Update in Hospital Medicine 2016-2017

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Division of Hospital Medicine

Update in Hospital Medicine 2016-2017

• Updated literature
• March 2016 – March 2017

Process:
• CME collaborative review of journals
  • Including ACP J. Club, J. Watch, etc.
• Independent analysis of article quality
• Thank you to Brad Monash, Ed Vasilevskis, Rachel Thompson, Chad Miller

Update in Hospital Medicine 2016-2017

Chose articles based on 3 criteria:
1) Change your practice or teaching
2) Modify your practice or teaching
3) Confirm your practice or teaching

• Hope to not use the words:
  • Student’s t-test, meta-regression, Mantel-Haenszel statistical method, etc.
  • Focus on breadth, not depth
Update in Hospital Medicine 2016-2017

- Major reviews/short takes
- Case-based format
- Multiple choice questions

Syllabus/Bookkeeping

- No conflicts of interest
- Final presentation available by email
  sharpeb@medicine.ucsf.edu

Case Presentation

You are on the teaching service and hearing about a holdover admission from the nightfloat.

She describes an 83 year-old woman with a history of asthma, HTN, and chronic kidney disease (CKD) who presented after a syncopal episode at dinner with her family.

She described the sudden onset of loss of consciousness just after ordering dessert. She had no prodromal symptoms and no prior episodes of syncope.
Case Presentation

In the Emergency Department, her vital signs were normal (including orthostatics) and her exam was unremarkable. Her electrocardiogram (ECG) was sinus with new lateral T-wave inversions; troponin I negative.

The etiology of her syncope was unclear. She was admitted for observation.

During the assessment and plan, the nightfloat asks, “I’m wondering, how often in patients with syncope from an unclear cause is it from a pulmonary embolism (PE)?”

How do you respond to the nightfloat about the rate of PE in syncope of unclear cause?

A. It’s low, less than 5%.
B. If I remember right, it’s about 17%.
C. It’s a lot higher than you would think – like 25% or so.
D. Who cares, the ED is going to get the CT scan anyway.
E. What do you think the rate of PE is?

PE in Syncope

Question: How common is PE in patients admitted to the hospital with syncope?

Design: Prospective study, 11 hospitals in Italy, hospitalized for syncope, age > 18 years. Standard evaluation for syncope

- Applied simplified Wells & d-dimer to all patients
- If "high-risk" → CT angiogram or V/Q scanning
- Of 2584 screened, 560 admitted* to the hospital
- Average age 76 years old

Results

• Cause of syncope identified in 355 patients (63.4%)
• PE ruled out by Wells/d-dimer in 330 pts. (58.9%)

<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>PE in Syncope (overall)</td>
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<tbody>
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<td></td>
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</tr>
<tr>
<td></td>
<td>(95% CI 19.4%-31.3%)</td>
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</tbody>
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<table>
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<tr>
<th>PE in Syncope (other cause)</th>
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<tbody>
<tr>
<td></td>
<td>12.7%</td>
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<tr>
<td></td>
<td>(95% CI 9.2%-16.1%)</td>
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</tbody>
</table>

- Main or lobar PE in ~ 67%
- Tachypnea, tachycardia, hypotension, signs of DVT more common in those with PE
How do you respond to the nightfloat about the rate of PE in syncope of unclear cause?

A. It’s low, less than 5%.
B. If I remember right, it’s about 17%.
C. It’s a lot higher than you would think – like 25% or so.
D. Who cares, the ED is going to get the CT scan anyway.
E. What do you think the rate of PE is?

Case Presentation

In the moment, you apply the simplified Wells and she is “low probability.” A d-dimer is added on which is low.

She remains on telemetry and has no further events. After a full evaluation, the cause of the syncope is unclear.

On the day of discharge, she asks, “You know, my doctor says I have ‘asthma’ but I’ve never had it before – do you think I have asthma?”

Short Take: Diagnosis of Asthma

In a prospective cohort study, 701 adults diagnosed with asthma in the previous 5 years underwent spirometry, bronchial challenge, and/or tapering of asthma medications.

Asthma was ruled out in 33.1%. Most had not had spirometry.

Most were felt to have something benign as the cause (e.g. allergic rhinitis).

Case Presentation

You discuss the need to get a full evaluation as an outpatient and she is discharged after one night in the hospital.

Unfortunately, she is readmitted to your team 2 weeks later at the end of your attending stretch. She presented with fever, cough, and shortness of breath and was diagnosed with community-acquired pneumonia (CAP).

She is treated with levofoxacin (cephalosporin allergy) and slowly improves over 48 hours.

Case Presentation

On the morning of hospital day 3, she feels well, has normal vital signs (on room air), and is eating and taking pills.

The team decides he is stable for discharge. The intern turns to you and asks, “How long do you think we should treat her for her community-acquired pneumonia (CAP)?”

How do you respond to the intern’s question – how long should her total antibiotic course be?

A. 3 days  
B. 5 days  
C. 7 days  
D. 10 days  
E. 14 days  
F. Who cares. She probably won’t take it anyway. I hate my job.

Treatment Duration for CAP

Question: What is the optimal duration of antibiotics in patients hospitalized with CAP?

Design: Randomized, controlled; non-blinded, non-inferiority trial

Hospitalized for CAP, age > 18 years-old

- All patients treated for 5 days
- Randomized to stopping vs. continuing antibiotics

Stop
- No fever for 48°
- 0-1 abnormal vitals

Continue
- Duration determined by MD

Results

- A total of 312 patients, 40% class IV or V (not ICU)
- Most received a fluoroquinolone (80%)

<table>
<thead>
<tr>
<th>Outcome</th>
<th>5 Days</th>
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<tbody>
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<td>Clinical Success (10d)</td>
<td>56.3%</td>
<td>48.6%</td>
<td>0.18</td>
</tr>
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<td>Clinical Success (30d)</td>
<td>91.9%</td>
<td>88.6%</td>
<td>0.33</td>
</tr>
<tr>
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<td></td>
<td></td>
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<tr>
<td>Mortality (30d)</td>
<td>2.1%</td>
<td>2.2%</td>
<td>0.99</td>
</tr>
<tr>
<td>Median Duration of Abx</td>
<td>5 days</td>
<td>10 days</td>
<td>0.001</td>
</tr>
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</table>

- A total of ~70% got 5 days in the intervention group
- No difference for sicker patients
- Readmissions at 30 days lower in shorter-course

Treatment Duration for CAP

Question: What is the optimal duration of antibiotics in patients hospitalized with CAP?

Design: Randomized, controlled; non-blinded; non-inferiority trial Hosp. for CAP, age > 18 yo

Conclusion: In CAP, if afebrile x 48° & stable vitals, 5 days non-inferior to longer course;
No diff. in clinical outcomes; Less antibiotics

Comments: Well done RCT, generalizability?
Confirms prior studies/guidelines
For most patients, 5 days is enough
Use your judgement, can treat longer
but 7 days usually enough

How do you respond to the intern’s question – how long should his total antibiotic course be?

A. 3 days
B. 5 days
C. 7 days
D. 10 days
E. 14 days
F. Who cares. She probably won’t take it anyway. I hate my job.
Case Presentation

You and the team decide to treat with 5 days total and she is discharged. 

As you’re walking down the hall to round on the next patient, the medical student asks, “Seems like we never culture anything in pneumonia. Has anyone ever done PCR on sputum to see what’s in there in CAP?”

Short take: Molecular Testing in CAP

A total of 323 patients with CAP (U.K.) had sputum collected on admission. All samples were tested with real-time PCR for 26 respiratory viruses and bacteria.

A pathogen was confirmed in 87% of patients. *H flu* (40.2%) and *Strep pneumo* (35.6%) were the most common bacteria.

Viruses were present in 30% but 82% of these were co-detections with bacteria.

Case Summary

Definitely

1. Recognize PE may be common in patients admitted with syncope.

Consider

1. Up to 1/3 of adults diagnosed with asthma may not have asthma.
2. Shorter courses of antibiotics (5 days) in patients with CAP who are afebrile with stable vital signs.
3. A future state when we use real-time PCR to improve pathogen detection in CAP.

Pair Share Exercise
You are on call and the intern on your team presents the next case.

She describes a 63 year-old man with a history of COPD and back pain who presented with 1-2 days of productive cough, pleuritic chest pain, and shortness of breath.

On presentation, his vitals were temperature 37.1°C, blood pressure 110/65, heart rate 110, respiratory rate 28, and oxygen saturation 87% on room air, 96% on 2 liters.

His exam is notable for distant expiratory wheezes diffusely. His white blood cell count is 9,000 and his CXR is clear.

The intern states that she thinks this is a COPD exacerbation. Yet, there was no clear trigger for the exacerbation.

You ask the intern, “In patients with unexplained COPD exacerbations, how often do we need to worry about pulmonary embolism (PE)?”
How does the intern respond to your question about the rate of PE in unexplained COPD exacerbations?

A. It has to be low – maybe 5%?
B. I don’t know, about 17% like in syncope?
C. Must be more than in syncope so let’s say 40%?
D. Who cares, the ED is going to get the CT scan anyway.
E. What do you think the rate of PE is?

Pulmonary Embolism in COPD

Question: How common is PE in patients with an unexplained COPD exacerbation?

Design: Systematic review & meta-analysis; patients with unexplained COPD exacerbations all got CT-angiography

- Total of 7 studies, 859 patients

Results

<table>
<thead>
<tr>
<th>PE in COPD Exacerbations</th>
<th>Prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>16.1%</td>
</tr>
<tr>
<td>(95% CI 8.3%-25.8%)</td>
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</tbody>
</table>
**Results**

<table>
<thead>
<tr>
<th>Location</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulmonary artery or lobar</td>
<td>67.5%</td>
</tr>
<tr>
<td>Subsegmental</td>
<td>32.5%</td>
</tr>
</tbody>
</table>

**Prevalence**

- PE in COPD Exacerbations: 16.1% (95% CI 8.3%-25.8%)

### Predictors of PE:

1. Pleuritic chest pain (50% vs 25%)
2. Syncope/hypotension

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**Pulmonary Embolism in COPD**

**Question:** How common is PE in patients with an unexplained COPD exacerbation?

**Design:** Systematic review & meta-analysis; patients with unexplained COPD exacerbations; all got CT-angiography

**Conclusion:** PE in unexplained COPD was 16.1%; most (68%) met criteria for treatment; pleuritic chest pain & hypotension predict

**Comment:** Many smaller studies; most already admitted; consistent finding; PE is common in unexplained COPD exacerbations; consider applying prediction rules, ddimer?
How do you respond to the intern about the rate of PE in unexplained COPD exacerbations?

A. It has to be low – maybe 5%?
B. I don’t know, about 17% like in syncope?
C. Must be more than in syncope so let’s say 40%?
D. Who cares, the ED is going to get the CT scan anyway.
E. What do you think the rate of PE is?

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E. What do you think the rate of PE is?

Case Presentation

You get a d-dimer and it is high (3250 mcg/L). Per his Wells’ score, he has a low pre-test probability.

You order the CT angiogram and it is negative. He is treated for a COPD exacerbation.

Your team is rounding the next morning and you recommend that the intern sits down while talking with the patient.

“Why?” she asks, “All that does is make it seem like we’ve spent more time with him.”

Short take: Sitting at the Bedside

In a cluster randomized trial of sitting versus standing, patients whose physician sat were more likely to rate the M.D. highly on:

1) Listening carefully
2) Explaining clearly

- No change in patient perception of time together
- Sitting did not prolong the encounter

Case Summary

**Definitely**
1. Recognize PE is common in patients with unexplained COPD exacerbations.
2. Sit down when rounding on patients.

Case Presentation

A few weeks later after a vacation to Hawaii you're back on and get called to admit a 72 year-old man with a history of hypertension who presented with a few hours of hematemesis.

He is given an intravenous proton pump inhibitor (PPI) and transported to the ICU.

Case Presentation

An EGD is performed within a few hours and reveals a visible vessel in the gastric antrum which is treated with cautery. This is deemed to be a “high-risk bleeding ulcer.”

You are seeing the patient later that day and the pharmacist is there and asks, “Now that the EGD is done, what do you want to do with the PPI?”
How do you respond to the question about the PPI?

A. We can stop it since the ulcer was treated during the EGD.
B. This is a high-risk ulcer so we have to continue a PPI drip for 72 hours.
C. I think we can switch to twice daily IV PPI.
D. I think we can switch to twice daily PO PPI.
E. Tums®, Just Tums®, Tropical Fruit Tums®.

PPIs in Bleeding Ulcers

Question: For patients with peptic ulcer bleeding, what is the optimal route for the PPI?

Design: Systematic review & meta-analysis; RCTs high-risk ulcer bleeding; Oral vs. IV PPI (BID or other)

- High-risk peptic ulcers
  1) Active bleeding
  2) Visible vessel
  3) Adherent clot

Results

- Low risk for publication bias

<table>
<thead>
<tr>
<th>Outcome</th>
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<th>IV</th>
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### Results

- Low risk for publication bias

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<td>2.4%</td>
<td>NS</td>
</tr>
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<td>Length of Stay (d)</td>
<td>4.58</td>
<td>5.23</td>
<td>NS</td>
</tr>
</tbody>
</table>
**PPIs in Bleeding Ulcers**

**Question:** For patients with peptic ulcer bleeding, what is the optimal route for the PPI?

**Design:** Syst review & meta-analysis; 7 RCTs ulcer bleeding; oral vs. IV PPI

**Conclusion:** No difference in recurrent bleeding at 7 or 30 days; no difference in mortality or length of stay

**Comment:** Variable quality, only 7 studies; all RCTs; Acid suppression equivalent with PO

Add to prior data where intermittent = bolus/infusion PPI dosing

Can start with IV BID but change to PO when able

---

**How do you respond to the question about the PPI?**

A. We can stop it since they the ulcer was treated during the EGD.

B. This is a high risk ulcer so we have to continue a PPI drip for 72 hours.

C. I think we can switch to twice daily IV PPI.

D. I think we can switch to twice daily PO PPI.


---

**Case Presentation**

You switch to an oral PPI and he goes home the next day.

A few months later you see in the EHR that he has been admitted to the surgery service for gastrectomy. You notice this was caught by an “artificial nose” after biopsies were inconclusive.

You do a quick search to see what this artificial nose is all about....
**Short take: Nano-Nose**

A complex artificial intelligence nanoarray was used to analyze 2808 breaths from 1404 patients with different illnesses (e.g. cancer, infection, etc.).

By identifying unique volatile organic compounds (VOCs), the analyzer was able to accurately identify the illness 86% of the time.


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**Case Presentation**

He undergoes uncomplicated gastrectomy, does well, and is discharged.

Unfortunately six months later he is admitted to you with a malignant pleural effusion and has had progressive gastric cancer despite chemotherapy.

He receives an indwelling catheter, but he worsens and becomes confused and has progressive respiratory failure and acute kidney injury. His prognosis is quite poor.

---

**Case Presentation**

You meet with his wife and two children to discuss his goals of care.

You explain his current condition including the poor prognosis given the multi-organ failure and metastatic cancer. You state he has a less than 10% chance of surviving.

You ask her what she thinks his chance of survival is. How do you think she responds?

---

**How do you think she responds to your question about his chance of survival?**

A. "Sounds like it’s pretty bad, probably less than 10% chance."
B. "He’s gonna make it, I just know it."
C. "He is going to survive this – he has been strong and a fighter all his life."
D. "I just know he’s not going to survive – I don’t think he can make it."
E. It was hard to come up with an appropriate “joke” answer for this one. But, if you’re the one person that has to answer E, go right ahead.
**Discordance About Prognosis**

**Question:** How often do physicians and surrogates disagree about prognosis in the ICU?

**Design:** Single center, prospective, cohort study, 4 ICUs; total of 229 surrogates
Mixed methods, quantitative & interview

- All patients ventilated with respiratory failure
- All had high estimated mortality (< 40% survival)
- Had physicians & surrogates estimate % survival
- Interviewed surrogates afterward

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**Results**

- Patients were medical (57%), surgical (22%), & neurosurgical (16%)

<table>
<thead>
<tr>
<th>Physician-Surrogate Discordance*</th>
<th>Incidence</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>53%</td>
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</table>

- Most misunderstanding & differences in beliefs
- Total of 43% more optimistic

* A > 20% difference
Results

<table>
<thead>
<tr>
<th>Surrogate Optimism</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Need to maintain optimism</td>
<td>48%</td>
</tr>
<tr>
<td>Patient’s unique strength</td>
<td>33%</td>
</tr>
<tr>
<td>Religious/spiritual beliefs</td>
<td>27%</td>
</tr>
</tbody>
</table>

- Physicians more accurate than surrogates (C statistic 0.83 vs. 0.74, p=0.008)

Discordance About Prognosis

Question: How often do physicians and surrogates disagree about prognosis in the ICU?

Design: Single center, prospective, cohort study, 4 ICUs; total of 229 surrogates

Conclusion: Physicians & surrogates often disagree re: prognosis; surrogates more optimistic
Optimism from hope, patient strength, religious/spiritual beliefs

Comment: May not be generalizable; selection bias
Concordant with prior smaller studies
Recognize surrogates may not believe estimates/disagree
Address misunderstanding vs. beliefs

How do you think she responds to your question about his chance of survival?

A. "Sounds like it’s pretty bad, probably less than 10% chance."
B. "He’s gonna make it, I just know it."
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E. It was hard to come up with an appropriate "joke" answer for this one. But, if you’re the one person that has to answer E, go right ahead.
Case Summary

Definitely
1. Change to PO PPI when able in patients with high-risk peptic ulcer bleeding.

Consider
1. A future state where breath samples will be analyzed using nanotechnology.
2. In critically ill patients, surrogates will often be more optimistic.

Case Summary

Definitely
1. Recognize PE may be common in patients admitted with syncope.

Consider
1. Up to 1/3 of adults diagnosed with asthma may not have asthma.
2. Shorter courses of antibiotics (5 days) in patients with CAP who are afebrile with stable vital signs.
3. A future state when we use real-time PCR to improve pathogen detection in CAP.

Case Summary

Definitely
1. Recognize PE is common in patients with unexplained COPD exacerbations.
2. Sit down when rounding on patients.
“What should I do about eating when I am sick? I’ve always been told to feed a cold; starve a fever...

...Is there truth to that??”

Genetically identical mice were infected with a bacteria (Listeria) or a virus (influenza) and then either force-fed or starved.

<table>
<thead>
<tr>
<th>Survival (10 d)</th>
<th>Force-Fed</th>
<th>Starved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bacterial Infection</td>
<td>0%</td>
<td>60%</td>
</tr>
<tr>
<td>Viral Infection</td>
<td>78%</td>
<td>11%</td>
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Glucose appeared to be the key driver of mortality in bacterial infections. It is unclear if there are implications for humans.