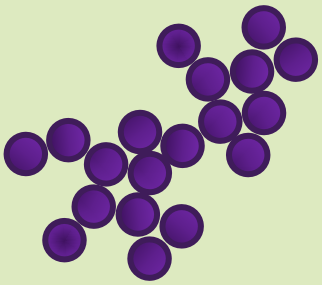
Staphylococcus aureus



Infections: cellulitis, nec fasc, pneumonia

Acquired Resistance

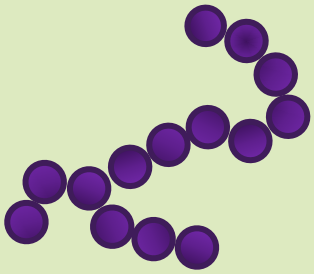
Coagulase-Negative Staphylococci



Infections: hospital acquired infections

Acquired Resistance

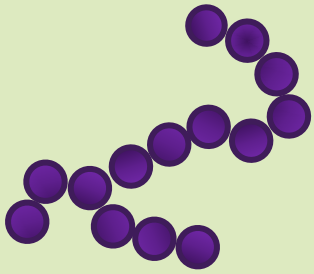
Group A Streptococcus



Infections: cellulitis, nec fasc, pneumonia

Acquired Resistance

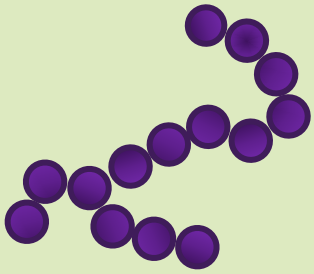
Group B Streptococcus



Infections: septicemia, pneumonia, cellulitis, cystitis

Acquired Resistance

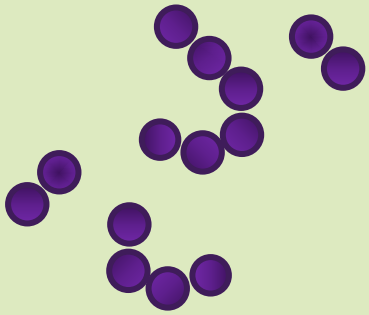
Groups C & G Streptococcus



Infections: cellulitis

Acquired Resistance

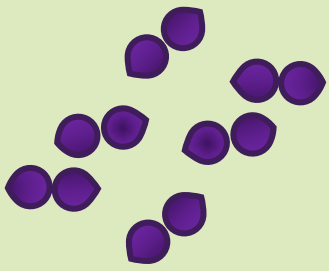
Viridans Strep



Infections: odontogenic disease

Acquired Resistance

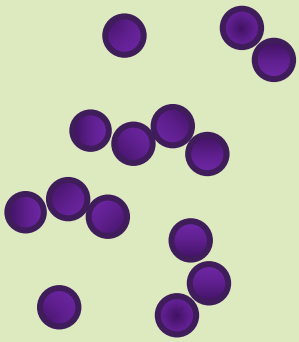
Streptococcus pneumoniae



Infections: pneumonia, meningitis

Acquired Resistance

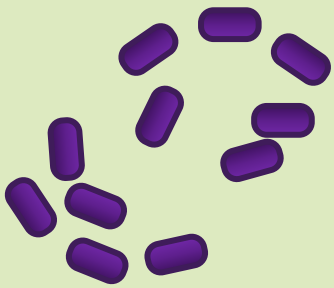
Enterococcus



Infections: cystitis, hospital acquired infections

Acquired Resistance

Listeria monocytogenes

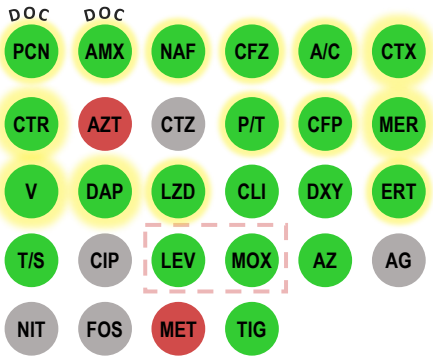


Infections: meningitis, septicemia

Acquired Resistance

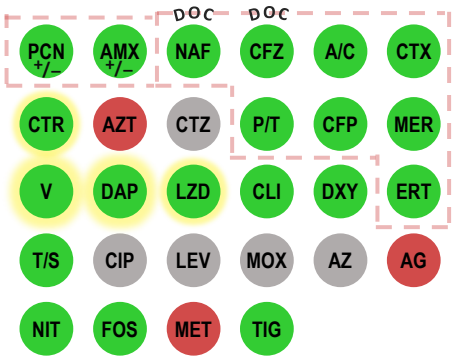
Group A Streptococcus

Causes both strep throat and necrotizing fasciitis. Which is it going to be??



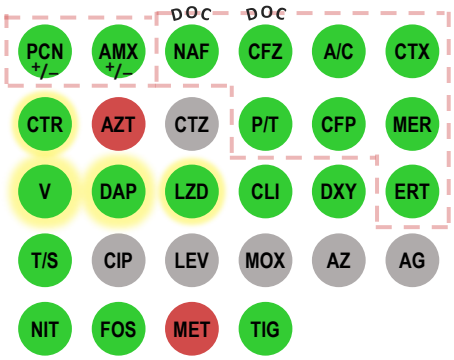
Coagulase-neg Staph

The wimpiest of Staph, the coagulase-negative Staphylococci can usually be ignored if a foreign object is not involved.



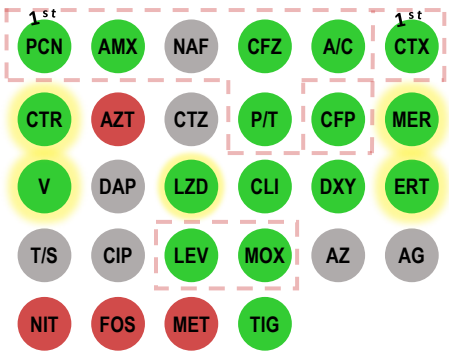
Staphylococcus aureus

The most virulent of Staph, cultures growing S. aureus should never be ignored regardless where it is found.



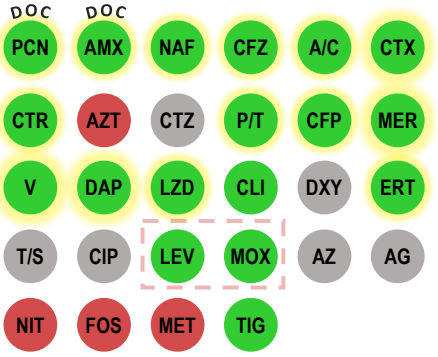
Viridans Streptococci

ß-lactam resistance occurs through accumulated changes in PBPs. Slow, sneaky, and a bit hard to interpret. ß-lactamase inhibitors don't help.



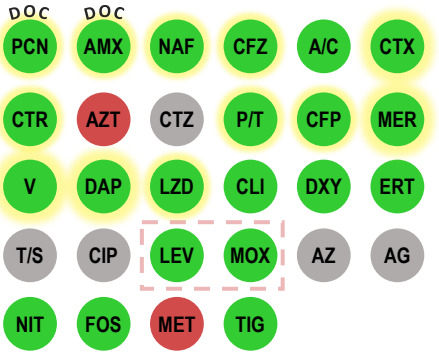
Groups C & G Streptococcus

The lettered Streps are the "beta-hemolytic Streps" are the "penicillin-susceptible Streps".



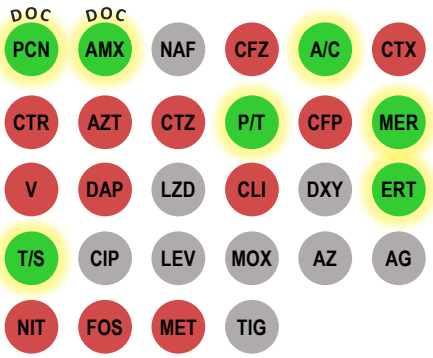
Group B Streptococcus

Group B Strep mostly causes disease in the very young and very old. Both ideal age groups for penicillin.



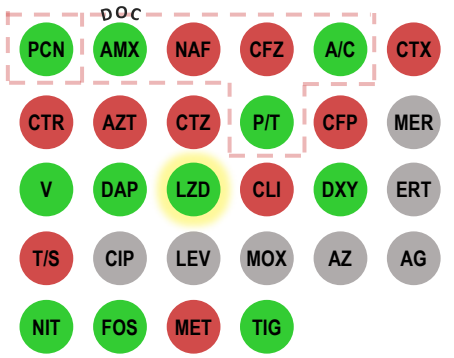
Listeria monocytogenes

Listeria can cause gastroenteritis, septicemia, and meningoencephalitis. TMP-SMX is typically used in cases of severe PCN allergy.



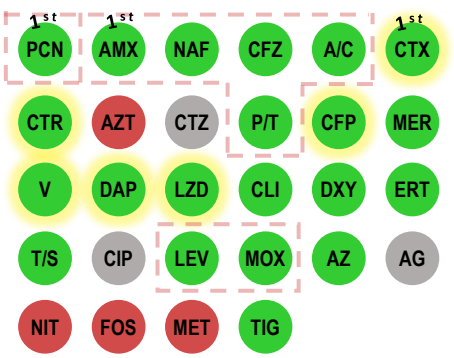
Enterococcus

The fluoroquinolones are probably fine for UTIs but maybe not so much elsewhere.

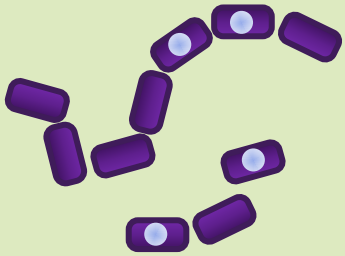


Strep pneumoniae

Susceptibility to ceftriaxone depends on the site of infection and drug penetration. Sometimes resistant in the CNS, but rarely anywhere else.



Bacillus anthracis



Infections: Anthrax

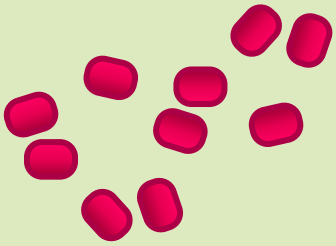
Acquired Resistance

E coli

Infections: cystitis, gastroenteritis, hospital acquired infections

Acquired Resistance

Klebsiella pneumoniae



Infections: cystitis, Friedlander's Disease, liver abscess, hospital acquired infections

Acquired Resistance

Proteus mirabilis

Infections: cystitis

Acquired Resistance

Enterobacter cloacae

Infections: hospital acquired infections

Acquired Resistance

Serratia marcescens

Infections: hospital acquired infections

Acquired Resistance

C diff

Event

flip and play immediately

Code Brown.

Salmonella enterica

Infections: gastroenteritis, Typhoid

Acquired Resistance

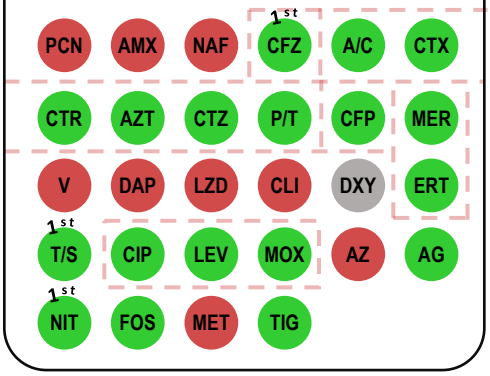
Pseudomonas aeruginosa

Infections: hospital acquired infections

Acquired Resistance

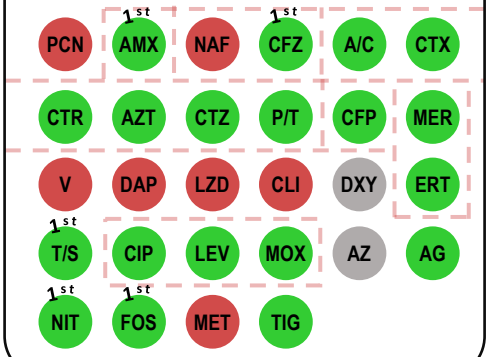
Klebsiella pneumoniae

Klebsiella, Serratia, and Enterobacter are intrinsically resistant to ampicillin / amoxicillin.



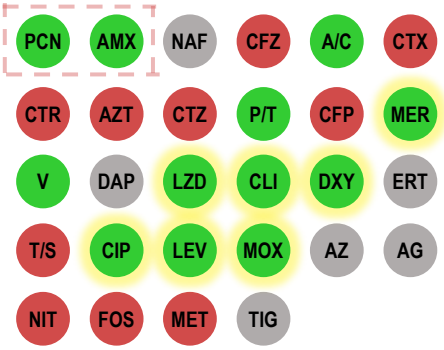
E coli

Number one cause of UTIs for 3,000 years running.



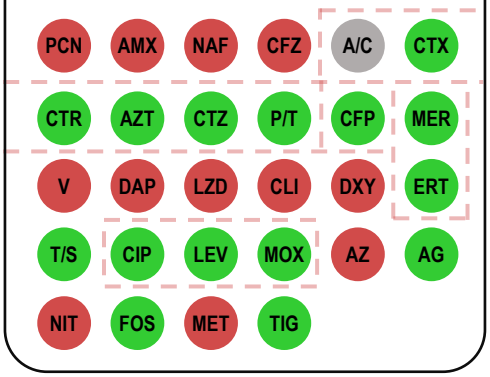
Bacillus anthracis

Can cause cutaneous, pulmonary, or gastrointestinal disease. One of the few infections where combination therapy is always recommended.



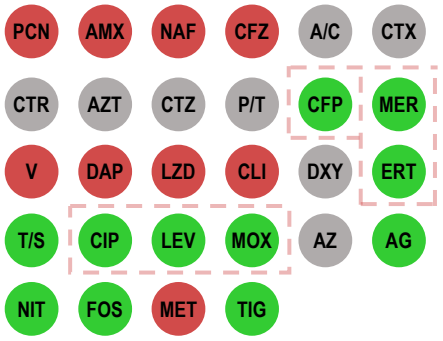
Serratia marcescens

Officially one of the "SPICE" organisms potentially possessing an inducible AmpC bet-lactamase, it does so rarely and current recommendations are to treat based on DSTs



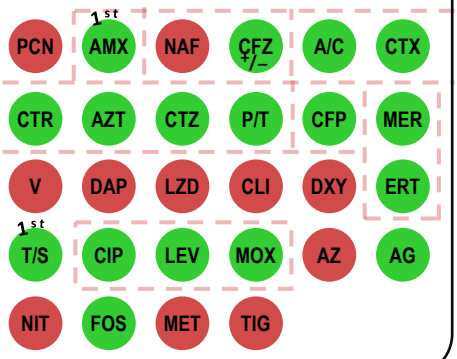
Enterobacter cloacae

One of the "SPICE" organisms potentially possessing an inducible AmpC bet-lactamase, current recommendations are to avoid certain beta-lactams for severe disease.



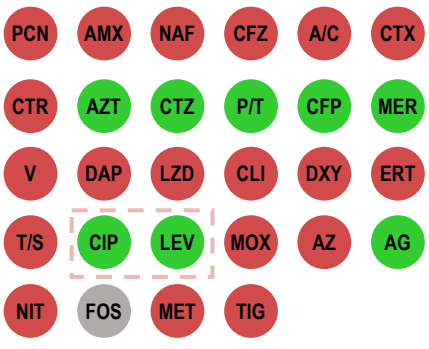
Proteus mirabilis

Proteus can make the most amazing stones. Unfortunately it does so in your kidneys.



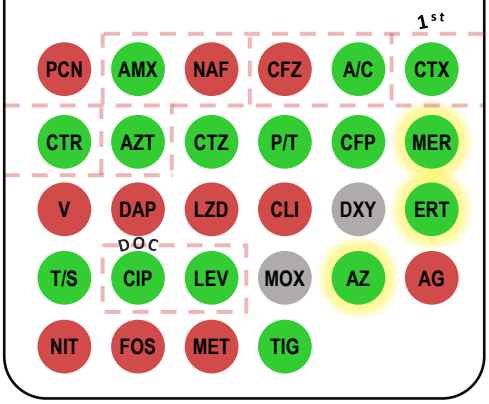
Pseudomonas aeruginosa

Does it smell like corn tortillas or grapes? Either way, it's always resistant to ceftriaxone, moxifloxacin, and amox-clav.



Salmonella enterica
including serovars Typhi & Paratyphi

Serovars Typhi and Paratyphi cause typhoid while all other serovars cause gastroenteritis. Gastroenteritis and sometimes bacteremia and disseminated disease.



C diff

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<u>*Highest Risk*</u>
Clinda *Fluoroquinolones* *3rd gen Cephs*

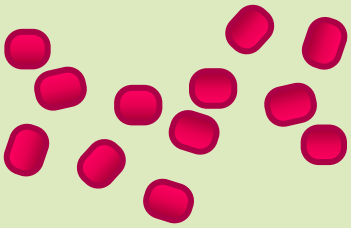
<u>*Lowest Risk*</u>
Doxy *Aminoglycosides* *Trim Sulfa*

Stenotrophomonas maltophila

Infections: hospital acquired infections

Acquired Resistance

Acinetobacter baumanii



Infections: cellulitis, hospital acquired infections

Acquired Resistance

Bordetella pertussis

Infections: Whooping Cough

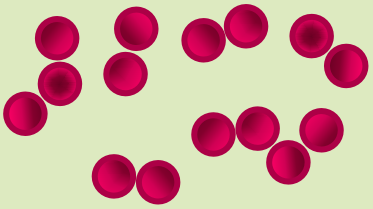
Acquired Resistance

H flu

Infections: otitis media, sinusitis, pneumonia

Acquired Resistance

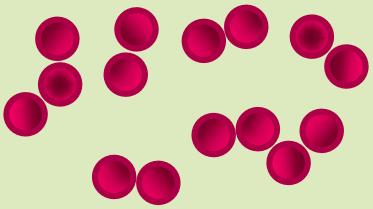
Neisseria gonorrhoeae



Infections: Gonorrhea, urethritis

Acquired Resistance

Neisseria meningitidis



Infections: meningococcemia, meningitis

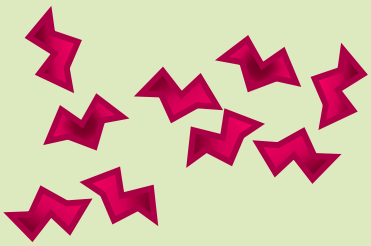
Acquired Resistance

Pasteurella multocida

Infections: cellulitis, pneumonia

Acquired Resistance

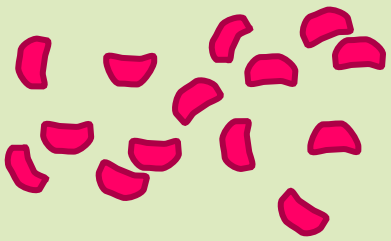
Campylobacter jejuni



Infections: gastroenteritis

Acquired Resistance

Vibrio cholerae

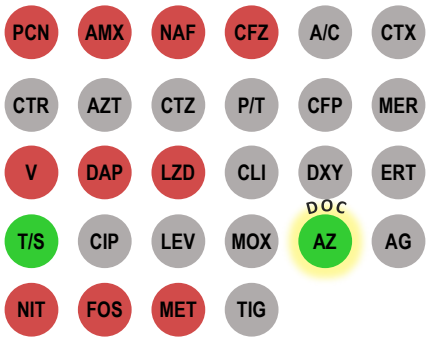


Infections: Cholera

Acquired Resistance

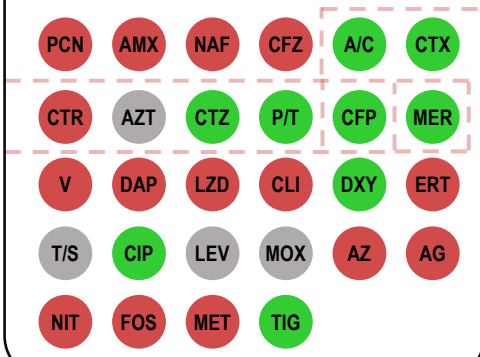
Bordetella pertussis

Pertussis has few antibiotic options because few antibiotics have been studied outside the petri dish.



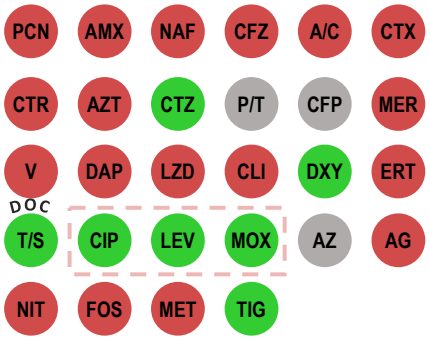
Acinetobacter

Acinetobacter can be extremely drug resistant. In such cases sulbactam (part of amp-sulbactam) itself may retain some efficacy.



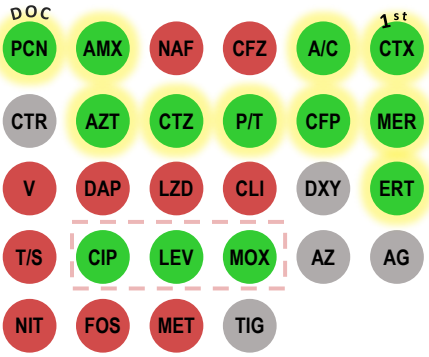
Stenotrophomonas

Stenotrophomonas is very resistant, but very low virulence. They can cause disease, but they can also just colonize.



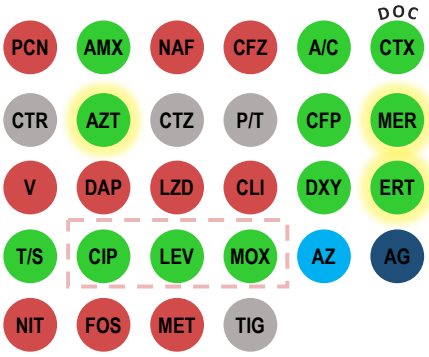
Neisseria meningitidis

Neisseria meningitidis is a medical emergency. Thankfully a penicillin-susceptible medical emergency.



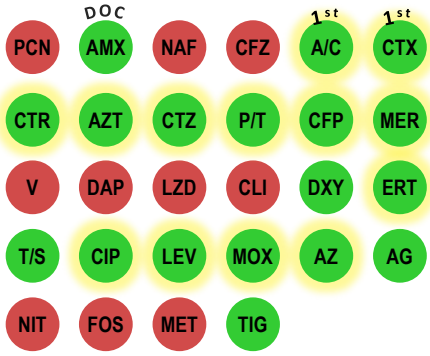
Neisseria gonorrhoeae

Ceftriaxone monotherapy is sufficient. Dose may vary by site infected. Azithromycin fails to minimize resistance development.



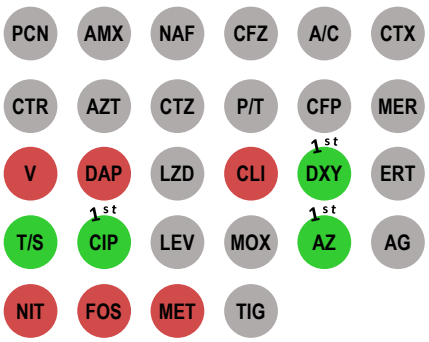
H flu

Amoxicillin still kills most H flu. Amox-clav kills the rest.



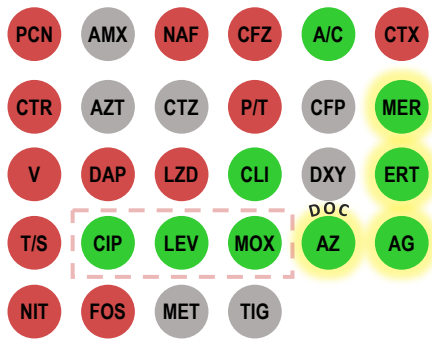
Vibrio cholerae

You probably won't see any Cholera patients, but if you do now you know your options. Also, for board review: rice water stools.



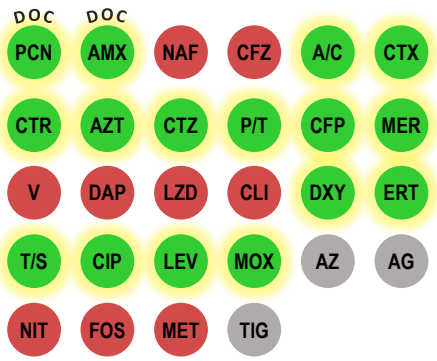
Campylobacter jejuni

Fluoroquinolone resistance is increasing in Campylobacter. One of many reasons they are not recommended for severe traveler's diarrhea in much the world.

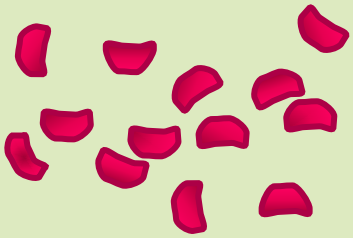


Pasteurella multocida

Pasteurella can be found in cat mouths and in dog mouths, but only cat mouths come with little hypodermic needle teeth.



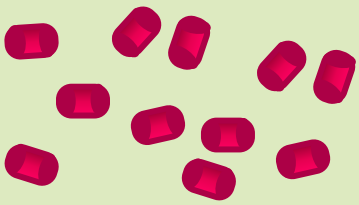
Vibrio vulnificus



Infections: gastroenteritis, cellulitis, septicemia

Acquired Resistance

Yersinia pestis



Infections: Plague

Acquired Resistance

Yersinia enterocolitica

Infections: gastroenteritis, pseudoappendicitis

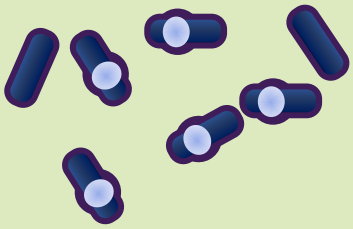
Acquired Resistance

Fusobacterium necrophorum

Infections: Lemierre's Syndrome, Ludwig's angina, Vincent's angina

Acquired Resistance

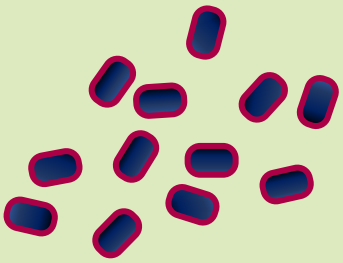
Clostridium perfringens



Infections: necrotizing fasciitis

Acquired Resistance

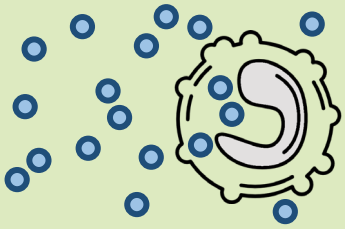
Bacteroides fragilis



Infections: intraabdominal infections

Acquired Resistance

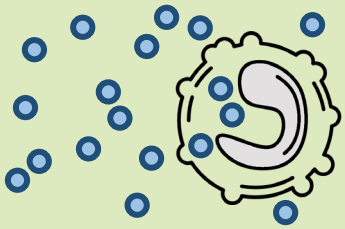
Chlamydia trachomatis



Infections: Chlamydia, urethritis, PID

Acquired Resistance

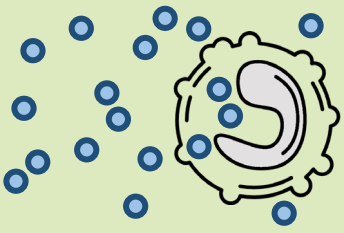
Chlamydia pneumoniae



Infections: "walking" pneumonia

Acquired Resistance

Chlamydia psittaci

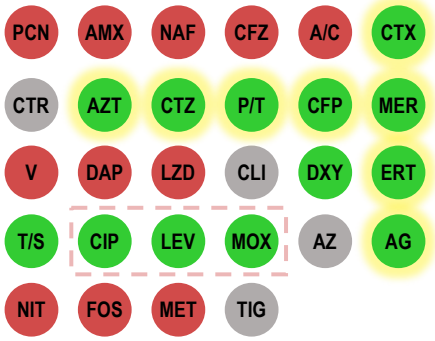


Infections: Psittacosis (AKA "Parrot Fever")

Acquired Resistance

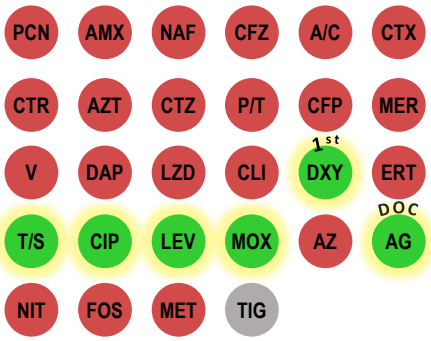
Yersinia entercolitica

A cause of diarrhea, but also pseudoappendicitis, mesenteric adenitis, reactive arthritis, and erythema nodosum.



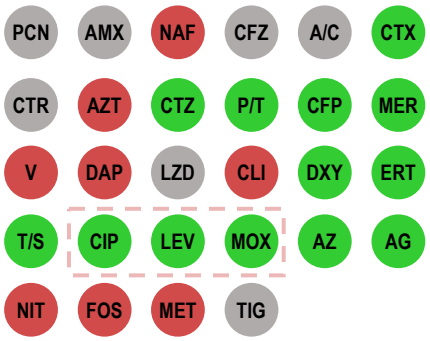
Yersinia pestis

Technically the drug of choice is still Streptomycin, but it is available only through the CDC so gentamicin it is!



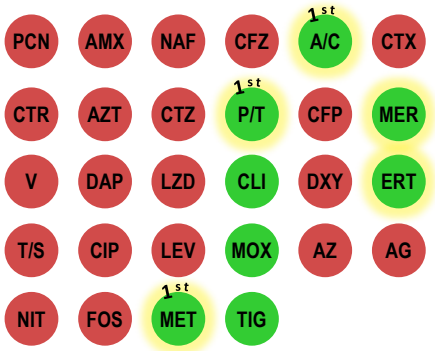
Vibrio vulnificus

Transmitted through the ingestion of raw mollusks (gastroenteritis & septicemia) or inoculation of wounds with warm sea water (cellulitis)



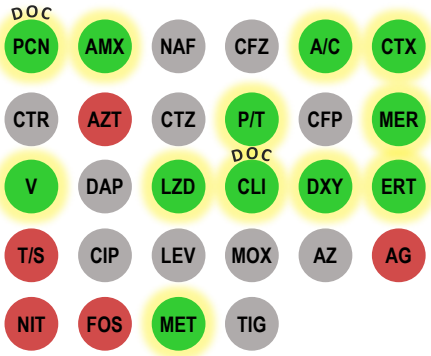
Bacteroides fragilis

One of the most common anaerobes and one of the most resistant. Why clindamycin isn't a very good empiric option any more.



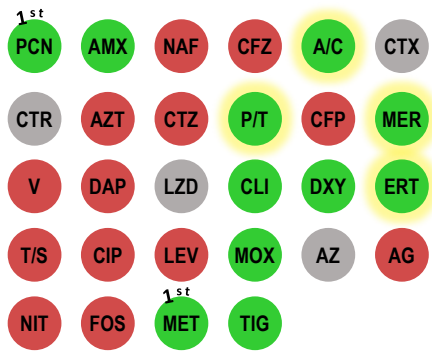
Clostridium perfringens

A medical & surgical emergency. A beta-lactam + clindamycin (for its antitoxin effects) are the standard of care.



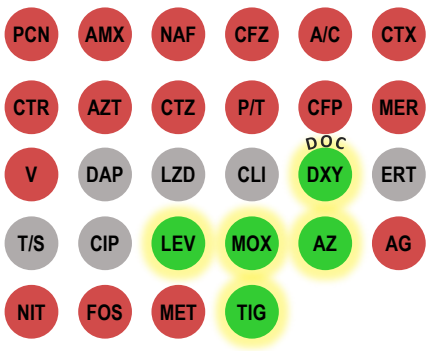
Fusobacterium necrophorum

Capable of causing severe head and neck disease, often in those with poor dentition, it is thankfully usually PCN-susceptible.



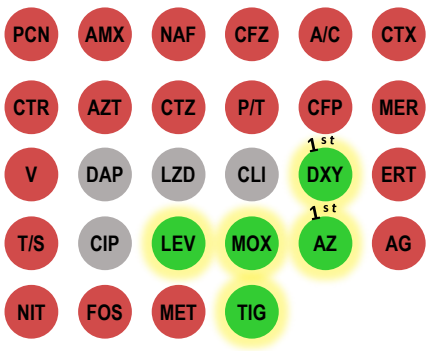
Chlamydia psittaci

Psittacosis typically presents as an atypical pneumonia, but sometimes headache or flu-like symptoms may predominate.



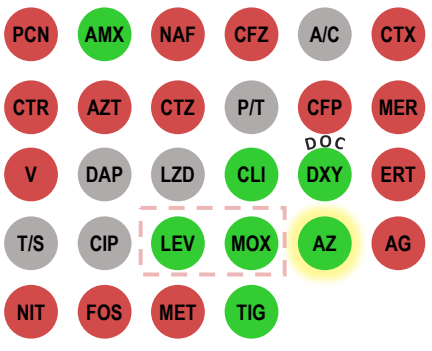
Chlamydia pneumoniae

One of the most common and mild causes of pneumonia.

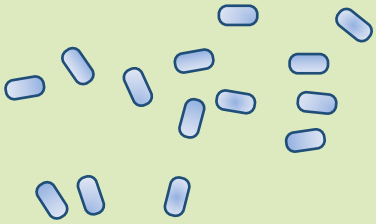


Chlamydia trachomatis

The most common cause of non-gonococcal urethritis.



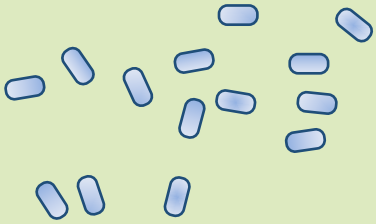
Mycoplasma pneumoniae



Infections: "walking" pneumonia

Acquired Resistance

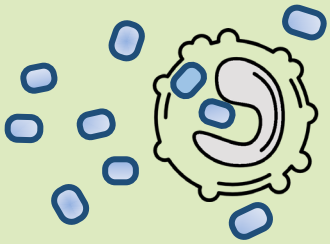
Mycoplasma genitalium



Infections: urethritis

Acquired Resistance

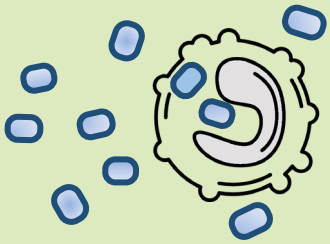
Coxiella burnetii



Infections: Q Fever

Acquired Resistance

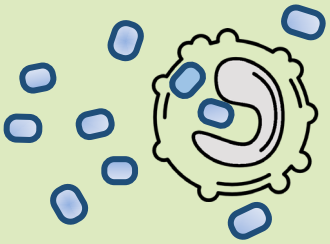
Brucella abortus



Infections: Brucellosis

Acquired Resistance

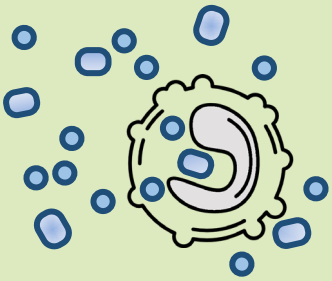
Bartonella henslae



Infections: Cat Scratch Disease

Acquired Resistance

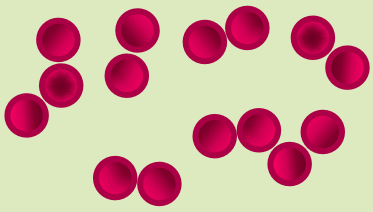
Ehrlichia, Anaplasma, & Rickettsia



Infections: Ehrlichiosis, Anaplasmosis, Rocky Mountain Spotted Fever, other spotted fevers

Acquired Resistance

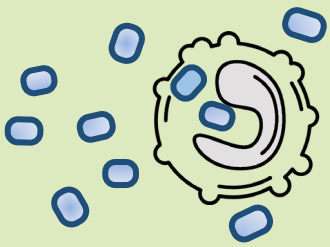
Moraxella cattarhalis



Infections: otitis media, sinusitis, pneumonia

Acquired Resistance

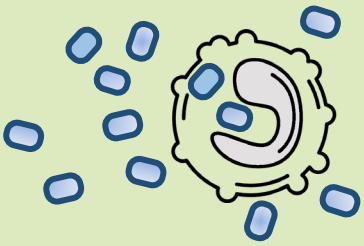
Francisella tularensis



Infections: Tularemia (AKA "Rabbit Fever")

Acquired Resistance

Legionella pneumophila

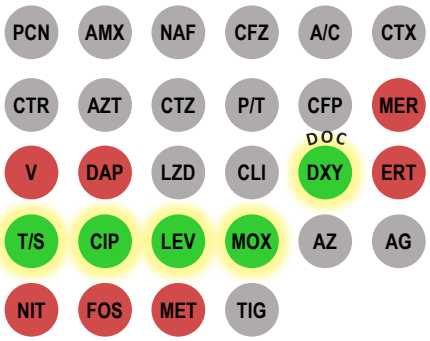


Infections: Legionnaire's Disease

Acquired Resistance

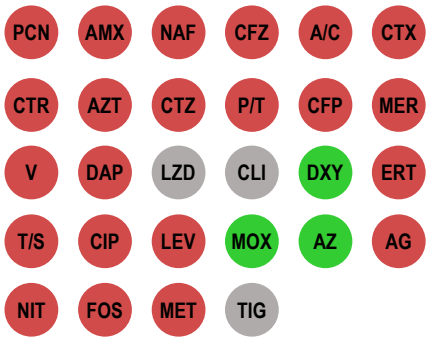
Coxiella burnetii

A rare cause of Fever of Unknown Origin (FUO) in those exposed to infected animals (livestock & pets) and unpasteurized dairy (less common).



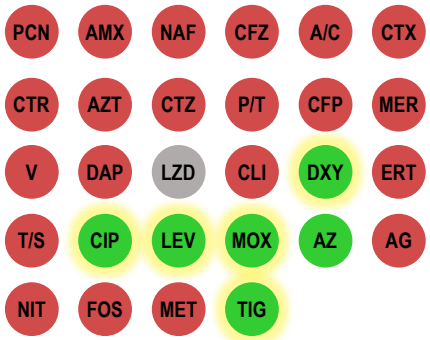
Mycoplasma genitalium

The most common cause of non-gonococcal non-chlamydial urethritis.



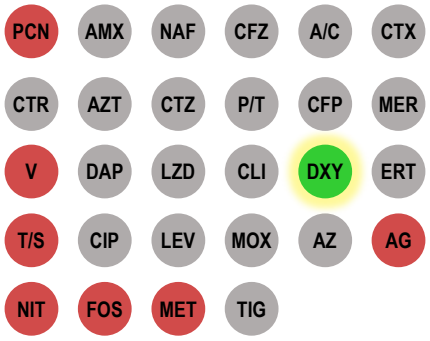
Mycoplasma pneumoniae

A common cause of "walking pneumonia", also associated with hemolytic anemia, Stevens Johnson syndrome, and various CNS manifestations



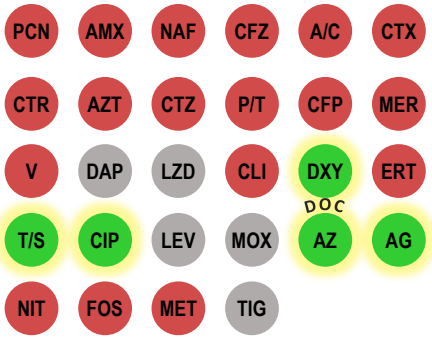
Ehrlichia, Anaplasma, & Rickettsia

Ehrlichia, Anaplasma, and Rickettsia are all within the order Rickettsiales. They typically cause a non-specific febrile illness often with cytopenias and LFT abnormalities.



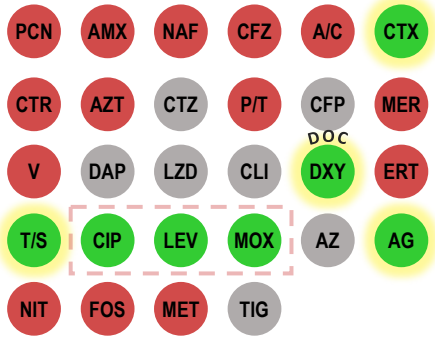
Bartonella henslae

Cat scratch disease is typically an isolated lymphadenitis, but may also involve hepatosplenomegaly, encephalitis, and ocular manifestations.



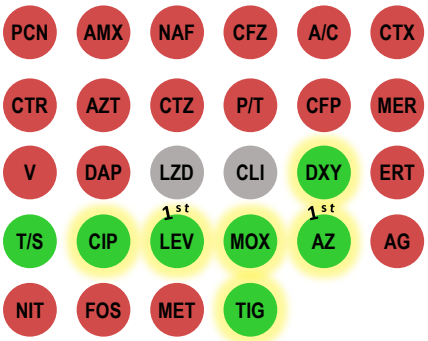
Brucella abortus

A rare cause of Fever of Unknown Origin (FUO) in those exposed to infected animals (primarily livestock) and unpasteurized dairy (more common).



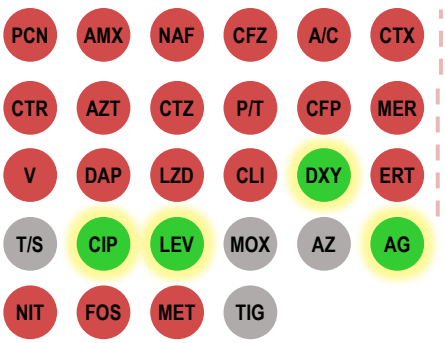
Legionella pneumophila

A possible cause of both severe community and hospital-acquired pneumonia. Requires special culture media, urinary antigen testing, or sputum PCR to diagnose.



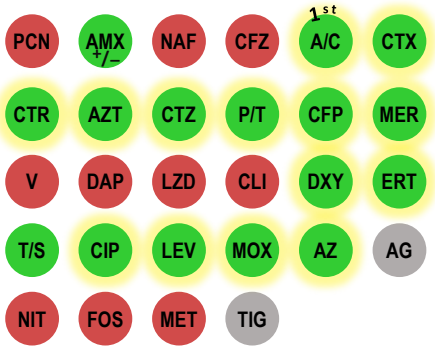
Francisella tularensis

Tularemia can occur from biting arthropods, cutaneous inoculation, inhalation, and ingestion. May present in glandular, ulceroglandular, oculoglandular, pharyngeal, pneumonic, and typhoidal forms.

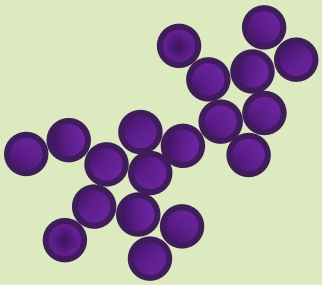


Moraxella cattarhalis

Beta-lactamase production now exceeds 95% globally. Amoxicillin used to be a good idea.



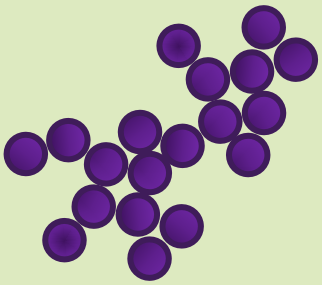
MRSA
(Methicillin-Resistant Staph aureus)



Infections: cellulitis, nec fasc, pneumonia

Acquired Resistance

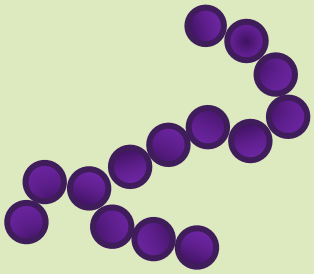
Coagulase-Negative Staphylococci



Infections: hospital acquired infections

Acquired Resistance

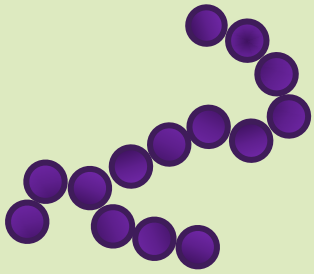
Group A Streptococcus (GAS)



Infections: cellulitis, nec fasc,

Acquired Resistance

Group B Streptococcus (GBS)



Infections: septicemia, pneumonia, cystitis, cellulitis

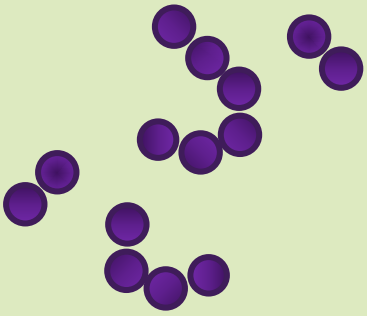
Acquired Resistance

ß-lactamase+ H flu

Infections: otitis media, sinusitis, pneumonia

Acquired Resistance

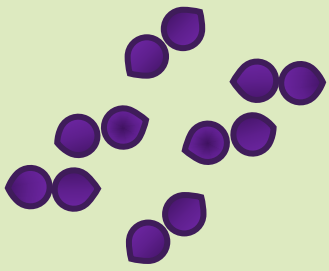
Viridans Strep



Infections: odontogenic disease

Acquired Resistance

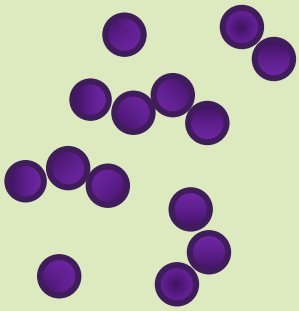
Streptococcus pneumoniae



Infections: pneumonia, meningitis

Acquired Resistance

VRE
(Vancomycin-Resistant Enterococcus)



Infections: cystitis, hospital acquired infections

Acquired Resistance

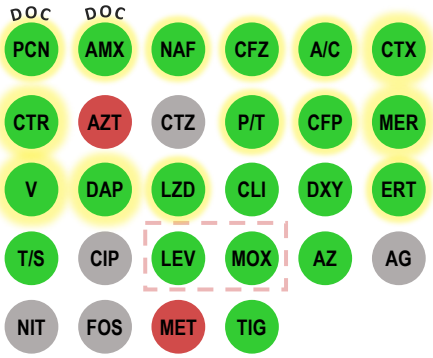
Pseudomonas aeruginosa

Infections: hospital acquired infections

Acquired Resistance

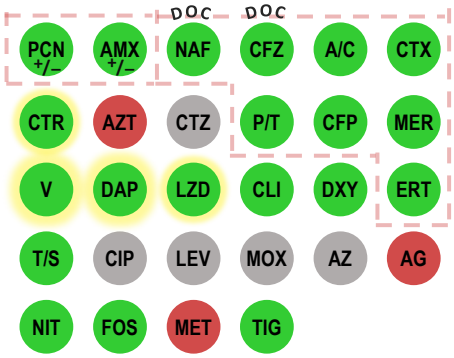
Group A Streptococcus

Causes both strep throat and necrotizing fasciitis. Which is it going to be??



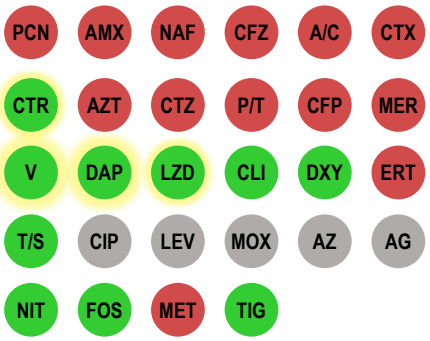
Coagulase-neg Staph

The wimpiest of Staph, the coagulase-negative Staphylococci can usually be ignored if a foreign object is not involved.



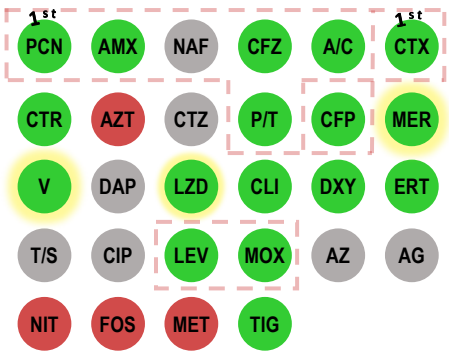
MRSA
(Methicillin-Resistant Staph aureus)

For most mild, uncomplicated disease doxycycline, tmp-smx, and clindamycin are just as effective as any other anti-MRSA drug at 1/10th the price.



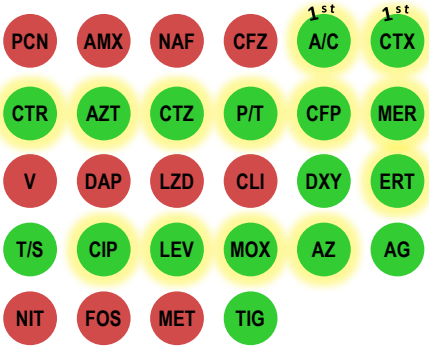
Viridans Streptococci

One minute they're in your mouth minding their own business, next minute they're on your heart valves.



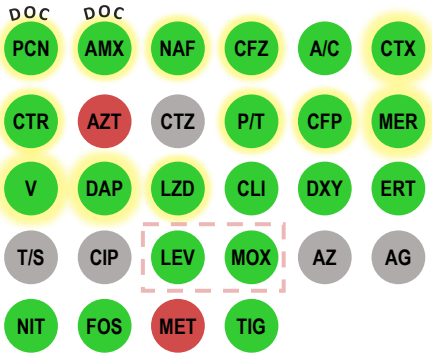
ß-lactamase+ H flu

Beta-lactamase positive H flu is just amoxicillin-resistant H flu. No need for the meropenem.



Group B Streptococcus

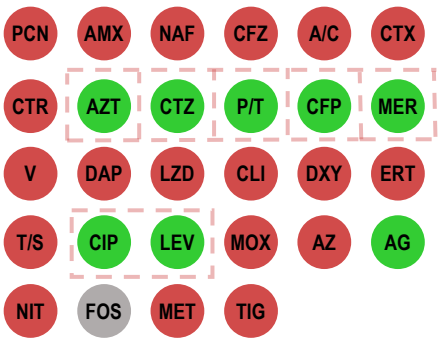
Group B Strep mostly causes disease in the very young and very old. Both ideal age groups for penicillin.



Pseudomonas aeruginosa

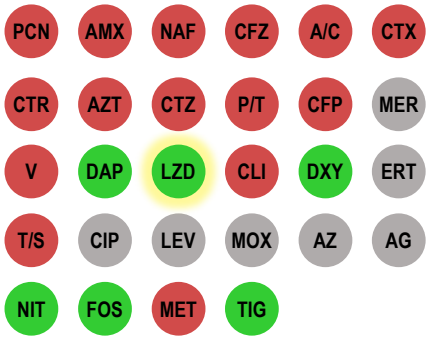
Does it smell like corn tortillas or Dimetapp? Time to make a decision.

Also, don't forget it's always resistant to ceftriaxone, moxifloxacin, and amox-clav.



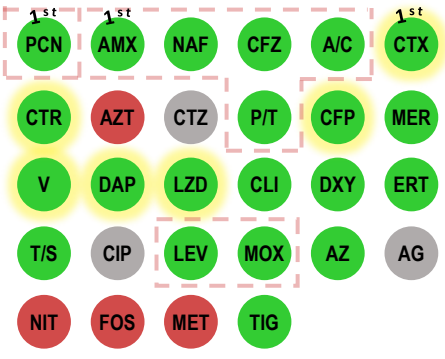
VRE
(Vancomycin-Resistant Enterococcus)

Daptomycin is dose-dependent. Use the bigger of the two doses you are considering, and then round up.



Strep pneumoniae

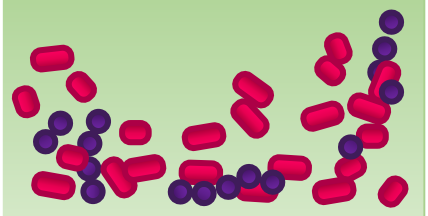
Susceptibility to ceftriaxone depends on the site of infection and drug penetration. Sometimes resistant in the CNS, but rarely anywhere else.



SBP
(Spontaneous Bacterial Peritonitis)

Status: Mod-Severe, hospitalized

Not on antibiotic prophylaxis



Pathogens: Enterobacteriaceae, Strep Viridans

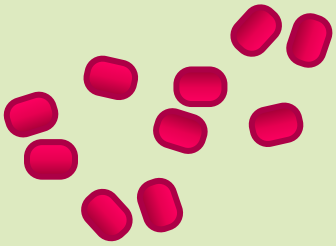
Acquired Resistance

ESBL E coli

Infections: cystitis, gastroenteritis, hospital acquired infections

Acquired Resistance

CRE Klebsiella



Infections: cystitis, Friedlander's Disease, liver abscess, hospital acquired infections

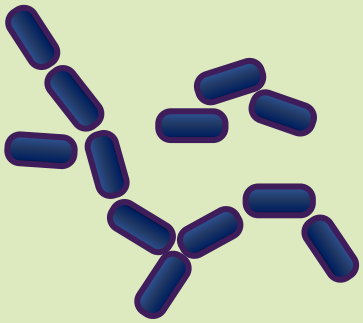
Acquired Resistance

Proteus mirabilis

Infections: cystitis

Acquired Resistance

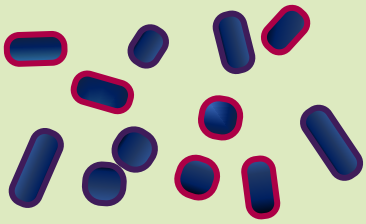
Actinomyces



Infections: odontogenic infections, abdominal abscess, pelvic abscess

Acquired Resistance

Oral Anaerobes

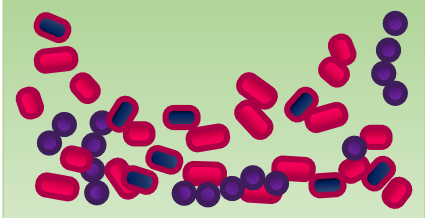


Infections: odontogenic infections, lung abscess, brain abscess

Acquired Resistance

Cholangitis
(and other hepatobiliary infections)

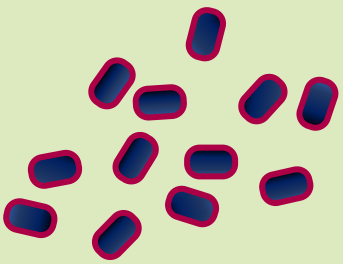
Status: Mod-Severe, hospitalized



Pathogens: Enterobacteriaceae, Strep Viridans, Bacteroides, Enterococcus (not usually covered)

Resistance

Bacteroides fragilis

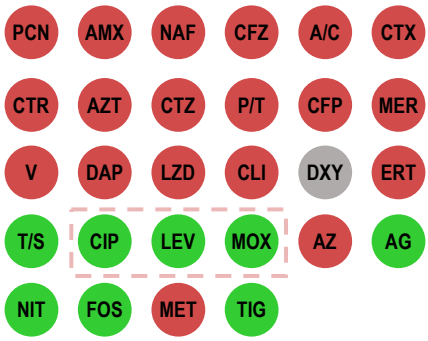


Infections: intraabdominal infections

Acquired Resistance

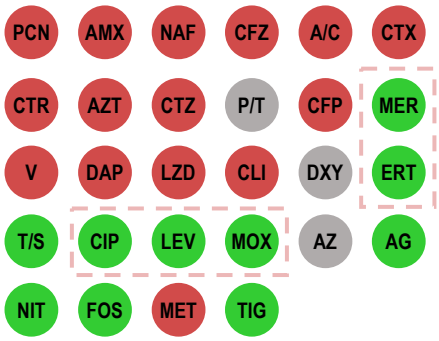
CRE Klebsiella

The carbapenem-resistant Enterobacteriaceae (CRE) are the new super bugs. A result of our progress and our hubris.



ESBL E coli

The extended-spectrum beta-lactamase (ESBL) Enterobacteriaceae are yesterday's super bugs. The result of our progress and our hubris.

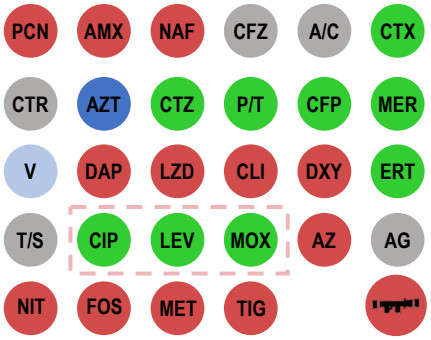


SBP
(spontaneous bacterial peritonitis)

Status: Mod-severe, hospitalized

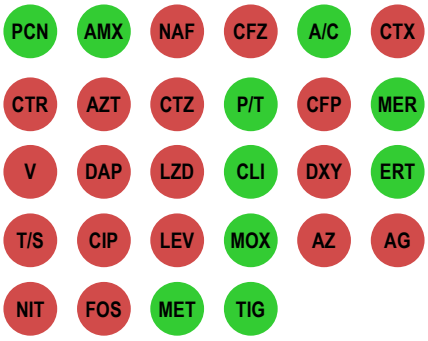
Not on antibiotic prophylaxis

Anaerobic coverage is not necessary.



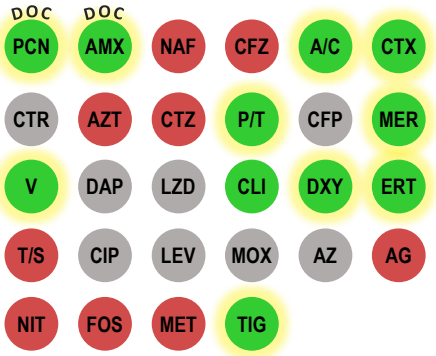
Oral Anaerobes

The oral anaerobes are a diverse mix, but a diverse mix that are generally susceptible to most penicillins.



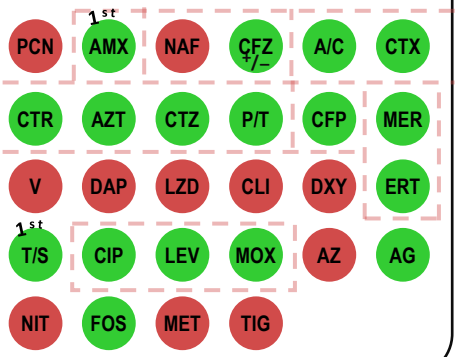
Actinomyces

A rare cause of pneumonia that eats through tissue planes. Not normal.



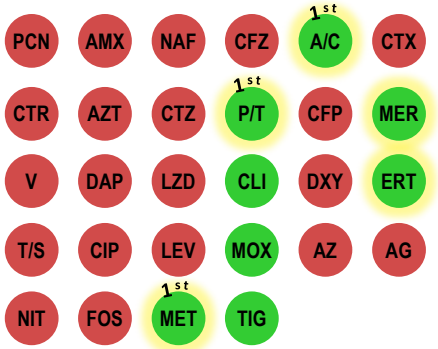
Proteus mirabilis

Proteus can make the most amazing stones. Unfortunately it does so in your kidneys.



Bacteroides fragilis

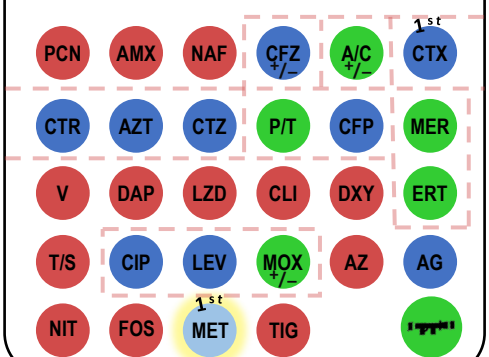
One of the most common anaerobes and one of the most resistant. Why clindamycin isn't a very good empiric option any more.



Cholangitis
(and other hepatobiliary infections)

Status: Mod-Severe, hospitalized

Cholangitis is like an abscess in your hepatobiliary tree. Antibiotics are typically insufficient without source control.



Urinary Tract Infection (UTI)

Status: Mild, outpatient — only PO

No prior cultures with resistant organisms

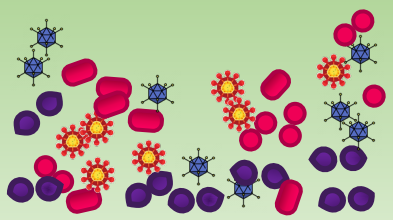
Pathogens: E coli, Klebsiella, Proteus

Acquired Resistance

Acute Sinusitis

Status: Mild, outpatient — only PO

With progressive or persistent sxs > 7 days



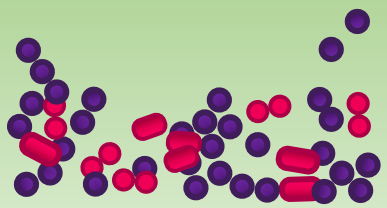
Pathogens: Respiratory viruses, H flu, Strep pneumo, Moraxella

Acquired Resistance

Septic Arthritis

Status: Mod-Severe, hospitalized

No risks for Pseudomonas

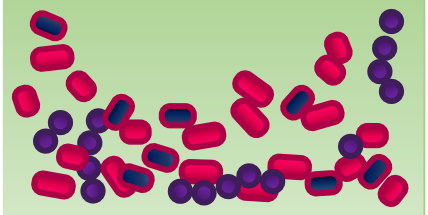


Pathogens: Staph aureus, Strep spp., N. gonorrheae, Enterobacteriaceae (if old)

Acquired Resistance

Diverticulitis
(and other gastrointestinal infections)

Status: Mild, outpatient — only PO



Pathogens: Enterobacteriaceae, Strep Viridans, Bacteroides, Enterococcus (not usually covered)

Acquired Resistance

Urinary Tract Infection & Pyelonephritis

Status: Mod-Severe, hospitalized

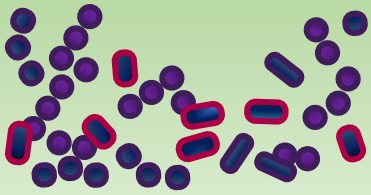
No prior cultures with resistant organisms

Pathogens: E coli, Klebsiella, Proteus

Acquired Resistance

Lung Abscess

Status: Mod-Severe, hospitalized

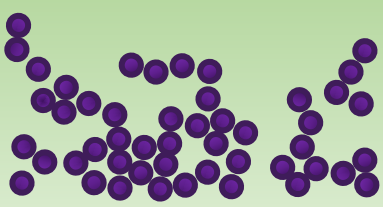


Pathogens: Viridans Strep, oral anaerobes

Acquired Resistance

Purulent Cellulitis

Status: Mild, outpatient — only PO



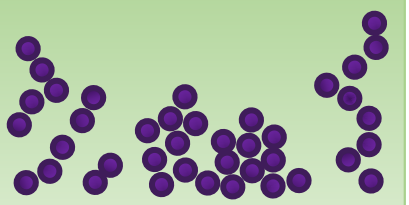
Pathogens: S. aureus, MRSA, Group A Strep

Acquired Resistance

Non-Purulent Cellulitis

Status: Mild, outpatient — only PO

No risks for MRSA

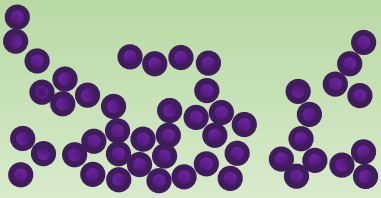


Pathogens: Group A Strep, Group C & G Strep, Staph aureus

Acquired Resistance

Purulent Cellulitis

Status: Mod-Severe, hospitalized



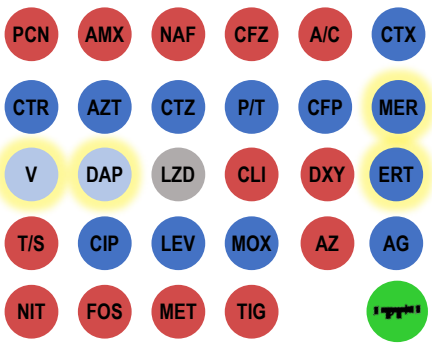
Pathogens: S. aureus, MRSA, Group A Strep

Acquired Resistance

Septic Arthritis

Status: Mod-Severe, hospitalized

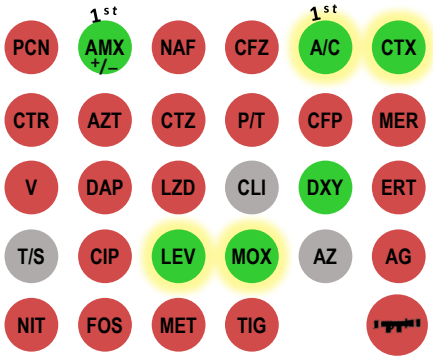
Most infections are monomicrobial so empiric antibiotics should be modified by gram stain results.



Acute Bacterial Sinusitis

Status: Mild, outpatient

*Supportive care **without** antibiotics is also a right answer.*

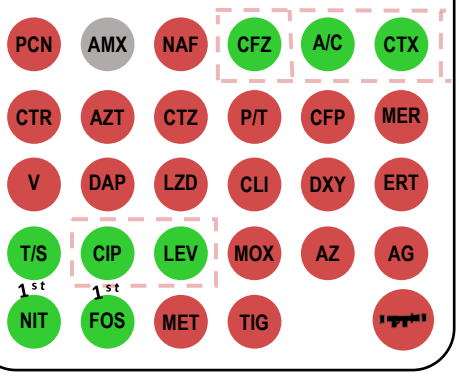


Urinary Tract Infection (UTI)

Status: Mild, outpatient

No prior cultures with resistant organisms

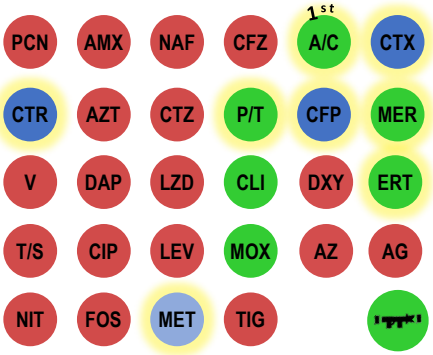
Resistance to everything is increasing. Check your local antibiograms for the most reliable options.



Lung Abscess

Status: Mod-Severe, hospitalized

Empiric anaerobic coverage is necessary in most cases except with some monomicrobial pathogens (i.e. S. aureus, K. pneumo, etc.)

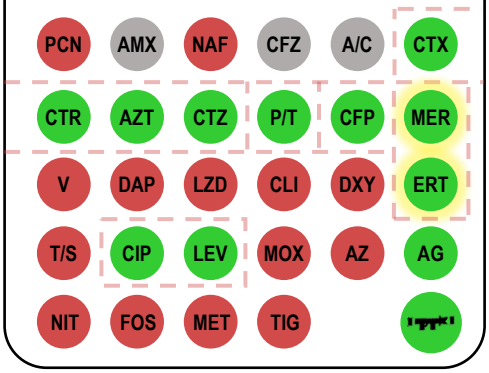


Urinary Tract Infection (UTI) & Pyelonephritis

Status: Mod-Severe, hospitalized

No prior cultures with resistant organisms

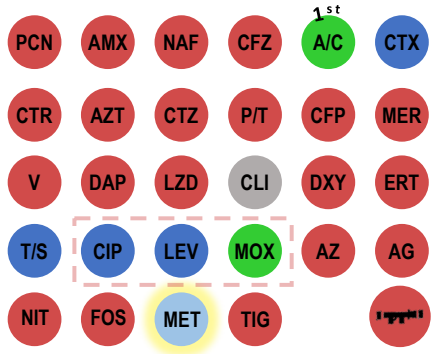
Greater illness severity should lead to lower tolerance for gaps in empiric coverage.



Diverticulitis
(and other gastrointestinal infections)

Status: Mild, outpatient

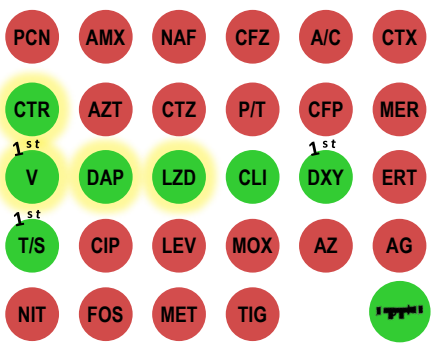
*Mild diverticulitis may also be managed with supportive care **without** antibiotics in many cases.*



Purulent Cellulitis

Status: Mod-Severe, hospitalized

Pus = S aureus ≠ vancomycin if they're stable, tolerating a diet, and can take a pill.

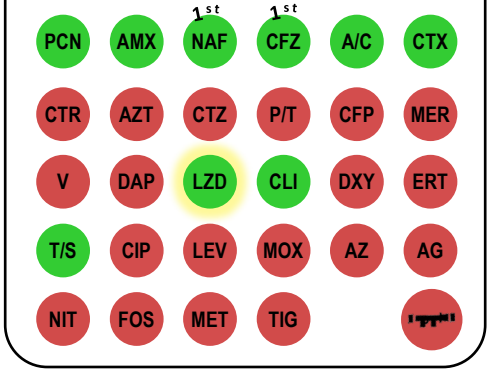


Non-Purulent Cellulitis

Status: Mild, outpatient

No risks for MRSA

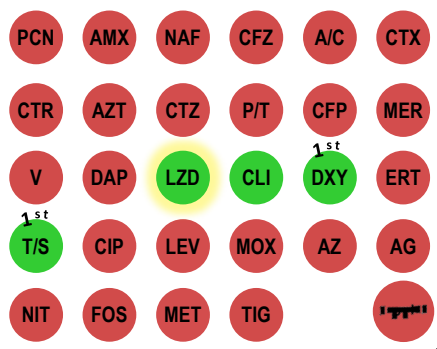
Cellulitis may worsen in the first 24-48 hours before it improves. Broadening antibiotics may not always be necessary.



Purulent Cellulitis

Status: Mild, outpatient

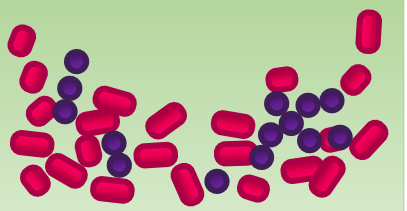
Be sure to check your local antibiogram for local resistance patterns. Clindamycin resistance is increasing.



Neutropenic Fever

Status: Mod-Severe, hospitalized

On fluoroquinolone prophylaxis



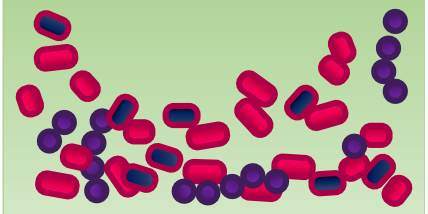
Pathogens: E coli, Klebsiella, Pseudomonas, Strep Viridans

Resistance

Diverticulitis

(and other gastrointestinal infections)

Status: Mod-Severe, hospitalized



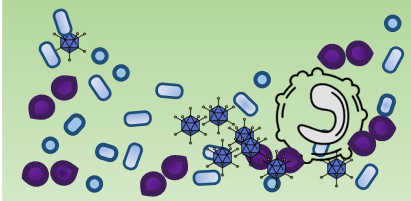
Pathogens: Enterobacteriaceae, Strep Viridans, Bacteroides, Enterococcus (not usually covered)

Resistance

Community Acquired Pneumonia (CAP)

Status: Mild, outpatient only PO

No risks for MRSA or Pseudomonas



Pathogens: Strep pneumo, H. flu, C. pneumo, M. pneumo, Respiratory viruses

Resistance

Bacterial Meningitis

Status: Mod-Severe, hospitalized

No risk factors for Listeria

Pathogens: S. pneumoniae, N. meningitidis, H. influenzae

Acquired Resistance

Pyelonephritis

Status: Mild, outpatient only PO

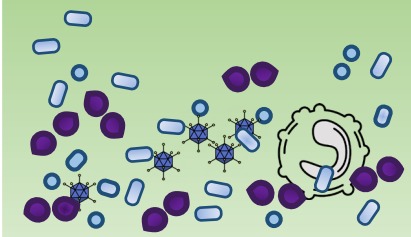
No prior cultures with resistant organisms

Pathogens: E coli, Klebsiella, Proteus

Acquired Resistance

Aspiration Pneumonia

Status: Mild, outpatient only PO

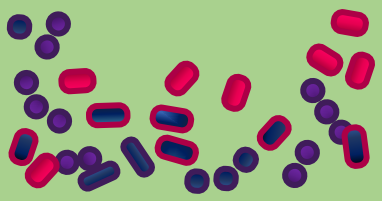


Pathogens: Strep pneumo, C. pneumo, M. pneumo, Respiratory viruses

Acquired Resistance

Cat/Dog Bite Infection

Status: Mod-Severe, hospitalized



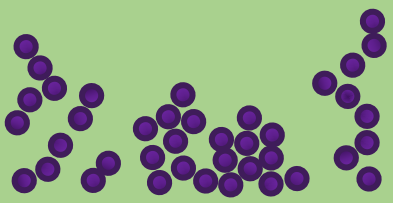
Pathogens: Pasteurella, Viridans Strep, oral anaerobes

Acquired Resistance

Non-Purulent Cellulitis

Status: Mod-Severe, hospitalized

No risks for MRSA



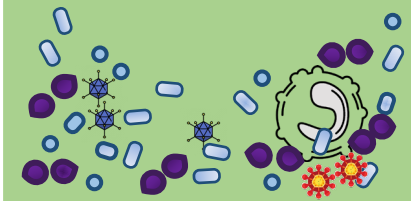
Pathogens: Group A Strep, Group C & G Strep, Staph aureus

Acquired Resistance

Community Acquired Pneumonia (CAP)

Status: Mod-Severe, hospitalized

No risks for MRSA or Pseudomonas



Pathogens: Strep pneumo, H. flu, C. pneumo, M. pneumo, Respiratory viruses

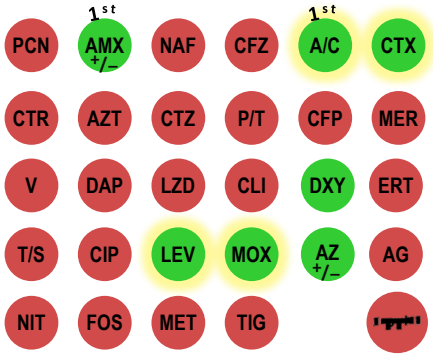
Acquired Resistance

Community Acquired Pneumonia (CAP)

Status: Mild, outpatient

No risks for MRSA or Pseudomonas

Young and healthy = amoxicillin.
Everyone else = amox-clav.

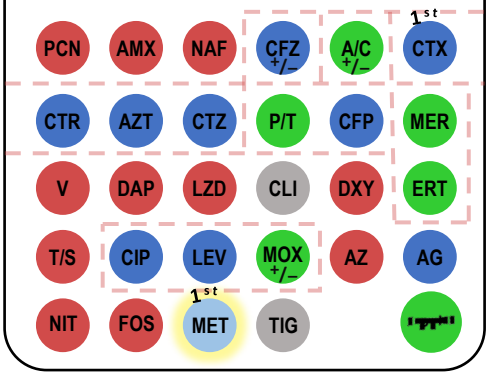


Diverticulitis

(and other gastrointestinal infections)

Status: Mod-Severe, hospitalized

Although Enterococci are common in the colon, due to their low virulence empiric coverage for them is often not necessary.

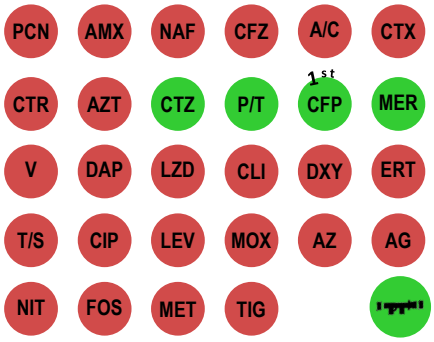


Neutropenic Fever

Status: Mod-Severe, hospitalized

On fluoroquinolone prophylaxis

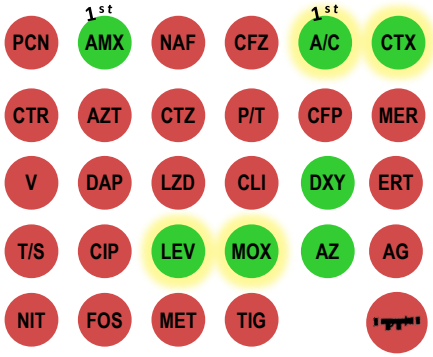
Chemotherapy leads to neutropenia & mucositis leads to gut translocation leads to fever leads to empiric gram negative coverage.



Aspiration Pneumonia

Status: Mild, outpatient

Despite the presence of anaerobes in oral flora empiric coverage of them in aspiration pneumonia is not necessary.

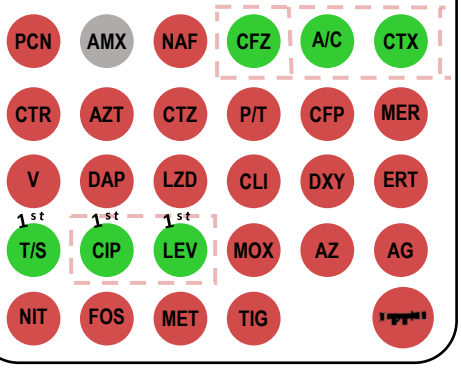


Pyelonephritis

Status: Mild, outpatient

No prior cultures with resistant organisms

Nitrofurantoin and Fosfomycin are great drugs for cystitis, but they don't treat upper tract disease.

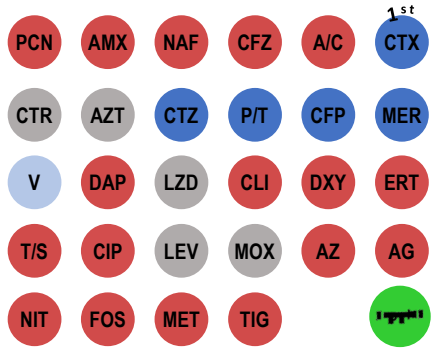


Bacterial Meningitis

Status: Mod-Severe, hospitalized

No risk factors for Listeria

Vancomycin isn't for MRSA or Enterococcus. It's for ceftriaxone-resistant pneumococcus.

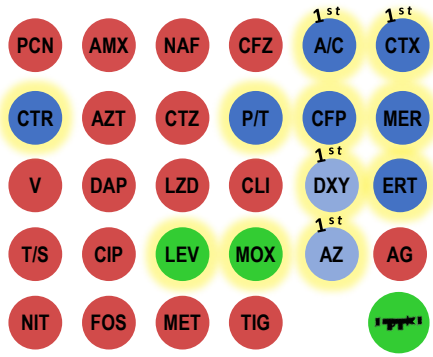


Community Acquired Pneumonia (CAP)

Status: Mod-Severe, hospitalized

No risks for MRSA or Pseudomonas

The benefit of empiric atypical coverage is unclear. Sometimes recommended for mild disease. Usually recommended for moderate.

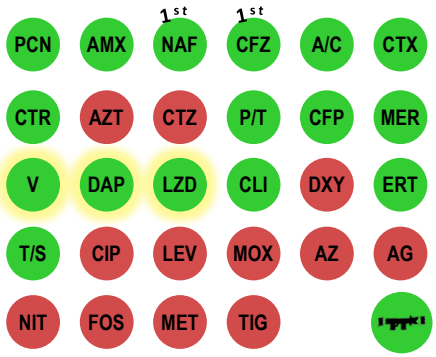


Non-Purulent Cellulitis

Status: Mod-Severe, hospitalized

No risks for MRSA

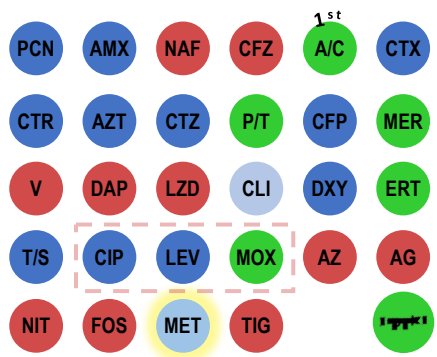
Recurrent cellulitis is common with chronic edema, venous stasis, & dermatophyte infections. Reduce these to reduce risk.



Cat/Dog Bite Infection

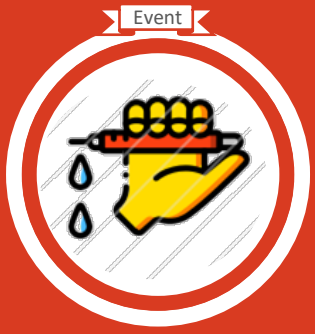
Status: Mod-Severe, hospitalized

Dog bites are more likely to cause tissue trauma, but cat bites are more likely to cause deep infection (tenosynovitis, OM, arthritis)



Anaphylaxis

Event



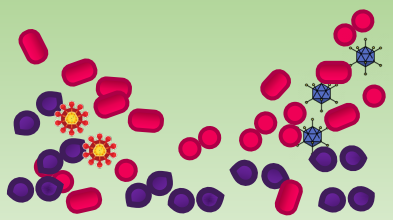
flip and play immediately

Nothing a giant needle of epinephrine can't fix.

Otitis Media

Status: Mild, outpatient

only PO



Pathogens: H flu, Strep pneumo, Moraxella

Acquired Resistance

Stevens Johnson Syndrome

Event

flip and play immediately

Toxic epidermal necrolysis is the worst manifestation of the worst side effect.

PLAYER SHEET

Round	Starting: Flora 10	Starting: Health 10	Expert Scoring: 1st +1	Expert Scoring: DOC +2
1				
2				
3				
4				
5				
6				
7				

For Co-op: start 6 / 6

☎ Pharm: ☐ ☐

Drug Rash

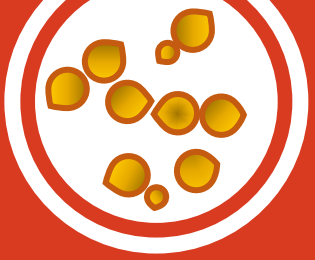
Event

flip and play immediately

But what does it mean?!

Candidiasis

Event



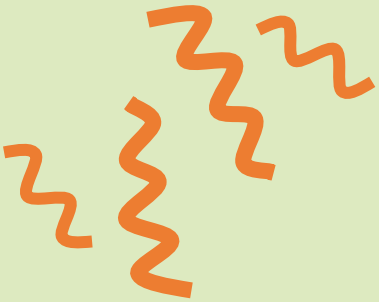
flip and play immediately

Yeast live in your gut until you kill your flora. Then they go adventuring.

Treponema pallidum

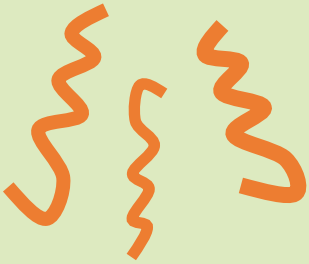
Acquired Resistance

Borrelia burgdorferi



Acquired Resistance

Leptospira interrogans



Acquired Resistance

Stevens Johnson Syndrome

Draw random card from your Drug Card discard pile. You can no longer play that Drug Card or related Drug Cards for the rest of the game:

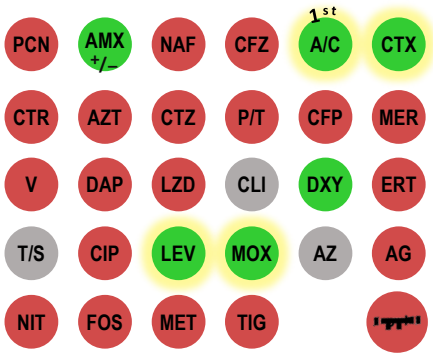
Related Drugs -
Fluoroquinolones: Cipro, Levo, Moxi
Beta-lactams: -cillins, cephalosporins, carbapenems, (monobactams ok)

The cross-reactivity of drugs when a patient experiences a type II, III, or IV hypersensitivity reaction is often not fully known. Given the severity of most of them the best advice is, "no."

Otitis Media

Status: Mild, outpatient

Moraxella & H flu produce ß-lactamases requiring a ß-lactamase inhibitor with your amoxicillin. S. pneumo tweaks its cell wall just requiring a bigger amoxicillin dose.



Anaphylaxis

Draw random card from your Drug Card discard pile. You can no longer play that Drug Card or related Drug Cards for the rest of the game:

Related Drugs -
Fluoroquinolones: Cipro, Levo, Moxi
Beta-lactams: -cillins, cephalosporins, carbapenems, (monobactams ok!)

The cross-reactivity of antibiotics when a patient experiences a type I hypersensitivity reaction (acute onset, urticarial rash or anaphylaxis) is low, but anaphylaxis sucks. Either allergy test related drugs or avoid unless absolutely necessary.

Candidiasis

All players must count the total Flora damage from all Drug Cards in their discard pile.

Player with most: 1
ties = no penalty
1P: if total / # cards > 2

Antibiotics increase the risk of cutaneous, vaginal, and oropharyngeal candidiasis.

Antibiotic use in the seriously ill increases your risk of candidemia and invasive candidiasis

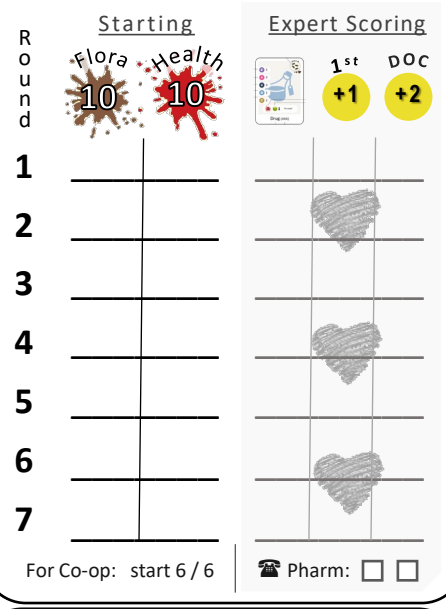
Drug Rash

Draw random card from your Drug Card discard pile. You can no longer play that Drug Card or related Drug Cards for the rest of the game:

Related Drugs -
Fluoroquinolones: Cipro, Levo, Moxi
The -cillins
Cephalosporins
Carbapenems

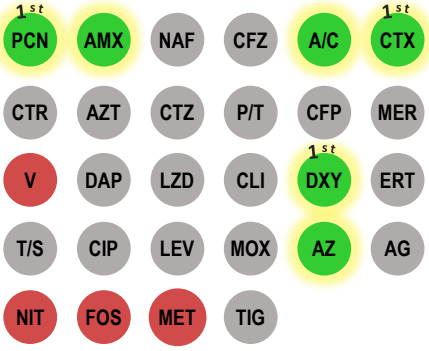
The cross-reactivity of antibiotics when a patient develops a delayed onset drug rash is very low, but it is not 0. Opinions vary, but usually it is just safer (and easier) to go with Plan B (an antibiotic from another class).

PLAYER SHEET



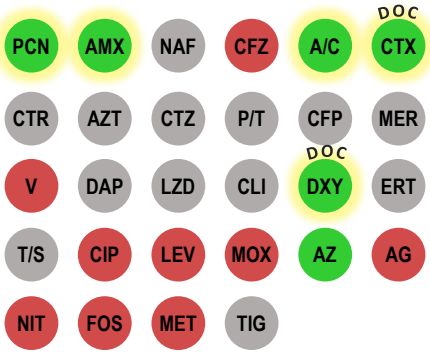
Leptospira interrogans

Leptospira is lurking in the water. Specifically water mixed with urine.



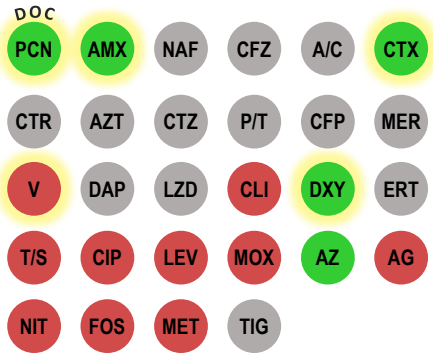
Borrelia burgdorferi

Doxycycline for erythema migrans, Bell's palsy, and as step down therapy from ceftriaxone for carditis and arthritis.



Treponema pallidum

Syphilis is best killed by penicillin first, penicillin second, and, maybe, doxycycline third.



Antibiotic Police

Event

flip and play immediately

"Wouldn't you rather have some penicillin?"

Antibiotic Police

Event

flip and play immediately

"Put down the vancopeme and come with me."

Antibiotic Police

Event

flip and play immediately

"The most powerful anxiolytic is often an antibiotic."

PLAYER SHEET

Round

Starting

Flora 10

Health 10

Expert Scoring

1st +1

DOC +2

1		
2		
3		
4		
5		
6		
7		

For Co-op: start 6 / 6

☎ Pharm: ☐ ☐

INTERN CHEAT SHEET

SET UP

I. SHUFFLE AND DEAL **DRUG** DECK

Deal 5 to each player

Vs & Co-op — Place 3 to right of the deck, image side up near play area

1P only — Place only the deck near play area

II. SHUFFLE AND PLACE **BUG** DECK

Vs only — Place 9 image side up in 3x3 square play area

1P & Co-op — Count out X cards for Bug Card deck per difficulty level

Place 3 image side up in 3x3 square

Place the deck near play area

III. ASSIGN FIRST PLAYER

Antibiotic Police

Event

flip and play immediately

"Friends don't let friends prescribe fluoroquinolones."

Nursing Mother

Event

place in Bug Card play area

flip after Drug Card played

Most antibiotics don't enter breast milk in substantial concentrations. Except for the ones that do.

INTERN CHEAT SHEET

SET UP

I. SHUFFLE AND DEAL **DRUG** DECK

Deal 5 to each player

Vs & Co-op — Place 3 to right of the deck, image side up near play area

1P only — Place only the deck near play area

II. SHUFFLE AND PLACE **BUG** DECK

Vs only — Place 9 image side up in 3x3 square play area

1P & Co-op — Count out X cards for Bug Card deck per difficulty level

Place 3 image side up in 3x3 square

Place the deck near play area

III. ASSIGN FIRST PLAYER

Octogenarian

Event

place in Bug Card play area

flip after Drug Card played

Some old folks can't handle their medicine.

Antibiotic Police

All players must count the Starred Drug Cards in their discard pile.

Player with most:
ties = no penalty
1P: if ≥ 2 ☆ Cards

Discard all in hand

& −3 points

Antibiotic stewardship seeks to use the right antibiotic for the right bug at the right time to minimize microbiome damage, side effects, and healthcare costs. And to ruin your fun.

Antibiotic Police

All players must count the Starred Drug Cards in their discard pile.

Player with least:
ties = no bonus
1P: if < 2☆ Cards

can look at 1 Bug Card back

Antibiotic stewardship seeks to use the right antibiotic for the right bug at the right time to minimize microbiome damage, side effects, and healthcare costs. And to ruin your fun.

Antibiotic Police

All players must count the Starred Drug Cards in their discard pile.

Player with least:
ties = no bonus
1P: if < 2 ☆ Cards

can look at 1 Bug Card back

Antibiotic stewardship seeks to use the right antibiotic for the right bug at the right time to minimize microbiome damage, side effects, and healthcare costs. And to ruin your fun.

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Antibiotic stewardship seeks to use the right antibiotic for the right bug at the right time to minimize microbiome damage, side effects, and healthcare costs. And to ruin your fun.

INTERN CHEAT SHEET

TURN

TAKE 1 OF 2 ACTIONS

Play **1** or **2** Drug Cards to kill Bug Cards
- Pay Health and Flora costs
- 2nd card costs 1 less flora damage

Heal 3 total ❤ or 🤎 (may mix)

DRAW DRUG CARDS TILL HAND FULL

1P only: May discard any prior unused cards

REFILL 3x3 BUG CARD PLAY AREA

1P & Co-op: Instead add X Bug Cards to play area per difficulty level

OFF TURN

PLAY DRUG CARDS FOR RESISTANCE

PLAYER SHEET

Round	Starting: Flora 10	Starting: Health 10	Expert Scoring: 1st +1	Expert Scoring: DOC +2
1				
2				
3				
4				
5				
6				
7				

For Co-op: start 6 / 6

☎ Pharm: ☐ ☐

Octogenarian

1

if Drug Card is:

Nitrofurantoin
Trim-Sulfa
Cipro
Levo
Moxi

Beer's Criteria Higher Risk Antibiotics

Nitrofurantoin	*↑ neuropathy*
	↑ hepatotoxicity
	↑ pulm toxicity
Trim-Sulfa	*↑ hyperkalemia*
Fluoroquinolones	*↑ CNS toxicity*
	↑ tendinopathy

INTERN CHEAT SHEET

TURN

TAKE 1 OF 2 ACTIONS

Play **1** or **2** Drug Cards to kill Bug Cards
- Pay Health and Flora costs
- 2nd card costs 1 less flora damage

Heal 3 total ❤ or 🤎 (may mix)

DRAW DRUG CARDS TILL HAND FULL

1P only: May discard any prior unused cards

REFILL 3x3 BUG CARD PLAY AREA

1P & Co-op: Instead add X Bug Cards to play area per difficult level

OFF TURN

PLAY DRUG CARDS FOR RESISTANCE

Nursing Mother

1

if Drug Card has:

😐 or ☹

LactMed Possible Lactation Risks

Metronidazole	*??? mutagenesis risk*
Trim-Sulfa	*↑ bilirubin**
Nitro	*↑ bilirubin**
Doxy	*Tooth staining***
Clinda	*GI upset*
Fluoroquinolones	*GI upset****

** For neonates, jaundiced, & G6PD def*
*** With prolonged use*
**** Risk ↓ by feeding before dose*