

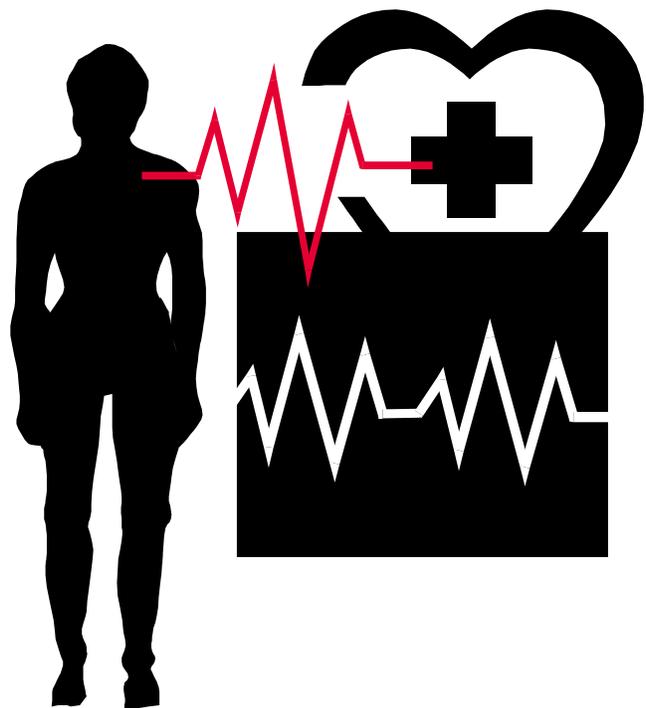


**The College of  
Family Physicians  
of Canada**

**Le Collège des  
médecins de famille  
du Canada**

## **Examination of Special Competence in Emergency Medicine**

### **Short Answer Management Problems (SAMPs)**



## **SHORT ANSWER MANAGEMENT PROBLEMS (SAMPs)**

### **A. INTRODUCTION**

This segment of the examination is intended to measure a candidate's knowledge and problem solving skills in the context of a clinical situation. The SAMPs portion of the examination will consist of two sessions, each three (3) hours in length, and will involve several clinical scenarios. Basic information regarding the presentation of the patient will be provided and a series of questions will follow from each scenario. When answering questions in this examination please read the question carefully and provide only the information that is requested. For the most part, each question will require a single word, short phrase or short list as a response. Please write legibly. Where appropriate, the number of desired responses will be indicated for each question. No credit will be given for responses, which exceed the number of requested responses.

In an effort to give candidates more help preparing for the Examination of Special Competence in Emergency Medicine, the Committee on Examinations has authorised the release of some SAMPs used on previous examinations. These questions are provided to help orient candidates to the format of this examination. Since the questions used here are from previous examinations, they may not reflect current clinical practice. Please bear this in mind as you work through the questions.

### **B. SAMPLES**

When working through the following problems please keep the following instructions in mind:

1. For each case, the setting in which you are practising will be described IF RELEVANT.
2. You can answer most questions in ten words or fewer.
3. You will be scored only on the number of answers required (e.g., if you are asked to provide three responses and put down five, only the first three will be scored).
4. Include dosages with any drugs mentioned in your answer ONLY IF ASKED.
5. Give details about procedures ONLY IF DIRECTED TO DO SO.

It is imperative that you follow the directions carefully so that you receive full credit for your responses. The examination is very clear about the manner in which candidates are expected to list or write their responses. Deviation from instructions can result in lower scores.

Sample answers have been provided. These answers are among the responses that would be acceptable to the committee. There may be other acceptable answers. The purpose of providing these sample answers is to demonstrate the correct manner in which to provide answers. Please use these cases to familiarise yourself with the examination format. If you have any questions or concerns about this component of the examination, please contact our office.

## SAMPLE CASE # 1 - 15 POINTS

A 19 year-old male presents with a nosebleed which was initially severe three days ago and has continued to trickle ever since. Today he felt too weak to get out of bed, so he called the ambulance. He has never had a serious nosebleed before, but he gives a history of easy bruising. Once, after a dental extraction, he bled continuously, and was eventually given plasma and some kind of intravenous medication, which his doctor explained, could also be given "up the nose". Later he was told that he had a problem with clotting, but he can't recall the exact diagnosis. He was adopted as an infant. No medical records are available, and attempts to contact the family physician are unsuccessful. He is taking no medication at present.

On examination:

- Pulse rate : 110 lying, 130 sitting
- Blood pressure: 110/90
- Respiratory rate: R 24
- Afebrile
- Skin: Pale, slightly clammy
- HEENT: Nose actively bleeding, but controlled for now with pressure; gag reflex intact; no blood in hypopharynx; airway patent
- Chest: clear

The remainder of the exam is non-contributory.

1. Assuming the bleeding is currently well controlled with pressure, list the **THREE** most important interventional steps at this point. Be specific. **(3 POINTS)**

1.

2.

3.

2. List **THREE** laboratory investigations which will be most helpful in managing this case. **(1.5 POINTS)**

1.

2.

3.

After your initial treatment, vital signs are as follows:

**P 95                  BP 130/85          RR 20**

3. When pressure is released, blood continues to trickle from the right naris. You elect to attempt cautery of the bleeding site. Based on the usual site of origin, where do you expect to find the source of the bleeding?

**(1 POINT)**

4. Give the **THREE** most likely causes of this patient's bleeding diathesis. **(1.5 POINTS)**

1.

2.

3.

The nurse is able to contact the family physician's secretary. She extracts the following information from the patient's chart:

- Prothrombin time (PT): normal
- Von Willebrand's Factor Antigen: pending
- Partial thromboplastin time (PTT): prolonged
- Von Willebrand's Factor Activity: pending
- Factor VIII-C: decreased
- Bleeding Time: prolonged
- Factor IX: normal

5. Given the above information, what is the **MOST** likely diagnosis? **(1 POINT)**

6. What is the mechanism of action of DDAVP in controlling haemorrhage in those bleeding diatheses for which it is effective? **(1 POINT)**

7. What other substance could be used intravenously to help control the bleeding? What is the initial dose? **(2 POINTS)**

1. Substance:

2. Initial dose:

8. Your nasal examination confirms active bleeding from the expected site. Cautery with silver nitrate is unsuccessful. List two other local interventions which might now be employed to control haemorrhage. **(2 POINTS)**

1.

2.

9. List **TWO** important infectious complications from the treatment outlined in question 7.  
**(2 POINTS)**

1.

2.

## SCORING FOR SAMPLE CASE # 1

ANSWERS	POINTS
<b>Question 1</b>	
Oxygenate 100% non-rebreathing mask	1
2 large-bore IV's and infuse 1L NS or Ringer's (10-20 cc / kg) and reassess vitals	1
Type and cross-match for at least 2 and preferably 4 units packed red-blood cells	1
	<b>Total 3 points</b>
<b>Question 2 (Any 3)</b>	
CBC (OR: Hgb, Hct, platelet count)	0.5
PT	0.5
PTT	0.5
Bleeding time	0.5
	<b>Total 1.5 points</b>
<b>Question 3 (Any 1)</b>	
Anterior inferior nasal septum	1
Kiesselbach's plexus	1
Little's area	1
	<b>Total 1 point</b>
<b>Question 4</b>	
Hemophilia A	0.5
Hemophilia B	0.5
Von Willebrand's Disease	0.5
	<b>Total 1.5 points</b>
<b>Question 5</b>	
Von Willebrand's disease	1
	<b>Total 1 point</b>
<b>Question 6</b>	
Release of Factor VIII from endothelial cells	1
	<b>Total 1 point</b>
<b>Question 7</b>	
Substance: Cryoprecipitate (Accept fresh frozen plasma)	1
Initial dosage: 1 bag, 20 ml, 80-100 units (10 ml/kg FFP)	1
	<b>Total 2 points</b>

**Question 8 (Any 2)**

Anterior pack with petrolatum guaze	1
Anterior hemostatic nasal balloon	1
Mericel	1
Cocaine	1
	<b>Total 2 points</b>

**Question 9 (Any 2)**

Acute sinusitis	1
Toxic shock syndrome	1
Putrefaction of anterior pack	1
bacterial rhinitis	1
	<b>Total 2 points</b>

**Total 15 Points**

## **SAMPLE CASE # 2 - 15 POINTS**

Concerned parents bring their two-year-old son to the emergency department (ED) because of a one-day history of wheezing. He had an upper respiratory infection (URI) for several days before the onset of wheezing with runny nose, cough, and irritability.

The child has been otherwise well. He was born at term by spontaneous vaginal delivery. His growth and development are normal and he has no known allergies. Immunisations are up to date.

The parents relate that their son is “an active little fellow” and “into everything”. Both parents smoke, but “not around the baby”. The family history is significant for an aunt who has asthma.

On examination:

- PR: 120 bpm
- RR: 30
- Afebrile: Alert and playful
- HEENT: Clear nasal discharge. Throat normal. Tympanic membranes (TMs) red but translucent with identifiable landmarks,
- Chest: Good air entry (A/E) bilaterally. Diffuse wheezes throughout both lung fields. No cyanosis. No accessory muscle use.
- CVS: Normal heart sounds

1. What are the differential diagnoses for this child? List **FOUR**. (2 POINTS)

1.

2.

3.

4.

2. What is the **MOST** likely diagnosis? (0.5 POINTS)

3. What agent **MOST** commonly causes this condition? **(0.5 POINTS)**
  
4. How would you differentiate between the **TWO** most likely diagnoses in this child? **(0.5 POINTS)**
  
5. What interventions would you advise for this child? List **THREE (1.5 POINTS)**
  - 1.
  
  - 2.
  
  - 3.

Five years later, the same child returns to the ED with a URI of one week's duration.

He recently had a cold with coryza and a particularly troublesome cough. The cough is harsh, seemingly incessant, and keeps him awake at night. He complains of soreness in his chest on arising. He has been wheezing. Cough syrups have not helped.

He has been reasonably well since you last saw him, although his parents claim that every cold "seems to settle in his chest".

Both parents continue to smoke, although they have cut down. The home is heated with wood and has no humidity control. The child's bedroom is carpeted and he likes to sleep with the family dog.

On examination:

- PR: 120 bpm
- RR: 30
- Afebrile: Alert, talkative
- HEENT: WNL
- Chest: Good A/E. Diffuse wheezing. Musical
  - Some indrawing noted of the intercostals
- CVS: Normal heart sounds
- Peak flows: 200 L/min
- O<sub>2</sub> Saturation: 95%

6. What is the **MOST** likely diagnosis in this child? Classify its severity. **(1 POINT)**

1. Diagnosis:

2. Severity:

7. What can you do in the ED to help confirm the diagnosis? **(1 POINT)**

8. What physical findings correlate **BEST** with the severity of the diagnosis in Question 6? List **TWO**. **(1 POINT)**

1.

2.

9. What treatments would you provide for this patient? List **FOUR**. Be **SPECIFIC** about dose and route of administration. **(2 POINTS)**

1.

2.

3.

4.

10. What would be appropriate advice on discharge? List **FOUR** pieces of advice. **(2 POINTS)**

1.

2.

3.

4.

Two days later the family returns to the ED for a follow-up visit. The boy does not seem to be responding to the inhaler.

Physical examination reveals no major change from two days ago.

11. Before changing the medication, what would be an appropriate observation to make?  
**(1 POINT)**

Just as you discharge this patient, the ambulance officers rush in with an adult asthmatic patient in extremis. She is well known to the ED staff because her severe asthma has been poorly controlled in the past. Last year she required short-term ventilation.

On examination:

- Obese, 31-year-old woman
- Exhausted, confused, diaphoretic
- BP: 160/100 mm Hg
- PR: 100 bpm
- RR: 40 and labored
- O<sub>2</sub> Saturation: 80%

12. You decide that the patient has severe asthma and will shortly suffer cardiac arrest. You decide to intubate her. What induction agent is **MOST** appropriate to facilitate intubation? Why? **(2 POINTS)**

1. Agent:

2. Why it is most appropriate:

## SCORING FOR SAMPLE CASE # 2

ANSWERS	POINTS
<b>Question 1</b>	
Bronchiolitis	0.5
Asthma	0.5
Foreign body aspiration	0.5
Pneumonia	0.5
	<b>Total 2 points</b>
<b>Question 2</b>	
Bronchiolitis	0.5
	<b>Total 0.5 points</b>
<b>Question 3</b>	
Respiratory syncytial virus (RSV)	0.5
	<b>Total 0.5 points</b>
<b>Question 4</b>	
Can't	0.5
	<b>Total 0.5 points</b>
<b>Question 5</b>	
Use of bronchodilators	0.5
Adequate hydration	0.5
Follow-up visit with the family physician	0.5
	<b>Total 1.5 points</b>
<b>Question 6</b>	
Diagnosis: Asthma	0.5
Severity: Mild to moderate	0.5
	<b>Total 1 point</b>
<b>Question 7</b>	
Objectively measure the patient's response to B <sub>2</sub> -agonists	1
	<b>Total 1 point</b>
<b>Question 8</b>	
Accessory muscle use	0.5
Pulsus paradoxus	0.5
	<b>Total 1 point</b>
<b>Question 9</b>	
Salbutamol, 0.03 mL/kg q 20 mins via nebulizer (max 1cc)	0.5
Ipratropium bromide, 125 to 250 ug q 60 mins via nebulizer	0.5
Oxygen (O <sub>2</sub> )	0.5
Prednisone 1 mg/kg orally	0.5
Wet Nebulization	0.5
	<b>Total 2 points</b>
<b>Question 10</b>	
Environmental control measures	0.5
Follow-up visit with family physicians within 2 to 3 days	0.5
Use of salbutamol (Ventolin) with an aerochamber (2 puffs q4h with supplementary puffs as required)	0.5
Use of oral prednisone for 7 days; (accept 7 to 14 days)	0.5
	<b>Total 2 points</b>

**Question 11**

Observation of inhaler technique

1

**Total 1 point**

**Question 12**

Agent: Ketamine

1

Why: A: it maintains the protective reflexes of the airway

B: there is no release of histamine

C: it is a bronchodilator

(for A,B,C)

1

**Total 2 points**

**Total 15 Points**

### **SAMPLE CASE # 3 - 15 POINTS**

A 37-year-old man arrives by ambulance at your urban ED. Firemen say he went back into his burning house to rescue a dog, and apparently he was overcome by smoke. When they arrived, he was unconscious and his clothes were smouldering.

He was revived after administration of 100% oxygen for several minutes. However, he remained confused and disoriented throughout transportation to the hospital.

He complains of a sore throat and says it hurts to take a deep breath. He moans with pain as he is moved from the stretcher to a bed.

He is given 100% oxygen and appears to be moving air adequately. An intravenous (IV) line is established in the left antecubital fossa, and his clothing is removed carefully. Cardiac monitoring shows narrow-complex sinus tachycardia.

#### Primary Survey

- Able to speak, but hoarse
- Singed nasal hairs
- Sooty residue in an erythematous hypopharynx
- RR: 24
- Good air entry bilaterally
- Coarse, transmitted upper airway sounds that clear with coughing
- No evidence of cyanosis
- Strong radial pulse, 140 bpm
- BP: 150/100 mm Hg
- IV infusing well
- Alert and cooperative, but oriented to person only
- No gross lateralizing neurological findings
- Partial-thickness burns involving the entire anterior thorax and abdomen, and full-thickness burn of the entire right arm circumferentially

1. What is the single most important intervention at this point? Explain in detail **HOW** and **WHY** you would proceed with this intervention. **(5 POINTS)**

Standard two-band pulse oximetry shows oxygen saturation of 99%. Analysis of an arterial blood gas (ABG) sample indicates the following:

- pH: 7.2
- pCO<sub>2</sub>: 20
- pO<sub>2</sub>: 488
- HCO<sub>3</sub>: 14
- O<sub>2</sub> sat: 100%

Several minutes later, measured arterial oxygen saturation is reported to be 60%.

2. Excluding the possibility of a lab error, what is the **MOST** likely cause for the discrepancy between the measured arterial oxygen saturation and the saturation reported on ABG analysis/pulse oximetry? **(2 POINTS)**

3. What single test could be used to confirm or rule out the cause for the discrepancy in Question 2? **(1 POINT)**

4. Your goal now is to restore normal cellular respiration. What is the **BEST** intervention to use, if it is available? Why? **(2 POINTS)**

1. Best intervention:

2. Why:

5. What is the urgent management intervention for the burned arm? **(2 POINTS)**

6. Using the “rule of nines”, estimate the percentage of total body surface burned. **(1 POINT)**

Once the patient has been stabilised, arrangements are made to transfer him to the burn unit. Because the resident on call is busy in the operating room, she asks you to use the Parkland formula to write orders to cover the patient’s IV fluid replacement.

7. Outline the Parkland formula and calculate the total amount of fluid required for the **FIRST EIGHT HOURS** of patient care. (Assume the patient weighs 70 kg.) Show your calculations. **(2 POINTS)**

1. Parkland formula:

2. Calculations for fluid required:

### SCORING OF SAMPLE CASE # 3

ANSWERS	POINTS
<b>Question 1</b>	
Secure airway	1
By endotracheal intubation	1
Rapid sequence induction or Controlled intubation with patient awake	1
Significant evidence of airway burn	1
Risk of edema and rapid airway obstruction	1
	<b>Total 5 points</b>
<b>Question 2</b>	
Abnormal hemoglobin	1 either
2-band pulse oximetry cannot distinguish between carboxyhemoglobin and oxyhemoglobin	1
	<b>Total 2 points</b>
<b>Question 3</b>	
Measurement of carboxyhemoglobin level	1
	<b>Total 1 point</b>
<b>Question 4</b>	
Best intervention: use of a hyperbaric chamber	1
Why: it reduces the half-life of carboxyhemoglobin to less than 30 minutes	1
	<b>Total 2 points</b>
<b>Question 5</b>	
Fasciotomy	2
	<b>Total 2 points</b>
<b>Question 6</b>	
27%	1
	<b>Total 1 point</b>
<b>Question 7</b>	
Parkland formula:	
4 mL X weight in kg X % body surface area burned (half in the 1st 8 hours)	1
Calculations for fluid required: $4 \times 70 \times 27 \div 2 = 3780$ mL in 8 hours	1
	<b>Total 2 points</b>
	<b>Total 15 Points</b>