

Curbside Consultations (aka “Hey, Blackburn - Got a Second?”)

ACOI’s 11th Annual Hospital Medicine Update
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Disclosures: none
Comments: my own

Blackburn's Rule # 3

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- Never ask an I.D. doc a question and expect a short answer!

So...Blackburn - what's going to kill us this year?

- 2017 - emerging concerns
- HIV - the latest
- Zika - an opinion
- C. difficile - a quick reminder/pearl
- Pneumonia - not so easy
- Pneumococcal vaccine - confusing; other vaccines - not so much
- A new polio-like illness - very worrisome

5 emerging infectious diseases to keep an eye on in 2017*

- **Leishmaniasis:**

Also known as "Aleppo boil", recently an issue among Syrian refugees. Spread by the sand fly, which is native to warmer climates

- **Rift Valley Fever:**

A virus spread by mosquitoes, with transmission to humans limited thus far to Africa; however, more than 30 species of mosquito can spread the illness, 19 of which are native to North America. Humans become infected after mosquitoes have fed on previously infected livestock. (31% mortality rate!)

- **Oropouche:**

virus spread by Culex mosquitoes, which have a much wider population distribution than the Aedes mosquitoes that carry Zika. While typically confined to the Amazon, [Oropouche](#) has recently extended its reach into neighboring parts of South America.

A

*D. Gatherer. University of Lancaster, U.K.
(as quoted from Medscape)

5 emerging infectious diseases to keep an eye on in 2017*

- **Mayaro:** This virus clinically mirrors chikungunya — its distant relative — and incites fever, chills, rash and joint pain. [Mayaro](#), like chikungunya and Zika, is spread by Aedes mosquitoes. Previously, the virus was limited to the forests of the Amazon; recently, infections have been detected in urban environments in Haiti. This trajectory resembles that of chikungunya.
- **Elizabethkingia:** Found throughout the world, this bacterium's potential rise is linked to the evolution of antibiotic resistance.

* D.Gatherer. Medscape; Jan 5,2017)

Also out there.....

- Pertussis
- H7N9 “Bird Flu” from China: ~ 40% mortality
- Seoul Virus (a member of the hantavirus group of rodent-borne viruses)
- Candida auris -13 cases in U.S. (5/13-11/16) w/ high mortality, associated w/ bloodstream and wound infections. While still uncommon to date, this is a big deal if found, as unusually high rate of resistance to fluconazole (Diflucan_(R))



1990

Hey, Blackburn - I'm a Hospitalist - why are you bothering me with all this HIV stuff - again?

Isn't that your specialty?

(Besides, I thought this was under control!)

not exactly....

- 1.2 million HIV + in U.S.; (33 million worldwide)
- 1 in 8 unaware of their HIV +; many others in denial
- **responsible for up to 30% of transmission of HIV!!!**
- < 1/3 completely virally suppressed
- ~1/2 are over 50 y.o., at risk for accelerated dx of aging
- 45,000 newly infected each year in U.S.; over 1/2 MSM
- 37,000 newly diagnosed each year will present with advanced disease (13,000 will die)

- You will be caring for HIV+ individuals, whether you - or they - know it or not
- **37,000 present each year with advanced disease as their initial diagnosis - you may be the very first physician to evaluate these patients!**

What's sort of new?

- Frequent, widespread testing
- Prompt treatment
- Pre-exposure prophylaxis (PreP)

- Who should be doing the testing?

Answer: YOU!

- Who should be tested these days?

Answer: almost everyone, including pregnancy and older folks

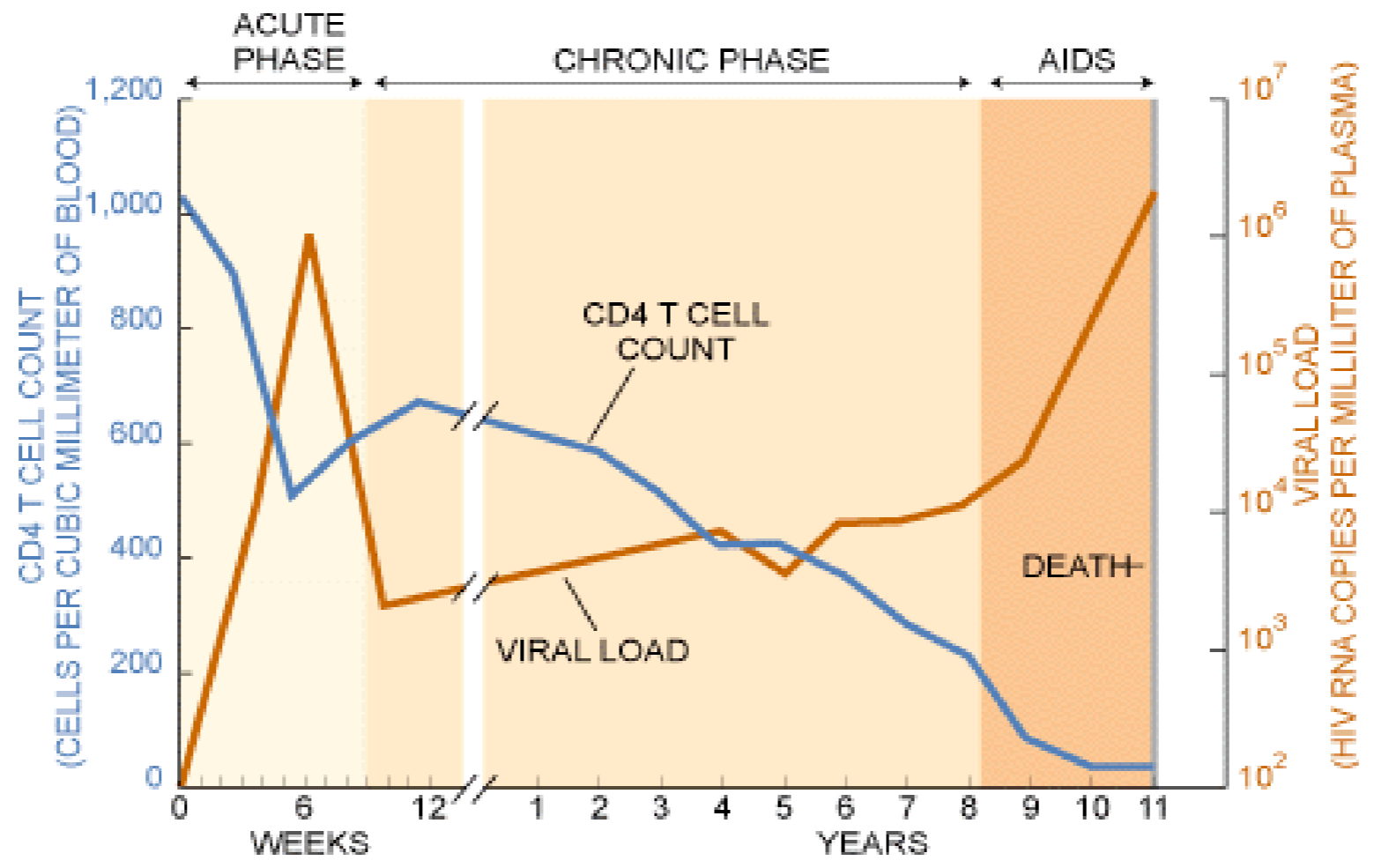
- How often should we be testing?

Answer: everyone at least once; more often with “high-risk” individuals.

Problem: you cannot tell who is “high-risk”

Testing for HIV should now be a part of your everyday care.

- When should we be testing?
Answer: the sooner, the better
- What's the rush?
Answer: earlier testing allows for earlier treatment
- So what?
Answer: prompt treatment decreases transmission and provides major health benefits to the individual



Courtesy: AETC

- without tx, approx. 10 yrs to develop AIDS
- initial presentation may be anywhere along this spectrum

Initiation of Antiretroviral Therapy in Early Asymptomatic HIV Infection

The INSIGHT START Study Group - N Engl J Med 2015; 373:797-807

- 4685 HIV + patients
 - median VL of 12,759 copies/ml
 - median CD4 count of 651
- After 3 years, those started immediately on ART experienced less than half of serious AIDS-related events (including reduced cancer risk by 64%) than those whose therapy was deferred to later

Pre-exposure Prophylaxis (PreP): Once daily Truvada ®

- Viewed by many experts as critical to shutting down the epidemic
 - Pros: effective if used appropriately
 - **New: “On-Demand” PreP** (NEJM, Dec. 3, 2015)
 - Cons:
 - limited candidates, e.g., commercial sex workers; discordant sexual partners (may not be necessary if infected partner on treatment w/ undetectable VL)
 - cost/hassle
 - possibility of selecting for resistance to a major drug combination used in the treatment of HIV
 - ethical issues?

What's quite new?

- Dramatic increase in STDs associated w/ PreP in MSM
- With optimal treatment, i.e. “undetectable”, these folks are, sexually speaking, not contagious!!
- Major concern over increasing incidence of HIV in Russia

Among MSM using PrEP:

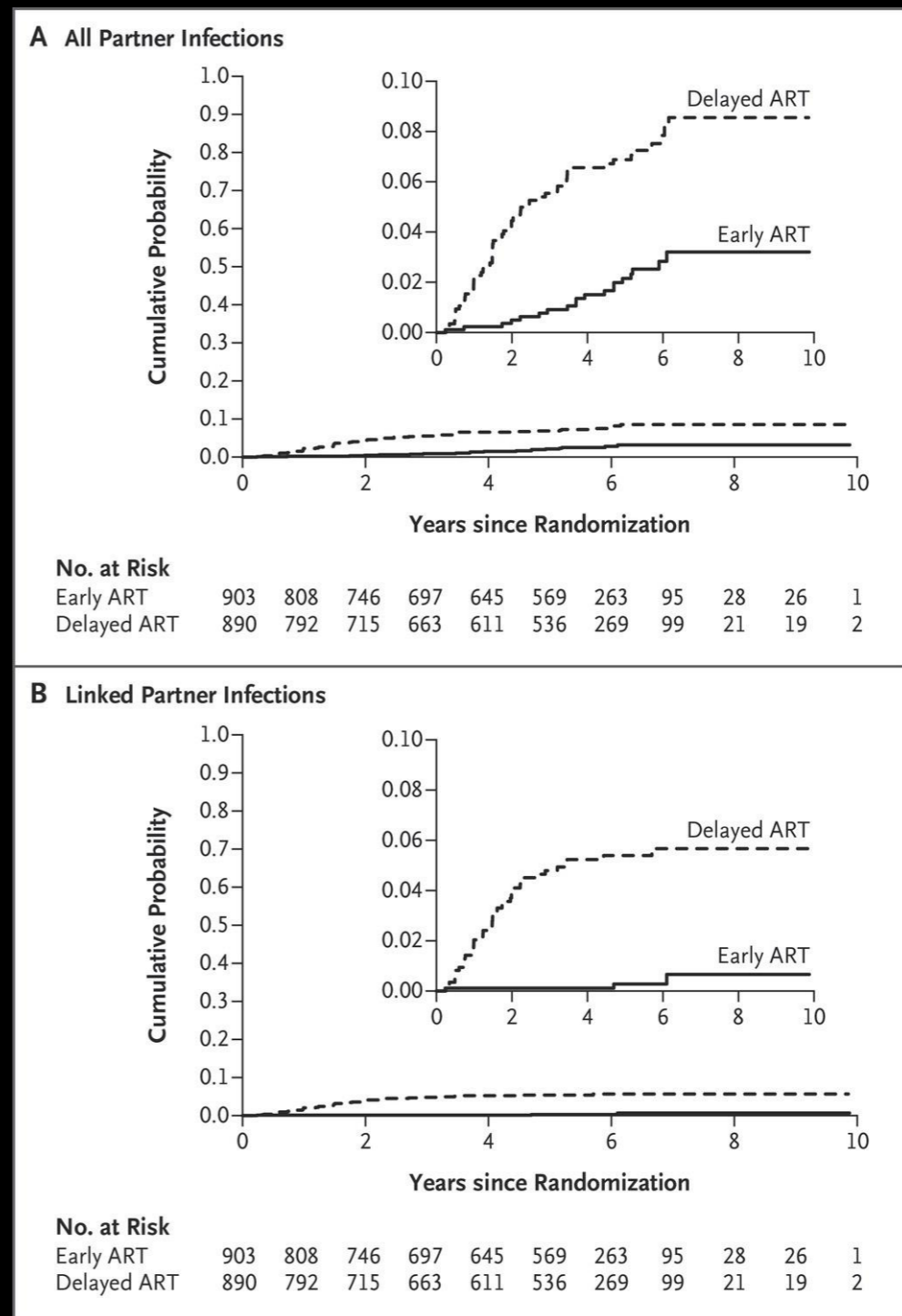
- 11.2 increased incidence of chlamydia!
- 25.3 increased incidence of N. gonorrhoea!!
- 44.6 increased incidence of syphilis!!!

“Treatment as Prevention (of transmission)”

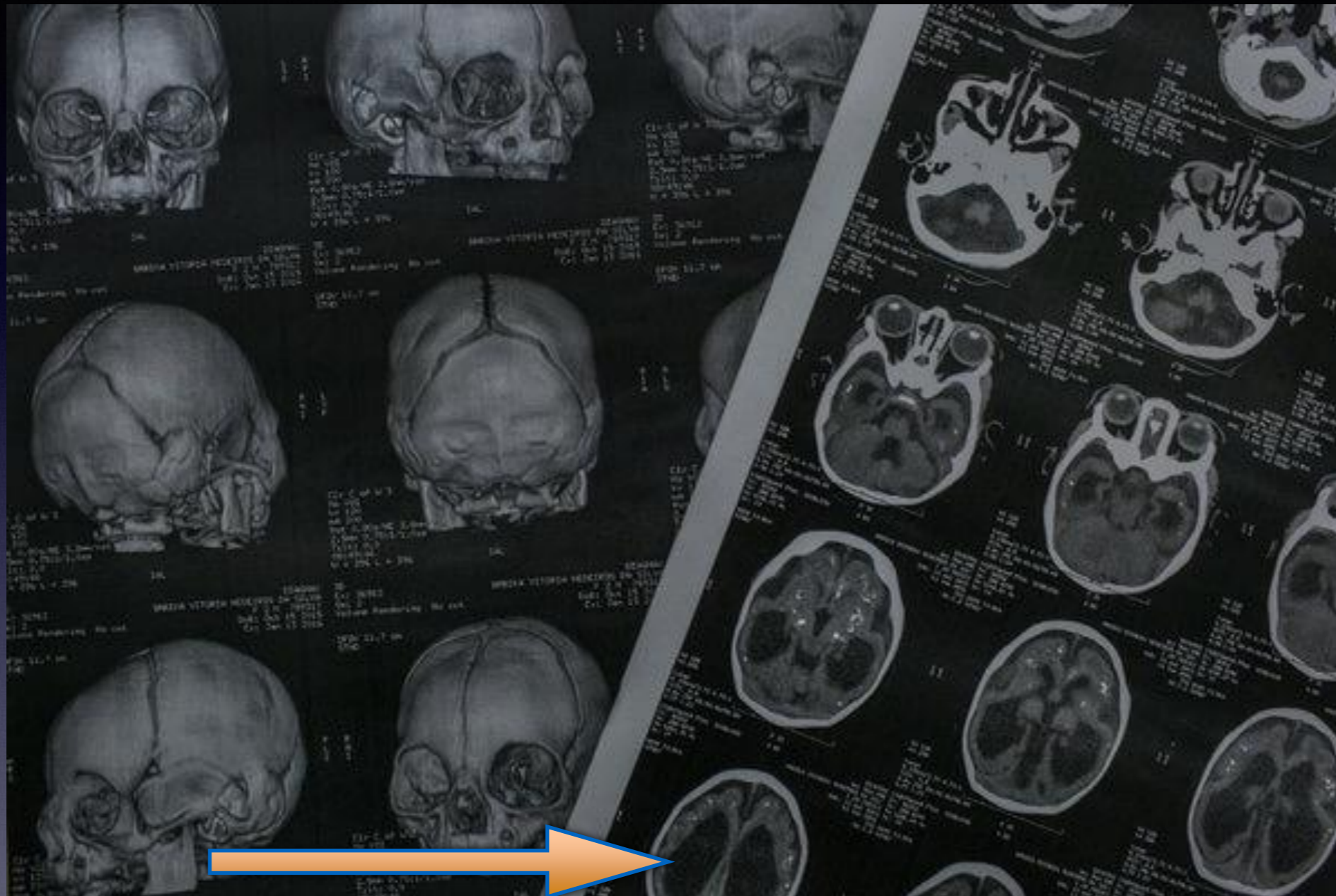
- 1763 discordant heterosexual couples followed over 3 yrs
- Early treatment vs delayed (no) treatment
 - 9 countries
 - Variable treatment regimens
 - Equal distribution of circumcision
 - Condoms most of the time
- 28 virologically-linked infections
 - **Only 1 in “early treatment” group - 96% reduction in transmission!!!!**
 - early treatment -> 41% less “serious health problems”

“Treatment as Prevention (of transmission)”

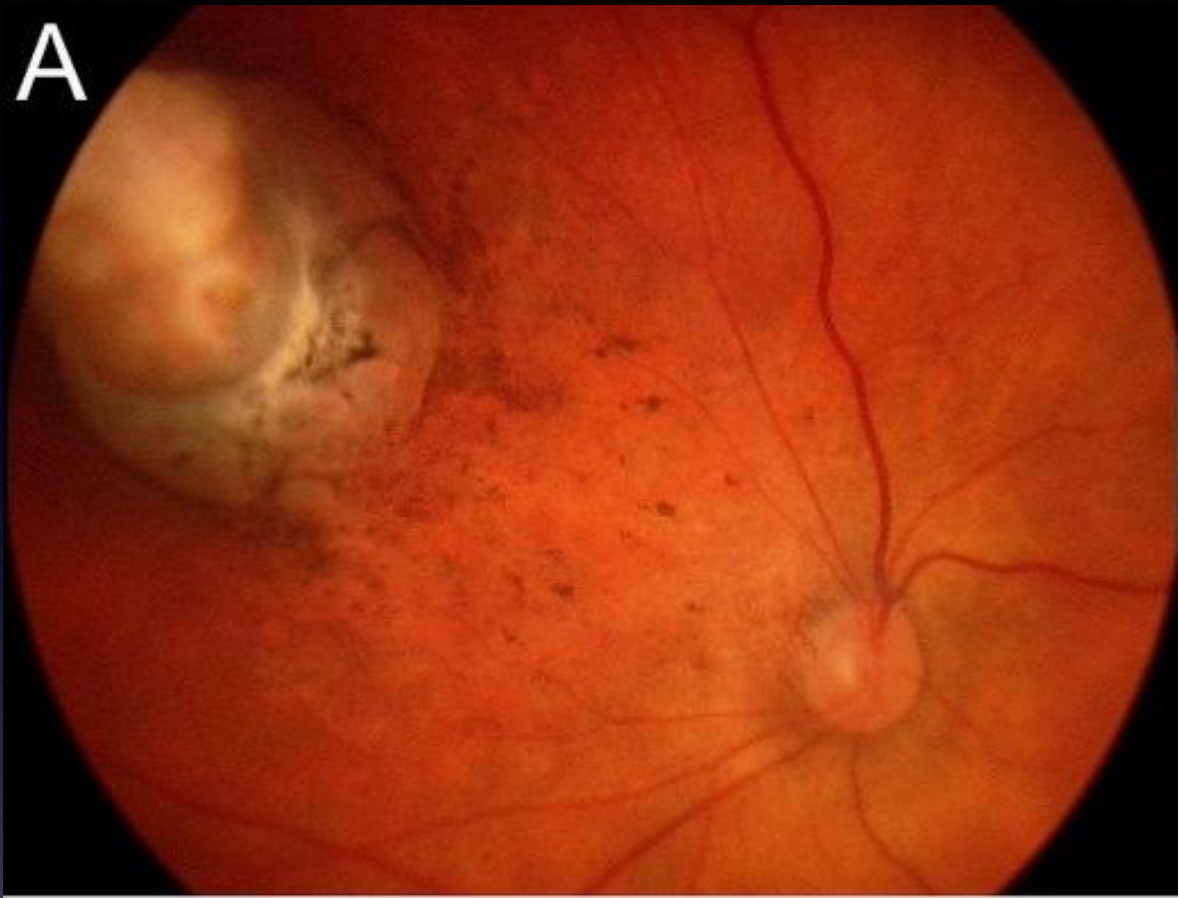
“No linked infections were observed when HIV-1 infection was stably suppressed by ART in the index participant”



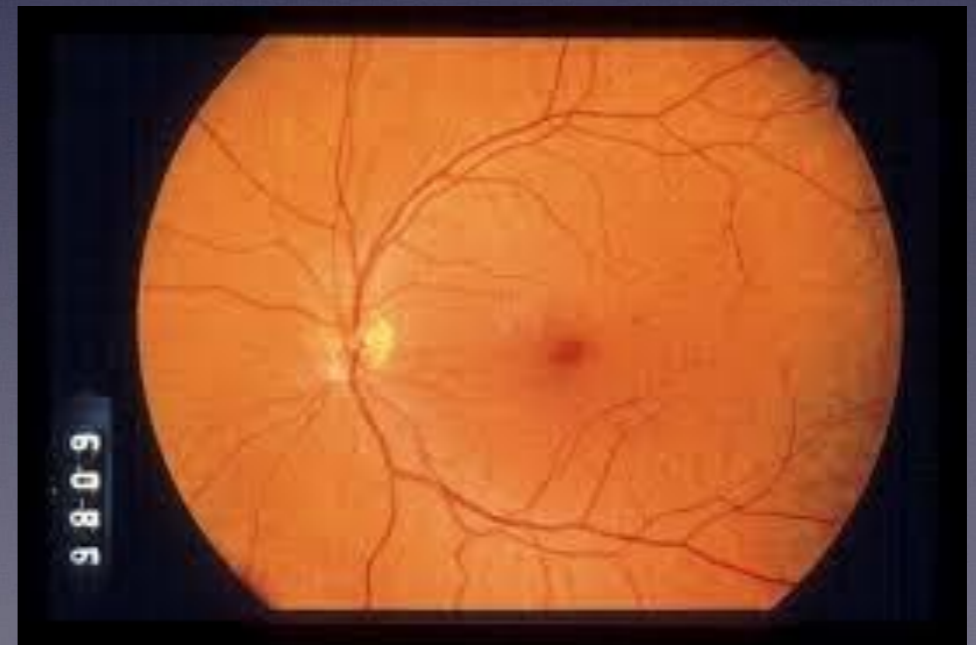




Mauricio Lima, NYT



American Medical Assoc.



Your resident calls you with the following question:

“Hey Dr. Blackburn, I just found out my wife is pregnant and we have reservations to fly to Cancun in two weeks.

We would be very careful, wear lots of mosquito repellent, and not go out at dawn and dusk.

What do ya think?”



Don't !!!!!!!

Here's Why:

- Ultrasound changes may occur only very late in pregnancy
- Ultrasound changes may be only the tip of the iceberg
- **Once mom is infected, there are no tests to predict a healthy baby**

Hey - Blackburn - I just saw someone admitted through the ER w/ acute respiratory symptoms, who happened to have a few loose stools.

She was started on antibiotics for possible CAP, and, for some reason, someone ordered testing for C. diff.

Go figure - it came back positive!

What do I do with that? - she really isn't having true diarrhea and her respiratory symptoms seem to be improving.....

A reminder/Pearl:

- PCR testing for “C. diff.” tests for the gene in C. difficile that is capable of producing toxin. It does not test for the actual presence of the toxin. As such, the PPV (positive predictive value) may be as low as 45%!!
- Changing to a more sensitive test than some of the older modalities has created problems for some hospitals when reporting to various oversight agencies

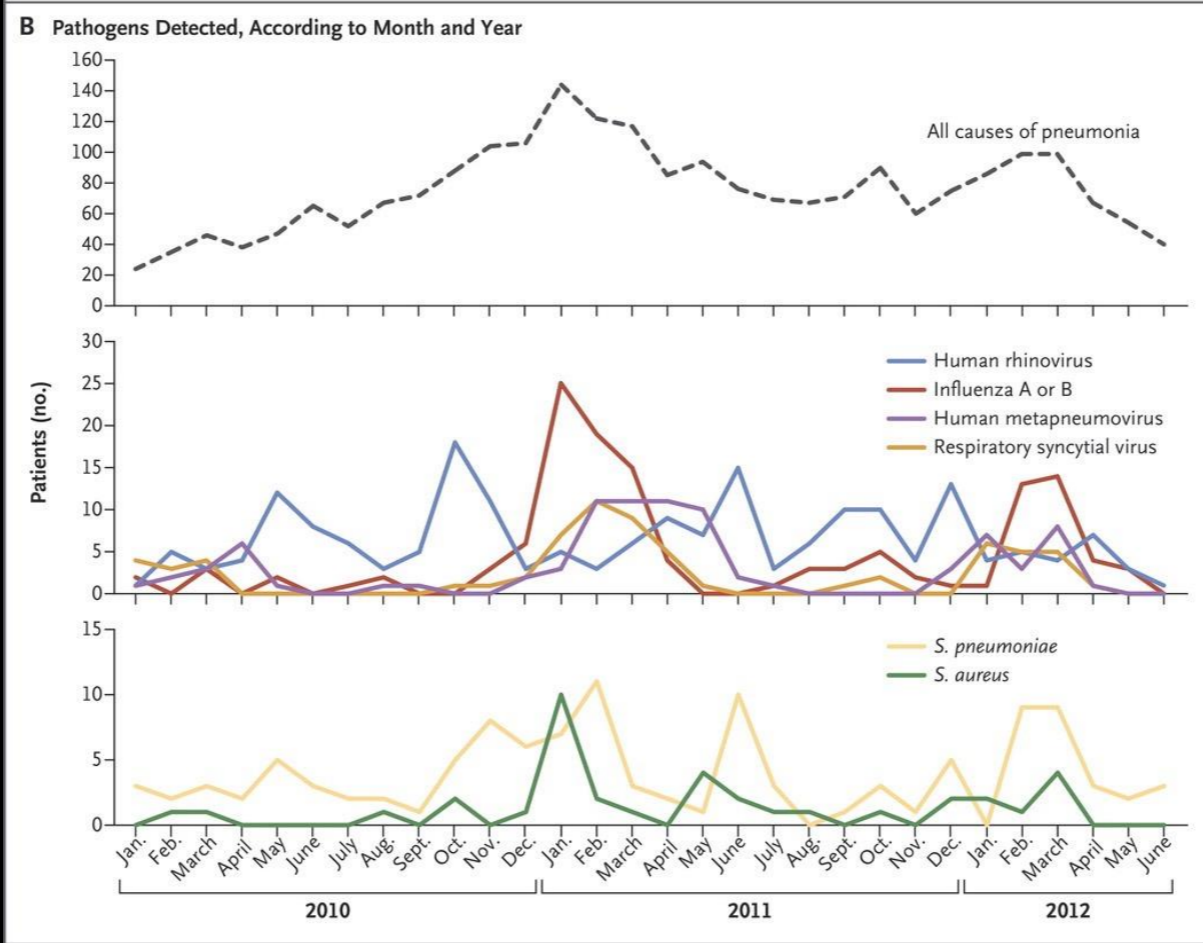
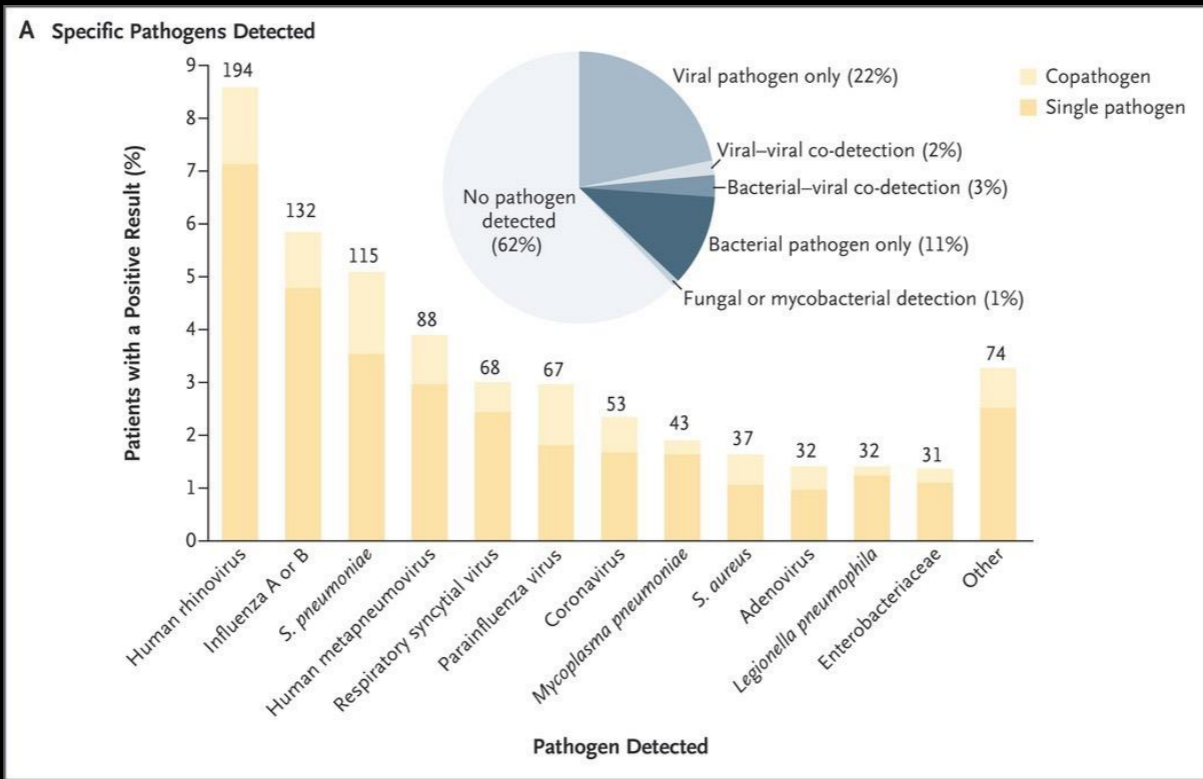
Speaking of pneumonia.....

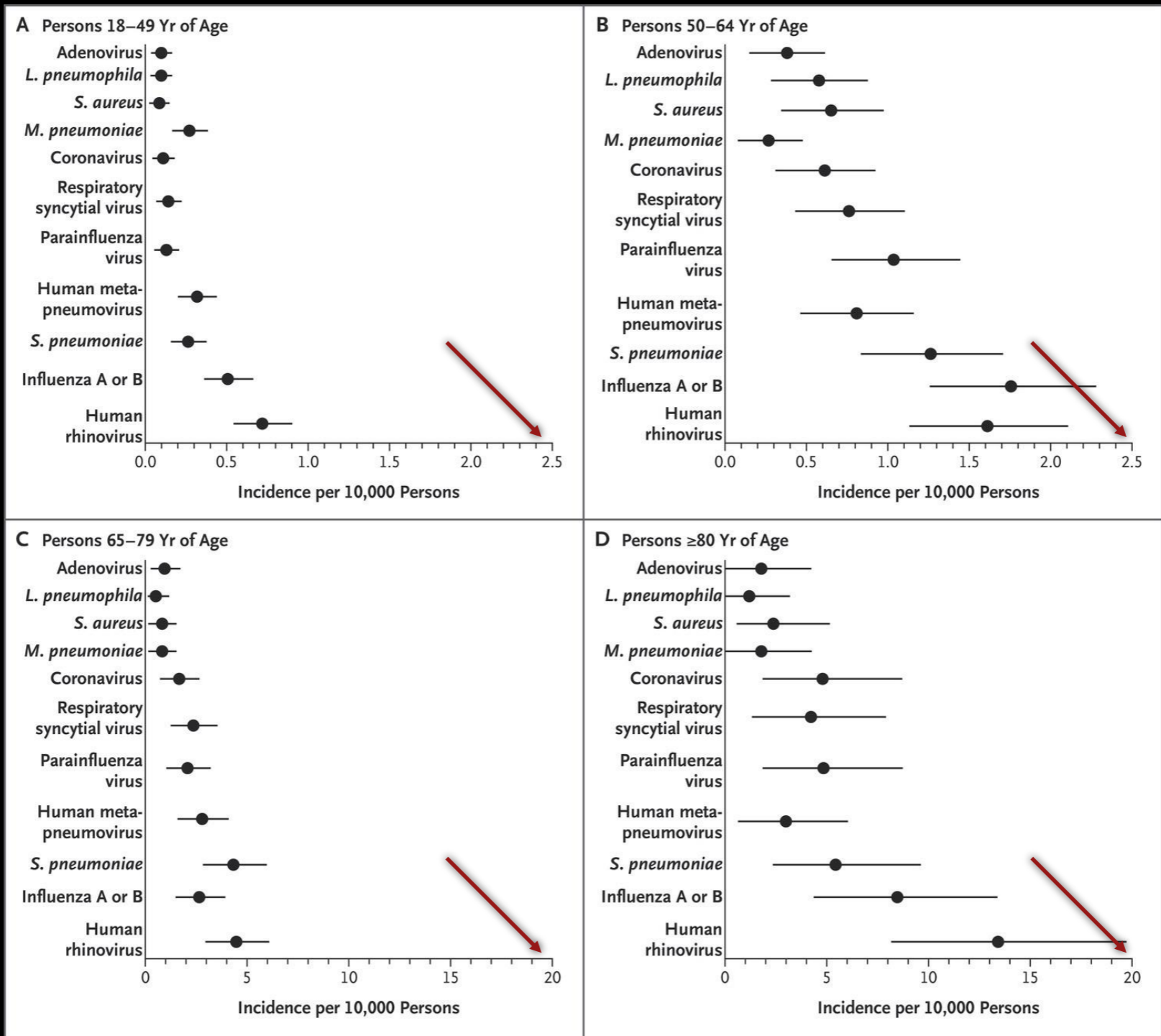
Hey - Blackburn - as a (somewhat) academic hospitalist, how come half the time I admit a patient w/ community-acquired pneumonia, I never have a clue as to what I'm treating - or why they (usually) get better?

What were taught in medical school?

- unknown
- viral
- pneumococcal
- mycoplasma
- Legionella

- unknown - 62%
- viral - rhinovirus, followed by influenza (seasonal)
- pneumococcal
- mycoplasma
- Legionella





So, given the above, which would be the most reliable antibiotic(s)?

- doxycycline
- clindamycin
- penicillin/ampicillin/amoxicillin
- cephalexin (Keflex®); cefazolin (Kefzol®); ceftriaxone (Rocephin®)
- amoxicillin/clavulanate (Augmentin®); ampicillin/sulbactam (Unasyn®)
- quinolones
- azithromycin (Z-pack®)

So, given the above, which would be the most reliable antibiotic(s)?*

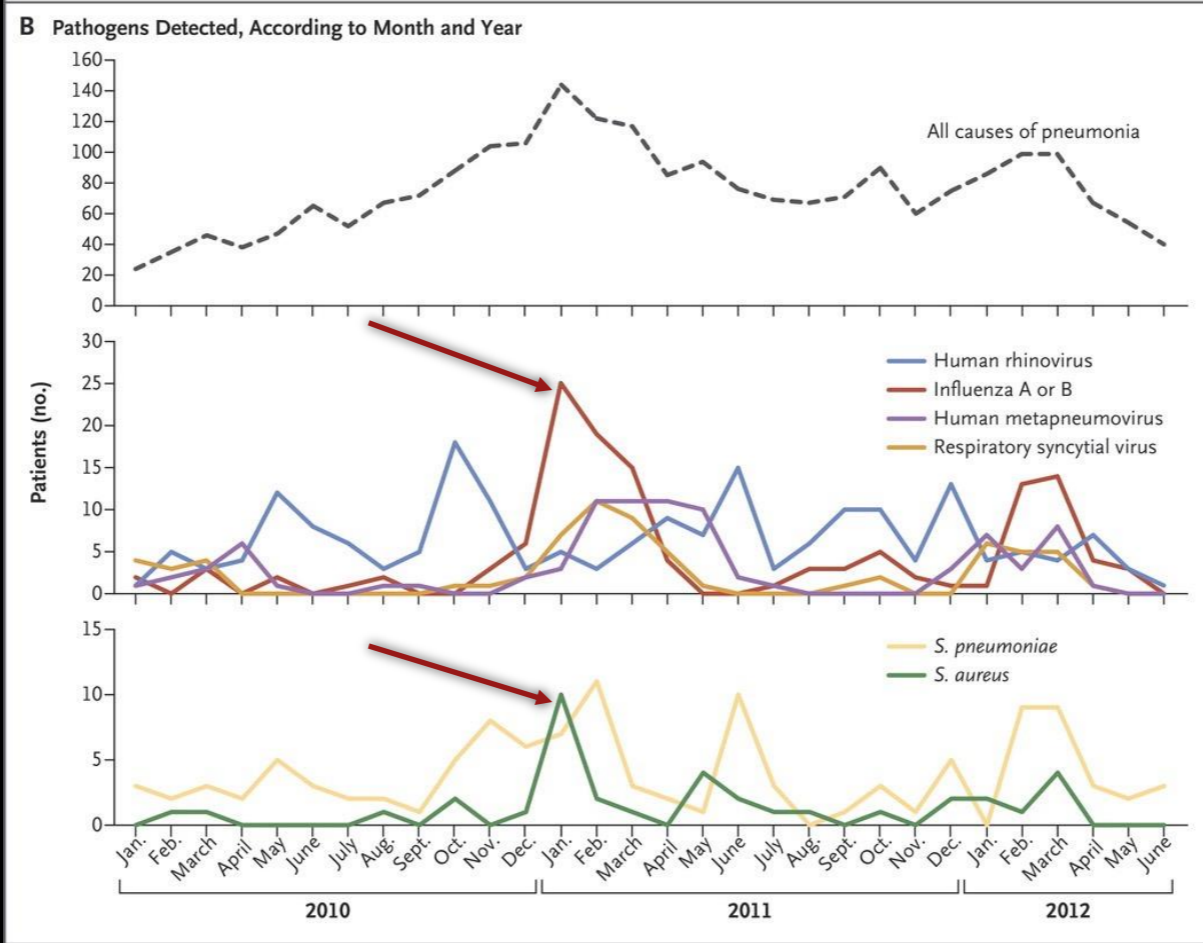
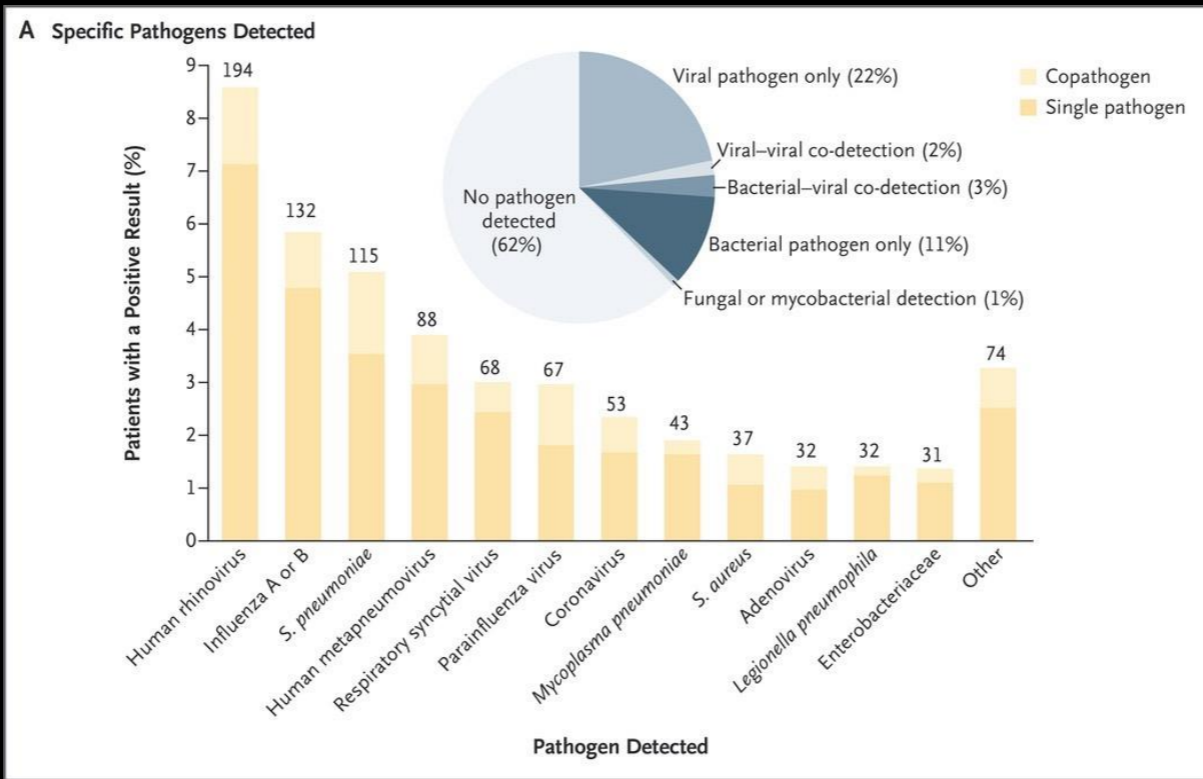
- penicillin/ampicillin - 100%
- cephalexin (Keflex®); cefazolin (Kefzol®); ceftriaxone (Rocephin®) - 100%
- amoxicillin/clavulanate (Augmentin®); ampicillin/sulbactam (Unasyn®) - 100% (but beta-lactamase inhibitor unnecessary)
- quinolones - 100% (**but not Cipro**®)
- clindamycin - 80% (??)
- doxycycline - 86%
- azithromycin (Z-pack®) - 71% (nationally, only 50% as of 2014**)

*based on our hospital's susceptibility data from 2015

**K. Keedy. Cempra Pharmaceuticals.
ID Week Poster Session 2016

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



Characteristics of pts w/ severe CA-MRSA
(post-influenza bacterial) pneumonia*

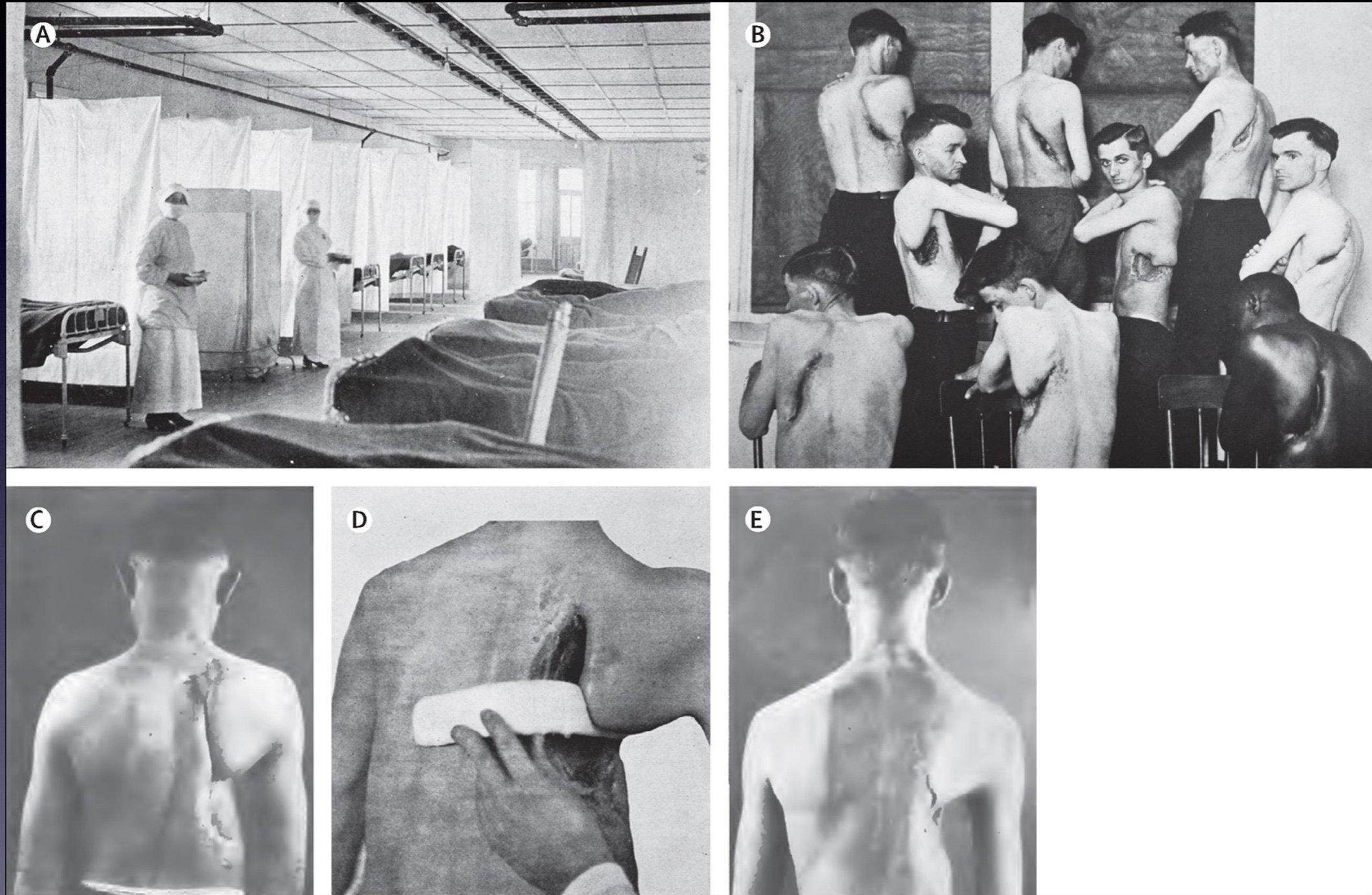
Pt	Age (yrs)	Hemoptysis	Shock	Cavitary lesions	Duration Hosp.	+ Influenza A titers
1	31	+	+	+	41 days	yes
2	52	+	+	+	2 days	?
3	20	-	+	+	108 days	yes
4	33	+	+	+	102 days	?

*Francis et al. CID 2005; 40:100-7

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

Survival following surgical treatment of Grp A streptococcal empyema circa 1918



“Dear, my doctor says I need two different pneumonia shots besides the flu vaccine. The more I asked him about that, the more confused I got. What’s with that?”

The Problem:

- “pneumonia”
 - difficulty in making this diagnosis - upper airway colonization (5-25%); infrequent sputum collection, etc
- # cases of pneumococcal pneumonia/yr (est) in U.S.: 500,000
 - ~ 10 - 12% of all cases of pneumonia (CAP)
 - 25 - 30% bacteremic
 - of these, 25 - 30% mortality; much higher in elderly
 - # cases requiring hospitalization: 175,000
 - ~40,000 deaths

The Problem:

- pneumococcus - > 90 capsular serotypes
 - ~ 20 serotypes cause majority of invasive dx (bacteremia, bacteremic pneumonia, meningitis)
- 125,000 (?) “invasive” cases of pneumococcus/yr (est)
 - 3000-6000 deaths from pneumococcal meningitis

The (Partial) Solution

- Effectiveness of 2 currently available vaccines:
~ 21-93%
- younger, healthier - more effective

- **Pevnar (PCV 13):**

- 13 serotypes (all but one found in PPSP 23 as well)

- Best for infants under age of 2

- t-cell recognition - decreases N-P carriage in kids -> decreases adult colonization via “herd protection” -> decreases adult dx

- Of interest: most of the strains included in PCV 13 are disappearing, with this vaccine now containing only 10% of serotypes that currently cause invasive dx

- **Pneumovax (PPSP 23)**

- includes ~ 1/2 of serotypes currently believed to cause invasive dx in U.S. (may be higher in Europe)

- no effect on N-P colonization/carriage

(The Marketing of) Current Vaccine Recommendations



▲ Indication

▼ Important Safety Information

📄 Full Prescribing Information

▼ More PREVNAR 13® Sites



HOME

PNEUMOCOCCAL PNEUMONIA

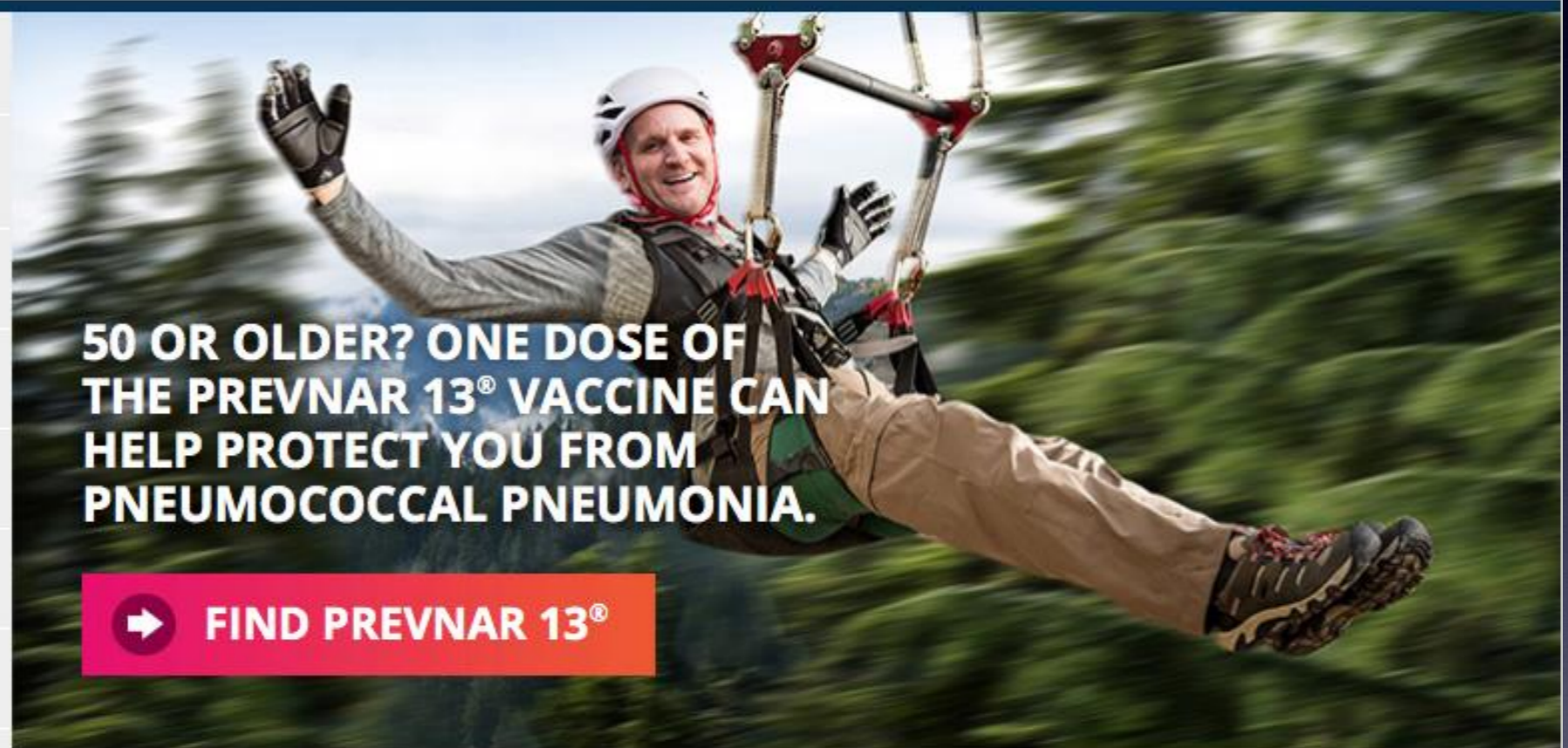
AM I AT RISK?

ABOUT PREVNAR 13®

FIND PREVNAR 13®

SIDE EFFECTS

FAQs



PNEUMOCOCCAL PNEUMONIA



Text Size: **A A A**

Pneumococcal pneumonia can be serious and symptoms can last for weeks.

Current Recommendations:

- Since 2010, all kids get 4 doses of Prevnar13. This alone will, in time, make adult immunization w/ Prevnar obsolete.
(Note: Prevnar7 given between 2000-2010)
- Everyone over the age of 65: Prevnar,[®] followed a year later by Pneumovax[®]
- “at risk” under the age of 65 - see CDC for specifics
 - high risk: Pneumovax
 - at even higher risk: Prevnar followed 8 weeks later by Pneumovax
 - for some, a 2nd dose of Pneumovax is recommended (before age 65); if this is the case, give a 3rd dose after 65, but at least 5 yrs after last dose

(Currently) Recommended Sequence:

- Pevnar13 given first (if possible); never more than once; not given if received Pevnar13 as a child (if hi risk, and received only Pevnar7, give Pevnar13 x 1)
- Regardless of sequence, space the 2 different vaccines a year apart if immunocompetent
- Where Pneumovax23 is repeated, space at least 5 yrs apart

What's the Big Deal About a Year Between Revaccination?

- Weak science
- ? Increase in local reactions
- ***Medicare payment***
 - Prevnar: \$148.78
 - Pneumovax: 73.53

The Future of Pneumococcal Vaccine:

- While not in compliance w/ current recommendations, it is quite possible that immunizing your patients only with Pneumovax and not including Prevnar, is not putting your patients at risk and not compromising their care
- Immunization of children has not only dramatically reduced the incidence of invasive pneumococcal dx in children but also, as a result of “herd protection” has dramatically reduced the incidence of invasive pneumococcal dx in adults.
An additional effect of childhood immunization has resulted in changing the predominant serotypes of pneumococcal disease.
- Whether the provision of Prevnar in adult patients can be justified in the future after a re-evaluation of the available data (2018) remains to be seen
- Immunize the kids!!

What is the adult immunization rate for HPV, zoster and pneumococcal disease in a very large Primary Care Practice owned by a very large hospital system in SE Michigan?

- 5%
- 20%
- 45%
- 65%
- 85%

In order for vaccines to work, they must be given!

- HPV: 6.8%*
- Zoster: 0.4%*
[Note: Stroke is a major concern following an episode of shingles, esp. if zoster ophthalmicus. Lang SM et al. Clin Infect Dis (2014) 58(11):1497-1503]
- Pneumococcus:
 - healthy - 28.9%*
 - higher risk - 2.8%*

*Source: anonymous
(but extremely reliable)

What are the main obstacles to improving these numbers



Part D Vaccine Manager

Simply the Best Way for Providers to Bill for Part D Covered Vaccines!

Complete Claims and Payment Management Solution

The TransactRx Part D Vaccine Manager provides all the features necessary to manage the reimbursements for Medicare Part D covered vaccines.

- Check patient eligibility and determine the appropriate Part D Plan to bill
- The system displays the amount of co-payment the patient needs to make
- With one click the claim is submitted in real time to the Part D Plan
- Acceptance of the claim and amount to paid to provider is displayed in real time
- Check on the status of payments for outstanding claims
- Payments are made to providers twice a month via check or ACH
- Complete reporting is available to track and manage claims and payments

For additional information about the TransactRx Part D Vaccine Manager solution and other services offered by TransactRx, visit our website at www.TransactRx.com or call 800.971.3890 to speak with a representative.

TransactRx Part D Vaccine Manager is the nation's leading solution for healthcare providers to overcome the billing and reimbursement challenges associated with administering vaccines covered by Medicare Part D to their patients. With Vaccine Manager, providers no longer need to file paper claims or ask their patients to pay full costs out of pocket and then try and get reimbursed.

The easy to use web based system enables providers to determine if a patient has Medicare Part D coverage, which Part D plan to bill, the exact amount of patient financial responsibility for a specific vaccine and the amount the provider will be reimbursed. All before the vaccine is administered to the patient.

Then after the vaccine is administered with one click the provider can submit a claim to the appropriate plan and receive confirmation of payment of the claim in real time.

TransactRx Part D Provider Network

By signing one contract with TransactRx a healthcare provider immediately is enabled to submit claims for any Medicare Part D covered vaccine to all TransactRx contracted Medicare Part D plans.

- Simple online enrollment process
- Credentialing and acceptance into network in less than 48 hours.
- TransactRx is contracted with Medicare Part D plans that represent over 80% of all Medicare Part D covered lines.
- Includes all Part D covered vaccines
- Favorable negotiated reimbursement rates for all Part D covered vaccines.



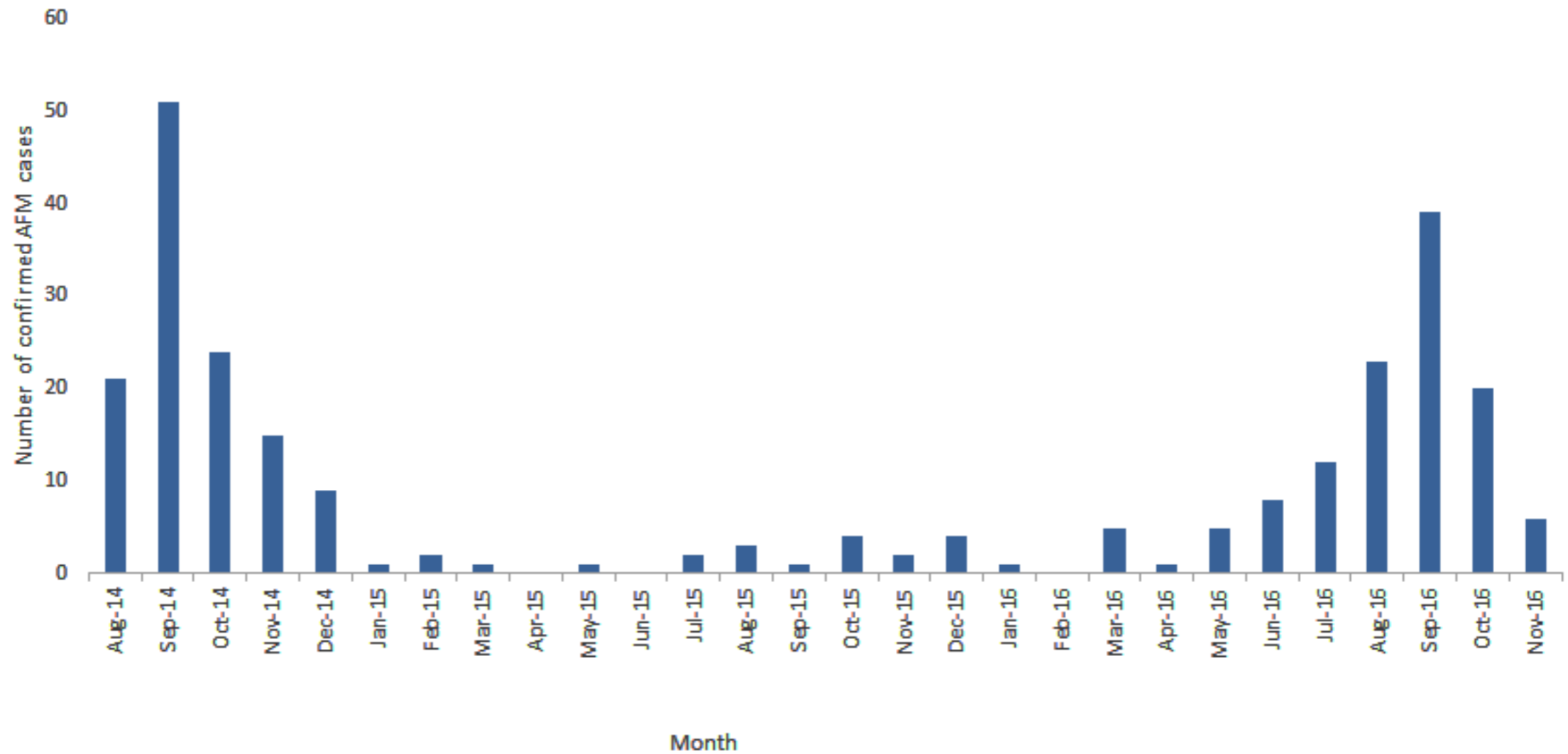


A newly described polio-like illness:

- Acute flaccid myelitis (AFM) -

- Acute onset limb weakness in children. May have cranial nerve involvement and/or respiratory failure
- Of suspected viral origin, but, to date, no specific virus identified
- August - December, 2014: 120 cases
- 2015: 21 cases
- January - November, 2016: 120 cases, 37 states

Number of confirmed U.S. AFM cases reported to CDC by month of onset,
August 2014 - November 2016^{^*†}



Acute flaccid myelitis (AFM)

- etiology - unknown, presumably infectious
- treatment - unknown
- prevention - unknown
- prognosis - unknown

Hey - Blackburn - isn't it about time for coffee?
Answer: most definitely

Thanks!

References

Re: HIV/AIDS - www.aidsinfo.nih.gov

Guidelines for the Use of Antiretroviral Agents in HIV-1-Infected Adults and Adolescents (updated July 14, 2016)

Initiation of Antiretroviral Therapy in Early Asymptomatic HIV Infection. The INSIGHT START Study Group. *N Engl J Med* 2015; 373:797-807

Re: Zika - www.cdc.gov/zika

Re: Community-Acquired Pneumonia - Jain et al. Community-Acquired Pneumonia Requiring Hospitalization among U.S. Adults. *N Engl J Med* 2015;373:415-427

Re: Pneumococcal vaccine - www.cdc.gov/pneumococcal/vaccination

Re: Candida auris - www.cdc.gov/fungal/diseases

Re: AFM - www.cdc.gov/acute-flaccid-myelitis