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Top Ten Impactful EM Papers

NOVEMBER 5-8, 2025
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JAMA Pediatrics | Original Investigation

Removable Boot vs Casting of Toddler's Fractures
A Randomized Clinical Trial

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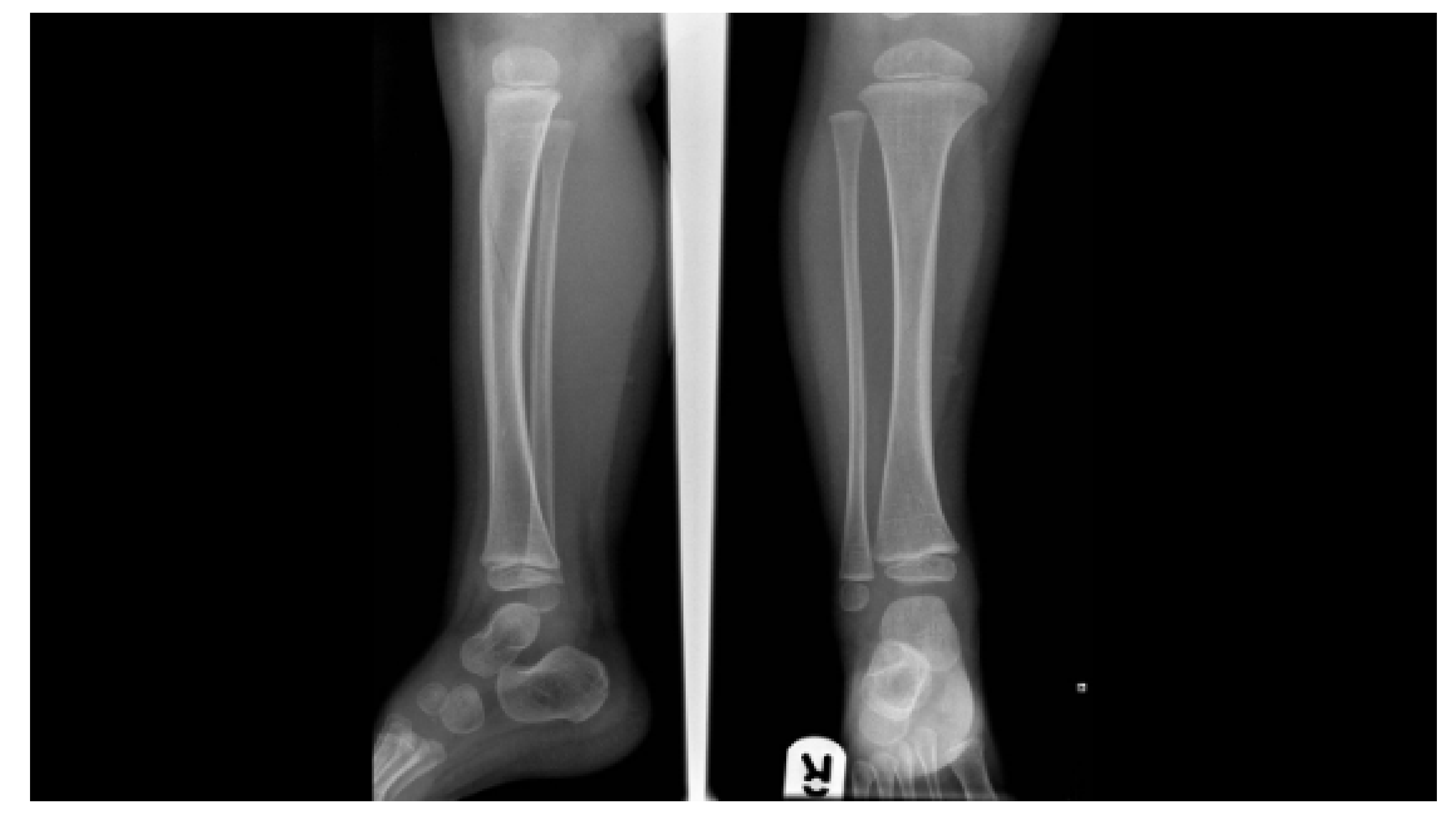
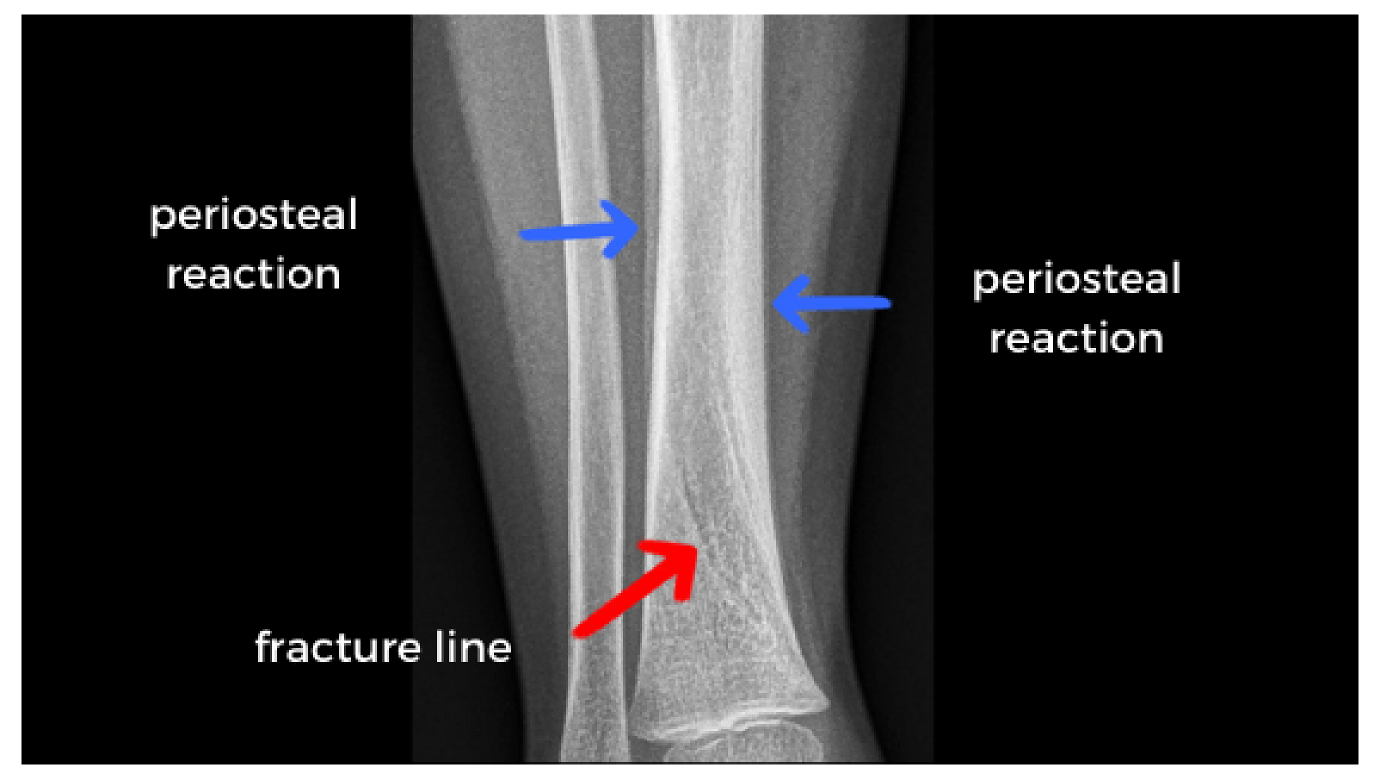


Case courtesy of Dr Jeremy Jones, Radiopaedia.org. From the case rID: 9317



Case courtesy of Dr Sebastian Tschauner, Radiopaedia.org. From the case rID: 49123

Funding and COI

- Government and Institutional (University)

Funding and COI

- Institutional Funding (University)
- No COI

Why it Matters

- Toddler's Fractures are common injuries of the distal Tibia in children.
- They are often treated with casting and Orthopedic follow up.
- This study investigates if these interventions are necessary.

Methods

- Pragmatic, multicenter, assessor-blinded, noninferiority randomized clinical trial
- Four urban, tertiary care, pediatric Canadian emergency departments.
- October 2019 and February 2024
- Children between 9 months and 4 years with a radiograph-visible TF were eligible for inclusion.

Methods

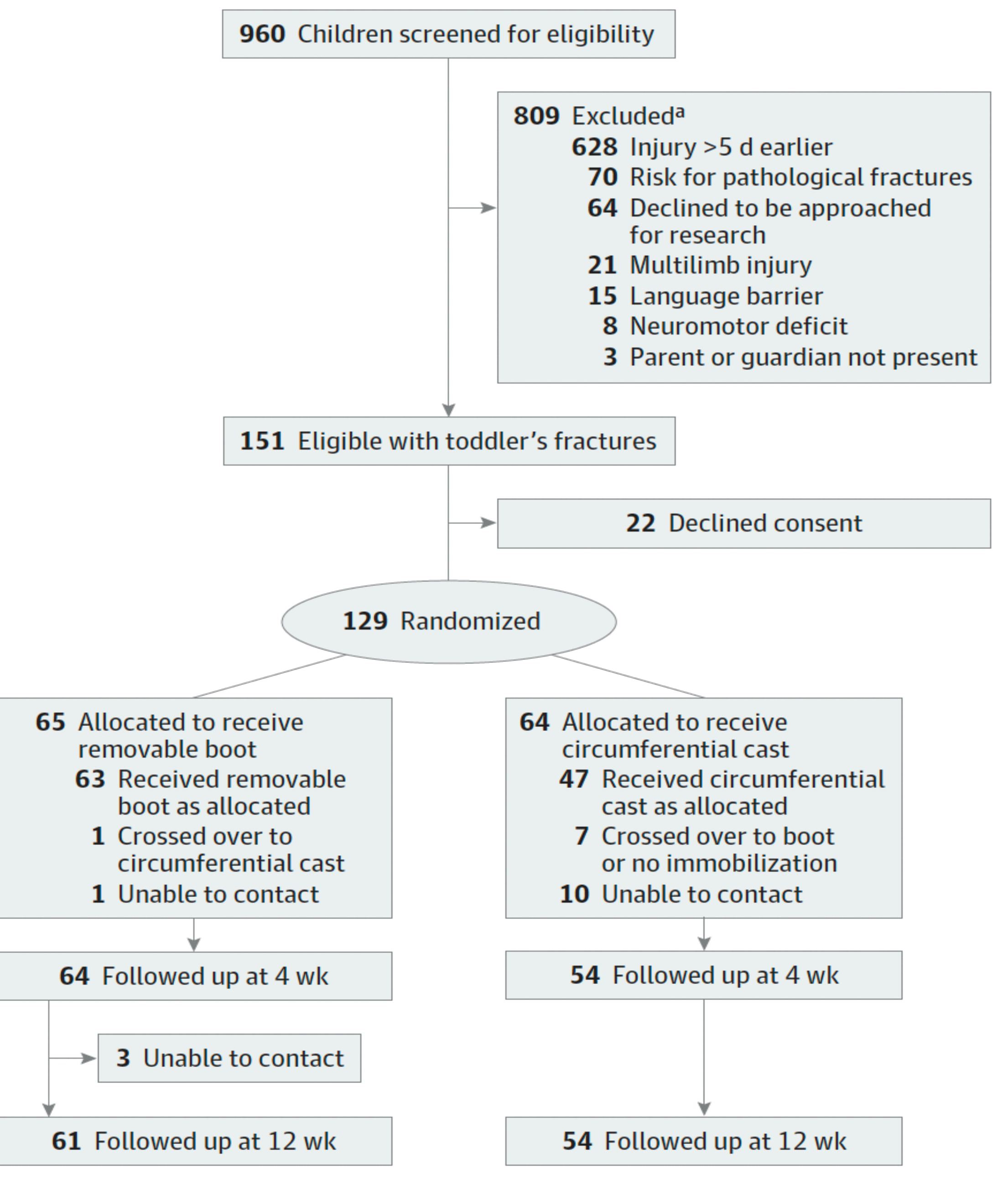
- INTERVENTIONS
- Prefabricated walking boot for up to 3 weeks (removable at caregivers' discretion)
- Circumferential cast immobilization (site standard of care) for 3 weeks.

Methods

- MAIN OUTCOMES AND MEASURE
- Primary outcome was pain score, measured with the Evaluation Enfant Douleur (EVENDOL) scale (maximum score: 15).
- Additional outcomes included return to baseline activities, complications, parental satisfaction and care burden.

Methods

Started with 1000 children and finished with 115



Results

Demographics between groups were similar

Table 1. Patient and Injury Demographics of Enrolled Participants

Variable	Participants, No. (%)	
	Boot (n = 65)	Cast (n = 64)
Age, mean (SD), y	2.3 (0.8)	2.1 (0.8)
Child sex		
Female	28 (43)	28 (44)
Male	37 (57)	36 (56)
Private insurance	40 (62)	39 (61)
Median (IQR) days since injury at presentation	1.3 (0.7-2.4)	1.3 (0.7-2.4)
Mechanism[a]		
Fall	41 (63)	41 (64)
Twist	24 (37)	22 (34)
Direct contact	3 (5)	1 (2)
Weight-bearing		
None	47 (72)	48 (75)
Partial	14 (22)	13 (20)
Full with pain	3 (5)	2 (3)
Swelling	10 (15)	13 (20)
Bruising	5 (8)	4 (6)
Focal tenderness	50 (77)	45 (70)
Emergency department EVENDOL pain score, mean (SD)	4.8 (3.0)	5.1 (3.4)
Fracture location		
No fracture	3 (5)	3 (5)
Middle third	18 (28)	18 (28)
Distal third	44 (68)	43 (67)
Fracture morphology[b]		
Buckle	6 (9)	12 (19)
Spiral or oblique	51 (79)	44 (69)
Transverse	5 (8)	5 (8)
Fracture displacement 1-2 mm	6 (9)	6 (9)

Results

No Difference in outcomes

Table 2. Pain Scores, Complications, and Immobilization Use in the Removable Boot vs Circumferential Cast Group Measured at 4 Weeks

Outcome	Removable boot	Circumferential cast	Mean difference (95% CI), %
EVENDOL pain score (primary outcome)			
Intention-to-treat			
No.	64	54	NA
Mean (SD) [range]	1.21 (1.54) [0-5]	1.76 (2.13) [0-9]	−0.55 (−1.23 to 0.13)[a]
Per-protocol			
No.	63	49	NA
Mean (SD)	1.23 (1.54)	1.84 (2.19)	−0.61 (−1.31 to 0.10)[a]
Per-protocol of only radiology-confirmed toddler's fractures			
No.	61	47	NA
Mean (SD)	1.30 (1.60)	1.86 (2.21)	−0.56 (−1.31 to 0.19)[a]
Weight-bearing (secondary outcome), No. (%)[b]			
No.	64	54	NA
Almost all of the time	48 (75)	32 (59)	16 (−12 to 43)
Most of the time	13 (20)	12 (22)	−2 (−26 to 22)
Sometimes	2 (3)	4 (7)	−4 (−17 to 9)
Almost never	1 (2)	6 (11)	−10 (−23 to 4)
Return to baseline activities (secondary outcome), No. (%)[b]			
No.	64	54	NA
Almost all of the time	49 (77)	22 (41)	36 (9 to 63)
Most of the time	10 (16)	22 (41)	−25 (−51 to 1)
Sometimes	5 (8)	6 (11)	−3 (−20 to 14)
Almost never	0	4 (7)	−7 (−18 to 3)
Complications (secondary outcome), No. (%)[b]			
No.	64	54	NA
Skin rash, erythema, or pressure sore	46 (72)	27 (50)	22 (−6.1 to 50.1)
Skin itching	18 (28)	21 (39)	−11 (−35 to 13)
Device breakage	0	7 (13)	−13 (−30 to 4)
Device poor fit	7 (11)	4 (7)	4 (−17 to 10)
Time point immobilization discontinued (secondary outcome), No. (%)[b]			
No.	64	54	NA
<7 d	6 (10)	3 (6)	4 (−18 to 11)
7-13 d	23 (36)	1 (2)	34 (4 to 64)
14-21 d	35 (55)	50 (93)	−38 (−63 to −13)

Results

Table 3. Follow-Up Health Service Use in Removable Boot vs Circumferential Cast Group

Variable	No. (%)		Mean difference (95% CI), %[a]
	Removable boot (n = 64)	Circumferential cast (n = 54)	
Follow-up physician visits	15 (23)	15 (28)	−5 (−31 to 22)
Primary care physician or walk-in clinic[b]	7 (11)	2 (4)	NA[e]
Orthopedic surgeon[c]	5 (8)	12 (22)	NA[e]
Emergency physician[d]	4 (6)	1 (2)	NA[e]
Follow-up radiographs	8 (13)	11 (21)	−8 (−29 to 14)
Primary care physician or walk-in clinic	2 (3)	1 (2)	NA[e]
Orthopedic clinic	3 (5)	9 (17)	NA[e]
Emergency department	3 (5)	1 (2)	NA[e]

Results

- EVENDOL pain scores of
- 1.21 Boot vs 1.76 Cast (difference, −0.55; 95%CI, −1.23 to 0.13).
- Return to Normal Activity at 3 months

  77 % boot group vsn41% in the cast group

  difference, 36%; 95% CI, 9%-63%).
- Skin complications occurred in both groups (boot: 46 total complications 72%], with 5 stage 1 pressure sores; cast: 27 total complications (50%), with 1 pressure sore];

  difference, 22%; 95%CI, −6%to 50%).

Results

- Care giver satisfaction was the same between group

  (difference,9%; 95%CI, −24%to 43%).

- Fewer caregivers reported bathing care burden in the boot group

  (difference,−32%; 95%CI, −47%to −18%) and challenges with carrying the child

  (difference, −21%; 95% CI, −27%to −15%) in the boot vs cast group.

Limitations

- All the Emergency Departments were Tertiary care hospitals.
- Follow up was often done by Video call due to COVID- 19 restrictions.
- More Children dropped out of the cast group. (Parents gave up).

Bottom Line

- Toddler's Fracture treatment with a boot is Non-inferior to cast treatment.
- The Boot strategy would allow these patients to be followed in Family Practice offices with no Orthopedic consultation.
- This is similar to Wrist buckle fractures which do not require casting.

Short-Stay Hospitalizations and Hospital Capacity Constraints

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Keywords: ED crowding, ED boarding, Short-stay hospitalizations.

A **podcast** for this article is available at www.annemergmed.com.

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Why it matters

- Emergency Physicians and Family Physicians providing Emergency Care often feel pressure not to admit patients who will stay in hospital for a short period.
- This study address the question of what impact short stay admissions have on hospital crowding

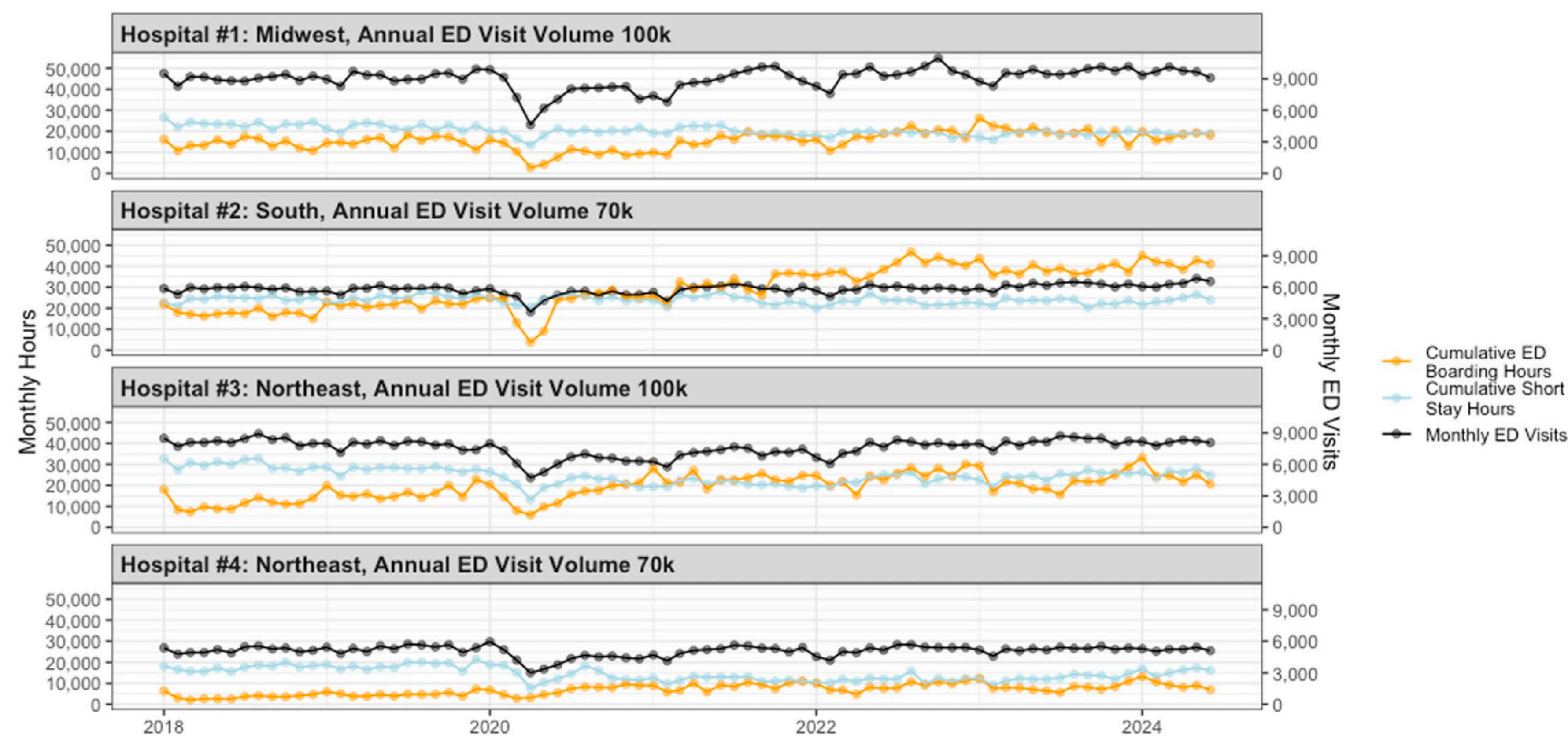
Funding and COI

- Institutional Funding (University)
- No COI

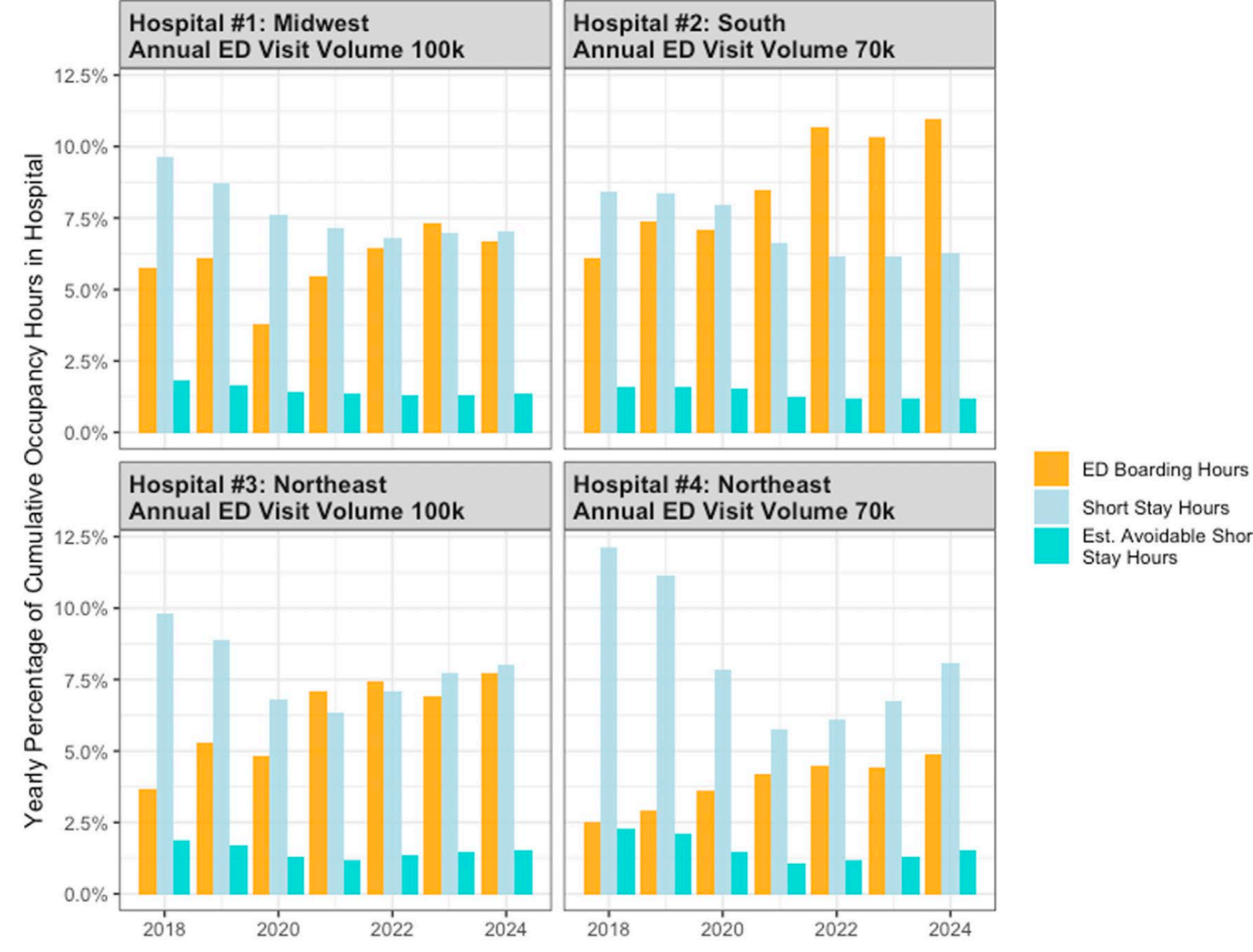
Methods

- Retrospective cross-sectional analysis of hospitalizations at 4 US EDs (January 2018 to June 2024).
- Total occupancy hours were calculated by subtracting hospital departure from ED disposition timestamps.
- Short stays were defined as lengths of stay less than or equal to 48 hours
- inclusive of hospital-based observation stays. We reported, as a percentage of ED-related total hospital occupancy hours, the proportion made up by short stays, in addition to reporting hospital boarding in the ED by total hours.

Results



Results



Results

Table 1. Hospitalizations and occupancy hours stratified by short stays (≤48 hr vs 48 hr+) across sites.

Hospital	Hospital No. 1: Midwest	Hospital No. 2: South	Hospital No. 3: Northeast	Hospital No. 4: Northeast
Annual ED visit volume	100,000	70,000	100,000	70,000
No. of hospitalizations (n, %)				
<48 hr	56,684 (35.2)	67,516 (33.5)	52,584 (32.9)	33,356 (32.5)
48 hr+	104,529 (64.8)	133,994 (66.5)	107,335 (67.1)	69,235 (67.5)
Hospitalization occupancy hr (n, %)				
<48 hr	1,579,798 (7.7)	1,865,235 (7.1)	1,919,658 (7.8)	1,128,531 (8.0)
48 hr+	18,931,915 (92.3)	24,366,996 (92.9)	22,808,838 (92.2)	12,908,024 (92.0)

Proportions of cumulative hospitalizations (count of hospitalizations occurring through the ED, stratified by short stays [≤48 hr vs 48 hr+]) by site for the full study period. Short-stay hospitalizations, as a percentage of all hospitalizations occurring through the ED, range from 32.5% to 35.2%. Short-stay hours, as a percentage of overall occupancy hours in hospital through the ED, range from 7.1% to 8.0%.

Results

- Short Stay Admissions were common

  36% of admits from the ED.

- Short Stay Admissions made up a negligible proportion of bed capacity

  7.6 % of the bed capacity

Limitations

- Retrospective
- Large USA hospitals
- Different Financial Incentives
- Only admissions coming through the ED were accounted for.

Bottom Line

- Short Stay admissions are not the problem with Hospital inpatient crowding.
- Reducing Short Stay admission will make negligible difference in hospital crowding.
- We should not give into pressure to avoid short admissions when they are the safe thing to do.

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The effect of intravenous ondansetron on QT interval in the emergency department

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- All authors report no conflicts of interest

Introduction

- Nausea and vomiting are common symptoms in the ED
- FDA has warned that ondansetron can increase the risk of fatal arrhythmias by prolonging the QT interval
- Patients in the ED may have other risk factors for QT prolongation such as electrolyte imbalance and underlying heart disease

Outcomes

- Primary outcome
  - To determine the duration of QT prolongation and the incidence of arrhythmias in patients prescribed ondansetron
- Secondary outcome
  - Investigate the relationship between QT prolongation and age, gender, comorbid disease, ondansetron dose, and use of drugs that prolong QT interval

Methods

- Prospective, observational cohort study over a 1 year period
- ECGs were done at 0, 5, 15, and 30 minutes after drug administration
- The severity of QT prolongation rated as "negligible" (< 5 ms), "significant" (> 20 ms), “potential concern” (> 30 ms), or "definitely worrying" (> 60 ms)
  - Defined by the International Conference on Compatibility
- Patients' history, meds, age, gender, cause of N/V, and dose of medication administered also recorded

Results

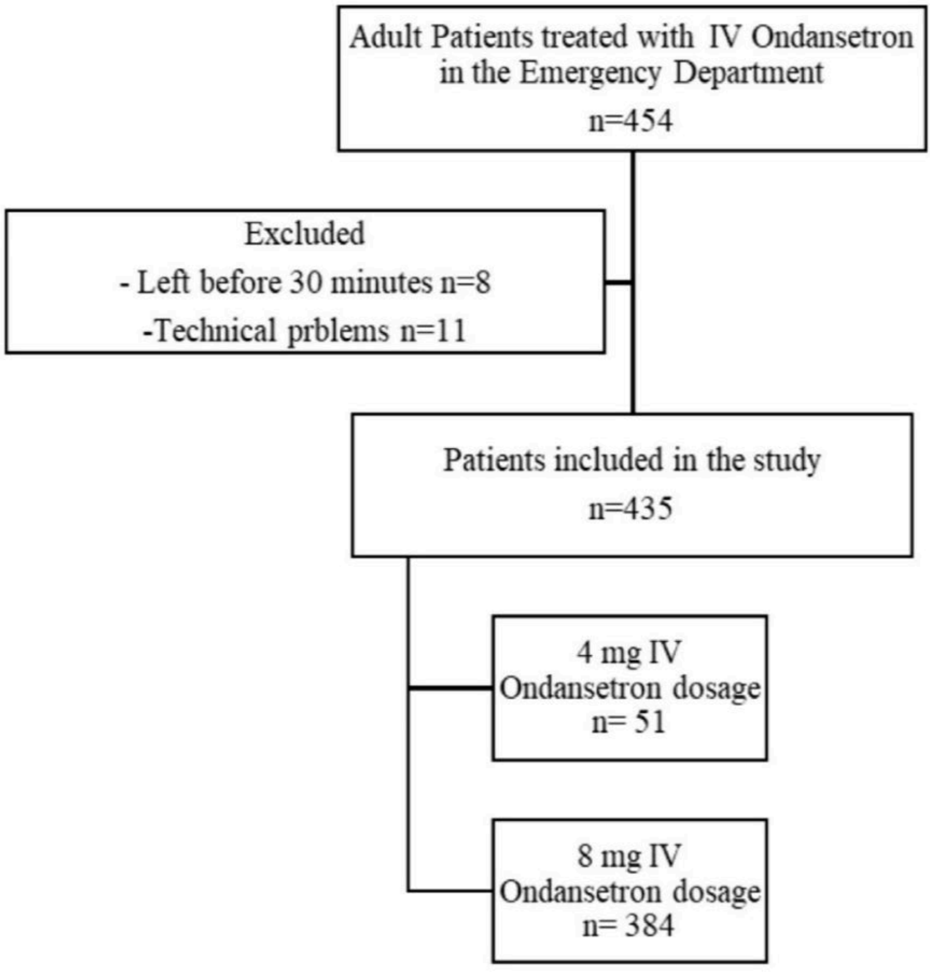

Fig. 1. Patient Flowchart.

Results

Table 2
Relationship between QTc interval and prolongation of QTc and the dose of intravenous ondansetron (overall and two dosage groups).

	All (N = 435)			4 mg (*N* = 51)			8 mg (*N* = 384)			Comparison of 4 mg and 8 mg groups	
Time after administration *(minute)*	QTc Interval *(ms)* *mean ± SE*	QTc prl *(ms)* *mean ± SE*	p	QTc Interval *(ms)* *mean ± SE*	QTc prl *(ms)* *Mean ± SE*	p*	QTc Interval *(ms)* *mean ± SE*	QTc prl *(ms)* *mean ± SE*	p*	QTc Intervals p*	QTc prl p
0 th	431.9 ± 27	–	–	434.8 ± 28.1	–	–	431.5 ± 27.1	–	–	0.413	–
5 th	439.8 ± 29	7.9 ± 18	<0.001	443.4 ± 35.1	8.5 ± 26.2	0.005	439.3 ± 28.8	7.8 ± 16.8	<0.001	0.358	0.78
15 th	438.6 ± 27	6.7 ± 16	<0.001	440.4 ± 28.4	5.6 ± 16.9	0.005	438.4 ± 27.7	6.9 ± 16.8	<0.001	0.632	0.59
30 th	438.4 ± 27	6.5 ± 19	<0.001	437.6 ± 29	2.7 ± 19.7	0.005	438.5 ± 27.5	7 ± 19	<0.001	0.819	0.13

QTc prl: prolongation of QTc.
* Analysis of variance in repeated measurements.

QTc measured at the 5th, 15th, and 30th min were all significantly longer than at 0th min

Average length of QTc prolongation was 7.9 ms, below the “significant” threshold

No statistically significant difference in QTc durations at the 5th, 15th, and 30th minute

Results

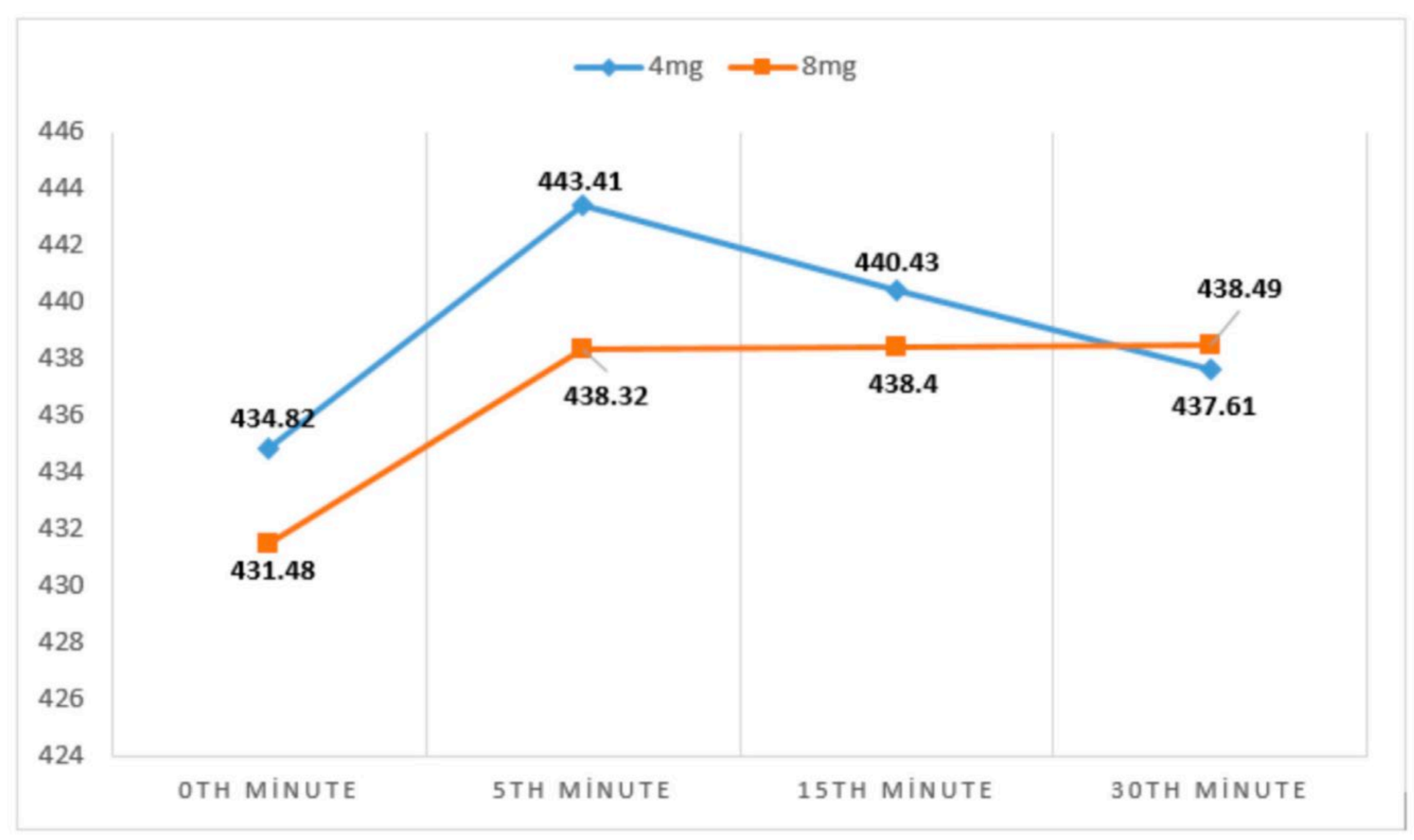

Fig. 2. Mean QTc Durations (ms) According to Ondansetron Doses.

Results

Table 4
Mean Ages of Patients With Normal and Long QTc Intervals.

Time after administration *(minute)*	QTc interval	Age, year *mean (SD)*	p *t-test*	r *Biserial correlation*
0th	Normal	36.5 ± 17.21	<0.001	0.303
	Long	52.7 ± 22.03		
5th	Normal	35.18 ± 16.54	<0.001	0.339
	Long	49.67 ± 21.01		
15th	Normal	35.67 ± 16.87	<0.001	0.330
	Long	50.50 ± 21.05		
30th	Normal	37.3 ± 18.16	0.001	0.171
	Long	44.96 ± 20.36		

Average age of patients with a long QT is statistically higher than those with a normal QT, and that persisted across all four time points

Results

Table 5
Mean QTc Durations and QTc Changes According to the Use of Drugs That Prolong QT Duration and the Presence of Concomitant Diseases.

Time after administration *(minute)*		Drug use			Comorbidity		
		Positive	Negative	p	Positive	Negative	p
0th	Mean QTc (ms)	441.24 ± 28	431.42 ± 27	0.107	442.67 ± 30	426.45 ± 23	<0.001
5th	Mean QTc (ms)	458.67 ± 37	438.86 ± 28	0.003	452.66 ± 32	433.34 ± 25	<0.001
	QT prolongation (ms)	17.43 ± 35	7.44 ± 16	0.22	9.99 ± 22	6.89 ± 15	0.09
15th	Mean QTc (ms)	451.81 ± 29	438.01 ± 27	0.026	447.92 ± 30	434 ± 24	<0.001
	QT prolongation (ms)	10.57 ± 17	6.59 ± 16	0.291	5.25 ± 18	7.55 ± 16	0.17
30th	Mean QTc (ms)	447.95 ± 27	437.96 ± 27	0.108	447.1 ± 31	434 ± 24	<0.001
	QT prolongation (ms)	6.71 ± 14	6.54 ± 19	0.969	4.42 ± 21	7.62 ± 17	0.09

Patients taking other QT prolonging drugs had statistically longer QT intervals at 5 and 15 minutes

Patients with comorbidities had statistically longer QT intervals at all four timepoints

Limitations

- Single centre study in Turkey so generalizability to Canadian population may be limited
- Sample size may be too small to detect rare events
  - No cardiac dysrhythmias detected in any patients
- Excluded some potentially higher risk patients including those with pacemakers/ICDs and those with altered LOC

Conclusions

- Ondansetron IV administration results in a QT prolongation below the “significant” threshold
- In the absence of a known risk factor for cardiac arrhythmia, administration of 4 or 8 mg doses of IV ondansetron may not pose a significant risk of QT prolongation
- Routine ECG monitoring for these patients does not seem cost effective when considering the negative impact on patient flow, personnel time, and cost

Noninvasive Ventilation for Preoxygenation during Emergency Intubation

The NEW ENGLAND JOURNAL *of* MEDICINE

ORIGINAL ARTICLE

Noninvasive Ventilation for Preoxygenation during Emergency Intubation

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ABSTRACT

BACKGROUND

Among critically ill adults undergoing tracheal intubation, hypoxemia increases

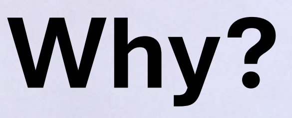
The authors' full names, academic de-

What?

- Intubation is a common, high-risk procedure. Hypoxemia in 10-20% of cases and associated with significant morbidity/mortality
- Preoxygenation aims to create oxygen reservoir in lungs
- Preoxygenation with oxygen mask can lead to unreliable FiO_2 delivery and does not provide PEEP
- NIPPV could improve FiO_2 and improve alveolar recruitment but may risk aspiration

Funding and COI

- U.S. Department of Defense
- No COI declared



Why?

- Smaller studies created clinical equipoise
- PreVent trial (2019) supported BVM use in ICU intubations
- Pragmatic study to compare NIPPV with oxygen mask

Objectives

- Determine the optimal approach to preoxygenation in critically ill patients

Methods

- A pragmatic, multicenter, unblinded, randomized controlled trial across 24 U.S. emergency departments and ICUs.
- 1301 critically ill adults (≥18 years) undergoing intubation
- Excluded "Crash" intubations precluding a 3-minute preoxygenation, patients already on positive-pressure ventilation, active vomiting, or facial trauma.
- Preoxygenation with NIV compared to oxygen mask

Results

Lower risk of hypoxemia in NIPPV group

NNT 11 to prevent one episode hypoxemia

Similar aspiration events between groups

Table 3. Outcomes of Tracheal Intubation.

Outcome	Noninvasive Ventilation (N=645)	Oxygen Mask (N=656)	Difference (95% CI)*
Primary outcome			
Hypoxemia during intubation — no./total no. (%)†‡	57/624 (9.1)	118/637 (18.5)	−9.4 (−13.2 to −5.6)§
Secondary outcome			
Median lowest oxygen saturation (IQR) — %‡	99 (95 to 100)	97 (89 to 100)	2 (1 to 3)
Exploratory procedural outcomes			
Lowest oxygen saturation <80% — no./total no. (%)‡	39/624 (6.2)	84/637 (13.2)	−6.9 (−10.2 to −3.7)
Lowest oxygen saturation <70% — no./total no. (%)‡	15/624 (2.4)	36/637 (5.7)	−3.2 (−5.4 to −1.1)
Cardiovascular collapse — no./total no. (%)¶	113/645 (17.5)	127/656 (19.4)	−1.8 (−6.1 to 2.4)
Systolic blood pressure <65 mm Hg — no./total no. (%)	18/621 (2.9)	28/633 (4.4)	−1.5 (−3.6 to 0.6)
New or increased use of vasopressors — no./total no. (%)	111/645 (17.2)	117/656 (17.8)	−0.6 (−4.8 to 3.5)
Cardiac arrest — no./total no. (%)‖	1/645 (0.2)	7/656 (1.1)	−0.9 (−1.8 to −0.1)
Successful intubation on the first attempt — no./total no. (%)	534/645 (82.8)	535/656 (81.6)	1.2 (−2.9 to 5.4)
Median time from induction to intubation (IQR) — seconds	115 (89 to 150)	113 (85 to 152)	2 (−5 to 9)
Exploratory safety outcomes			
Operator-reported aspiration — no./total no. (%)**	6/645 (0.9)	9/656 (1.4)	−0.4 (−1.6 to 0.7)
New infiltrate on chest imaging — no./total no. (%)††	144/509 (28.3)	148/497 (29.8)	−1.5 (−7.1 to 4.1)
New pneumothorax — no./total no. (%)‡‡	7/509 (1.4)	7/497 (1.4)	0.0 (−1.5 to 1.4)
Median oxygen saturation at 24 hr (IQR)§§	97 (95 to 100)	97 (95 to 100)	0 (−1 to 1)
Median F_{IO_2} at 24 hr (IQR)¶¶	0.40 (0.30 to 0.40)	0.40 (0.30 to 0.40)	0.01 (−0.05 to 0.05)
Exploratory clinical outcomes‖‖			
Median ventilator-free days (IQR)	21 (0 to 26)	17 (0 to 25)	4 (−1 to 9)
Median ICU-free days (IQR)	16 (0 to 23)	14 (0 to 23)	2 (−1 to 8)
In-hospital death — no./total no. (%)	209/645 (32.4)	217/656 (33.1)	−0.7 (−5.8 to 4.4)

Limitations

- Non-blinded study
- Excluded patient's already on NIPPV
- Primarily patients on NRB for preoxygenation rather than BVM with peep valve

Discussion

- Large sample size gave it statistical power, and the multicenter, real-world design increases generalizability.
- Rigorous randomization with allocation concealment and an intention-to-treat analysis.
- The primary outcome (SpO2) was measured by an independent observer, Clinicians knew the treatment allocation, creating a potential for performance bias, but SpO2 measured by independent observe.
- The control arm (oxygen mask without PEEP) may not be routine care everywhere. (eg. bag-mask device with a PEEP valve, O2 mask with nasal prongs)

Take Home

The evidence from PREOXI is strong enough to support adopting NIV as the default preoxygenation strategy for eligible patients.

Use NIV for preoxygenation for at least 3 minutes.

Future study could compare NIV to BVM with Peep Valve

Is antibiotic prophylaxis necessary for anterior epistaxis with packing? Insights from a large database

The American journal of emergency medicine, 2025-07, Vol.93, p.64-72

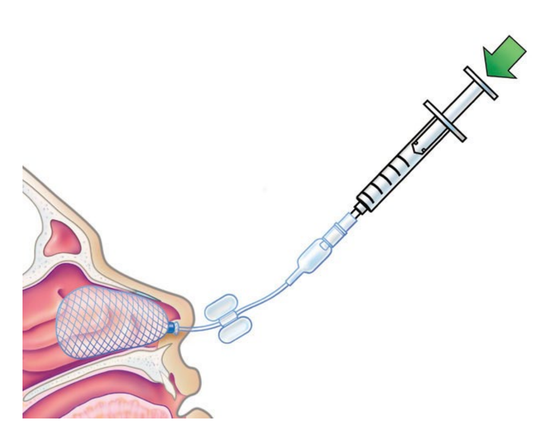
Tran, Quincy K., MD, PhD ; Vashee, Isha ; Vanga, Rohan ; Camp, Samantha ; Rallo, Melissa K ; Najafali, Daniel ; Bontempo, Laura J., MD, MEd ; Pourmand, Ali, MD, MPH

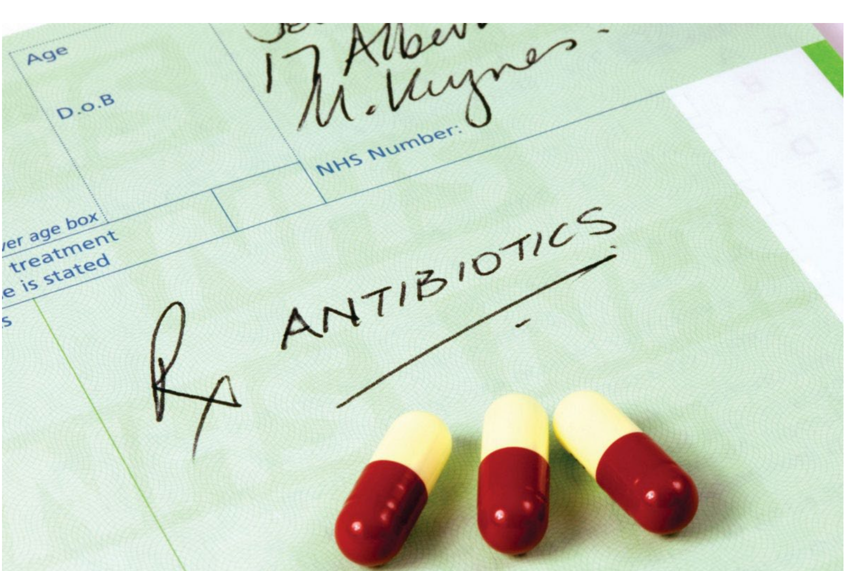
Funding and COI

- No funding or competing interests declared by authors.

What?

- Patients with spontaneous epistaxis frequently receive anterior nasal packing (ANP).
- Many patients also receive prophylactic antibiotics.





Why?

- Evidence of benefits is unclear and mainly derived from small studies.
- Professional society guidelines do not mandate routine prophylactic antibiotics and recommend individualization of antibiotics according to patient risk of infection.
- Unnecessary antibiotic prescriptions increase the risk of antibiotic resistance and subject patient to possible adverse drug reactions.

Objectives

- Leverage a large international database to investigate the rates of clinically significant infection(CSI) in patients, with ANP, who received prophylactic antibiotics and those that did not.
- Primary outcome was 30-day rate of CSI
- Secondary outcome was to determine overall prevalence of adverse drug event.

Methods

- Multicenter retrospective, propensity-matched cohort study included adults, who presented to any ED with epistaxis that required anterior nasal packing, who received either prophylactic antibiotics or not.
- The TriNetX database, a multicenter clinical database from 94 different large health organizations across 5 countries in the Americas, Europe and Asia.
- December 10, 2004 –December 10,2024.

Results

- A total of 15,224 patients encounters with ED visit and ANP.
- 3161 received antibiotics and 12,063 without antibiotics.
- Propensity matching identified 6302 patients(3151 per group).
- Mean age both groups was 65; 42% female; 31% with PMH diabetes mellitus and 70% with hypertension.
- Some characteristics were statistically different but not clinically different—BP, INR, Hgb and platelets.

Results

- Analysis of CSI excluded 815 patients due to outcomes prior to index ED visit
  - 5487 patients(2750 without abx and 2737 receiving abx).
- Overall prevalence of CSI was 0.5%(25 patients);
  - Without antibiotics 10(0.4%) patients.
  - Antibiotics 15(0.5%) patients.
  - Risk Difference 0.2%, 95%CI-0.013 to 0.001, p=0.31)
  - NNT to prevent one CSI was 500
- Overall prevalence of any adverse drug event was 1%--26 in each in each group.
  - risk difference was 0%(95%CI-0.005 to 0.006, p=0.94)

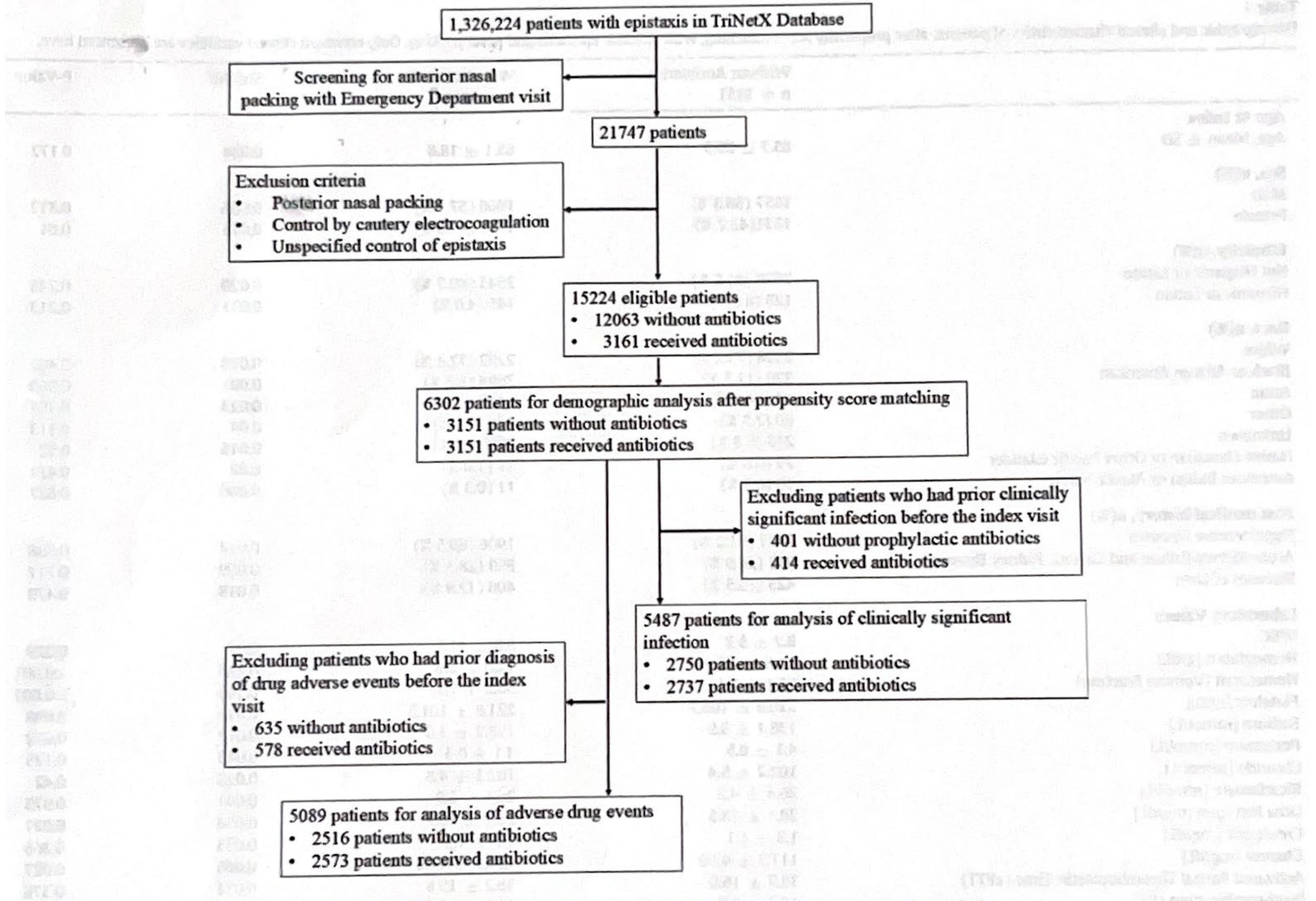


Fig. 1. Flow diagram depicting patient selection and final population included in the analysis.

Table 2
Rates of clinically significant infections (CSI) and adverse drug events between patients with nasal packing with or without prophylactic antibiotics.

	Without Antibiotics	With Antibiotics	Risk Difference (95 % CI)	P-Value	Number Needed to Treat
CSI, n(%)[1]	10 (0.36 %)	15 (0.55 %)	0.002 (−0.005,0.002)	0.311	500
Adverse drug events, n (%)[2]	26 (1.01 %)	26 (1.01 %)	0.000 (−0.005,0.006)	0.935	NA

[1] For the analysis of CSI rate, 401 patients in the control group (without prophylactic antibiotics) and 414 patients who were given prophylactic antibiotics were excluded from results because they had the outcome prior to the index ED visit.

[2] For the analysis of adverse reaction, 635 patients in the control group (without prophylactic antibiotics) and 578 patients who were given prophylactic antibiotics were excluded from results because they had the outcome prior to the index ED visit.

Limitations

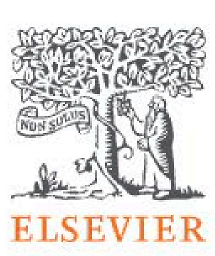
- Immune status not identified
- Patient population may not represent general population
- Use of diagnostic codes to identify disease states may not accurately capture CSI or ADE
- HCO may not capture all cases of CSI or ADE if patients presented to facilities outside network
- Data did not specify type or duration of nasal packing.

Conclusions

- Rate of clinically significant infection and adverse drug events among patients with anterior nasal packing for spontaneous epistaxis was low.
- Given the lack of significant benefit, low incidence of infectious complications and importance of antibiotic stewardship there is very little benefit of prophylactic antibiotics in most patients.

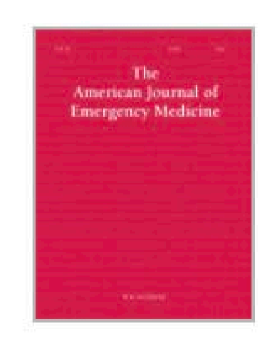
Take Home

- Recommend against routine use of prophylactic antibiotics in clinical practice.



The American Journal of Emergency Medicine

Volume 80, June 2024, Pages 99-106



Simple aspiration for spontaneous pneumothorax in adults: A systematic review and meta-analysis of randomized controlled trials

Jiangli Cheng [a], Aijia Ma [b], Guopeng Liang [a]

Interactive CardioVascular and Thoracic Surgery 30 (2020) 337–345
doi:10.1093/icvts/ivz290 Advance Access publication 20 December 2019

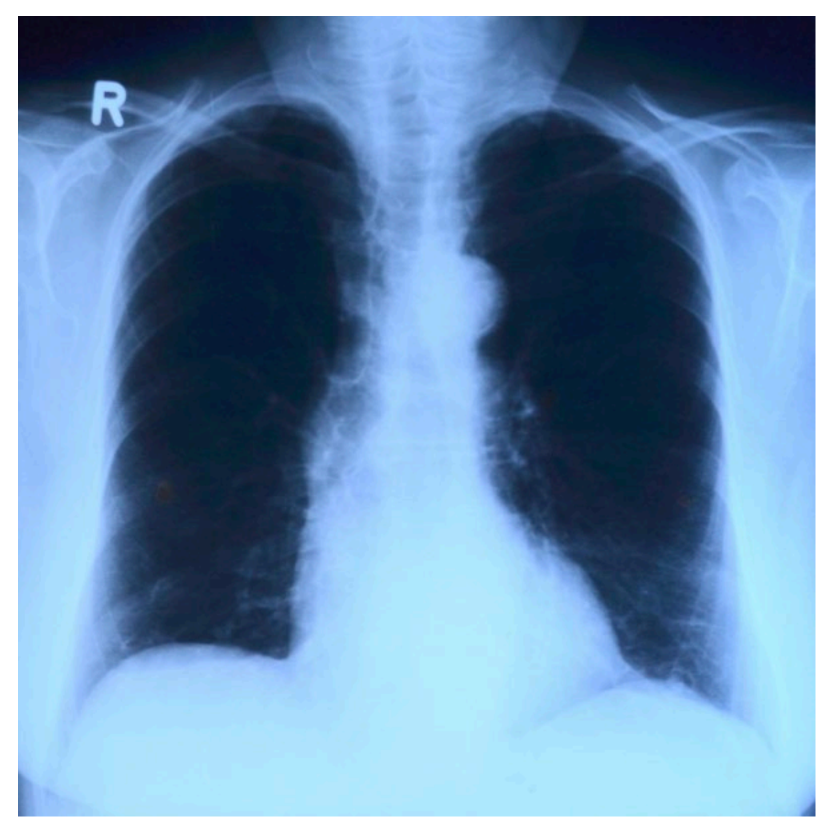
STATE-OF-THE-A

Cite this article as: Mendogni P, Vannucci J, Ghisalberti M, Anile M, Aramini B, Congedo MT *et al.* Epidemiology and management of primary spontaneous pneu
thorax: a systematic review. Interact CardioVasc Thorac Surg 2020;30:337–45.

Epidemiology and management of primary spontaneous pneumothorax: a systematic review

Paolo Mendogni [a], Jacopo Vannucci [b,†], Marco Ghisalberti [c,†], Marco Anile [b,†], Beatrice Aramini [d,†], Maria Teresa Congedo [e], Mario Nosotti [a] and Luca Bertolaccini [f,*], Collaborators of the Pneumothorax Working Group, on behalf of the Italian Society for Thoracic Surgery (endorsed by the Italian Ministry of Health)
Collaborators of the Pneumothorax Working Group: Ambra Enrica D'Ambrosio [g], Andrea De Vico [h], Francesco Guerrera [i], Giovanna Imbriglio [j], Alessandro Pardolesi [k], Marco Schiavon [l] and Emanuele Russo [m]

background: PSP



- ~15-23/100,000
  - Recurrence: ~25-50%*
- ♀:♂
  - ~1: 3.3-5.0

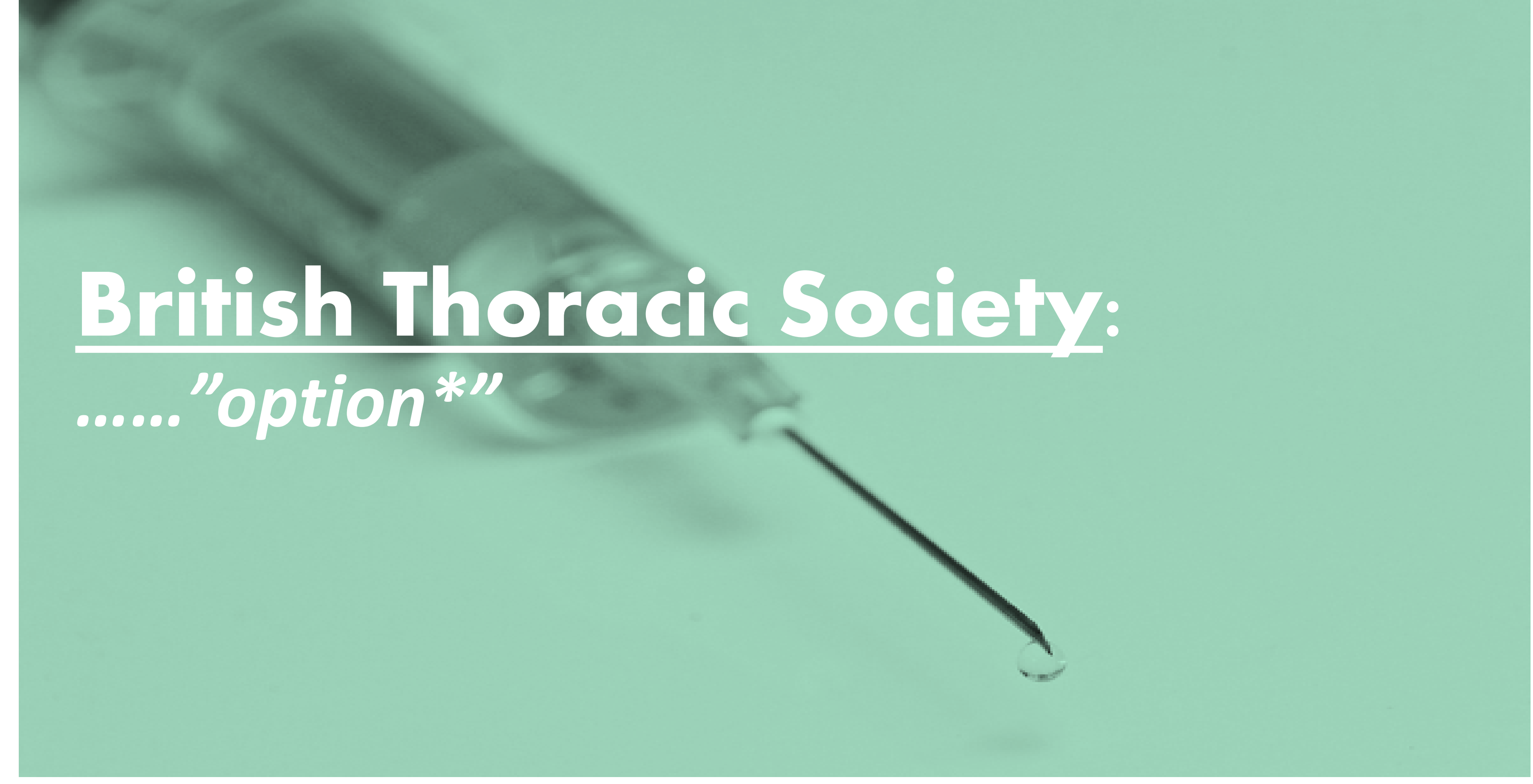
Management?

management?

- Chest tube
- *Aspiration*
- Heimlich (pig tail..)
- OR
- Nil?

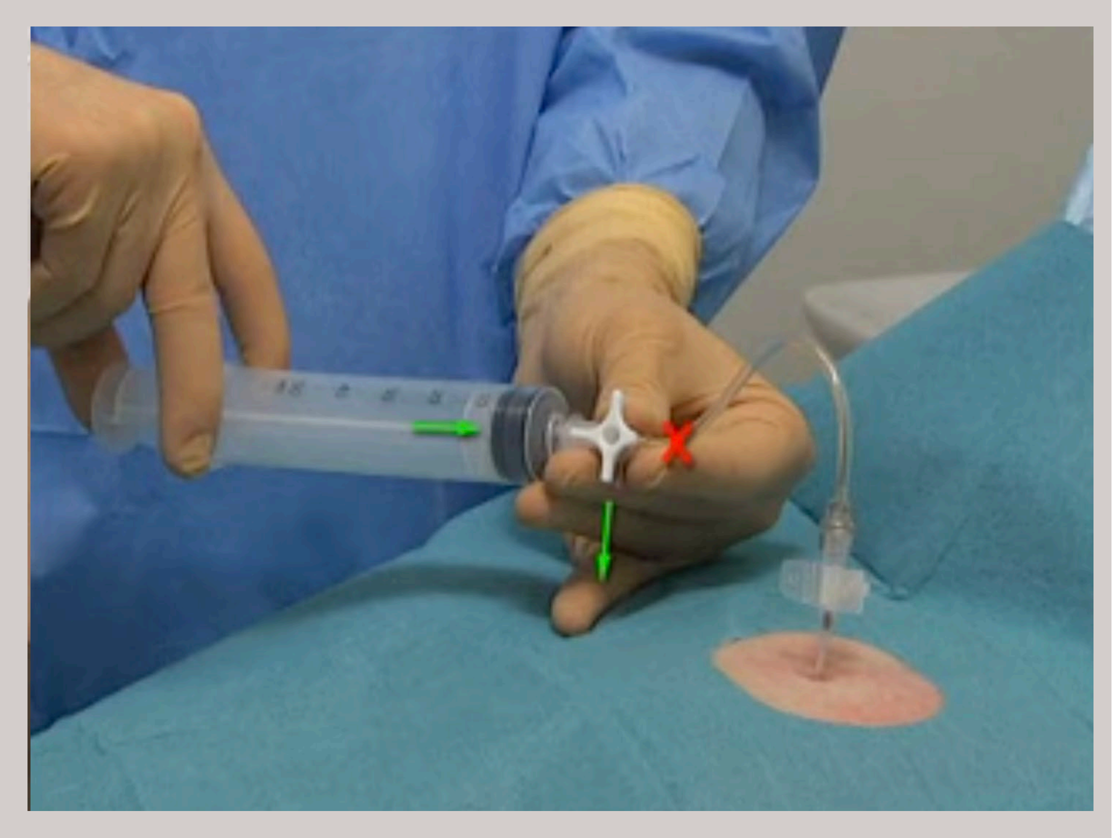
American College of Chest Physicians:

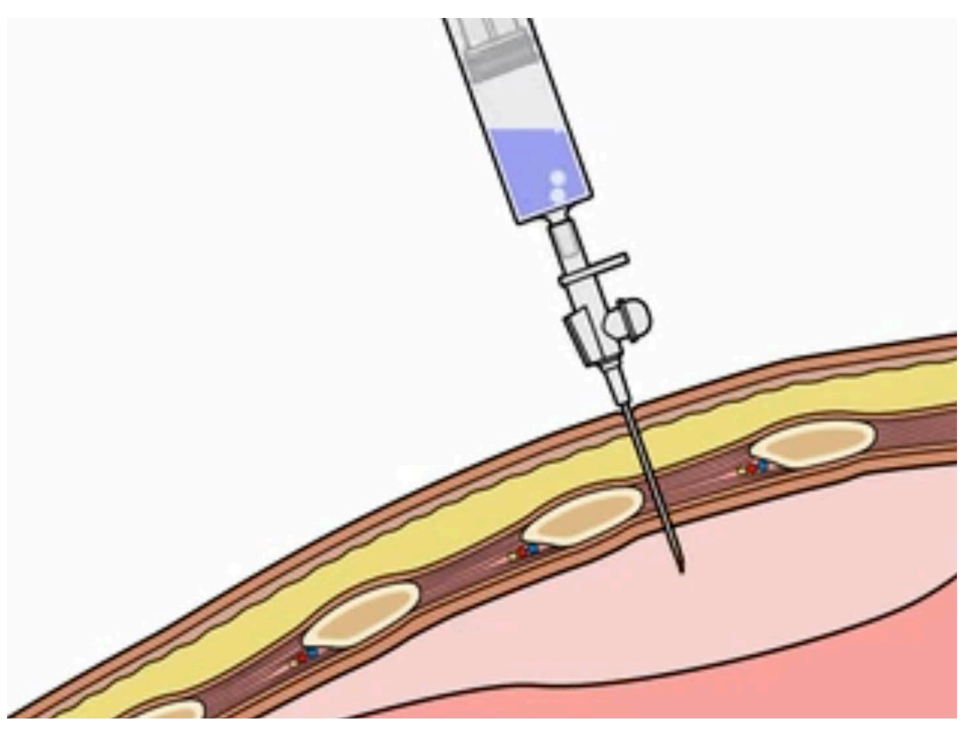
……"rarely appropriate"*



aspiration…

- *Indications:*
  - 1st episode
  - *No* underlying lung disease
  - SOB **+** >2cm @ the hilum
- *Contra-indications:*
  - Traumatic, tension, unstable
  - COPD, coagulopathy, recurrent





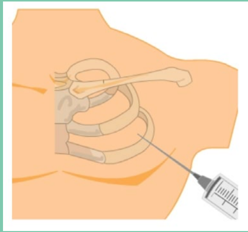
The American Journal of Emergency Medicine
Volume 80, June 2024, Pages 99-106

Simple aspiration for spontaneous pneumothorax in adults: A systematic review and meta-analysis of randomized controlled trials

Jiangli Cheng [a], Aijia Ma [b], Guopeng Liang [a]

study design & results

- 10 RCT's
  - 1044 subjects
- Aspiration:
  - ↓ admits (on average >2d)
  - ↓ rate of OR (both $p < 0.05$)
  - Bleeding/wound infection ↓ ($p > 0.05$)
- Initial success: slightly ↓



results…

What do these results mean?

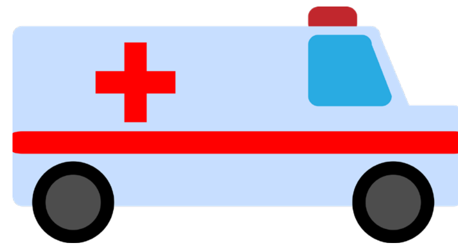
pro tips!

- Recurrent/Complicated/2^0/High risk Ptx?
  = *VATS*
- Children?
  - ++ limited data
- O_2 (↑ **rate** of re-absorption)
  - Conservative "*option*"
  - *Individualized* care

discussion & conclusions

- Manual aspiration
  - 1st line *option*
    - Slightly ↓ success*?
    - ↓ admits / hospitilizations
    - ↓ recurrence & complications ? (trend)
- *Caution*
  - ANY 2^0 Ptx, symptoms/size?...

Case:

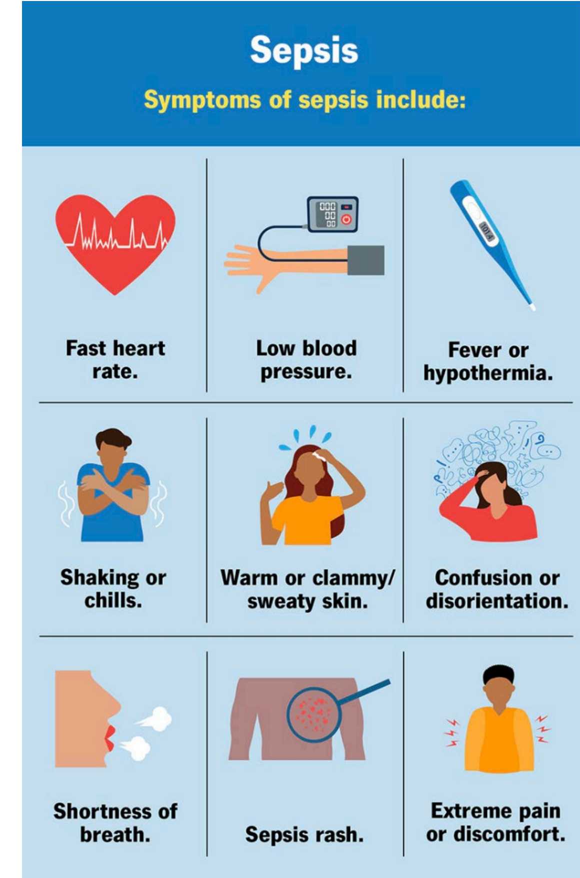


Early Physician Gestalt Versus Usual Screening Tools for the Prediction of Sepsis in Critically Ill Emergency Patients

Sarah K S Knack[1], Nathaniel Scott[1], Brian E Driver[1], Matthew E Prekker[1], Lauren Page Black[2], Charlotte Hopson[3], Ellen Maruggi[1], Olivia Kaus[1], Walker Tordsen[1], Michael A Puskarich[4]

diagnosis?

- SIRS + infection?
- SOFA?
- *Clinical…?*



qSOFA (Quick SOFA) Score for Sepsis

Identifies high-risk patients for in-hospital mortality with suspected infection outside the ICU.

INSTRUCTIONS

Use to predict mortality, NOT to diagnose sepsis, per 2021 Surviving Sepsis Guidelines.

When to Use | Pearls/Pitfalls | Why Use

Altered mental status GCS <15	**No**	Yes
Respiratory rate ≥22	**No**	Yes
Systolic BP ≤100	**No**	Yes

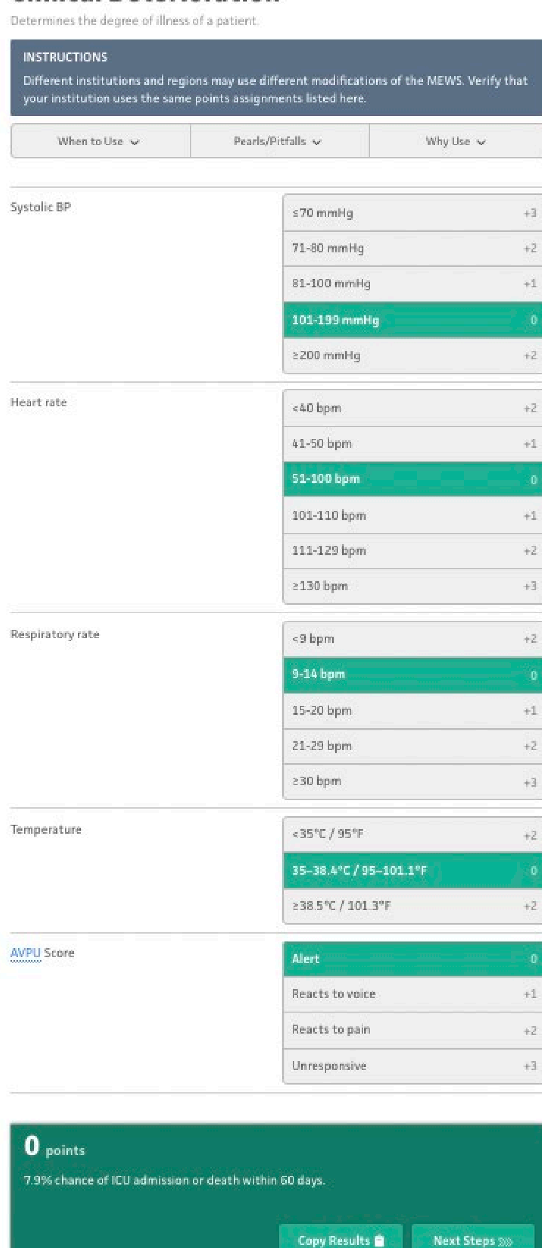
0 points

qSOFA Score

Not high risk

If sepsis is still suspected, continue to monitor, evaluate, and initiate treatment as appropriate, including serial qSOFA assessments.

Copy Results | Next Steps »»



Modified Early Warning Score (MEWS) for Clinical Deterioration

Determines the degree of illness of a patient.

INSTRUCTIONS

Different institutions and regions may use different modifications of the MEWS. Verify that your institution uses the same points assignments listed here.

When to Use | Pearls/Pitfalls | Why Use

Criterion	Option	Points
Systolic BP	≤70 mmHg	+3
	71-80 mmHg	+2
	81-100 mmHg	+1
	101-199 mmHg	0
	≥200 mmHg	+2
Heart rate	<40 bpm	+2
	41-50 bpm	+1
	51-100 bpm	0
	101-110 bpm	+1
	111-129 bpm	+2
	≥130 bpm	+3
Respiratory rate	<9 bpm	+2
	9-14 bpm	0
	15-20 bpm	+1
	21-29 bpm	+2
	≥30 bpm	+3
Temperature	<35°C / 95°F	+2
	35-38.4°C / 95-101.1°F	0
	≥38.5°C / 101.3°F	+2
AVPU Score	Alert	0
	Reacts to voice	+1
	Reacts to pain	+2
	Unresponsive	+3

0 points

7.9% chance of ICU admission or death within 60 days.

Copy Results | Next Steps

Phoenix Sepsis Score

Evaluates for sepsis and septic shock in children.

INSTRUCTIONS

Use in pediatric patients with suspected sepsis. Age is not adjusted for prematurity and the criteria should not be used in patients who are ≥18 years of age or preterm (<37 weeks gestation at birth). The score should not be used during birth hospitalizations.

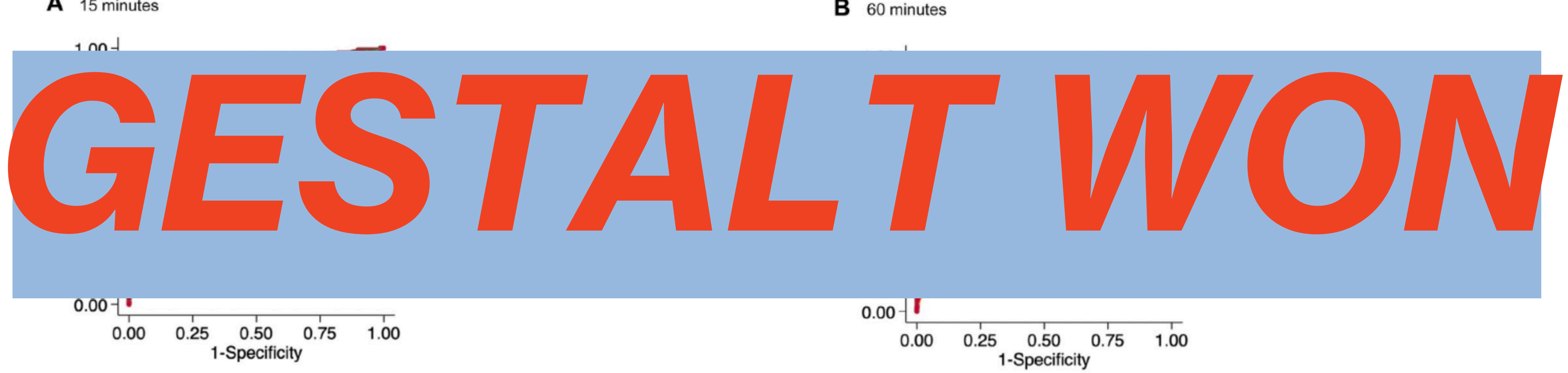
When to Use | Pearls/Pitfalls | Why Use

Age
<1 month
1 to 11 months
1 to <2 years
2 to <5 years
5 to <12 years
12 to 17 years

study design

- Prospective Observational Study
  - 2500 pts; 69 MD's
  - 11% (275) discharged =“*sepsis*”
- *Gestalt:*
  - VAS @ 15 & 60 min
- *SIRS, SOFA, qSOFA, MEWS*....calculated *retro*spectively

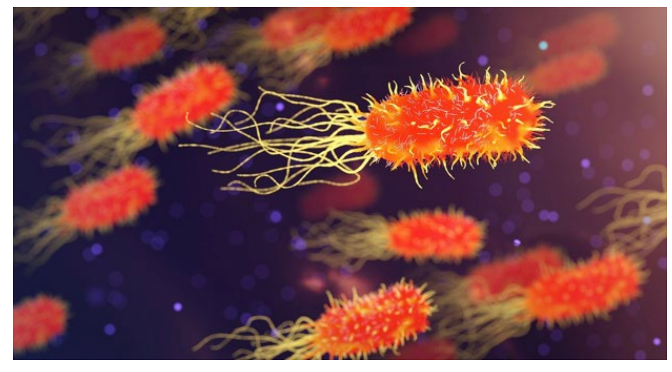
results



discussion & conclusions

- We are pretty good at identifying *septic* patients
- *What if we didn't include the sickest? (as this study did)*
- 10 patients on VAS = 'no sepsis' & ended up with it

limitations…



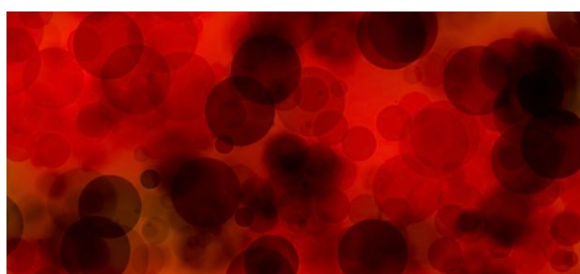
- *Gold standard?*

- <u>VAS</u> = 50%?
  - → *Do you treat 60%; not 40%?*

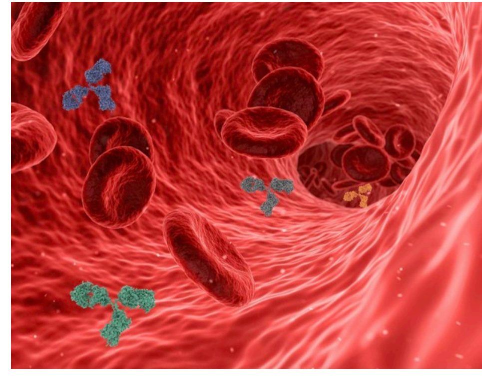
- <u>Unfair?</u>:   CDRs don't diagnosis/define sepsis
  - need score PLUS source (or=some clinical judgement)

limitations

- *Hawthorne effect?* (CDR’s lack this potential bias)
- Academic centre?
- Outcomes better?
  - *assumption?*



practice change & pro-tips



CDT's are helpful….but GESTALT of an experienced MD still lives

"Trust your gut"

Bottom line: This trial suggests that CJ is…. quite good.

The impact of alternate defibrillation strategies on time in ventricular fibrillation

RESUSCITATION (2025) 209: 110549

Cheskes, Drennan, Turner et al.

Raphael Panais MD, CCFP(EM)

Funding and COI

- No conflicts of interest disclosed
- Funding: Not apparent
- DOSE-VF RCT NEJM (2022) funded by Heart and Stroke Foundation of Canada

Introduction

- Out of hospital cardiac arrest (OHCA): 55/100,000 annually
- Initial rhythm of VF more likely to achieve neurologically intact recovery
- VF often recurs after successful termination with shock
  - Increases VF burden, decreased survival outcomes
- DOSE-VF RCT trial (NEJM 2022): double sequential external defibrillation (DSED) and vector change defibrillation (VC) resulted in survival benefit compared to standard defibrillation for patients in refractory VF
- Thought DSED and VC may prolong interval to VF recurrence, reduce total VF burden
- Time in VF shorter for DSED and VC shocks compared to standard shocks

Defibrillation techniques

Methods

- Secondary analysis of prospectively collected data from patients enrolled in the DOSE-VF RCT
- Cluster-RCT: 6 paramedic services in Ontario to evaluate the strategies of DSED and VC defibrillation compared to standard defibrillation in adult patients with refractory VF during OHCA
- RVF: initial presenting rhythm of VF or pVT present after three consecutive rhythm analyses and standard defibrillations (pads in the Ant-Lat. position)
- Separated by 2-minute intervals CPR
- Following 1st 3 shocks patients in RVF using standard defibrillation pad placement were randomized to receive ongoing resuscitation and either DSED, VC, or continued standard defibrillation (max 6 shocks total)

Methods

Results

- The proportion of shocks that terminated VF into ROSC for shocks 4–6 was significantly greater for DSED shocks (17.6%, $p < 0.001$) and VC shocks (14.2%, $p < 0.002$) than standard shocks (5.3%)
- Overall, the proportion of shocks in which VF was not terminated was significantly lower for DSED shocks (29.9%) than standard shocks (40.6%) ($P = 0.013$)
- Proportion of shocks that were associated with survival to hospital discharge for shocks 4–6 was significantly greater for DSED (10.2%, $p = 0.002$) and VC (7.3%, $p = 0.049$) compared to standard defibrillation (3.5%)

Results

Discussion

- Secondary analysis of DOSE-VF RCT demonstrated both DSED and VC significantly decreased time in VF compared with standard defibrillation
- Corresponding increases in ROSC and survival rates
- As VF persists, energy required to defibrillate increases over time as a result of ischemia-induced changes in conduction velocity and refractoriness
- Limitations: analysis of only 1st 6 shocks, lack of assessment of variables such as BMI and changes in defibrillation impedance

Take home points

- In patients with RVF, after 3 defibrillation attempts, consider alternate pad placement (AP) or double sequential external defibrillation (DSED)
  - AL+AP pad placement, or double AL pad placement

Noninvasive Ventilation in Acute Asthma Exacerbations: A Systematic Review

2025 May;22(5):766-784.
DOI: 10.1513/AnnalsATS.202407-799OC

Noninvasive Ventilation in Acute Asthma Exacerbations: A Systematic Review

Collin Homer-Bouthiette [1], Kevin C Wilson [1]

Affiliations + expand

PMID: 39642363 DOI: 10.1513/AnnalsATS.202407-799OC

Abstract

Rationale: Because of a paucity of evidence, multiple clinical practice guidelines lack recommendations pertaining to noninvasive ventilation (NIV) in acute asthma exacerbations. However, the evidence syntheses for these guidelines were performed years ago, and more recent randomized controlled trials (RCTs) and observational studies have been published. **Objectives:**

What?

- Physicians estimate 31% of severe asthma patients are not controlled
- 47% of patients reported 2 or more exacerbations per year requiring oral corticosteroids
- 14% of patients required hospitalization due to exacerbation in the past 12 months
- 50% of assessed patients experienced either 2 or more exacerbations or hospitalization in the past year

Why?

- Paucity of evidence
- Clinical practice guidelines lack recommendations pertaining to NIV in acute asthma
- Syntheses for these guidelines are old
- Recent RCTs and observational studies
- Although fun - intubation carries risk

Objectives

- Update the evidence syntheses from previous guidelines to further clarify the effects of NIV in acute asthma exacerbations

Methods

Systematic search of Medline, Embase, and the Cochrane Library was conducted

- Studies comparing NIV plus standard medical therapy with standard medical therapy alone
- Adults with acute asthma exacerbations were selected

A priori selection criteria, and relevant data were extracted. Weighted aggregation (meta-analysis) was performed to summarize effects, which were appraised using the Grading of Recommendations, Assessment, Development, and Evaluation (or, GRADE)

Results

Eight RCTs and **Five** observational studies were selected

NIV was associated with

- Reduced intubation rate (RCTs: risk ratio [RR] = 0.46; 95% CI = 0.16 to 1.29; observational studies: RR = 0.55; 95% CI = 0.45 to 0.68)
- Reduced admission rate (RR = 0.57; 95% CI = 0.34 to 0.98)
- Reduced time to improvement in accessory muscle use (mean difference = -1.13 h; 95% CI = -1.28 to -0.99)
- Other outcomes favored NIV plus standard medical therapy (not statistically significant) including dyspnea measures and spirometry measures

Limitatons

Conclusions

- All statistically significant **outcomes favored NIV plus standard medical therapy** over standard medical therapy alone in adults with acute asthma exacerbations
- Aggregate data suggest that intubation rate may be reduced with NIV plus standard medical therapy, although the overall quality of the evidence is low
- Intubation has been shown to correlate with mortality in multiple observational trials
- Patients with acute asthma exacerbations may benefit from a trial of NIV in addition to standard medical therapy

Take Home
• NIV + Standard therapy
• Intubation increases mortality
• ? Reduced days admitted
STAINLESS STEEL
KaWe
GERMANY

Lactated Ringer vs Normal Saline Solution During Sickle Cell Vaso-Occlusive Episodes

JAMA 2024;184;(11):1365-1372. doi:10.1001/jamainternmed.2024.4428

Original Investigation

Lactated Ringer vs Normal Saline Solution During Sickle Cell Vaso-Occlusive Episodes

Augusta K. Alwang, MD[1]; Anica C. Law, MD, MS[2]; Elizabeth S. Klings, MD[2,3]; et al

Author Affiliations

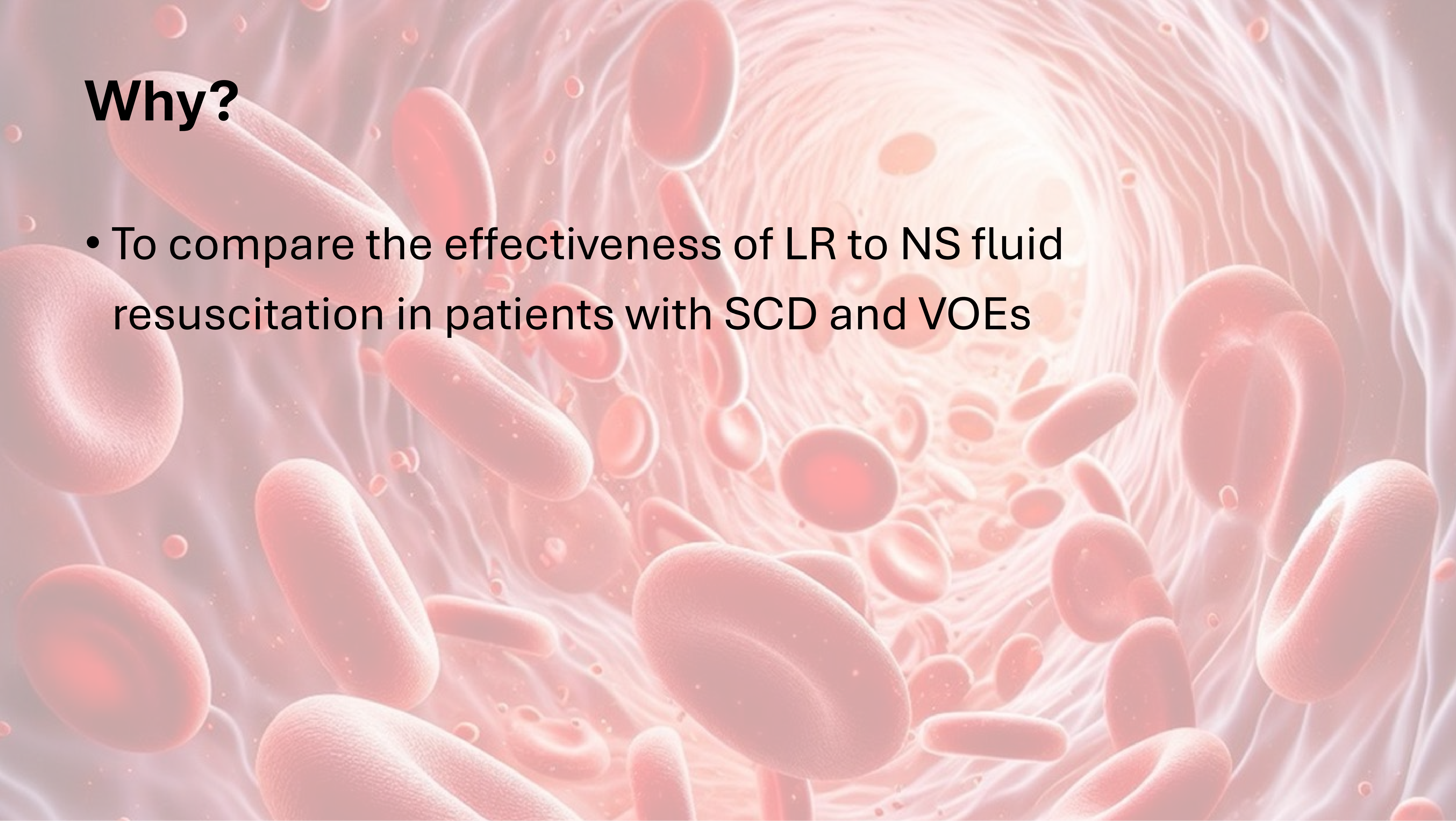
RELATED ARTICLES

Key Points

Question What is the comparative effectiveness of lactated Ringer solution vs normal saline for fluid resuscitation in inpatients with sickle cell disease and vaso-occlusive episodes?

What?

- Sickle cell disease a heterogenous genetic hemoglobinopathy is characterized by painful vasoocclusive episodes
- Patients are often initially resuscitated with NS to improve concurrent hypovolemia, despite preclinical evidence that NS may promote sickling
- Comparative effectiveness of alternative volume-expanding fluids (eg, RL) for resuscitation is unclear



Why?

- To compare the effectiveness of LR to NS fluid resuscitation in patients with SCD and VOEs

Funding and COI

Objective

- To compare the effectiveness of LR to NS fluid resuscitation in patients with SCD and VOEs
- Primary outcome was hospital-free days by day 30

Methods

- Multicenter cohort study included inpatient adults with SCD VOEs who received either LR or NS on DAY 1
- The Premier PINC AI database (2016-2022), a multicenter clinical database including approximately 25% of US hospitalizations was used
- October 6, 2023, and June 20, 2024

Results

- A total of 55 574 patient encounters where LR (n = 3495) or NS (n = 52 079) was administered included
- Median (IQR) age was 30 years (25-37)
- Patients who received LR had more HFDs compared with those who received NS (marginal mean difference, 0.4; 95% CI, 0.1-0.6 days)
- Patients who received LR had shorter hospital lengths of stay (marginal mean difference, −0.4; 95% CI, −0.7 to −0.1 days)
- Patients who received LR has lower risk of 30-day readmission (marginal risk difference, −5.8%; 95% CI, −9.8% to −1.8%)

Patient Flow

Patients with SCD and VOE= 55 574

LR= 3495

NS=52079

LOS

HFD

Baseline

Limitations

Conclusion

- Compared with NS, LR had a small but significant improvement in HFDs
- LR provided lower 30-day readmission
- This difference was measured most when patients received 2L of fluid or more

Take Home

- Among patients with VOEs in whom clinicians plan to give volume resuscitation fluids (> 2 L) on hospital admission, LR should be preferred over NS

THANK YOU!

PLEASE FILL OUT YOUR SESSION EVALUATION

FOLLOW US

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FamilyMedForum