Pneumonia

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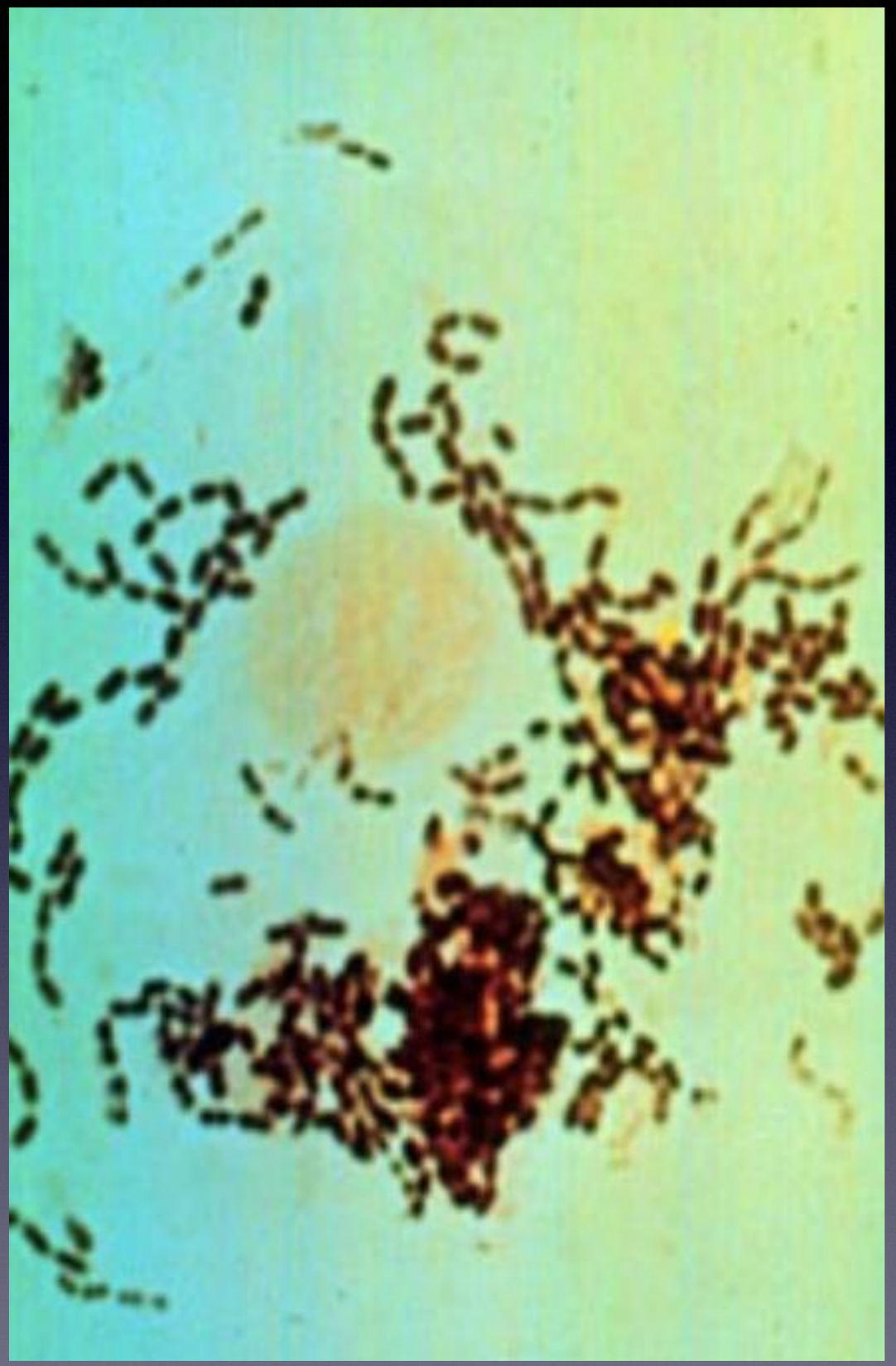
Disclaimer:

- I have no conflicts to disclose

- CAP; CAP requiring hospitalization, including post-influenza bacterial pneumonia
- less common CAPs
- HAP; HCAP; VAP
- lung abscess

S. pneumoniae

- classically - sudden rigor, fever and cough productive of rust colored sputum
- Rx: beta-lactams



Legionella

- sporadic, or part of an outbreak associated w/ aerosol spread of a contaminated water system
- severe pneumonia w/ high, spiking fevers
- classically w/ diarrhea, relative bradycardia, mental status changes and/or hyponatremia
- purulent sputum w/o identification of a pathogen (though this could also include viral, mycoplasma or chlamydophilia)
- Rx: quinolone; macrolide (+rifampin?)

Mycoplasma

- paroxysmal, non-productive cough
- CXR may have minimal to diffuse pulmonary infiltrates
- + cold agglutinins

Endemic Fungal Pneumonias

- can infect normal hosts
- > 60% are asymptomatic
- most resolve spontaneously
- location, location, location

Endemic Fungal Pneumonias

- Histoplasma capsulatum - Ohio and Mississippi River Valley
  - Dx: serum or urine ag
  - Rx: amphotericin/itraconazole
- Blastomyces dermatitidis - Dakotas to Louisiana;
  - decaying vegetation
  - extrapulmonary dx always approached as disseminated dx
  - Rx: amphotericin/itraconazole

Endemic Fungal Pneumonias

- Coccidioides immitis - dry regions of southwestern U.S.
- dissemination common
- Rx: fluconazole or itraconazole

CAP - out pt RX

- First line:
  - Macrolide (clarithromycin, azithromycin “z-pak”)
  - OR……doxycycline
- For those recently on antibiotics w/in the past 3 mo or with multiple medical comorbidities:
  - Respiratory fluroquinolone (moxifloxacin, levofloxacin)
  - Macrolide + beta lactam (cefuroxime, amoxicillin, amoxicillin-clavulanate)
  - These agents cover the majority of community isolates, including Legionella


LEFT

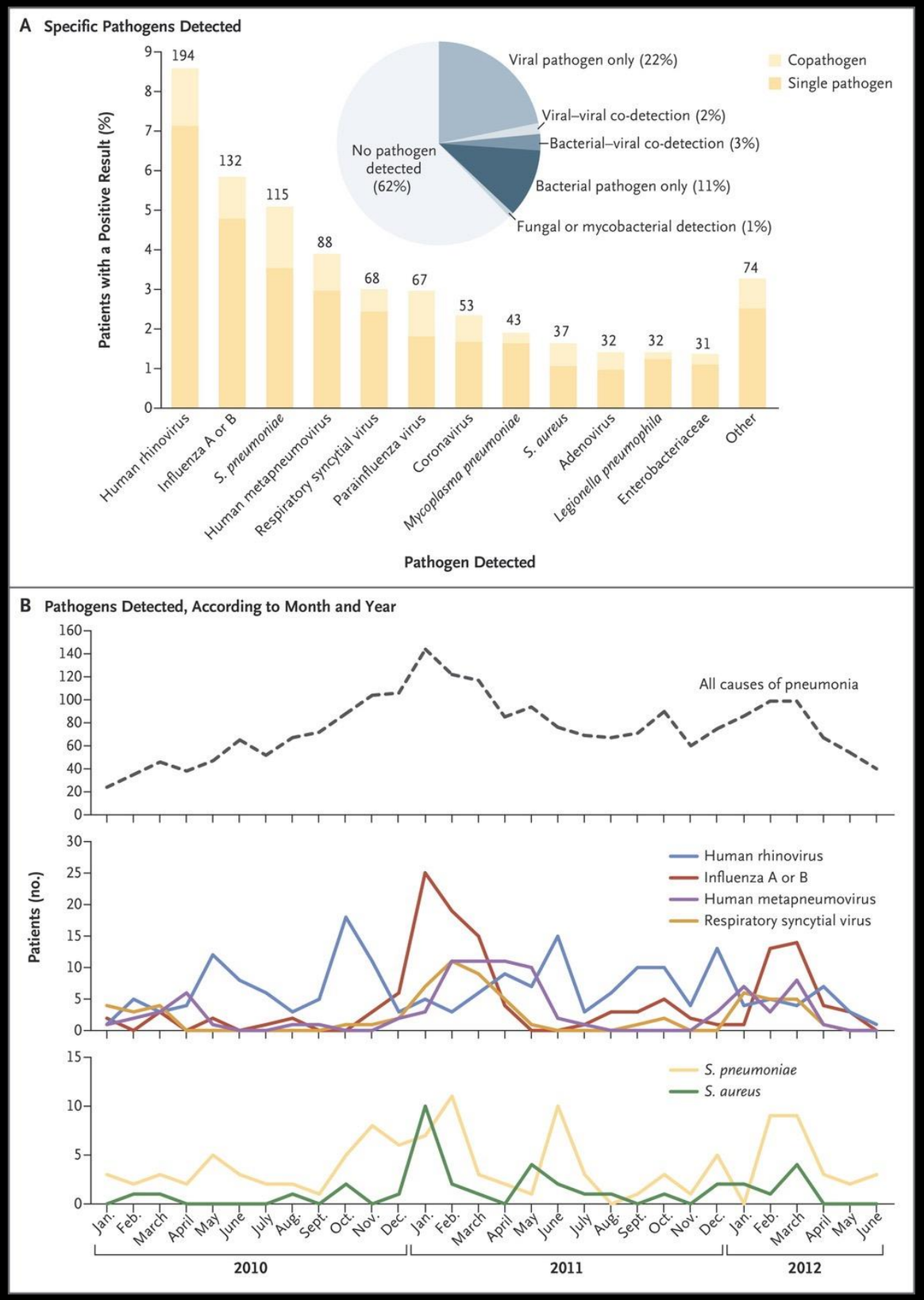
What were we taught/do we still teach in medical school?

- unknown
- viral
- pneumococcal
- mycoplasma
- Legionella

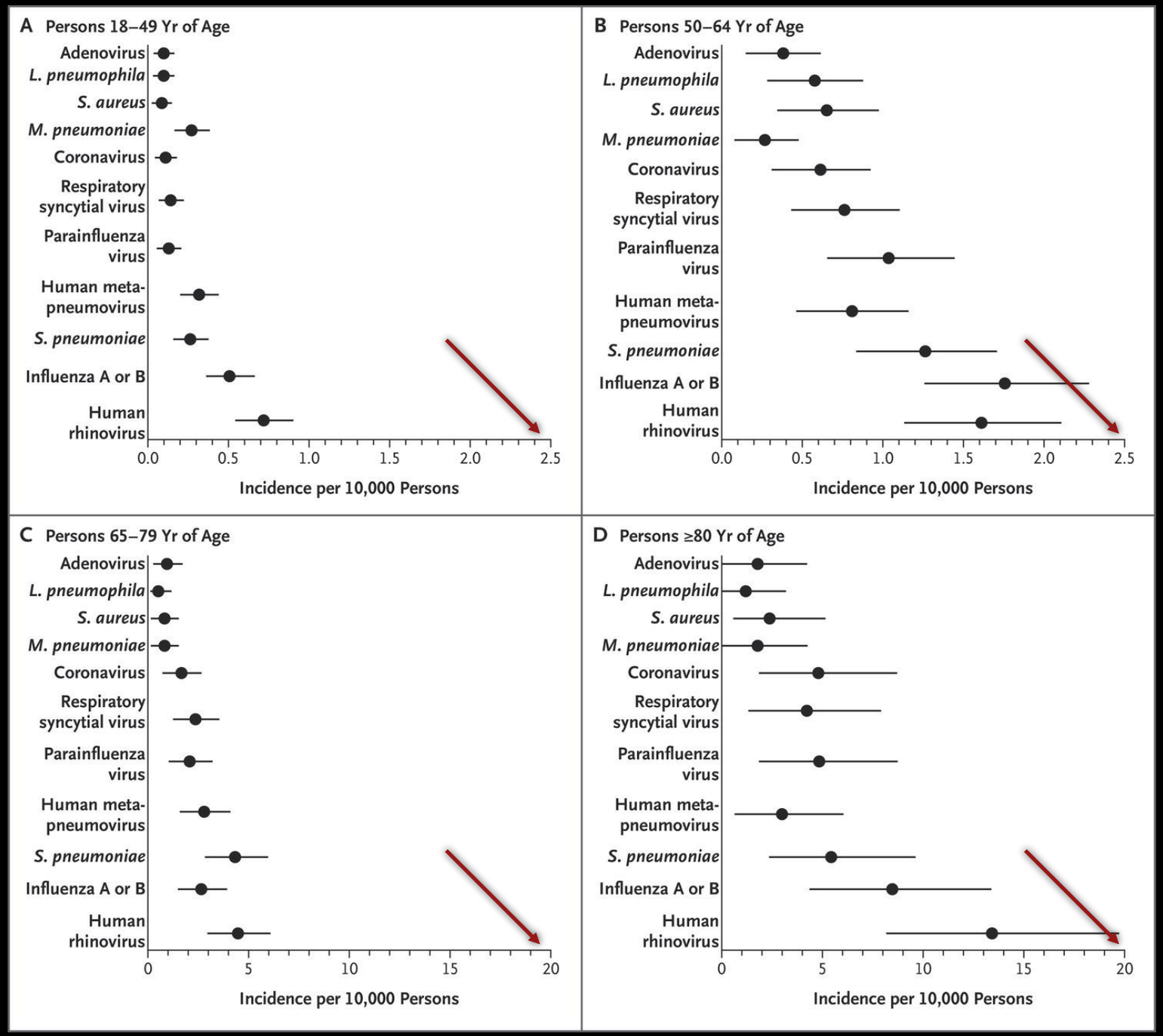
CAP leading to Hospitalization

- unknown - 62% (how many of these were aspiration?)
- viral - rhinovirus, followed by influenza (seasonal)
- pneumococcal
- mycoplasma
- Legionella

Jain et al. NEJM 2015



Jain S et al. N Engl J Med 2015;373:415-427.



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CAP requiring Hospitalization

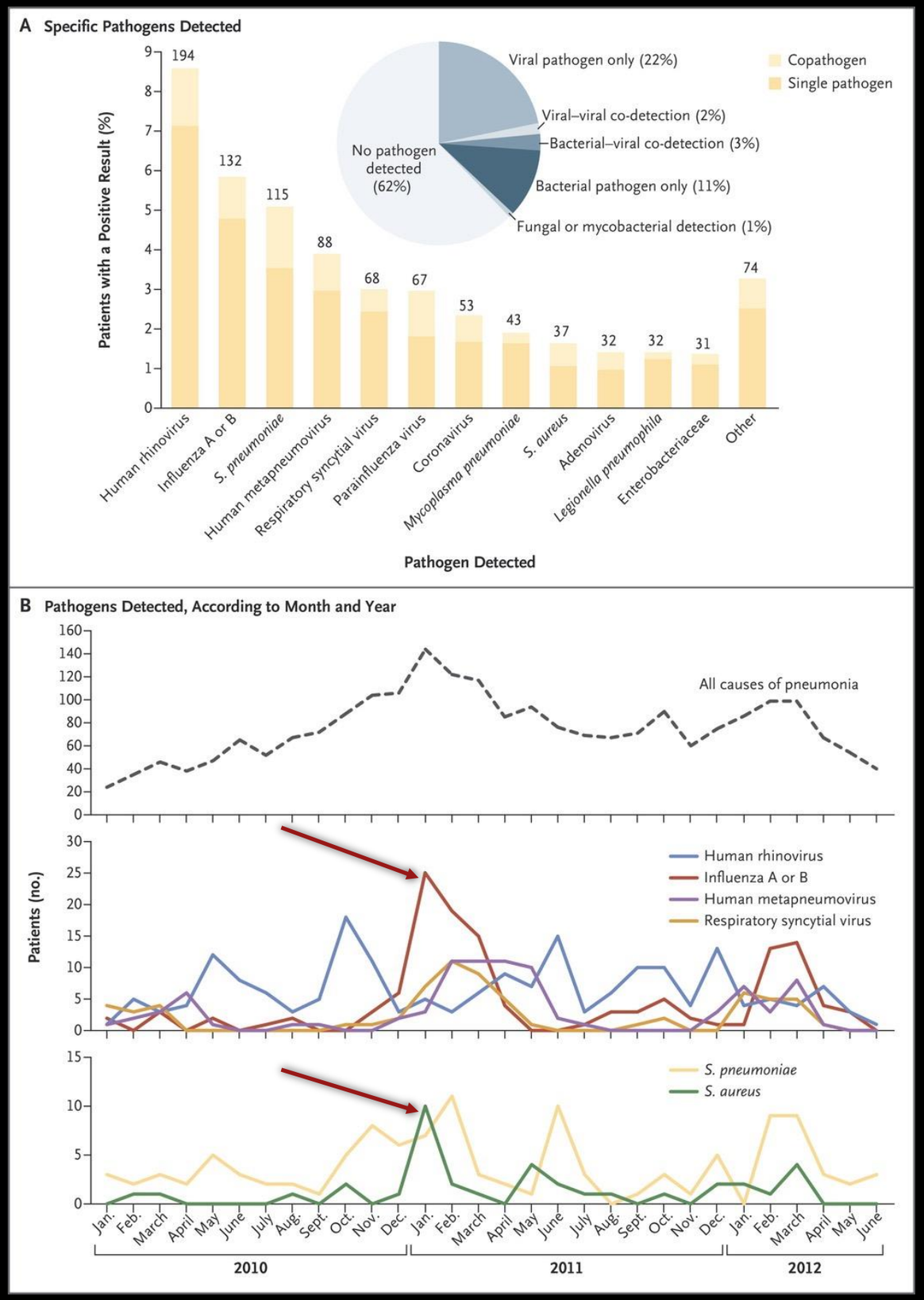
- A respiratory fluoroquinolone
  - Moxifloxacin, levofloxacin
- OR….. a macrolide + a beta-lactam
  - Azithromycin + ceftriaxone

CAP requiring ICU

- Azithromycin OR…. a respiratory fluoroquinolone PLUS a beta-lactam (ceftriaxone, ampicillin-sulbactam, cefotaxime)
- For patients allergic to beta-lactams: Fluoroquinolone + aztreonam
- High risk for pseudomonas: Piperacillin-tazobactam, cefepime, ceftazidime, carbapenem (imipenem/meropenem) + ciprofloxacin or levofloxacin or beta-lactam + aminoglycoside
- High risk for MRSA: vancomycin or linezolid 600mg IV/p.o. q12h

But….in the context of “post-influenza bacterial pneumonia” (or co-infection), things change:

- pneumococcus
- S. aureus (as high as 36% co-infection!)
- Group A streptococcus



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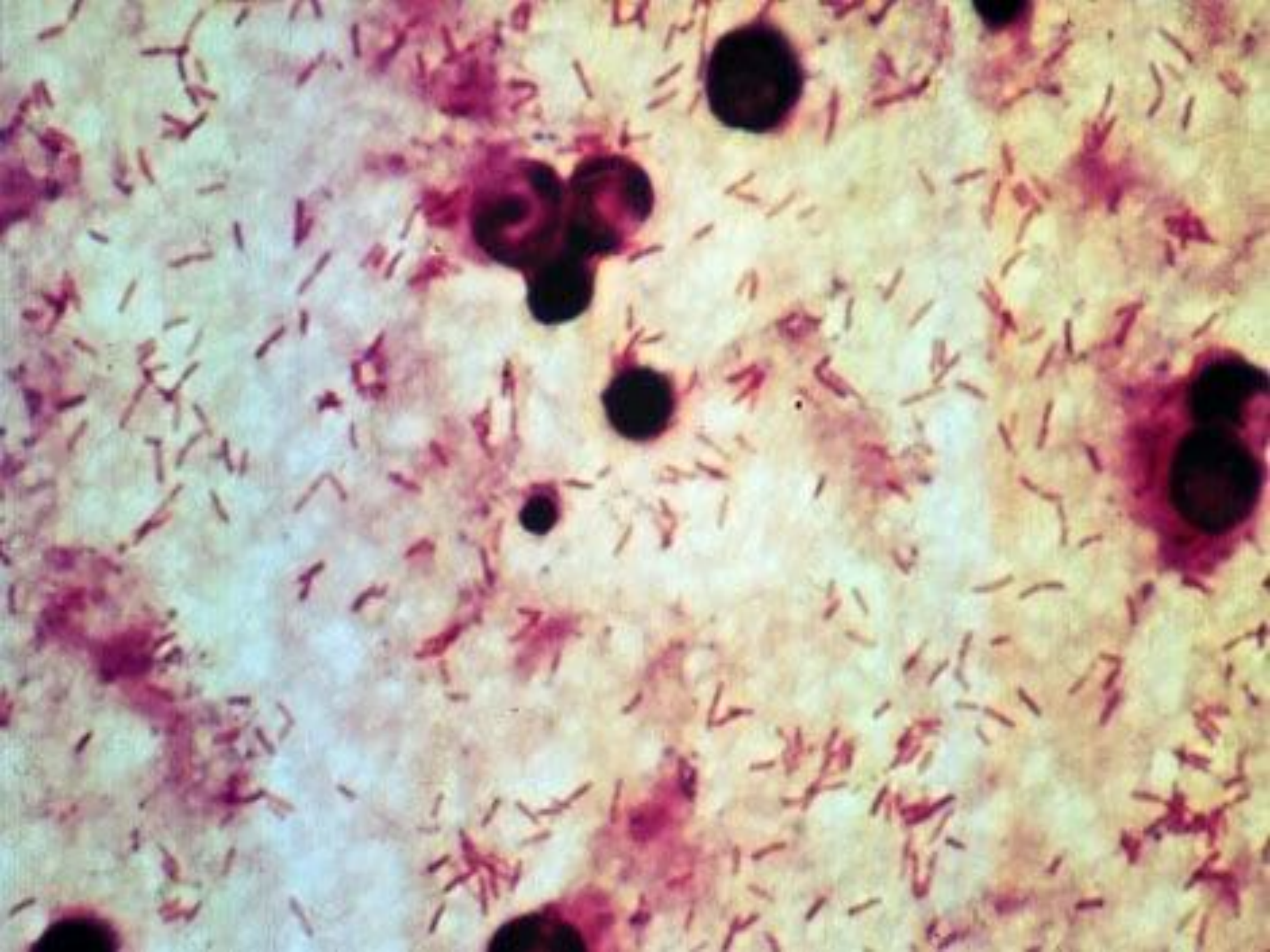
Post-influenza S. aureus pneumonia/empyema

- 17 patients from 9 states; median age - 21
- All had influenza-like illness w/ abnormal chest x-rays
- 71% had laboratory confirmed influenza
- Respiratory symptoms 4 days prior to cultures
- 81% required admission to ICU;
  62% intubated; 46% required chest tubes
- 5 deaths (30%); only 1 w/ underlying dx

*Hageman et al. Emerg Infect Dis 2006;12(6):894-899

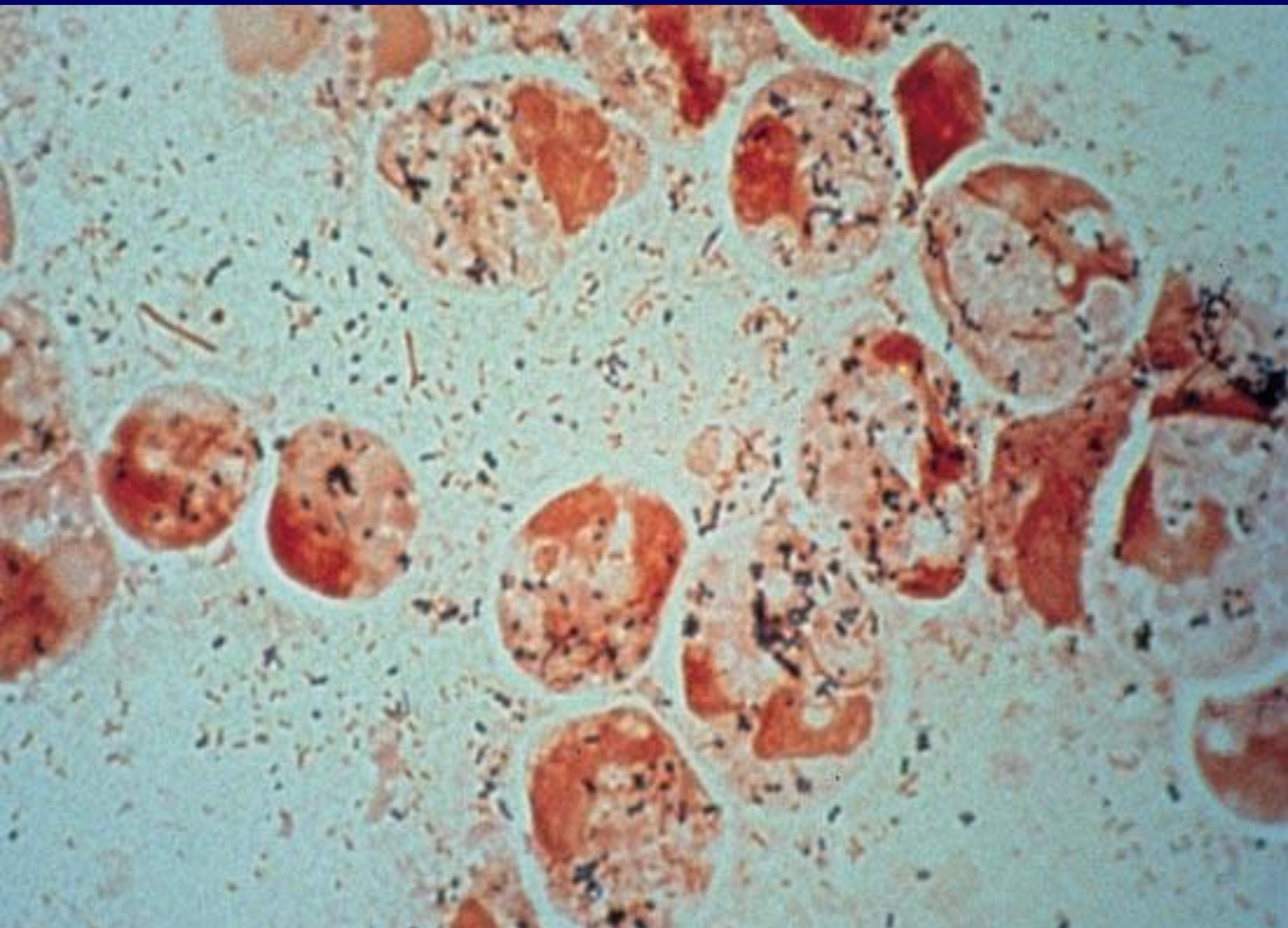


HCAP

- Rx should include staph aureus/MRSA and pseudomonas coverage
- Cefepime or ceftazidime
- Imipenem or meropenem
- Piperacillin-tazobactam
- Aztreonam in PCN allergic patients
- A SECOND antispeudomonal agent?
  - Levofloxacin or ciprofloxacin
  - Aminoglycoside
- Coverage for MRSA - vancomycin; linezolid
- Known ESBL carrier? - Carbapenem class

Lung Abscess

- Risk factors?



- Usually predisposition to aspiration (alcoholics, nursing home patients)
- Indolent symptoms with fever, weight loss, malaise
- Poor dentition
- Foul smelling purulent sputum
- Infiltrate with single or multiple cavities

Rx of lung abscess

- Reports of as many as 30% of lung abscesses resolve on their own w/o antibiotics!
- Clindamycin 300mg p.o. q 6h
- Amoxicillin-clavulanate 875mg p.o. BID
- Amoxicillin 500mg p.o. TID + metronidazole 500mg p.o. TID
  Note: Metronidazole alone not reliable
- Moxifloxacin 400mg p.o. daily
- IV zosyn, IV carbapenems, IV clindamycin used in hospitalized patients
- Duration? Until better.