Pneumonia

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The problem

Pneumonia is dangerous

Tens of thousands of deaths per year

What is the most common cause of CAP?

40% strep pneumoniae
30% atypicals
30% viruses

What is the most common cause of lobar pneumonia?

Strep Pneumoniae

Who cares?

Pneumonia
Otitis Media
Sinusitis
Meningitis
Sepsis

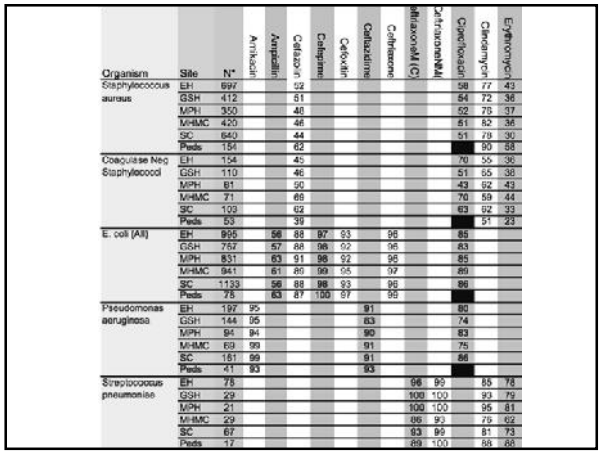
10%

What's the most commonly used abx for CAP?

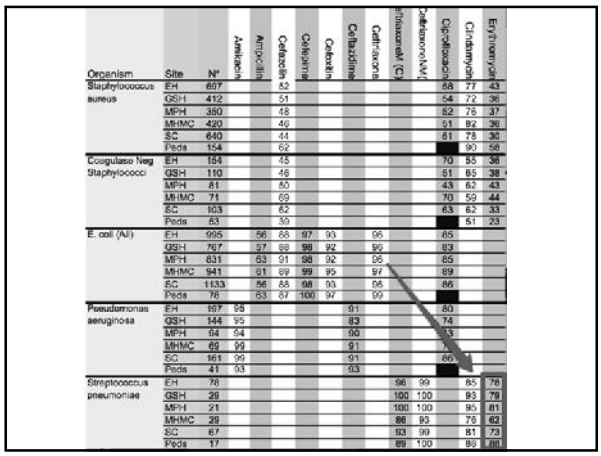
Z-pak

What's the problem with that?

Increasing resistance



Organism	Site	N*	Amikacin	Ampicillin	Cefazolin	Cefepime	Cefoxitin	Ceftazidime	Ceftriaxone	Ceftriaxone/NM (C)	Ceftriaxone/NM	Ciprofloxacin	Clindamycin	Erythromycin
Staphylococcus aureus	EH	697			92							58	77	43
	GSH	412			51							54	72	36
	MPH	350			48							52	76	37
	MHMC	420			46							51	82	36
	SC	640			44							51	78	30
	Peds	154			62								90	58
Coagulase Neg Staphylococci	EH	154			45							70	55	36
	GSH	110			46							51	65	38
	MPH	81			50							43	62	43
	MHMC	71			69							70	59	44
	SC	103			62							63	62	33
	Peds	53			39								51	23
E. coli (All)	EH	995		56	88	97	93		96			85		
	GSH	767		57	88	98	92		96			83		
	MPH	831		63	91	98	92		96			85		
	MHMC	941		61	89	99	95		97			89		
	SC	1133		56	88	98	93		96			86		
	Peds	78		63	87	100	97		99					
Pseudomonas aeruginosa	EH	197	95					91				80		
	GSH	144	95					83				74		
	MPH	94	94					90				83		
	MHMC	69	99					91				75		
	SC	161	99					91				86		
	Peds	41	93					93						
Streptococcus pneumoniae	EH	78								96	99		85	78
	GSH	29								100	100		93	79
	MPH	21								100	100		95	81
	MHMC	29								86	93		79	62
	SC	67								93	99		81	73
	Peds	17								89	100		88	88



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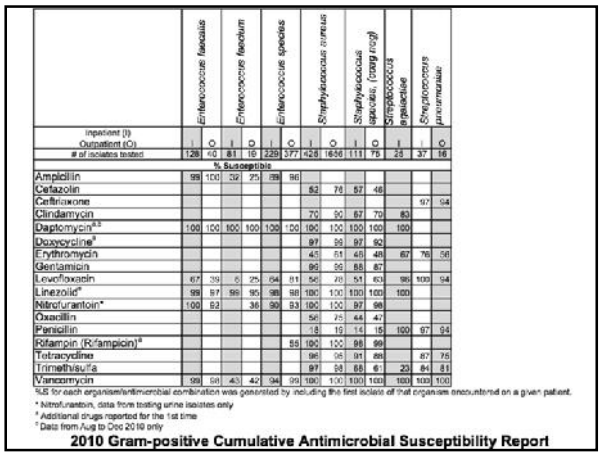
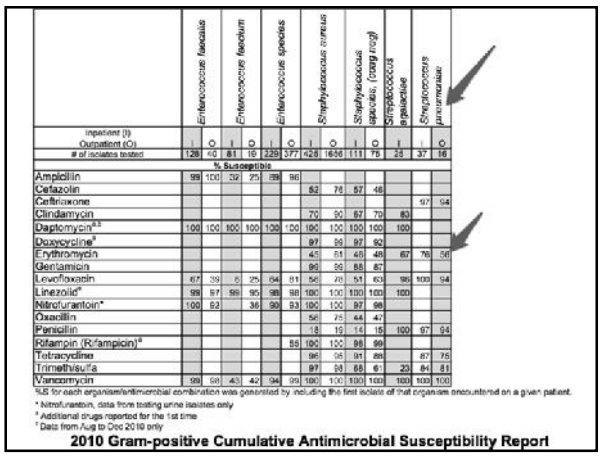


	Enterococcus faecalis		*Enterococcus faecium*		*Enterococcus* species		*Staphylococcus aureus*		*Staphylococcus* species (coag neg)		*Streptococcus agalactiae*		*Streptococcus pneumoniae*	
Inpatient (I) Outpatient (O)	I	O	I	O	I	O	I	O	I	O	I		I	O
# of isolates tested	128	40	81	19	229	377	428	1636	111	75	28		37	16
	% Susceptible													
Ampicillin	99	100	32	25	89	96								
Cefazolin							82	76	67	48				
Ceftriaxone													97	94
Clindamycin							70	90	67	79	83			
Daptomycin[2,3]	100	100	100	100	100	100	100	100	100	100	100			
Doxycycline[3]							97	98	97	92				
Erythromycin							48	51	48	48	67		76	56
Gentamicin							86	96	88	87				
Levofloxacin	67	39	6	25	64	81	56	76	51	63	96		100	94
Linezolid[3]	98	97	99	95	98	98	100	100	100	100	100			
Nitrofurantoin*	100	93		36	99	93	100	100	97	98				
Oxacillin							56	75	44	47				
Penicillin							18	19	14	15	100		97	94
Rifampin (Rifampicin)[3]							55	100	100	98	99			
Tetracycline							96	96	91	88			87	75
Trimethrisulfa							97	98	88	61	23		84	81
Vancomycin	99	98	40	42	94	99	100	100	100	100	100		100	100

%S for each organism/antimicrobial combination was generated by including the first isolate of that organism encountered on a given patient.
* Nitrofurantoin, data from testing urine isolates only
[2] Additional drugs reported for the 1st time
[3] Data from Aug to Dec 2010 only

2010 Gram-positive Cumulative Antimicrobial Susceptibility Report



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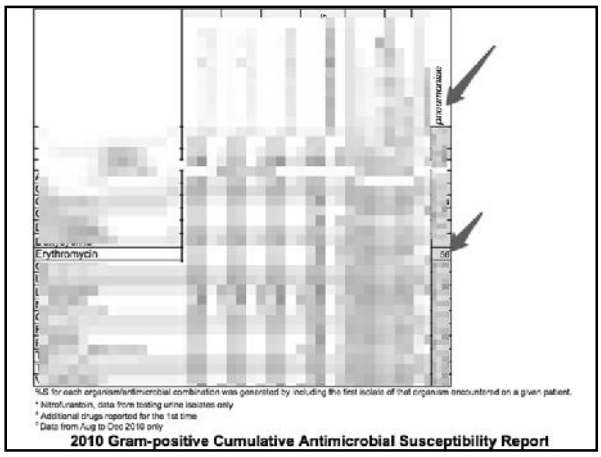

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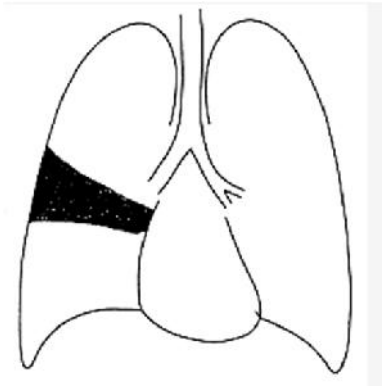
2010 Gram-positive Cumulative Antimicrobial Susceptibility Report

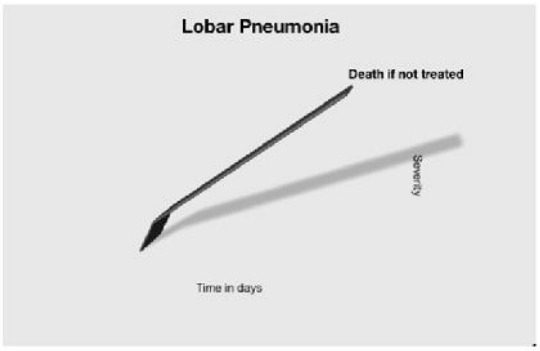
Strep Pneumoniae =
56% sensitive to Macrolides

IDSA guidelines
> 5 years old
Data > 12 years old

Z-Pak is decreasingly effective for the most dangerous type of infection

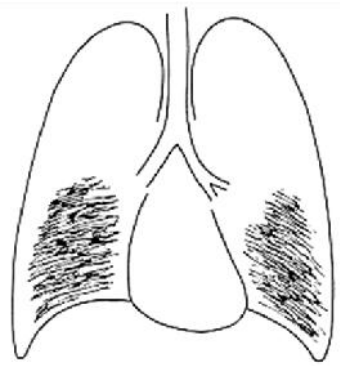
What is the definition of lobar pneumonia?

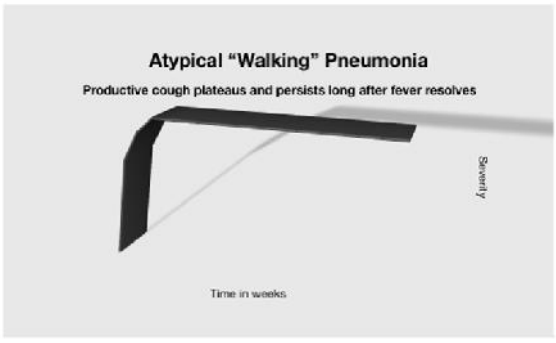




No routine sputum cultures

What is walking pneumonia?





What are the bacterial causes of "walking" or atypical pneumonia?

Mycoplasma Pneumoniae

Chlamydophila Pneumoniae
Psittacosis
Legionella Pneumophila

Which are 3 categories of medicines that work for atypical pneumonia?

Macrolides
Respiratory FQs
Tetracyclines (Doxy)

What age group usually doesn't get walking pneumonia?

Below the age of 5

How do you distinguish between lobar vs. atypical pneumonia on exam?

What are the clues to mycoplasma?

fever for at least 3 days
productive cough-- not improving
no nasal symptoms
posterior HA
mild sore throat

Wheeze or rales or rhonchi
hypoxia
tachycardia
tachypnea

How do you treat community acquired pneumonia?

The goal is to cover Strep Pneumoniae and Mycoplasma

Only a few antibiotics do both

Stats

Strep Pneumoniae resistance to Macrolides: 19 - 44%
Strep Pneumoniae resistance to Doxy: 10-28%
Strep Pneumoniae resistance to Levaquin, Avelox: 1 - 6%
Strep Pneumoniae resistance to Augmentin: 6%

Using Z-pak for empiric treatment of pneumonia

Clarithromycin?

There are two levels of <u>empiric</u> treatment for pneumonia

Level 1:

Cheap
Works for atypical or lobar

Which antibiotic?

Doxy

Level 2:

Really sick
co-morbidities
Unclear or confirmed lobar
2nd line for tx failure

respiratory FQ

Which are the respiratory fluoroquinolones?

What percent of pneumonias are missed based on the physical exam alone?

20 - 40%

When should I get a chest x-ray?

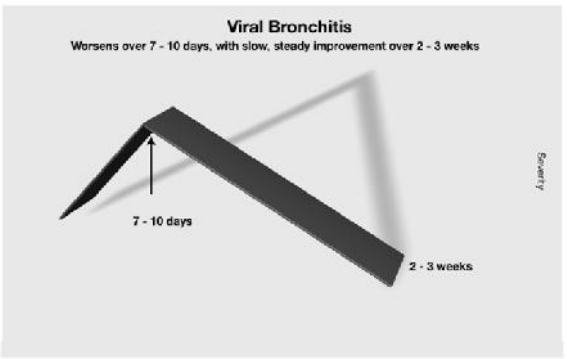
Often

What is the definition of bronchitis?

Acute bronchitis is a cold virus in the lung

Acute bronchitis
≠
Walking pneumonia

Mind = Blown



Does viral bronchitis show up with a fever?

almost never

What is the significance of rhonchi?

rhonchi are nonspecific

Identify the patterns in these cases:

Case 1:

Patient comes in with fever of 101, productive cough, wheeze no h/o asthma

What is it and how do you treat it?

Case 2:

Patient comes in with fever of 101, productive cough, unilateral rales

What is it and how do you treat

Case 3:

A patient comes in with sudden onset body aches, fever to 102, and a dry cough

What questions do you ask?

Case 3:

A patient comes in with sudden onset body aches, fever to 102, and a dry cough

What do you examine?

Case 3:

A patient comes in with sudden onset body aches, fever to 102, and a dry cough

What do you do now?

Take Home Points:

1. Stop using Z-pak for empiric tx

2. Instead use Doxy or Levaquin

3. If there's a unilateral component, cover for Strep Pneumoniae

4. A fever + cough requires: pos. flu test, chest x-ray, or abx

References

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