Update in Hospital Medicine 2015

- Updated literature
- Sept 2014 – Sept 2015

Process:
- CME collaborative review of journals
  - Including ACP J. Club, J. Watch, etc.
- Four hospitalists ranked articles
  - Definitely include, can include, don’t include

Thank you to Michelle Mourad, Will Southern, Amit Pahwa, Mel Anderson

Update in Hospital Medicine 2015

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

- Hope to not use the words
  - Mantel-Haenszel statistical method, meta-regression, Kruskal-Wallace test....
- Focus on breadth, not depth
Update in Hospital Medicine 2015

- Major reviews/short takes
- Case-based format
- Multiple choice questions
  
  Ebbinghaus’ Forgetting Curve
  (How much of something do we forget each day?)

  - very quick loss
  - 20 min (58% left)
  - 1 hour (44% left) ... already halfway gone!
  - 1 day (33% left)
  - 6 days (25% left)

Syllabus/Bookkeeping

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

You are long-call and your hard-working intern presents the next case.

She describes a 63 year-old man with a history of COPD and diabetes who presented with 3 days of fever, cough, and shortness of breath.

On presentation, his vitals were temperature 38.9°C, blood pressure 110/65, heart rate 100s, respiratory rate 28, and oxygen saturation 87% on room air, 96% on 2 liters.
Case Presentation

His exam was notable for diffuse expiratory wheezes and crackles at the right base. His white blood cell count is 18,000 and his CXR shows a clear RLL infiltrate.

The team has diagnosed him with community-acquired pneumonia (CAP) and a COPD exacerbation and is admitting him to the stepdown unit.

The intern states they will treat him with ceftriaxone and azithromycin (he has an allergy to doxycycline).

The resident then asks, "Hey, I read this New England Journal of Medicine study that showed that maybe we don’t need the atypical coverage for pneumonia. What do you think about this study?"

Antibiotic Treatment Strategies for Community-Acquired Pneumonia in Adults

Douwe F. Postma, M.D., Cornelis H. van Weerden, M.D., Leentie J.R. van Elden, M.D., Ph.D., Steven F.T. Thijssen, M.D., Ph.D., Andy I.M. Hoogmans, M.D., Ph.D., Jan A.J.W. Kruitman, M.D., Ph.D., Wim G. Boeree, M.D., Ph.D., Clara J. Compagne, M.D., Eva van der Wall, M.D., Jan M. Puts, M.D., Ph.D., Jan J. Oosterhaut, M.D., Ph.D., and Marc J.M. Bonten, M.D., Ph.D., for the CAPSTART Study Group

BACKGROUND

The choice of empirical antibiotic treatment for patients with clinically suspected community-acquired pneumonia (CAP) who are admitted to non-intensive care unit (ICU) hospital wards is complicated by the limited availability of evidence. We compared strategies of empirical treatment (allowing deviations for medical reasons) with beta-lactam monotherapy, beta-lactam–macrolide combination therapy, or fluoroquinolone monotherapy.

METHODS

In a cluster-randomized, crossover trial with strategies rotated in 4-month periods, we tested the noninferiority of the beta-lactam strategy to the beta-lactam–macrolide and fluoroquinolone strategies with respect to 90-day mortality, in an intention-to-treat analysis, using a noninferiority margin of 3 percentage points and a modified 90% confidence interval.
How do you respond to the resident about the recent NEJM study on treatment of CAP?

A. Regardless of that study, this sounds like a pretty typical pneumonia – it’s probably strep pneumo. Let’s just go with the ceftriaxone.

B. I think it’s a good study. We probably don’t need the atypical coverage in this case.

C. I think it’s a good study. But I don’t think it is enough to change practice; let’s stick with the ceftriaxone and azithromycin.

D. What do you think about that study?

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4. What do you think about that study?
**Treatment of CAP**

**Question:** Do patients with CAP admitted to a non-ICU setting need atypical coverage?

**Design:** Cluster-randomized, crossover trial, 7 hospitals in the Netherlands. 2283 pts. w/ CAP; mild-mod illness

1. β-lactam (amoxicillin, amox + clavulanate, 3rd-gen ceph.)
2. β-lactam + macrolide (azithro, clarithro, erythro)
3. Fluoroquinolone (levo or moxi)

- Antibiotics could be adjusted

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**Results**

- Nearly 35% got antibiotics before admission
- Only 2% had atypicals (Legionella, Mycoplasma)
- Deviation in ~ 25% of patients

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- β-lactam non-inferior to both
- No difference in adverse events
Treatment of CAP

Question: Do pts. admitted with CAP need atypical coverage?
Design: Cluster-randomized; 2283 pts.; β-lactam v. β-lactam + macrolide v. fluoroquinolone
Conclusion: β-lactam monotherapy non-inferior to regimens w/ atypical coverage; no difference in side effects
Comment: Well-done study, intention-to-treat
Generalizable? European study, pre-abx, antibiotic choices, long LOS, etc.
Not quite enough to change practice; β-lactam + macro/doxy or fluoroquinolone


How do you respond to the resident about the recent NEJM study on treatment of CAP?

A. I think regardless of the study, this sounds like a pretty typical pneumonia – it’s probably strep pneumo so let’s just go with the ceftriaxone.
B. I think it’s a good study and I think we probably don’t need the atypical coverage in this case.
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D. What do you think about that study?

Case Presentation

The resident nods but you get a sense she is skeptical of your analysis.

So you decide to pull out this article to bolster your argument:

Original Investigation

β-Lactam Monotherapy vs β-Lactam-Macrolide Combination Treatment in Moderately Severe Community-Acquired Pneumonia
A Randomized Noninferiority Trial

Nicole Gorn, MD; Daniel Gerret, MD; Sebastian Catholico, MD; DFN; Christian Chaud, MD; Gerhardt Eich, MD; Oliver Hutt, MD; MPh; Oliver Lamy, MD; Mathieu Mendez, MD, MPh; Pierre-Auguste Pelgratt, MD; Thomas Peneges, MD, PhD; Olivier Fuchsman, MD, MPh; Laurent Sessoli, MD; Stephane Hartn, MD, MSe; Arnaud Perrier, MD
Short Take: Treatment of CAP

In an RCT in Switzerland, 580 patients with mild-moderate CAP admitted to the hospital received β-lactam monotherapy or β-lactam + macrolide.

β-lactam monotherapy was not non-inferior (i.e. was inferior) in failure to reach clinical stability at day 7 (41.3% vs. 33.4%, p=0.07).

β-lactam monotherapy also led to higher rates of 30-day readmission (7.9% vs. 3.1%, p=0.01).


Case Presentation

The resident is, well, still not impressed.

But, the patient receives ceftriaxone and azithromycin.

Over lunch you are discussing the case with a colleague and she asks, “Are you giving the guy steroids for his pneumonia?”

“Steroids, for pneumonia?” you ask. She shows you this article.
What is the role for systemic corticosteroids in the management of CAP?

A. There is no role for steroids in CAP unless they are also having a COPD exacerbation.
B. Steroids may improve clinical outcomes in CAP but there is no mortality benefit.
C. Steroids reduce mortality in CAP.
D. Steroids? In pneumonia? Sure, if you want to kill the guy. Umm, it’s uh, like an infection. Duh.
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Steroids in CAP

Question: In community-acquired pneumonia (CAP), what is the effect of corticosteroids?

Design: Systematic review & meta-analysis; Total of 13 studies, 2005 patients; All RCT with steroids vs. placebo

- Variable drugs, doses, routes, durations
- Both moderate & severe pneumonia

## Results

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- Biggest benefits in sicker patients
- No major difference in side effects


Steroids in CAP

Question: In community-acquired pneumonia (CAP), what is the effect of corticosteroids?

Design: Systematic review & meta-analysis; Total of 13 studies, 2005 patients; All RCT with steroids vs. placebo, variable dose/route/duration

Conclusion: Systemic steroids in CAP may save lives; May lead to less need for ventilation, earlier stability, shorter LOS; no change in side effects

Comments: Many small studies, varied dose/route/duration; Probably a real benefit in a subset of patients; Need to figure out which patients, how much, and for how long – stay tuned.

What is the role for systemic corticosteroids in the management of CAP?

A. There is no role for steroids in CAP unless they are also having a COPD exacerbation.
B. Steroids may improve clinical outcomes in CAP but there is no mortality benefit.
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What is the role for systemic corticosteroids in the management of CAP?

A. There is no role for steroids in CAP unless they are also having a COPD exacerbation.
B. **Steroids may improve clinical outcomes but there is no mortality benefit.**
C. Steroids reduce mortality in CAP.
D. Steroids? In pneumonia? Sure, if you want to kill the guy. Umm, it’s uh, like an infection.
Case Presentation

You decide not to treat with steroids but will be following the literature and guidelines over the next 6-12 months.

He improves with treatment and supportive care. The blood cultures performed on admission (before antibiotics) remain negative so, once again, you end up treating empirically.

You wonder how often do we isolate a pathogen in community-acquired pneumonia (CAP).

Short Take: Microbiology of CAP

Community-Acquired Pneumonia Requiring Hospitalization among U.S. Adults

Short Take: Microbiology of CAP

In an prospective study of patients with CAP at five U.S. hospitals, all possible diagnostic tests were used to determine the causative organism.

There was no pathogen detected in 62% of patients.

Viruses were the most commonly isolated (22%) and *Streptococcus pneumoniae* was the most common bacteria isolated (5%).


Case Summary

**Definitely**

1. Continue providing atypical coverage to patients admitted with CAP.

**Consider**

1. Using systemic steroids in the management of CAP once we have a bit more evidence.
2. It is rare to isolate the causative agent in CAP and for now we’re stuck with treating empirically.
Case Presentation

The patient is discharged to finish a 7 day course of antibiotics.

Unfortunately, the patient is readmitted to you after your week off. This time he presented with a few hours of hematemesis.

He is given an intravenous proton pump inhibitor in the ED 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 in the afternoon 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 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 PPI.
D. What did the gastroenterologist say to do? He’s probably going to want to keep the guy here for a week. Argh.
How do you respond to the question about the PPI?

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PPI Treatment High-Risk Ulcers

Question: Is intermittent PPI dosing non-inferior to bolus + infusion in patients with high-risk bleeding ulcers?

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

80mg bolus + 72 hour infusion

**PPI Treatment High-Risk Ulcers**

**Question:** Is intermittent PPI dosing non-inferior to bolus + infusion in patients with high-risk bleeding ulcers?

**Design:** Systematic review & meta-analysis, RCT comparing intermittent vs. continuous PPI; high-risk ulcers

13 studies, 1733 patients

**Intermittent**
- Variable dose, frequency, route
- Most common: 40mg daily or BID

**Bolus**
- 80mg IV bolus + 8mg/hour infusion
- For 72 hours


**Results**

- No suggestion of publication bias

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Results

- No suggestion of publication bias

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<tr>
<td>Length of Stay</td>
<td>- 0.26 days</td>
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- No differences in 30-day bleeding, surgery, urgent intervention, or transfusions
- Oral and IV intermittent PPI similar

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PPIs in Bleeding Ulcers

**Question:** For patients with high-risk bleeding ulcers, what is the optimal route for the PPI?

**Design:** Syst review & meta-analysis; 13 RCTs high-risk ulcers; intermittent vs. bolus PPIs

**Conclusion:** Trend toward less bleeding at 7 days in intermittent group; no difference in 30 d bleeding, mortality, surgery, transfusions; Oral and IV PPI similar

**Comment:** Variable quality studies but all RCTs
- Enough acid suppression w/ intermittent?
- Dose & route unclear but probably don’t need the infusion; clear cost savings
- Probably PO BID once taking POs

How do you respond to your question about the PPI?

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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 PPI.**
D. What did the gastroenterologist say? I’m sure he’s going to want to keep the guy here for a week.
Case Presentation

He is changed to a BID PO PPI. Unfortunately, he continues to have intermittent bleeding over the next 24 hours.

He is a “hard stick” and the nurses and phlebotomists are having trouble getting blood draws.

Is there any risk in just putting in a temporary PICC line for blood draws?

Short Take: PICC Line Clotting

In an multicenter, retrospective study of 76,242 patients hospitalized in Michigan, 3790 received a PICC line in the hospital.

Compared to those with no PICC line, those who got a PICC had a 10X increase in upper-extremity DVT (nearly 3%).

Case Summary

Definitely
1. Use intermittent PPI dosing in patients with high-risk ulcers.

Consider
1. PICC lines place patients at high risk for the development of upper-extremity DVT.

Pair Share Exercise

[Graph showing Ebbinghaus' Forgetting Curve with data points for very quick loss at 20 min (58% left), 1 hour (44% left) already halfway gone, 1 day (33% left), and 6 days (25% left).]
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 acute diverticulitis and a 6cm diverticular abscess.

After discussion with the general surgeon and interventional radiologist, the decision is made to pursue IR drainage. He is treated with intravenous ertapenem.

He undergoes uncomplicated IR drainage of the abscess.

Case Presentation

After the procedure he feels well but continues to have a low-grade fever (38.1°C), mild abdominal pain, and a WBC of 14,000. Blood cultures are negative.

What is the appropriate duration of antibiotics for this complicated intraabdominal infection which has been treated by IR drainage?
What is the appropriate duration of antibiotics?

A. Four days more.
B. A total of 7 days.
C. A total of 10 days.
D. A total of 14 days.
E. For 2 days after evidence of SIRS has resolved.
F. Who cares. He probably won’t take it anyway. I hate my job.

What is the appropriate duration of antibiotics?

1. Four days more.
2. A total of 7 days.
3. A total of 10 days.
4. A total of 14 days.
5. For 2 days after evidence of SIRS has resolved.
6. Who cares. He probably won’t take it anyway. I hate my job.
Antibiotics Intra-abdominal Infection

Question: What is the appropriate duration of antibiotics in patients who have a complicated intra-abdominal infection?

Design: RCT of patients with a complicated intra-abdominal infection;
Total of 518 patients at 23 sites;

Complicated intraabdominal infection:
- Fever, WBC, or peritonitis
- Needed surgery or catheter drainage

Four days after source control

Two days after SIRS resolved; Max 10 days

Results

- 35% colon/rectal, 15% appy, 13% small bowel
- 33% treated with IR drainage

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<td>4 days</td>
<td>8 days</td>
<td>0.01</td>
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- Approximately 25% got longer courses (same in both groups)
- Time to diagnosis of infection much longer in “after SIRS” group
- Did not report on antibiotic side effects

Antibiotics Intra-abdominal Infection

Question: What is the appropriate duration of antibiotics intra-abdominal infection?

Design: RCT; compared 4 days after source control to 2 days after SIRS resolved;

Conclusion: No difference in surgical infection or death
- Four days led to fewer antibiotic days
- Longer antibiotics may delay diagnoses

Comment: RCT but ~ 25% did not follow protocol
- No clear harm to short-course (4 days)
- Likely most complicated abdominal infections should get 4 days after source control*

What is the appropriate duration of antibiotics?

A. Four days more.
B. A total of 7 days.
C. A total of 10 days.
D. A total of 14 days.
E. For 2 days after evidence of SIRS has resolved.
F. Who cares. He probably won’t take it anyway. I hate my job.
Case Presentation

He receives four more days of antibiotics total and is discharged home.

He ultimately gets surgical resection. Unfortunately, the pathology reveals colorectal cancer. He is found to have metastatic disease.

Five weeks later he is admitted to you with a malignant pleural effusion and has had progressive cancer despite chemotherapy.

Case Presentation

On hospital day one you decide to consult palliative care.

You wonder if there are evidence-based benefits to palliative care consultation in patients with end-stage cancer.
Short take: Costs and Palliative Care

In a prospective observational study at 5 hospitals with palliative care programs, in patients with advanced cancer, palliative care consultation in the first two days was associated with:

- Lower costs (-$2,280, p<0.001)
- Shorter LOS (-1.0 days, p<0.01)


Case Presentation

Palliative care is consulted and he receives an indwelling catheter for his malignant pleural effusion.

The oncologist has met with him and suggested he get more chemotherapy to improve his quality of life.

The patient asks you what you think. What do you tell him about the benefits of chemotherapy? He has good functional status (goes for walks, works in the yard).
What do you tell the patient about the benefit of chemotherapy for his advanced cancer?

A. It is likely to prolong your life.
B. It will improve your quality of life.
C. It will not prolong your life but will improve your quality of life.
D. It will not prolong your life and may make your quality of life worse.
E. I’m not an oncologist. But I did stay at a Holiday Inn Express last night.

What do you tell the patient about the benefit of chemotherapy for his advanced cancer?

1. It is likely to prolong your life.
2. It will improve your quality of life.
3. It will not prolong your life but will improve your quality of life.
4. It will not prolong your life and may make your quality of life worse.
5. I’m not an oncologist. But I did stay at a Holiday Inn Express last night.
Chemo in End-Stage Cancer

Question: In patients with end-stage cancer, what is the impact of chemotherapy on quality of life?

Design: Observational cohort study, pts. w/ metastatic cancer, prognosis <6 months
Total of 312 patients
Compared those who got chemo vs. not

- Controlled for other factors
- Quality of Life (QOL) per the caregiver

Results

- Lung, colon, pancreatic most common
- A total of 51% got chemotherapy
- Median survival 3.8 months

Prigerson HG, et al. JAMA Oncol. 2015;1:778
Results

- Lung, colon, pancreatic most common
- A total of 51% got chemotherapy
- Median survival 3.8 months

No difference in survival

Prigerson HG, et al. JAMA Oncol. 2015;1:778

Update in Hospital Medicine
**Chemo in End-Stage Cancer**

**Question:** In patients with end-stage cancer, what is the impact of chemotherapy on quality of life?

**Design:** Observational study, pts. w/ advanced cancer; measured QOL

**Conclusion:** 51% of pts. w/ advanced cancer given chemo; no impact on mortality
- No change in QOL in pts. w/ moderate or poor fxnl status
- Worse QOL w/ good functional status

**Comment:** Well done but not perfect
- In these pts., no clear benefit to chemo
- Can use to counsel patients

*Prigerson HG, et al. JAMA Oncol. 2015;1:778*

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**What do you tell the patient about the benefit of chemotherapy for his advanced cancer?**

A. It is likely to prolong your life.
B. It will improve your quality of life.
C. It will not prolong your life but will improve your quality of life.
D. **It will not prolong your life and may make your quality of life worse.**
E. I’m not an oncologist. But I did stay at Holiday Inn Express last night.
Short take: Knuckle Cracking

Based on real-time MRI imaging, knuckle cracking (all 10 MCP joints in one male participant) was caused by the formation of gas cavities in the joint, not by collapse of cavitation bubbles.


Short take: Can you do the Dishes?

Short take: Can you do the Dishes?

A total of 51 college students were randomized to “control” dishwashing or “mindful” dishwashing. Those in the “control” group, read a passage about the mechanics of dishwashing while those in the “mindful” group read a passage about being mindful while washing. Both groups washed the same number and type of dishes.

Short take: Can you do the Dishes?

Those in the “mindful” dishwashing group reported spending more time washing the dishes.

They also reported less nervousness and more inspiration.


Case Summary

Consider

1. Treating complicated intra-abdominal infections with 4 days of antibiotics after source control.

2. In advanced cancer, chemotherapy at the end of life may worsen quality of life for those with good functional status at baseline.

3. Knuckle cracking is from the formation of gas cavities.

4. Doing the dishes – mindfully!
Questions
Summary

Definitely
1. Continue providing atypical coverage to patients admitted with CAP.

Consider
1. Using systemic steroids in the management of CAP once we have a bit more evidence.
2. It is rare to isolate the causative agent in CAP and for now we’re stuck with treating empirically.

Summary

Definitely
1. Use intermittent PPI dosing in patients with high-risk ulcers.

Consider
1. PICC lines place patients at high risk for the development of upper-extremity DVT.
Update in Hospital Medicine
2015

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Syllabus/Bookkeeping

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