

# Patient Evaluation

*The Key to  
Management  
in Critical Care*





**The medical and  
ethical performance  
of EMS professionals  
has never been  
more important than  
it is today**



# The emerging of a profession:



# *The End of the Beginning*

- **Innocence is over**
- **You are COMPLETELY accountable for what you do**
- **Becoming a professional requires you to always be able to explain your actions**
- **EMS is ONLY and ALWAYS about patient care**

# **Critical Care Evaluation and Management**

***The Essence of what  
Makes a Paramedic  
a Critical Care Technician***

***EMS is  
a great deal about  
critical care  
medicine***

***Part of excellence  
in critical care  
is performing  
superior medical  
histories and  
physical exams***

**“See what you see!”**



*“People look, but they  
don't see”*

*...A. Fowler, Jr.*

**Alertness?**

**Level of distress?**

**Noises?**

**Respirations?**

**The pulse rate?**

**Skin?**

**Obvious things (bleeding)**



***The Order of  
Assessment  
of the Critically ill***

**As we assess patients,  
we must quickly determine  
fundamental parameters  
of their respiratory  
and circulatory status.**



# The Primary Survey

**Scene Survey/Mechanism/# pts.**



**LOC/Airway/Cspine**



**Respiratory Rate and Labor**



**Pulses R & Q, N & W  
Skin CMT/CRT/External Bleeding**



**Neck appearance, JVD, Trachea**



**Chest appearance, BS, HT**



**Quick survey of abdomen, pelvis,  
extremities, and back**

Scene Survey/~~Mechanism~~/# pts.

↓  
LOC/Airway/Cspine

↓  
Respiratory Rate and Labor

↓  
Pulses R & Q, N & W  
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Neck appearance, JVD, Trachea

↓  
Chest appearance, BS, HT

↓  
Quick survey of abdomen, pelvis,  
and extremities

Reveals threats to  
Basic Physiology

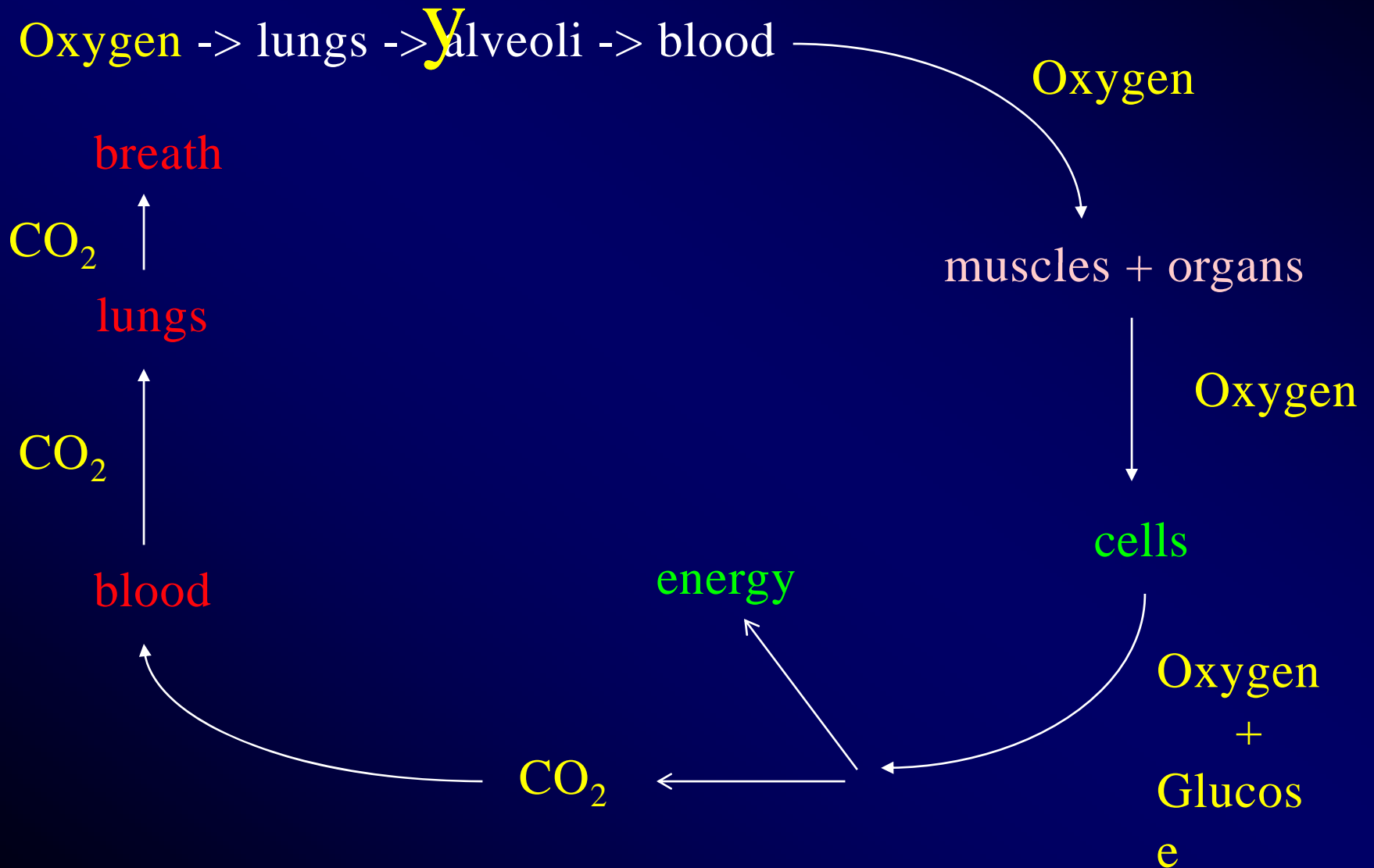
*...the vital elements of the Primary Survey*

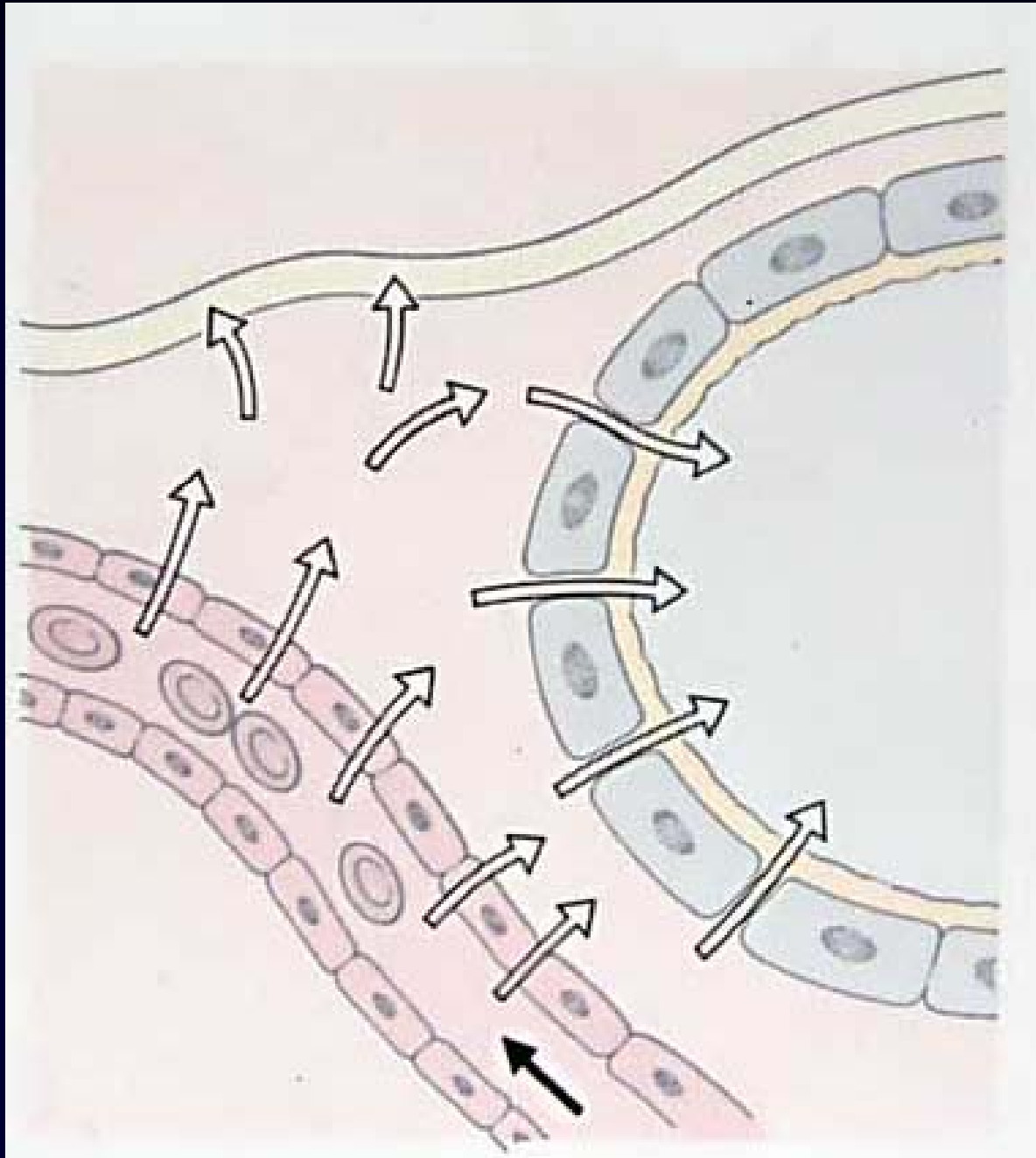
# ***Respiratory Assessment***

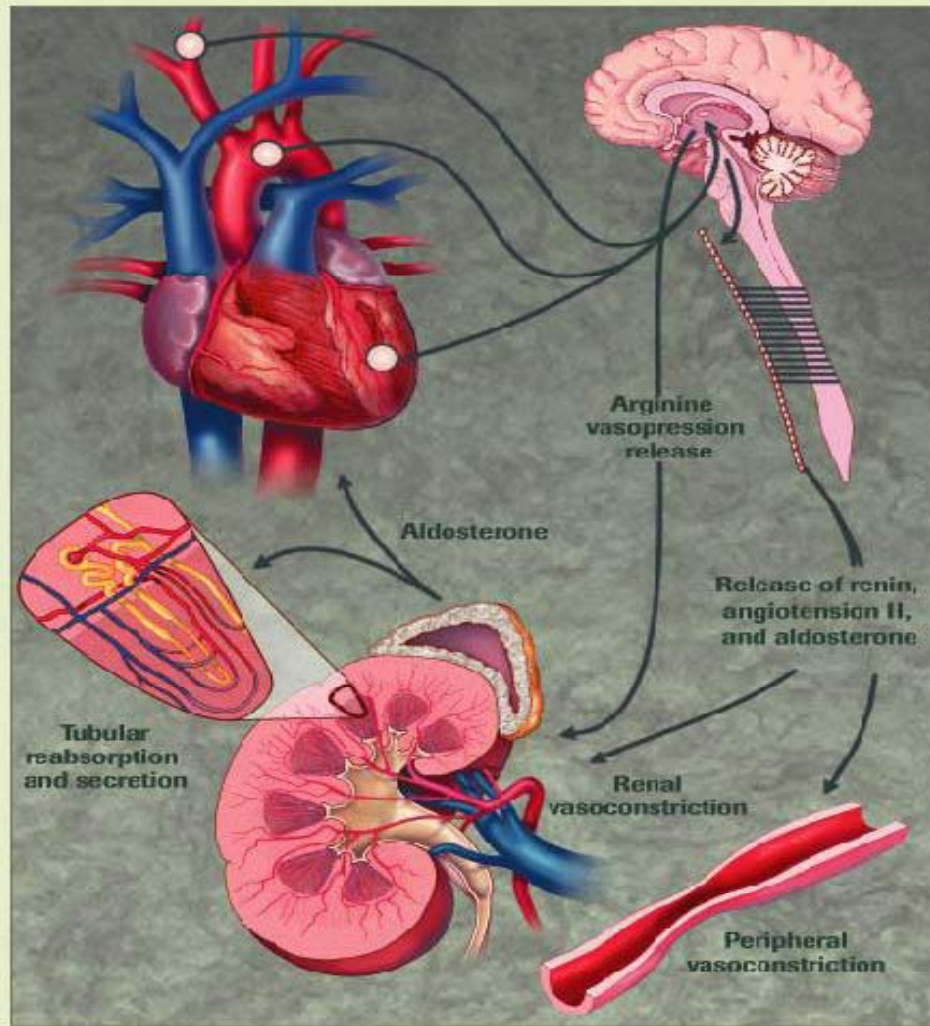
***Rate and Quality***



# Physiolog

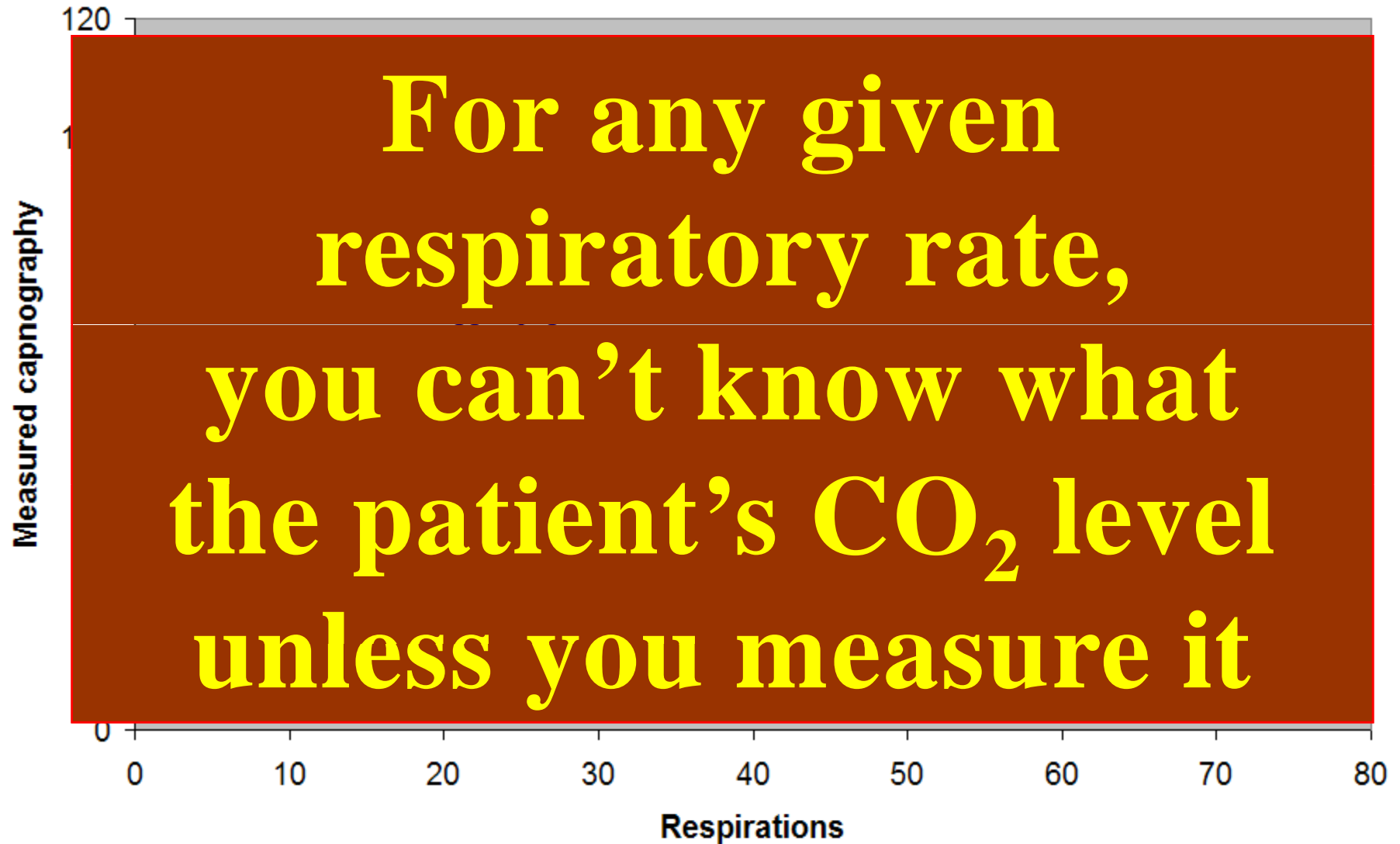




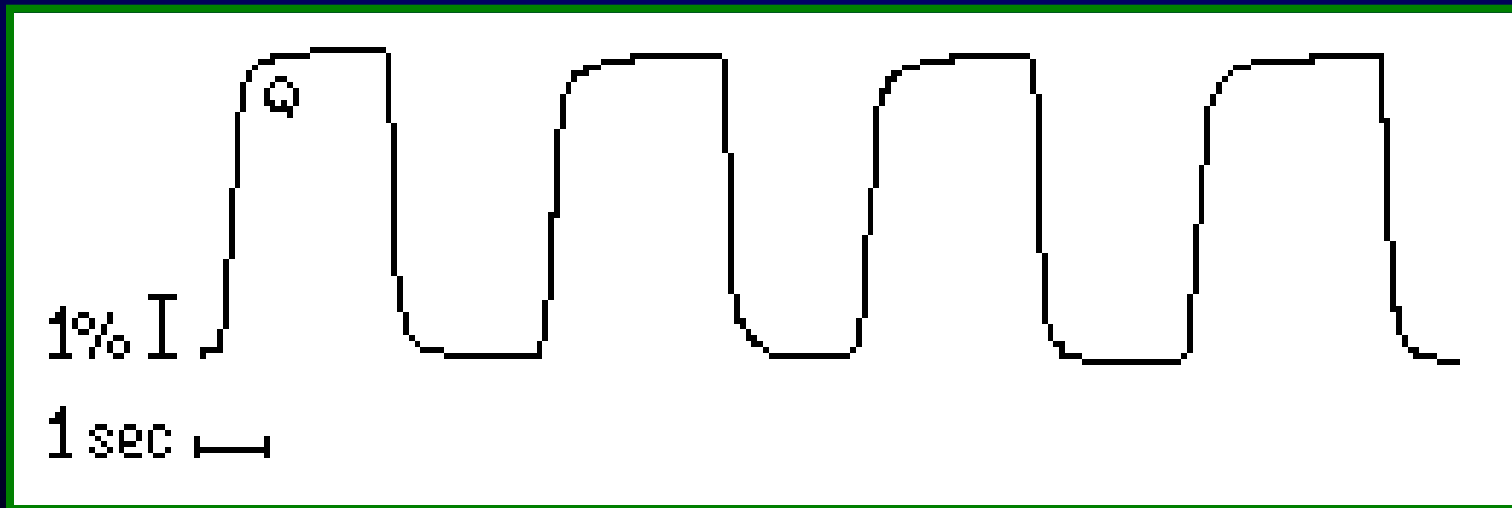


Heart failure commences when an event or condition such as MI, hypertension, or diabetes causes a decline in the heart's pumping capacity, leading to the activation of compensatory mechanisms. The renin-angiotensin-aldosterone system kicks in to attempt to restore cardiac function. Over time, however, end-organ damage occurs, leading to left ventricular remodeling.

## Respirations vs. Capnography



# Let capnography guide you!










# The Art of Critical Thinking



# **What Makes a Student Become a Great Paramedic?**

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- Solid foundation of knowledge
- Ability to perform skills
- Ability to think critically



**Critical Thinking** is the process of determining the authenticity, accuracy or value of something; characterized by the ability to seek reasons and alternatives, perceive the total situation and change one's view based on evidence.



## Chapman, et al

- **Critical thinking has three parts:**
  - Medical inquiry
  - Clinical decision-making
  - Clinical reasoning



# Mistakes We Make

- Quality assurance/CQI
- Learn from our mistakes
- Why do we make these mistakes
- How do we avoid making them in the first place



# “Pre-Loss” Strategies

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Things we can do before a  
loss occurs



# What Causes Errors?

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Most result from incomplete or poorly performed patient assessments



# Mistakes We Make

- EMS training tends to focus on manual skills performed according to algorithmic protocols

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- We should focus on
  - Honing our assessment
  - Critical thinking
  - Critical reasoning



# Heuristics

- Defined in psychology as simple, efficient rules that explain how people make decisions, come to judgments and solve problem
- Problem with heuristics is that they can predispose us to respond to certain situations in certain ways.



# Cognitive Dispositions to Respond

- Predisposition to respond to certain situations in certain ways
- One goal of our error-reducing programs should be to unmask cognitive errors in the patient assessment process and allow for the development of de-biasing techniques.



# Confirmation Bias

- Type of cognitive “cherry picking”
- We tend to look for evidence that confirms the assessment we’ve already made (Fowler: Never explain away...)
- We fail to consider persuasive evidence that changes or refutes that assessment.



# Diagnosis Momentum

- Once we've attached a label to a patient, it tends to stick—even if it's erroneous—right into the emergency department
- A quickly performed assessment in the field may end up resulting in the exclusion of other potential diagnoses in the ED
- An assessment error made by a field provider may lead to a patient being misdiagnosed down the line



# Attribution Error

- Becoming judgmental
- Blaming patients for their illnesses rather than fully examining the circumstances
- Particularly vulnerable when dealing with psychiatric patients, homeless patients and minority patients, especially those with cultural differences



# Psych-Out Error

- Psychiatric Patients
- We overlook serious co-morbid medical conditions
  - Hypoglycemia
  - Hypoxia
  - Hyperthermia
  - Metabolic Abnormalities



# Gender Bias

- We believe gender is a determining factor in the probability of a diagnosis
- Recent studies on women and heart disease
  - Atypical presentations of acute coronary symptoms.
  - Delays in starting or maintaining CPR



# Laboratory of Error

- Half of the litigation brought against emergency physicians results from delayed or missed diagnoses.
- Errors in diagnosis occur when:
  - We work in noisy environments
  - We're exhausted
  - We work too quickly
- Failure to consider all available information
  - The prehospital setting



# Anchoring

- The tendency to lock onto the patient's initial presentation
- Failure to adjust the initial impression in light of information acquired later
- “Tunnel vision” phenomenon



# Overconfidence Bias

- The tendency to believe we know more than we actually do
- Overconfident EMS personnel may act on incomplete information
- The Eyes will not See what the Mind does not Know



# Search Satisfying

- The tendency to call off a search once something is found
- Important information can be missed if we call the search off to early
  - Co-morbid conditions
  - Second gunshot wounds or exit wounds
  - Additional trauma



# Wright vs City of Los Angeles

- Initial presentation vs Thorough patient assessment
- Homeless man lying in the street
  - Altered LOC
- Assumed he was intoxicated



# David Rosenbaum

- Mugged while jogging in Washington, D.C
- Assumed to be drunk
- Transport Record Made Public
  - Assessment of condition reads only “ETOH”
  - “found” is spelled “fond”
  - “trauma” is spelled “trama.”
  - GCS 6
- Made a P3 instead of P1
- Unfounded prejudice followed him all the way from the field into the ED



# A Drunk and a Bar

- EMS received a call for a gunshot wound at a bar in a rural area
- Law enforcement officers inform EMS that they don't think anyone has been shot
- The patient is a homeless man wearing several layers of shirts and two pairs of pants
- He repeatedly tells EMS he's been shot, but when they ask where, he points to his head, where there's no gunshot wound



# Technician vs Clinician

- Technicians are strictly protocol driven and respond in a specific way when a certain group of signs and symptoms appear.
- Clinicians gather pertinent information from many sources, carefully evaluate that information and develop a treatment plan



**There is a difference between being a “clinician” and a “technician” in EMS.**

**Part of the difference involves the provider's training and experience.**

**The second, and perhaps the most important, is the clinician's mind-set.**



# Steps to Critical Thinking

1. Assess and treat for life threats before anything else
2. Develop a list of differential diagnosis
3. When you hear hoof beats, look for horses, not zebras
4. Consider onset, fever and risk factors
5. The diagnosis often won't hit you right in your face: You'll have to think!



# Steps to Critical Thinking

6. Don't chase your tail over non-significant findings
7. Consider co-existing conditions
8. Accept ambiguities
9. Follow up on challenging patients to check your diagnosis and treatment. It will help hone your critical thinking skills.



# Making Things Better

- Reduce errors by understanding how they happen in the first place
- Minimize cognitive errors by understanding and acknowledging the biases that lead to them
- Force ourselves to think outside the box



## Reduce Errors

- Scenario-based training
- Simulations
- Focus less on algorithmic protocols
- Focus more on developing critical thinking and reasoning skills



# Reducing Errors

- Recognize our biases
- Work with the insight we gain from this admission
- Remember to always consider alternatives
- Constantly ask ourselves what else might be going on
- Learn to step back from difficult problems
- Recognize when we're fatigued and possibly in a situation of impaired judgment



# Reducing Errors

- Decrease our reliance on memory by using cognitive aids
  - Drug dosage protocols on an electronic device
- Take a minute to be clear in our thoughts
- Reflect on our thinking process
- Reconsider our assessments



# Conclusions

- EMS must learn the value of critical thinking
- Identify Biases
- Accepting them
- Take steps to change them
- Careful, thoughtful patient assessments
- Frequent reassessment
- Open-mindedness



***Critical Thinking***  
***Case Discussion***

***Management of  
the Patient with  
Shortness of  
Breath***

## ***Critical Features of Severe CHF at the Bedside***

- ***Patient very short of breath***
  - ***Elevated respiratory rate***
    - ***Labored respirations***
- ***May be tachycardic, not always***
  - ***Usually hypertensive***
- ***Jugular venous distension***
  - ***Edema***
  - ***Rales (crackles)***
    - ***+/- Wheezes***
    - ***Cyanosis***

# ***Key point!!!***

**Severe CHF has similar features to tension pneumothorax, cardiac tamponade, and massive pulmonary embolism**

- SOB**
- JVD**
- Tachycardia**
- Cyanosis**

# ***Key Features in COPD***

- ***Severe SOB***
- ***Cyanosis (Late)***
  - ***↓ Pulse Ox***
  - ***↑ CO<sub>2</sub> (Late)***
  - ***JVD (Late)***
- ***Usually wheezing***
  - ***“Air trapping”***

# ***Nail Clubbing in Late COPD***



# ***Asthma*** ***(“Status Asthmaticus”)***

***An acute attack of severe  
shortness of breath in a  
(usually)  
previously diagnosed  
patient with asthma***

# ***Key Features in Status Asthmaticus***

- ***Severe SOB***
- ***Cyanosis (Late)***
  - ***↓ Pulse Ox***
  - ***↑ CO<sub>2</sub> (Late)***
- ***Usually wheezing***
  - ***“Air trapping”***

# ***The Clinical Challenge***

**The clinical presentation of these respiratory problems can be so similar that making a clear determination is difficult, even for the most experienced provider at any level**

# *Puryear's Differentiating The Desaturating*

## Focus Your History

- **Sub-acute symptoms**
  - **PND**
  - **Orthopnea**
  - **Worsening SOB with normal activities**
  - **Fever**
  - **Cough (productive or non-productive)**

## *Puryear's Differentiating The Desaturating*

- **Fluid retention: Patients often know if they're retaining more water than usual, just ask**
- **Renal roundup: Have they made their dialysis appts?**

# *Puryear's Differentiating The Desaturating*

- **Medications**
  - **Anti-hypertensives**
  - **Diuretics**
  - **Antibiotics**
  - **Steroids**
  - **Nebulized medications**

## *Puryear's Differentiating The Desaturating*

- **Signs around the scene**
  - **Never-ending lengths of oxygen tubing**
  - **Ashtrays with cigarette butts**
  - **Nebulizer machines**

# ***Considerations 1***

***The patient with  
CHF, COPD, and  
asthma attacks  
have common  
features***

# ***Considerations 1***

***They're short of  
breath, usually  
tachypneic,  
tachycardic,  
cyanotic (late)***

# ***Considerations 1***

***They all may be  
wheezing, and  
have some  
features of JVD***

# ***Considerations 1***

***Telling them apart  
may be difficult:***

- ***?Hx of CHF***
- ***?Hx of COPD***
- ***?Hx of Asthma***

## ***Considerations 2***

***End stage COPD  
may have right  
heart failure***

- **JVD**
- **Cyanosis**

## ***Considerations 3***

***CHF may present  
with wheezing  
also***

- ***“Cardiac Asthma”***

## ***Considerations 4***

***These people are  
SICK, and you  
must act quickly***

# *Risks*

- *They may stop breathing*
- *They may develop cardiac arrest*

# ***Common Treatment Goals 1***

- ***These patients are hypoxic and need oxygen***

# ***Common Treatment Goals 2***

- Be prepared to assist ventilation***

## ***Common Treatment Goals 3***

- Wheezing is treated with albuterol in all of these patients***

# ***Common Treatment Goals 3***

- ***If CHF is present  
WITHOUT  
WHEEZING,  
don't use albuterol!***

## ***Treatment Goals 4***

***The patient with CHF is volume overloaded in the chest and must have this volume displaced elsewhere***

## ***Treatment Goals 4***

***The chief difference  
in treating severe  
CHF vs.  
COPD/asthma is in  
the use of  
nitroglycerin***

## ***Treatment Goals 4***

***NTG provides rapid displacement of the thoracic volume load into the vascular tree, principally in the veins***

## ***Treatment Goals 4***

***NTG reduces afterload,  
meaning lowering  
blood pressure, which  
takes pumping strain  
off of the heart***

## ***Treatment Goals 4***

***NTG also improves forward flow from the heart, allowing perfusion of the kidneys so that diuresis can occur***

## ***Treatment Goals 5***

***Be very careful with  
morphine in severe  
CHF: Data suggests  
that outcome is  
worsened in the EMS  
environment***

***Griswell et al 2003:***  
***“Diuretics and***  
***morphine should be***  
***used with caution, as***  
***they carry higher risks,***  
***especially in***  
***misdiagnosed patients”***

personnel in the future. But for now, EMS personnel must rely on their fundamental skills of history taking and physical examination for accurate diagnosis of CHF.

***The chief risk of morphine use in severe CHF is that the patient may become over-sedated, appear to be clinically better, but is in fact worsening***

***A useful thing to remember about morphine use in CHF is that you use it as you are preparing to intubate the patient***

***Lasix does very little in the first half hour, and it may even raise afterload:***

***Relative renal underperfusion***

***Continuous  
Positive Airway  
Pressure***

# ***CPAP Physiological Effects***

- ***Airways less likely to collapse, as happens in CHF***
- ***Pulmonary edema is pushed out of the alveoli and back into circulation***
- ***Edema AROUND the alveoli is pushed back into the circulation***
  - ***Higher levels of delivered oxygen***
- ***Nebulized treatments better delivered***

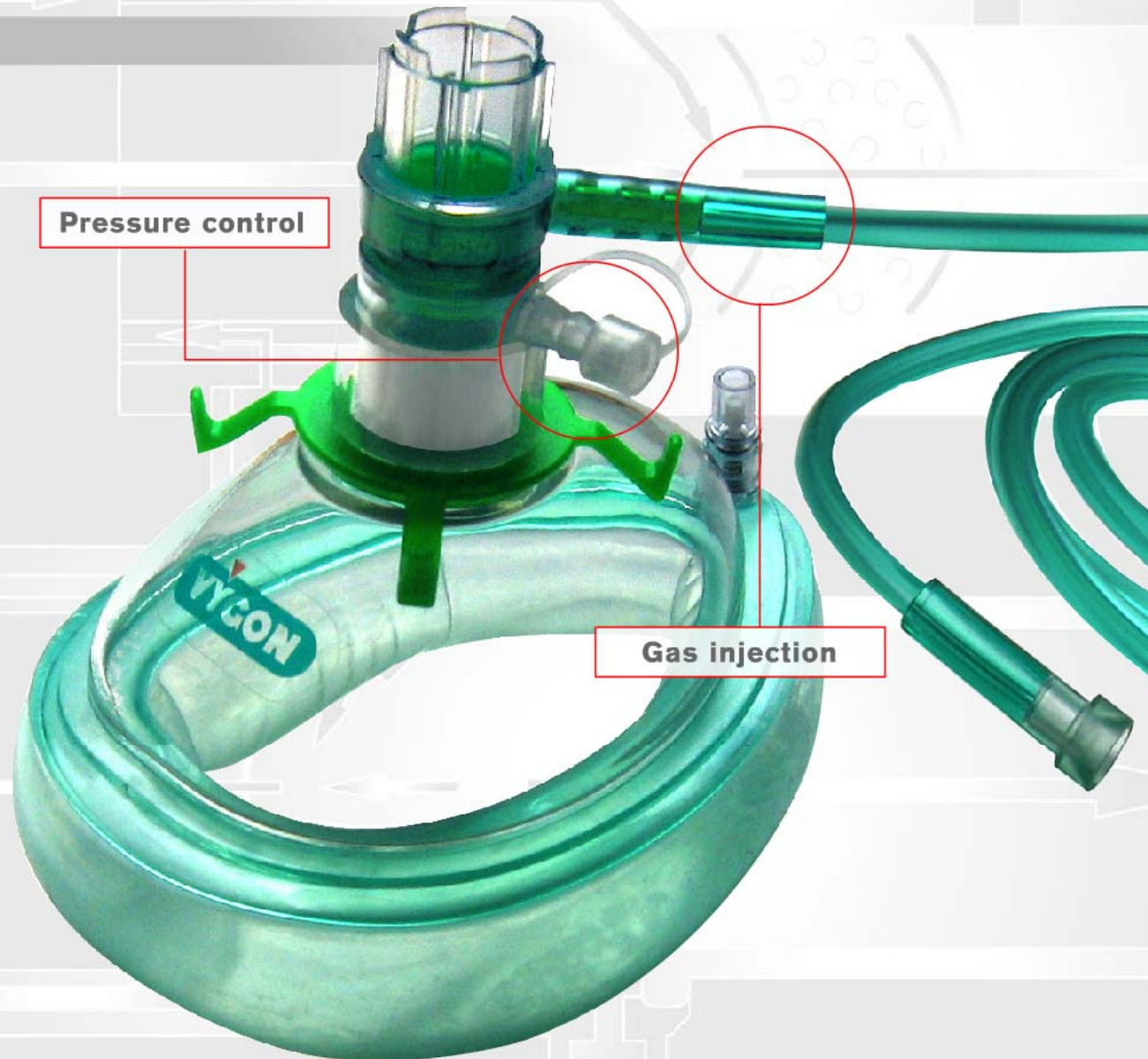
# ***CPAP Clinical Effects***

- ***The work of breathing is reduced***
- ***Patients usually feel less short of breath***
- ***Delivered oxygen improves, decreasing the sense of smothering***
- ***Improved nebulization delivery allows more rapid improvement in wheezing***

**Vitaid** *Aiding Life*

Pressure control

Gas injection



# ***CPAP Essential 1***

- ***If you apply CPAP, do NOT leave your patient unattended at any moment!***
- ***These patients may worsen quickly***
  - ***Beware of increasing CO<sub>2</sub> in the setting of the patient who appears to be more relaxed***
  - ***This may indicate impending respiratory distress***

# ***Fowler's Law of Decreased Work of Breathing***

***The work of breathing  
in patients who are  
severely short of breath  
will appear to improve  
for one of two reasons***

***They're getting  
better...***

***...or they're  
getting worse***

*Don't get fooled*

**AND**

*Don't let a patient*

*get hurt!*

# ***CPAP Essential 2***

- ***Continuous respiratory monitoring***
  - ***Continuous pulse ox monitoring***
- ***Continuous capnography monitoring***
  - ***Simultaneous Neb administration***
- ***Suction through the mask if needed***

# ***CPAP Essential 3***

- ***Do NOT use high CPAP on the patient with COPD or status asthmaticus***
- ***5 cm of water CPAP is the most you want to give to these patients***
- ***While studies are not conclusive on this point, air trapping could theoretically worsen with CPAP in these patients***

# ***Summary***

***The field of  
Prehospital Emergency Care  
is an emerging  
medical subspecialty  
requiring critical thinking  
as never before***

# *Summary*

*Will we,  
as a profession,  
meet these challenges,  
for the betterment  
of those we serve?*



*Questions  
and  
Comments?*