Capnography

More than just tube placement confirmation.

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Objectives

- Lets look at what we are actually monitoring.
- Then how is it that we actually get to monitor CO2
- What is normal vs abnormal
- How do we tell the difference
- And finally what that can tell us about our patient.
So...
What are we looking at??

\[
\text{CO}_2 \quad \text{O=O}\quad \text{O=C=O}
\]
Where does CO₂ come from?
Capillary beds of lungs where gas exchange occurs

PULMONARY CIRCUIT

Pulmonary arteries
Pulmonary veins
Aorta and branches

Venae cavae

Left atrium
Left ventricle
Right atrium
Right ventricle

SYSTEMIC CIRCUIT

Capillary beds of all body tissues, where gas exchange occurs

Oxygen-poor, CO₂-rich blood
Oxygen-rich, CO₂-poor blood
PULMONARY CIRCUIT

Capillary beds of lungs where gas exchange occurs

Pulmonary arteries
Pulmonary veins
Aorta and branches

Venae cavae
Left atrium
Left ventricle

Right atrium
Right ventricle

SYSTEMIC CIRCUIT

Capillary beds of all body tissues, where gas exchange occurs

O₂
Oxygen

Oxygen-poor, CO₂-rich blood
Oxygen-rich, CO₂-poor blood
\[ \text{C}_6\text{H}_{12}\text{O}_6 + 6 \text{O}_2 \rightarrow 6 \text{CO}_2 + 6 \text{H}_2\text{O} \]

Energy stored in ATP
Exhale
What is this telling us?
What is it not telling us?
Normal CO$_2$

$35-45$
What can we learn by monitoring CO₂?
What is high CO$_2$ telling us?

Is this bad?
Metabolic
vs.
Cardiovascular
vs.
Respiratory
High CO$_2$

- Increased Metabolism

- Increased Transportation

- Decreased Ventilation
ROSC
What is low CO$_2$ telling us?

Is this bad?
Metabolic vs. Cardiovascular vs. Respiratory
Low CO$_2$

- Metabolism
- Transportation
- Ventilation
Quick look at wave forms.
Decreasing Sedation/Paralytic
Normal?
CPR

- Monitor Quality of CPR
- Identify ROSC
- Use during termination decision
Summary

ETCO2
Its only a tool but a good one.
35-45 is normal
  But we don’t have normal patients.

Know your patient
  Not just your equipment.
Sources

- file:///E:/Capnography/Capnography%20%20Medic%20Scribe.htm
- https://acls-algorithms.com/waveform-capnography
Questions?