The Top 10 EM Articles from 2017

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Disclosure

- My presentation will at times involve comments or discussion concerning unapproved or off label uses of a medical device or pharmaceuticals. When any unapproved or off-label uses of products is discussed, disclosure must be made.
- I have no financial relationships or interest with industry or manufacturers represented in the presentation.

Objectives

- Review current literature to outline important advances in emergency medicine.
  - Look at the most important “game changers” (IMHO) from 2017.
- Analyzing the implications and limitations of the studies on the practice of clinical emergency medicine.
  - Take away points for your practice.

2017– What a year!!!

The Articles

- Large trials that are impactful
  - Good takeaways for the practicing EMP
- Represent my opinion as to those that are important
- From reputable journals
- Really hard to choose only 10!


RESEARCH
memegenerator.net

Topical Tranexamic Acid Compared with Anterior Nasal Packing for Treatment of Epistaxis in Patients Taking Antiplatelet Drugs: Randomized Controlled Trial

Zahed R, et al. *Academic Emergency Medicine*.

Nov 2017; ePub ahead of print.

TXA vs Anterior Packing in Epistaxis

- Antiplatelet drugs, specifically aspirin and clopidogrel, are prescribed widely for the treatment or prevention of CV disease.
  - Epistaxis management is more difficult in these patients
- Anterior nasal packing is a frequently performed procedure in the management of epistaxis
- The use of topical TXA for the treatment of dental, pulmonary and sinus bleedings has been shown to be efficacious.
- The purpose of this study was to compare topical TXA to anterior nasal packing in patients with epistaxis who are on antiplatelet agents

TXA vs Anterior Packing in Epistaxis

- Researchers performed a randomized parallel group clinical trial in two US EDs.
- 124 participants (on antiplatelet agents and having bleeding requiring treatment after 20 minutes of compression) were randomized to either topical TXA (500 mg in 5 mL) or anterior nasal packing.
- The assessed the proportion of patients whose bleeding has ceased within 10 minutes.
- They also assessed the re-bleeding rate at 24 hours and 1 week, ED LOS and patient satisfaction.

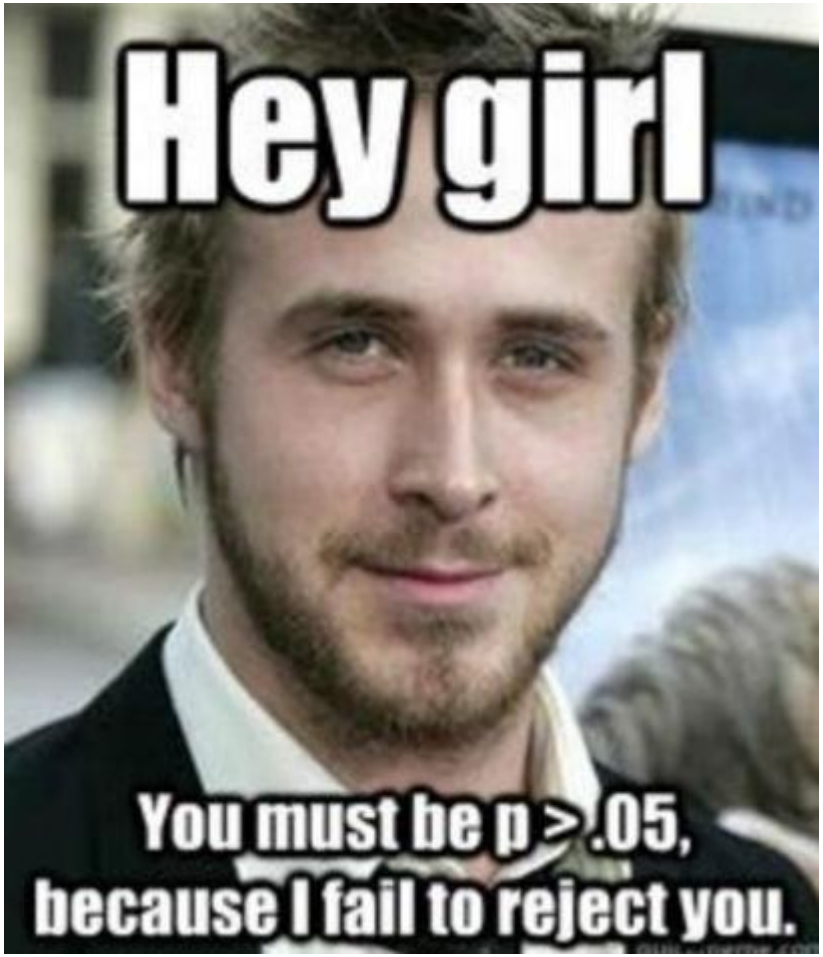
TXA vs Anterior Packing in Epistaxis

- Bleeding was stopped in 73% of TXA patients and 29% in the packing group ($p<0.001$).
- Re-bleeding occurred in 5% of TXA patients and 10% of packing patients in the first 24 hours.
- Re-bleeding occurred in 5% of TXA patients and 21% of packing patients in the first 1 week ($p=0.007$).
- Treatment and placebo groups were comparable.
- Higher patient satisfaction scores in the TXA group (9 vs. 4; $p<0.001$).
- In the TXA group 97% of patients discharged in < 2 hours vs. 13% in the ANP group ($p<0.001$)/
- No adverse events were seen in either group.

TXA vs Anterior Packing in Epistaxis

- Recommendations:
  - This study demonstrates improved cessation of epistaxis bleeding at 10 minutes in patients treated with topical TXA who utilize antiplatelet drugs.
  - TXA patients had less re-bleeding within a week of treatment
  - TXA patients had shorter length of ED stay, improved patient satisfaction.

Patient satisfaction better?


Hey girl
You must be p > .05,
because I fail to reject you.

Opioid Prescribing Patterns of Emergency Physicians and Risk of Long-Term Use

Barnett ML, et al. *New England Journal of Medicine*. 2017; 376; 663-73.

Opioid Prescribing Risk

- Rates of opioid prescribing and opioid-related deaths have quadrupled in the US over the past three decades.
- It has been argued that the prescribing behavior of physicians has been a driver of the opioid epidemic.
- Few studies have examined the extent to which individual physicians vary in opioid prescribing and the implications for long term opioid usage.
- This study followed a national Medicare cohort and examined how an initial exposure to an opioid by an emergency physician related to long-term opioid use outcomes.

Opioid Prescribing Risk

- Using a Medicare database, the researchers identified patients without cancer who had an ED visit from 2008–2011 and had not filled an opioid prescription in the prior 6 months.
- Opioid prescriptions filled within 3 days of the visit were attributed to the billing emergency physician, and these physicians were stratified into quartiles based on frequency of opioid prescribing relative to others in the same ED.

Opioid Prescribing Risk

- Sample consisted of 215,678 patients from low intensity providers and 161,951 from high intensity providers.
- Opioid prescribing rates differed significantly between highest quartile and lowest quartile prescribers in the same ED (mean rates, 24.1% vs. 7.3% of ED visits).
- Patient characteristics, including diagnoses, were similar for those treated by both groups of physicians.
- Long-term opioid use was significantly greater among those treated by high-intensity prescribers (adjusted odds ratio, 1.3; $p<0.001$).

Opioid Prescribing Risk

- Recommendation
  - The intensity of a physician's opioid prescribing was positively associated with the probability that a patient would become a long-term opioid user over the subsequent 12 months
  - *Physician initially evaluating patient was attributed with the opioid prescription*
  - *Medicare part D patients*


PATIENTS BE LIKE
THESE PAIN MEDS AIN'T DOIN SHIT
memegenerator.net

Effect of a Single Dose of Oral Opioid and Nonopioid Analgesics on Acute Extremity Pain in the Emergency Department

Chang AK, et al. *JAMA.* November 7, 2017; 318(17):1661-1667.

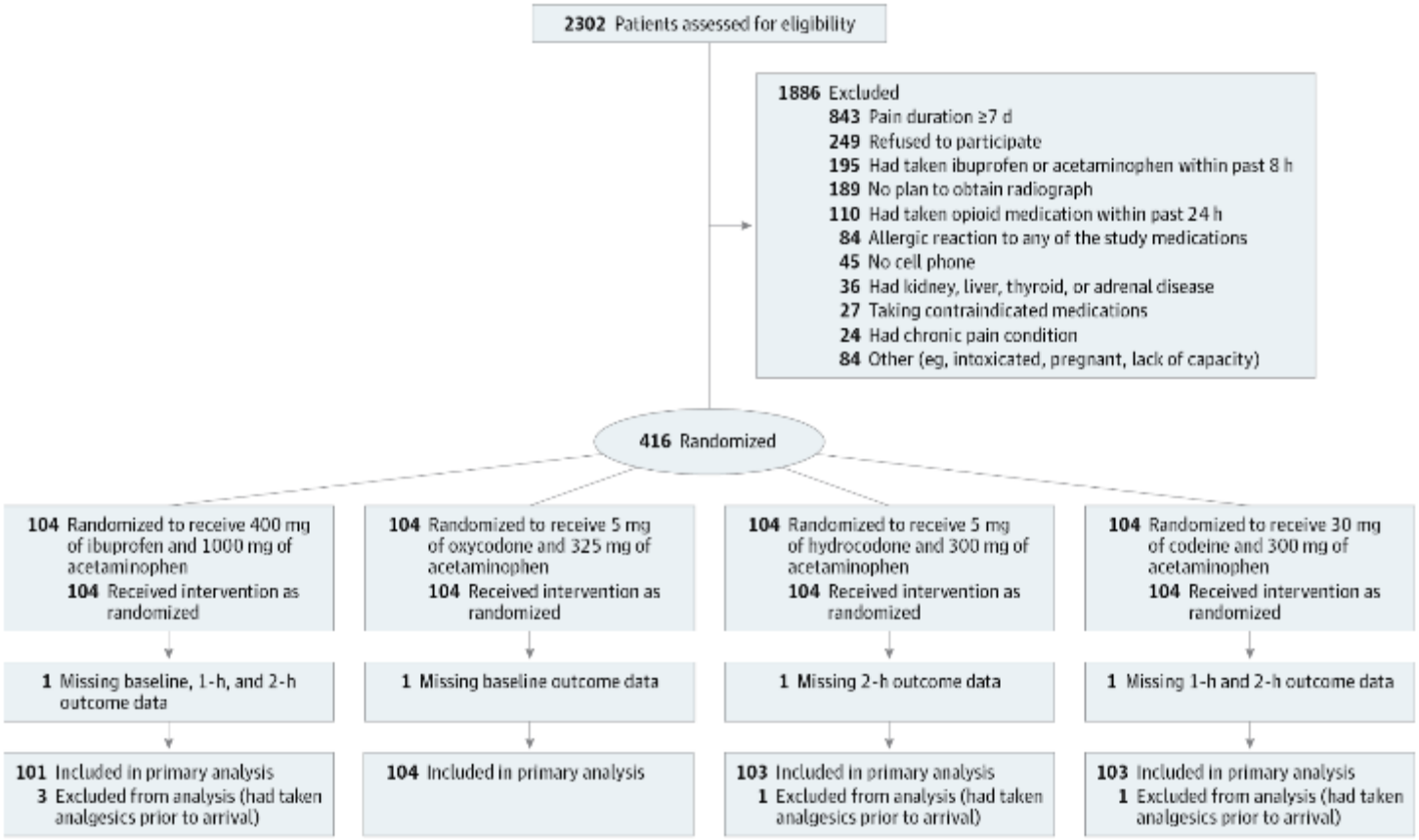
Single Dose of Oral Opioid

- Again, in the midst of a huge opioid epidemic
  - 500,000 OD deaths (most from opioids) since 2000.
- Opioids are commonly used in the ED and oral opioids are often used for extremity pain
- Some evidence that combination opioids are no more efficacious than non-opioid anageslic combinations
- Objective of the study was to measure the degree of pain relief at 2 hours using 4 different oral combination analgesics.
  - One of the analgesics was opioid free.

Single Dose of Oral Opioid

- Randomized double blind clinical trial
- Received one of four oral medications for their extremity pain
  - Ibuprofen and acetaminophen
  - Oxycodone and acetaminophen
  - Hydrocodone and acetaminophen
  - Codeine and acetaminophen
- Patients rated their pain at 1 and 4 hours post ingestion on a 0-10 scale

Single Dose of Oral Opioid



Single-Dose of Oral Opioid

Table 1. Patient Characteristics

	Ibuprofen and Acetaminophen[a]	Oxycodone and Acetaminophen[b]	Hydrocodone and Acetaminophen[c]	Codeine and Acetaminophen[d]
No. of patients	101	104	103	103
Female sex, No. (%)	54 (54)	50 (48)	51 (50)	44 (43)
Age, mean (SD), y	37 (11)	37 (12)	37 (13)	37 (12)
Diagnosis, No. (%)				
Sprain or strain	64 (63)	66 (64)	59 (57)	67 (65)
Extremity fracture	21 (21)	23 (22)	21 (20)	24 (23)
Muscle pain	8 (8)	9 (9)	12 (12)	7 (7)
Contusion	4 (4)	3 (3)	7 (7)	2 (2)
Other	4 (4)	3 (3)	4 (4)	3 (3)
Nonpharmacological ED interventions, No. (%)				
Elastic bandage	39 (39)	37 (36)	23 (22)	36 (35)
Splint	12 (12)	20 (19)	18 (18)	10 (10)
Cast	10 (10)	14 (14)	6 (6)	11 (11)
Ice	7 (7)	11 (11)	10 (10)	4 (4)
Other	11 (11)	5 (5)	15 (15)	16 (16)

Abbreviation: ED, emergency department.

[a] Patients received 400 mg of ibuprofen and 1000 mg of acetaminophen.

[b] Patients received 5 mg of oxycodone and 325 mg of acetaminophen.

[c] Patients received 5 mg of hydrocodone and 300 mg of acetaminophen.

[d] Patients received 30 mg of codeine and 300 mg of acetaminophen.

Single Dose of Oral Opioid

- In all groups the baseline pain score was 8.7 and this decreased to 4.3 at 2 hours
  - There was no change in pain reduction at 2 hours between all groups.
  - The amount of rescue analgesia (morphine) was not different between any of the groups.
  - No different with those with 10/10 pain or a documented fracture.

Single Dose of Oral Opioid

- Limitations
  - Did not compare standard does of acetaminophen
    - 300–325 mg in narcotic analgesic combination meds and 1000 mg in non-narcotic analgesic meds
  - Did not assess patient's pain scores post discharge form the ED or return visits for pain management
  - No single tablet non-opioid analgesic formulation available (2 tabs with differing dosage schedules)

Single-Dose of Oral Opioid

- Recommendations:
  - For patients presenting to the ED with acute extremity pain, there was no statistically significant or clinically important differences in pain reduction at 2 hours between opioid and non-opioid analgesic combination medications.

State population to double by 2040; babies to blame

TOM PHILP
Clatchy News Service

SACRAMENTO — In their first ttempt at projecting California

Area Counties

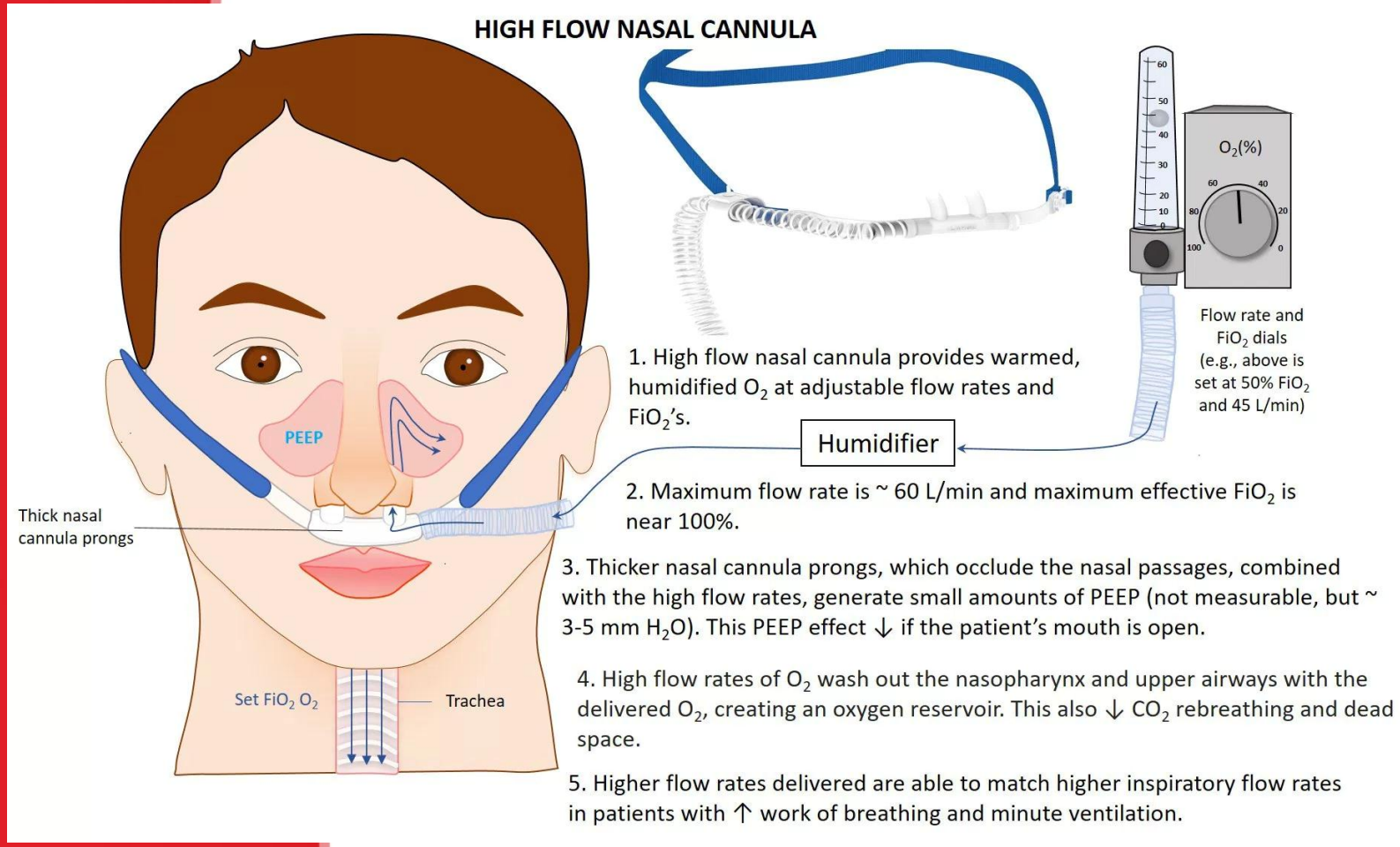
Can High-Flow Nasal Cannula Reduce the Rate of Endotracheal Intubation in Adult Patients with Acute Respiratory Failure Compared with Conventional Oxygen Therapy and Non-Invasive Positive Pressure Ventilation? A Systematic Review and Meta-Analysis

Yun-Nan NI, et al. *Chest*. 2017; 151(4):764-775.

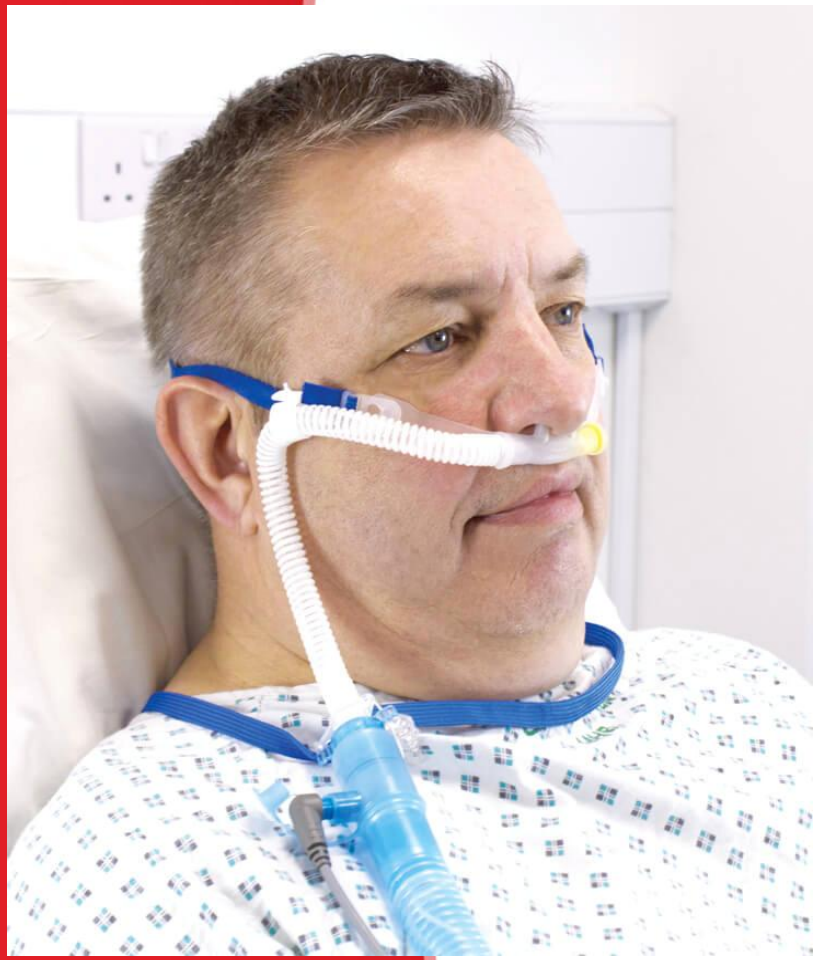
High-Flow Nasal Cannula

- High-Flow nasal cannula is a novel technique of oxygen therapy that delivers heated and humidified O2 via special devices at a rate of up to 60 L/min
- Often better tolerated and efficacious in critically ill infants and children
- Contradictory evidence for adults has been noted in a number of small studies

High Flow Nasal Cannula



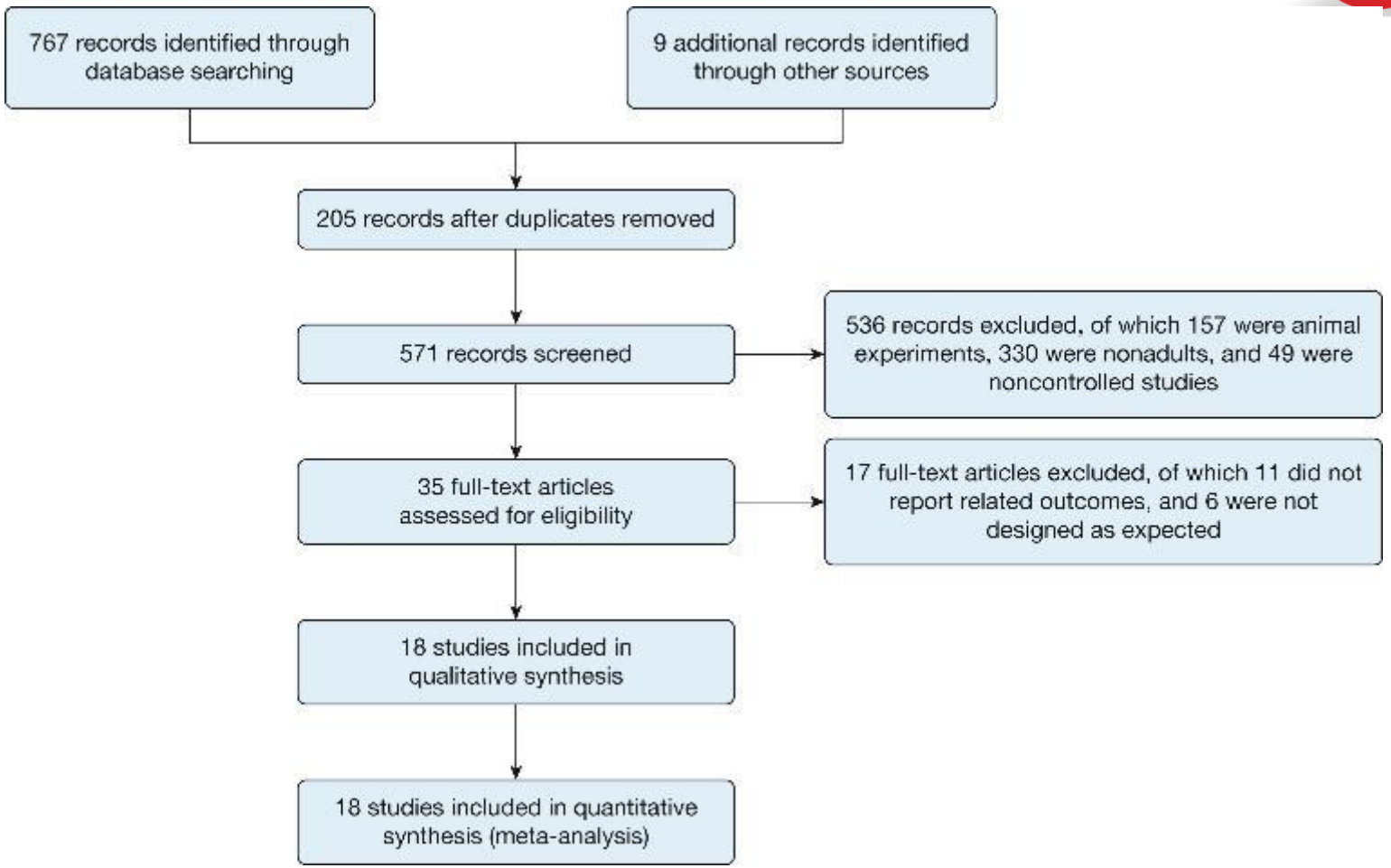
Nasal Cannula vs. Face Mask



High-Flow Nasal Cannula

- For this study:
  - Assumed endotracheal intubation for an outcome in acute respiratory failure patients
    - High-flow nasal cannula is more effective than conventional oxygen therapy
    - Might be a substitute for Non-invasive positive pressure ventilation
  - Secondary outcomes were ICU mortality and length of ICU stay
  - Conducted a systematic review and meta-analysis of the literature from 1946-2016

High-Flow Nasal Cannula



High-Flow Nasal Cannula

- 18 trials selected and total of 3,881 patients were pooled for the final analysis.
- The findings revealed that except for ICU mortality (p=0.02), and endotracheal intubation rate (p=0.02), no significant heterogeneity was noted.
- Compared with conventional oxygen therapy, HFNC was associated with a lower rate of intubation.
- No difference in intubation rates was seen between HFNC and NIPPV.
- No differences in ICU mortality or length of stay

High Flow Nasal Cannula

- Recommendations
  - In adult patients with acute respiratory failure, HFNC decreases the need for endotracheal intubation, and is similar to NIPPV.
  - HFNC improves the rate of endotracheal intubation compared to conventional nasal oxygenation.
  - HFNC is better tolerated than NIPPV

"Good news.
Your cholesterol has stayed the same,
but the research findings have changed."

Risk of Intracranial Hemorrhage in Ground Level Falls with Antiplatelet or Anticoagulant Agents

Ganetsky, et al. *Academic Emergency Medicine*. 2017;24:1258-1266.

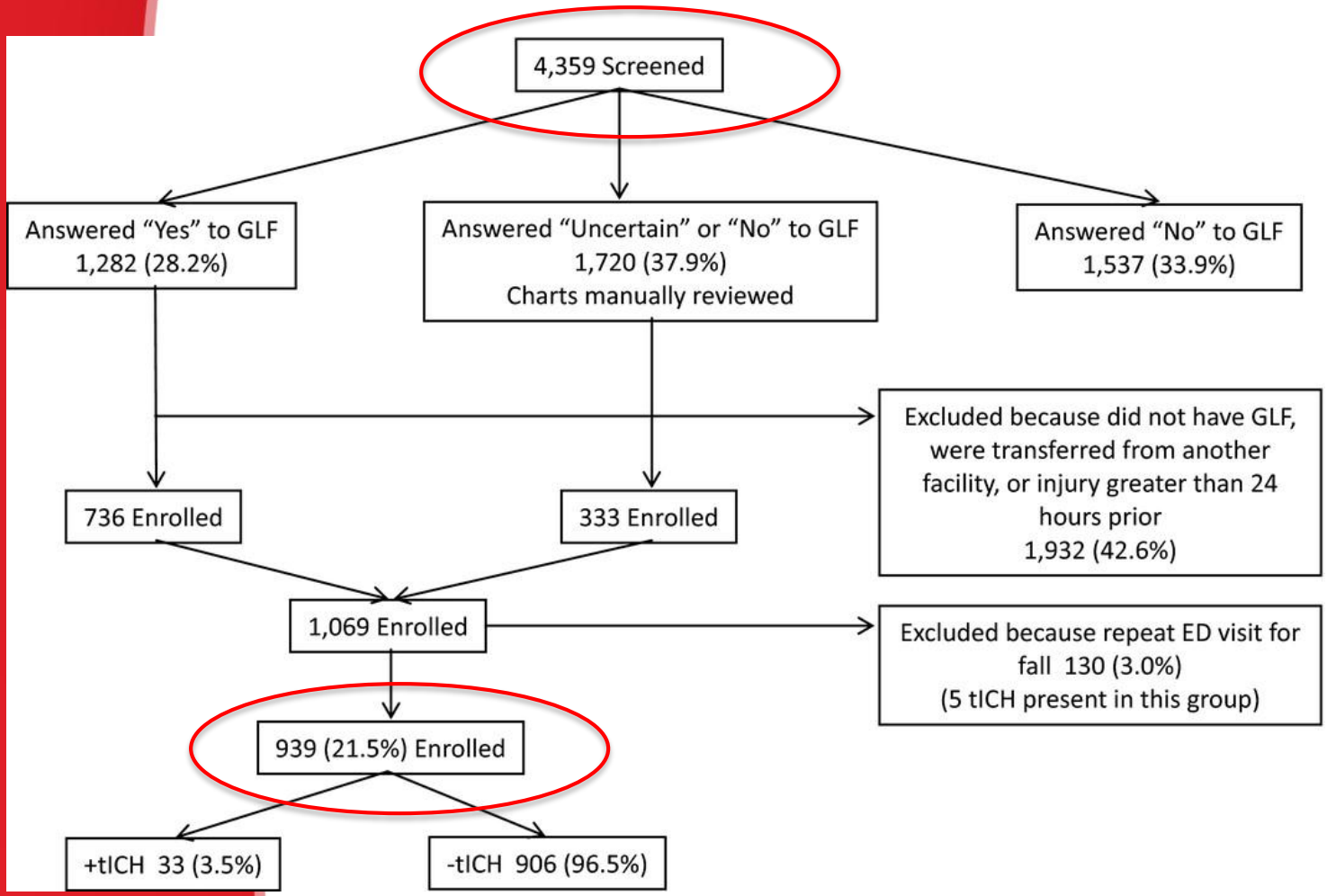
ICH from GLF in Anticoagulation

- Currently, multiple agents available for anticoagulation (both antiplatelet and anticoagulant)
  - Increasing use of direct oral anticoagulants (DOAC)
  - Studies have suggested DOACs have a decreased ICH rate compared to warfarin
    - No studies have investigated traumatic ICH (tICH)
- Few studies have compared tICH rates between antiplatelet and anticoagulant agents
  - Previous studies have not been standardized to a low-acuity ground-level fall mechanism (common presentation)

ICH from GLF in Anticoagulated

- Prospective observational cohort study of consecutive patients presenting to a Level 1 trauma center ED.
- Patients enrolled if they had a GLF and a CT scan
- Primary outcome was a tICH (subdural, epidural, SAH or intraparenchymal hemorrhage) present as read by a neuroradiologist.
- Mortality was assessed by a record review

ICH from GLF in Anticoagulated



ICH from GLF in Anticoagulated

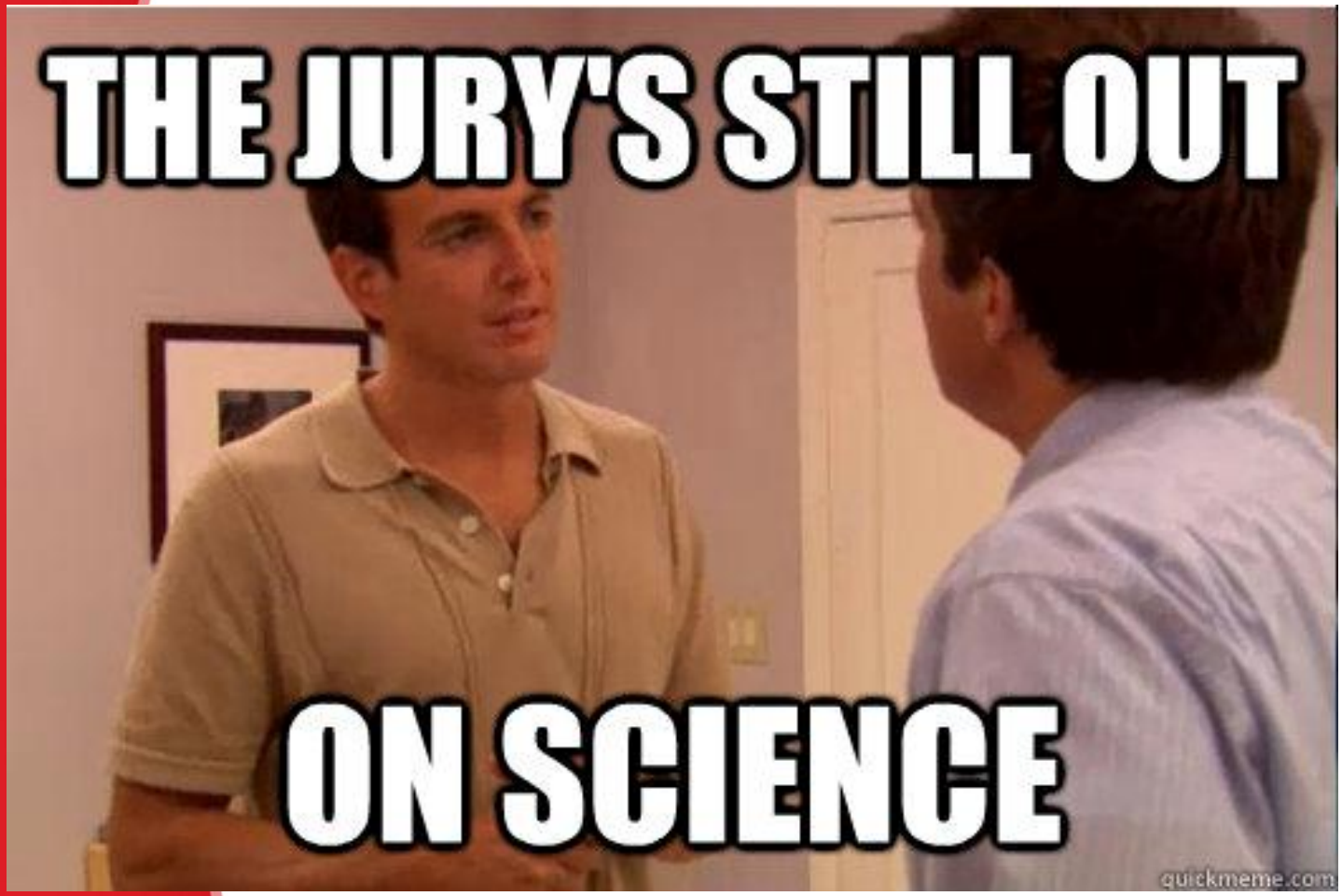
- Total of 33 patients with ICH
  - Anticoagulants alone had a rate of 1.7%
  - Antiplatelet meds had a tICH rate of 4.3%
    - Aspirin alone had a tICH rate of 4.6%
  - Combination aspirin, clopidogrel and warfarin had an tICH rate of 12.5%
  - DOACs had a tICH rate of 0% (31 subjects)
- 2 patients went for a craniotomy (1 ASA, 1 warfarin)
- 4 deaths

ICH from GLF in Anticoagulated

- Difficult to extrapolate the results
  - Selection bias as only those patients who got a CT were enrolled in the study
    - Need structured follow-up of those not imaged
  - Limited number (31) of DOAC patients
- Results seem counterintuitive to other published trials with anticoagulants > antiplatelets for tICH
  - Different mechanism vs. bias?
  - Need larger sample size

ICH from GLF in Anticoagulated

- Recommendations
  - In patients taking one or more of antiplatelet or anticoagulant medications, there is an overall low incidence of tICH (3.5%) from GLF
  - No significant difference between antiplatelet and anticoagulants
    - DOACs 0% but small sample size


THE JURY'S STILL OUT
ON SCIENCE
quickmeme.com

A Placebo-Controlled Trial of Antibiotics for Smaller Skin Abscesses

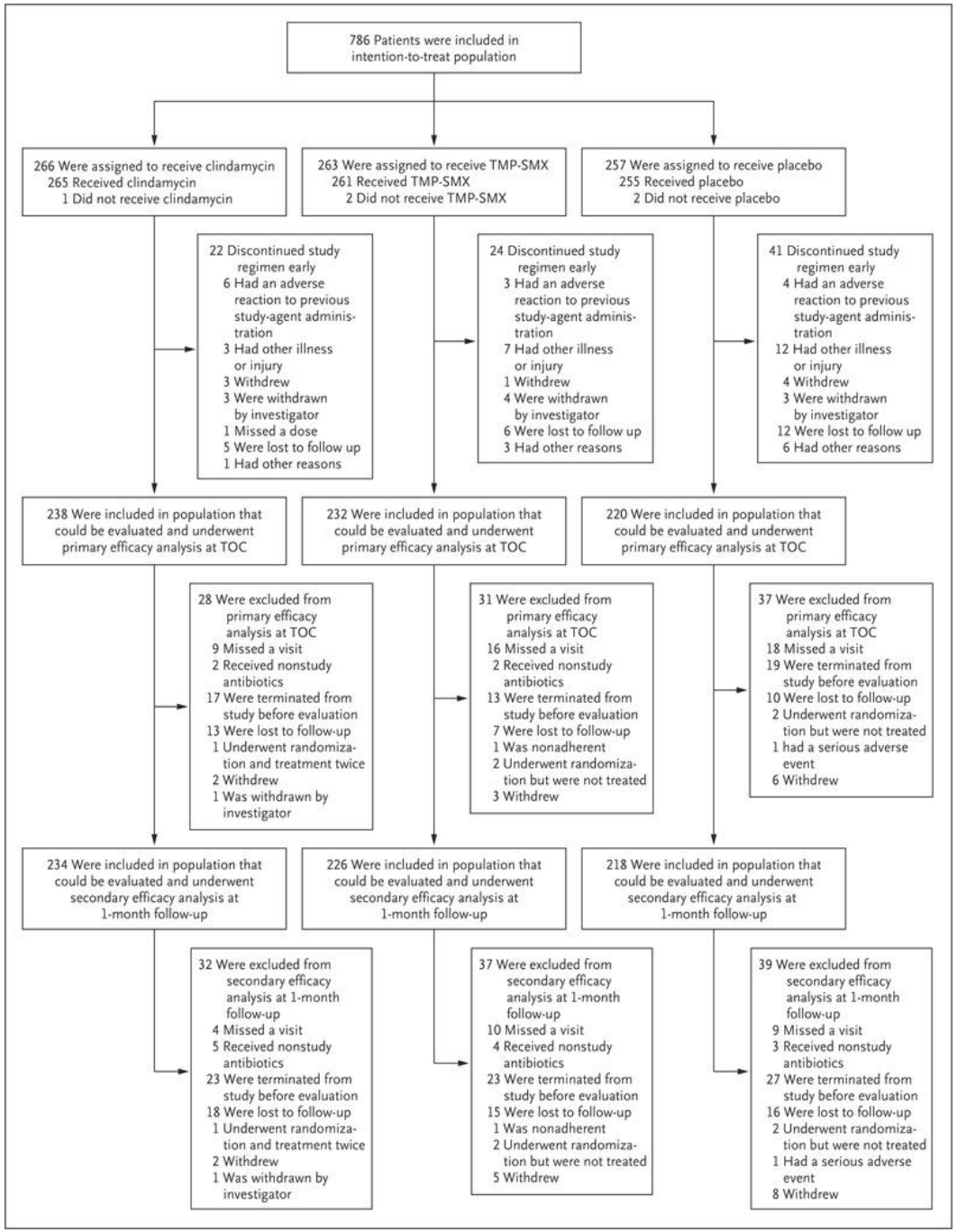
Daum RS, et al. *N Engl J Med*. June 25, 2017; 376:2545-55.

Antibiotics for Skin Abscesses

- More than 4 in 100 people seek medical attention for skin infections annually.
- The most common source of purulent skin and soft-tissue infections in the U.S. is MRSA.
- Last year's NEJM study: TMP-SMX plus I & D treatment for presumed MRSA positive drained skin abscesses resulted in a higher clinical cure rate than placebo
- Previous trials comparing TMP-SMX and clindamycin have shown no difference in clinical cure rates
  - Lacked a placebo group and only enrolled large abscesses.
- The purpose on this trial was to evaluate small abscesses after I & D, also treated with TMP-SMX, clindamycin, or placebo.

Antibiotics for Skin Abscesses

- Multicenter, double-blind, RCT to determine if 10 days of TMP-SMX or clindamycin was superior, as compared to placebo, for clinical cure of skin abscesses receiving drainage in the ED (outpatients).
- Criteria for Lack of Clinical Cure:
  - Lack of resolution of the "signs or symptoms of infection"
  - Inability to continue to take the study medication
  - Reoccurrence at the original site of infection
  - Occurrence of a new infection at a different body site
  - Unplanned surgical treatment of a skin infection
  - Hospitalization related to an infection
- The primary null hypothesis was that placebo, clindamycin and TMP-SMX would have equivalent rates of cure.


786 Patients were included in intention-to-treat population
266 Were assigned to receive clindamycin
265 Received clindamycin
1 Did not receive clindamycin
263 Were assigned to receive TMP-SMX
261 Received TMP-SMX
2 Did not receive TMP-SMX
257 Were assigned to receive placebo
255 Received placebo
2 Did not receive placebo
22 Discontinued study regimen early
6 Had an adverse reaction to previous study-agent administration
3 Had other illness or injury
3 Withdrew
3 Were withdrawn by investigator
1 Missed a dose
5 Were lost to follow up
1 Had other reasons
24 Discontinued study regimen early
3 Had an adverse reaction to previous study-agent administration
7 Had other illness or injury
1 Withdrew
4 Were withdrawn by investigator
6 Were lost to follow up
3 Had other reasons
41 Discontinued study regimen early
4 Had an adverse reaction to previous study-agent administration
12 Had other illness or injury
4 Withdrew
3 Were withdrawn by investigator
12 Were lost to follow up
6 Had other reasons
238 Were included in population that could be evaluated and underwent primary efficacy analysis at TOC
232 Were included in population that could be evaluated and underwent primary efficacy analysis at TOC
220 Were included in population that could be evaluated and underwent primary efficacy analysis at TOC
28 Were excluded from primary efficacy analysis at TOC
9 Missed a visit
2 Received nonstudy antibiotics
17 Were terminated from study before evaluation
13 Were lost to follow-up
1 Underwent randomization and treatment twice
2 Withdrew
1 Was withdrawn by investigator
31 Were excluded from primary efficacy analysis at TOC
16 Missed a visit
2 Received nonstudy antibiotics
13 Were terminated from study before evaluation
7 Were lost to follow-up
1 Was nonadherent
2 Underwent randomization but were not treated
3 Withdrew
37 Were excluded from primary efficacy analysis at TOC
18 Missed a visit
19 Were terminated from study before evaluation
10 Were lost to follow-up
2 Underwent randomization but were not treated
1 had a serious adverse event
6 Withdrew
234 Were included in population that could be evaluated and underwent secondary efficacy analysis at 1-month follow-up
226 Were included in population that could be evaluated and underwent secondary efficacy analysis at 1-month follow-up
218 Were included in population that could be evaluated and underwent secondary efficacy analysis at 1-month follow-up
32 Were excluded from secondary efficacy analysis at 1-month follow-up
4 Missed a visit
5 Received nonstudy antibiotics
23 Were terminated from study before evaluation
18 Were lost to follow-up
1 Underwent randomization and treatment twice
2 Withdrew
1 Was withdrawn by investigator
37 Were excluded from secondary efficacy analysis at 1-month follow-up
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2 Underwent randomization but were not treated
5 Withdrew
39 Were excluded from secondary efficacy analysis at 1-month follow-up
9 Missed a visit
3 Received nonstudy antibiotics
27 Were terminated from study before evaluation
16 Were lost to follow-up
2 Underwent randomization but were not treated
1 Had a serious adverse event
8 Withdrew

Table 4. Logistic-Regression Model of Cure Rates among Children and Adults.

Variable and Population	P Value in the Logistic-Regression Model*		
	TMP-SMX vs. Clindamycin	Placebo vs. Clindamycin	Placebo vs. TMP-SMX
Study group			
Intention-to-treat population	0.37	<0.001	0.003
Population that could be evaluated	0.17	<0.001	<0.001
Age group			
Intention-to-treat population	0.11	0.11	0.98
Population that could be evaluated	0.04	0.03	0.87
Interaction			
Intention-to-treat population	0.17	0.09	0.83
Population that could be evaluated	0.06	0.06	0.74

* The P values refer to the results of a logistic-regression model incorporating study group (clindamycin vs. TMP-SMX) and age group (children vs. adults). After controlling for the effect of age, the differences between placebo and clindamycin and between placebo and TMP-SMX were significant in both the intention-to-treat population and the population that could be evaluated ($P<0.001$). The cure rates for clindamycin in the population that could be evaluated were significantly higher among children than among adults (among children, $P=0.04$ for TMP-SMX vs. clindamycin and $P=0.03$ for placebo vs. clindamycin). None of the interaction terms for the logistic-regression models were significant, indicating that the differences in cure rates between children and adults were not significant in each respective study-group comparison ($P>0.05$ for the intention-to-treat population and the population that could be evaluated).

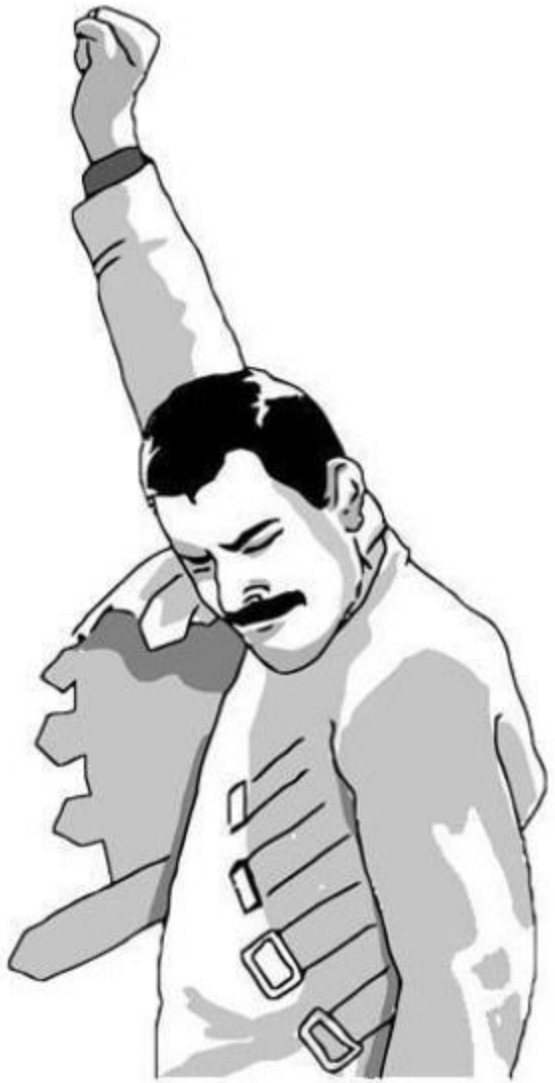
Antibiotics for Skin Abscesses

- The cure rate for TMP-SMX (81.7%) was similar to clindamycin (83.1%).
- Both antibiotics had a higher clinical cure rate than placebo (68.9%; $p<0.001$).
- Adverse effects were more common in the clindamycin group (21.9%) vs. the TMP-SMX group (11.1%) or placebo (12.5%).
- Limitations:
  - Only looked at TMP-SMX and clindamycin.
  - Subjective determination of clinical cure.
  - Most effective with MRSA and MSSA, not as effective with other organisms.
  - Average area of abscess was 3.89 cm^2; average area of erythema 27.3 cm^2
    - Still more on the large side

TMP-SMX for Skin Abscesses

- Recommendations:
  - TMP-SMX or clindamycin treatment for drained skin abscesses results in a higher clinical cure rate than placebo
  - Study population used abscesses ≥5 cm in diameter
    - Most were still pretty big

$p<0.05$



Randomized Trial of Icatibant for Angiotensin-Converting Enzyme Inhibitor-Induced Upper Airway Edema

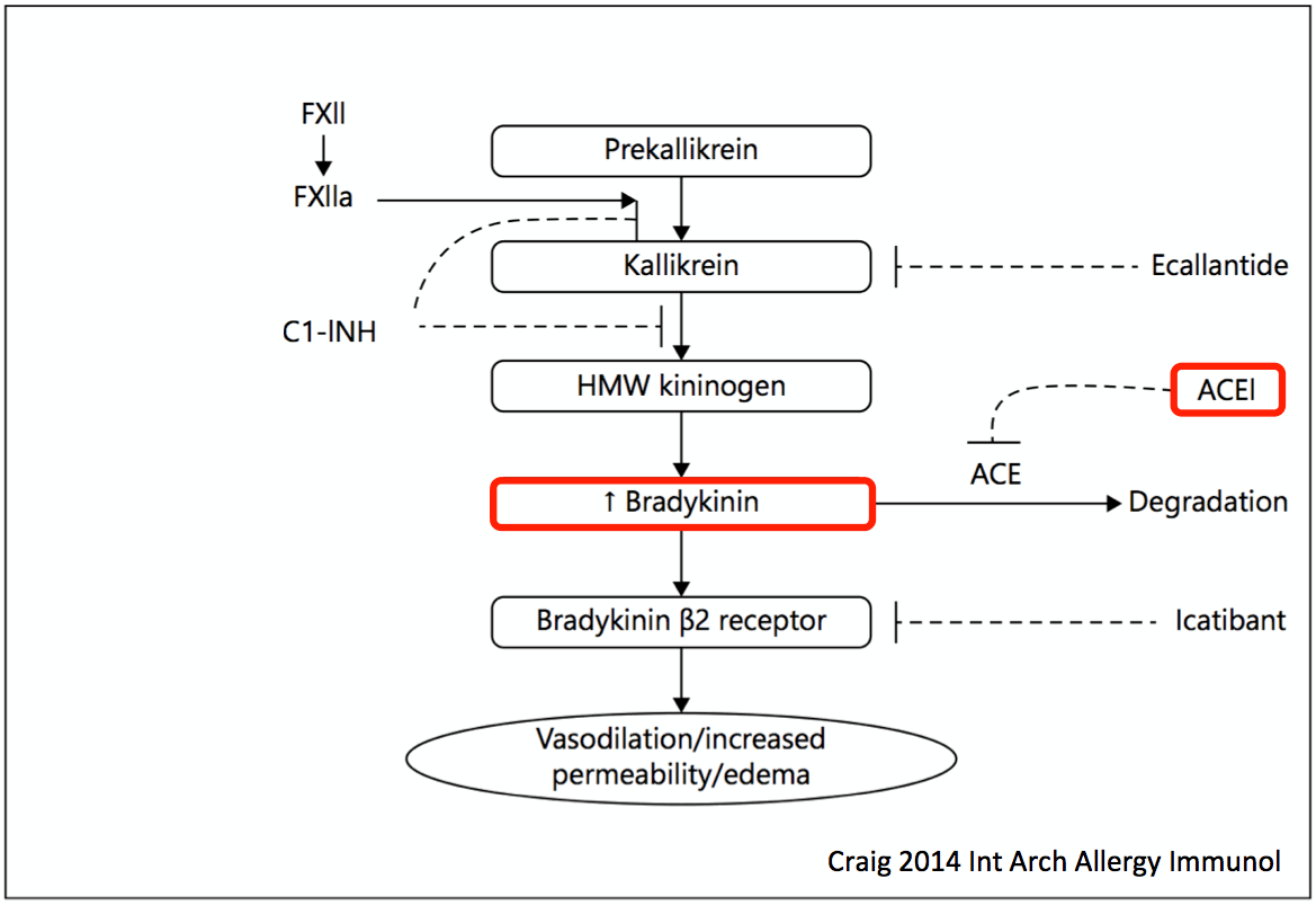
Sinert R, et al. *J Allergy Clin Immunol Pract*. 2017;5(5):1402-09.

Scary Angioedema

Icatibant for Angioedema

- An estimated 1 in 150 to 1000 treated with ACE inhibitors (ACE-I) will develop angioedema
- Currently, there is no known effective pharmacologic treatment for ACE-I induced angioedema.
  - Corticosteroids, antihistamines, and epinephrine have no clear benefit.
- Icatibant is a selective bradykinin B2 receptor antagonist approve to manage hereditary andgioedema (type 1 and 2)
  - Due to a genetic deficiency in C1 inhibitor activity.
- Some small retrospective studies indicate effectiveness in ACE-I angioedema

ACE-I Angioedema Pathway



Icatibant Cost

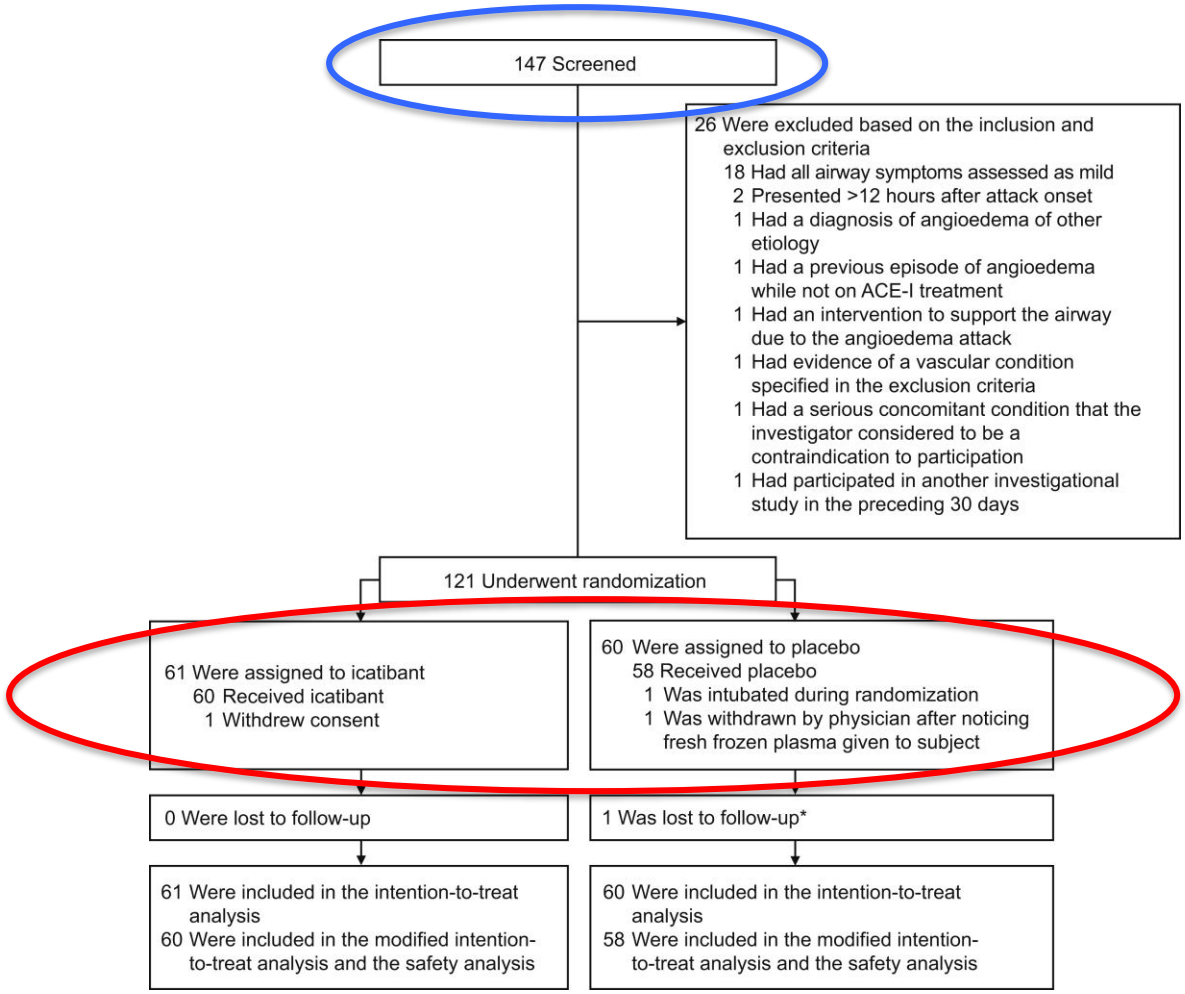
- Cost is ~9600 wholesale; $33,000 for 30mg/3 mL

Icatibant may cost as much as a small car

Icatibant for ACE-I Angioedema

- Phase III, 2-armed, double-blind, placebo controlled RCT in 59 centers (mostly U.S.)
- Eligible if ACE-I angioedema (non-hereditary) not requiring immediate airway management.
- Conventionally administered drugs (corticosteroids, antihistamine, epi) were allowed at any time.
  - If they had good clinical response to these measures they were excluded.
- Randomized in a 1:1 ratio
- Primary efficacy endpoint was time to meeting discharge criteria
  - Secondary endpoints included time to onset of symptom relief, airway intervention, and admission rates.

Icatibant for ACE-I Angioedema

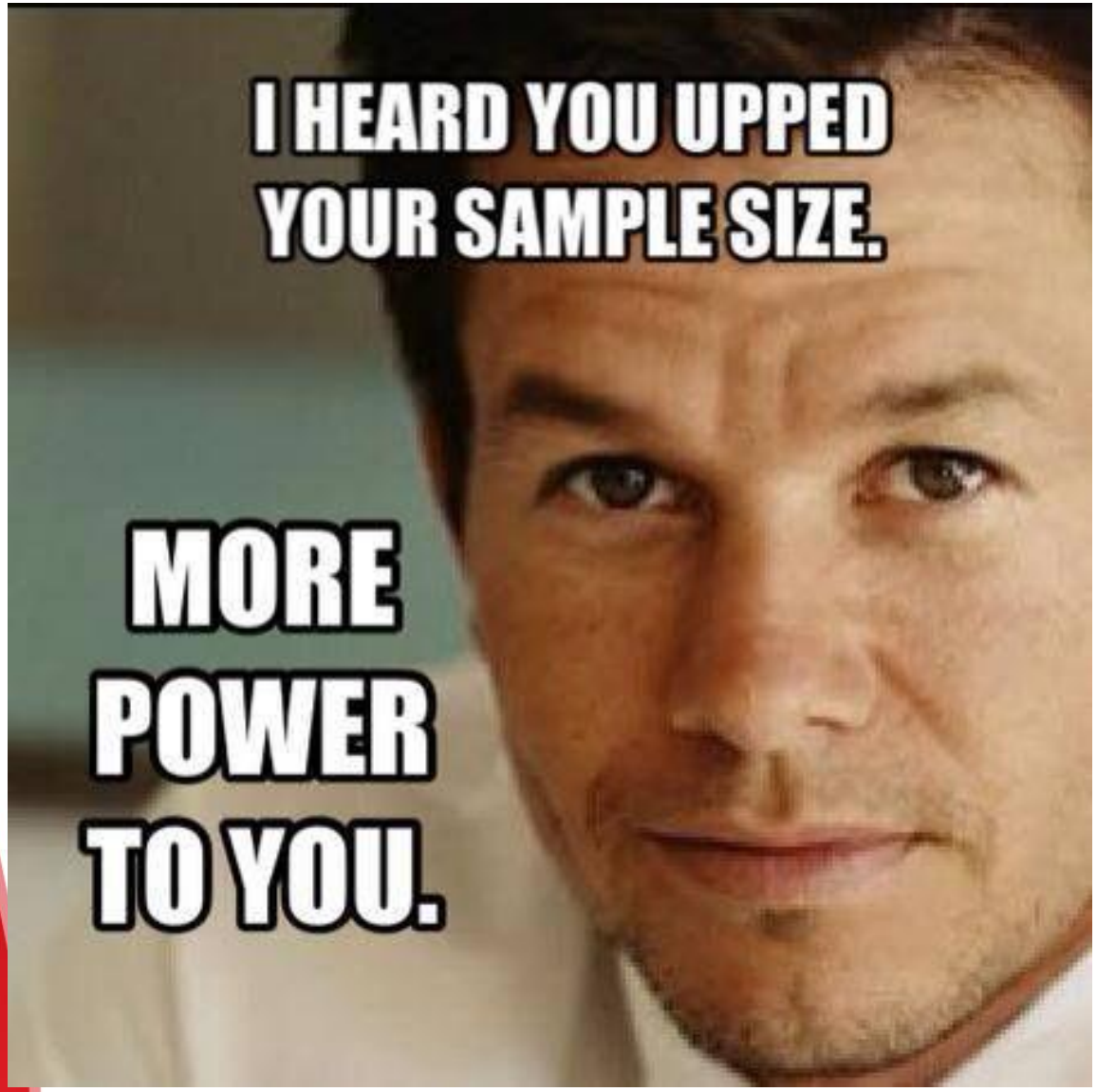


Icatibant for ACE-I Angioedema

- Demographics and baseline characteristics were similar for both groups.
  - 90% received adjunctive medication.
- No statistically significant difference between the two treatment groups in the time to meeting discharge criteria (median time 4.0 hours both groups).
- No statistically significant difference between the two treatment group for any secondary outcome.

Icatibant for ACE-I Angioedema

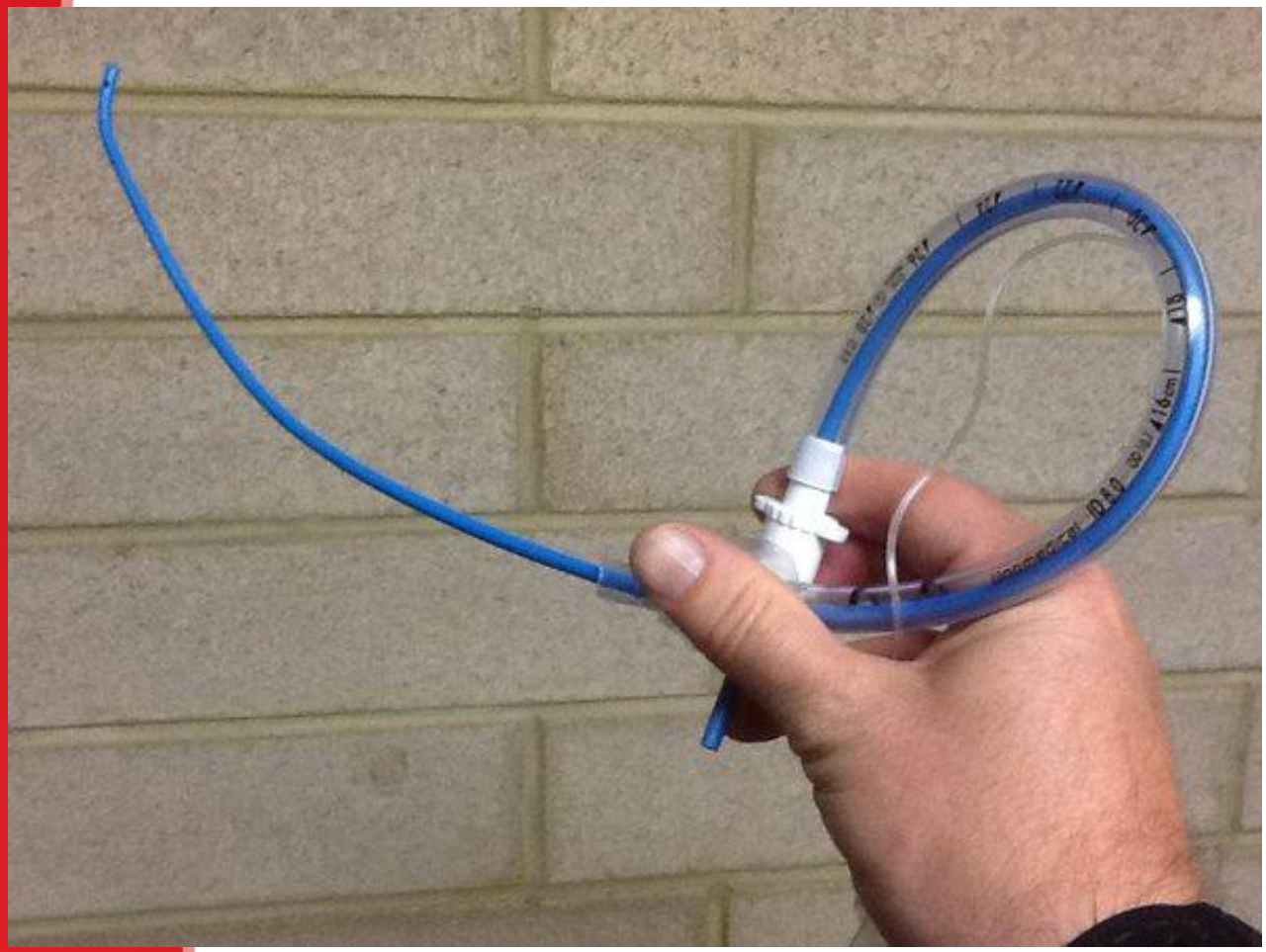
- Recommendations:
  - Icatibant was no more efficacious than placebo in shortening the time to discharge, symptom relief, hospital admission or intubation requirement for angioedema thought secondary to ACE-I.
  - Published negative drug industry sponsored trial (unicorn)


I HEARD YOU UPPED
YOUR SAMPLE SIZE.
MORE
POWER
TO YOU.

The Bougie and First-Pass Success in the Emergency Department

Driver B, et al. *Annals of Emergency Medicine*. October, 2017; 70(4):473-78.

Bougie



Bougie in the ED

- We all intubate – first pass intubation is preferred to avoid intubation complications.
- Use of a bougie was first described by Macintosh in 1949.
- Bougies in the ED are usually used as a rescue device after a failed intubation.
  - May improve first pass success in the ED.
- First pass success averages 85% in the ED
- Bougies are used in an estimated 3.5% of intubations according to data from the National Emergency Airway Registry.
- This study's goal was to determine if bougie use is associated with increased first pass intubation success in ED patients.

Bougie in the ED

- Retrospective observational study at a Level 1 trauma center using video review as the primary mode of data collection.
- Studied consecutive intubations
  - C-Mac was the only video laryngoscope available.
  - Reviewed resuscitation room videos recorded for each patient case.
  - Reviewed C-MAC recorded video
  - Intubation attempt was anytime the blade entered the mouth of the patient
- The primary outcome was first pass success
  - Confirmed on video and waveform capnography

Bougie in the ED

- 676 adult ED intubations occurred during the study period, of which videos were available for 593 (88%).
- First-pass success was higher with bougie use (414/435 – 95%) compared to without it (93/108 – 86%).
- The duration of the first attempt was higher in the bougie than without (mean difference 14 seconds).
- On multivariable analysis, bougie remained associated with first-pass intubation success (adjusted odds ratio 2.83).

Bougie in the ED

- Limitations:
  - Retrospective review of video data
  - Not all videos available
  - Not randomized
  - Single institution that clearly loves bougies
  - No preintubation assessments (Mallampati scoring, mouth opening, etc)

Bougie in the ED

- Recommendations-
  - Bougie use routinely was found to have a higher first pass intubation success.
  - Hennepin loves bougies


CONTROL GROUP
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Search ID: jco0288

Complications from Administration of Vasopressors through Peripheral Venous Catheters: An Observational Study

Medlej K. *The Journal of of Emergency Medicine*. 2018 January; 54(1):47-53 Epub 2017 October 27.

Vasopressors through PVC

- Early goal-directed therapy (EGDT) for sepsis emphasizes early aggressive fluid administration and vasopressor initiation for refractory hypotension.
- The placement of a CVC for vasopressors is still required by many institutions due to potential complications of peripheral administration of vasopressors.
  - Skin necrosis at the peripheral site most common.
  - Actual rates of complications is not well known.
- This is a prospective observational study conducted in a tertiary care ED that routinely uses a PVC for vasopressors.

Vasopressors through PVC

- Patients or families were approached in the ED and informed consent was obtained
- Patients were then examined the IV site twice daily for 48 hours by research fellows.
  - Research fellows were recently graduated MDs who choose post doctoral work prior to starting residency.
  - Research fellows were educated in the complications of interest.
  - Sites were examined for extravasation, thrombophlebitis, cellulitis , tissue necrosis and limb ischemia.

Vasopressors through PVC

- 55 patients were enrolled (34 males and 21 females).
- Norepinephrine (NE) was the most common vasopressor (91%).
- The antecubital fossa was the most common IV site and most catheters were 20-gauge (50.9%) or 18 gauge (36.4%).
- Administration of NE had a low rate (5.5%) of minor complications
  - Thrombophlebitis (1) and extravasations (2).
- Administration of NE had no major complications (0%).
  - Tissue necrosis (0) and limb ischemia (0).

Vasopressors through PVC

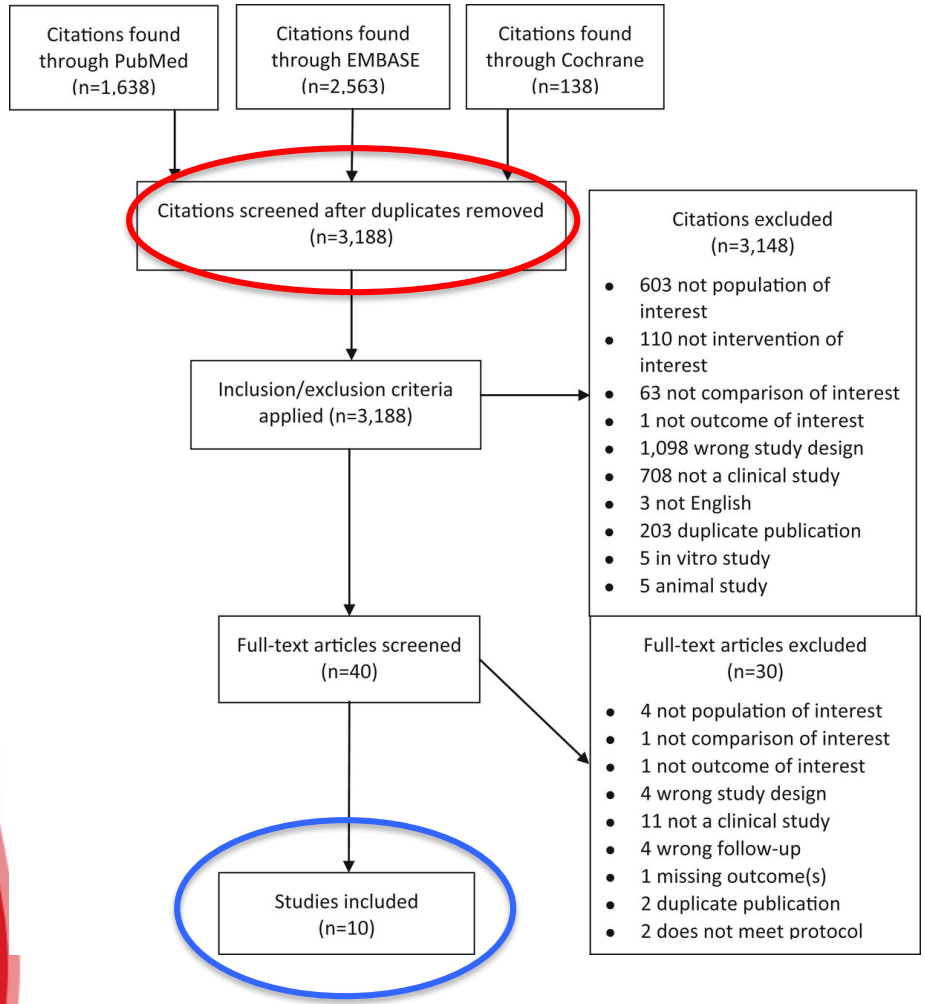
- Recommendations:
  - In this observational study, administration of vasopressors through a PVC had a low rate of complications that did not result in significant morbidity.
  - 2/3 of the complications occurred when the PVC site was in the hand.
    - Consistent with the prior literature – hands and feet should be avoided when using vasopressors through a PVC.

WHEN THE PATIENT TELLS YOU THEY'VE DONE EXTENSIVE INTERNET RESEARCH ABOUT THEIR DIAGNOSIS AND START RECOMMENDING TREATMENTS

2017 American College of Cardiology (ACC)/American Heart Association (AHA)/Heart Rhythm Society (HRS) Guideline for the Assessment and Management of Patients with Syncope

Shen WK, et al. *Circulation*. (published online March 9, 2017).

2017 Syncope Guidelines



Applying Class of Recommendation and Level of Evidence to Clinical Strategies, Interventions, Treatments, or Diagnostic Testing in Patient Care

(Updated August 2015)

CLASS (STRENGTH) OF RECOMMENDATION

CLASS I (STRONG) — Benefit >>> Risk

Suggested phrases for writing recommendations:
- Is recommended
- Is indicated/useful/effective/beneficial
- Should be performed/administered/other
- Comparative-Effectiveness Phrases†:
  - Treatment/strategy A is recommended/indicated in preference to treatment B
  - Treatment A should be chosen over treatment B

CLASS IIa (MODERATE) — Benefit >> Risk

Suggested phrases for writing recommendations:
- Is reasonable
- Can be useful/effective/beneficial
- Comparative-Effectiveness Phrases†:
  - Treatment/strategy A is probably recommended/indicated in preference to treatment B
  - It is reasonable to choose treatment A over treatment B

CLASS IIb (WEAK) — Benefit ≥ Risk

Suggested phrases for writing recommendations:
- May/might be reasonable
- May/might be considered
- Usefulness/effectiveness is unknown/unclear/uncertain or not well established

CLASS III: No Benefit (MODERATE) — Benefit = Risk

(Generally, LOE A or B use only)

Suggested phrases for writing recommendations:
- Is not recommended
- Is not indicated/useful/effective/beneficial
- Should not be performed/administered/other

CLASS III: Harm (STRONG) — Risk > Benefit

Suggested phrases for writing recommendations:
- Potentially harmful
- Causes harm
- Associated with excess morbidity/mortality
- Should not be performed/administered/other

LEVEL (QUALITY) OF EVIDENCE‡

LEVEL A
- High-quality evidence‡ from more than 1 RCT
- Meta-analyses of high-quality RCTs
- One or more RCTs corroborated by high-quality registry studies

LEVEL B-R (Randomized)
- Moderate-quality evidence‡ from 1 or more RCTs
- Meta-analyses of moderate-quality RCTs

LEVEL B-NR (Nonrandomized)
- Moderate-quality evidence‡ from 1 or more well-designed, well-executed nonrandomized studies, observational studies, or registry studies
- Meta-analyses of such studies

LEVEL C-LD (Limited Data)
- Randomized or nonrandomized observational or registry studies with limitations of design or execution
- Meta-analyses of such studies
- Physiological or mechanistic studies in human subjects

LEVEL C-EO (Expert Opinion)

Consensus of expert opinion based on clinical experience

COR and LOE are determined independently (any COR may be paired with any LOE).

A recommendation with LOE C does not imply that the recommendation is weak. Many important clinical questions addressed in guidelines do not lend themselves to clinical trials. Although RCTs are unavailable, there may be a very clear clinical consensus that a particular test or therapy is useful or effective.

* The outcome or result of the intervention should be specified (an improved clinical outcome or increased diagnostic accuracy or incremental prognostic information).

† For comparative-effectiveness recommendations (COR I and IIa; LOE A and B only), studies that support the use of comparator verbs should involve direct comparisons of the treatments or strategies being evaluated.

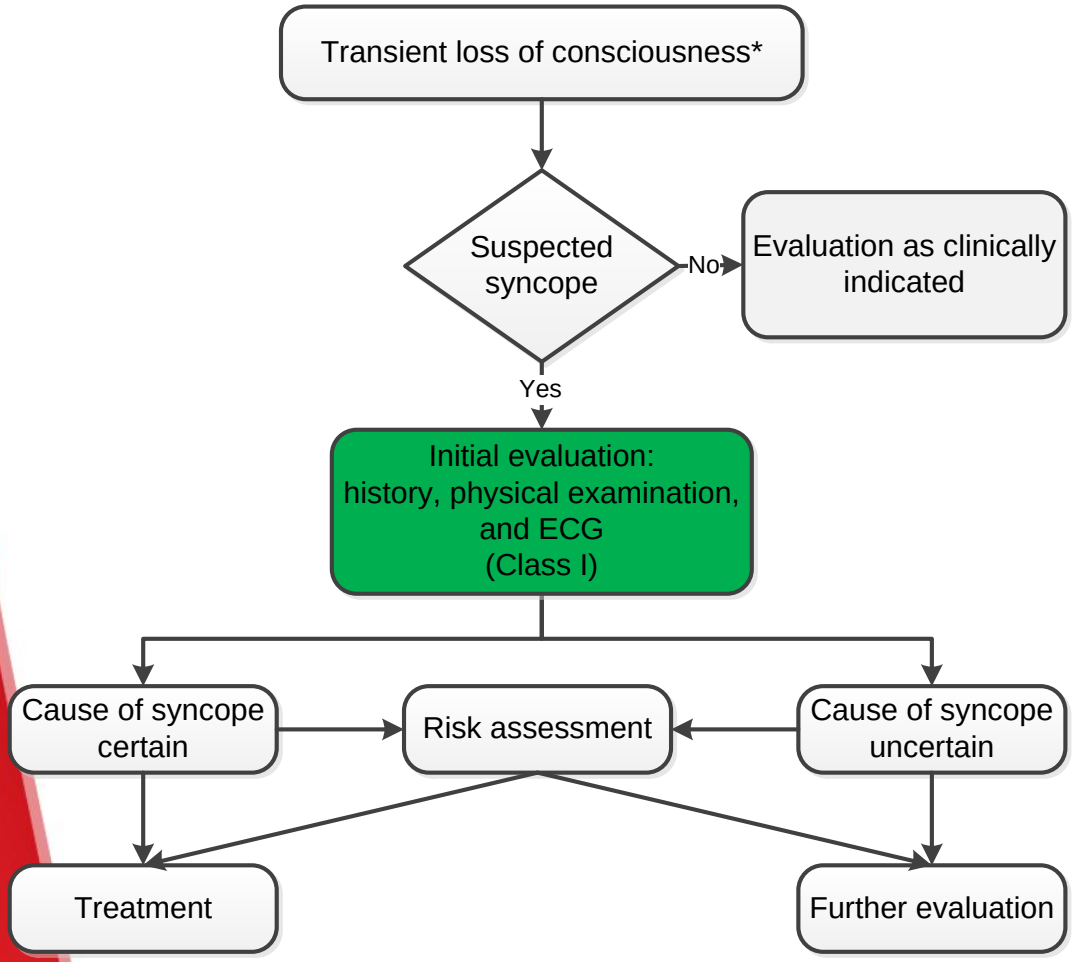
‡ The method of assessing quality is evolving, including the application of standardized, widely used, and preferably validated evidence grading tools; and for systematic reviews, the incorporation of an Evidence Review Committee.

COR indicates Class of Recommendation; EO, expert opinion; LD, limited data; LOE, Level of Evidence; NR, nonrandomized; R, randomized; and RCT, randomized controlled trial.

2017 Syncope Guidelines

- Initial Evaluation
  - Conduct a physical exam, history and resting ECG (Class 1)

Syncope Initial Evaluation



*See relevant terms and definitions in Table 3.
Colors correspond to Class of Recommendation in Table 1. This figure shows the general principles for initial evaluation of all patients after an episode of syncope.
ECG indicates electrocardiogram.

2017 Syncope Guidelines

TABLE 3 **Historical Characteristics Associated With Increased Probability of Cardiac and Noncardiac Causes of Syncope (40,47-55)**

More Often Associated With Cardiac Causes of Syncope
■ Older age (>60 y)
■ Male sex
■ Presence of known ischemic heart disease, structural heart disease, previous arrhythmias, or reduced ventricular function
■ Brief prodrome, such as palpitations, or sudden loss of consciousness without prodrome
■ Syncope during exertion
■ Syncope in the supine position
■ Low number of syncope episodes (1 or 2)
■ Abnormal cardiac examination
■ Family history of inheritable conditions or premature SCD (<50 y of age)
■ Presence of known congenital heart disease
More Often Associated With Noncardiac Causes of Syncope
■ Younger age
■ No known cardiac disease
■ Syncope only in the standing position
■ Positional change from supine or sitting to standing
■ Presence of prodrome: nausea, vomiting, feeling warmth
■ Presence of specific triggers: dehydration, pain, distressful stimulus, medical environment
■ Situational triggers: cough, laugh, micturition, defecation, deglutition
■ Frequent recurrence and prolonged history of syncope with similar characteristics

SCD indicates sudden cardiac death.

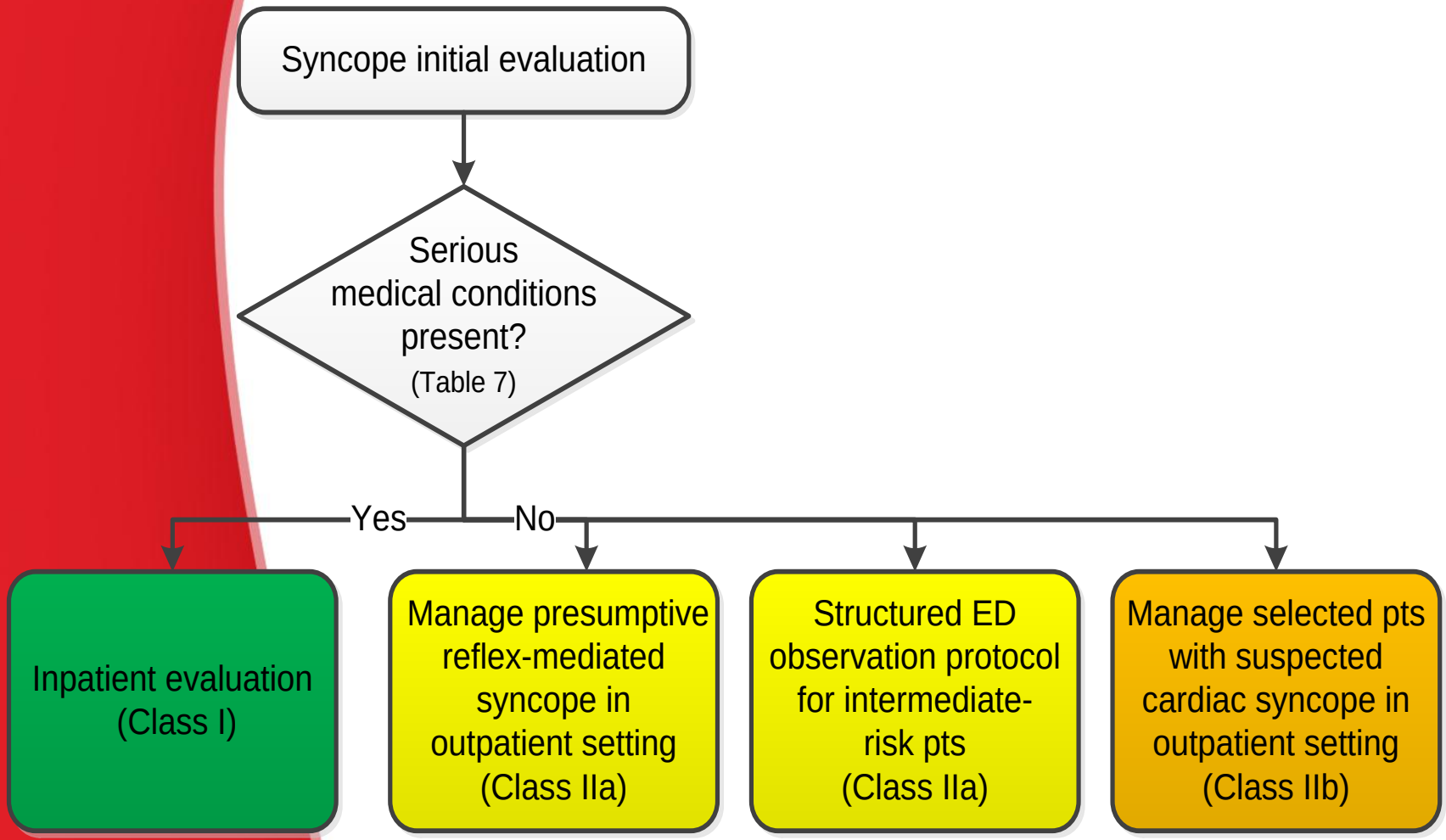
2017 Syncope Guidelines

- Testing
  - Only if the initial clinical evaluation does not reveal an etiology, targeted blood testing may be reasonable (IIa)
  - For selective patients with syncope suspected to be from CV causes, certain tests are useful:
    - Structural heart disease – TTE (IIa)
    - Cardiac etiology – cardiac CT/MRI
    - Syncope during exertion – Echo and stress testing
    - For arrhythmia – EP testing

2017 Syncope Guidelines

- Disposition from the ED
  - Hospital admission for those with a serious medical condition (I).
  - For admitted patients with syncope suspected to be of cardiac etiology, admit to a telemetry unit for continuous monitoring (I).
  - Patients with presumptive reflex-mediated syncope can be managed as outpatients (Ia)
  - ED observation units are appropriate for intermediate risk patients or have an unclear etiology (IIb)

Patient Disposition After Initial Evaluation for Syncope



Colors correspond to Class of Recommendation in Table 1.
ED indicates emergency department; pts, patients.

2017 Syncope Guidelines

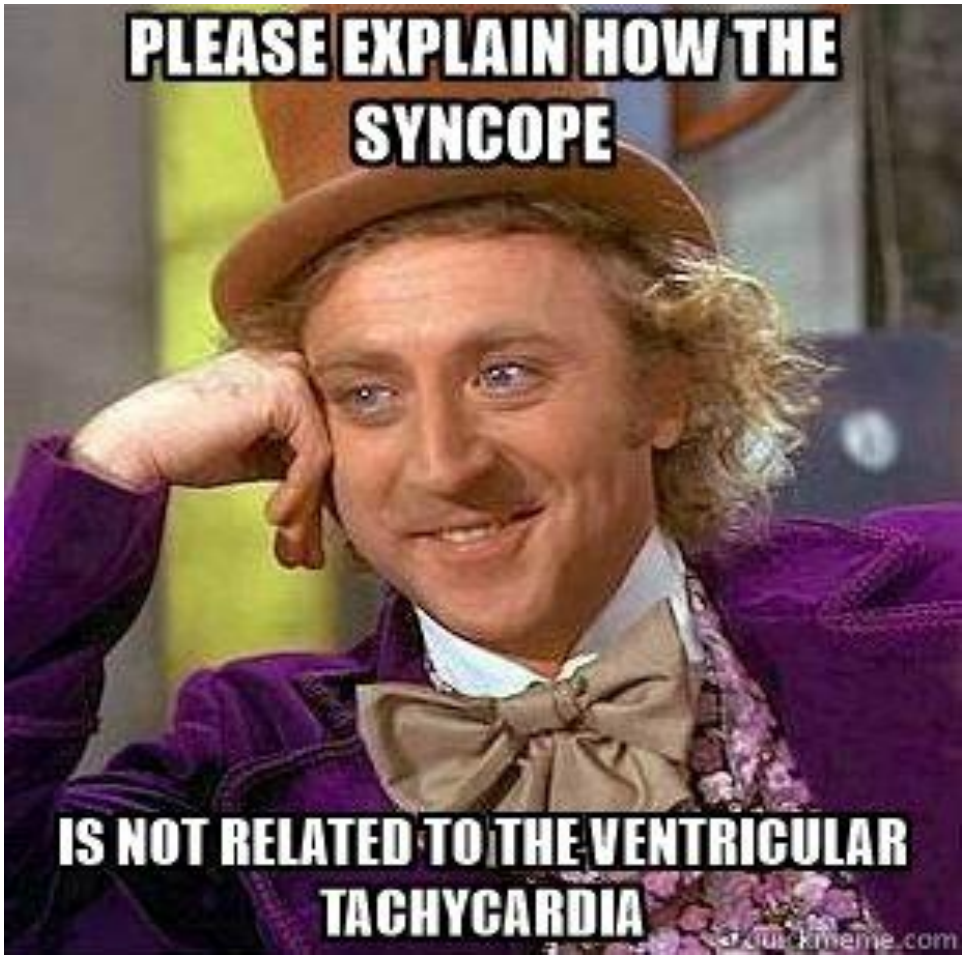
TABLE 6 Examples of Serious Medical Conditions That Might Warrant Consideration of Further Evaluation and Therapy in a Hospital Setting

Cardiac Arrhythmic Conditions	Cardiac or Vascular Nonarrhythmic Conditions	Noncardiac Conditions
■ Sustained or symptomatic VT	■ Cardiac ischemia	■ Severe anemia/gastrointestinal bleeding
■ Symptomatic conduction system disease or Mobitz II or third-degree heart block	■ Severe aortic stenosis	■ Major traumatic injury due to syncope
■ Symptomatic bradycardia or sinus pauses not related to neurally mediated syncope	■ Cardiac tamponade	■ Persistent vital sign abnormalities
■ Symptomatic SVT	■ HCM	
■ Pacemaker/ICD malfunction	■ Severe prosthetic valve dysfunction	
■ Inheritable cardiovascular conditions predisposing to arrhythmias	■ Pulmonary embolism	
	■ Aortic dissection	
	■ Acute HF	
	■ Moderate-to-severe LV dysfunction	

HCM indicates hypertrophic cardiomyopathy; HF, heart failure; ICD, implantable cardioverter-defibrillator; LV, left ventricular; SVT, supraventricular tachycardia; and VT, ventricular tachycardia.

Davos Technique

- Recommendations
  - First combined guidelines for evaluation and treatment of syncope by the ACC, AHA and HRS
  - Similar to the ACEP 2007 guidelines
    - After history, physical exam, and ECG, further workup is indicated only for patients with a suspected serious underlying cause


PLEASE EXPLAIN HOW THE SYNCOPE
IS NOT RELATED TO THE VENTRICULAR TACHYCARDIA

Time to Delivery of an Automated External Defibrillator using a Drone for Simulated Out-of-Hospital Cardiac Arrests vs. EMS

Claesson A, et al. JAMA. June 13, 2017. 317(22):2332-2334.

AED Drones vs. EMS

- Drones with an attached AED can be activated by a dispatcher and sent to an address given by the caller
- Swedish study compared drone AED response time to that of EMS
  - Drone dispatched for out-of-sight flights to areas where there was an out-of-hospital cardiac arrest (OHCA)
  - Response times were compared with documented EMS times.

AED Drones vs. EMS

- https://www.youtube.com/watch?v=SAc1idDc5Nc

Summary


that pretty much
WORLD'S BEST BOSS
sums it up
ICANHASCHEEZBURGER.COM

Summary

1. Topical TXA is superior to nasal packing for epistaxis patients on antiplatelet meds.

2. High ED opioid prescribers are linked to subsequent higher opioid use in Medicare patients.

3. Acetaminophen/ibuprofen was as effective as opioid/acetaminophen for treatment of ED extremity pain.

4. In adult patients with acute respiratory failure, HFNC decreases intubation, and is better tolerated than NIPPV.

Summary

5. In patients taking antiplatelet or anticoagulant medications, there is a low incidence of tICH (3.5%) from GLF – but it still occurs!

6. Use of TMP-SMX or clindamycin in drained skin abscesses improves clinical cure rates.

7. Icatibant is not helpful for ACE-I angioedema. It is very expensive!!

8. The bougie improves first pass intubation rates.

Summary

9. Vasopressors administered via PVC seem safe – except in the hands or the feet.

10. The ACC/AHA/HRS Syncope guidelines are similar to ACEP 2007 guidelines

Bonus! Drones are cool and can be lifesaving!