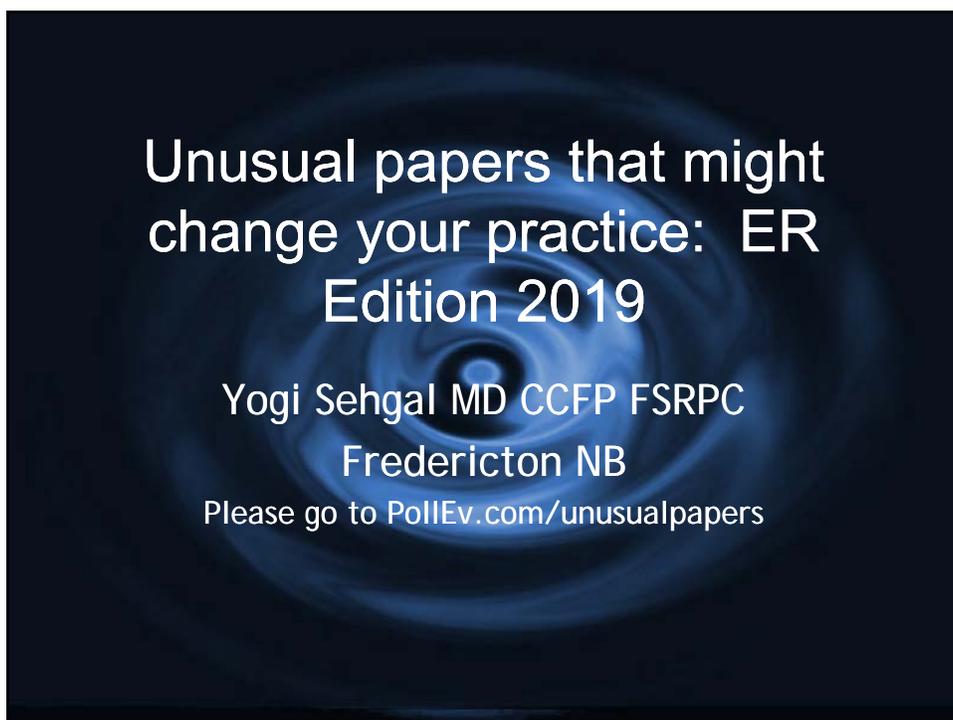


1



Unusual papers that might  
change your practice: ER  
Edition 2019

Yogi Sehgal MD CCFP FSRPC  
Fredericton NB

Please go to [PollEv.com/unusualpapers](http://PollEv.com/unusualpapers)

2

## Testing PollEverywhere

G Open browser to [pollev.com](http://pollev.com)

G To participate, join:  
[Pollev.com/unusualpapers](http://Pollev.com/unusualpapers)

3

## Conflicts of Interest

No one usually  
pays me to do  
this  
I am interested  
in conflict but  
have no conflicts  
of interest



*"I'm afraid I can't treat you, Mr. Fisk.  
I have a conflict of interest."*

4

## What's your favourite grammar-based expression?

- A) Every time a typo is made, the errorists win
- B) Don't date apostrophes—they're too possessive
- C) Grammar is the difference between knowing your s#!t and knowing you're s#!t
- D) Why is a group of squids not called a squad?
- E) Does a grammatically-correct owl say "Whom?"

5

**Which is your favourite grammar-based expression?**

|   |  |
|---|--|
| <p>Every time a typo is made, the errorists win</p> <p>Don't date apostrophes—they're too possessive</p> <p>Grammar is the difference between knowing your s#!t and knowing you're s#!t</p> <p>Why is a group of squids not called a squad?</p> <p>Does a grammatically-correct owl say "Whom?"</p> |  |
|---|--|

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6

## Objectives

- ☐ Will review several papers that actually have some potential relevance to YOUR practice
- ☐ Interactive (pollev.com)
- ☐ Bottom line
- ☐ Hopefully will inspire some curiosity and wonder

7

## Chuck Hurley

- ☐ 21 yo with gastro, puking
- ☐ Would like something for nausea
- ☐ Med student says, "Hey I went to this unusual papers thing and that guy said you could use alcohol swabs to get initial control of nausea while waiting for something to work. Why not try it instead of ondansetron?"

8

Which is true of sniffing isopropyl alcohol swabs for nausea?

- A) They are as effective as ondansetron
- B) They are more effective than ondansetron
- C) They are less effective than ondansetron
- D) They are additive to ondansetron (more effective together)

9

Which is true of alcohol swab sniffing for nausea?

|                                   |  |
|-----------------------------------|--|
| As effective as ondansetron       |  |
| More effective than ondansetron   |  |
| Less effective than ondansetron   |  |
| Additive to ondansetron (synergy) |  |

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10

## Chuck Hurley

- G April, M, et al, Aromatherapy Versus Oral Ondansetron for Antiemetic Therapy Among Adult Emergency Department Patients: A Randomized Controlled Trial, *Ann Emerg Med.* 2018; 72: 184-193
- G N=120 (120 completed), single centre ER adults with chief complaint nausea vomiting, nausea  $\geq 3/10$
- G Excluded known long QT, alcohol contraindications, altered LOC, pregnant, IV or other antiemetic already given

11

## Chuck Hurley

- G Double blinded to oral liquid 4 mg ondansetron
- G Also single-blinded to rubbing alcohol swab vs saline swab opened by the patient
  - G Unlike previous study, sniff deeply as frequently as required for relief

12

## Primary Outcome

G Measured change in nausea from baseline on VAS at 30 min

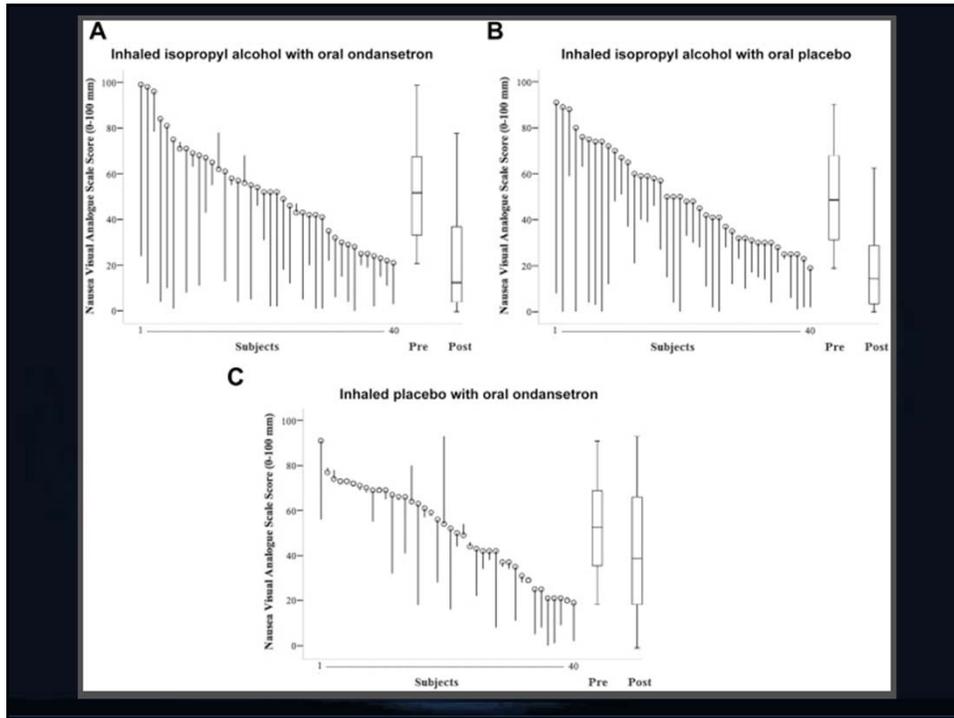
13

## Results

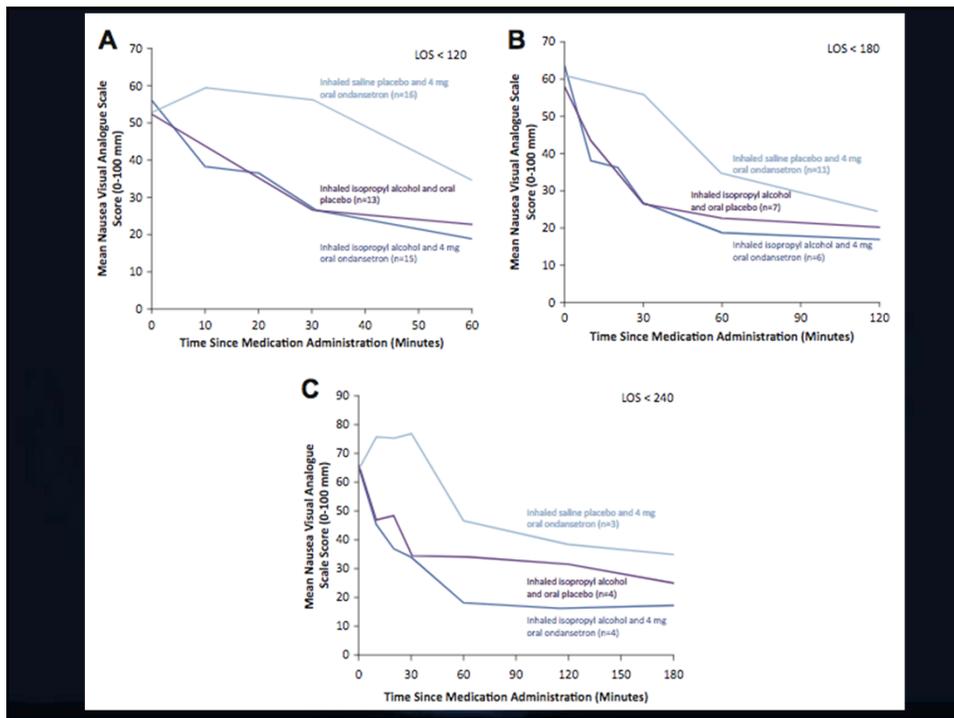
G Groups similar demographically and symptoms, but they did not give reason for presentation for each group

G All groups started with a mean nausea around 5/10 on VAS

14



15



16

## Reductions in VAS

G Alcohol + Ondansetron:

G 30 mm (95% CI 22 to 37 mm)

G Alcohol Alone:

G 32 mm (95% CI 25 to 39 mm)

G Ondansetron alone:

G 9 mm (95% CI 5 to 14 mm)

17

## Caveats

G Convenience sample (but did it at different shifts including night, w/end)

G Underdosed ondansetron at 4 mg

G 30 min vs 60 min?

G IV vs IM vs oral ondansetron?

G Safety? (unlimited use)

G Initial differences? Pain?

18

## Bottom Line

- G Sniffing an isopropyl alcohol swab may give rapid relief of nausea, cheaply
- G Unclear if better than a good dose of ondansetron after 30 min
- G Sniff 1 min/swab for up to 3 swabs over 10 min, or sniff 1 swab until relief
- G ?Protocol to let nurses do at triage?
- G Conditions where it works better?

19

## Which is true of sniffing isopropyl alcohol swabs for nausea?

- A) They are as effective as ondansetron
- B) They are more effective than ondansetron
- C) They are less effective than ondansetron
- D) They are additive to ondansetron (more effective together)

20

Which is true of sniffing isopropyl alcohol swabs for nausea?

- A) They are as effective as ondansetron
- B) They are more effective than ondansetron (initially)
- C) They are less effective than ondansetron
- D) They are additive to ondansetron (more effective together)

21

## Case Resolution

- G Chuck sniffs an alcohol swab and feels much better
- G However, he slips on the floor of the bathroom and dies of an epidural hemorrhage

22

## Woody Long

G 34 year old with 6 hours of erection,  
becoming painful

G Started after using papaverine  
injection for erectile dysfunction

23

## Which has been shown to work?

- A) A spoonful of dry sugar
- B) Doing a headstand to drain the blood
- C) Cayenne pepper
- D) Running up and down the stairs
- E) The "DownBoy" app

24

**Which of the following has evidence for priapism treatment?**

- A spoonful of sugar (helps the erection go down)
- Doing a headstand to drain the blood
- Cayenne pepper on the scrotum
- Running up and down the stairs (go up to go down)
- The “DownBoy” app

Start the presentation to see live content. Still no live content? Install the app or get help at [PollEv.com/app](https://PollEv.com/app)

25

## Woody Long

- Gravel, J, et al, Management of priapism with a trial of exercise in the emergency department, CJEM 2018:1-4 DOI 10.1017/cem.2018.3
- Case report from Toronto of 34 year old male who presents with priapism after injecting papaverine, phentolamine, and prostaglandin E1 (triple cocktail)
- Previous non response to oral meds, worked up by a urologist
- Non-smoker, minimal drinker, no red flags
- Already tried ice packs, cold shower and orgasm

26

## Treatment

- G Nothing to find other than an erect penis
- G Declined pain meds
- G Instructed to climb up and down a set of hospital stairs vigorously and continuously for 10 min
- G Detumescence at 7 minutes

27

## Other studies

- G They mention another study of 53 patients in a subset of pharm induced priapism in whom 21 (40%) were successfully reversed with stairclimbing
- G 18 (34%) were reversed with oral salbutamol

28

## Caveats

- G Case report, not RCT, although there is some other accumulating evidence and not much better evidence for anything else
- G Simple ischemic priapism
- G Healthy young male, not old CAD patient

29

## Bottom Line

- Going up and down can make it go from up to down
- I suspect most patients would prefer that to two giant needles in their penis
- What's the downside other than logistics and a very brief delay in definitive therapy?
- Obesity and priapism treated together

30

Which has been shown to work?

- A) A spoonful of dry sugar
- B) Doing a headstand to drain the blood
- C) Cayenne pepper
- D) Running up and down the stairs
- E) The "DownBoy" app

31

Which has been shown to work?

- A) A spoonful of dry sugar
- B) Doing a headstand to drain the blood
- C) Cayenne pepper
- D) Running up and down the stairs**
- E) The "DownBoy" app

32

## Woody Long

G Case resolution:

G Woody runs up and down the stairs and his erection goes away and he goes home

G He dies that night of a massive PE caused by his previously undiagnosed leukemia (the cause of his priapism)

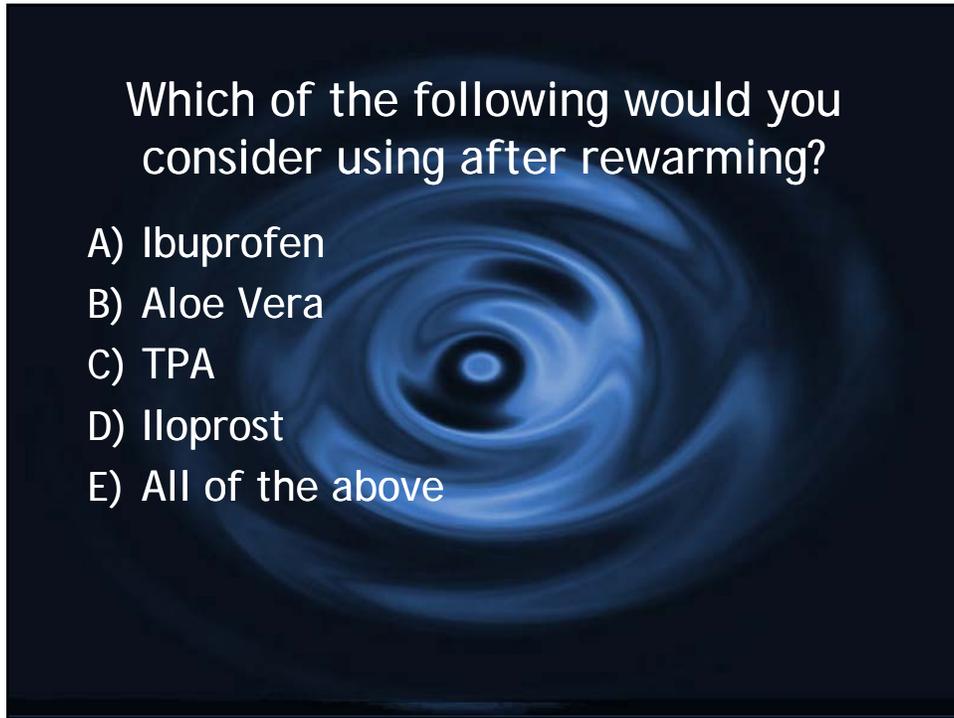
33

## Frosty the Snowrunner

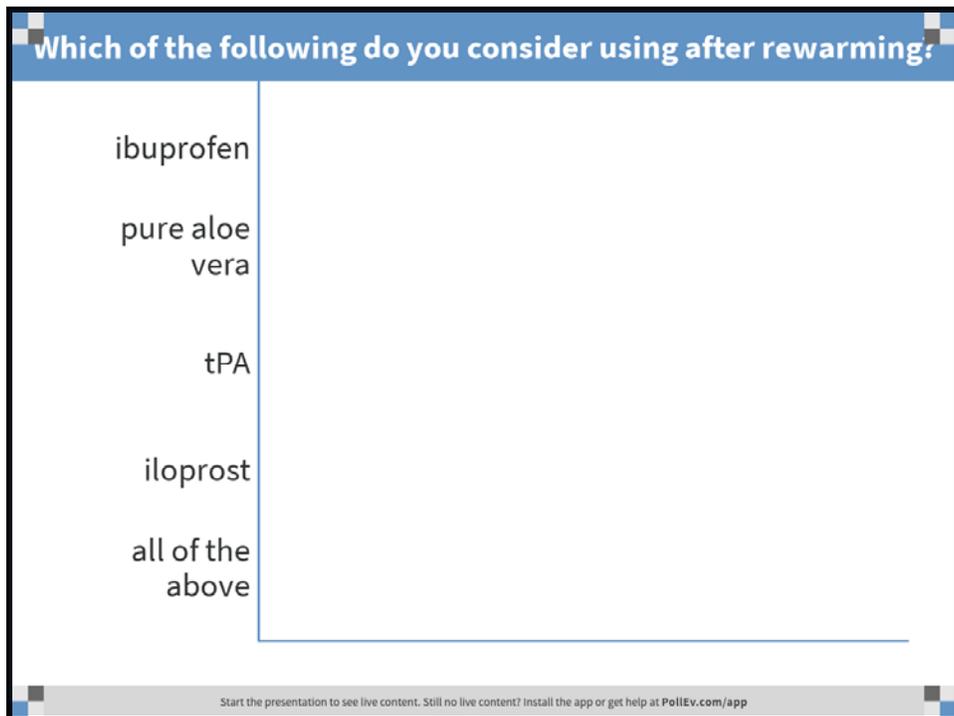
G Frosty comes to ER after running in -30 Celsius with frostbite on hands



34



35



36

## Frosty the Snowrunner

- Cauchy E, et al, A controlled trial of a prostacyclin and rt-PA in the treatment of severe frostbite. N Engl J Med 2011;364:189-90
- Open label, N=47 with severe digital frostbite, mean 33 yo
  - grade 3 =lesion proximal to proximal phalynx OR
  - grade 4 = lesion proximal to MCP
- Healthy mountaineers

37

## Randomized for 8 days

- 1) 250mg ASA and 400mg buflomedil (not available)
  - 2) 250mg ASA and iloprost (2ng/kg per min X 6 hours/day)
  - 3) Same as 2 PLUS rtPA
- F/U at 8 days with scintigraphy (99.6% PPV for amputation in this series)

38

## Risk of amputation

- 1) Control: 60% (9 of 15)
- 2) PG: 0% (0 of 16)
- 3) PG +tPA: 19% (3 of 16)

39

## Caveats

- G LOTS!!!
- G Open-label
- G tPA vs PG?
- G Power?
- G Hawthorne effect? (hospital X 5 days)
- G Patient selection?
- G Safety?

40

## HOWEVER

G Almost identical in retrospective review of subsequent pts:

G Cauchy, et al, Iloprost With and Without rt-PA: Treatment of 131 Cases of Severe Frostbite, DOI: <https://doi.org/10.1016/j.wem.2016.06.029>

G Amputations (N=131 grade 3):

|                            |               |
|----------------------------|---------------|
| G No Treatment:            | 100% (4/4)    |
| G ASA/buflomedil:          | 62.5% (10/16) |
| G ASA/buflomedil/Iloprost: | 4.9% (2/41)   |
| G tPA/iloprost:            | 27% (3/11)    |

41

## Other results

G Grade 4:

|                            |            |
|----------------------------|------------|
| G No Treatment:            | 100% (3/3) |
| G ASA/buflomedil:          | 100% (4/4) |
| G ASA/buflomedil/Iloprost: | 66% (4/6)  |
| G tPA/iloprost:            | 44% (4/9)  |

42

## AND

- Pandey et al, Case Report: Severe Frostbite in Extreme Altitude Climbers—The Kathmandu Iloprost Experience, September 2018 Volume 29, Issue 3, Pages 366-374
- Similar success in a small case series

43

## Other Info

- G Poole, A, Gauthier, J, Treatment of severe frostbite with iloprost in northern Canada, CMAJ December 06, 2016 188 (17-18) 1255-1258; DOI: <https://doi.org/10.1503/cmaj.151252>
- G Two case reports from Whitehorse of treatment of severe frostbite using rapid rewarming in 39 Celsius isopropyl alcohol/chlorhexidine, ibuprofen, pure aloe vera and iloprost
- G Retrospectively 25 patients grade 3 or 4 over 10 years, 6 had  $\geq 1$  amputation prior

44

## Whitehorse protocol

- Surgical consultation
- Rapid rewarming of the affected digits in hot water (39° C) with chlorhexidine and isopropyl alcohol
- Immersion of affected parts in hot water (39° C) in a hydrotherapy whirlpool daily (starting day 2)
- Debridement and aspiration of clear blisters
- Aloe vera protective ointment and porous low-adherent wound dressings

45

## Whitehorse protocol

- Elevation of affected parts
- Avoidance of tobacco and alcohol
- Tetanus-diphtheria immunization
- Oral ibuprofen every 6 hours

46

## Whitehorse protocol

### G Grade 3:

G Intravenous infusion of iloprost 2 ng/kg per min, 6 h/d, for 5 days

### G Grade 4:

G After administration of iloprost, concurrent intravenous infusion of alteplase (for one day; weight-based dosage, progressively increased to a maximum total dose of 100 mg) and heparin (for 72 hours; dosage based on weight and PTT)

47

## Bottom Line

G There are interventions for frostbite that might actually improve outcomes

G Iloprost is a special release (very expensive), might see if your referral centre has it or uses it

G tPA only for grade 4 (proximal to MCP)

G More studies needed (Whitehorse f/u?)

G Freeze in winter amputate in spring? Maybe not

48

Which of the following would you consider using after rewarming?

- A) Ibuprofen
- B) Aloe Vera
- C) TPA
- D) Iloprost
- E) All of the above

49

Which of the following would you consider using after rewarming?

- A) Ibuprofen
- B) Aloe Vera
- C) TPA
- D) Iloprost
- E) All of the above

50

Case 1, a 46-year-old man with grade 3 frostbite on his right hand.



Alexander Poole, and Josianne Gauthier CMAJ  
2016;188:1255-1258

CMAJ·JAMC

51

Case 2, a 43-year-old man with grade 3 frostbite on his right foot.



Alexander Poole, and Josianne Gauthier CMAJ  
2016;188:1255-1258

CMAJ·JAMC

52

## Frosty the Snowrunner

- G He is determined to have Grade 4 frostbite
- G He recovers almost fully after treatment with the Whitehorse protocol: Aloe, ibuprofen, tPA and iloprost
- G He gets lost during his next race in the Himalayas and is eaten by a Yeti

53

## Corrie Dohr

- G Corrie is a 7 year old type I diabetic who comes in acutely with RLQ pain
- G No BM for two days (normal for her), LMP not started yet, **no genitourinary symptoms**
- G No assaults or trauma or bubble baths
- G No NSAIDs, no alcohol, no blood, no melena
- G Relatively benign exam, weight 18kg

54

## Corrie Dohr

- G Normal ultrasound
- G Preg test negative, Blood work normal except glucose 12
  - G Urine: 2+ leuks, + nitrites, mod squamous cells
- G You give her an extra 4 units of lispro
- G While awaiting results, has a big poop and feels 100% and wants to go home

55

## Corrie Dohr

- G Glucometer is now down to 6.0
- G You give her advice on constipation
- G You decide to discharge her on amoxicillin 1g po bid for presumptive UTI while awaiting C and S
- G F/U family doc for C and S and diabetes clinic

56

## Which might reduce the chance of complications?

- A) Use amox-clav same dose instead
- B) Increase insulin by 4 units per day
- C) Give a fleet enema
- D) Supplement with 1 cup of prune juice bid for two weeks
- E) Run the case by a colleague

57

### Which might reduce the risk of complications?

Use amox-clav same dose instead

Increase insulin by 4 units per day

Fleet enema

1 cup of prune juice bid for two weeks

Run the case by a colleague

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58

## Corrie Dohr

G Freund, Y, et al, Effect of Systematic Physician Cross-checking on Reducing Adverse Events in the Emergency Department The CHARMED Cluster Randomized Trial, JAMA Intern Med. 2018;178(6):812-819. doi:10.1001/jamainternmed.2018.0607

G N=1680 ER patients in 6 depts in Paris

G Convenience sample, Monday to Friday 0800-1630, 14 patients per day for 10 days

G Excluded low acuity patients or quick pts

G Excluded mental health (saw team directly)

59

## Intervention

- Two 10 day weekday periods separated by a 1 month "washout" period, crossover design
- Randomized to "cross-checking" or "usual care"

60

## Cross-checking

- 3 times per shift, researcher would gather an ER physician and a peer (occasionally the peer was a trainee) (98% compliance)
- Briefly presented all of the patients currently under their care to the peer
  - "sex, age, chief complaint and main medical history; main clinical findings; main investigation available or outstanding; treatment given in the ED; and a brief summary of the plan."
  - Feedback given

61

## Primary outcome

- "Near miss" ("medical error that had a chance to cause an adverse event but did not due to change or intervention")
- OR
- (preventable) serious adverse event
- Looked for problems up to 7 days after the index visit

62

### Multiple levels of checking against a previously published list of error severity, adjudicated by experts

#### Severe outcome within 7 days

|   |  |
|---|--|
| Death or cardiac arrest                                       | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| ICU admission   | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Return visit to the ED or re hospitalisation                  | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Adverse drug event  | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Thrombo-embolic event   | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Severe hemorrhage   | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Severe sepsis or septic shock                                 | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Acute coronary syndrome                                       | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| One episode of hypotension (SBP<90 mmHg)                      | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Antidote regimen started (Flumazenil, Prothrombin complex...) | <input type="checkbox"/> Yes <input type="checkbox"/> No |

63

#### Known at risk situation

|  |  |
|--|--|
| Major procedure (Sedation, intubation, ponction)         | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Catecholamine or vasopressor introduction                | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Mechanical ventilation or NIV                            | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Total length of stay in the ED > 4 hours                 | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Electrolyte disturbances (Dysnatraemia, Dyskalaemia,...) | <input type="checkbox"/> Yes <input type="checkbox"/> No |

64

**At least one aspect of the ED care is suboptimal**

Yes  No

**Suspicion of :**

|   |  |
|---|--|
| Guideline violation (local or national) | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Medication error                        | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Delay for recommended treatment         | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Insufficient monitoring                 | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Error in ordering test                  | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Delay in ordering test                  | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Lack of prevention (eg no LMWH)         | <input type="checkbox"/> Yes <input type="checkbox"/> No |

65

## Preventability

- G Cross checked against a list of predetermined preventable errors, adjudicated by experts
- G Formally classified by severity, adjudicated by experts (B=no consequence to I=may have contributed to death of pt)

66

## Results

**Table 3. Main Causes of Preventable Serious Adverse Events, Number of Patients With at Least One Error in a Category**

| Error Leading to a Serious Adverse Event      | No. <sup>a</sup> |
|---|------------------|
| Error in sepsis management                    | 24               |
| Timing to antibiotherapy                      | 12               |
| Fluid therapy                                 | 11               |
| Identification of infection source            | 5                |
| Choice of antibiotic                          | 4                |
| Error in acute heart failure management       | 6                |
| Treatment                                     | 4                |
| Diagnostic                                    | 2                |
| Error with patient on anticoagulant therapy   | 4                |
| Diagnostic studies for head trauma            | 1                |
| Reversal of vitamin K agonist treatment       | 3                |
| Bone fracture not diagnosed                   | 4                |
| Diagnostic missed in patients with chest pain | 4                |
| Aortic aneurism                               | 2                |
| Pulmonary embolism                            | 1                |
| Acute coronary syndrome                       | 1                |
| Lumbar puncture                               | 4                |
| Complicated procedure                         | 3                |
| Not indicated                                 | 1                |
| Other diagnostic error                        | 7                |

<sup>a</sup> Several errors from different categories and subcategories can occur in the same patient.

67

## Results

**Table 2. Incidence of Adverse Events, Near Misses, and Serious Adverse Events for a 7-Day Period**

| Variable   | All Patients | Cross-checkings |                  | Standard Period |                    | Relative Risk Reduction, (95% CI) | P Value |
|--|--------------|-----------------|------------------|-----------------|--------------------|-----------------------------------|---------|
|  | No. (%)      | No.             | % (95% CI)       | No.             | % (95% CI)         |                                   |         |
| Adverse event (near miss or serious adverse event) | 144 (8.6)    | 54              | 6.4 (4.9 to 8.4) | 90              | 10.7 (8.7 to 13.0) | 40 (12 to 59)                     | .01     |
| Near miss or preventable serious adverse event     | 135 (8.0)    | 51              | 6.1 (4.6 to 8.0) | 84              | 10.0 (8.1 to 12.3) | 39 (10 to 59)                     | .02     |
| Near miss  | 75 (4.5)     | 26              | 3.1 (2.1 to 4.6) | 49              | 5.8 (4.4 to 7.7)   | 47 (15 to 67)                     | .009    |
| Serious adverse event                              | 69 (4.1)     | 28              | 3.3 (2.3 to 4.8) | 41              | 4.9 (3.6 to 6.6)   | 32 (-9 to 57)                     | .14     |
| Preventable serious adverse event                  | 60 (3.6)     | 25              | 3.0 (2.0 to 4.4) | 35              | 4.2 (3.0 to 5.8)   | 29 (-18 to 57)                    | .24     |

G ARR =4.3%

NNT=24 crosschecks to prevent 1 adverse event

68

## Results

| Severity of the Preventable Serious Adverse Event <sup>a</sup> | All     | Cross-Check |    | Standard |    |
|--|---------|-------------|----|----------|----|
|  | No(%)   | No          | %  | No       | %  |
| Contributed to temporary harm                                  | 5 (8)   | 2           | 8  | 3        | 9  |
| Required initial or prolonged hospitalization                  | 35 (58) | 15          | 60 | 20       | 57 |
| Contributed to permanent patient harm                          | 9 (15)  | 3           | 12 | 6        | 17 |
| Required intervention to sustain life                          | 5 (8)   | 3           | 12 | 2        | 6  |
| Contributed to patient death                                   | 6 (10)  | 2           | 8  | 4        | 11 |

G Unable to do a statistical analysis due to low numbers

69

## Caveats

- G Adverse events beyond 7 days?
- G Did the presence of the researcher affect the results?
- G Confounders such as already informal corridor consults, day shifts
- G How many of these caused preventable mortality/morbidity?

70

## Bottom Line

- We are human and miss things
- Corridor consults probably help patients but this isn't proof of concrete benefit yet
- Might be worth looking at this as a pilot project
  - if it really reduces errors, the time spent doing this might prevent time spent later fixing it!

71

## Which might reduce the chance of complications?

- A) Use amox-clav same dose instead
- B) Increase insulin by 4 units per day
- C) Give a fleet enema
- D) Supplement with 1 cup of prune juice bid for two weeks
- E) Run the case by a colleague

72

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73

## Case Resolution

- Your colleague points out the urine is likely contaminated (sq epithelial cells) + she is asymptomatic so no need to Rx
- Culture is negative
- You call the patient's family and find out that the patient died of HUS from E Coli 0157:H7 that she got from the hospital cafeteria during recent visit

74

## Maieer Hertz

- Maieer is a 6 year old with a very sore R ear who comes to your ED with Mom
- "She needs antibiotics," says mom as the kid screams in pain
- You calmly ask her how she thinks antibiotics will treat her pain and ask when she last gave ibuprofen (she gave nothing for pain)
- She files a complaint about you being rude and not taking her child's pain seriously

75

How could you avoid this complaint and look like a genius?

- A) Virtual reality goggles
- B) Give mom a lorazepam
- C) Clowns
- D) Put some lidocaine in the ear
- E) The Ear We Go app

76

**How could you avoid the complaint and look like a genius?**

- Virtual reality goggles
- Give mome some lorazepam
- Clowns
- Put some lidocaine in the ear
- The "Ear We Go" app

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77

## Ligno-lido

- G Bolt P, Barnett P, Babl FE, et al, Topical lignocaine for pain relief in acute otitis media: results of a double-blind placebo-controlled randomised trial, Archives of Disease in Childhood 2008;93:40-44.
- G N=63, kids 3-12 yo in single Australian ED
- G AOM (red, dull and bulging)
- G Excluded tubes/perforation, allergy
- G Got 15mg/kg paracetamol if no analgesia already given

78

## Intervention

- G 2% lignocaine vs normal saline drops
- G 3 gtts with ear upward X 5 min
- G Double blinded
- G Measured pain on faces pain scale 0-6 yo and VAS >7 yo
- G Primary outcome 50% reduction in pain from baseline score
- G N=56 80% power at 30 min (50% difference)

79

## Intervention

- G N=31 got lidocaine, lost 2 to f/u
- G N=32 got placebo, lost 1 to f/u
- G Baseline not difference in groups
- G Mean age around 6 yo

80

## Results

Ⓔ Statistically significant difference in 50% reduction at 10 min and 30 min

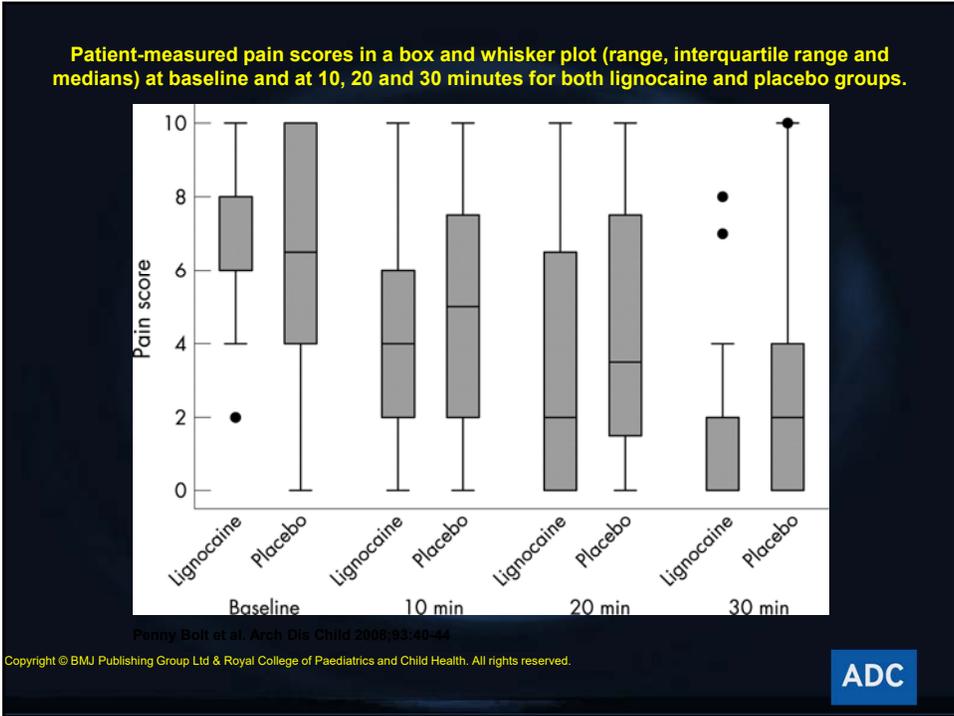
Ⓔ At T30, 81% (25/31) of children and 59% (19/32) in placebo reported minimal pain  $\leq 2$

81

**Table 2**  
Reduction in pain scores by 50%, 25% and reduction in pain score by at least two points from baseline (T0) pain score

|  | Lignocaine (n=31) Yes/No (%) | Saline (n=32) Yes/No (%) | Relative Risk (95% CI) | p-value |
|--|------------------------------|--------------------------|------------------------|---------|
| Reduction by 50% in pain score from T0 (Yes/ No) |                              |                          |                        |         |
| Measured by patient                              |                              |                          |                        |         |
| T10  | 16/15 (52) *                 | 8/24 (25)                | 2.06 (1.03–4.11)       | 0.03    |
| T20  | 21/10 (68)                   | 16/16 (50)               | 1.35 (0.88–2.06)       | 0.15    |
| T30  | 28/3 (90)                    | 20/12 (63)               | 1.44 (1.07–1.93)       | 0.009   |

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## Other Outcomes

- G No serious side effects
- G Only 40% got antibiotics
- G Equal numbers with ear D/C

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## Caveats

- G Too small to say NO adverse effects
- G Does not include perforations
- G Practitioner variability in dx of AOM
- G 40% antibiotics prescribed in 1 week
- G All kids got analgesia po too
- G Single centre, convenience sample
- G Longer term? Recurrent?

85

## Bottom Line

- G Lignocaine (lidocaine) 2% directly in the ear likely provides rapid relief of pain in AOM
- G The magnitude of effect not clear yet
- G A small chance of serious adverse events is not ruled out

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How could you avoid this complaint and look like a genius?

- A) Virtual reality goggles
- B) Give mom a lorazepam
- C) Clowns
- D) Put some lidocaine in the ear
- E) The Ear We Go app

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How could you avoid this complaint and look like a genius?

- A) Virtual reality goggles
- B) Give mom a lorazepam
- C) Clowns
- D) Put some lidocaine in the ear**
- E) The Ear We Go app

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## Case Resolution

- Maieer gets a few drops of lidocaine and some ibuprofen with rapid relief
- She says, "My Mom is a pain in the butt but I like you and thank you," and hugs u
- Mom dies in a car accident the next day, while texting her complaint and driving
- With no family around, custody of Maieer is awarded to you, as you were the only one who cared

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## Perky Wells

- G Perky is a G1T0P0A0L0 at 28 weeks GA
- G Presents with acute onset of mild SOB, pleuritic chest pain
- G No history of PE or DVT, no leg swelling or pain, but is a smoker
- G HR 110, Sat 94%, BP 104/64, RR 20
- G Lungs clear, CVS normal, no leg findings

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## Wells criteria for PE

|                                 |      |
|---------------------------------|------|
| G Clinical signs or sx of DVT   | +3   |
| G PE is #1 or equally likely dx | +3   |
| G HR > 100                      | +1.5 |
| G Immobilization >3d            | +1.5 |
| OR                              |      |
| G Surgery in prev. 4 weeks      |      |
| G Prev. objectively dx PE/DVT   | +1.5 |
| G Hemoptysis                    | +1   |
| G Malignancy w/ Rx <6mos        | +1   |
| G palliative                    |      |

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## Wells

|  |
|--|
| G LOW: <2 points = 1.3% incidence PE     |
| G MOD.: 2-6 points = 16.2 % incidence PE |
| G HIGH: >6 point = 37.5 % incidence PE   |

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## Revised Geneva Score and Probability PE

|                               |   |                        |
|-------------------------------|---|------------------------|
| G $\geq 65$ yo:               | 1 |                        |
| G Prior DVT/PE:               | 3 |                        |
| G Surgery/fracture <1 month:  | 2 |                        |
| G Active malignant condition: | 2 |                        |
| G Unilateral lower limb pain: | 3 | 0-3: 8% (LOW)          |
| G Hemoptysis:                 | 2 | 4-10: 29% (MOD)        |
| G HR 75-94/min:               | 3 | $\geq 11$ : 74% (HIGH) |
| G HR >95                      | 5 |                        |
| G Tender lower limb + edema   | 4 |                        |

93

## Revised Geneva Score and Probability PE

|                               |   |                        |
|-------------------------------|---|------------------------|
| G $\geq 65$ yo:               | 1 |                        |
| G Prior DVT/PE:               | 3 |                        |
| G Surgery/fracture <1 month:  | 2 |                        |
| G Active malignant condition: | 2 |                        |
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| G Hemoptysis:                 | 2 | 4-10: 29% (MOD)        |
| G HR 75-94/min:               | 3 | $\geq 11$ : 74% (HIGH) |
| G HR >95                      | 5 |                        |
| G Tender lower limb + edema   | 4 |                        |

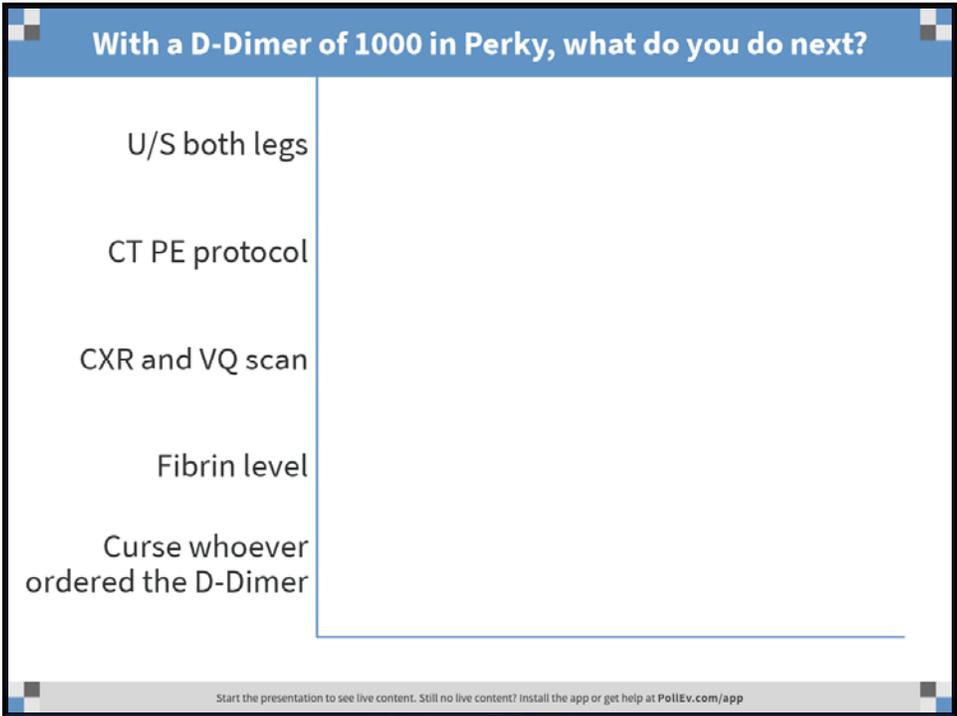
94



D-Dimer 1000--What do you do next?

- A) U/S both legs
- B) CT PE
- C) CXR and VQ Scan
- D) Fibrin level
- E) Curse whoever ordered the D-Dimer!

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With a D-Dimer of 1000 in Perky, what do you do next?

- U/S both legs
- CT PE protocol
- CXR and VQ scan
- Fibrin level
- Curse whoever ordered the D-Dimer

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## Perky Wells

- G Righini, et al, Diagnosis of Pulmonary Embolism During Pregnancy, Ann Intern Med. doi:10.7326/M18-1670
- G N=395 pregnant outpatient adult women at multiple centres in Europe, with clinically suspected PE
- G Risk-stratified by revised Geneva
- G All got D-Dimer, ruled out with low or intermediate risk + negative D-Dimer (<500)

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## Perky Wells

- G Positive D-Dimer or High Risk pts then got U/S both legs
- G If negative, then got CTPA
- G If inconclusive, then got VQ

98

From: Diagnosis of Pulmonary Embolism During Pregnancy A Multicenter Prospective Management Outcome Study

Ann Intern Med. 2018;169(11):766-773. doi:10.7326/M18-1670

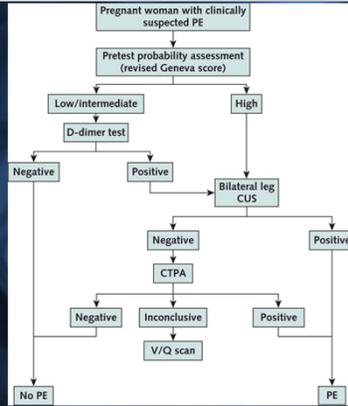


Figure Legend:

Diagnostic algorithm used in the study. CTPA = computed tomography pulmonary angiography; CUS = compression ultrasonography; PE = pulmonary embolism; V/Q = ventilation-perfusion.

Date of download: 3/16/2019

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# Patients

G Excluded obvious other cause, renal dysfunction, anticoagulated, prior diagnosis, unable to f/u

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## Follow-up

- G If negative algorithm, considered not to have PE and not anticoagulated and followed 3 months clinically (telephone)
- G If a possible event disclosed, 3 panel adjudication, blinded to initial workup

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## Outcome

- G Primary:
  - G Risk for adjudicated VTE during 3 mo. f/u
- G Sample size calculated for 95% CI of 3 month VTE risk  $<3.0\%$ , with a prevalence of **5.0%** of PE and 1.5% risk of VTE on F/U after normal results

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From: Diagnosis of Pulmonary Embolism During Pregnancy A Multicenter Prospective Management Outcome Study

Ann Intern Med. 2018;169(11):766-773. doi:10.7326/M18-1670

**Table 2. Diagnostic Contributions of Tests in the Initial Work-up**

| Variable   | Patients (n = 395), n (%) |
|--|---------------------------|
| <b>PE diagnosed</b>  | 28 (7.1)                  |
| Low or intermediate clinical probability                                     |                           |
| Proximal DVT on ultrasonography  | 5 (17.9)                  |
| Positive results on CTPA   | 18 (64.3)                 |
| Inconclusive results on CTPA and high-probability V/Q scan                   | 2 (7.1)                   |
| High clinical probability  |                           |
| Proximal DVT on ultrasonography  | 2 (7.1)                   |
| Positive results on CTPA   | 1 (3.6)                   |
| <b>PE ruled out on the basis of low or intermediate clinical probability</b> | 367 (92.9)                |
| Negative D-dimer result  | 46 (11.6)                 |
| Negative results on CTPA   | 290 (73.4)                |
| Inconclusive results on CTPA and normal or low-probability V/Q scan          | 17 (4.3)                  |
| Other  | 14 (3.5)                  |

CTPA = computed tomography pulmonary angiography; DVT = deep venous thrombosis; PE = pulmonary embolism; V/Q = ventilation-perfusion.

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## Results

- G VTE risk over 3 months if workup negative was 0%
- G However, 22 got anticoagulation with negative workup
- G Assuming 4, 5 or 10 VTE in that group had they not had anticoag:
  - G 2.8%, 3.1% or 4.9% upper 95% confidence

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## Caveats

- Always selection bias in pregnancy
- Risks of overtesting?
  - Indication creep into NO risk population
- Revised Geneva score vs Wells vs Geneva score
- Have to use the same assay (Vidas by bioMérieux to use D-Dimer <500)
- 7.1% PE prevalence
- U/S yield was low (8.8%-5 of 57)—worth it?
- Lots got anticoagulated anyway

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## Bottom Line

- G This is the best evidence we have so far that this sort of strategy works
- G It is reasonable to use D-Dimer, bilateral U/S, CTPA and VQ in that order to r/o PE in pregnant women
- G Or just go straight to CTPA and save a bunch of extra tests

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D-Dimer 1000--What do you do next?

- A) U/S both legs
- B) CT PE
- C) CXR and VQ Scan
- D) Fibrin level
- E) Curse whoever ordered the D-Dimer!

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D-Dimer 1000--What do you do next?

- A) U/S both legs
- B) CT PE (or skip the U/S and do CT???)
- C) CXR and VQ Scan
- D) Fibrin level
- E) Curse whoever ordered the D-Dimer!  
(You have info to have informed discussion with the patient)

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## Case Resolution

- G Perky rules out for PE and does fine and delivers a healthy baby
- G She was so pleased with your care that she names the baby after you
- G Child grows up to be an infamous serial killer and in your retirement you have to change your name

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**What was your favourite ER paper for this 2019 presentation?**

- Sniffing alcohol swabs helps nausea in the ER
- Exercise may help detumescere priapism
- There are new modalities to treat severe frostbite
- Medical errors might be reduced by corridor consults
- Lidocaine drops in the ear might give limited relief of pain
- There is an algorithm that might be helpful for PE in pregnancy

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