

1. Lead examiner .....

2. Co-examiner .....

Candidate No:

Final Mark:

A 67 year-old woman who lives independently has been brought in after being found by her daughter on the floor of her shower. It appears that she has been there all night. She was well the day before.  
 Initial observations: GCS 7/15 (E-1 V-2 M-4); PR 70 irregular; BP 70/40; RR 6/min; SaO<sub>2</sub> 95%.  
 This is her initial ECG (included in stem).

**Question 1: Describe and interpret the ECG (included in stem) - expected time 1 min**

Expected Response	Details & Comments	
Features consistent with <b>severe hypothermia</b>		
Rate, Rhythm	<b>AF, 78 bpm</b>	
Morphology	J (Osborn) waves, shivering artefact, non spec IV conduction > <b>QRS, prolonged QT</b>	
Other	N axis, difficult to interpret ST segment	
Relevant -ves	Rate higher than expected, given scenario and BP	
<b>Interpretation</b>	Severe <b>hypothermia</b> with consequent CNS and cardiovascular effects. Given scenario, probably secondary to environmental exposure. Still need to identify causes of fall, and possible other complications.	

**Question 2: The patient's core temperature is 27degC. Observations remain unchanged. There appear to be no other injuries and no apparent cause of collapse has been found. How would you rewarm this patient?**

Expected time 2-2.5 min

Expected Response	Details & Comments	
Active warming	Dry, clothe and cover patient <b>External:</b> <ul style="list-style-type: none"> <li>- Forced-air re-warming blanket, warmed mattress if available</li> <li>- Warm ambient temperature: heating, removing draughts</li> </ul> <b>Internal:</b> <ul style="list-style-type: none"> <li>- Warmed IV fluids. Warm saline (up to 40 deg) resuscitation – 20 ml/kg +repeat (hypotensive initially + likely to vasodilate further as warms)</li> <li>- Warmed humidified air / O<sub>2</sub> +/- ETT</li> </ul> If becomes unstable or more severe / refractory hypothermia <ul style="list-style-type: none"> <li>- Warmed fluid lavage (IDC - feasible in ED, NGT, peritoneal - ?practicality)</li> <li>- Cardiopulmonary bypass</li> </ul>	Pass –fail  Tiered sensible response at least 1 external/ 1 internal + <b>prompted (if the temp is not rising what else could you try)</b> aggressive technique
	Minimal handling / movement	

**Question 3: Active re-warming measures have been started. The GCS and observations are unchanged.**

**DISCUSS the pros and cons of doing an immediate CT head. (2-2.5 minutes)**

Expected Response	Details & Comments	
<i>Expect exploration of potential risks of intubation / transfer to CT of hypothermic 'unstable' patient vs the likelihood of finding an acute intracerebral lesion (ICH) that will alter management.</i>		
Intubation <b>Prompt</b> if intubation not discussed- <b>what are the pros and cons of intubating this lady before transferring for CT.</b>	Discuss the role of immediate CT vs delay of CT until warmed (> 31) and response to this assessed Concerns <ul style="list-style-type: none"> <li>• Hypotensive, bradycardic, extremely hypothermic patient (= not stabilised) leaving ED for less safe environment of CT</li> <li>• Difficulty of continuing warming efforts in CT</li> <li>• Potential destabilising effects of movement and transfers (?induce arrhythmias – controversial)</li> <li>• Potentially plausible cause for presentation – slipped + NOF# + spent night under cold water with resultant hypothermia</li> </ul>	<b>Pass Fail criteria</b>  <b>Must have 2 pros and cons-risks of moving unstable,hypothermic patient and intubation issues with sensible cogent</b>

	<ul style="list-style-type: none"> <li>If ICH detected ?change management ?neurosurgery while markedly hypothermic vs when warmed in 67 yo.</li> </ul> <p>CT indications</p> <ul style="list-style-type: none"> <li>Prognostic/diagnostic</li> <li>May identify lesion for treatment (SDH, SAH etc)</li> </ul> <p>Stronger case for urgent CT if signs of head trauma, localising neurological deficit</p>	<p><b>reasoning</b></p>
	<p>Discuss role of intubation</p> <p>Pros</p> <ul style="list-style-type: none"> <li>Provide <b>definitive airway protection</b> in patient with low GCS (7/15)</li> <li>Facilitate warming and humidification of inspired air</li> <li>Optimise oxygenation and ventilation (hypoventilation potentially leading to hypercarbia and abnormal respiratory status)</li> <li>Careful intubation with minimal movement (C-spine protection with immobilisation) may well have minimal risk</li> </ul> <p>Cons</p> <ul style="list-style-type: none"> <li><b>May destabilise patient eg arrhythmia</b></li> <li>Has inherent risks</li> <li>Patients oxygenation appears adequate and if hypoventilation (CO2) an issue then can be managed simply with bag-mask ventilation</li> <li>Airway patency can be maintained with simple non-invasive measures, close observation, immediate suctioning</li> <li>warming may rapidly improve low GCS due to hypothermia making intubation unnecessary</li> </ul>	

**Question 4:** The patient’s daughter arrives and says that her mother would not want to end up on a ventilator. What are the factors that would determine your further management? (1.5-2 minutes)

Expected Response	Details and Comments	Pass Fail
Patient wishes and autonomy	Clarify presence or absence of Advanced Health Directive (or similar document) or any enduring power of attorney	
Duty of Care	To identify and treat reversible pathology, if reasonable belief of advantage to life or QOL	
Information to Assist Decision	<p>For staff: Collateral regarding events, medical background, pre-morbid QOL. Results of CT and other tests, response to initial Mx</p> <p>For daughter: Clarify concerns and answer queries. Explain current situation (uncertain cause for events, severe hypothermia = potentially reversible) and level of care (active warming, fluid resuscitation, good nursing/supportive care = standard care rather than resuscitation).</p> <p>Outline (in absence of documented patient wishes) plan to maintain current level of care in absence of evidence of futility.</p>	<p><b>Must discuss end of life issues/ medico-legal, + QOL_ PMH, Collateral hx</b></p>
Other stakeholders	Other NOK, ED nursing, GP, ICU colleagues	
Definitions and agreements	Actual limits of Mx, and their indications. Includes Rx goals and disposition destination. Timing of actions	
Impacts and Implications	Medicolegal, ethical. Personal biases.	

**Comments: (if you fail the candidate, please state why)**

**If the candidate fails the exam overall, what feedback would you suggest the regional censor provide for this SCE?**

## SCENARIO

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