

Hospital Medicine Newsflash

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3/1/2018

Before we start

- I have no financial disclosures to make
- This is not meant to be a complete review, there are articles or topics that I have not included due to time constraints and/or lack of awareness
- Focus is on pertinent articles or news that will be relevant to the average hospitalist.
- Tried to stick to developments from 2018 but a few early 2019 articles mentioned.
- Cardiology and oncology information will likely be covered more thoroughly in other talks today.
- ACP Hospitalist newsletter is a great resource for staying up to date throughout the year.

Inpatient Medicine General

- **Attendings have been found to be unnecessary!**
 - **Just kidding...** However, interesting RCT in July in JAMA looked at effect of increasing inpatient attending supervision on medical errors, patient safety, resident education.
 - Compared attending present on work-rounds vs attending available but not present on work-rounds.
 - Found that higher levels of supervision did not reduce medical error rate but did result in interns speaking less, residents noting less overall autonomy.
 - Attendings felt like they were giving better care to patients when involved in rounds

Finn K, Metlay J, Chang Y, et al. *Effect of Increased Inpatient Attending Physician Supervision on Medical Errors, Patient Safety, and Resident Education: A Randomized Clinical Trial*. JAMA Intern Med. 2018 Jul 1;178(7):952-959. doi: 10.1001/jamainternmed.2018.1244.

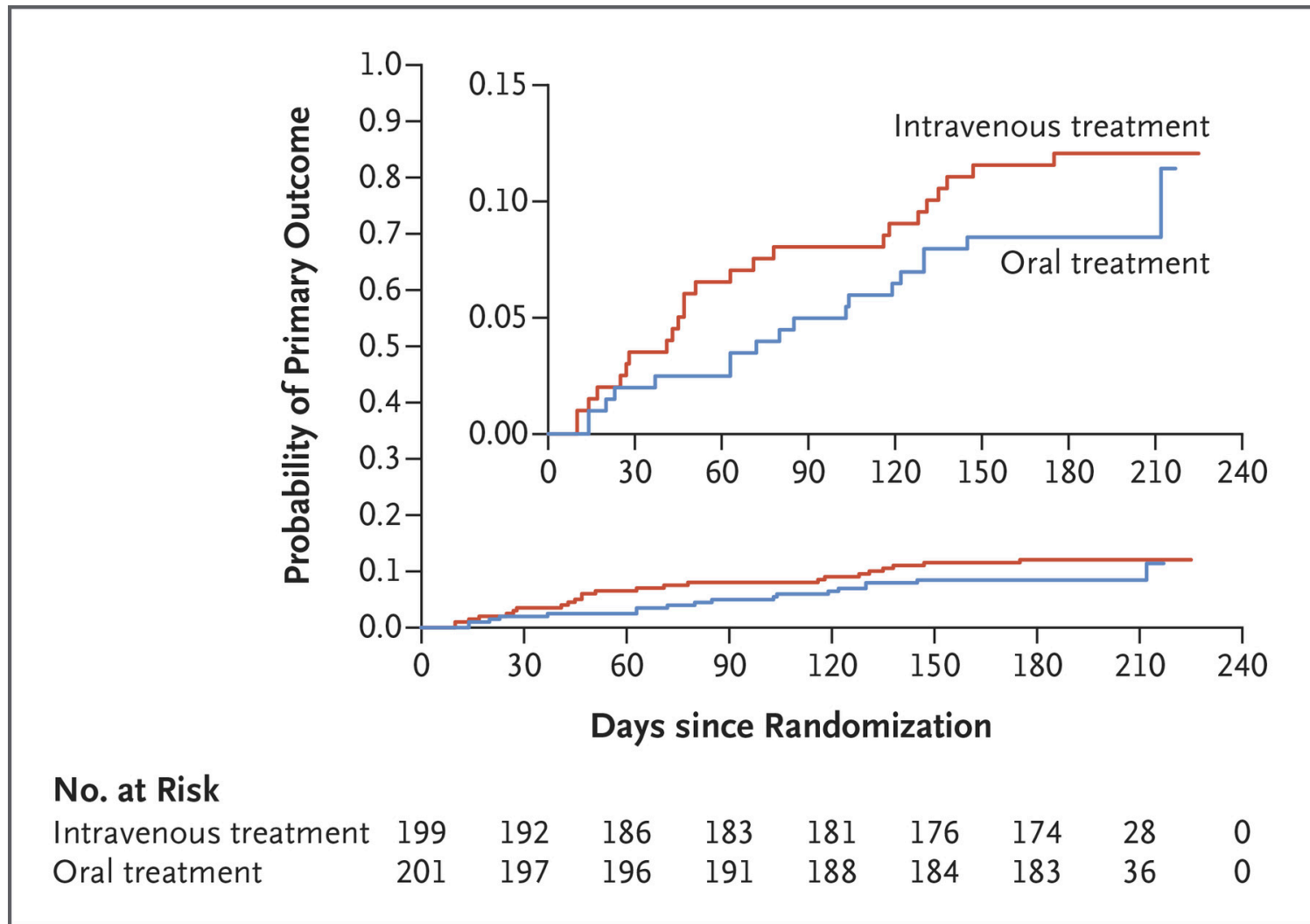
Intern Duty Hours

- Flexible duty hour policies vs standard ACGME schedule policy (with mandatory time-off and shift length limits) compared in NEJM this year, .
- Flexible found to have higher reported intern dissatisfaction. No difference in test scores or overall reported time spent in patient care or education.
- Program directors happier with flexible policies.
- Notably 2/3 of **all** respondents reported moderate to high levels of **burnout**.
- Also high levels of variation in outcomes at various programs makes results somewhat questionable on generalizability.

Infectious Disease

- **RCT: In stable left-sided endocarditis, changing IV to oral antibiotics vs continuing IV antibiotics did not differ for a composite clinical outcome (including mortality, unplanned cv surgery, embolic event, relapse of positive bcx).**
- “Partial Oral Treatment of Endocarditis (POET)” trial. Took place in Denmark, 400pts total 200 in each group (IV cont vs oral)
- IV Rx pts remained hospitalized while oral abx pts were able to go home
- Oral abx regimens used combination antibiotic regimens (i.e. beta lactam + rifampin)
- No subgroup found with inferiority for oral abx among those studied

Figure 2: Kaplan Meir Plot of probability of primary outcome.



Caveats to the study

- 10 days IV treatment initially, Echo without surgical needs, excluded pts with poor GI uptake
- Only enrolled for 4 different organisms: Streptococcus, *E. faecalis*, *Staph aureus*, or coag-neg staph.
- Only 4 IV drug users, no MRSA (although not excluded), only 22% staph in the study.
- Many abx used that are not common/used in US.

Quick Bites:

- “Do Patients with Cellulitis Need to be Hospitalized? A Systematic Review and Meta-analysis of Mortality Rates of Inpatients with Cellulitis”
- Main point made is that cellulitis mortality in around 18 studies reported to be around 0.5 % in USA, 1.1% worldwide. Similar to that of community acquired pneumonia treatable as outpatient.
- Can we use parenteral abx or even weekly dosed abx (dalbavancin) to keep these low morbidity pts out of hospital? Need an RCT like the prior one we reviewed.
 - Gunderson C, Cherry B, Fisher A. Do Patients with Cellulitis Need to be Hospitalized? A Systematic Review and Meta-analysis of Mortality Rates of Inpatients with Cellulitis J GEN INTERN MED (2018) 33: 1553.
- **Late Breaking: “Oral versus Intravenous Antibiotics for Bone and Joint Infection.”**
- Conclusions: Oral antibiotic therapy was noninferior to intravenous antibiotic therapy when used during the first 6 weeks for complex orthopedic infection, as assessed by treatment failure at 1 year.
 - Li HK, Rombach I, Zambellas R. *Oral versus Intravenous Antibiotics for Bone and Joint Infection* N Engl J Med. 2019 Jan 31;380(5):425-436

SEPSIS:

- “Prognostic Accuracy of the Quick Sequential Organ Failure Assessment for Mortality in Patients With Suspected Infection”
 - Fernando SM, Tran A, Taljaard M, et al. *Ann Intern Med.* 2018;168(4):266-275.
- Meta Analysis of 38 studies using qSOFA
- Conclusion: qSOFA sensitivity far lower for sepsis than SIRS in non-critical care setting. Specificity had opposite pattern (higher in non-ICU population).
- Suggests use of qSOFA in tandem with SIRS is likely best strategy for managing sepsis.

From the lighter side of medicine

- **“Orthopod Bewildered by Internist with Bigger Biceps”**

Gomerblog (<https://gomerblog.com/2017/02/orthopod-puzzled-biceps/>)

“Hammersley had to sit down. He was visibly shaking his head from side to side in disbelief. “Brah, how can those pythons get so huge? He must do tons of chest compressions. Or is he curling stethoscopes? Can you build muscle with such a wimpy instrument?!”

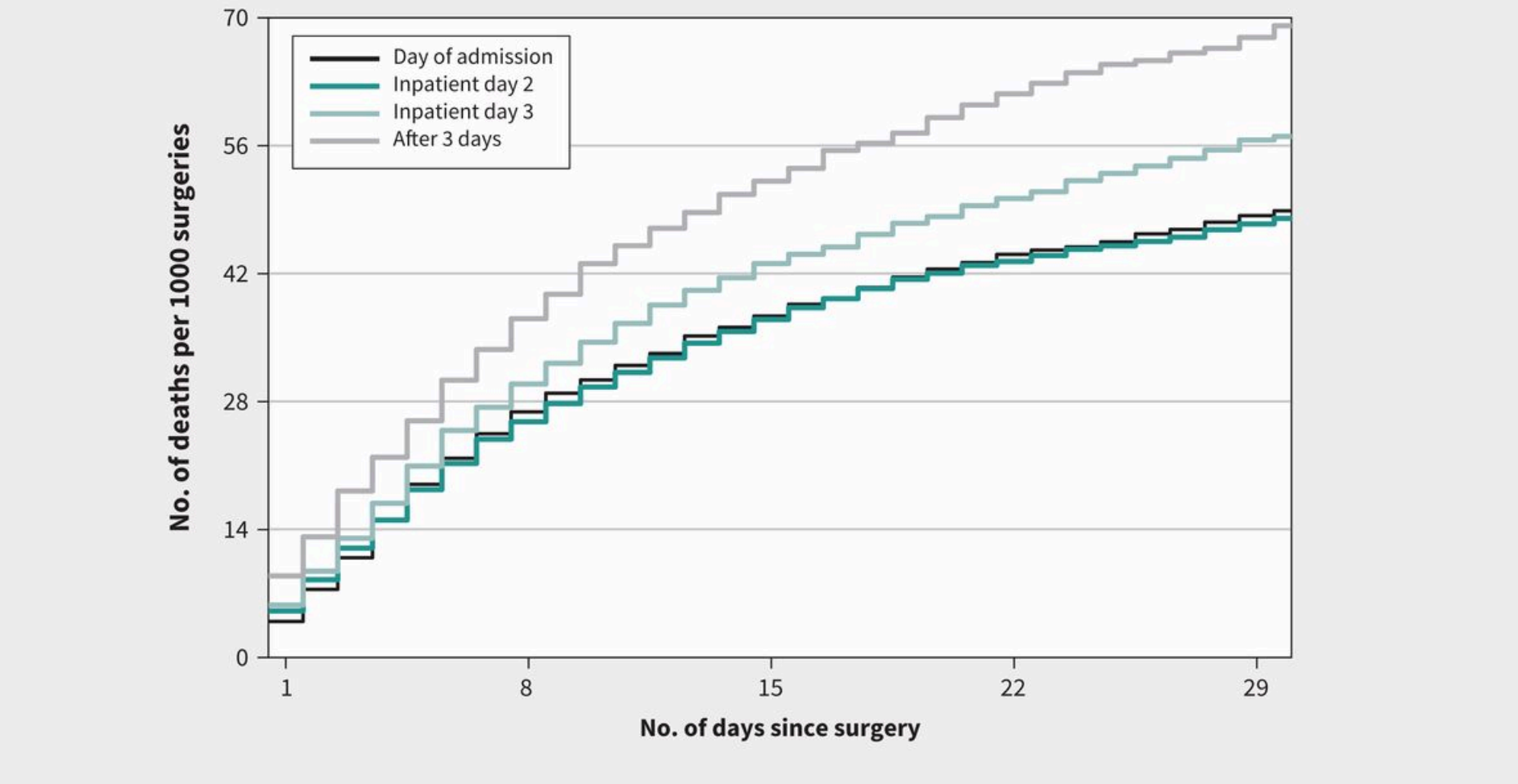


Based off the true story of an IHC hospitalist?

Perioperative Management

- Early hip fracture surgery associated with decreased overall mortality.
 - Retrospective chart review of patients in Canadian hospitals between 2004 and 2012. Compared mortality rates for surgery done on admit day, day 2, day 3, or after day 3.
 - Weighted with confounding influences and excluded patients with compelling indications to delay surgery based on NIH guidance recommendations. Trying to isolate delays for non-clinical reasons (no OR space, no surgeon available, family preference, etc...).
 - Outcome was in-hospital death within 30 days.
-
- B Sobolev, P Guy, K Sheehan, et al. *Mortality effects of timing alternatives for hip fracture surgery*. CMAJ August 07, 2018 190 (31) E923-E932;

Figure C: Cumulative incidence of in-hospital death, by observed timing of surgery.



Results: 42.1 deaths/1000 surgeries within first 2 days, 53.1 deaths/1000 surgeries later. Estimated 16.5% of deaths after HD #2 to be attributable to surgical delays.

Conclusion: When were involved we should be advocating for OR ASAP in all patients who are medically safe to get there,

Pulmonology

- “Prevalence of Pulmonary Embolism in Patients With Syncope” G. Constantino, M. Ruwald, J. Quinn et al. JAMA Intern Med. 2018;178(3):356-362.
- **Found only 1% rate of PE in study of 1.5 million syncope cases identified in admin database from four countries (Canada, Italy, Denmark, US).**
- **Only 2-3% of hospitalized patients.**
- Contrast with prior PESIT trial from Italy which found rates of PE in syncope up to 17% of hospitalized (patients were admitted for syncope and went through a protocolized workup for PE).
- Authors speculated that PESIT algorithm may have been overdiagnosing/finding subsegmental PE of questionable relevance.

Endocrinology (i.e. inpatient Diabetes Management)

- **Close loop insulin (sensor + pump) management system associated with improved time in target glucose range (66% vs 42%, $p < 0.001$) in noncritical care inpatients.**
 - Bally L, Thabit H, Hartnell S. *Closed-Loop Insulin Delivery for Glycemic Control in Noncritical Care* N Engl J Med 2018; 379:547-556
- Downside: Incorporation to EMR difficult, would require cost assessment of equipment, may have had some bias from better measurement of BS in the closed loop group (others had sensor data send to a receiver that RNs then reacted to, occasional dropped signals)
- **“Cost-Related Insulin Underuse Among Patients With Diabetes”**
 - Herkert Et al. JAMA Internal Medicine, Jan 2019, Volume 179 Number 1.
- 25% of patients at an urban diabetes center reported underuse. Had lower incomes on average, poor glycemic control. Also reported difficulty buying DM equipment.
- We should be asking our DKA patients about this, trying to get them any low-income benefits possible, providing as much equipment and care as possible during hospital stay.
- Insulin prices increasing “between 2002 and 2013 the average price of insulin nearly tripled” (ADA Action center, online access @ stopdiabetes.com)
- Congressional hearings taking place within 2019 to try to address causes of price spikes for insulin and other drugs.

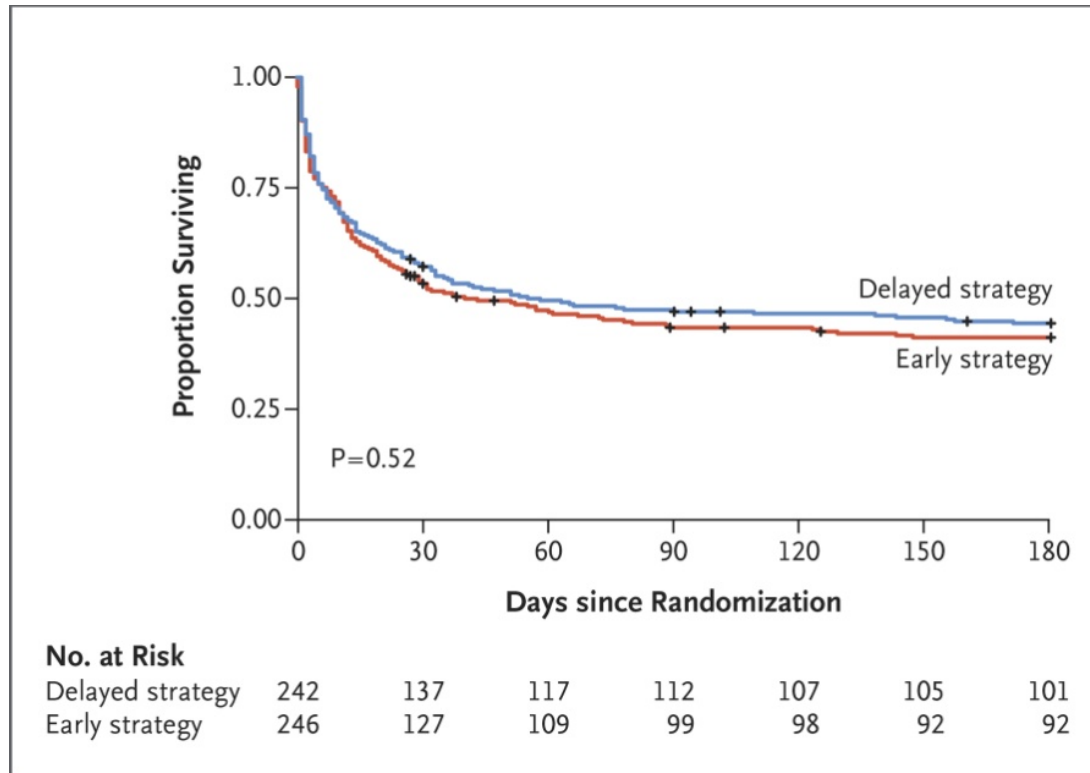
Nephrology

- **RCT: In adults with septic shock and severe acute kidney injury, early vs delayed renal-replacement therapy did not differ for 90-d death.**

- Barbar SD, Clere-Jehl R, Bourredjem A, et al. *Timing of Renal-Replacement Therapy in Patients with Acute Kidney Injury and Sepsis*. N Engl J Med. 2018 Oct 11;379(15):1431-1442.

- ICU Population with no emergent dialysis conditions present
- For patients with renal failure ($\text{Cr} > 4$ or $3\times$ baseline, or $\text{UOP} < 30\text{cc/hr}$ in 12 hrs) despite adequate MAPs on pressors
- Initiation of RRT (Dialysis) at 12 hrs vs $>48\text{hrs}$ (delayed)
- Study performed at Academic and non-academic centers in France

Conclusions:



- No difference in primary or secondary outcomes with early or delayed therapy. (including mortality at 28, 90, 180 days, ICU LOS, volume overload)
- Much higher amount of patients in early therapy group exposed to risks of dialysis (but no change in outcomes). Still cost difference and invasive procedure for access.
- Limitations: Not studied/applicable to pts after > 48hrs of renal failure. Used a classification of kidney failure not intended to predict dialysis need (RIFLE).

IV Fluid Resuscitation: Saline vs Balanced Crystalloids

- Two studies in NEJM, both finding significant reduction in rate of AKI for patients resuscitated with Balanced crystalloid (One in ICU and one in non-ICU patients).
 - Self W, Semler M, Wanderer J, et al. *Balanced Crystalloids versus Saline in Noncritically Ill Adults*. N Engl J Med 2018; 378:819-828
 - Semler M, Self W, Wanderer J, et al. *Balanced Crystalloids versus Saline in Critically Ill Adults*. N Engl J Med 2018; 378:829-839
- For Non ICU pts found reduction in composite outcome (Death, need for RRT, doubling of Cr) with balanced crystalloids (4.7% vs 5.6%, $p = 0.01$). However, primary outcome of 30d mortality showed no difference between fluids.
- In ICU found similar slight but significant reduction in above composite outcome (Death, need for RRT, doubling of Cr) (14.3 vs 15.4%, $p = 0.04$).
- Single center trial only, composite outcome, not patient centered and thus needs more study!

Anticoagulation

- **RCT: EPCAT II: No significant difference between ASA vs Rivaroxaban for post-op DVT prophylaxis of hip and knee surgery. (Same bleed rate as well).**

▫ Anderson D, Dunbar M, Murnaghan J, et al. *Aspirin or Rivaroxaban for VTE Prophylaxis after Hip or Knee Arthroplasty*, Feb 22, 2018. N Engl J Med 2018; 378:699-707.

- **Still some use for Coumadin; RCT: In high-risk patients with thrombotic antiphospholipid syndrome, rivaroxaban increased thrombotic events and bleeds (combined 19%) more than warfarin (3%).**

▫ Pengo V, Denas G, Zoppellaro G, et al. *Rivaroxaban vs warfarin in high-risk patients with antiphospholipid syndrome*. Blood. 2018 Sep 27;132(13):1365-1371. doi: 10.1182/blood-2018-04-848333. Epub 2018 Jul 12.

- **ASPREE trial: Aspirin for primary prevention in Elderly.**
 - Low-dose aspirin was found not to increase “disability-free survival” in pts > 70 without other indications
- **RCT in NEJM with multiple analyses.**
 - Healthy pts over age 70 (65 if black or hispanic) randomized to low-dose aspirin or placebo.
 - ASA did not decrease CV events or disease-free survival. It did incr major hemorrhage at a median 4.7 years (HR 1.38, NNH ~417).
 - Higher mortality in aspirin group, mainly in cancer related death (not reported in other trials of aspirin, grain of salt)
 - Only 5 years of trial (2010-2014) so maybe the benefit would be seen at longer term.
 - **Does not negate the primary prevention benefits seen in younger populations.** Studies for secondary benefit as well still show use.
 - As hospitalists we can be implementing discontinuation of ASA especially in our GI bleed pts and no secondary prevention need
 - (if secondary prevention needed benefit of aspirin still outweighs risks)

McNeil JJ, Wolfe R, Woods RL, et al. *Effect of Aspirin on Cardiovascular Events and Bleeding in the Healthy Elderly*. N Engl J Med. 2018 Oct 18;379:1509-1518. DOI: 10.1056/NEJMoa1805819.

McNeil JJ, Wolfe R, Woods RL, et al. *Effect of Aspirin on Disability-free Survival in the Healthy Elderly* N Engl J Med 2018; 379:1499-1508 DOI: 10.1056/NEJMoa1800722

McNeil JJ, Wolfe R, Woods RL, et al. *Effect of Aspirin on All-Cause Mortality in the Healthy Elderly*. N Engl J Med. 2018; 379:1519-1528. DOI: 10.1056/NEJMoa1805819.

- **RCT: After initial embolic stroke of undetermined source, rivaroxaban no better than aspirin for recurrent stroke (4.7% for both) but increased major bleeding (1.8% vs 0.7%, HR 2.72)**

▫ Hart R, Sharma M, Mundl H, et al. *Rivaroxaban for Stroke Prevention after Embolic Stroke of Undetermined Source*. N Engl J Med. 2018 Jun 7;378(23):2191-2201.

Table 3. Safety Outcomes.*

Outcome	Rivaroxaban Group (N = 3609)	Aspirin Group (N = 3604)	Hazard Ratio (95% CI)†	P Value
	<i>no. of patients (annualized rate)</i>			
Primary safety outcome: ISTH major bleeding‡	62 (1.8)	23 (0.7)	2.72 (1.68–4.39)	<0.001
Secondary safety outcomes				
Life-threatening or fatal bleeding	35 (1.0)	15 (0.4)	2.34 (1.28–4.29)	0.004
Clinically relevant nonmajor bleeding	118 (3.5)	79 (2.3)	1.51 (1.13–2.00)	0.004
Symptomatic intracranial hemorrhage§	20 (0.6)	5 (0.1)	4.02 (1.51–10.7)	0.003
Intracerebral hemorrhage	12 (0.3)	3 (0.1)	4.01 (1.13–14.2)	0.02
Subarachnoid hemorrhage¶	5 (0.1)	1 (0.0)	5.03 (0.59–43.0)	0.10
Subdural or epidural hematoma¶	3 (0.1)	2 (0.1)	1.51 (0.25–9.02)	0.65

* Event rates are unadjusted.

† Hazard ratios and 95% confidence intervals were estimated on the basis of age group (<60 years vs. ≥60 years) in stratified Cox proportional-hazards models.

‡ Criteria are from the International Society on Thrombosis and Hemostasis (ISTH).⁹

§ These events were included as ISTH major bleeding events and life-threatening or fatal bleeding events. Traumatic intracerebral and subarachnoid hemorrhages were included here.

¶ One patient in the aspirin group had both a traumatic subarachnoid hemorrhage and a separate subdural hematoma; both events are included here.

Afib CHEST Guidelines updated.

- At least in the setting of afib we can use the new ACCP guidelines from August of this year. Open access in CHEST. Lip, Gregory Y.H. et al.
Antithrombotic Therapy for Atrial Fibrillation
CHEST, Volume 154, Issue 5, 1121 - 1201
 - NOACs favored for most in these guidelines.
 - No anticoag for nonvalvular afib with low stroke risk (CHADS₂-VASC max of 0 in males or 1 in females)
 - Oral anticoag recommended **over** no therapy, aspirin, and aspirin + clopidogrel. (low and high risk patients)

And finally....

- **“Apixaban linked to lower risk of serious bleeding compared to warfarin in patients with or without afib”**
 - **ACP Hospitalist Weekly, 7/11/2018**
- BMJ Study, retrospective chart review.
- Lowest risk of GI Bleed with apixiban (NNT ~130-180 depending on indication), highest mortality rate with rivaroxaban (NNH ~60 w/o afib, ~212 with afib).
- Increased risk of all cause mortality for those taking rivaroxaban AND the low dose apixiban compared to warfarin.

▫ Vinogradova Y, Coupland C, Hill T. *Risks and benefits of direct oral anticoagulants versus warfarin in a real world setting: cohort study in primary care.* BMJ 2018; 362

What, No Dilaudid?! Guests Leave Super Bowl Party AMA (Gomerblog)

“Guacamole? Nachos? Potato skins? Where’s the IV Benadryl for Pete’s sake? The IV Ativan? The IV Phenergan? What if a first down makes me itchy?”



<https://gomerblog.com/2019/02/no-dilaudid-super-bowl-party-ama/>

Pain Management

Improving the Safety of Opioid Use for Acute Noncancer Pain in Hospitalized Adults: A Consensus Statement From the Society of Hospital Medicine *J. Hosp. Med.* 2018 April;13(4):263-271

TABLE 2. **Society of Hospital Medicine Recommendations on Improving the Safety of Opioid Use for Acute Noncancer Pain in Hospitalized Adults Outside of Intensive Care, Palliative Care, and End-of-Life Care**

Deciding Whether to Use Opioids During Hospitalization:

Limit the use of opioids to patients with 1) severe pain or 2) moderate pain that has not responded to nonopioid therapy, or where nonopioid therapy is contraindicated or anticipated to be ineffective.

Use extra caution when administering opioids to patients with risk factors for opioid-related adverse events.

Review the information contained in the prescription drug monitoring program (PDMP) database to inform decision-making around opioid therapy.

Educate patients and families or caregivers about potential risks and side effects of opioid therapy as well as alternative pharmacologic and nonpharmacologic therapies for managing pain.

Once a Decision Has Been Made to Use Opioids During Hospitalization:

Use the lowest effective opioid dose for the shortest duration possible.

Use immediate-release opioid formulations and avoid initiation of long-acting or extended-release formulations (including transdermal fentanyl) for treatment of acute pain.

Use the oral route of administration whenever possible. Intravenous opioids should be reserved for patients who cannot take food or medications by mouth, patients suspected of gastrointestinal malabsorption, or when immediate pain control and/or rapid dose titration is necessary.

Use an opioid equivalency table or calculator to understand the relative potency of different opioids 1) when initiating opioid therapy, 2) when changing from one route of administration to another, and 3) when changing from one opioid to another. When changing from one opioid to another, clinicians should generally reduce the dose of the new opioid by at least 25%-50% of the calculated equianalgesic dose to account for interindividual variability in the response to opioids as well as possible incomplete cross-tolerance.

Pair opioids with scheduled nonopioid analgesic medications, unless contraindicated, and always consider pairing with nonpharmacologic pain management strategies (ie, multimodal analgesia).

Unless contraindicated, order a bowel regimen to prevent opioid-induced constipation in patients receiving opioids.

Limit co-administration of opioids with other central nervous system depressant medications to the extent possible.

Work with patients and families or caregivers to establish realistic goals and expectations of opioid therapy and the expected course of recovery.

Monitor the response to opioid therapy, including assessment for functional improvement and development of adverse effects.

Prescribing at the Time of Hospital Discharge:

Ask patients about any existing opioid supply at home and account for any such supply when issuing an opioid prescription on discharge.

Prescribe the minimum quantity of opioids anticipated to be necessary based on the expected course and duration of pain that is severe enough to require opioid therapy after hospital discharge.

Ensure that patients and families or caregivers receive information regarding how to minimize the risks of opioid therapy for themselves, their families, and their communities. This includes but is not limited to: 1) how to take their opioids correctly (the planned medications, doses, schedule); 2) that they should take the minimum quantity necessary to achieve tolerable levels of pain and meaningful functional improvement, reducing the dose and/or frequency as pain and function improve; 3) how to safeguard their supply and dispose of any unused supply; 4) that they should avoid agents that may potentiate the sedative effect of opioids, including sleeping medication and alcohol; 5) that they should avoid driving or operating heavy machinery while taking opioids; and 6) that they should seek help if they begin to experience any potential adverse effects, with inclusion of information on early warning signs.

Quick Bites 2:

- Study from VA patients showing many had BP regimen intensified after hospitalization for unrelated issues. More than half of these in patients with previously well controlled outpt BP.
 - Anderson TS, Wray CM, Jing B et al. *Intensification of older adults' outpatient blood pressure treatment at hospital discharge: national retrospective cohort study* BMJ 2018; 362 :k3503
- Accompanying Editorial in BMJ (*BMJ* 2018;362:k3789) regarding this and data from SPRINT trial would indicate we should not be intensifying regimens for this, potentially for other chronic diseases.
 - Don't mess with Stenehjems (i.e. PCP) management!!
- Study from annals in patients at Kaiser Hospitals in Northern California implementing PESI web based tool to help triage PE pts home vs inpatient. As expected home discharge rates increased from 17 to 28% at sites with the web tool. No change in 5 day return visits or 30 day major adverse outcomes for patients.
 - Vinson DR, Mark DG, Chettipally UK, et al. *Increasing Safe Outpatient Management of Emergency Department Patients With Pulmonary Embolism: A Controlled Pragmatic Trial.* Ann Intern Med. ;169:855–865. doi: 10.7326/M18-1206
- Another annals study showing rate of patients with moderate anemia at discharge increased since 2010 but not mortality, associated decrease in transfusion rate of 28%.
 - Roubinian NH, Murphy EL, Mark DG, et al. *Long-Term Outcomes Among Patients Discharged From the Hospital With Moderate Anemia: A Retrospective Cohort Study.* Ann Intern Med. ;170:81–89. doi: 10.7326/M17-3253

Virtual Hospitalists: The newest forefront

- **“Virtual hospitalists bring expertise to rural hospital” -ACP Hospitalist, Jan 2019**
- **IMC has its own telemedicine program admitting and doing cross cover at our Heber Valley hospital at night and soon Bear River as well.**
- **Keynote speech tonight.**

Thank you!



Mt Baldy, Feb 2019

Shameless Plug:

White D, Woller S, Stevens S, et al. *Comparative thrombosis risk of vascular access devices among critically ill medical patients*

Thrombosis Research , Volume 172 , 54 – 60. 12/2018.

Significant increase in thrombosis risk for ICU patients who receive lines, esp when they receive both central venous catheters and peripherally inserted central catheters.

Trend toward higher thrombosis risk in PICCs.