

DID
YOU
KNOW?

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DEAD SPACE VOLUME (V_{DS})

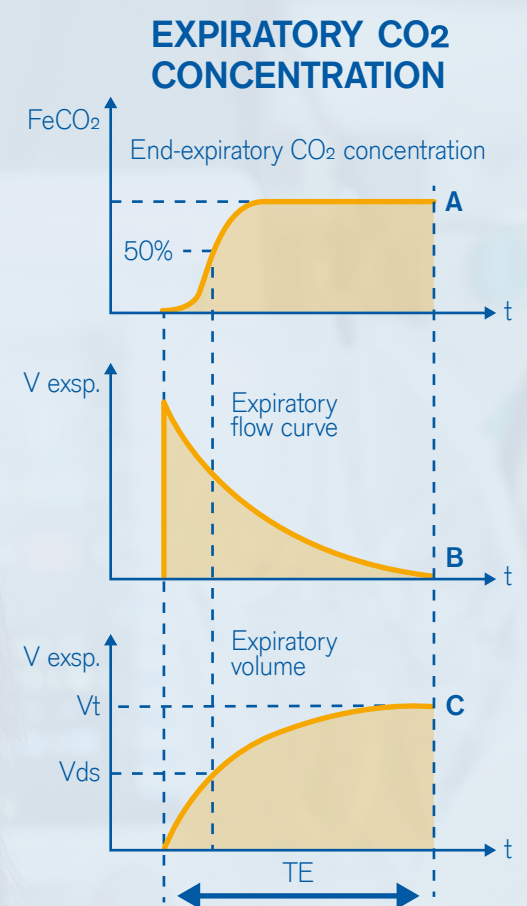


What is it?

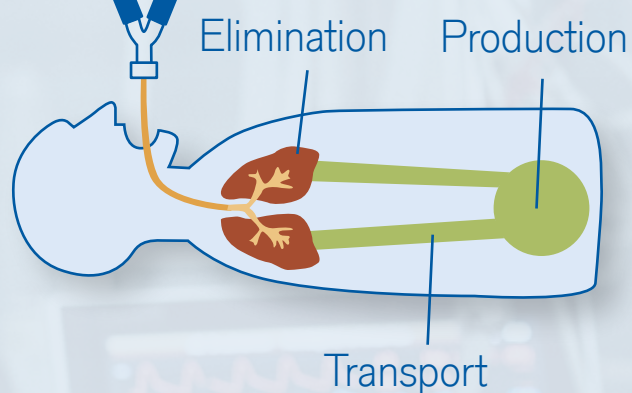
The expiratory tidal volume is composed of two volumes: the gas from the dead space and the gas from the alveolar area.

V_{ds} is the volume exhaled when the expiratory CO₂ concentration has reached 50% of the end expiratory %.

V_{ds} / V_T % is the dead space volume ration to the entire exhaled tidal volume.



VENTILATION WITH CO₂ MONITOR



How is it measured?

A simple expiratory volume sensor will always record both these volumes and display them as one reading. This does not provide the user with the essential information about how much of the expiratory volume has taken part in the gas exchange.

Using a flow and a CO₂ monitoring sensor together is possible to process both real time measuring signals (volume and CO₂), thus it is possible to calculate the dead space with a high degree of accuracy.



Why is it relevant?

Ventilator management previously required frequent feedback from arterial blood gases to evaluate the adequacy of support.

Respiratory mechanics provides additional information regarding the physical movement of gas into and out of the lung, but by itself it does not fully represent the ventilatory requirements of the patient.

Advanced CO₂ measurements provide more.

The ratio of dead space (ineffective) to alveolar (effective) volume (TV_d /TV) should also be considered in making changes to the total minute ventilation or in considering extubation. More specifically, alveolar volume defines the actual gas-exchanging potential.



Why is it helpful to improve outcome?

A relative increase in dead space points to a rise in respiratory insufficiency and can be regarded as an indicator of the current patient situation. V_{ds} reflects the current patient situation and indicates the respiratory insufficiency.

