2015-Year in Review

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Agenda

• IV iron and anaphylaxis/tolerability
• Use of Antibiotics and Steroids in CAP
• Screening for Malignancy in Unprovoked VTE
• Risk of postoperative AKI
• Reducing Inpatient Delirium
• Residents and Hours
Clinical Trials in 2015

• Pubmed search “medicine” = 4,090,684 articles
• Published between 1/1/2015-12/31/2015 → 357,337 articles
• English → 351,435 articles
• Humans → 107,917 articles
• Clinical Trial → 6,783 articles
• Today → 8!
Case

- 64 yo F with GERD, OA, HTN, CAD, admitted with tarry stools, Hgb 6.1
- History reveals high NSAID use
- Found to have multiple gastric ulcers, on PPI drip, Hgb 7.6 (s/p 2 units)
- Iron studies also sent, confirm significant Iron deficiency
- Intern wants to start oral iron supplementation, your resident suggests a dose of IV iron to “tank her up”
- Pharmacist not on rounds yet, and intern asks you “I thought IV iron had a risk of anaphylaxis. Is one type better than another?”
• Retrospective new use cohort study of Medicare patients receiving IV iron
• Duration: 2003-2013
• Primary comparison: Dextran vs non-dextran
• Secondary comparison: Head to head, Iron Dextran vs gluconate/sucrose/ferumoxytol
• Outcome: Incidence of anaphylaxis
Results

- N=688,183
- First exposure:
  - Dextran: 68/100,000 persons
  - Non-dextran: 24/100,000 persons
  - OR 2.6 (2.0-3.3)
- Compared to iron sucrose
  - Dextran: OR 3.6
  - Gluconate: OR 2.0
  - Ferumoxytol: OR 2.2
- Cumulative anaphylaxis risk (12-wk period)
  - Dextran: 82/100,000 persons
  - Sucrose: 21/100,000 persons
IV iron and risk of adverse events

- Analysis included studies comparing IV iron to no iron, placebo, oral, IM
- Primary outcome: Serious Adverse Events (SAEs)
  - SAEs include infections, infusion, cardiovascular, neurologic, respiratory, gastrointestinal, thromboembolic, and constitutional severe reactions
- 103 RCTs involving 19,253 patients
- No difference in SAEs between IV iron and other forms overall
  - There was an increase in infusion reactions
- IV iron can be safely used
Overnight handover...

• Your team received a patient from the overnight team, admitted with LLL pneumonia
• ED gave 1 dose of Ceftriaxone and azithromycin
• Still febrile this morning, WBC has normalized
• No evidence of ongoing sepsis, still requiring 3L O2 via NC
• Urine antigens for legionella are negative
• Pharmacist mentions no new antibiotic orders have been written
• What do you tell your team?
Antibiotic Treatment Strategies for Community-Acquired Pneumonia in Adults

- Cluster randomized, crossover trial
  - 7 hospitals in the Netherlands (CAP-START study)
- Noninferiority study
- 2283 adult patients enrolled admitted with CAP to non-ICU setting
- Rotated Beta-lactam (BL) treatment with Beta-lactam/macrolide (BLM) or Fluoroquinolone (FQ) therapy every 4 months over a 2 year period
- Primary outcome was 90-day mortality
Results

- No difference in mortality
- No difference in LOS or complications
- Limitations: low # of atypical pathogens and BL resistance; “motivated deviation” higher in BL group
- In the absence of suspicion for atypicals, BL monotherapy may be a reasonable choice
Meta-analysis of Randomized Clinical Trials
Studies evaluating effect of adjunctive corticosteroid therapy on mortality, morbidity, and duration of hospitalization with community-acquired pneumonia (CAP)
Hospitalized Adults with CAP
Patients at high risk for adverse events were excluded
Results

• 13 randomized trials (including 2 from 2015)
• 2005 patients
• Systemic corticosteroid therapy (20-60 mg daily dose of prednisone/equivalent) associated with:
  o Reduction in mechanical ventilation (3.1% vs 5.7%) and development in ARDS (0.4% vs 3.0%)
  o Reductions in time to clinical stability (1.22 d) and duration of hospitalization (1 d)
• Mortality reduction noted mainly in subgroup of severe CAP (7.4% vs 22.0%)
• Increase in hyperglycemia requiring treatment noted; not GI bleed
• Dose/duration still unclear (2018?)
Next patient on rounds...

- 52 yo F with HTN, who was admitted with a new DVT
- No prior VTE history; no recent travel, surgery or other traumatic events; nonsedentary
- Your team has received this patient from the overnight team, already started on heparin, with plans made for CT scan to evaluate for other causes of her DVT
- Patient is feeling much better, and hoping to be discharged today
- She asks your team if this scan is really necessary…
Multicenter, open-label randomized, controlled trial
Patients with first unprovoked venous thromboembolism (VTE) randomized to:

- Limited occult-cancer screening (basic blood testing, chest radiography, and screening for breast, cervical, and prostate cancer)
- Limited occult-cancer screening in combination with CT abdomen/pelvis, with enhancement of the liver, distended bladder, virtual colonscopy and gastroscopy, and parenchymal pancreatography

Primary outcome=Confirmed cancer missed by screening strategy
- Detected by the end of the 1-year follow-up period

Secondary outcome=Recurrent VTE, all-cause mortality, cancer mortality
Results

- 854 patients randomized
- 33 with new cancer diagnosis
  - 14/431 (3.2%) in the limited group
  - 19/423 (4.5%) in the limited + CT group
- Primary outcome
  - 4/14 (29%) missed in limited group
  - 5/19 (26%) missed in limited + CT group
- No significant difference between groups for primary (P=1.0) or secondary outcomes
- Routine screening with CT did not provide a clinically significant benefit
(Un)expected development

• You were consulted by ortho for medical clearance
• 74 yo M with HTN, T2DM, CKD, obesity, admitted with R hip fracture
• Went to OR 2 days ago
• Hgb 10.2, Cr 1.56 (at baseline)
• You get paged, notified that Cr up to 3.3
• You mumble to yourself, “I knew this would happen!”
• Intern asks you, “How did you know that would happen?”
• Ortho surgeries from 2005-2011 from 2 Scottish hospitals
  o A 3rd hospital was included in the validation cohort
• Outcomes: Development of acute kidney injury (AKI) within the first postoperative week, and 90-day/1-year survival
• 10,600 adult patients: 6200 in development group, 4400 in validation group
• Mean baseline eGFR of 71 ml/min
• Logistic regression analysis used to identify risk factors
Results

• Postop AKI rates:
  o 11% (development group), 7% in validation

• 7 predictors identified:
  o Older age
  o Male
  o Diabetes
  o Lower eGFR
  o Use of ACEi or ARB
  o 3 or more prescribed drugs
  o High ASA grade

• Survival lower in patients with AKI vs no AKI (Short and Long-term)
Your team gets paged...

• Another of your patients has become more agitated, and the nurse is paging for an order for Haldol
• You review the case: 83 yo M with HTN, T2DM, Glaucoma, BPH, admitted with dehydration 2 nights ago.
• When you enter the room, the patient is confused, the room is dark, and he appears to be frightened
• The nurse also notes that the patient’s family has not brought his hearing aids yet
• Your student shakes his head and asks, “There really isn’t anything you can do to stop delirium other than medications, is there?”
• Review of studies comparing Nonpharmacologic multicomponent interventions (NPMIs) to controls
• Outcomes included Delirium incidence, falls, LOS, discharge to institution, change in functional status or cognitive status
• 14 studies including 4267 patients (mean age-80)
  o 9 studies used >4 interventions (variations of Helping Elder Life Program)
  o Included medical and surgical patients
Results

• NPMIs reduced risk for incident delirium and falls
  o OR 0.47 and 0.38
  o RRR compared to controls of 40% and 57%
• No difference in other outcomes measured
• Estimated savings of 16 billion in the US
Finishing Rounds

• You gathered your team to discuss current national initiatives surrounding patient safety with one of your senior colleagues
• Some discussion ensues afterwards about other initiatives that the residents are aware of
• One of the interns says “What about duty hours, they’ve made things better, right?”
• Your resident states “Well, that was one of the goals…”
• You chime in “…and there have been even more changes recently”
• Resident: “Dr. XXX, what did you think about duty hours when you were training?”
• Senior physician (on his way out), “Duty hours? HAHAHAHAHAHAHA…..”
• Literature search from 1987-2013 about the effects of Duty Hours Reforms (DHRs)

• Used the Medical Education Research Study Quality Instrument (MERSQI) scoring system to determine “high-quality” studies

• 72 “high-quality” studies were included (10 RCTs)

• Most consistent effect was an increase in total cost to the healthcare/educational system

• Mixed results in resident quality of life, education, performance and patient complications

• No increase in patient mortality
Summary

- IV iron is safe compared to other forms
- Iron sucrose seems to be the better option
- 1 antibiotic in CAP may be all that is needed
- Steroids may be more useful in CAP than previously thought
- First unprovoked VTE does not require CT workup
- We may be able to better assess perioperative AKI risk
- Nonpharmacologic bundles can reduce inpatient delirium
- Jury’s still out on DHRs and their effects
References