

June 18th, 2019

Announcements

- No TASP week of July 4th
- Cases and questions



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Agenda

• Didactic:

Antimicrobial Adverse Effects and Toxicities

Case Discussions

A Case

- A 23 year old patient with a complicated meningitis is treated with ceftriaxone. Ten days into therapy, her hematocrit, previously WNL, dropped to 16. Although stable, she was felt exhausted and sleepy.
- 3 units of pRBC were given with minimal improvement in HCT.



What was happening to this patient?

- A. Autoimmune hemolytic anemia
- B. Pathogen mediated anemia
- C. Hemorrhage
- D. Iron deficiency
- E. Ceftriaxone-mediated hemolytic anemia





- Direct chemical impact on tissues
- Immune-mediated (antigenantibody)
- Alteration of bacterial flora

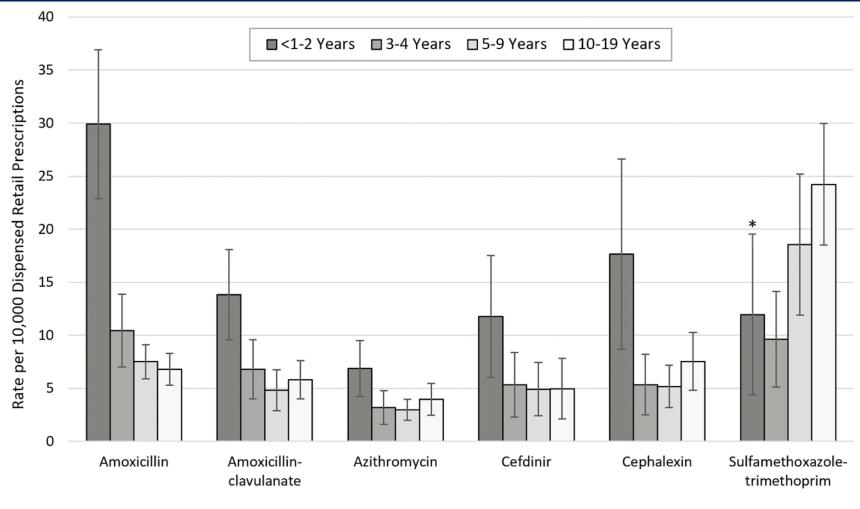


AAEs - Humans

- Age
- Genetics
- Malnutrition
- Volume status
- Severity of illness
- Organ function (liver, kidneys, vasculature)



AAEs and ED Visits - Pediatrics



Antibiotic Drug Product

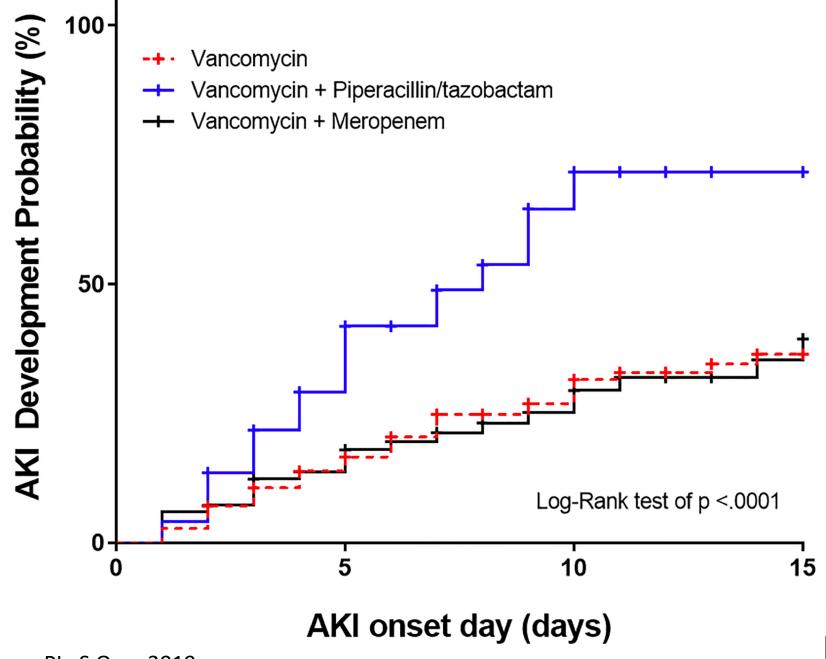
Lovegrove, Ped Inf Dis, 2018



AAEs and ED Visits - Adults

- U.S. adults >20 years of age = 145,490 ED visits per year between 2011-2015
- Antibiotics linked to ~14% of all ED visits for adverse drug effects
- Most visits for people <50y and ~72% were females
- Mostly "allergic" reactions
- Most common drugs: PO sulfonamides, penicillins, and fluoroquinolones





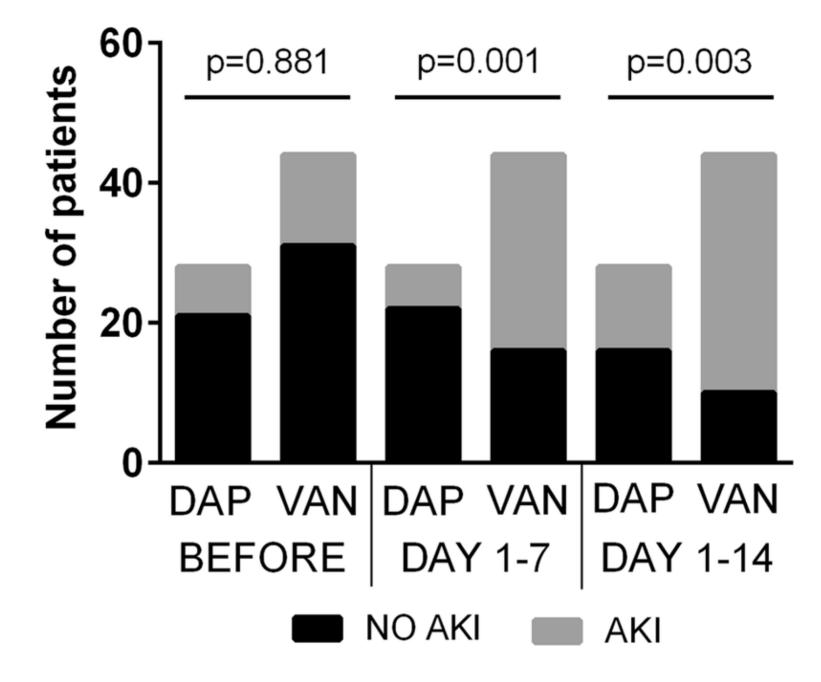
Kang, PLoS One, 2019



Vancomycin

- Histamine-mediated flushing
- Nephrotoxicity
- Ototoxicity
- Linear IgA bullous dermatosis







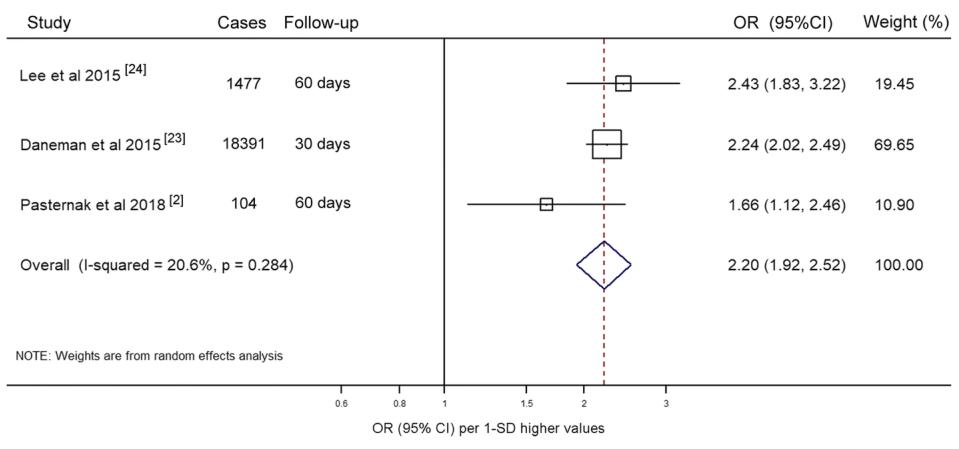
Gaudard, BMC Infectious Dis, 2019





Kang, Annals of Derm, 2008

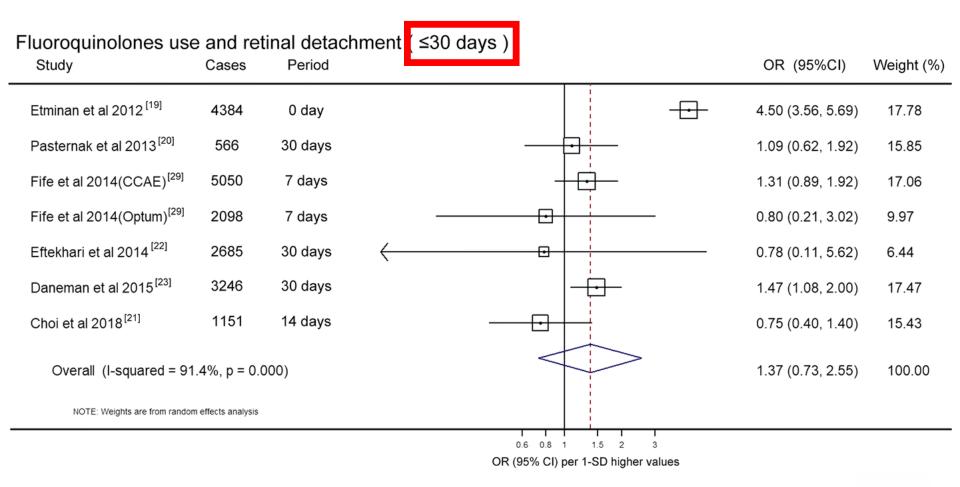
Fluoroquinolones use and aortic dissection or aortic aneurysm



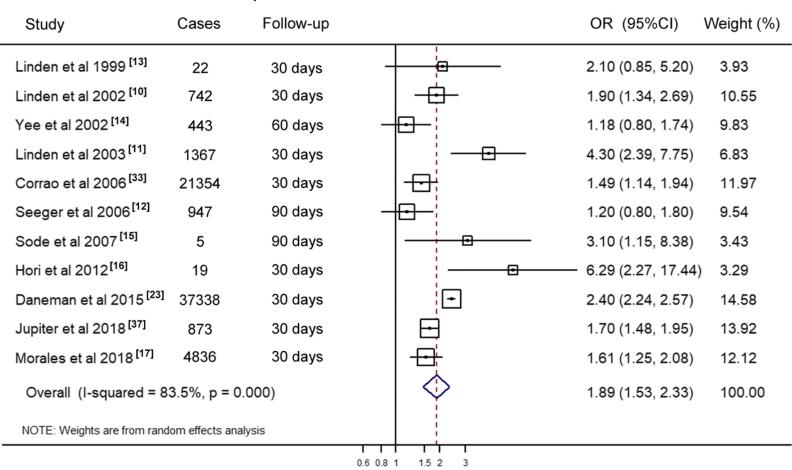
Fluoroquinolones use and retinal detachment (>30days and ≤365 days)

Study	Cases	Follow-up		OR (95%CI)	Weight (%)
Etminan et al 2012 ^[19]	4384	365 days	+	1.39 (1.23, 1.57)	18.46
Pasternak et al 2013 ^[20]	566	180 days		1.25 (0.98, 1.60)	13.39
Fife et al 2014(CCAE) ^[29]	5050	365 days		1.04 (0.94, 1.16)	19.04
Fife et al 2014(Optum) ^[29]	2098	365 days		1.30 (1.11, 1.52)	17.06
Eftekhari et al 2014 ^[22]	2685	365 days		1.35 (0.89, 2.05)	7.85
Kuo et al 2014 ^[30]	142	90 days		.07 (1.45, 2.96)	9.50
Choi et al 2018 ^[21]	1151	365 days		1.00 (0.81, 1.24)	14.71
Overall (I-squared = 76.6%)	, p = 0.000)			1.27 (1.09, 1.47)	100.00
NOTE: Weights are from random effects a	analysis				
		1 0.6	I I I 0.8 1 1.5 2	3	
OR(95% CI) per 1-SD higher values					









Fluoroquinolones use and tendon disorders

OR (95% CI) per 1-SD higher values



Other Antimicrobial AEs

- Nitrofurantoin
 - Pulmonary injury (acute and sub-acute)
 - Liver injury
 - Hemolytic anemia
- Daptomycin
 - Eosinophilic pneumonia
 - Rhabdomyolysis/myopathy
- Linezolid
 - Thrombocytopenia/other cytopenias
 - Peripheral neuropathy (usually not reversible)
 - Optic neuropathy



Like other drugs, antimicrobials can be dangerous!





Do you have an AE story for the group?

