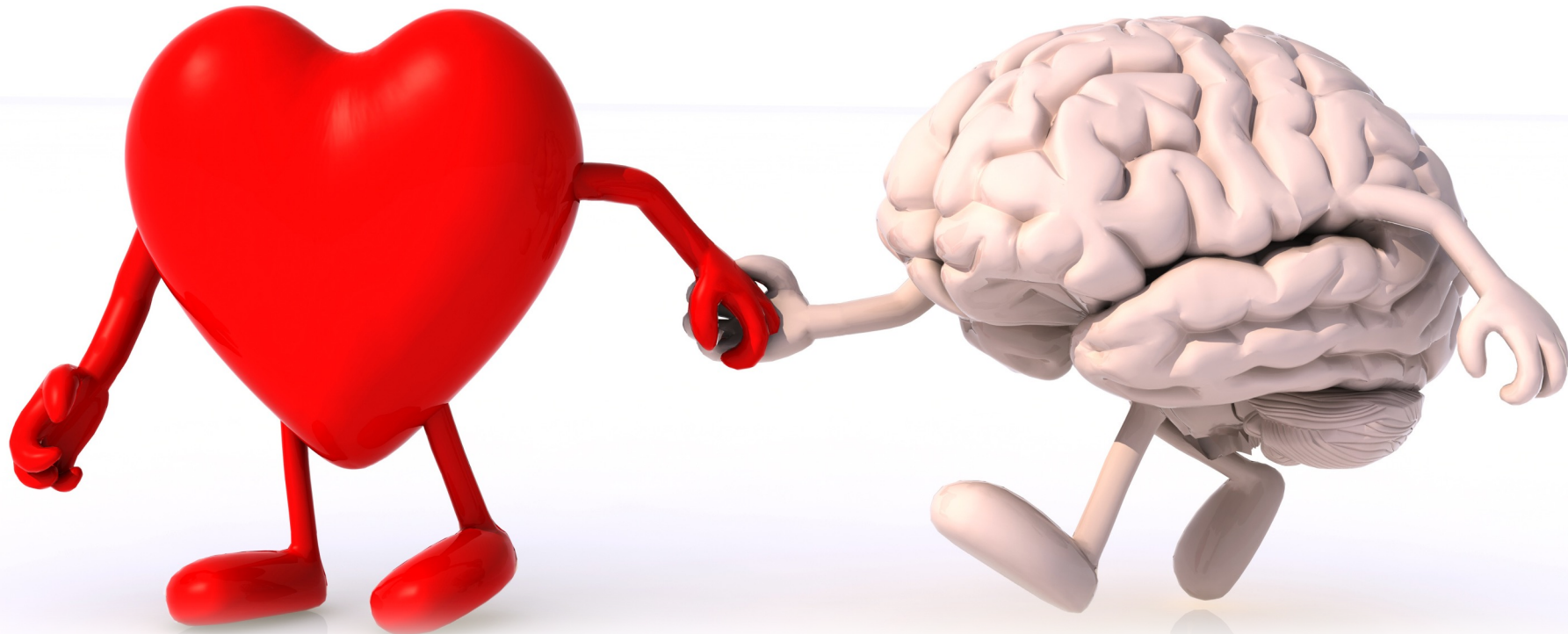


APPROACH TO CARDIAC ARREST





Merchant et al. J Am Heart Assoc 2014;3(1):e000400

Hospital Variation in Survival After In-hospital Cardiac Arrest

Risk-adjusted survival:

Worst Hospitals: Median 12% (0% to 16%)

Best Hospitals: Median 23% (range 21% to 36%)

Patients identical for 36 risk factors: Median difference in odds of survival was 42% at one randomly selected hospital vs another

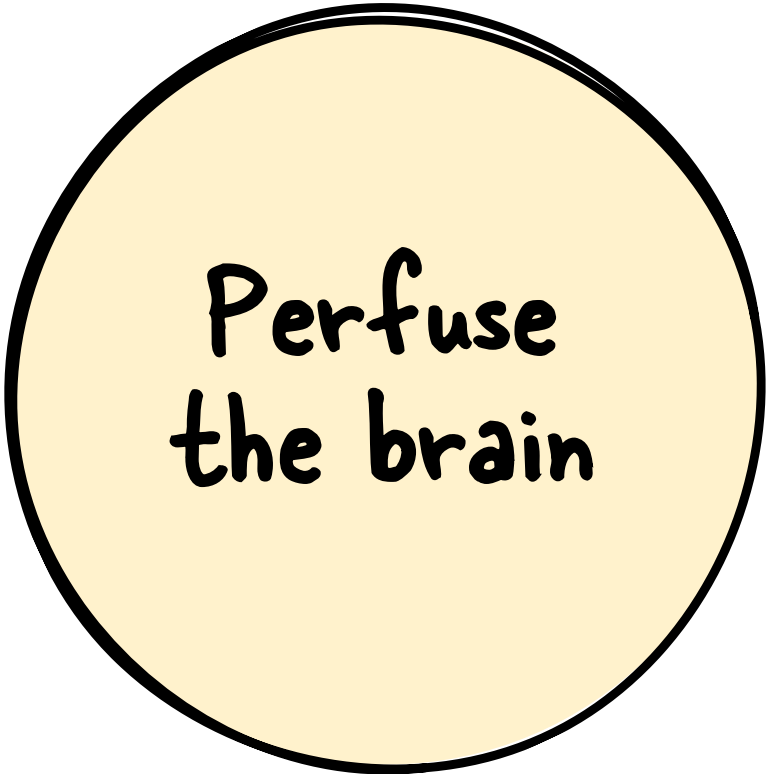
YOUR PATIENT LOSING THEIR PULSE
DOES NOT SUDDENLY OBVIATE
YOUR RESPONSIBILITY TO **THINK**

- Cardiac arrest pathophysiology
- Hemodynamic-directed epinephrine dosing
- Intra-arterial medication administration
- Refractory ventricular tachycardia
- End-tidal CO₂ nuances
- Transesophageal echo in cardiac arrest
- Intra-arrest POCUS
- Anti-arrhythmic drug nuances
- Pregnant arrest
- Traumatic arrest
- ECMO & ECPR
- Emergency Preservation and Resuscitation
- Cardiac Surgery Advanced Life Support
- Selective aortic arch perfusion
- Cessation of resuscitation
- Post-arrest cooling
- Post-cardiac arrest syndrome
- Etc etc etc etc etc




COMPLICATED

APPROACH TO CARDIAC ARREST



Perfuse
the brain

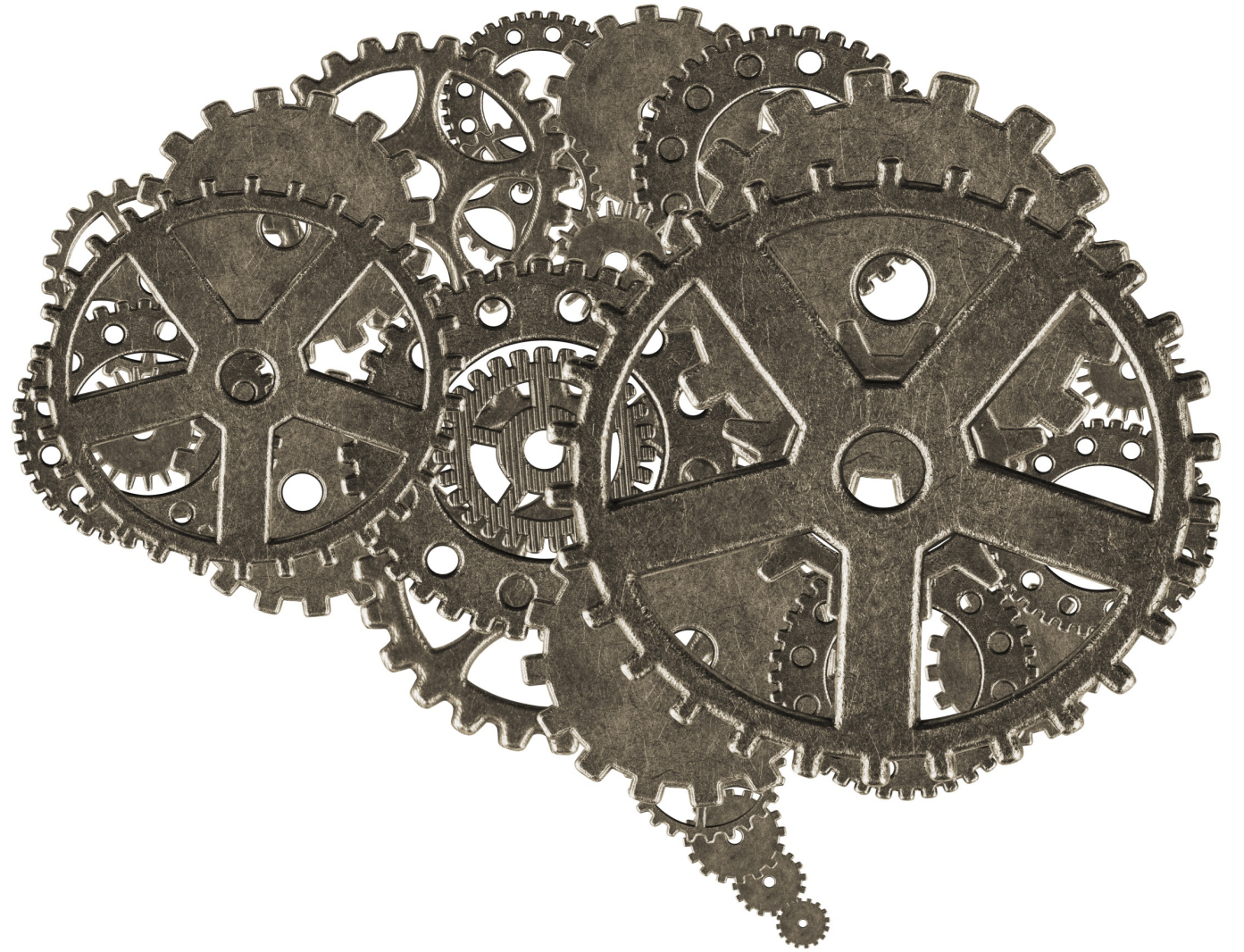


Identify
and address
reversible
causes



Reboot
the heart

MENTAL MODEL



APPROACH TO CARDIAC ARREST

Perfuse
the brain

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and address
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RETURN OF SPONTANEOUS
CIRCULATION



NEUROLOGICALLY INTACT
SURVIVAL

**WHOEVER IS DOING
CHEST COMPRESSIONS IS
THE MOST IMPORTANT
PERSON IN THE ROOM!**



THE 4 KEY COMPONENTS OF GOOD CHEST COMPRESSIONS





KEYS TO GOOD CHEST COMPRESSIONS

1. Start doing them: Short downtime
2. Minimize interruptions: Maintain pressure head
3. Allow diastolic filling: Optimal rate and recoil
4. Adjust location: Outflow tract patency

IS THERE A
PULSE???





Cardiopulmonary resuscitation techniques and instruction:
when does evidence justify revision?

Patients **WITH** pulses → Providers said pulse **absent** 40% of the time

Patients **WIHTOUT** pulses → Providers said pulse **present** 10% of the time

Only 15% of providers could correctly confirm
the presence of a pulse in ≤ 10 seconds **(?!?!)**

TRUE PEA

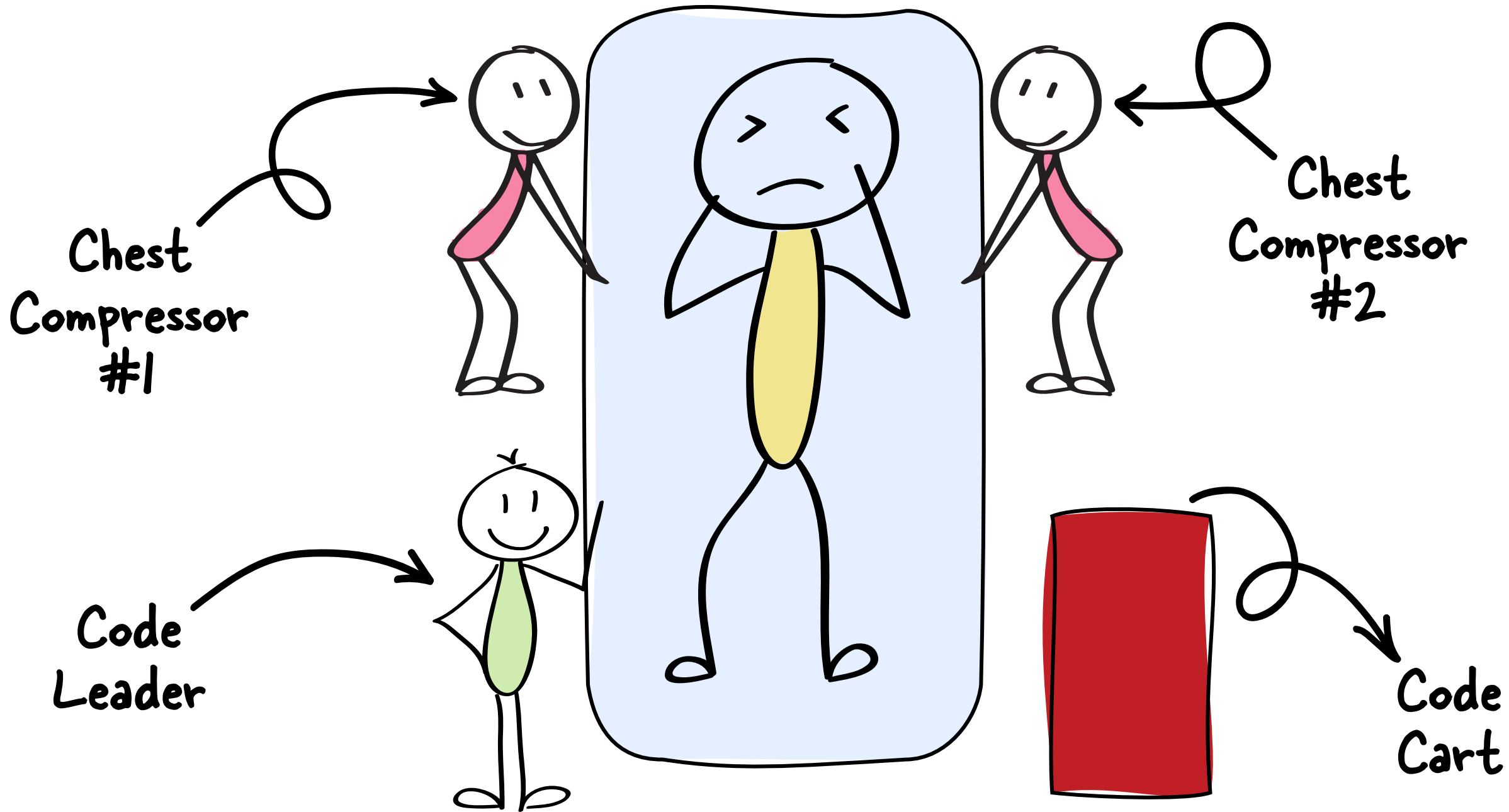
VS

"PSEUDO-PEA"





See
DO YOU ~~FEEL~~
A PULSE???





DO THINKING!

THERE IS A REASON WHY
EXPERTS DON'T TEND
TO USE MNEMONICS...

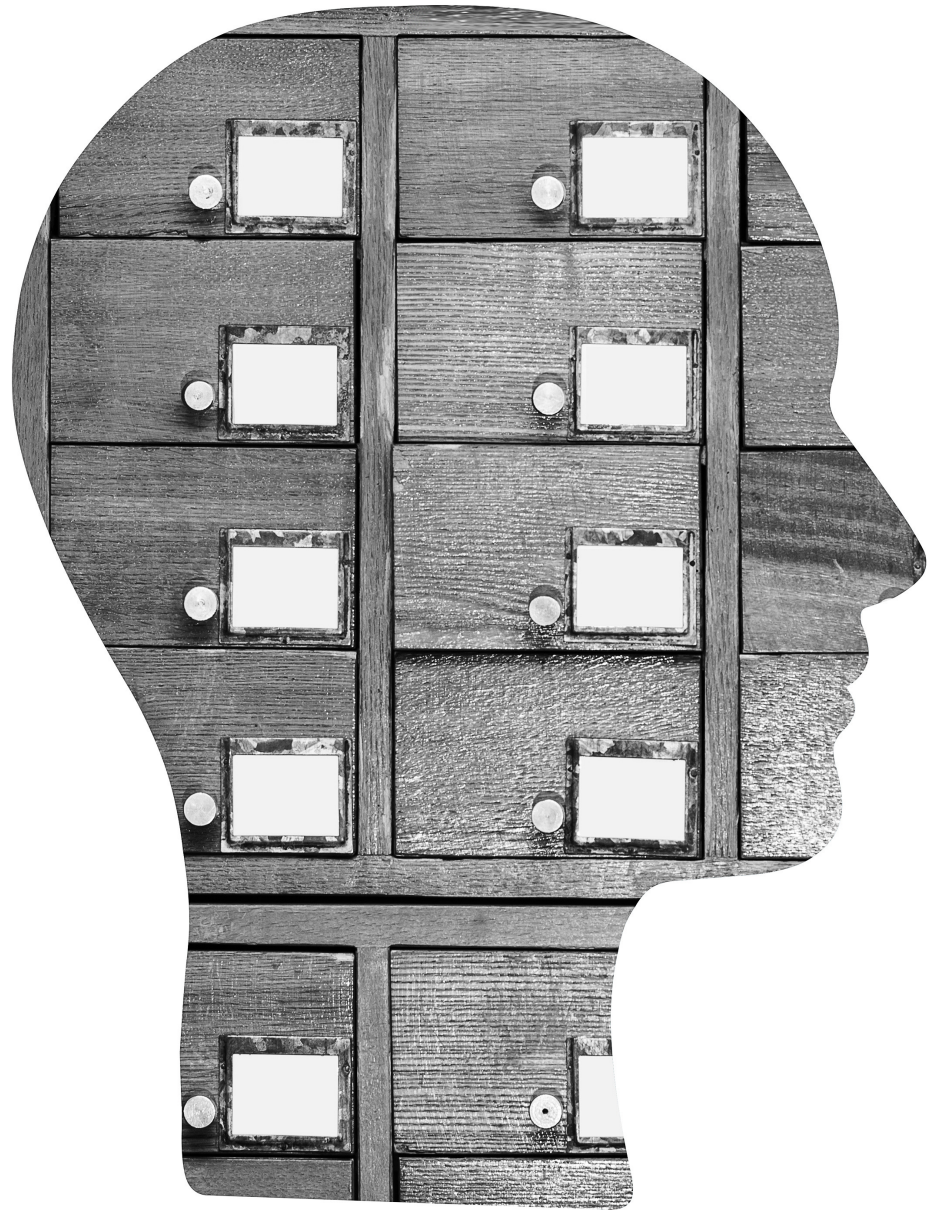


Recall of random and distorted chess positions: Implications for the theory of expertise

FERNAND GOBET and HERBERT A. SIMON

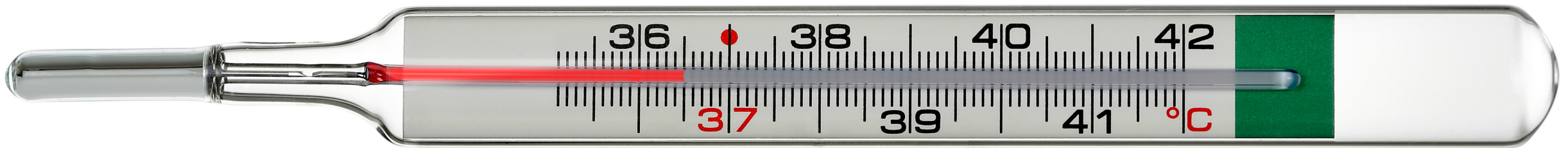
Memory & Cognition 1996, 24 (4), 493-503



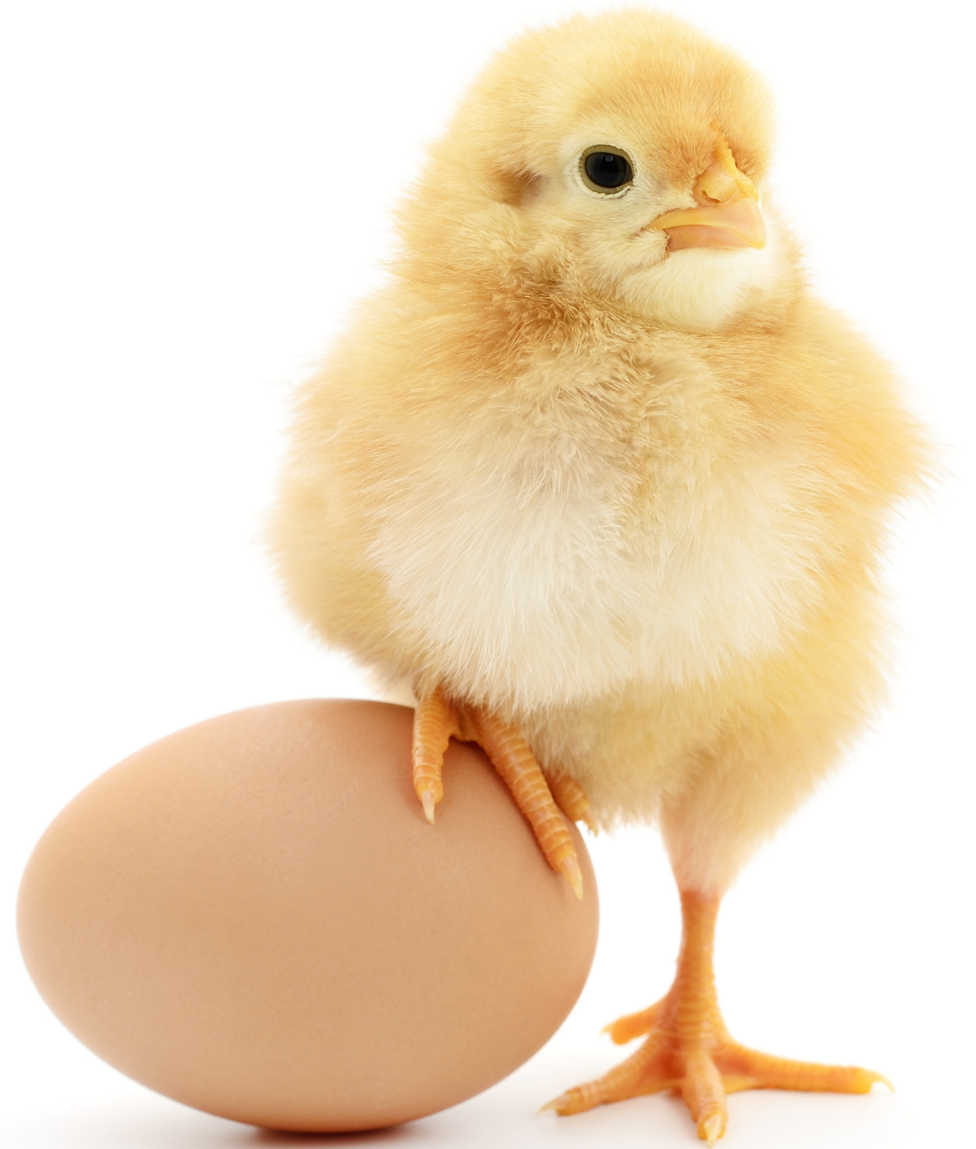


ORGANIZED PROBLEM-SOLVING APPROACH

WHAT ABOUT HYPOTHERMIA AND HYPERTHERMIA?



VENTRICULAR DYSRHYTHMIAS





ADVANCED AIRWAY



Airway Management During Cardiopulmonary Resuscitation

Conflicting data on ideal timing for advanced airway placement during cardiac arrest

No conclusive evidence that an ETT is superior to a supraglottic airway with regard to either survival or neurologic outcomes

OTHER DRUGS?

(Don't do something just for the sake of doing something...)



MURPHY'S LAW OF RESUSCITATION

The more things that
have gone wrong, the more
things that will go wrong



APPROACH TO CARDIAC ARREST

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the brain

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and address
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causes

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the heart



DEFIBRILLATION



**SPEED
MATTERS**





HEART IS MOST
RECEPTIVE WHEN
WELL PERFUSED

EPINEPHRINE BOTTOM LINE?

Early is probably better
Too much is probably bad
Don't delay defibrillation!





Commentary: Early Epinephrine Administration for Cardiac Arrest

Out of Hospital Cardiac Arrest

Epinephrine associated with higher rate of survival but worse neurologic outcomes in survivors

Any beneficial treatment effect was greater for nonshockable rhythms and declined with increasing time to epinephrine administration



Commentary: Early Epinephrine Administration for Cardiac Arrest

In-Hospital Cardiac Arrest

Nonshockable rhythm: **Delay** to first epinephrine associated with decreased survival & neurologically favorable outcomes

Shockable rhythm: Epinephrine **given immediately** associated with decreased survival & neurologically favorable outcome



BMJ

Evans et al. *BMJ* 2021;375:e066534

Epinephrine before defibrillation in patients with shockable
in-hospital cardiac arrest: propensity matched analysis

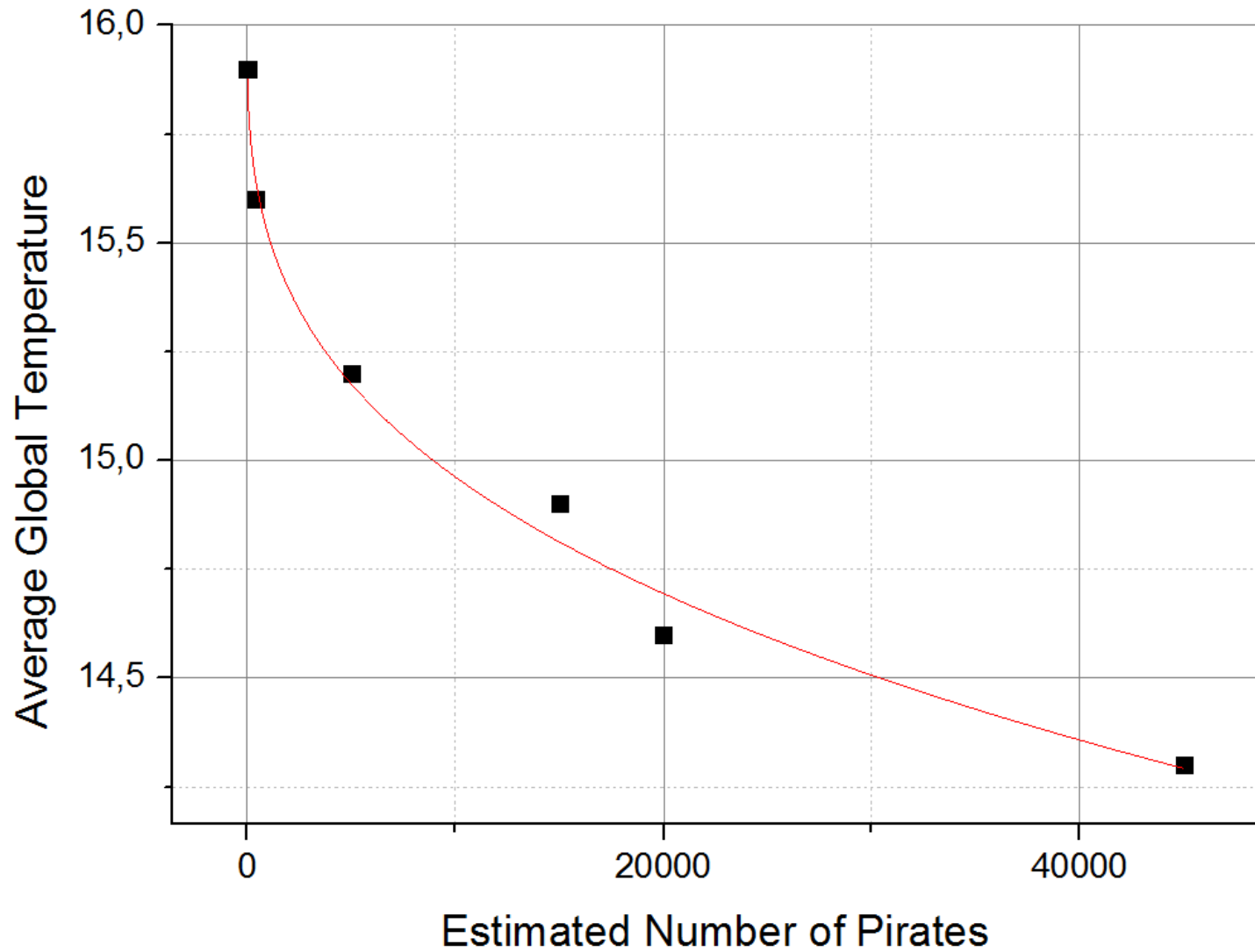
Treatment with epinephrine before defibrillation
was strongly associated with delayed defibrillation

Administration of epinephrine before defibrillation
was associated with worse survival outcomes



Analysis of Epinephrine Dose, Targeted Temperature Management, and Neurologic and Survival Outcomes Among Adults With OHCA

Higher doses of epinephrine associated with decreasing odds of neurologically favorable outcomes (OR 0.46 for each additional mg of epi) and survival to hospital discharge (OR 0.47 for each additional mg of epi)



CAUSATION
VS
CORRELATION

IMMEDIATE POST-ROSC ACTIONS

Maintain Post-Arrest Hemodynamic Stability

- Check BP
- Start Pressors
- Place lines

Identify Arrest Causes & Consequences

- POCUS
- 12-lead EKG
- Labs & Imaging



COOLING GOOD



FEVER BAD



Temperature control after cardiac arrest

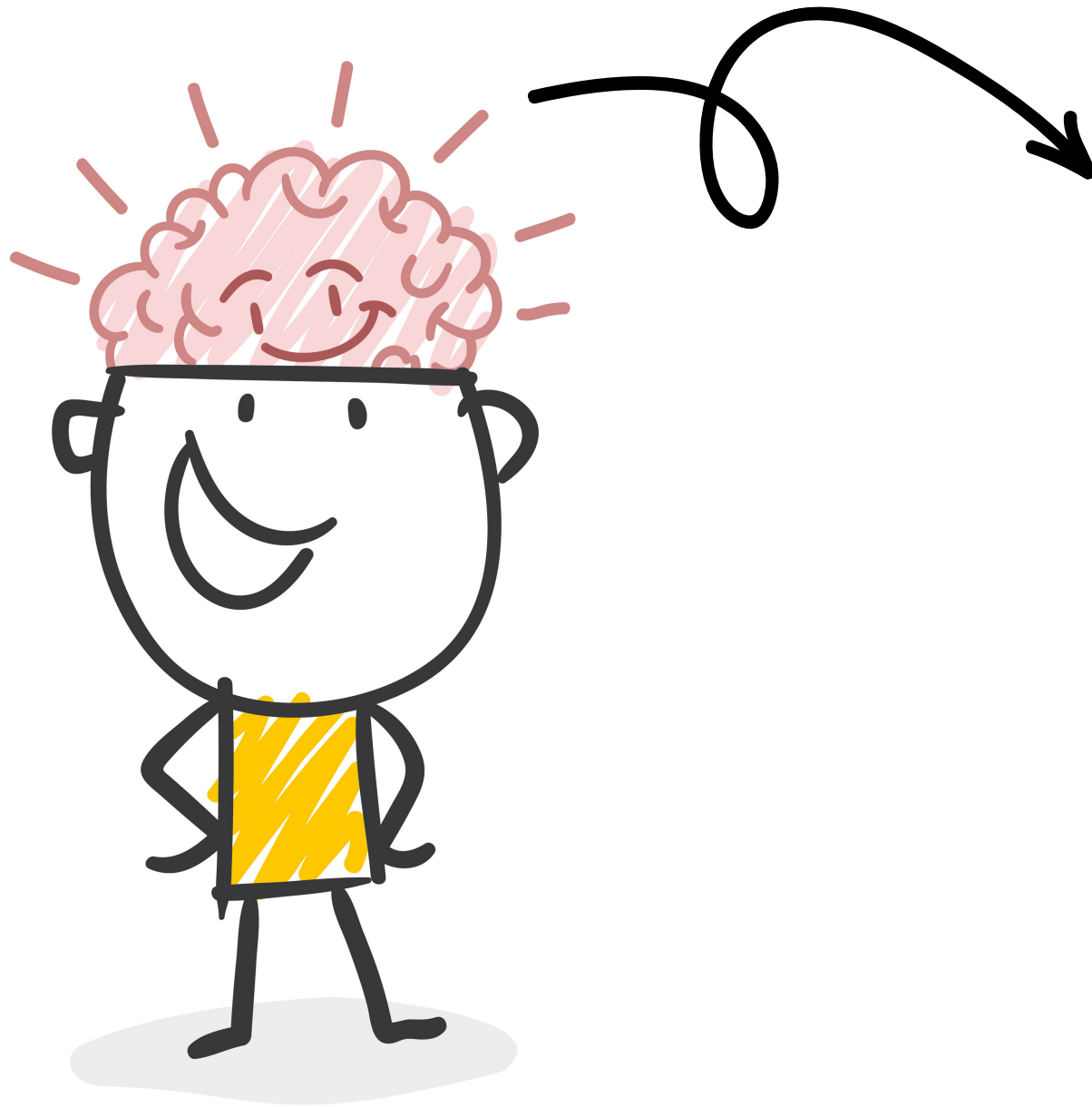
Systematic review of 32 trials

Conclusion: Targeted cooling to 32–34°C compared to fever prevention not associated with improvement in survival or functional neurologic outcomes

INTERNATIONAL LIAISON COMMITTEE ON RESUSCITATION 2022 RECCOMENDATIONS

Monitor core temperature and actively prevent fever (37.7°C) for $\geq 72\text{h}$ in patients who are comatose after cardiac arrest





**NECESSARY
BUT NOT
SUFFICIENT**

SET THE EMOTIONAL TONE





MORE
≠
BETTER

ANTICIPATE



PRIORITIZE



To do list:

1

2

3

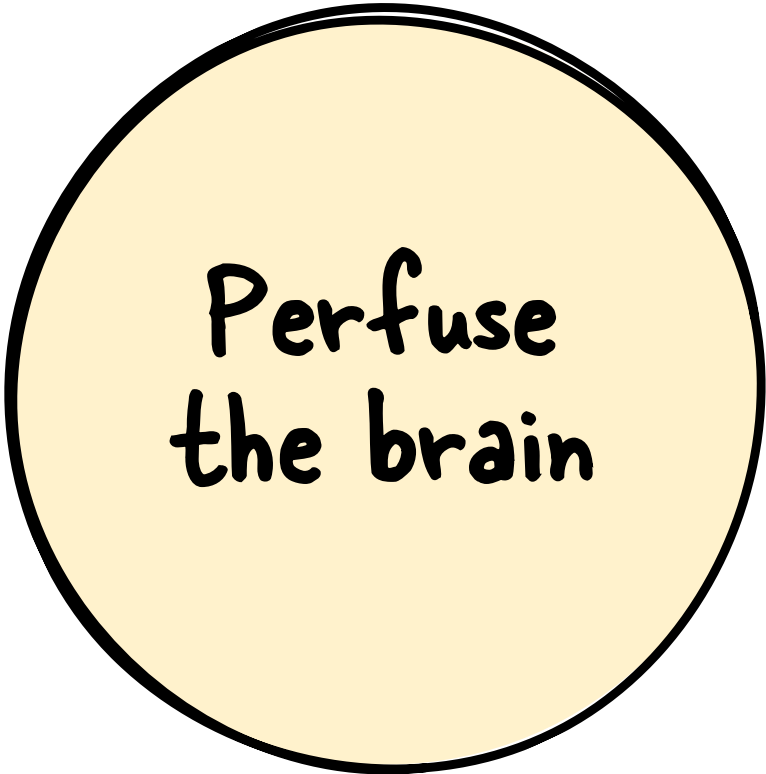
4

5




RECAP

APPROACH TO CARDIAC ARREST



Perfuse
the brain



Identify
and address
reversible
causes



Reboot
the heart



KEYS TO GOOD CHEST COMPRESSIONS

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See
DO YOU ~~FEEL~~
A PULSE???

RESPIRATORY

Airway

Lungs

HEMODYNAMIC

Cardiogenic

Obstructive

Hypovolemic

Distributive

METABOLIC

Potassium

Acidemia

Glucose

Toxins

IMMEDIATE POST-ROSC ACTIONS

Maintain Post-Arrest Hemodynamic Stability

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