



\$150

\$100

\$100
+
ONE SPIN

\$200



\$550

PRESS
YOUR
LUCK



\$500

BIG
PAYOUT

\$200

\$470

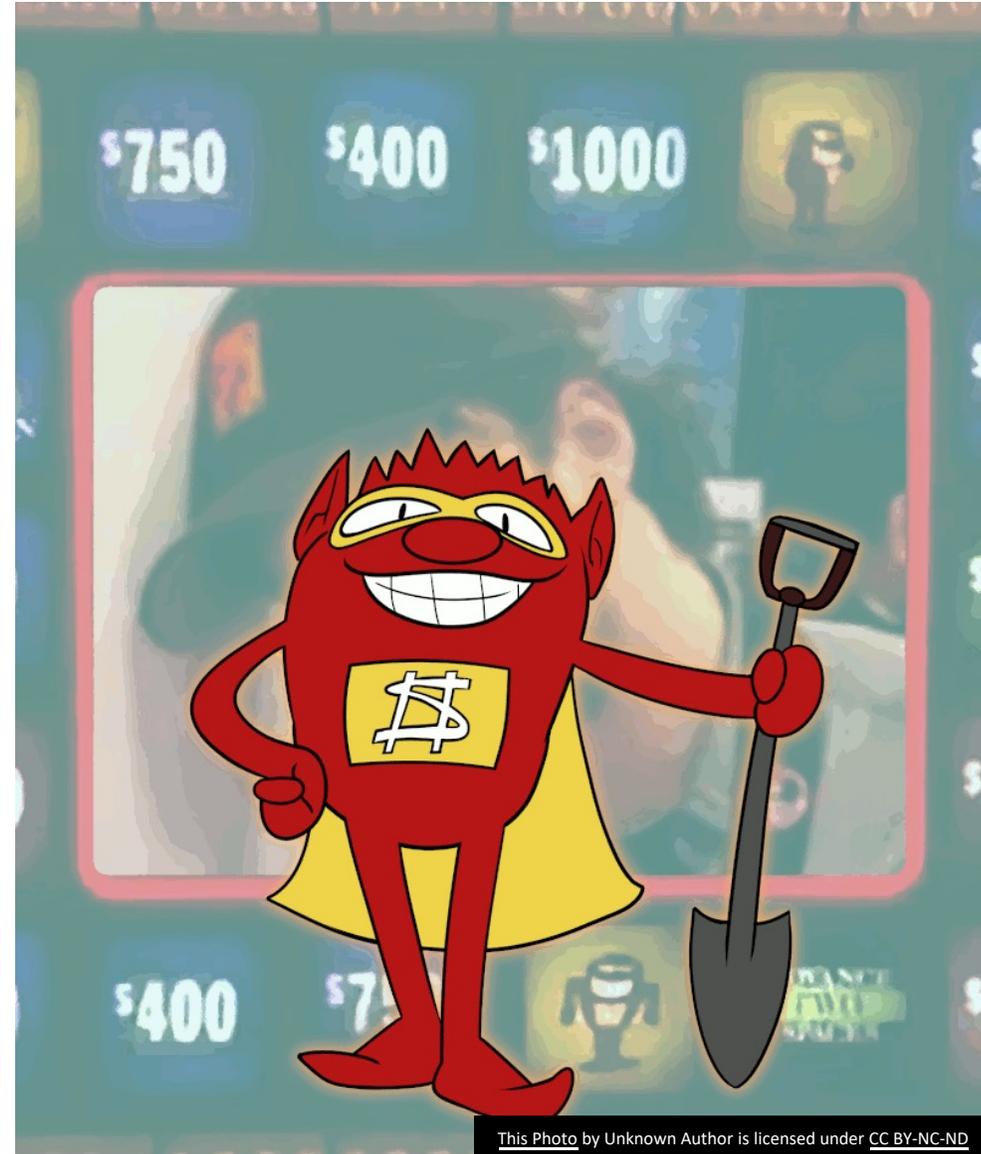
\$300

\$550

\$200

To Press or Not to Press

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No disclosures

Objectives



Discuss recent guidelines for appropriate fluid resuscitation and inotropic support in pediatric patients



Understand the rationale of choosing and administering inotropes in the emergency department



Discuss the use of push-dose epinephrine in pediatrics

5-year-old Male

- Ill-appearing
- Temp 101.2F
- Pulse: 183
- RR: 35
- BP: 72/34
- Pulse oximeter: 90% RA

- 17 kg





A magnifying glass with a black frame and handle is positioned over a small, rectangular piece of white paper. The paper is placed on a light-colored, slightly textured surface. The word "Research" is written on the paper in a dark blue, cursive-style font. The magnifying glass's lens is centered over the word, making it appear larger and more prominent. The handle of the magnifying glass extends to the left, and the frame curves around the lens. The background is a plain, light gray surface.

Research

Studies Assessing Efficacy and Safety of Push-Dose Vasopressors outside the OR

Citation	Study Type	Population/ Drugs/ Dosing	Benefits	Adverse Effects	Notes
Panchal AR, J Emerg Med 2015	Retrospective	<ul style="list-style-type: none"> 20 adults w/ peri-intubation treated with phenylephrine 65% received multiple doses 70% received additional vasopressors 	<ul style="list-style-type: none"> Mean SBP increase from 73 (95% CI 67-78) to 93 (95% CI 80-105) (p<0.05) Mean DBP increase from 42 (95% CI 35-48) to 52 (95% CI 44-58) (p<0.05) No change in HR (pre 114 [95% CI 99-130] vs. post 115 [95% CI 101-130]) 	<ul style="list-style-type: none"> Not listed 	Push-dose phenylephrine commonly used as a bridge to continuous vasopressor infusions
Gottlieb M, CJEM 2018	Case Series	<ul style="list-style-type: none"> 3 post arrest cases Push-dose epinephrine given for hypotension after fluid administration 10mcg every 1-2 minutes for 8 to 12 doses 	<ul style="list-style-type: none"> Increased SBP and DBP in all cases No episodes of re-arrest 	<ul style="list-style-type: none"> Not listed 	Push-dose epinephrine commonly used as a bridge to continuous vasopressor infusions after fluid bolus
Rotando A, Am J Emerg Med 2018	Retrospective	<ul style="list-style-type: none"> 146 patients given push-doses outside OR (78% of use in SICU or MICU) 104 phenylephrine doses 51 ephedrine doses Mean phenylephrine dose 147 ± 68.8 mcg Mean ephedrine dose 14.7 ± 10.1 mcg 57.3% of doses were given as a single dose 57.3% of doses were given during peri-intubation procedure 	<ul style="list-style-type: none"> 32.5% increase in SBP 27.2% increase in DBP 6.4% increase in HR 	<ul style="list-style-type: none"> 17 total adverse events 13 medication doses 9 patients given push-dose with normal or elevated hemodynamics 	Most patients (78%) did not require continuous vasopressor infusions
Svensen AJEM	Retrospective	<ul style="list-style-type: none"> 181 patients treated with push-dose phenylephrine in the ED Dose range from 100-500 mcg 53.4% received multiple doses 46.5% received additional vasopressors or inotropes 	<ul style="list-style-type: none"> MAP based <100 mcg: MAP +4 (95% CI 1.7-6.2); HR +2.2 (95% CI -2.6-6.3) 100-199 mcg: MAP +5.6 (95% CI 2.3-8.8); HR -0.2 (95% CI -2.6-2.1) 200-500 mcg: MAP +12 (95% CI 4.5-20); HR -2.4 (95% CI -6-1.1) 	<ul style="list-style-type: none"> 3% (5/181) developed ADE with no apparent harm 3 cases of SBP>180 2 cases of HR<50 	Doses >200 mcg more effective at raising MAP vs. <100 mcg doses (p=0.02)
Schwartz AJEM 2015	Retrospective	<ul style="list-style-type: none"> 73 patients treated with push-dose phenylephrine in the ED Dose range from 100-200 mCg per dose 53.4% required multiple doses 46.5% required continuous vasopressor infusion 	<ul style="list-style-type: none"> Not assessed 	<ul style="list-style-type: none"> 20.5% (15/73) developed ADE ADE included bradycardia (9.6%), reactive hypertension (8.2%), and ventricular tachycardia (2.7%) 	Patients that did not receive >30 mL/kg fluid challenge required more phenylephrine doses (2.3 vs. 1.5; p=0.01)

ADULTS

2018

Pediatric Push Dose Epinephrine: Getting the Epi Dose Right During Pediatric Resuscitation



Indications in Pediatric Patient

Peri-arrest

Profound hypotension*

Post-arrest hypotension

Anaphylaxis shock

Bridge to pressors

Prior to intubation

Problems

- Increased mortality
- Standardized dosing and mixing
- Education
- Policy
 - **ENSURE EVERYONE IN YOUR INSTITUTION USES THE SAME NAME FOR 1 MCG/KG PUSH OF EPINEPHRINE**
- Medication errors

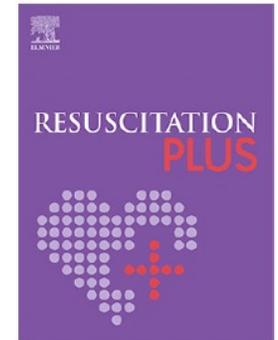




Available online at www.sciencedirect.com

Resuscitation Plus

journal homepage: www.elsevier.com/locate/resuscitation-plus



Short paper

Peri-arrest bolus epinephrine practices amongst pediatric resuscitation experts



Push-Dose Epinephrine

Epi Spritzer*	Pre-a
Dwindle dose Epi*	Anti-c
Micro (as in 1mcg/kg)	Pro-li
Epi Kiss	Just a
Low dose epi*	Twilig
Tenth code dose*	Peri-a
Ultra Low Dose*	Push
Lil epi*	Hooc
Diet epi*	Snifte
Epi lite*	Short



Ken Tegtmeyer, MD

@pccm_doc

Following



You've waited so long for it. I appreciate all the voting and engagement. Here it is the final, scientifically conducted, legally binding arbitrary twitter poll on what we'll call sub-code dose Epinephrine/Adrenaline from here on out. **#PedsICU**

46% Epi Spritzer

54% Peppinephrine

297 votes • Final results

6:04 PM - 25 Jan 2018

Epinephrine

Pharmacology Targets alpha and beta receptors
Increases BP by increasing heart rate, stroke volume and vasoconstriction

Dose	Every 2-5 minutes
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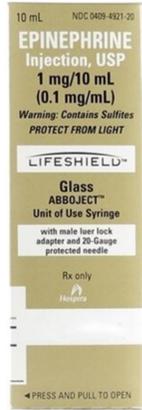
Onset	1 minute
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Duration	5-10 Minutes
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Making the Epi-Spritzer

1 mL



9 mL



1 mL



10 mL

10 mcg/mL

100 mcg total

9 mL



10 mcg/mL



Dose:

1 mcg/kg



Dose: 1 mcg/kg

10 kg 10 mcg 1 mL

15 kg 15 mcg 1.5 mL

20 kg 20 mcg 2 mL

30 kg 30 mcg 3 mL



0.1 mcg/kg



Lack of Evidence



Safety

Take Home Pearls



Evidence



How to make



Dose

Questions, Doubts, Confusions

-
- Thanks



References

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Pediatric Pulse Dose Pressors
For Pediatric Emergency Nurses