Updates in Hospital Medicine

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Updates in Hospital Medicine 2013

Chose articles based on 3 criteria:
1) Change practice
2) Modify/Tweak practice
3) Confirm practice

- Hope to avoid the words
  - Markov model, regression analysis, Student’s t-test
- All articles not treated equally
- Breadth, not depth

Update in Hospital Medicine 2013

Major reviews/short takes
Case-based format
Will ask for audience response

Updates in Hospital Medicine 2013

- Articles From 2012 and early 2013

Process:
- CME collaborative review of journals
  - Including ACP J. Club, J. Watch, etc.
- 3 Hospitalists Ranked articles
  - Definitely include, can include, don’t include

Syllabus/Bookkeeping

- No conflicts of interest
- Final presentation available by email:
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Case Presentation

You are admitting a 55 year-old Cantonese-speaking man with a history of cirrhosis from hepatitis B who presented with 2 days of abdominal pain and one episode of coffee-ground emesis.

On admission, his vitals were stable and he had moderate ascites but minimal abdominal tenderness. His initial hemoglobin was 9.5 g/dL (his baseline is around 9 g/dL).

Six hours later his repeat hemoglobin was 7.8 g/dL but he remained hemodynamically stable with no further overt bleeding.

While coming out of the room in the morning, the bedside nurse comments, "Did you see his hemoglobin? Do you want a transfusion?"

How do you respond to the nurse’s question?

A. We should generally transfuse to get to a hemoglobin of 10 g/dL.
B. We shouldn’t transfuse until the hemoglobin gets below 7 g/dL.
C. There’s no great evidence – we just transfuse when “clinically indicated.”
D. We’ll transfuse when the gastroenterologist tells us to transfuse.

Transfusion in Upper GI Bleeding

Question: When should we transfuse in the setting of an acute upper GI bleed?

Design: RCT, 921 pts, acute GI bleeding with hematemesis or melena; Restrictive (7g/dL) vs. liberal (9g/dL)

- Excluded if massive GI bleed or very low risk
- All patients got EGD within 6 hours

Transfusion for target Hgb 7
Transfusion for target Hgb 9

Villanueva et al. AEM 2013;368:11.

Optimal Transfusion in UGIB

Results:

Transfusion for target Hgb 7
95% Survival
10% Rebleeding

Transfusion for target Hgb 9
91% survival
16% Rebleeding

- Survival at 6 weeks was significantly higher in the restrictive target group compared to the liberal target.

How do you respond to the nurse’s question?

• The survival difference most pronounced in mild cirrhosis.

• No survival difference in severe cirrhosis.
Transfusion in GI Bleeding

Question: When should we transfuse in the setting of an acute GI bleed?

Design: RCT, 921 pts, acute upper GI bleeding; Restrictive (7g/dL) vs. liberal (9g/dL)

Conclusion: Restrictive threshold decreased transfusions, rebleed, mortality; fewer adverse events; poss. not class C cirrhosis

Comment: Single center, not blinded; early EGD, exclude massive bleeding
Transfusion may impair hemostasis, increase intestinal blood flow; infection?
Should decrease transfusion threshold.


How do you respond to the nurse’s question?

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B. We shouldn’t transfuse until the hemoglobin gets below 7 g/dL.
C. There’s no great evidence – we just transfuse when clinically indicated.
D. We’ll transfuse when the gastroenterologist tells us to transfuse.

What should you do about restarting your patient’s aspirin?

A. Restart ASA when Hgb has stabilized
B. Restart ASA + a PPI when Hgb has stabilized
C. Restart ASA in four weeks
D. Restart ASA in eight weeks
E. Never. List aspirin as one of his “allergies.”

Can ASA be restarted safely after the diagnosis of an ASA related peptic ulcer?

Our case continues...

We decide to hold off on transfusion.

Endoscopy demonstrates a clean base, shallow peptic ulcer, most likely from his recent aspirin use.

Could we continue ASA?

Endoscopy demonstrates a clean base, shallow peptic ulcer, most likely from his recent aspirin use.

Could we continue ASA?

Endoscopy demonstrates a clean base, shallow peptic ulcer, most likely from his recent aspirin use.

Could we continue ASA?
Esomeprazole Alone Compared with Esomeprazole Plus Aspirin for the Treatment of Aspirin-Related Peptic Ulcers

**Design:**
- 178 patients with endoscopically confirmed peptic ulcers who were taking daily ASA
- Excluded patients with an acute bleed

Treated with 40mg esomeprazole + 100mg ASA
- Treated with 40mg esomeprazole

**Primary outcome:** Healing on 8 week endoscopy, complications of bleeding/perforation


**Results:**
- 178 patients with endoscopically confirmed peptic ulcers who were taking daily ASA
- Excluded patients with an acute bleed

Treated with 40mg esomeprazole + 100mg ASA
- Treated with 40mg esomeprazole

**Ulcer healing:**
- 81.5%
- 82.5%

**Bleeding or Perforation Events:**
- 0
- 0

**Conclusion:**
Aspirin-related peptic ulcer disease treated with esomeprazole healed at the same rate with or without continued use of 100 mg of daily aspirin.

**Comment:**
Small study, limited power. No apparent major effect on ulcer healing with PPI. Study did not include pt with acute GIB or acute medical illness.

Continuation of Low-Dose Aspirin Therapy in Peptic Ulcer Bleeding: A Randomized Trial. Ann Intern Med; 2010;152 (January 5): 1-9

All received high dose IV PPI then oral therapy

8/78 patients (10%) in the ASA group had recurrent bleeding
- 2 non-fatal acute ischemic events

4/78 patients (5%) in the placebo group had recurrent bleeding
- 4 non-fatal acute ischemic events

30 day mortality 1.3%
30 day mortality 9%

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What should you do about restarting your patient’s aspirin?

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Case Continues

Given he is a cirrhotic you want to start antibiotics for empiric treatment of SBP. But he is PCN allergic (was told as a child he threw up with PCN).

Is there anything you can do to test if he is truly allergic?

Review of the Evidence: Antibiotics in Cirrhosis with GI bleed

• **Methods:** 12 trials comparing antibiotics to placebo in cirrhotics presenting with upper GI bleeding.

• **Results:**
  - 21% decrease in overall mortality
  - 57% decrease in mortality from bacterial infections
  - 71% fewer episodes of SBP
• **# needed to treat of 5 to prevent 1 death**

Take-Home Points

**Stop:**
*Transfusing patients with an UGIB and a hemoglobin >7 g/dL*

**Start:**
*Restarting ASA along with a PPI in non-actively bleeding peptic ulcers*
*Skin testing patients to determine if they are PCN allergic*

**Remember:**
*Empiric Antibiotics have a mortality benefit in cirrhotics with an upper GI bleed*
Case Presentation

A 69 year-old man with a history of severe COPD and frequent admissions for *C. difficile*, presents with a week progressive shortness of breath, increased cough, and increased sputum production. ("a little more yellow than usual, like custard")

On presentation, he is afebrile, tachycardic, and mildly hypoxic (87% on room air). He has poor airflow on exam. His WBC is 8.3 x 10^9/L. His chest x-ray does not show pneumonia.

Do you prescribe antibiotics? If so, which antibiotic do you choose?

- A. No antibiotics if he is improving
- B. Yes, levofloxacin
- C. Yes, azithromycin
- D. Yes, doxycycline
- E. Yes, other
- F. Is this a set up? Do you want to give him *C. difficile*?

Antibiotics in COPD Exacerbation

Question: In COPD exacerbations, do antibiotics provide a benefit in patients given steroids?

Design: Retrospective cohort study; 53,000 pts (> 40 yo) with a COPD exacerbation; No respiratory failure or ICU admits; All received systemic steroids.

**Stefan HS, et al. Chest.2013;143:82.**

- Compared those given antibiotics in the first 2 days vs. not
- Did multi-variable analysis and matched patients in both groups to control for variables
- Then looked at effectiveness of various antibiotics

Results

- 86% were given antibiotics in first 2 days
- Most common antibiotic: quinolone

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Abx</th>
<th>No Abx</th>
<th>OR</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-hospital mortality</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Readmission for COPD</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Antibiotics in COPD Exacerbation

Question: In COPD exacerbations, do antibiotics provide a benefit in patients given steroids?

Design: Retrospective cohort study; 53,000 pts (> 40 yo) with a COPD exacerbation; No ICU admits;

Conclusion: In COPD exacerbations, antibiotics decrease mortality when added to steroids
May decrease 30-d readmission; no antibiotic better than others

Comments: Retrospective, database, confounders, etc. Confirms prior studies; Most pts admitted w/ COPD exac. should get abx

Review of the Evidence: Antibiotic Duration COPD

- Methods: Systematic review of RCT ≤5 days vs. 5 days antibiotics for COPD
- Results: No difference in clinical cure (repeat exacerbations) at short term <25 day and long term >25 day follow up

Moussaoui, Thorax 2008;63:415–422
His cough and DOE exertion improve with antibiotic and you are thinking of sending him home.

You wonder how long his course of steroids should be?

A. 3 days
B. 5 days
C. 7 days
D. 10 – 14 days with taper
E. Antibiotics and steroids? You think I don’t know where this is going? Don’t blame me when he gets *C. difficile* again.

**Results**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>5 day tx</th>
<th>14 days tx</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exacerbation within six months</td>
<td>35.9%</td>
<td>36.8%</td>
<td>NS</td>
</tr>
<tr>
<td>Time to exacerbation</td>
<td>43.5 days</td>
<td>29 days</td>
<td>NS</td>
</tr>
</tbody>
</table>

• No difference in mortality, need for mechanical ventilation or quality of life
• Significantly reduced steroid exposure over 6 months

**Steroids in COPD Exacerbation**

**Question:** In COPD exacerbations, what is the optimal duration of steroids?

**Design:** Randomized placebo controlled; double blind; non-inferiority trial
Past or present smokers (no asthma), >40

• 314 patients presenting to the ED, including ICU pts
• Compared prednisone 40mg for 5 versus 14 days
• All received systemic antibiotics and nebulizer therapy

**Conclusion:** In COPD exacerbations, a 5 day steroid course not inferior to 14 days of therapy

**Comments:** Well done RCT, first to include ICU patients. Confirms prior observational studies.
**Review of the Evidence: IV vs. PO steroids**

- **Methods:** Review of 80,000 non-ICU patients treated with oral or IV steroids for COPD.
- **Results:** No difference in initiation of mechanical ventilation, mortality, or readmission for COPD within 30 days of discharge.

Lindauer, JAMA, June 2010—Vol 303, No. 21

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**Short Take: Smells like c.diff**

Beagle trained to identify the smell of *C. difficile* in stool samples and sit or lie down with a positive result.

Performance was tested on:
- 100 stool samples (50% positive)
- 300 patients (30 cases and 270 controls).

Bomers, MK et al. BMJ; 2012:345, 7-9

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**Case Continues**

You decide not to continue prednisone beyond 5 days and are now ready to discharge your patient.

You run into the nurse in the halls and he says “It smells like C.diff!”

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**Short Take: C.diff sniffing dogs**

<table>
<thead>
<tr>
<th>Test</th>
<th>Sensitivity</th>
<th>Specificity</th>
<th>Speed</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursing Staff</td>
<td>55-82%</td>
<td>77-83%</td>
<td>Minutes</td>
<td>Free</td>
</tr>
<tr>
<td>C. Diff Beagle (stool samples)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. Diff Beagle (patient)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Bomers, MK et al. BMJ; 2012:345, 7-9

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**Short Take: C.diff sniffing dogs**

- Performed perfectly on Stool Samples
- Performed similar to conventional tests (have disease if lies down, sometimes doesn’t lie down with positive patients)

Bomers, MK et al. BMJ; 2012:345, 7-9

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**Should you believe him? Can you tell *C. Difficile* simply by its smell?**
Case Continues

When your patient’s WBC returns at 24, you accept that he won’t be going home today.

When you finally do see him, he asks about the effectiveness of stool transplant for *C. difficile*.

You reply:

A. Stool transplant has been shown to be as effective as medications in patients with recurrent *C. difficile*.

B. Stool transplant has lower recurrence rates than most medical therapies.

C. Stool transplant has low rates of adverse events.

D. All of the above

E. Ew, gross.

Stool transplant for *C. difficile*

**Question:** What is the efficacy of stool transplant in the management of *C. difficile*?

**Design:** Systematic review of observational trials; No RCT in this systematic review

- 27 articles involving 317 patients
- All patients had a diagnosis of recurrent or relapsing CDI
- Multiple modalities of infusion (NG tube, colonoscopy & enema)

**Stool transplant for *C. difficile***

**Question:** What is the efficacy of stool transplant in the management of *C. difficile*?

**Design:** Systematic review of observational trials

**Conclusions:** Stool transplant effective treatment for recurrent *C difficile* to prevent future episodes. An RCT confirmed these results.

**Comments:** Unclear when to use in course of therapy. Unclear best mechanism. Consider in the most refractory cases.
You reply:
A. Stool transplant has been shown to be as effective as medications in patients with recurrent *C. difficile*.
B. Stool transplant has lower recurrence rates than most medical therapies.
C. Stool transplant has low rates of adverse events
D. All of the above
E. Ew, gross.

Short Take: Doxycycline for *C. difficile*

- Retrospective cohort study of 2305 adults who received at least 1 dose of ceftriaxone for any diagnosis after admission to San Francisco General Hospital.
- In hospitalized adults receiving ceftriaxone, co-administration of doxycycline was associated with a 27% lower risk of developing *C. difficile* infection.


Take home points

Start:
- Prescribing antibiotics right away in COPD exacerbations
- Referring those with relapsing *C. diff* for stool transplant

Stop:
- Prescribing long courses of steroids for COPD (or IV steroids)
- Prescribing long courses of IV antibiotics

Consider:
- Use Doxycycline for atypical coverage in those with a hx of CDI

You reply:
A. Stool transplant has been shown to be as effective as medications in patients with recurrent *C. difficile*.
B. Stool transplant has lower recurrence rates than most medical therapies.
C. Stool transplant has low rates of adverse events
D. All of the above
E. Ew, gross.

Case Continues

You realize that every subsequent COPD exacerbation or PNA is going to increase his chances of *C. difficile* recurrence.

You wonder if there is an antibiotic that could minimize his chances of getting *C. difficile* every time he is hospitalized.

Case Presentation

You are caring for a 65yo man with Stage IV NSCLC diagnosed 3 months ago who presented with fevers.

He completed his last round of chemotherapy 2 weeks ago and you've diagnosed him with pneumonia.

Results: Eating & Bacteremia


Short Take: Cultures & PO Intake

An observational cohort study of 1179 hospitalized patients who had blood cultures drawn, mostly in the setting of fever.

Reviewed nurse-documented food intake in the meal before cultures were drawn.

Case Presentation

Two days into his hospital stay, the bedside nurse informs you that he has spiked a fever to 38.5C.

As you prepare to order blood cultures the nurse says with a gleam in her eye: "I'll bet you those blood cultures will be negative."

You treat him for pneumonia and the blood cultures remain negative.

You note that his right arm (which has his PICC line) is larger than his left. An ultrasound confirms a PICC associated thrombosis.

The patient turns to you and says, "I was told these things are safe, how often does this happen with PICC lines?"
Short Take: PICC Lines and Risk of VTE
Large meta-analysis looking at 52 studies asked 2 questions:
1) Overall Incidence of VTE with PICC lines?

<table>
<thead>
<tr>
<th>Population</th>
<th>VTE Incidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>4.9% (4.1-5.6)</td>
</tr>
<tr>
<td>Cancer</td>
<td>6.7% (4.7-8.6)</td>
</tr>
<tr>
<td>ICU</td>
<td>13.91% (7.7-20.1)</td>
</tr>
</tbody>
</table>

2) Risk of VTE with PICC versus other CVCs

<table>
<thead>
<tr>
<th></th>
<th>DVT</th>
<th>PE</th>
</tr>
</thead>
<tbody>
<tr>
<td>PICC vs CVCs</td>
<td>OR 2.55 (1.5-4.2)</td>
<td>None reported</td>
</tr>
</tbody>
</table>

Case Presentation
The patient is started on a heparin infusion to treat the upper extremity DVT.

Two days later you notice the patient’s platelets have dropped from 240,000 to 120,000. You don’t see any clear cause for the drop and you are wondering if he should be worked up for heparin-induced thrombocytopenia (HIT).

How do you decide if this could be HIT and he should get a work-up?

A. If the platelets fell by 50% he should get a work-up.
B. If he hasn’t had a thrombosis yet, then you don’t need to worry about it.
C. You can use a validated scoring tool to decide if he needs a work-up.
D. Like many decisions in medicine, you rub your chin, look off into the distance, make an audible "hmph" sound, shrug your shoulders, and, well, guess.
Heparin-induced thrombocytopenia

Question: Can we use a pretest scoring system to predict the likelihood of HIT?

Design: Systematic review & meta-analysis; 13 studies, 3068 patients; Cohort studies of the 4Ts scoring tool

Update in Hospital Medicine

Results

<table>
<thead>
<tr>
<th>Risk</th>
<th>Prevalence</th>
<th>PPV</th>
<th>NPV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>55.8%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intermediate</td>
<td>36.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>8.2%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


Heparin-induced thrombocytopenia

<table>
<thead>
<tr>
<th>4T Category</th>
<th>2 Points</th>
<th>1 Point</th>
<th>0 Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thrombocytopenia</td>
<td>Fall &lt;50%, nadir &lt;20</td>
<td>Fall 30-50%, nadir 20-35</td>
<td>Fall &gt;50%, nadir &gt;35</td>
</tr>
<tr>
<td>Timing of Pr Fall</td>
<td>Clear onset days 5-10, +1 day with prior exposure* within 30 days</td>
<td>Clear onset with days 5-10 and +1 day with prior exposure &gt;30 days</td>
<td>Clear onset with days 5-10 and +1 day with prior exposure &gt;30 days</td>
</tr>
<tr>
<td>Thrombosis or other sequelae</td>
<td>New thrombosis, skin necrosis, other systemic reaction post heparin</td>
<td>Progressive or recurrent thrombosis, non-heparin-induced skin lesions, suspected thrombosis</td>
<td>None</td>
</tr>
<tr>
<td>Other causes of thrombocytopenia</td>
<td>None</td>
<td>Possible</td>
<td>Definite</td>
</tr>
</tbody>
</table>

Update in Hospital Medicine

Results

<table>
<thead>
<tr>
<th>Risk</th>
<th>Prevalence</th>
<th>PPV</th>
<th>NPV (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>55.8%</td>
<td>0.998</td>
<td>(0.97-1.0)</td>
</tr>
<tr>
<td>Intermediate</td>
<td>36.0%</td>
<td>0.14</td>
<td>(0.09-0.22)</td>
</tr>
<tr>
<td>High</td>
<td>8.2%</td>
<td>0.64</td>
<td>(0.4-0.82)</td>
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</tbody>
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Heparin-induced thrombocytopenia

Question: Can we use a pretest scoring system to predict the likelihood of HIT?

Design: Systematic review & meta-analysis; Cohort studies of the 4Ts scoring tool;

Conclusion: Most pts are low-risk for HIT; 4Ts good to exclude possibility of HIT; Intermediate/high risk need further eval.

Comment: Some study heterogeneity, no RCT of use in practice; Likely should be using this when we think about HIT – avoid unnecessary/costly work-ups;


Case Presentation

You calculate his 4T score and he is low risk. You continue the heparin infusion.

Unfortunately, two days later, he develops massive hemoptysis and suffers a respiratory arrest requiring intubation and is started on pressors.

He is transferred to the ICU.

How do you decide if this could be HIT?

A. If the platelets fell by 50% he should get a work-up.
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Case Presentation

You meet with his son (DPOA) describe his condition and state clearly "It is unlikely he will survive. That means he is likely to die."

What do you think his estimated percent chance of survival is for his father based on this statement?

A. 0%
B. 5%
C. 50%
D. 30%
E. We should avoid being quantitative with patients or surrogates as they may not understand.

Case Presentation

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Interpretation of Prognostic Information

Question: How do surrogates interpret prognostic statements and why?
Design: Mixed qualitative/quantitative; 3 ICUs;
Approached surrogates of critically ill patients;
 Asked to interpret 16 prognostic statements,
estimate % survival

- Using a numeric probability scale (0-100%)
- Ranging from “he will definitely survive” to “definitely not”
- If discordant, asked why estimate was different

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Update in Hospital Medicine

Results

- Surrogates over-estimated prognosis when given survival estimates of < 50%;
- Some unaware of over-estimation
- Four main explanations:
  1) Need to express optimism
  2) Belief in patient’s fortitude
  3) Disbelief in physician ability to prognosticate
  4) Interpretation of prognosis as a “gist” and not a precise estimate

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Update in Hospital Medicine
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Short Take: Voluntary Urinary Retention

In a prospective study, healthy volunteers drank 250ml of water every 15 minutes while doing cognitive tests (had to hold it).

Voluntary urinary retention reduced decision-making speed and delayed retrieval from working memory (like a BAL of 0.05%).

Performance on cognitive tests returned to normal after micturition.


Take home points

Start:
• Using the 4Ts scoring system for HIT
• Understanding that surrogates may be overly optimistic if presented with poor prognostic information.

Stop:
• Waiting to go to the bathroom!

Consider:
• Use the risk of DVT associated with PICC lines