

**“Expertise  
comes when you  
have made all  
the **mistakes**  
possible in your  
field”**

**[nychypothermia.org](http://nychypothermia.org)**

**I. Induction  
II. Maintenance  
III. Rewarming  
IV. Normothermia**

**Hypothermia**



**Hypothermia**



**Top Ten**

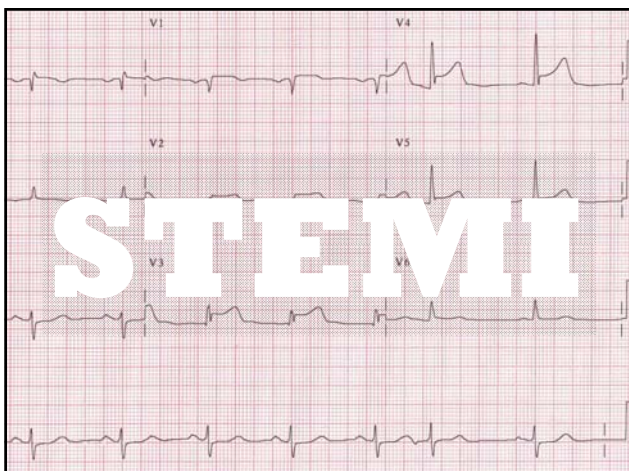
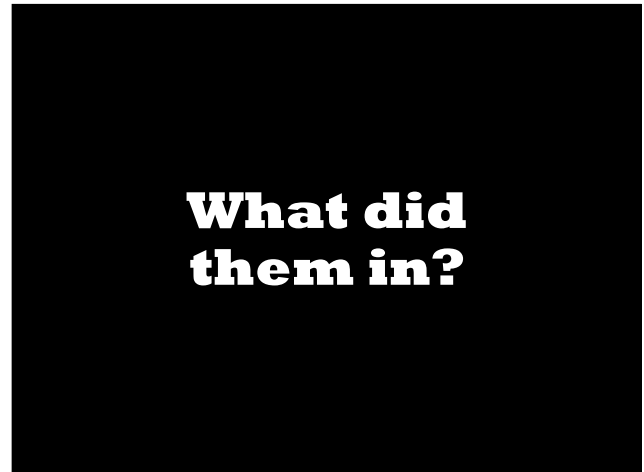
**The first 20 minutes**



**ABCs**

**Fingerstick**

**Neuro Exam**



**Get a rectal  
temp**

**Screen for  
Hypothermia**

**Who do  
we  
cool?**

**10**  
**Cool Everyone  
Going to an ICU**

**Any non-trauma,  
post-arrest patient,  
who doesn't follow  
commands, being  
admitted to an  
ICU**

FDNY

## **The Argument**

Oddo et al.

Abstracts

**9**

**Induce as quickly as  
possible**

**Induce with  
ICED Saline**



## Immersive Bath Systems



Janata - Critical Care Medicine 2008



Resus 2009;80:1223 & 12

# Circulation

JOURNAL OF THE AMERICAN HEART ASSOCIATION

American Heart  
Association®  
Learn and Live™

### Successful Cardiopulmonary Resuscitation After Cardiac Arrest as a "Sepsis-Like" Syndrome

Christophe Adrie, Minou Auby-Conquy, Ivan Laurent, Mehran Monchi, Christophe Vinsonneau, Catherine Fitting, François Fraisse, A. Tuan Dinh-Xuan, Pierre Carli, Christian Spaulding, Jean-François Dhainaut and Jean-Marc Cavaillon  
*Circulation* 2002;106:562-568; originally published online Jul 8, 2002;

## Place on Temp Monitoring

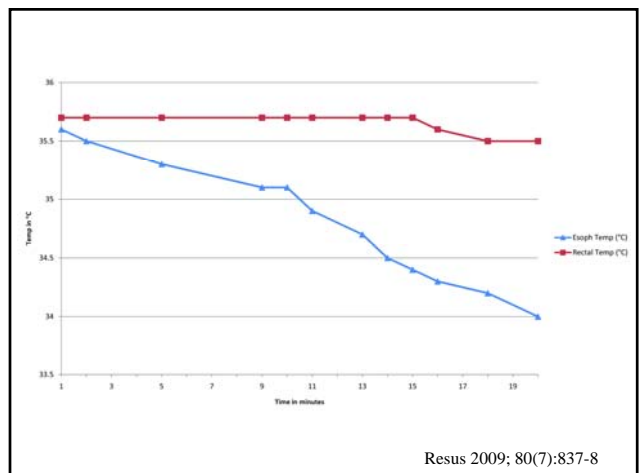
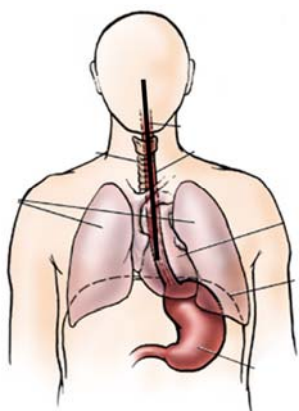


# 8

**esophageal probe to  
avoid probe lag**



## Esophageal



Device	Time Lag
Intravascular Catheters	None
Esophageal Probe	5 minutes (3-10)
Rectal Probe	15 minutes (10-40)
Bladder Probe	20 minutes (10-60)
Other Sites	Who Cares!

Polderman Crit Care Med 2009; 37:1101-1120

**Treat shivering aggressively**

**7**

**Paralyze for Induction**

#### Shivering Protocol After Induction

**Bedside Shivering Assessment (BSAS)** (Severson Care 2007;8:213)

**0-None**, no shivering. Must not have shivering on EKG or palpation.

**1-Mild**-localized to neck/thorax. May only be noticed on palpation or EKG.

**2-Moderate**-intermittent involvement of upper extremities +/- thorax.

**3-Severe**-generalized shivering or sustained upper extremity shivering

•All patients receive:

**Acetaminophen** 650 mg GT Q 6 hours unless allergic

•If BSAS > 1, add **Fentanyl Drip** (Start @ 25 mcg/hour; titrate as per EHCED drip sheet)

•If BSAS still > 1, add **Propofol Drip** (Start @ 3 mcg/kg/min; titrate as per EHCED drip sheet) or **Dexmedetomidine Drip**

•If BSAS still > 1, add **Bair Hugger Device** for counterwarming on both of patient's arms.

•If BSAS still > 1, administer **MgSO4** 2 grams IVSS, then 0.5-1 gram/hr for target serum Mg 3 mg/dl

•If BSAS still > 1, administer **Ketamine** 0.5 mg/kg IVP, may start drip at same dose per hour

•If BSAS still > 1 after titration of above meds, add **Nimbex** 0.15 mg/kg IV Q 1 hour PRN

Paralysis should only be necessary under extraordinary circumstances!

**6**

**You need a machine.  
More expensive  
= less work**



**33° C** (32° C)

**5**

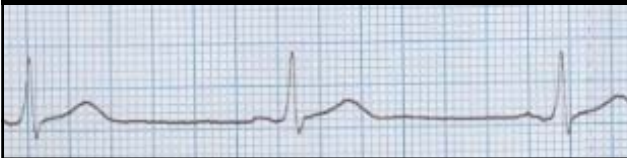
**Post-arrest patients  
need incredible  
nursing, but that is not  
the hypothermia's fault**

**4**

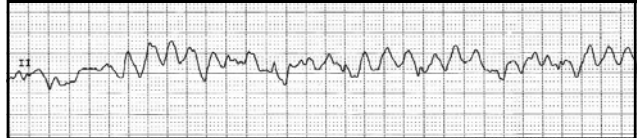
**Don't blame the  
hypothermia for the  
hemodynamic  
instability**



## **Bradycardia**



## **Dysrhythmia**



**3**

**Labs become tougher**

**Blood Gases**

**Mg**

**KCl**

**iCAL**

**Glucose**

**Mg**

**KCl**

**iCAL**

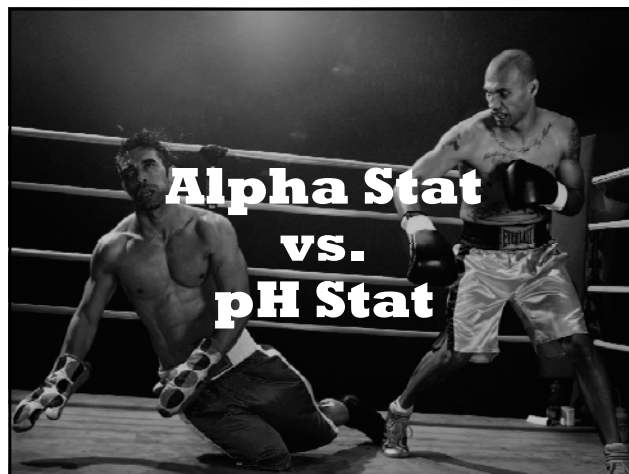
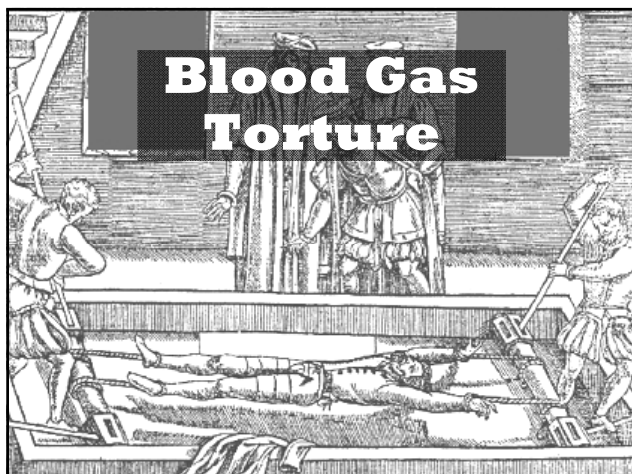
**Glucose**

Resuscitation, 2010 Jan;81(1):117-22

**K**

**180**

NEJM 2009;360:1283-1297  
Resuscitation 80 (2009) 624-630



**pH**  
**Increases ICP**  
**Increases CBF**  
**Higher PaCO<sub>2</sub>**

**Alpha**  
**Decreases ICP**  
**Decreases CBF**  
**Lower PaCO<sub>2</sub>**



## **Easiest Way**

- **Don't tell the lab anything**
- **PaCO<sub>2</sub> 45**
- **pH 7.35**
- **PaO<sub>2</sub> 80 (100-120)**

## **If you trust your Lab**

- **Correct for Temp**
- **Verify on the results**
- **PaCO<sub>2</sub> 35**
- **pH 7.45**
- **PaO<sub>2</sub> 60 (80-100)**

# **2**

**Rewarm slowly**  
**0.1 - 0.33 ° C per hour**  
**Actively**



**1**

**Hypothermia really  
screws up  
prognostication, but...**

**To  
Review**

Review Article

Therapeutic hypothermia and controlled normothermia in the intensive care unit: Practical considerations, side effects, and cooling methods\*

Kees H. Polderman, MD, PhD; Ingeborg Herold, MD (Crit Care Med 2009; 37:1101-1120)

**All refs and  
slides at:**

[NYChypothermia.org](http://NYChypothermia.org)

**blog.emcrit.org**

**Contact me at:**

me@emcrit.org

