



HEY WHAT ABOUT ME?

Mark Tornstrom BA, NYS EMT-P, NYS CIC

How we used to do it

- Simple Equipment
 - Focused on life threats
 - Relied on physician interpretation
- Minimal Training
 - First Aid
 - Paramedics later with limited scope





What Changed

- Lessons Learned
 - Science evaluations of what we do
 - Lessons derived from other areas of medicine
 - Modern warfare
 - Technology improvements
 - Portable equipment
 - Diagnostic capabilities



www.shutterstock.com · 34624543

4



DRE Call: 1.800.462.8195 Visit: www.dremed.com

CONFIDENTIAL

Ron Burgundy

SportsCenter Audition

August 24, 1979

Science

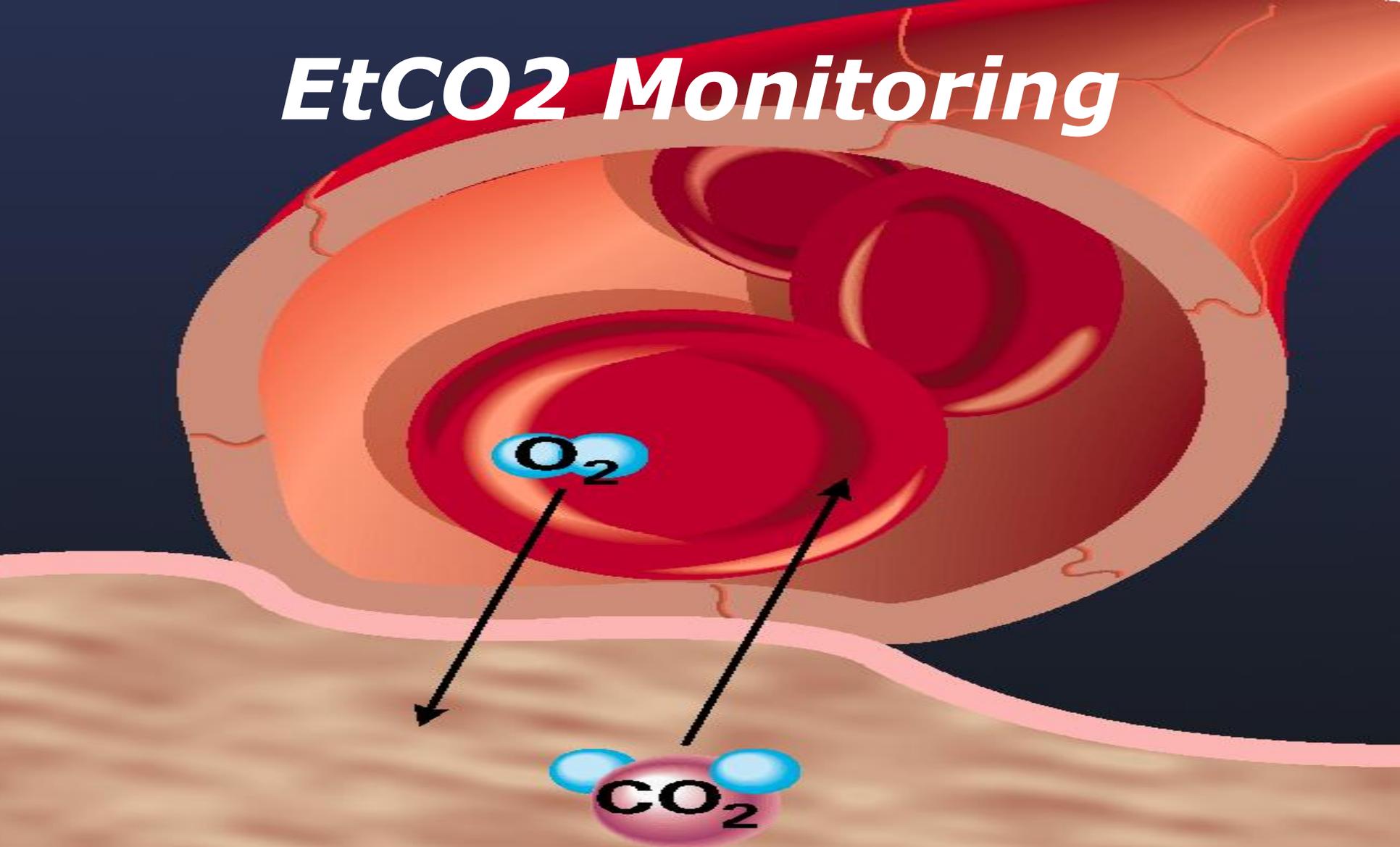
- What is important
 - Effective management of the airway
 - Definitive isolation of the airway
 - Excellent ventilation
 - Measurement and treatment
 - Early recognition and management of cardiac events
 - AED
 - 12 Lead ECG
 - Aspirin
 - Nitroglycerin
 - Effective access and shock management
 - IV versus IO
 - Hypothermic treatment
 - Bleeding Control

Capnography

- Capnography is the vital sign of ventilation.

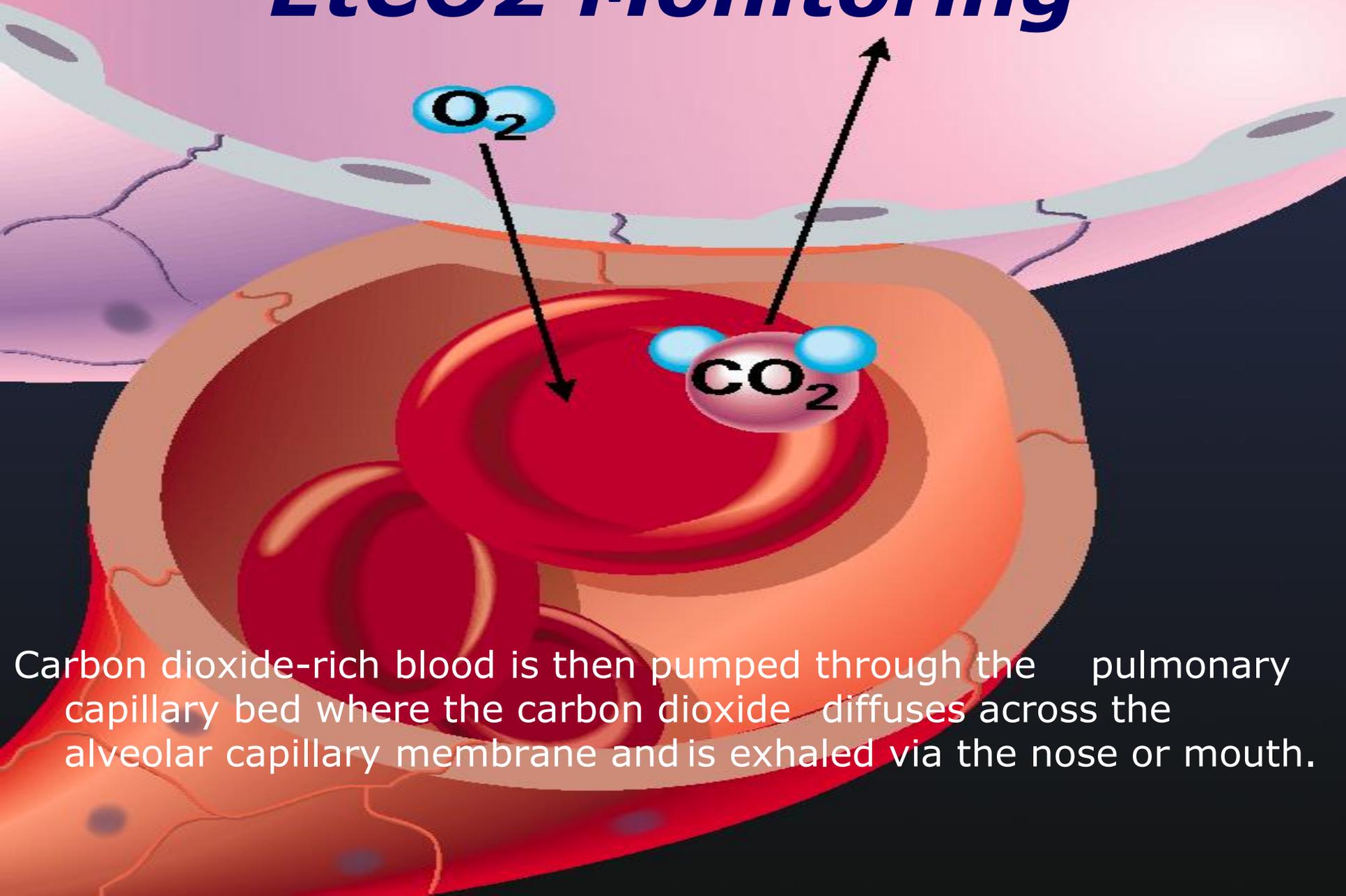
By tracking the carbon dioxide in a patient's exhaled breath, capnography enables EMS to objectively evaluate a patient's ventilatory status (and indirectly circulatory and metabolic status), as the medics utilize their clinical judgement to assess and treat their patients.

EtCO₂ Monitoring



The heart pumps the freshly oxygenated blood throughout the body to the cells where oxygen is consumed (metabolism), and carbon dioxide, produced as a byproduct, diffuses out of the cells into the vascular system.

EtCO₂ Monitoring



Carbon dioxide-rich blood is then pumped through the pulmonary capillary bed where the carbon dioxide diffuses across the alveolar capillary membrane and is exhaled via the nose or mouth.

EtCO₂ Monitoring

- ***EtCO₂ Numerical Values***
 - Normal = 35-45mmHg
 - < 35mmHg = Hyperventilation
 - Respiratory alkalosis
 - > 45mmHg = Hypoventilation
 - Respiratory acidosis
 - Dependant on 3 variables
 - CO₂ production
 - Delivery of blood to lungs
 - Alveolar ventilation



EtCO₂ Monitoring

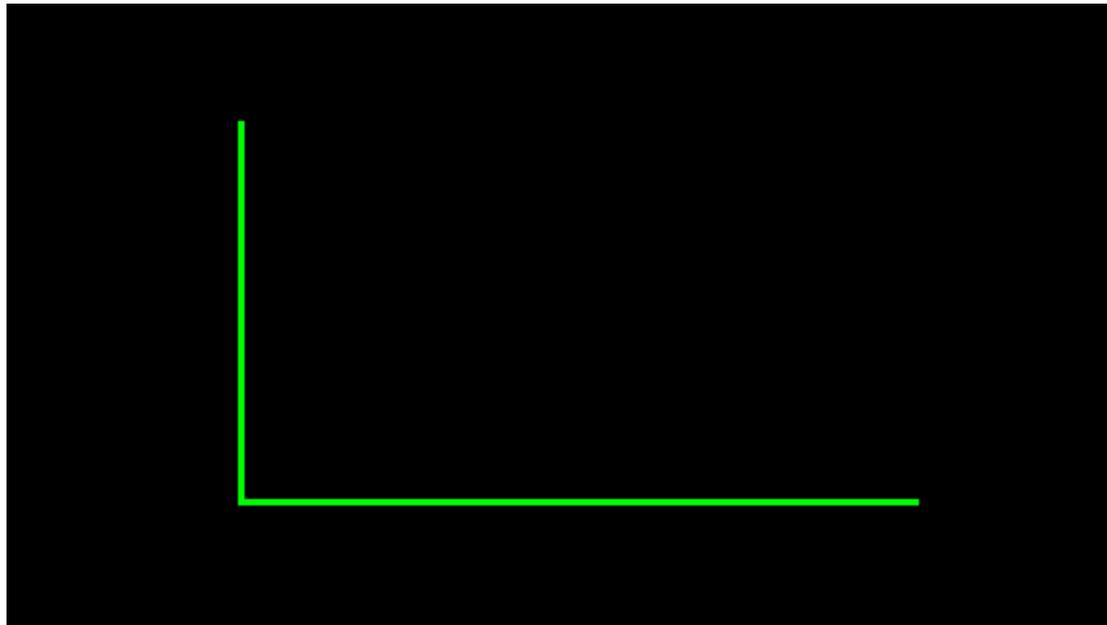
- Increased EtCO₂
 - Decreased CO₂ clearance
 - Decreased central drive
 - Muscle weakness
 - Diffusion problems
 - Increased CO₂ Production
 - Fever
 - Burns
 - Hyperthyroidism
 - Seizure
 - Bicarbonate Rx
 - ROSC
 - Release of tourniquet/Reperfusion

EtCO₂ Monitoring

- Decreased EtCO₂
 - Increased CO₂ Clearance
 - Hyperventilation
 - Decreased CO₂ production
 - Hypothermia
 - Sedation
 - Paralysis
 - Decreased Delivery to Lungs
 - Decreased cardiac output
 - V/Q Mismatch
 - Ventilating non-perfused lungs (pulmonary edema)

EtCO₂ Monitoring

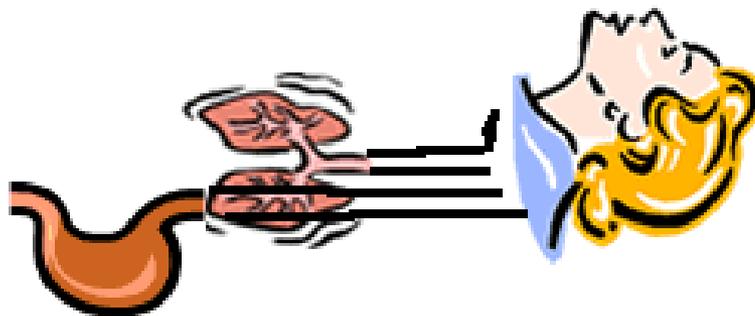
- ***Pulmonary Embolus***
- Note near “normal” waveform, but angled C-D section (indicates alveolar dead space)





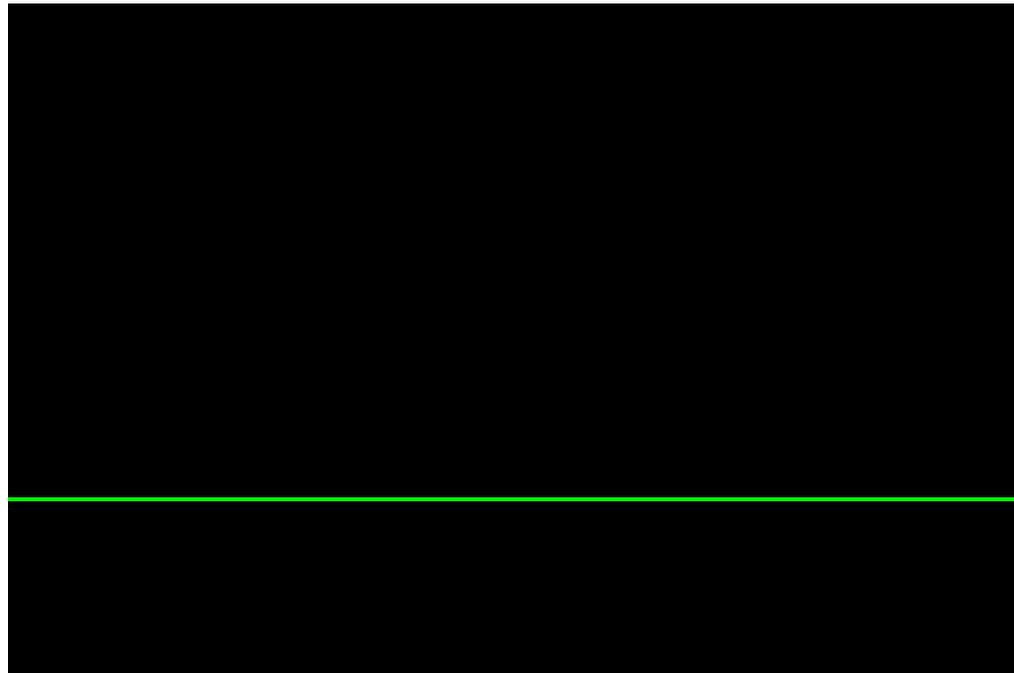
EtCO₂ Monitoring

- ***Tracheal -vs- Esophageal Intubation***



EtCO2 Monitoring

- ***Esophageal Intubation***



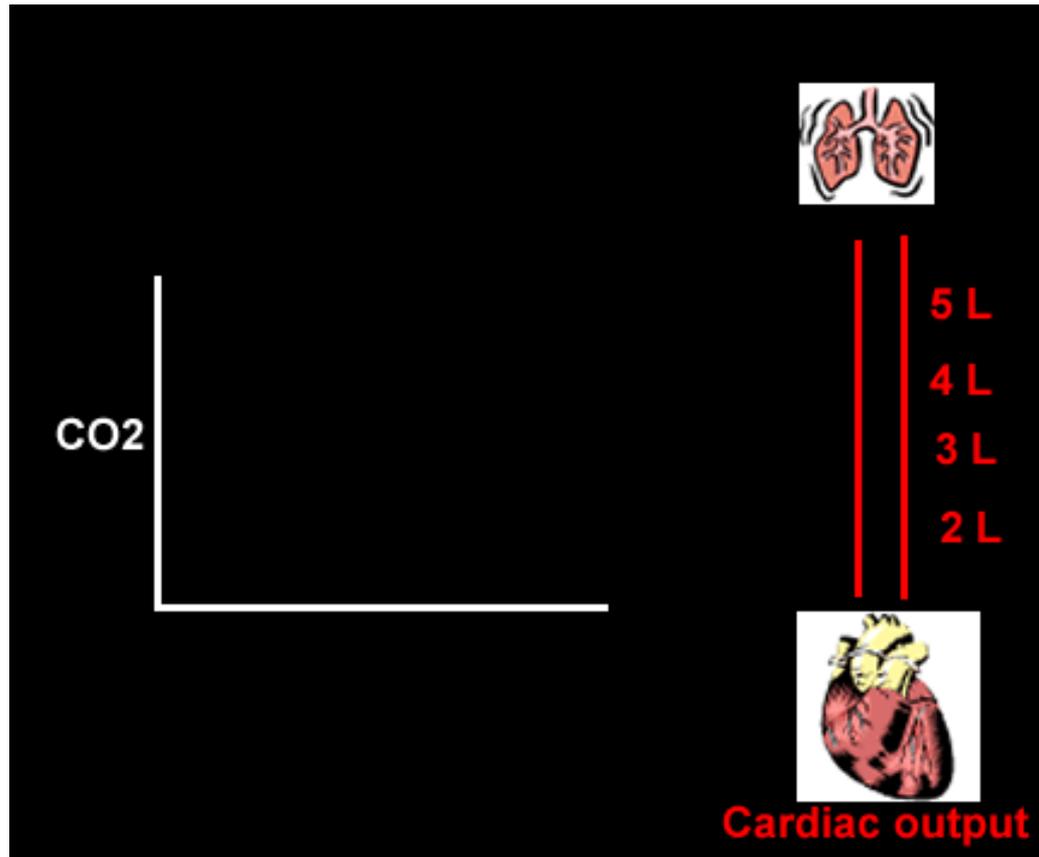
EtCO₂ Monitoring

- ***Esophageal Intubation w/carbonated beverages***

EtCO₂ Monitoring

- ***EtCO₂ and cardiac output***

- Values <20mmHg = unsuccessful resuscitation
- Low (20-30mmHg) = good CPR or recovering heart



EtCO2 Monitoring

- ***EtCO2 and cardiac output***
 - Sudden increase in value = ROSC

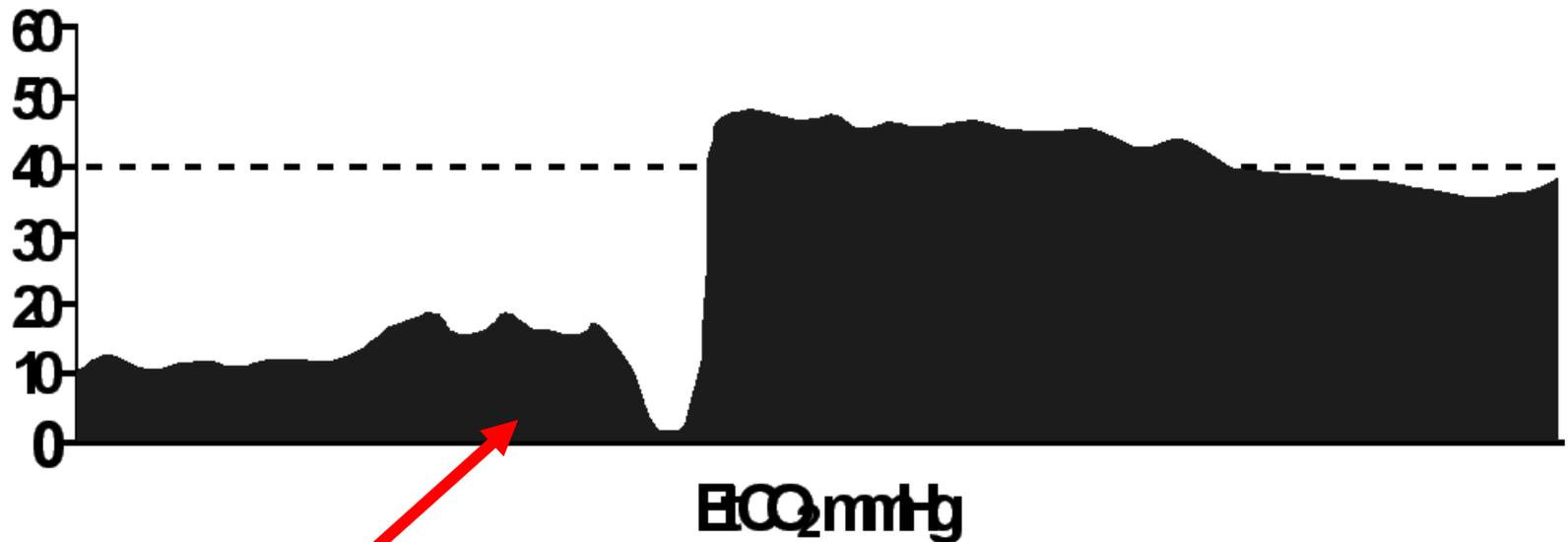


Cardiac arrest survivors had an average ETCO₂ of 18mmHg, 20 minutes into an arrest while non survivors averaged 6.

In another study, survivors averaged 19, and non-survivors 5.

EtCO₂ Monitoring

EtCO₂ and cardiac output

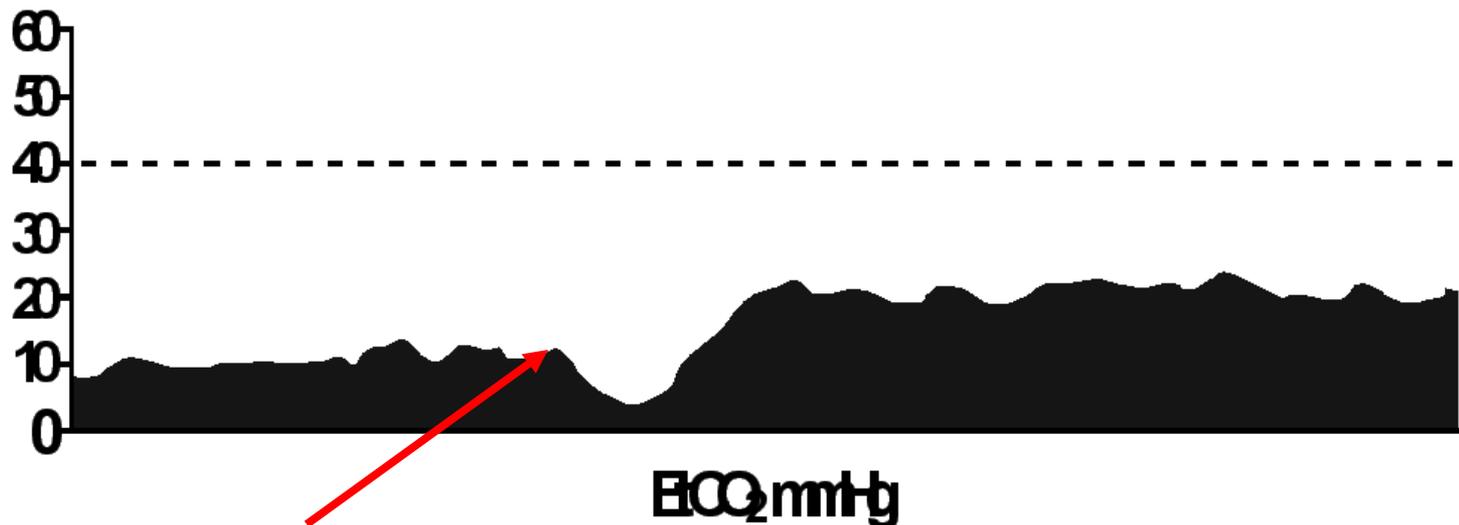


Successful defibrillation = pulses & ↑ EtcO₂

EtCO₂ Monitoring

EtCO₂ and cardiac output

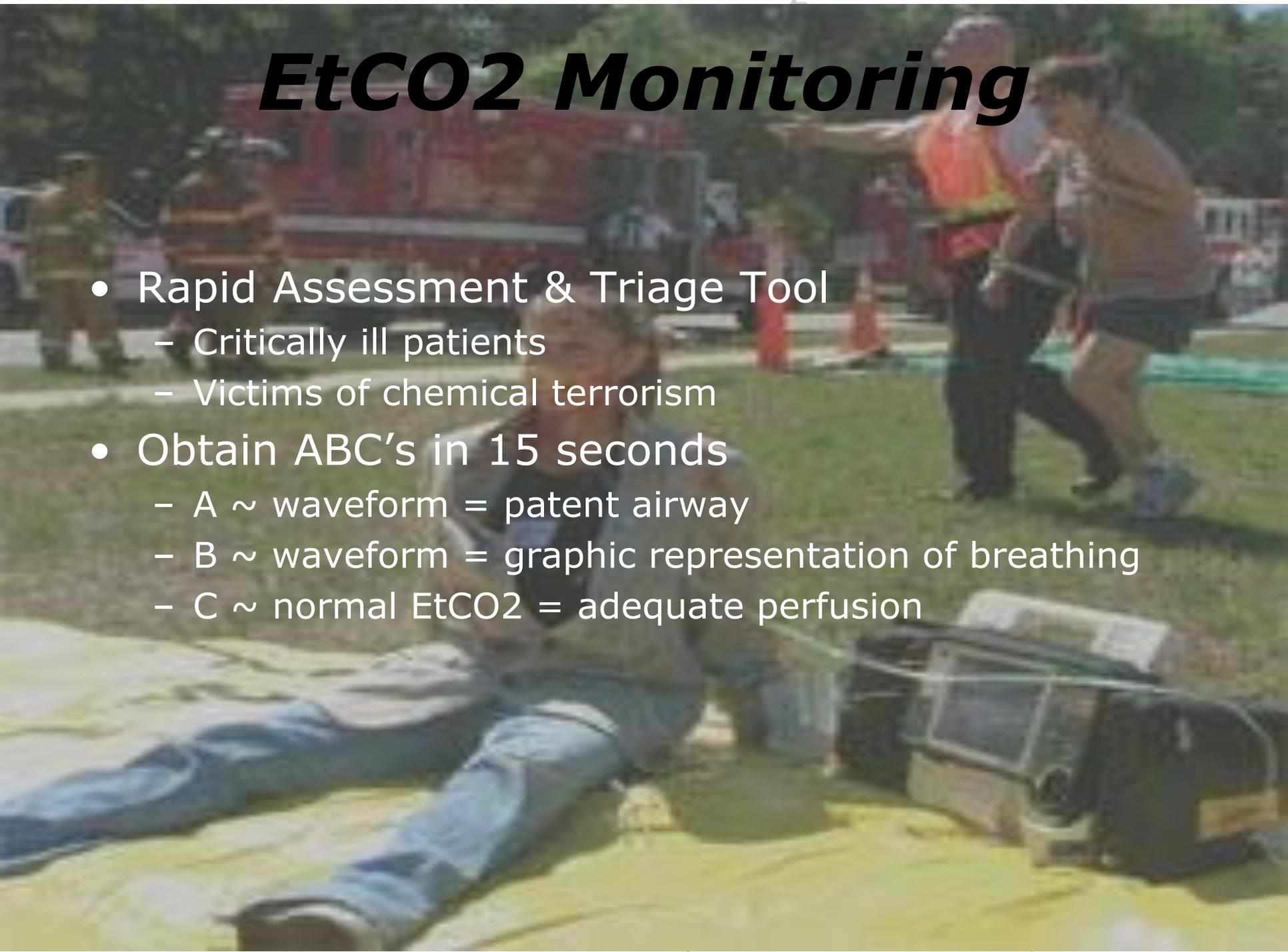
Because ETCO₂ measures cardiac output, rescuer fatigue during CPR will show up as decreasing ETCO₂.



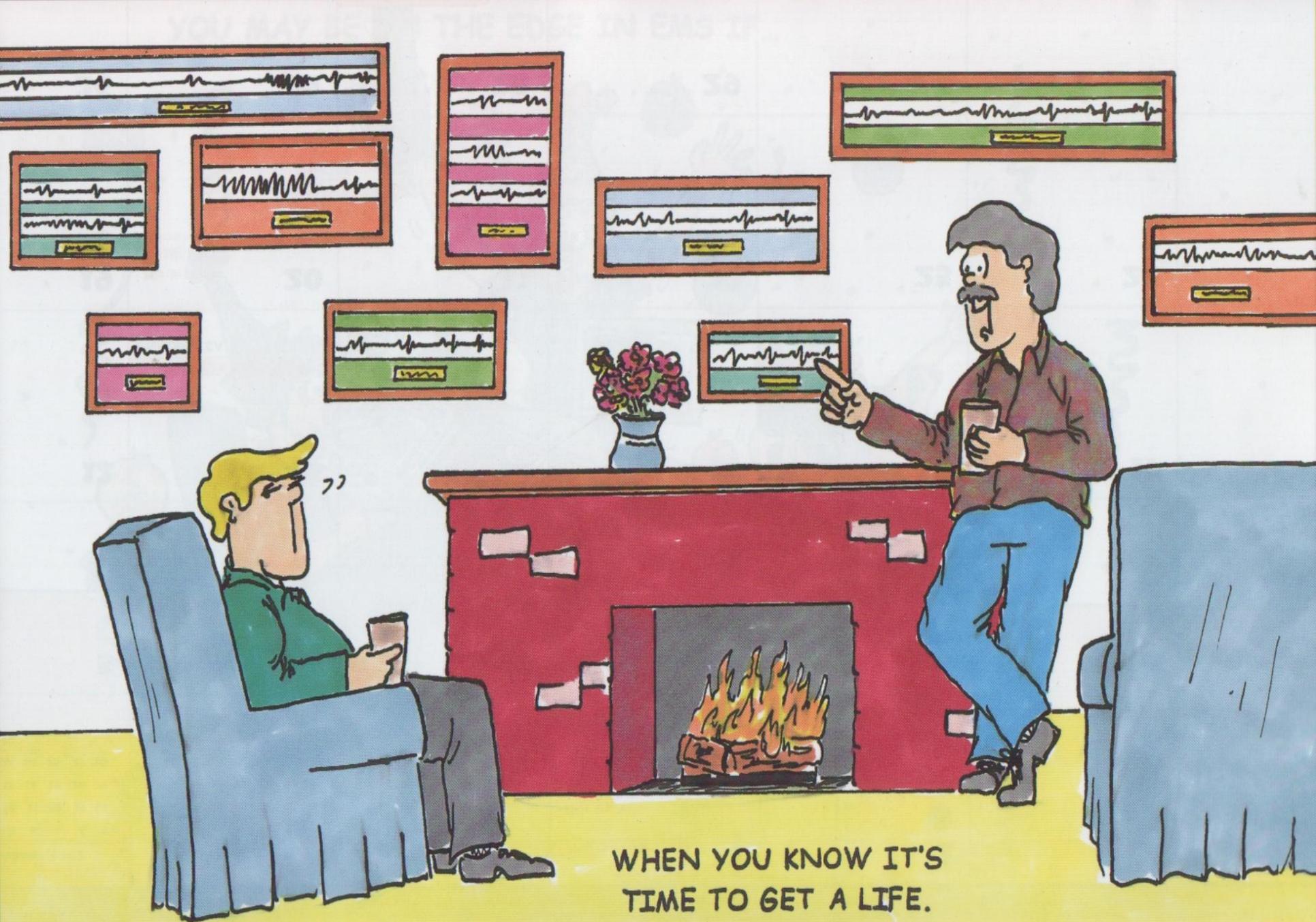
Change in rescuers – Note ↑ values w/ non-fatigued compressor



EtCO₂ Monitoring

The background image shows an outdoor emergency scene. A person is lying on a stretcher on a yellow tarp. A medical monitor is connected to the patient. In the background, there are other people, including one in an orange safety vest, and orange traffic cones. The scene is outdoors with trees and a building in the distance.

- Rapid Assessment & Triage Tool
 - Critically ill patients
 - Victims of chemical terrorism
- Obtain ABC's in 15 seconds
 - A ~ waveform = patent airway
 - B ~ waveform = graphic representation of breathing
 - C ~ normal EtCO₂ = adequate perfusion



WHEN YOU KNOW IT'S
TIME TO GET A LIFE.



CPAP - Introduction

- CPAP is a non-invasive procedure that is easily applied and can be easily discontinued without untoward patient discomfort.
- CPAP is an established therapeutic modality, recently introduced into the prehospital setting.
- In the primary phase CPAP application in cardiogenic pulmonary edema, thus far, appears to be beneficial to patient outcome.

What Is CPAP

Continuous Positive Airway Pressure

"Breathing Against A Threshold of Resistance"

"Pneumatic Splinting of Airways"

"Oxygen Therapy In It's Most Efficient Form"

What Is CPAP

-Resistance is regulated with a positive end expiratory pressure (PEEP) valve.



Effects of CPAP

-Increased Functional Residual Capacity

-Reduced Work Of Breathing

-Increased Oxygen Diffusion Across Alveolar Membrane

-Increased Alveolar Surface Area





Acute Pulmonary Edema

**a true life-
threatening
emergency**



Physical Exam

- 
- Anxious
 - Pale
 - Clammy
 - Tachypnea
 - Confusion
 - Edema
 - Hypertension
 - Diaphoretic
 - Rales
 - Rhonchi
 - Tachycardia
 - S₃ Gallop
 - JVD
 - Pink Frothy Sputum
 - Cyanosis
 - Displaced PMI



***CPAP therapy can
improve A.P.E.
patients in 90
seconds.***

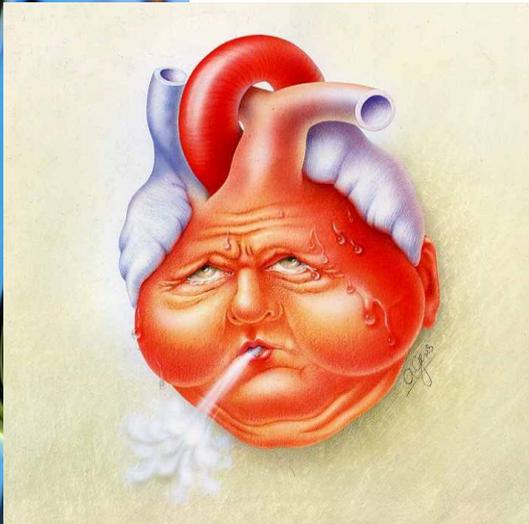
“CPAP was associated a decrease in need for intubation (-26%) and a trend to a decrease in hospital mortality (-6%) compared with standard therapy alone.”

(Pang, D. et al. 1998. Data review 1983-1997. Chest 1998; 114(4):1185-1192)

Effects of CPAP

Acute Pulmonary Edema

- Changes Pressure Gradients
- Reduces Work of Breathing
- Sympathetic Discharge
- Can Decrease Preload



Limitations of CPAP

*CPAP IS NOT MECHANICAL
VENTILATION!*



CPAP Systems

Whisper Flow, Oxypeep,



CPAP Systems

Port-O-Vent, Boussignac



CPAP SYSTEMS

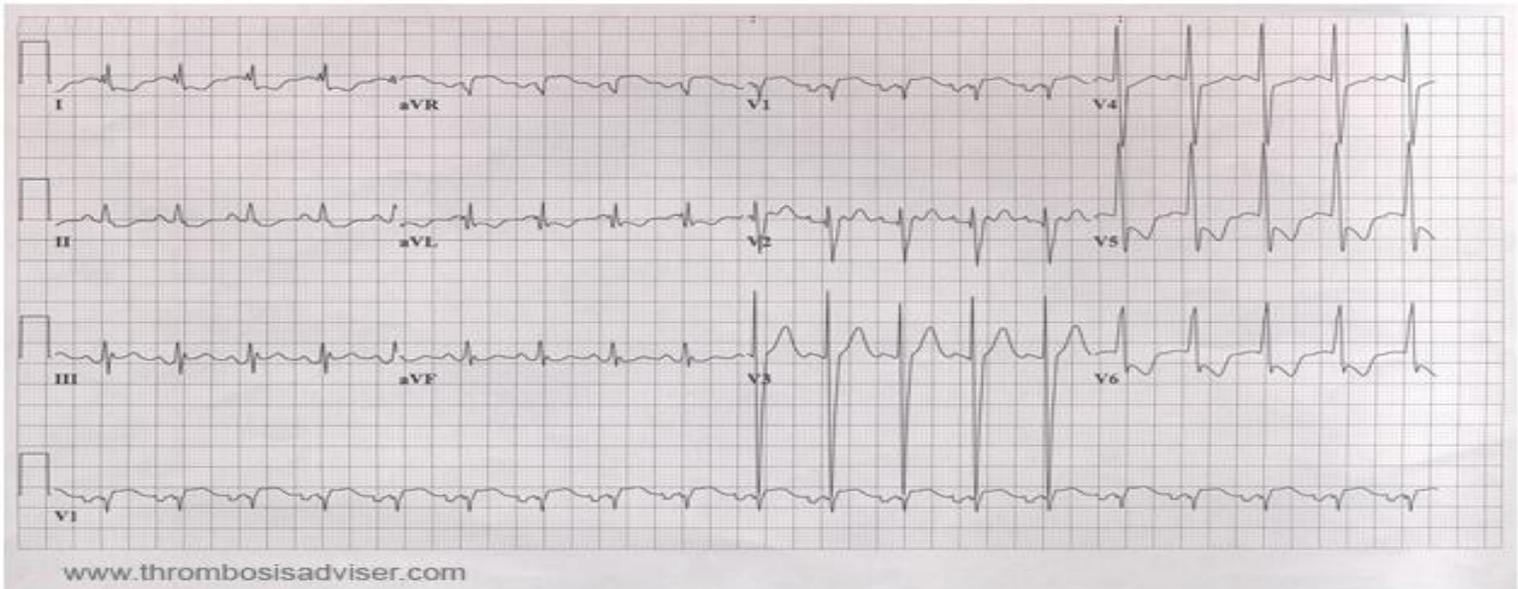
Boussignac



I'LL GIVE YOU 5 BUCKS
IF YOU WALK YOURSELF
TO THE AMBULANCE.



ECG



Airway and IO



RED NECK

OUTFITTERS

EMERGENCY MEDICAL SERVICES



Patient Assessment

- *Problem-oriented evaluation to identify potentially life-threatening injury or disease*
- Followed by clinical decision-making to determine course of action



Components

- Dispatch Information
- Scene Size-Up
- MOI or Nature of Illness
- Safety Considerations
- General Impression
- Initial Assessment
- Focused History
- Physical Exam: Detailed, Focused & Ongoing

Size-Up

- **Begins with dispatch info**
- **Create a mental image of the scene**
 - Update the image as new info is available
 - Finalize the image on arrival



General Impression of the Scene

- MOI or Nature of Illness
- The Environment
- Location & Position of Patient(s)
- General Appearance & Behavior
- Obvious Injuries or Illness
- Patient's Activity & Awareness

General Impression

- Sick or Not Sick
 - Is there an obvious emergent problem?
 - Is there a potentially life-threatening condition?
 - Does the patient need immediate interventions?
- What is your overall summation of the patient's condition?

Develop a plan



- Likely Diagnosis
- Appropriate Therapies
- What if? Plan for the worst
- Stay two steps ahead

First Impressions

- Positive Impression
 - Appearance
 - Confidence
 - Demeanor
 - Body Language



FreakingNews.com



combscartoons@yahoo.com
© 2005 www.ArtStudioSeven.com

ADVENTURES IN CREATIVE DEFTIB



Establishing the Patient Relationship

- Polite Introductions
 - Invited guest or unwanted pest?
 - Be respectful of person, space, property & family
 - Locate the patient(s)
 - Introduce yourself - Handshake
 - Determine patient's desired name
 - Avoid disrespectful terms & voice tone
 - Consider age & culture



Establishing the Patient Relationship

- Location & Position
 - Quiet & Private location, if possible
 - Can the patient be made more comfortable?
 - Eye contact & Position at eye level
 - Appropriate distance & position
 - Safety
 - Respect
 - Personal Zone



Elements of the Comprehensive History

- **Preadvival & Caller Info**
- **First Impression & the Environment**
- **Identifying Data**
- **Chief Complaint(s)**
- **History of the Present Illness**
- **Current Health Status & Medical Care**
- **Significant Past History**
- **Family History**
- **Systems Review**



Elements of the Comprehensive History

- The Chief Complaint
 - The single most critical concern to the patient
 - “What seems to be the problem today?”
 - “What can I help you with today?”
 - Which system (origin) do you believe to be affected by this CC?
 - Do you clearly understand the patient’s complaint or complaints?



Elements of the Comprehensive History

- Tips for effective history-taking
 - Open-ended questions
 - “What seems to be bothering you today?”
 - Closed-ended questions
 - “Is your chest pain sharp or dull?”
 - Multiple Choice Questions



Elements of the Comprehensive History

- Tips for effective history-taking
 - LISTEN ACTIVELY!!!
 - ACT as if you are listening
 - Repeat patient's statements
 - Clarify if needed
 - Take notes
 - Display your concern
 - Confront with caution





Elements of the Comprehensive History

- History of the Present Illness
 - Explore the CC in more detail
 - Explore other complaints
 - Are they associated?
 - Do they involve completely different body systems?
 - OPQRST
 - This is a GUIDE!
 - Modify for complaints other than pain

Elements of the Comprehensive History

- Current Health Status & Medical Care
 - Current Medical Therapies & Medications
 - Regular Physician Following
 - Allergies
 - Home Situation, Daily Life & Family Life
(continued)



Focusing the History

- Consider an Unsolved Mystery
 - Focus on the body system associated with the CC
 - Use knowledge of A&P and Pathophysiology
 - Why is this patient experiencing these signs/symptoms?
 - Create a picture of what occurred today to this patient
 - Create a differential diagnosis, then work towards exclusions/inclusions



Special Challenges



- Sensitive Topics
 - The Right Location
 - Does anyone present make the patient feel uncomfortable?
 - Gaining Trust
 - Choosing Appropriate Words
 - Understand the patient's feelings related to the sensitive nature
 - Be Professional



Special Challenges

- The Silent Patient
 - Short periods of silence may be normal
 - Allow time to collect thoughts
 - Provide reassurance & encouragement
 - Consider:
 - You have frightened the patient
 - You are dominating the discussion
 - You have offended the patient
 - There is a physical or mental disorder

Special Challenges

- The Anxious or Frightened Patient



- Look for signs of anxiety or fear
- Try to alleviate concerns & develop trust
- No false reassurance
 - Ø “Everything is going to be fine”
- Identify the source of anxiety/fear
- Understand the patient’s feelings
 - Ø “I don’t know why you are so anxious’

Special Challenges



- The Angry or Hostile Patient
 - Common feelings with stress or fear
 - Understand the source of these feelings
 - Respond in a professional & caring manner
 - Personal Safety is a primary concern!!!
 - Distance
 - Assistance
 - Firm but caring verbal & body language

Special Challenges

- Intelligence & Literacy
 - Does the patient really understand your questioning?
 - History may be inaccurate
 - Enlist friends or family
 - Can the patient actually read?
 - Read statements aloud to the patient





Special Challenges

- The Patient with Sensory Deficits
 - Hearing Impaired
 - Does the patient read lips?
 - Face patient, close to good ear
 - Talk slowly and distinctly
 - Sign language?
 - Will a hearing aid help? Where is it?
 - Blindness
 - Voice and touch are critical
 - Establish relationship & trust early on

Common Pitfalls

- *Choosing to ask lots of questions to obtain a history **WITHOUT** also directing initial care or performing a physical exam*
- **Patient's Impression**
 - Not doing anything for me
 - Why are we wasting our time here?
 - Stop asking all these silly questions



Common Pitfalls

- *Using a tone of voice that sends the wrong message*
 - “What is your ‘Problem’ **TODAY** Mrs. Jones?”
 - “Why did you call 911?”
- **Patient’s Impression**
 - He thinks I call EMS for every little problem
 - I must have called 911 and was not supposed to.
 - I think I am bothering these nice people



Common Pitfalls

- *Lack of respect for cultural, religious or ethnic differences*
 - “Why do you people use these home herbal remedies?”
 - “You have enough kids. You should consider birth control”
- **Patient’s Impression**
 - This person thinks I am a fool
 - She laughs at the traditions of my culture
 - He does not respect my personal decisions



Common Pitfalls

- *Poor choice of words or using technical terms*
 - *How many years has your husband been taking these **ACE-inhibitors**?*
 - *Your wife is experiencing congestive **heart failure***
- **Patient's Impression**
 - What the heck is he talking about?
 - My wife's heart is failing?!?! Has her heart stopped yet?
 - Son, could you speak English?

Summary

- Patient interaction is key
- Observation can be your most valuable tool
- Obtaining the history guides the physical exam
- History-taking is accomplished along with the physical exam and therapies

One Patient Perspective

- “I think it profoundly affected his perception of caregivers,” Mary Berk said. “When he was in the ICU, he talked about people who would touch him with healing hands as opposed to someone who just did what they had to do. It meant everything to him when someone touched in a way that he could feel the connection. Doctors are trained to distance themselves and maintain that distance and objectivity. When the role is reversed and you are so desperately in need of connection, it is pretty profound.”



Dr. Berk

- “I could tell that people cared as soon as they put their hands on me,” he said. “You could feel safe with them. Feeling safe is a big part of this because you are so dependent on everyone. When you don’t feel safe it is very concerning. Because my experience was extreme, it was so clear to me how important this is.”



Dr. Berk

- Berk has become convinced that hospitals have to make time for caregivers to get to know their patients so they can feel good about taking care of someone and the patient has time to let the caregiver know they appreciate the care
- Over the course of this illness, I have encountered so many wonderful caregivers. If something felt really good, I would tell them that I really appreciated their taking extra time. That interaction, that communication, really makes job satisfaction much better for the caregiver. We need to change our dynamic and make sure that there is time for the interaction to occur. In the hospital's current environment, where we're really trying to move patients along, it really does limit the opportunities for the patient and caregiver to have time to recognize what they have. I hope we can find ways to legitimize this as part of the way we operate."



SmileAndMove.com