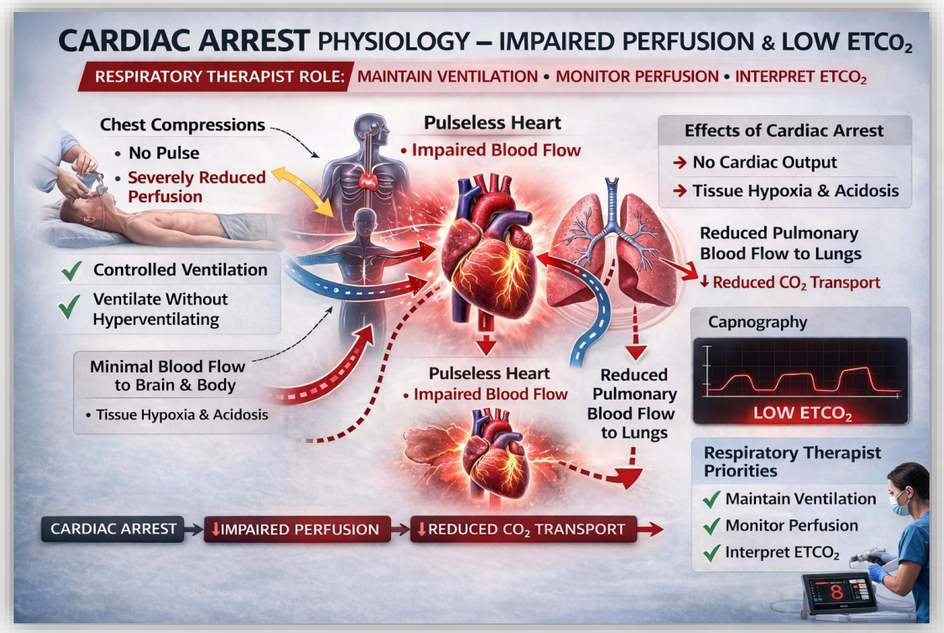
Part 4 - RT-ACLS
ACLS Medications

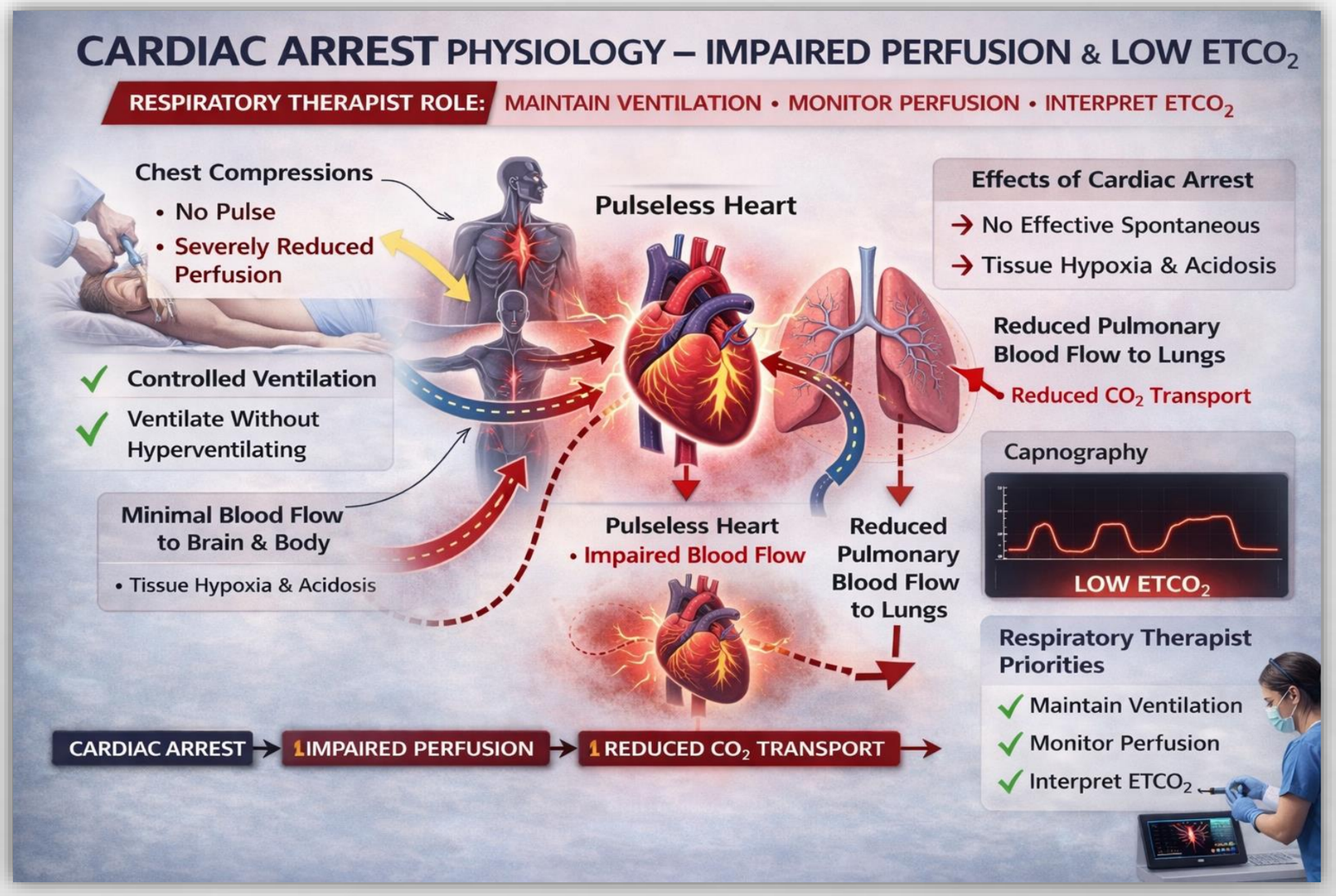


Physiologic Interpretation for the Respiratory Therapist

- Understanding medication effects through ventilation and perfusion
- Focus on physiologic response, not medication administration
- Emphasis on capnography and circulation monitoring
- Respiratory therapist as physiologic observer

Respiratory Therapist Scope During ACLS

- Maintain airway patency
- Provide effective ventilation
- Deliver oxygen to alveoli
- Remove carbon dioxide



Learning Objectives

- Physiologic purpose of ACLS medications
- Relationship between circulation and ventilation
- Capnography as indicator of perfusion
- Physiologic indicators of improving circulation
- Role of $ETCO_2$ in resuscitation monitoring

Physiology of Cardiac Arrest

- Loss of effective cardiac output
- Oxygen delivery to tissues stops
- Carbon dioxide transport stops
- Cellular hypoxia develops rapidly
- Ventilation alone cannot restore perfusion

H's and T's – Causes of Cardiac Arrest

- **H**ypovolemia
- **H**ypoxia
- **H**ydrogen Ions (Acidosis)
- **H**yperkalemia / **H**ypokalemia
- **H**ypothermia
- **H**ypoglycemia

- **T**oxins / Tablets
- **T**amponade
- **T**ension Pneumothorax
- **T**hrombosis (Myocardial / Pulmonary)
- **T**rauma

Purpose of ACLS Medications

- Improve coronary perfusion pressure
- Stabilize cardiac electrical activity
- Improve cardiac contractility
- Correct metabolic disturbances

ACLS Medication Recommendations

Part 2: Specific Arrhythmias Management

Stable Wide Complex Tachycardia

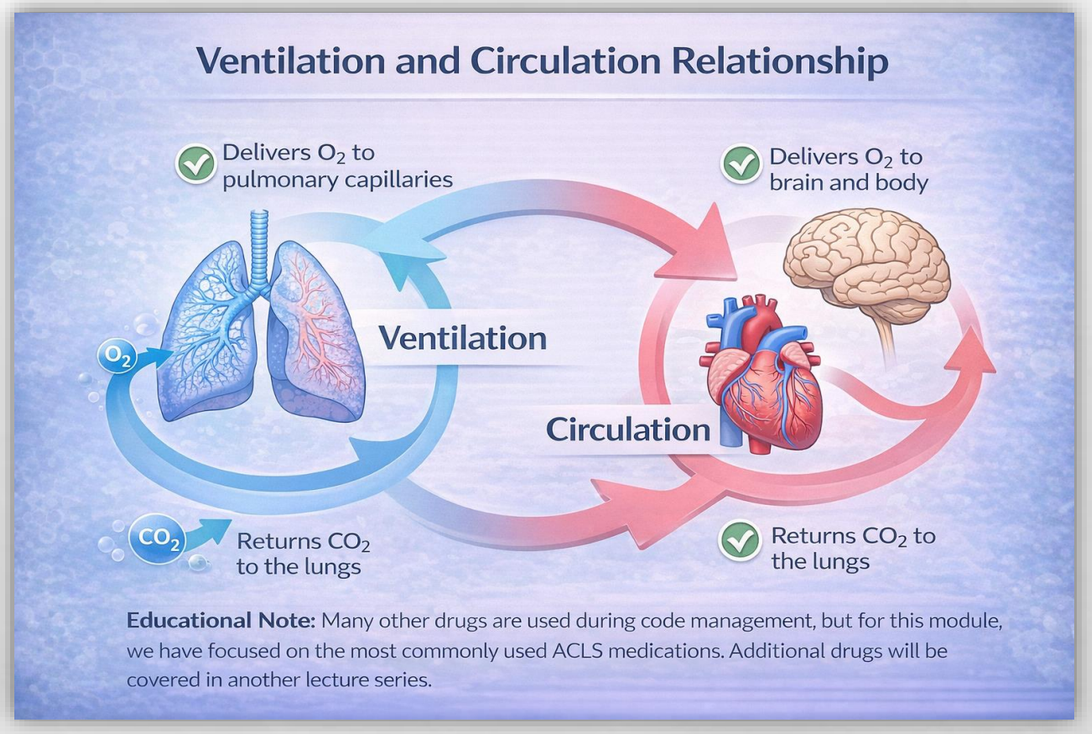
- Adenosine
- Amiodarone
- **AVOID: Verapamil**

Polymorphic Ventricular Tachycardia Magnesium	• With prolonged QT (Torsades de Pointes) • Magnesium • Lidocaine or amiodarone
Regular Narrow Complex Tachycardia Vagal maneuvers	• Vagal maneuvers • Adenosine • Diltiazem or verapamil
Atrial Fibrillation or Flutter with RVR Beta-blocker or diltiazem	• Beta-blocker or diltiazem • Amiodarone
Symptomatic Bradycardia Treat reversible causes	• Treat reversible causes • Atropine • Epinephrine or transcutaneous pacing

Educational Note: Many other drugs are used during code management, but for this module, we have focused on the most commonly used ACLS medications. Additional drugs will be covered in another lecture series.

Ventilation and Circulation Relationship

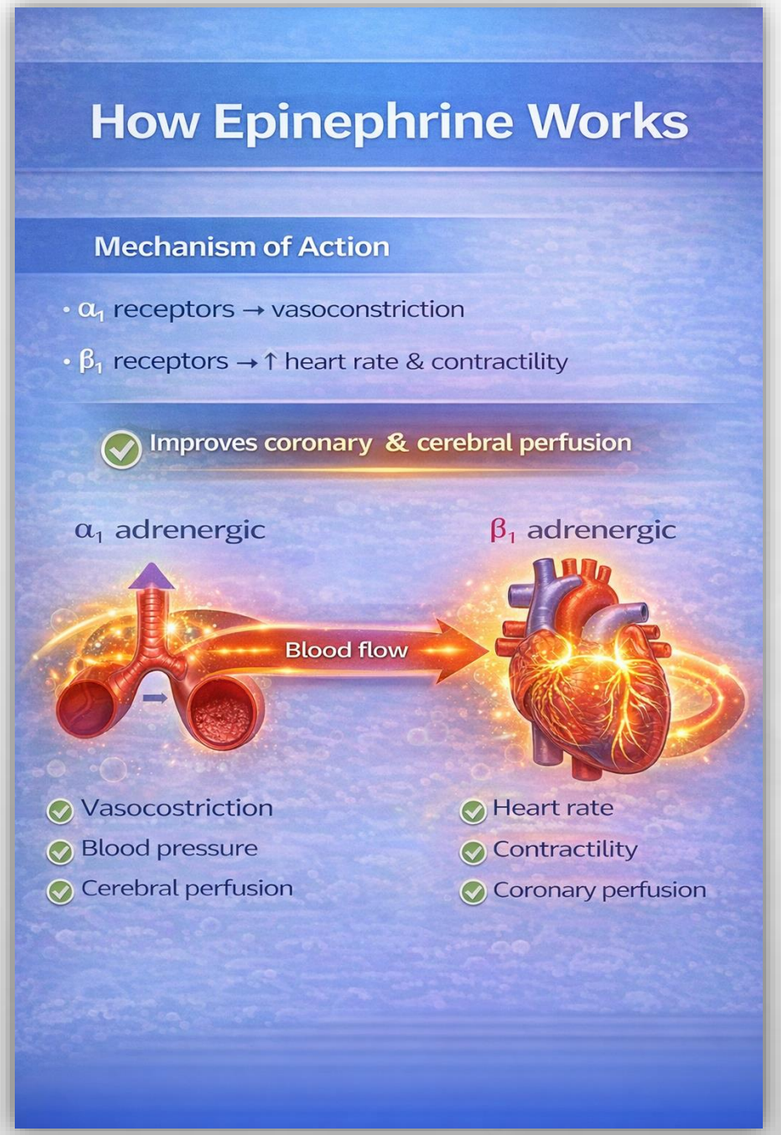
- Ventilation delivers oxygen to lungs
- Circulation delivers oxygen to tissues
- Circulation returns CO_2 to lungs



Epinephrine

Physiologic Mechanism

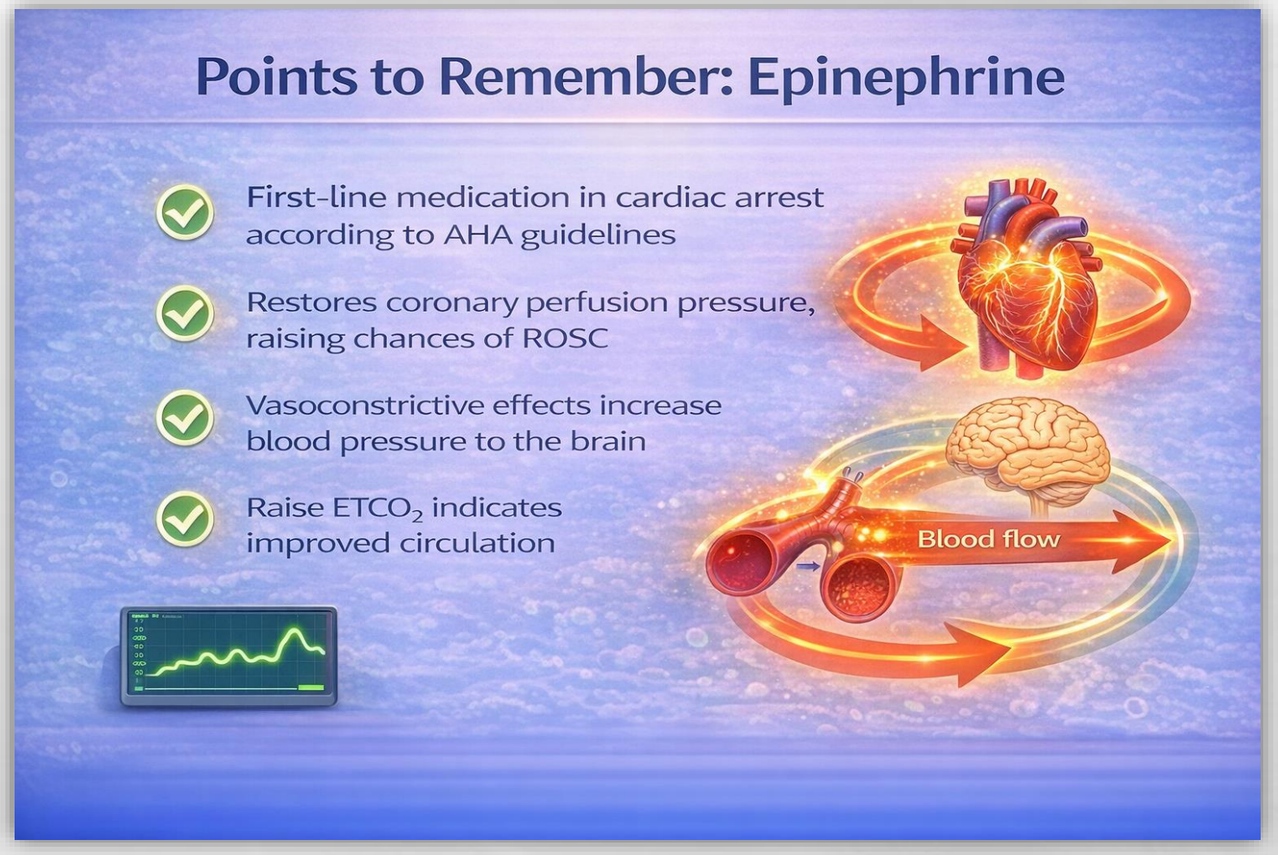
- Alpha-adrenergic vasoconstriction
- Increased systemic vascular resistance
- Increased coronary perfusion pressure



Points to Remember: Epinephrine

Physiologic Effects

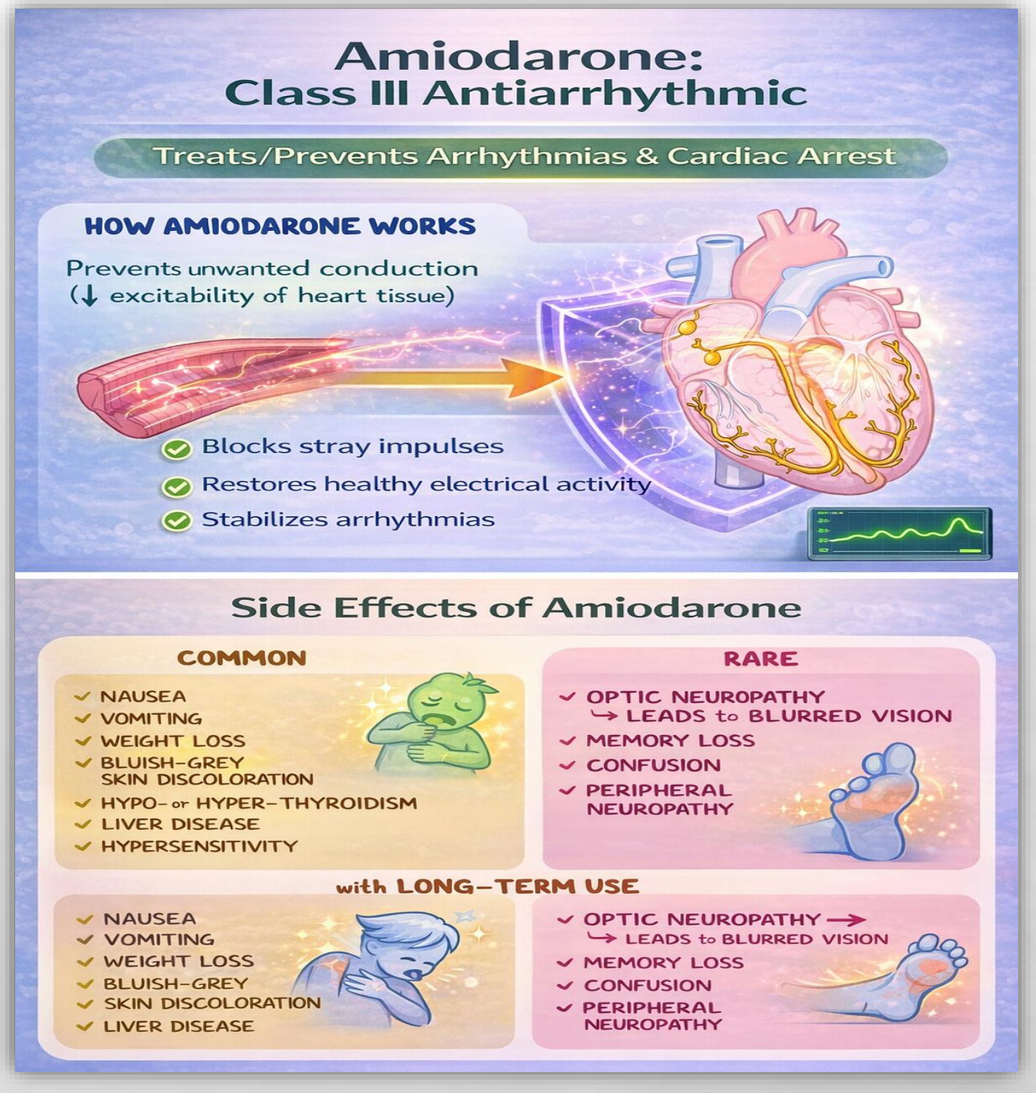
- Improves coronary perfusion
- Improves systemic perfusion
- Improves oxygen delivery



Amiodarone

Physiologic Mechanism

- Stabilizes cardiac electrical conduction
- Restores organized cardiac rhythm



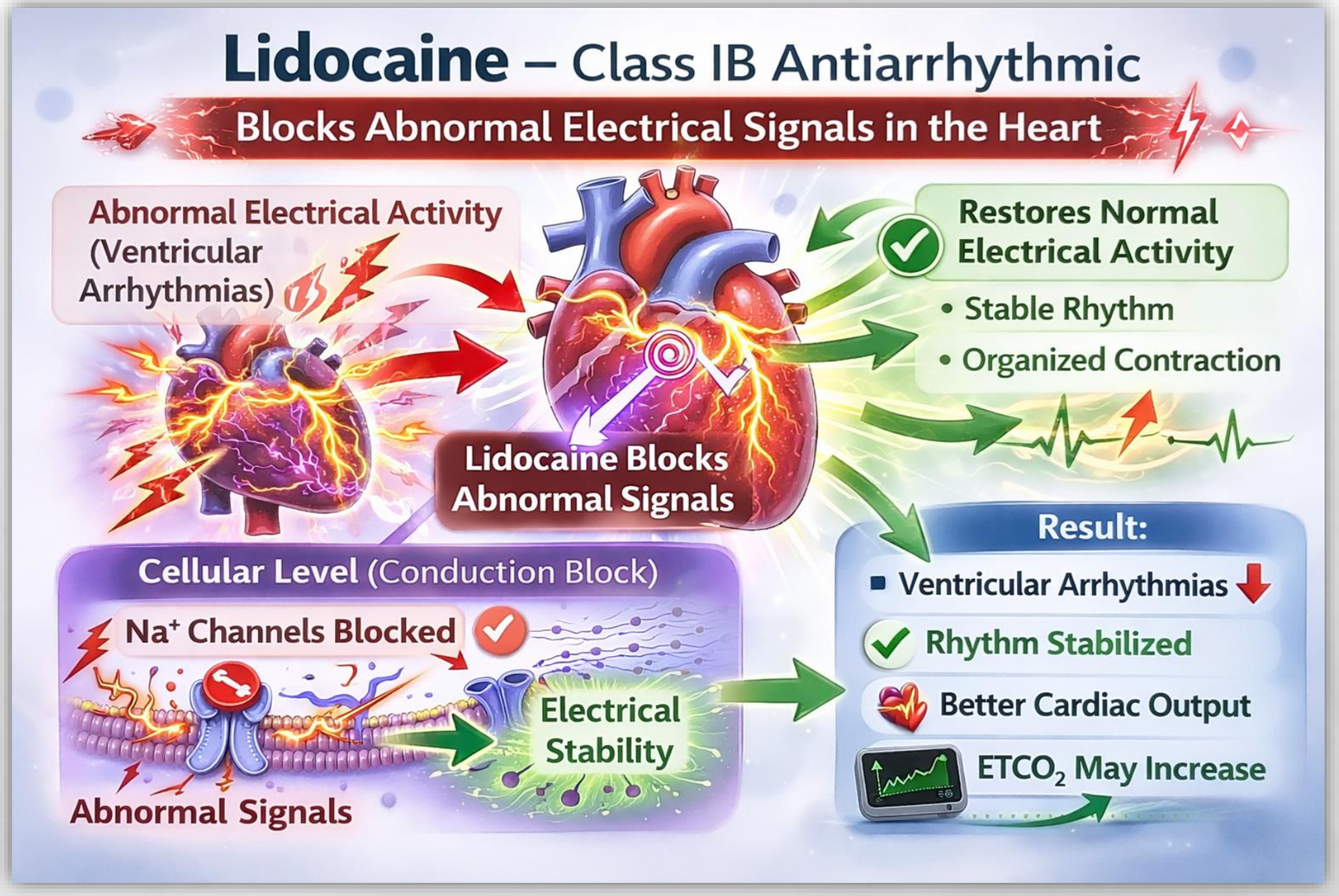
Points to Remember: Amiodarone

- Stabilizes cardiac rhythm
- Improves cardiac output
- Improves perfusion
- Improves $ETCO_2$

Lidocaine

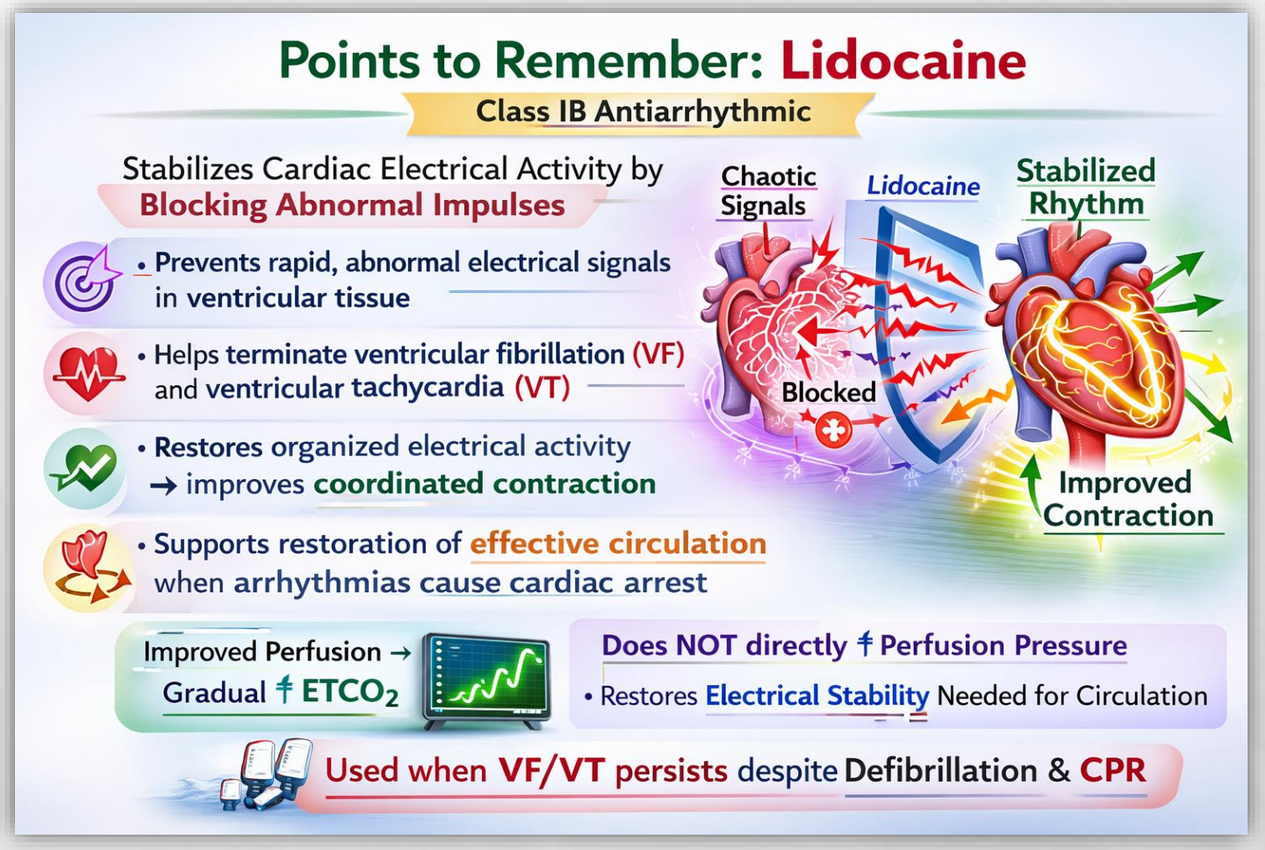
Physiologic Mechanism

- Suppresses ventricular arrhythmias
- Stabilizes myocardial electrical activity



Points to Remember: Lidocaine

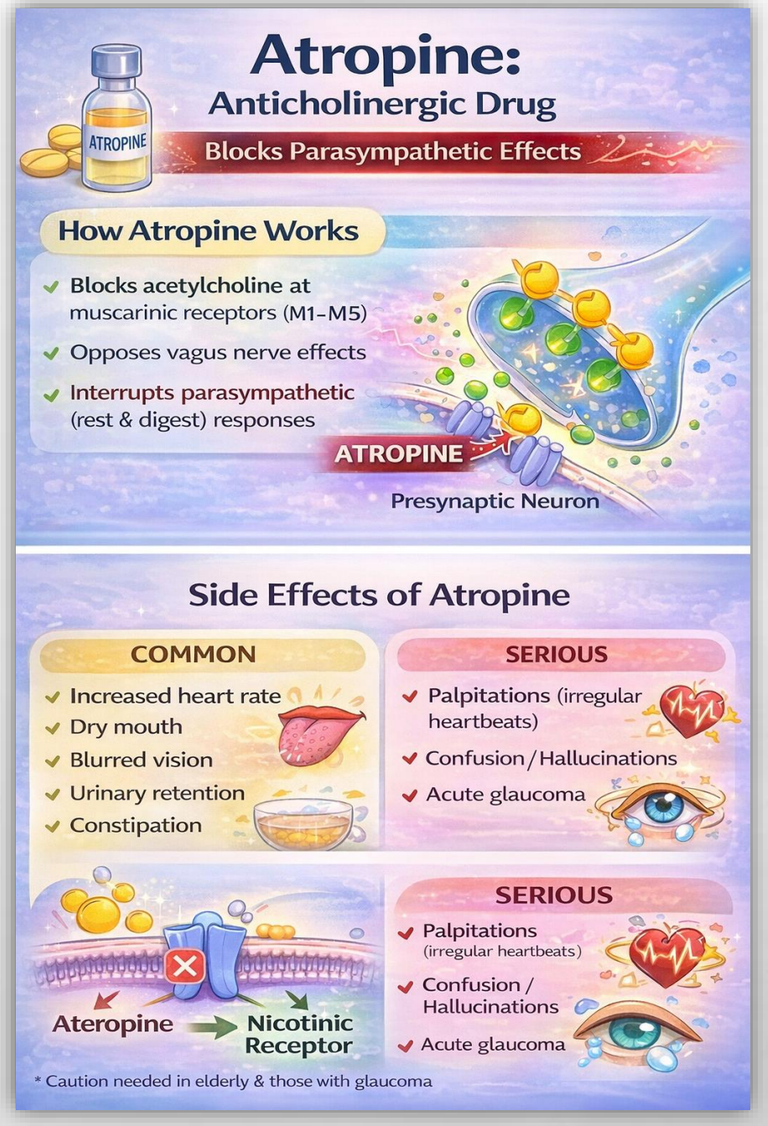
- Stabilizes myocardial electrical activity
- Improves cardiac output
- Improves perfusion
- Improves $ETCO_2$



Atropine

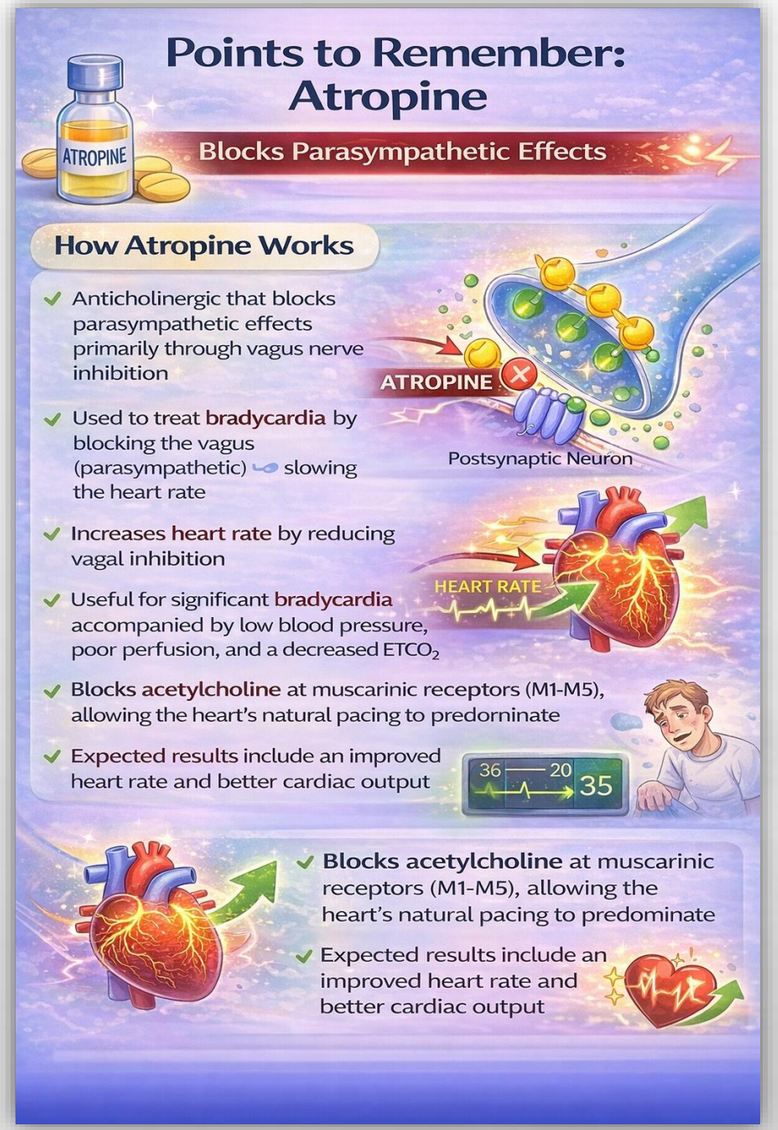
Physiologic Mechanism

- Blocks parasympathetic influence
- Increases heart rate



Points to Remember: Atropine

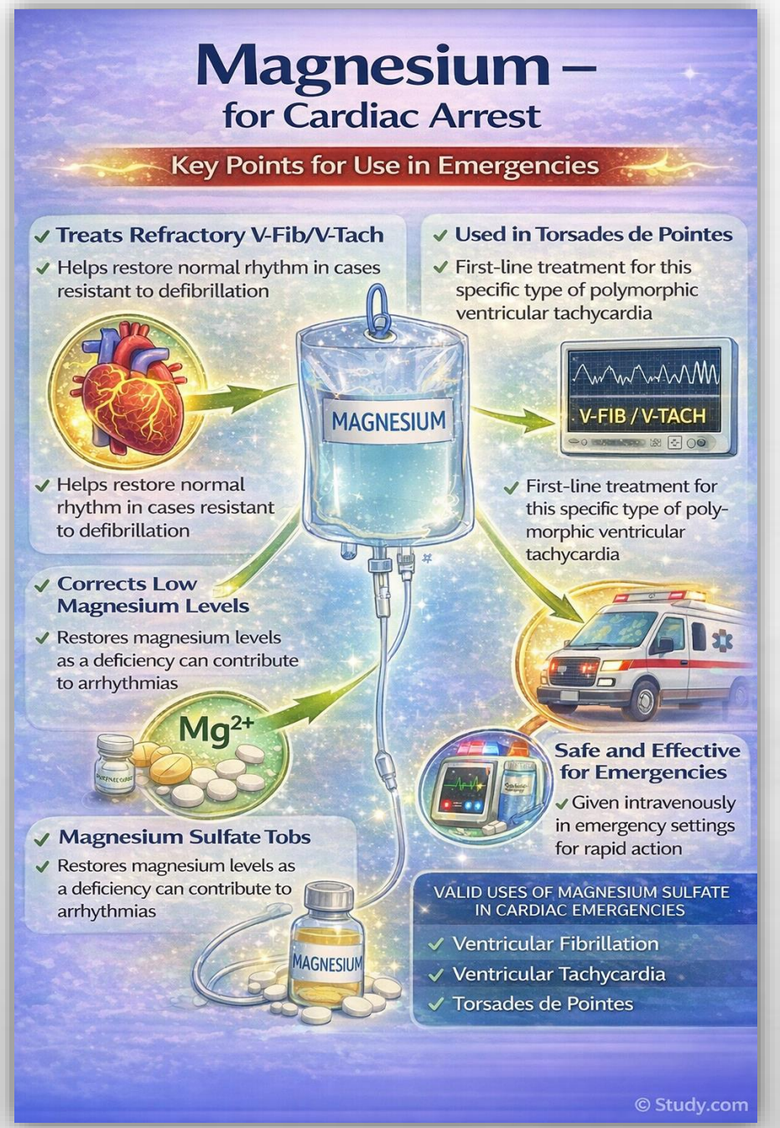
- Increases heart rate
- Improves cardiac output
- Improves perfusion
- Improves $ETCO_2$



Magnesium

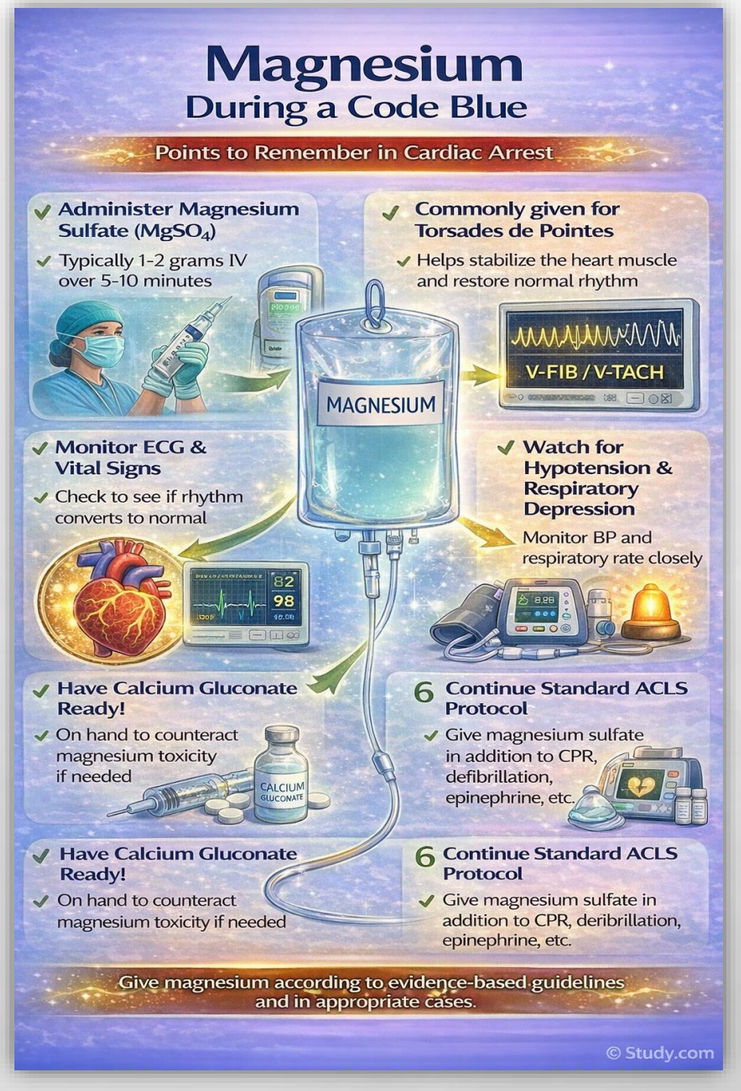
Physiologic Mechanism

- Stabilizes myocardial conduction
- Treats torsades de pointes



Points to Remember: Magnesium

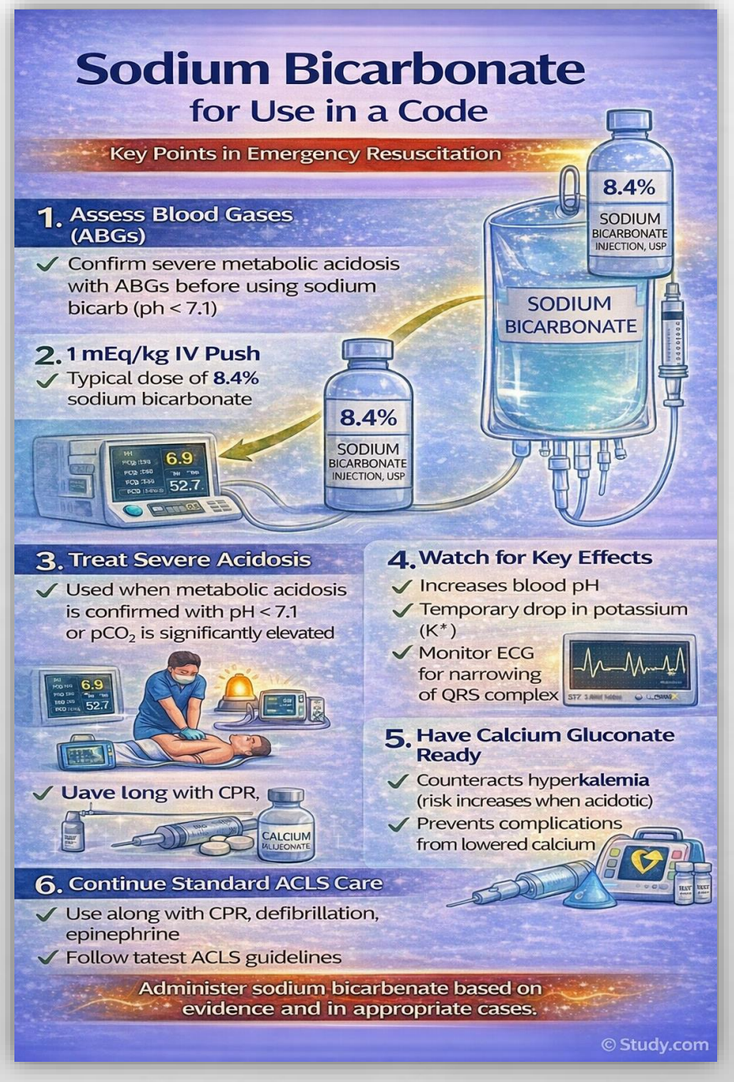
- Stabilizes rhythm
- Improves perfusion
- Improves $ETCO_2$



Sodium Bicarbonate

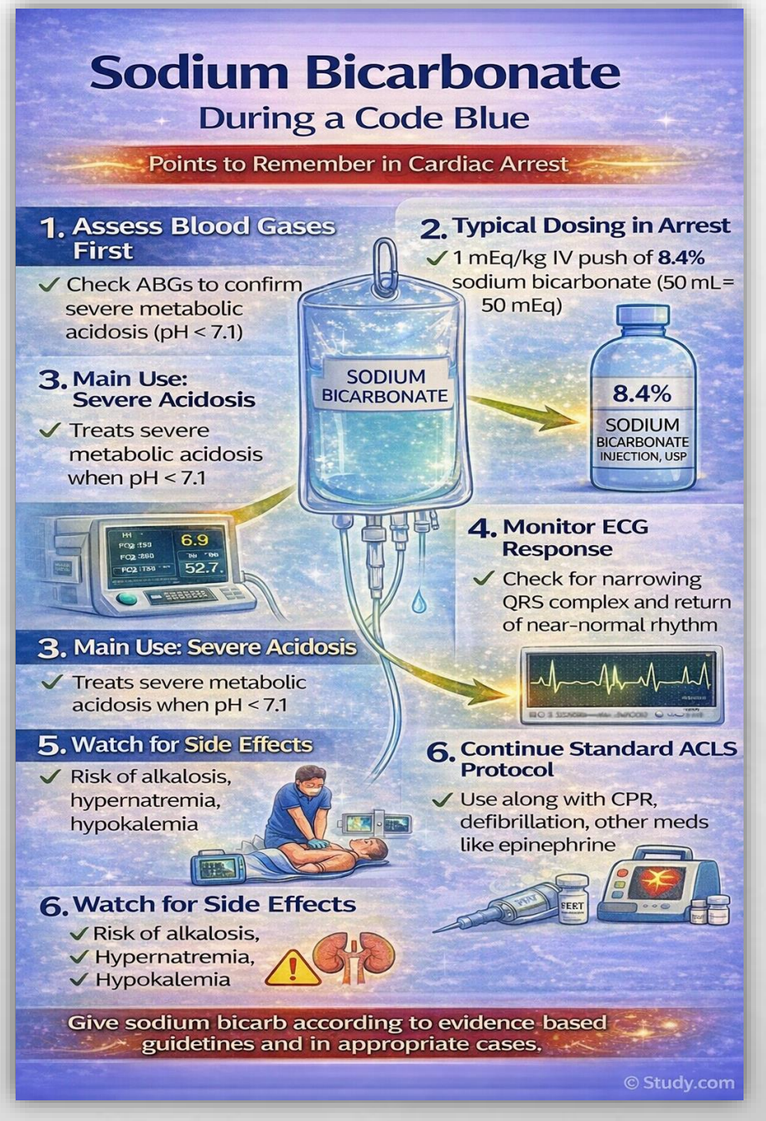
Physiologic Mechanism

- Corrects metabolic acidosis
- Improves myocardial function



Points to Remember: Sodium Bicarbonate

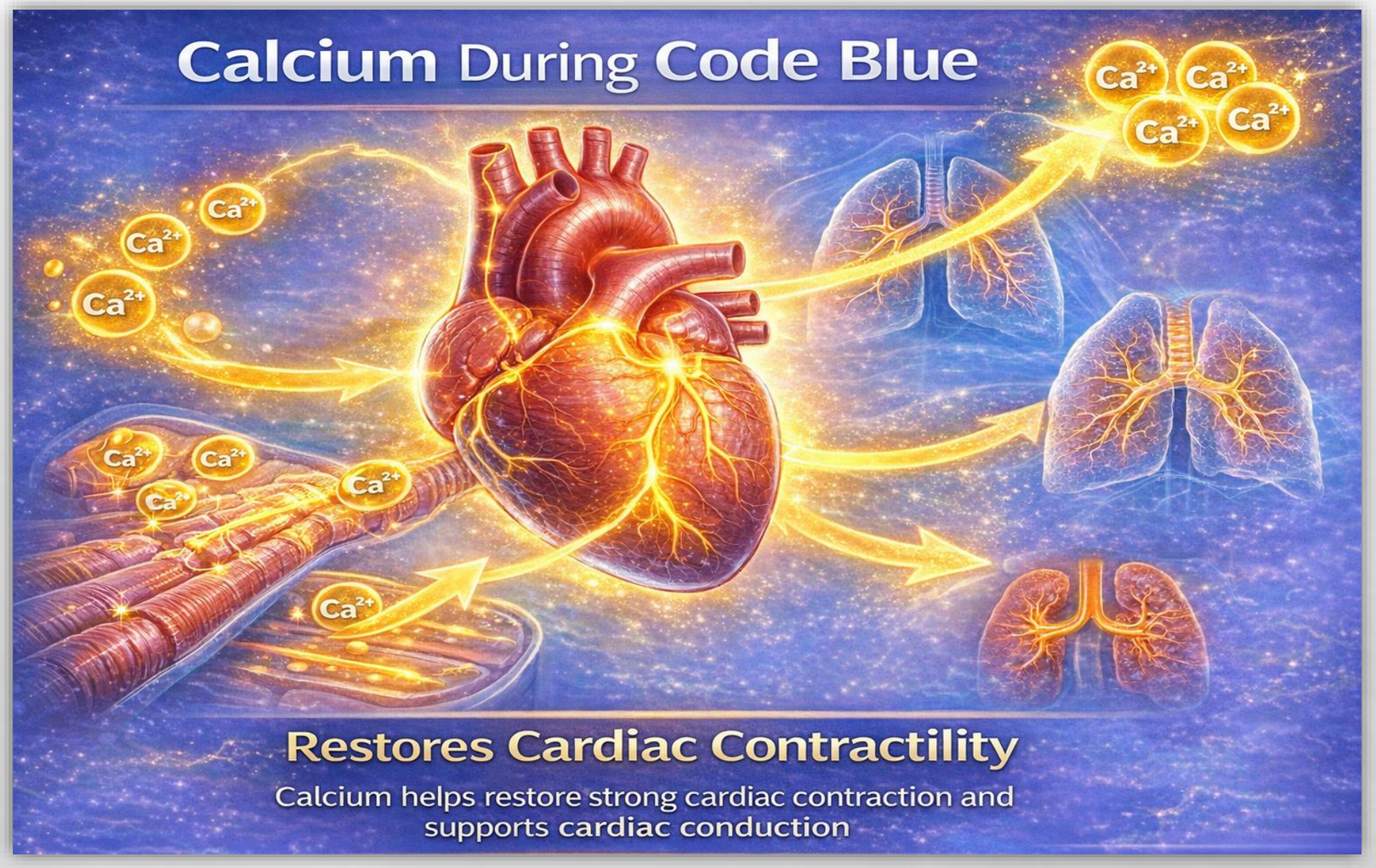
- Corrects acidosis
- Improves cardiac function
- Improves perfusion
- Improves $ETCO_2$



Calcium

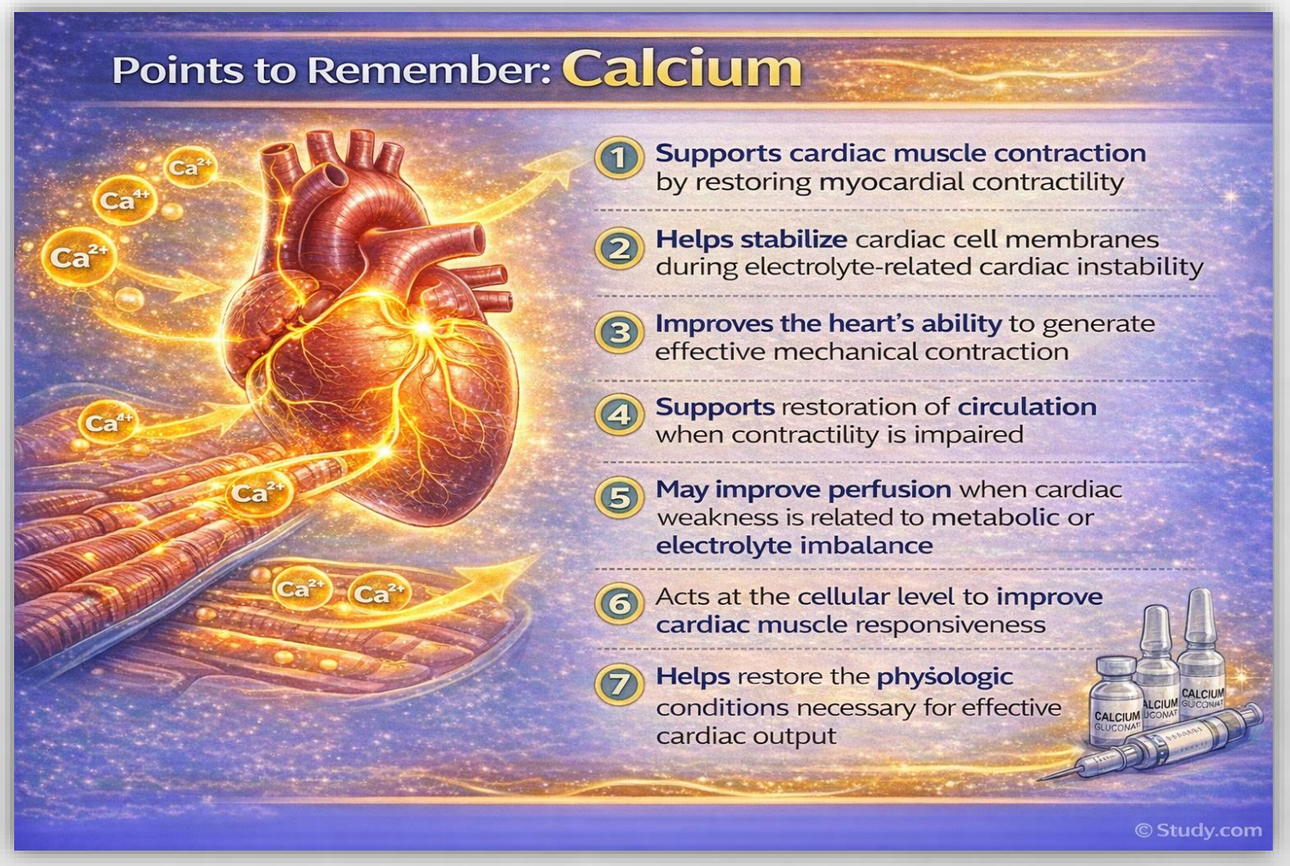
Physiologic Mechanism

- Improves myocardial contractility



Points to Remember: Calcium

- Improves contractility
- Improves cardiac output
- Improves perfusion
- Improves $ETCO_2$



Team Coordination During ACLS

- Physician directs care
- Nurse administers medications
- Respiratory therapist manages ventilation

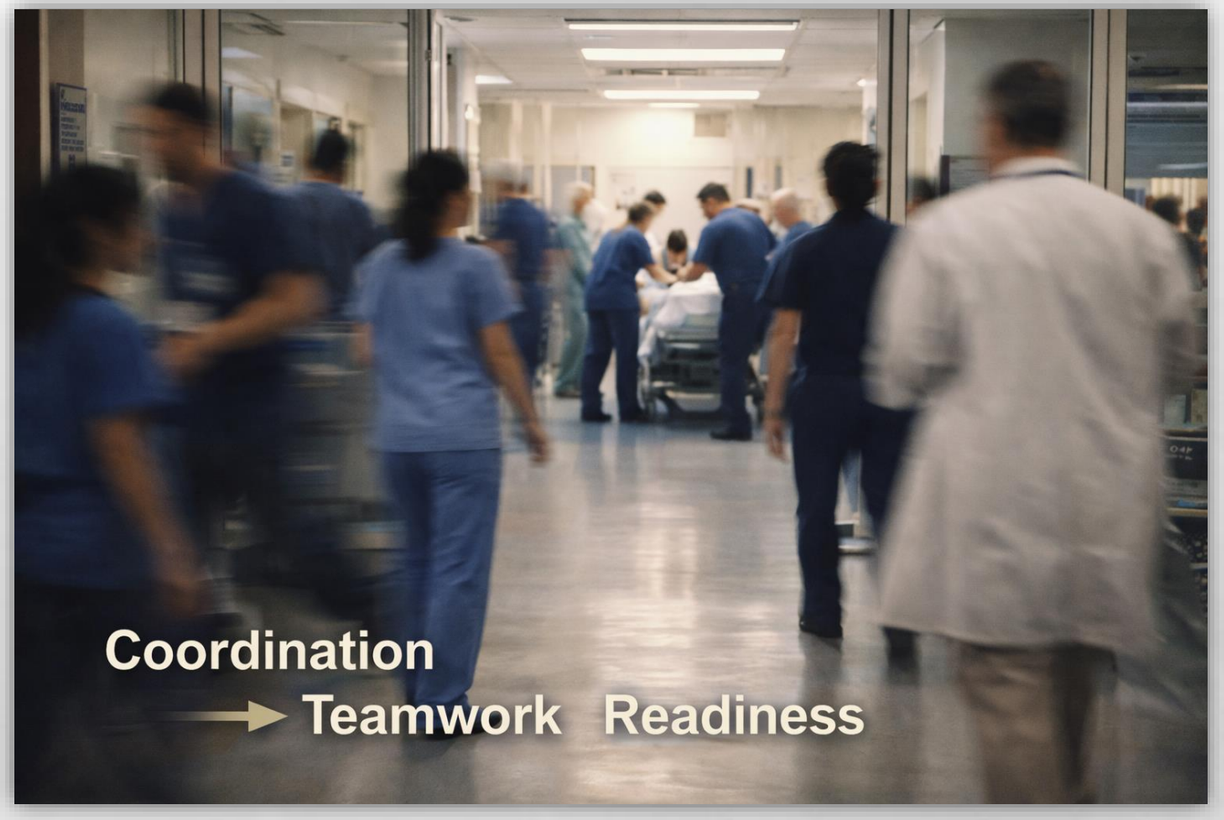
Respiratory therapist provides physiologic monitoring

- $ETCO_2$ reflects perfusion
- Early indicator of ROSC

ACLS medications restore Perfusion

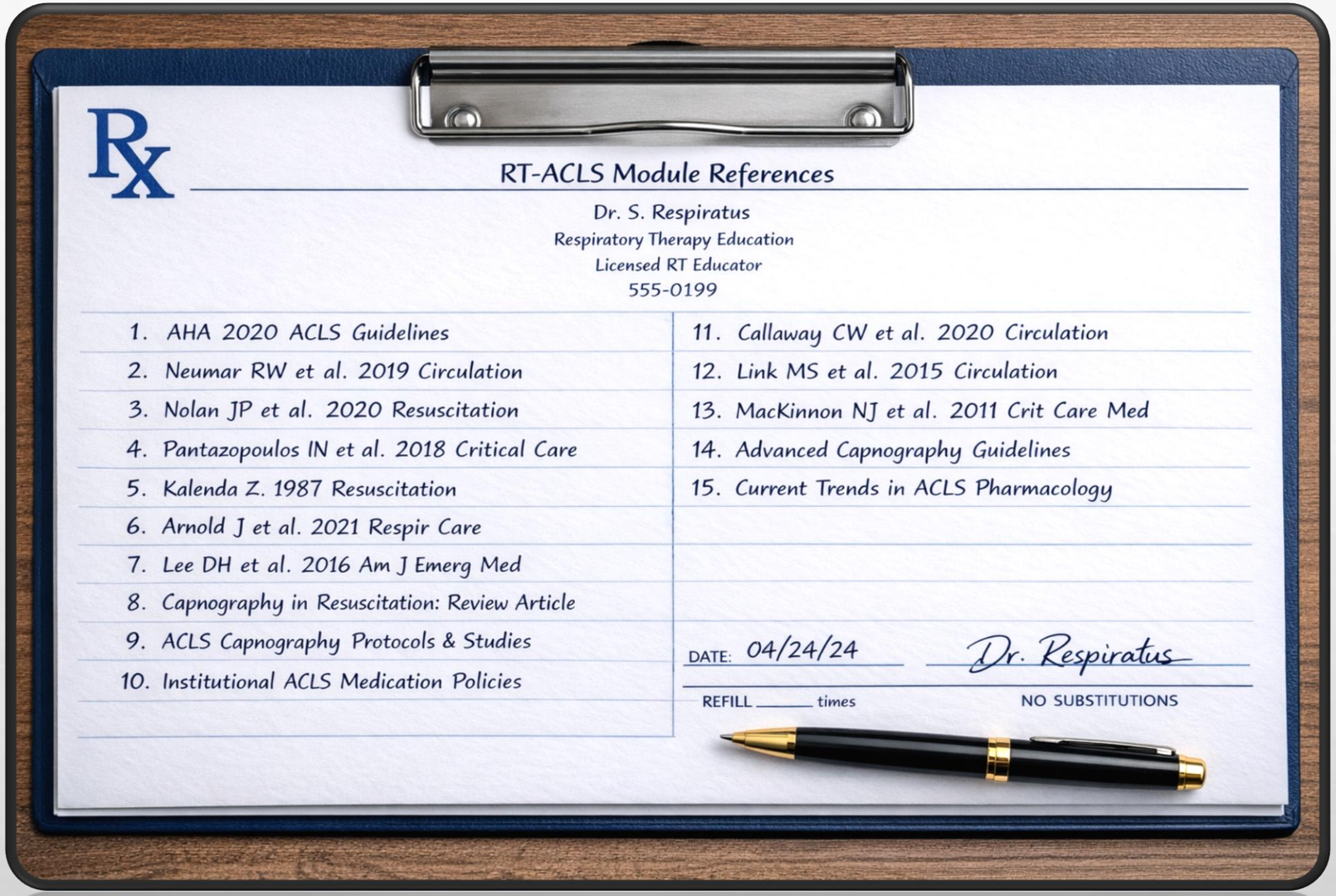
- Ventilation effectiveness
- Oxygen delivery
- $ETCO_2$ monitoring

The Language of Perfusion: A Respiratory Therapist's Case Study in ACLS Pharmacology



Course Wrap-Up

- Respiratory therapist is essential physiologic observer
- Capnography provides real-time perfusion feedback
- Physiologic awareness improves resuscitation success


Rx
RT-ACLS Module References
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Respiratory Therapy Education
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555-0199
1. AHA 2020 ACLS Guidelines
2. Neumar RW et al. 2019 Circulation
3. Nolan JP et al. 2020 Resuscitation
4. Pantazopoulos IN et al. 2018 Critical Care
5. Kalenda Z. 1987 Resuscitation
6. Arnold J et al. 2021 Respir Care
7. Lee DH et al. 2016 Am J Emerg Med
8. Capnography in Resuscitation: Review Article
9. ACLS Capnography Protocols & Studies
10. Institutional ACLS Medication Policies
11. Callaway CW et al. 2020 Circulation
12. Link MS et al. 2015 Circulation
13. MacKinnon NJ et al. 2011 Crit Care Med
14. Advanced Capnography Guidelines
15. Current Trends in ACLS Pharmacology
DATE: 04/24/24
Dr. Respiratus
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