



EM CASES SUMMARY

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Episode 64 – Update in Emergency Medicine, Whistler Conference (Part 2)

Drs. David Carr & Chris Hicks

5 Antibiotic Pearls and Pitfalls

1. Sinusitis & Pharyngitis rarely require antibiotics

Identifying acute bacterial vs viral Sinusitis
From IDSA Guidelines (2012)

- 1 of 3 presentations make bacterial sinusitis more likely:
1. Onset with persistent symptoms or signs compatible with acute rhinosinusitis with symptoms lasting 10 or more days, without any evidence of improvement
 2. Onset with severe symptoms or signs of high fever (>39.0 C), purulent nasal discharge, or facial pain lasting at least 3-4 consecutive days at the beginning of illness
 3. Onset with worsening symptoms or signs characterized by the new onset of fever, headache or increase in nasal

discharge following a typical URI that lasted 5-6 days that were initially improving (i.e. the “Double Sickening”)

One meta-analysis showed that the NNT to shorten duration of illness of sinusitis with antibiotics is 13.

Dr. Carr recommends treating sinusitis with antibiotics *only* in immunocompromised patients, post-op patients and septic patients.

Mclassac Pharyngitis Score

The sore throat score approach		
Step 1. Determine the sore throat score:		
Criteria	Points	
Temperature >38°C	1	
No cough	1	
Tender, anterior cervical nodes	1	
Tonsil swelling or exudate	1	
Age <15	1	
Age 45 or older	-1	
Total score is determined by summing the points for the criteria.		
Step 2. Suggested management strategy based on total sore throat score:		
Total score	Likelihood of GAS infection (%)*	Suggested management
-1 or 0	2-3	No culture or antibiotic required
1	4-6	No culture or antibiotic required
2	10-12	Culture all; treat patients with positive result
3	27-28	Culture all; treat patients with positive result
4 or 5	38-63	Treat (penicillin or erythromycin)

Dr. Carr's Commentary: Antibiotics are rarely (if ever) required for pharyngitis in adults as most cases are viral, only approximately 50% of patients with a McIssac score of 4 or 5 have strep throat, rheumatic fever in adults is extremely rare in North America (with little evidence that antibiotics prevent it), and the NNT to prevent suppurative complications of strep throat is approximately 400.

Penicillin: Number Needed to Harm
NNH = 5000 for anaphylaxis
NNH = 10 for diarrhea

*Note that there are still cases of pediatric rheumatic fever in Canada, and so withholding antibiotics for children with strep throat is not recommended at present.

2. Consider the bioavailability of oral antibiotics before you pull the trigger to give IV antibiotics

High Bioavailability oral antibiotics to consider instead of IV antibiotics:

Cephalexin
Quinolones – eg. ciprofloxacin, levofloxacin
Trimethoprim-Sulphamadoxazole – eg. Septra, bactrim
Clindamycin
Metronidazole
Doxycycline
Linezolid

3. Dosing Vancomycin

Use weight-based dosing of vancomycin (20-30 mg/kg based on severity of illness) rather than simply 1g or 2g. This will prevent the historical under-dosing vancomycin.

4. New Antibiotic choices for Gonorrhea

From 2014 Toronto Public Health

Uncomplicated gonorrhea: azithromycin + ceftriaxone regardless of whether the patient is positive for chlamydia.

PID: ceftriaxone + doxy +/- azithromycin 2g qweekly x2

Consider single dose gentamycin *or* gemifloxacin + azithromycin in high risk populations (i.e. men who have sex with men)

See The Skeptics Guide to EM for analysis of this study:
<http://thesgem.com/2015/01/sgem104-lets-talk-about-sex-baby-lets-talk-about-stds/>

5. Antibiotics for Upper GI Bleeds in cirrhotic patients

A Cochrane review meta-analysis in 2011 showed an all-cause mortality benefit in using prophylactic antibiotics in cirrhotic patients with upper GI bleeds.

Consider IV ceftriaxone for ED patients with upper GI bleeds.

Cardiology Pearls

Immediate PCI in all Post-Cardiac Arrest Patients with a presumed cardiac cause

PROCAT - Parisian Region Out of Hospital Cardiac Arrest Registry:

- 714 out of hospital cardiac arrest
- Excluded patients with obvious non-cardiac cause
- 400 patients underwent immediate angiography +/- PCI.
- Findings: ECGs that had ST elevations were specific (96%) for coronary lesions requiring PCI, however, lacked sensitivity. In patients with non-diagnostic ECGs, 60% of patients had lesions deemed appropriate for coronary stenting

Mortality benefit of early angiography +/- PCI in post-cardiac arrest patients regardless of whether the ECG showed a STEMI or NSTEMI pattern.

AHA (2013) Recommendations:

- Immediate coronary angiography (and PCI when indicated) should be performed in resuscitated out of hospital cardiac arrest patients when the initial ECG shows STEMI.
- Despite the absence of STEMI, it is reasonable to consider immediate angiography in patients that have a non-obvious cause of the arrest and an ischemic cause is deemed most likely on clinical grounds

Dr. Hicks' Commentary: ED physicians should advocate for their patients to go for immediate angiography +/- PCI when they have

non-diagnostic ECGs and a presumed cardiac cause of their out-of-hospital cardiac arrest.

The Modified Heart Score for Low Risk Chest Pain

The original 5 point HEART Score from the Netherlands: For patients at low risk for Major Adverse Cardiac Events (MACE) in the ED setting (i.e. PCI, CABG, death).

The HEART Score for Chest Pain Patients in the ED		
History	<ul style="list-style-type: none"> • Highly Suspicious • Moderately Suspicious • Slightly or Non-Suspicious 	<ul style="list-style-type: none"> • 2 points • 1 point • 0 points
ECG	<ul style="list-style-type: none"> • Significant ST-Depression • Nonspecific Repolarization • Normal 	<ul style="list-style-type: none"> • 2 points • 1 point • 0 points
Age	<ul style="list-style-type: none"> • ≥ 65 years • > 45 - < 65 years • ≤ 45 years 	<ul style="list-style-type: none"> • 2 points • 1 point • 0 points
Risk Factors	<ul style="list-style-type: none"> • ≥ 3 Risk Factors or History of CAD • 1 or 2 Risk Factors • No Risk Factors 	<ul style="list-style-type: none"> • 2 points • 1 point • 0 points
Troponin	<ul style="list-style-type: none"> • ≥ 3 x Normal Limit • > 1 - < 3 x Normal Limit • ≤ Normal Limit 	<ul style="list-style-type: none"> • 2 points • 1 point • 0 points
Risk Factors: DM, current or recent (<one month) smoker, HTN, HLP, family history of CAD, & obesity		
Score 0 – 3: 2.5% MACE over next 6 weeks → Discharge Home		
Score 4 – 6: 20.3% MACE over next 6 weeks → Admit for Clinical Observation		
Score 7 – 10: 72.7% MACE over next 6 weeks → Early Invasive Strategies		

HEART Score for Chest Pain Patients

This study used a single traditional troponin assay (not the high-sensitivity troponins that are increasingly being used) regardless of the timing of the troponin. Most EM providers would agree that a rate of MACE of 2.5% is not low enough to discharge patients from the ED. However, the *Modified* HEART Score lowered the risk of MACE to 0.6% by adding high sensitivity Troponins at 0 and 3 hours after arrival at the ED.

Modified HEART Score:

- HEART Score < 3, and
- Negative high sensitivity troponins at 0 and 3 hours

The rate of MACE in these patients was 0.6% within 6 weeks.

A subsequent study in March 2015 using the modified HEART score showed significant decreases in objective cardiac testing and median length of stay and increases in early discharge rates while maintaining a zero MACE rate at 30 days.

Another Approach to Low Risk Chest Pain (unpublished)

NICE (National Institute for Clinical Excellence) in the UK has suggested that negative high sensitivity troponins at 0 and 3 hours in any population, regardless of risk, may rule out ACS and patients can be discharged home for outpatient work up.

Additional FOAMed resources on the HEART Score & modified HEART score

Emergency Medicine Literature of Note

<http://www.emlitofnote.com/2013/12/time-to-move-to-heart-score.html>

ERCast with Amal Mattu

<http://blog.ercast.org/tag/heart-score/>

RebelEM

<http://rebelem.com/is-it-time-to-start-using-the-heart-pathway-in-the-emergency-department/>

Key References

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Chavez-Tapia e al. Meta-analysis: antibiotic prophylaxis for cirrhotic patients with upper gastrointestinal bleeding – an updated Cochrane review. Alimentary Pharmacology and Therapeutics. 34:509-518, 2011. Full PDF:

http://www.researchgate.net/profile/Christian_Gluud/publication/51252179_Meta-analysis_antibiotic_prophylaxis_for_cirrhotic_patients_with_upper_gastrointestinal_bleeding_-_an_updated_Cochrane_review/links/00b7d52b123e6e4ba000000.pdf

Bangalore, S & Hochman, JS. 2010. A routine invasive strategy for out-of-hospital cardiac arrest survivors: Are we there yet?

Circulation: Cardiovascular Interventions, 3: 197-9. Paper available at:

<http://circinterventions.ahajournals.org/content/3/3/197.full.pdf+html>

Backus BE, Six AJ, Kelder JC, et al. 2013. A prospective validation of the HEART score for chest patients at the emergency department. *Int J of Cardiology*, 168(3): 2153-8. Abstract available at:
<http://www.ncbi.nlm.nih.gov/pubmed/23465250>

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<http://circoutcomes.ahajournals.org/content/early/2015/03/03/CIRCOUTCOMES.114.001384>

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<http://www.ncbi.nlm.nih.gov/pubmed/18665203>