

Monitoring EtCO₂ with Microstream® Technology

What is EtCO₂ (Capnography) Monitoring?

- EtCO₂ is end-tidal carbon dioxide
- Non-invasive, continuous measurement and graphic display of exhaled carbon dioxide concentration
- Earliest sign of respiratory distress
- Breath by breath assessment of ventilation

Why Use Capnography?

Airway Management

- ET tube placement verification during placement / procedure / transport

Ventilation Management

- Adjunct to mechanical ventilator management
- Extremely useful in rapid weaning protocols

Hypoventilation

- First indicator of potential respiratory problems with patient
- Faster indicator of hypoventilation than pulse oximetry
- Useful for patients receiving narcotics

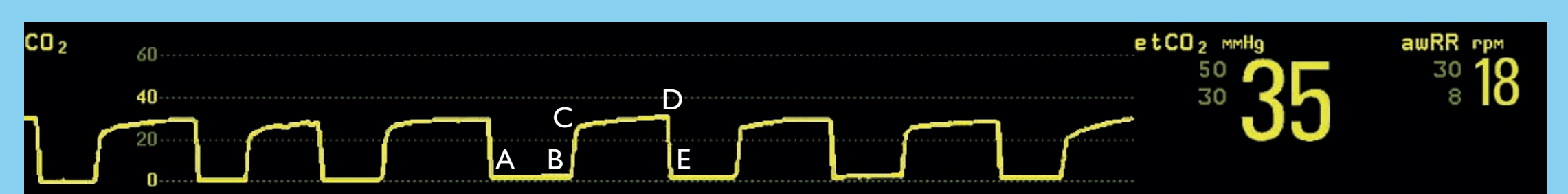
Causes for Elevated or Depressed EtCO₂

	Elevated EtCO ₂	Depressed EtCO ₂
Metabolism	<ul style="list-style-type: none"> • Hyperthermia • Pain • Shivering 	<ul style="list-style-type: none"> • Hypothermia
Respiratory	<ul style="list-style-type: none"> • Respiratory insufficiency • Respiratory depression • COPD • Analgesia/sedation 	<ul style="list-style-type: none"> • Alveolar hyperventilation • Bronchospasm • Mucus plugging • Hypoventilation with shallow breathing
Circulatory System	<ul style="list-style-type: none"> • Increased cardiac output with constant ventilation 	<ul style="list-style-type: none"> • Hypotension • Sudden hypovolemia • Cardiac arrest • Pulmonary embolism
Equipment	<ul style="list-style-type: none"> • Defective inhalation or exhalation valve • Excessive equipment dead space 	<ul style="list-style-type: none"> • Leak in airway system • Position of cannula • ET tube placement and size

Capnography displays the following parameters

EtCO₂ - normal 35-45 mmHg

EtCO₂ → Airway RR (awRR)



Waveform Characteristics:

- A-B Baseline
- B-C Expiratory Upstroke
- C-D Expiratory Plateau
- D End Tidal Concentration
- D-E Inspiration Begins

FilterLine® Selection Guide

Is the patient intubated?

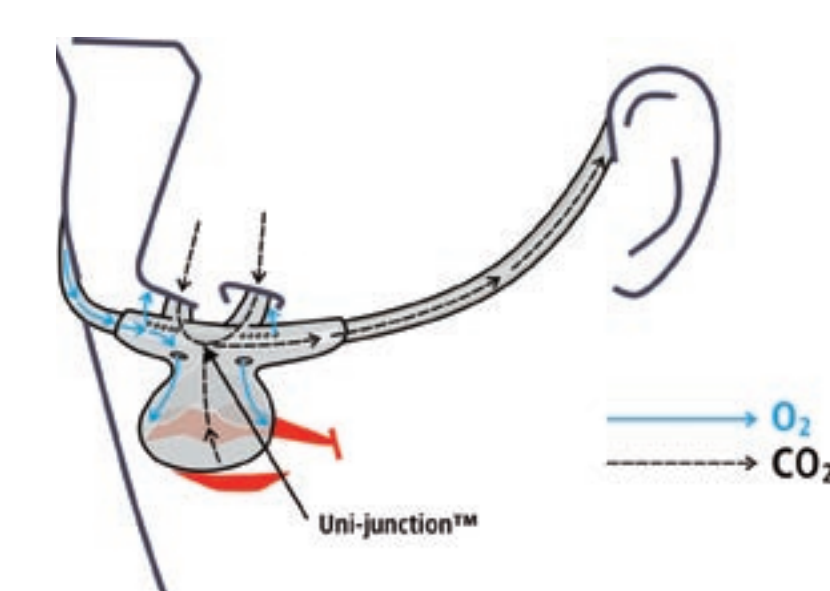
YES

NO

Does the patient need oxygen?

YES

NO



SHORT TERM

LONG TERM

Key Applications:
OR, EMS, ED

Key Applications:
Critical Care



FilterLine Set

FilterLine H Set

Adult/Pediatric (ETT >4.0 mm)
M1920A

Adult/Pediatric (>4.0 mm)
M1921A
Infant/Neonate (2.5-4.0 mm)
M1923A

SHORT TERM

LONG TERM

Key Applications:
Procedural Sedation,
Critical Care,
EMS, ED

Key Applications:
Critical Care,
Sleep Lab
Pain Management



Smart CapnoLine® Plus O₂
(Oral/Nasal)

CapnoLine H O₂
(Nasal)

Adult
M2522A

Adult
M4680A

Smart CapnoLine O₂
(Oral/Nasal)

Pediatric
M4681A

Pediatric
M2520A

SHORT TERM

SHORT TERM

LONG TERM

Key Applications:
Procedural Sedation,
Sleep Lab,
EMS, ED

Key Applications:
ED

Key Applications:
Critical Care,
Sleep Lab



Smart CapnoLine Plus
(Oral/Nasal)

NIV™ Line*
(Nasal)

CapnoLine H*
(Nasal)

Adult
M2526A

Adult
M4686A

Adult
M4689A

Smart CapnoLine
(Oral/Nasal)

Pediatric
M4687A

Pediatric
M4690A

Pediatric
M2524A

Infant/Neonate
M4691A



Microstream VitaLine™ for high humidity environments and Longline (length of 4 meters) are also available.

* For use with full-face or nasal mask CPAP/NIPPV

PHILIPS