HYPOTHERMIA

MODULE: HYPOTHERMIA

TARGET: F1/F2/CT1/CT2

BACKGROUND:

Hypothermia is defined as a core body temperature below 35oC. The effects of hypothermia are proportional to the change in temperature, with metabolic rate reduced by about 10% for every 1°C fall in temperature. Primary hypothermia is due to environmental exposure to cold, without any underlying medical conditions provoking temperature loss. Secondary hypothermia results from a medical illness lowering the temperature set-point.

RELEVANT AREAS OF THE CMT CURRICULUM

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Geriatric Competencies

Assess mental state and tests of cognitive function

Recognise the often multi-factorial causes for presentation in the elderly & outline preventative approaches

Recognise that older patients often present with multiple problems
INFORMATION FOR FACULTY

LEARNING OBJECTIVES

Define hypothermia and its diagnosis
Recall perturbations caused by hypothermia
Causes of hypothermia
Initial management of hypothermia
Complications of hypothermia

SCENE SETTING

Location: A&E Resus
Expected duration of scenario: 20 mins
Expected duration of debriefing: 40 mins

EQUIPMENT AND CONSUMABLES

SimMan 3G
Bair Hugger
Fluid warmer
IV fluids
Urethral catheter pack
Cardiac monitor
ECG printout with J waves
Cannulation equipment
ABG equipment
Blood cultures
Blood test tubes
Chest X-ray showing right basal pneumonia

PERSONNEL-IN-SCENARIO

F1/F2
CMT trainee
Nurse (faculty)

PARTICIPANT BRIEFING

You are seeing Elsie MacDonald, 83, found by her neighbour on her kitchen floor after not being seen for two days. It is not clear how long she has been on the floor. Her curtains have not been drawn for two days. The nurse in A&E Resus has taken bloods and put in an IV cannula.
FACULTY BRIEFING

‘VOICE OF THE MANIKIN’ BRIEFING

You are Elsie MacDonald who has had a fall at home and spent two days on her kitchen floor. You are previously independent though becoming frailer over recent months prompting concern amongst your family. You have a low body temperature from being exposed for two days and have developed a chest infection. You are dehydrated and your muscles are breaking down (rhabdomyolysis) from being on the floor. You can only moan and groan when asked any questions but as you are warmed up you are able to speak some confused words (e.g. "what's going on?" "where am I?"). You do not fully regain consciousness during the scenario.

IN-SCENARIO PERSONNEL BRIEFING

Medical Registrar – on phone – can give advice regarding Bair Hugger, warmed fluids, acute kidney injury; is unable to come and help for another 10 minutes – is with an unwell patient
A&E Nurse – (novice but helpful) had handover from ambulance staff. Neighbours found patient on floor after not seeing her for two days. Neighbours report that she has been less mobile over the last two months, but still independent. The patient feels very cold to the touch, and looks like she is shivering (prompt the participant if they do not quickly recognise that this is hypothermia)

ADDITIONAL INFORMATION

DHx

NKDA
Ramipril 5mg OD
Simvastatin 40mg ON
Paracetamol 1g QDS
Aspirin 75mg OD
CONDUCT OF SCENARIO

INITIAL SETTINGS

Initial Settings, monitoring attached
A: Patent
B: RR 18, SpO2 88% RA, R basal crepitations
C: P48 BP 86/40
D: Temp 28.7 Responds to voice BM 3.4
E: Shivering (tonic-clonic setting on SimMan), eyes closed, sluggish pupils

EXPECTED ACTIONS

IV cannula
Bloods
ABG
ECG interpretation
Warmed fluids
Bair hugger
Call for help (senior doctor)
Catheter

INITIAL ASSESSMENT

e.g.: Oxygen, identify hypothermia, ECG monitor
A: Patent
B: RR 18, SpO2 96% (on 15L O2 via NRB)
C: Hypothermia ECG (J-waves), P52
D: Temp 29oC, responds to voice

EXPECTED ACTIONS & CONSEQUENCES

- Identify hypoxia due to pneumonia
- Treat pneumonia
- Appropriate treatment of arrhythmias
- Appropriate fluid management
- Liase with ITU/Surgical team re: pancreatitis (at high difficulty)

ARRHYTHMIA

Parameter changes after arrhythmia
A: Maintained
B: RR 22, SpO2 96%
C: ECG shows arrhythmia (AF/VT), BP 75/50
D: Temp 31, Confused words, eyes half open
E: Continue shivering

EXPECTED ACTIONS

IV cannula
Bloods
ABG
ECG interpretation
Warmed fluids
Bair hugger
Call for help (senior doctor)
Catheter

RESOLUTION:

Start antibiotics & appropriate warming
Patient warm and alert
Patient referred to ITU (high difficulty)

LOW DIFFICULTY

- Resolving hypothermia with bair hugger
- Community acquired pneumonia

NORMAL DIFFICULTY

- Arrhythmia – AF
- Persistent low BP
- Acute kidney injury

HIGH DIFFICULTY

- Arrhythmia – VT
- Fractured NOF
- Sepsis and pneumonia
- Cardiogenic shock
- Acute pancreatitis

Results/Other information:

Hb 13
WCC 23
Plt 540
Hct 0.54
Urea 42
Creat 540
Na 151
K 6.5
Ca2+ 1.6
CK 16593
Amylase 720
ABG pH 7.23 pO2 7.4 pCO2 6.5 HCO3 14 Lact 6.1
(CXR Right basal consolidation)
DEBRIEFING

POINTS FOR FURTHER DISCUSSION

Define hypothermia and its diagnosis
Recall perturbations caused by hypothermia
Causes of hypothermia
Initial management of hypothermia
Complications of hypothermia

DEBRIEFING RESOURCES

http://www.patient.co.uk/doctor/Hypothermia.htm

Joint Royal Colleges Ambulance Liaison Committee; Care Guideline; Hypothermia; May 2007.

Edelstein JA, Li J; Hypothermia; eMedicine, October 2009.

NICE Clinical Guideline; Management of inadvertent perioperative hypothermia in adults; April 2008.

Resuscitation Council UK; Adult advanced life support guidelines, (2010)
KEY POINTS

Diagnosis of hypothermia
Initial management of hypothermia and its complications

RELEVANCE TO THE CURRICULUM

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PARTICIPANT REFLECTION

What have you learned from this experience? (Please try and list 3 things)

How will your practice now change?

What other actions will you now take to meet any identified learning needs?
PARTICIPANT FEEDBACK

Date of training session: .................................................................................................................................

Profession and grade: ...........................................................................................................................................

What role(s) did you play in the scenario? (Please tick)

Primary/Initial Participant

Secondary Participant (e.g. ‘Call for Help’ responder)

Other health care professional (e.g. nurse/ODP)

Other role (please specify):

........................................................................................................................................................................

Observer

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<th>Strongly Agree</th>
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<th>Neither agree nor disagree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
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<td>I found this scenario useful</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>I understand more about the scenario subject</td>
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<tr>
<td>I have more confidence to deal with this scenario</td>
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<td>The material covered was relevant to me</td>
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Please write down one thing you have learned today, and that you will use in your clinical practice.

How could this scenario be improved for future participants? This is especially important if you have ticked anything in the disagree/strongly disagree box.
What went particularly well during this scenario?

What did not go well, or as well as planned?

Why didn’t it go well?

How could the scenario be improved for future participants?