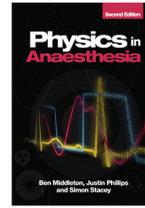


Chapter 12

Vaporizers



Self-assessment questions

These questions and answers, in both MTF and SBA formats, accompany *Physics in Anaesthesia 2e* and link back to the book for guidance.

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Multiple true / false questions

For each of the following questions, mark all answers as either true or false

1. The saturated vapour pressure of a volatile agent is affected by a change in:

- The temperature of the liquid
- The atmospheric pressure
- The anaesthetic agent in use
- The design of the vaporizer
- The position of the vaporizer in (VIC) or out (VOC) of the circuit

Reminder

- The SVP is different for each anaesthetic agent, so some are more volatile than others.
- The concentration of a volatile agent will decrease with increased atmospheric pressure.

2. Regarding variable bypass vaporizers:

- Wicks in the vaporizing chamber decrease the evaporation rates
- A Tec 6 (Desflurane) utilises a bypass channel
- Fresh gas is split into a carrier gas and a bypass gas
- A bi-metallic strip has two metals with different coefficients of thermal expansion
- They mainly use out-of-circuit setups

Pointer

- Most vaporizers are variable bypass, flow-over, automatically temperature compensated, agent specific and out-of-circuit.

3. Which of the following statements concerning a vaporizer to deliver desflurane are true?

- A dual circuit vaporizer is commonly used
- Desflurane might freeze if the vaporizer fails
- It must overcome the low boiling point of desflurane
- It requires a power supply
- It needs time to 'warm-up' prior to use

Pointer

- The splitting ratio (carrier gas flow), method of vaporization and temperature condensation methods are what are different in a Tec 6 (Desflurane) vaporizer than models for other agents.

Single best answer questions

For each of the following questions, select the single best answer – note that more than one answer may be true but only one option represents the best answer

1. The definition of a vapour is best stated as a:

- Substance in the gaseous state
- Substance in its gas phase at a temperature below its critical temperature
- Substance in its gas phase at a temperature above its critical temperature
- Gas that is visible to the naked eye at SVP
- Suspension of tiny particles of liquid, solid, or both within a gas

Reminder

- A vapour is different from an aerosol. However, these terms are often used interchangeably.
- For example, the mist produced by electronic smoking devices is an aerosol not a vapour – although the product is often called a 'vape'.
- See *Chapter 7: Humidity*.

2. The role of the heat sink in a vaporizer can be best described as:

- An active warming system for the vaporizing chamber
- An active cooling system for the vaporizer casing
- A convector of heat
- Transferring heat from a solid or liquid material to a fluid medium to minimize changes in temperature
- A reserve reservoir of anaesthetic agent

Reminder

- See *Chapter 4: Temperature and heat*.

3. The reason that desflurane cannot be delivered using a standard draw-over vaporizer is best stated as the:

- Cost of the agent
- Large fluctuations in atmospheric pressure
- High volatility of the agent
- Low boiling point of desflurane and thus high volatility of the agent
- High boiling point of desflurane

Did you know?

- Desflurane is exceptionally insoluble in blood and so results in a rapid induction of anaesthesia.
- See *Chapter 10: Diffusion, osmosis and solubility*.

Answers to questions for Chapter 12 – Vaporizers

Multiple true / false questions

The following answers are true:

1. a and c
2. c, d and e
3. a, c, d and e

Single best answer questions

The options below represent the single best answer, although other options may also be true:

1. b
2. d
3. d