

2023-02 Trial Exam

SAQ 21

You are caring for an adult patient with respiratory distress

a) Define the two types of respiratory failure

Type 1 - Hypoxic resp failure- issue is with oxygenation

Type 2- Hypercapnic resp failure- issue is with ventilation.

b) In addition to treating the underlying cause, state two strategies that can be used to correct Type 1 respiratory failure

I was looking for strategies that reverse the underlying issue-
i.e. in type 1 a problem with oxygenation.

So increasing the FiO_2 , and PEEP (or EPAP) via recruitment of alveoli.

The first phrase re apart from Rx of underlying cause is a common exam mechanism to focus the candidates' answers by e.g. giving non-specific or obvious answers, or excluding less specific answers (as in this case).

Variations on this theme in other exams include "apart from analgesia give Rx" or "Apart from allergy give adverse reaction to a drug" ... Be careful and don't give those answers.

Better answers said why the strategy was useful (e.g. "PEEP to recruit alveoli")

c) In addition to treating the underlying cause, state two strategies that can be used to correct Type 2 respiratory failure

I was looking for strategies that reverse the underlying issue- i.e. in type 2 the problem is ventilation.

So I accepted strategies that increased RR or TV. including Increased RR, Increased TV, Increased delta pressure between IPAP and EPAP. I accepted specific manoeuvres (e.g. BVM assisted ventilation with inc RR) if they explained how the strategy increased ventilation.

If you just said IPAP without further information then I gave 1/2 marks

I wanted more than just intubation- Needed to say what it was going to do in terms of improving ventilation.

I accepted decreased FiO₂ in chronic retention.

Again better answer explained why a strategy was useful AND

I didn't accept treating the underlying cause.

d) In the ED state two non-invasive modalities / strategies that can be used to address type I respiratory failure

This ties in with part b. So I wanted modalities to deliver oxygenation and / or PEEP.

They had to be “Non-invasive” so no score for intubation. I also did not score “underlying causes” (although the wording could have been clearer with regards to that. The real exam is workshopped to a higher level).

[In general in the exam, if you are only asked for 2 answers then it is likely there are not dozens of potential correct responses so that is the hint that underlying causes won't be accepted]

I accepted any conventional O2 delivery (mask, NP etc). BUT, I only accepted one type of this as more than one too similar.

Also Hi flow NP, CPAP, BVM

e) State two non-invasive modalities / strategies that can be used to address type II respiratory failure

This one ties in with part c. So I wanted modalities to improve ventilation. Again I did not accept invasive modalities (e.g. intubation) nor random cause treatments

BiPAP, AVAPS (Average volume assured pressure support)

Also accepted decreased FiO₂ with sats 88-92.

BVM with inc RR

Anything with high Oxygen scored zero point rule for this sub-question as Hi FiO₂ can be harmful in CO₂ retainers (inc Hi flow NP- No evidence of benefit and could cause harm. If you put HFNP and specifically said it with qualification re low FiO₂ then just wrong rather than zero point.)

f) After commencing your treatment in a patient with type II respiratory failure, their respiratory rate has decreased. In addition to blood gas analysis, state two ways in which you would determine that their respiratory status is improving

The Q asks how you would determine they are improving. So, you needed to say what you were looking for, not just what you are looking at.

So just saying "mental state" would not score, but saying "decreased drowsiness" or "improving mental state" would

Accepted improved mental state / decreased drowsiness;
Tidal Vol >8-10ml / kg; Decreased WOB; Improved air entry; Decreasing ETCO₂ with good trace etc

Also be careful to read the Q. It says "apart from blood gases", so any answer to do with blood gases did not score.

General hints

- ◆ Read the question and don't give answers that are excluded
 - ◆ e.g. don't give blood gases when they are specifically excluded. Don't give underlying cause Rx when excluded
- ◆ Don't give similar answers/ same category answers.
 - ◆ e.g. two conventional O₂ delivery systems (Mask and nasal prongs) won't score twice

General hints

- ◆ Answer the question asked
 - ◆ Part f asks how you'd determine improvement- Many said the modality e.g. "ETCO₂ trace" rather than stating what you'd look at on the trace to show improvement.
- ◆ Small number of requested responses
 - ◆ If only 2 responses are requested, then it's likely that either there are only 2-3 correct answers or they want concepts/most important answers. Try to avoid specific "random" responses e.g. reverse a toxin not mentioned/likely in the stem, give antibiotics etc

Marks

- ◆ Cut mark- $8/12$
 - ◆ $A=2, b=1.5, c=1.5, d=1, e=1, f=1$
- ◆ Range of marks $4.5-11$
- ◆ Mean score 8.6 , median score 8.8
- ◆ 36 scored ≥ 8