SAQ 2

References:

- Paed Cameron 2nd ed, p 129 to 132
- RCH Clinical Practice Guidelines http://www.rch.org.au/clinicalguide/guideline_index/Asthma_acute/ Accessed 4 June 2017.
- http://www.asthmahandbook.org.au/management/children/0-5-years Accessed 4 June 2017

Please pay close attention to the stem. Most, if not all information is included for some reason. When given a clinical scenario, try to imagine yourself there, and consider what you would do. Let's look at our stem:

A 3 year-old boy presents to your ED at 0400hrs with acute asthma, triggered by a viral upper respiratory tract infection. Examination reveals:

- GCS 15
- Heart rate 110 bpm
- Oximetry 91 % on room air

The child speaks in short phrases. He has moderate subcostal recession. His mother last administered salbutamol via spacer 2 hours ago. The child has never been to hospital before, for asthma. He weighs 15kg.

This scenario paints a picture of a pre-school child with moderate to severe asthma. This is his first presentation to hospital with asthma. It's been 2 hours since his last salbutamol. At 0400hrs, everyone (esp the child!) is tired. According to most guidelines he currently falls into the "moderate" category, but you would not be criticized for treating him as "severe", or at risk of becoming so. To initiate Rx as if he was "critical", however, without at least trying less aggressive measures first, is silly.

A. Complete the following table about key treatment interventions in the first hour, for this child. Assume there are no contraindications. (6)

Read the question. It said "in the first hour". This is asking for your first line Rx.

Agent	Route	Dose	Frequency
1. Oxygen	**Via Hudson mask or nasal prongs**	**2 to 4 L / min**	**Continuous**
2. Salbutamol	**Metered Dose Inhaler with Spacer**	**6 puffs**	**Every 20 minutes**
3. Prednisolone	**Oral**	**15 to 30mg**	**Once-off**

"Once-off" or "stat" for prednisolone is the start of a 3-day regime, at once daily dosing. So, "daily" is also accepted.

Alternative steroid is 0.15 to 0.30 mg/kg (ie 2.0 to 4.5mg) of oral dexamethasone.

What would be considered a critical error if omitted?

1. Salbutamol, of course. Without this, your section score is 0 / 6, irrespective of the rest of your answer.
2. Oxygen? One can argue this, given this child's current oximetry of 91%. RCH guidelines would recommend it. That said, those giving nebulized salbutamol will drive this with oxygen. Moreover, it's a good chance that oximetry will improve after the first dose of bronchodilator. So, no penalty if you omitted oxygen.

Other acceptable answers included nebulized salbutamol; nebulized or MDI ipratropium, provided doses were correct. Incorrect doses and/or routes earned 1 mark out of 2 per row. Candidates giving this child IV or nebulized magnesium in the first hour - in preference to more acceptable/conventional first-line measures - did not score marks.

B. IF this child was to clinically deteriorate despite initial treatment, list three (3) agents you can administer, in addition to the above. (3)

1. **Ipratropium**
2. **Aminophylline**
3. **Magnesium**

Ketamine was an interesting answer. Those of you clever enough to read the whole SAQ through (see part C), before answering the questions would have avoided this. That said, low dose ketamine infusion is described in the literature, so it scored. My tip is to avoid controversy if possible. Unless specifically instructed, your answers to clinical questions should fall within accepted range of practice. Do not give a hawk-ish, inflexible examiner the chance to deny you marks. If you're a genius clinician poised to revolutionize emergency medicine, go for it! But do so **after** you pass your fellowship exam.

Other acceptable answers:

- Salbutamol / ipratropium / steroid in different route to your answer for part A
- Mg
- Adrenaline
- Aminophyline
- Heliox

C. IF invasive ventilation was indicated for this child, complete the following table about your interventions. (3)

Principal Induction Agent for RSI:	**Ketamine**
Inspiratory to Expiratory (I:E) Ratio on Ventilator:	**1:4 (range accepted, provided at least 1:3)**
Maximum Tolerated Peak Airway Pressure (in cmH_2O):	**30 to 40 (range accepted)**

- Some stated "propofol" in the first row. While ketamine is preferred, propofol is technically correct, provided the dose was safe. So it scored the mark.
- Those who stated "suxamethonium" pushed the friendship too far. Know the definition of an induction agent.

- Maximum tolerated PIP gathered some interesting answers. Note that the unit of measurement is already given to you. Candidates who wrote numbers followed by "mmHg" or "cm" penalized themselves through violation of rule number 1 of exam technique: **Read the Damn Question**.
- Some included plateau pressures in their answer. All good, as long as the specific query about **peak pressure** was addressed.

D. Other than trigger avoidance, state two (2) evidence-based interventions that are effective for primary prophylaxis (prevention) in a 3 year-old child whose asthma attacks typically occur fortnightly. (2)

1. **Inhaled corticosteroid.**
2. **Inhaled longer-acting bronchodilator.**

These 2 agents can be in combination.

Accepted also are:

- Mast cell stabilisers such as cromoglycate (Intal) & nedocromil (Tilade)
- Leukotriene receptor antagonist (LTRA), such as montelukast (Singulair)
- A well-written asthma management plan
- Pre-trigger inhaled salbutamol

NOT accepted are:

- Any trigger avoidance strategies (read the damn question)
- Regular salbutamol (bad practice)
- Homeopathy (ummm…)
- Chiropractic therapy (WTF)

Fun Fact: Breastfeeding is effective in infants against developing asthma, especially in families with atopic history. Clearly not applicable to this case!

Standard Setting

This was considered an easy SAQ. Pass standard is 12/14. The vast majority of you achieved this. Well done.