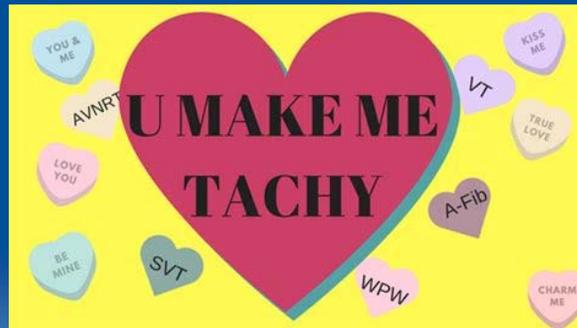


# Pushing Out the Push-Does with Dirty Dancing More Efficient Training with an Epi Drip Model



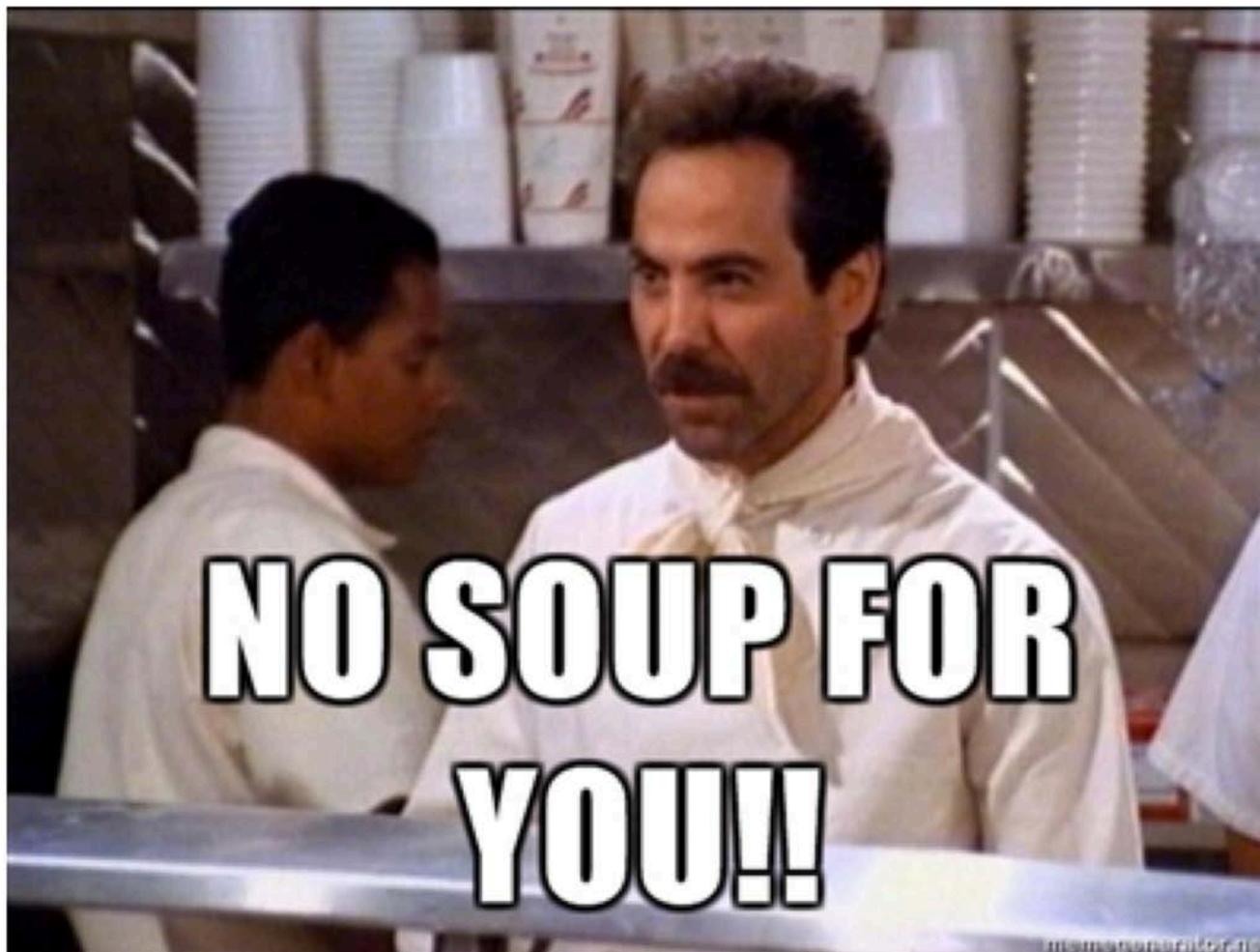
You get my heart racing like an epinephrine drip.

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DIVISION OF FIRE

**David P. Keseg, MD FACEP**  
**Medical Director, Columbus Division of Fire**  
**Adjunct Professor, The Ohio State University**



# ONE PRESSOR TO RULE THEM

ALL!



# What Are the Possible Indications for Epinephrine Infusions?

- 1. Symptomatic Bradycardia**
- 2. Non- hypovolemic shock**
- 3. Post-ROSC Hemodynamic Support**
- 4. CRASHING PATIENT!**



# Are Peripheral Vasopressors Safe?

Primary Outcome	Complication Rate
Major Complications*	0/55 (0%)
Minor Complications**	3/55 (5.45%)
Delayed Complications***	0/55 (0%)
* No Medical or Surgical Interventions Required	
**2 out of 3 complications were in PIVs in the hand; 3 out of 3 complications occurred with 20g catheters; 3 out of 3 complications occurred during infusions running for 11hrs, 28hrs, and 40hrs	
***ZERO delayed complications (i.e. up to 48 hours after discontinuation of pressor infusion)	

## Inclusion Criteria: Circulatory Shock

### Major: Tissue Necrosis and Limb Ischemia

### Minor: Extravasation, Thrombophlebitis and Cellulitis

1. Medlej et al. Complications from administration of vasopressors through peripheral venous catheters: an observational study. JEM. 2018
2. <http://rebelem.com/peripheral-vasopressors-safe-dangerous/>

# How Are Infusions Administered Without a Pump?

$$\text{Drip Rate} = (\text{Volume} * \text{Drop Factor}) / \text{Time}$$

**Math = Bad**



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# The Dirty Epi Drip

**1 mg Epinephrine + 1 L Normal Saline**

**Rate = Wide Open to Clinical Effect**

**Concentration = 1 mcg/mL**

**18 G IV = 20 – 30 mcg/min**

**Titrate to Clinical Effect**



## **Dirty Epi Drip vs. Push-Dose Epinephrine**

### **Push-Dose Epinephrine**

**Requires Math – Potential Safety Concerns**

**Dose Recommendations = 100 mcg/5 min aka 20 mcg/min**

### **Dirty Epi Drip**

**No Math -**

**Dosing via 18 G IV = 20 mcg/min**

# Columbus Fire Protocol

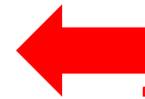
Indications

Bradycardia-continued Pulmonary Edema/CHF Non-Traumatic Shock  
Allergic Reaction/Anaphylaxis Neurologic Trauma-continued

Adult Dose

1 mg in 1,000 ml normal saline; run wide open to clinical effect.  
See: Epinephrine Infusion

Pediatric Dose



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# Columbus Fire Protocol

## Epinephrine (Adrenaline)

Mix 1 mg of 1:1,000 epinephrine in 1,000 mL of normal saline; run wide open through peripheral IV to achieve clinical affect. Stop infusion if adverse reaction occur.

(See Epinephrine 1:1,000 Infusion protocol)



# What Lessons Did We Learn?

1. Simplified Protocol
2. Easier Training
3. Assuage Concerns Regarding Volume Overload
4. Overall Positive

**QUESTIONS??????**

**DKESSEG@COLUMBUS.GOV**

