

FINALE SIMULATIE 6

Simulatie focus (Brandwonde met Hypoxisch/Hypotherm Arrest)

Expected outcomes

Team Leader - to perform initial A to E assessment, direct team and lead care – taking over skills as and when appropriate. Manage children with severe burns and hypothermia from excessive cooling.

Team/More experienced candidate - Recognise at risk airway secondary to thermal burn injury and hypoxic/hypothermic cardiac arrest and manage according to pulseless electrical activity (non-shockable) cardiac arrest algorithm.

For the candidate who needs a reassessment

This simulation can be used to reassess a candidate who needs to lead a trauma simulation. In this case the candidate is expected to direct an ABCDE primary survey, 20% TBSA deep dermal and full thickness burns as the diagnosis. They need to manage with passive warming and burn fluid as well as anticipating the need for advanced airway management and prepare but the patient remains stable and can be handed over to critical care.

History

Emergency staff:

Pre-alert: Harley, a 9-month-old, is being brought in by Ambulance. Harley was playing on the floor in the bathroom while her parent was running a bath for them. The parent tripped bringing some freshly boiled water which has soaked Harley. They immediately put Harley in a bath of cold water for 30 minutes until the ambulance arrived. It has now been 1 hour since the burn occurred.

Ward staff:

Harley is a 9-month-old who has been admitted with a chest infection. Her parent had boiled some water to heat a bottle and then tripped bringing the jug of boiling water into the cubicle and this has soaked Harley. They stripped Harley immediately, put them under a cold running tap and called for help.

Immediately apparent

Please ensure that the card with global overview is placed on the manikin for the start of the sim.

As you approach the child you notice extensive scalds. She is breathing slowly and shallowly. There is no obvious bleeding.

Clinical course (to be given as the simulation progresses)

Assess	Features	Action	Key treatment points
<c>	No signs of bleeding.	Assess	
A	Gurgling	Assess, gurgling improves with correct airway positioning but recurs if this is discontinued	Airway opening manoeuvres
B	RR 20/min with shallow breaths. Equal air entry. SpO₂ 93% in air with poor trace.	Assess including auscultation and SpO ₂	High flow oxygen via non-re-breathe face mask
C	HR 90/min, CRT 4sec, BP 60/35mmHg , Cold and mottled skin all over.	Assess and recognise signs of poor perfusion	Early IV access, Bloods Warmed fluid bolus 10ml/kg (balanced crystalloid)

D	Moaning and responding to voice, GCS 12 (E3V4M5). BM 72 mg/dl(4mmol/l) . Pupils 4mm, reflexes brisk	Recognise lowered level of consciousness and escalate concern Blood sugar	
E	Scalds to face, around the mouth and neck, right arm and right leg. Temp 31	Assess burn and start appropriate treatments	Passive warming measures Cover burns with cling film Give pain relief

Reassessment or weaker candidate or group
Use the guidance in blue box below

Strong confident group or candidate
Use the guidance in yellow box below

Reassessment candidate

This can be a severe burn scenario where the candidate is expected to direct an ABCDE primary survey, identify 20% TBSA deep dermal and full thickness burns as the diagnosis. This is complicated by hypothermia secondary to rapid cooling.
Manage with passive warming and burn fluid. Candidate can anticipate the need for advanced airway management and prepare but the patient remains stable and can be handed over for critical care.

Team learning scenario

If the team does not manage the hypothermia with warmed fluid and does not recognise potential airway compromise, the patient has PEA cardiac arrest secondary to hypothermia and hypoxia). Even if the team tries to warm the baby, this is unsuccessful, the airway becomes compromised by swelling, the child becomes unresponsive, bradypnoeic, hypoxic, shocked and then goes into PEA cardiac arrest. The team should declare the need for CPR and plan for Difficult Airway. The scenario can then be stopped but if time allows a faculty member can arrive as senior anaesthetist and intubate using DAS algorithm to help achieve ROSC.
Diagnosis: airway burn injury with hypothermia and hypoxic cardiac arrest.

Reassessment (Team learning scenario only – KTPs in italics)

As candidate starts their reassessment the child becomes unresponsive.

Assess	Features	Action	Key treatment points
A	Quiet stridor	Assess and recognise need for early intubation	<i>Call airway specialist and prepare for difficult intubation</i>
B	RR 10/min with shallow breaths. Equal air entry. SpO₂ 82% in facemask oxygen.	Assess including auscultation and SpO ₂	<i>BMV ventilation.</i>
C	HR 70/min, CRT 10sec, BP 40/15mmHg. Radial pulse no longer palpable. Pale with cold peripheries	Assess, recognise non-responsive/ decompensated shock	<i>Uninterrupted CPR. Give further 10ml/kg warmed fluid bolus.</i>
D	Unresponsive, GCS 3 (E1V1M1). Pupils 4mm. BM 72 mg/dl (4mmol/l)	Assess Blood sugar	<i>Reassess airway</i>
E	Burns unchanged but swelling of lips and intraoral mucosal injury evident	Calculate area of burn (20% TBSA)	<i>Vocalise need to calculate fluid requirements</i>

Debrief

Using the learning conversation, discuss the technical and non-technical elements of the simulation

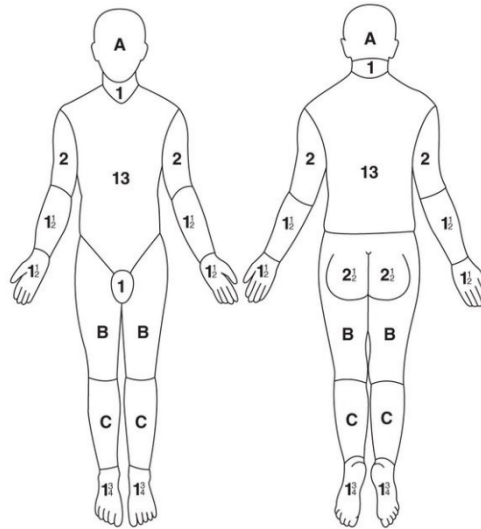
Assessment

This station makes up part of the continuous assessment process, therefore candidates need to know whether they are meeting the standard.

At the end give the opportunity for candidates to ask questions, answer these and then summarise the key points.

Algorithms:

Cardiac arrest expanded
PEA/Asystole



Area indicated	Surface area at				
	0	1 year	5 years	10 years	15 years
A	9.5	8.5	6.5	5.5	4.5
B	2.75	3.25	4.0	4.5	4.5
C	2.5	2.5	2.75	3.0	3.25

FINALE SIMULATIE 6

Props to print and laminate

Finaal 6 - Globaal overzicht (op oefenpop plaatsen)

Het kind heft uitgebreide bradnwonden.

Ze ademt traag en oppervlakkig.

Er is geen bloeding zichtbaar.

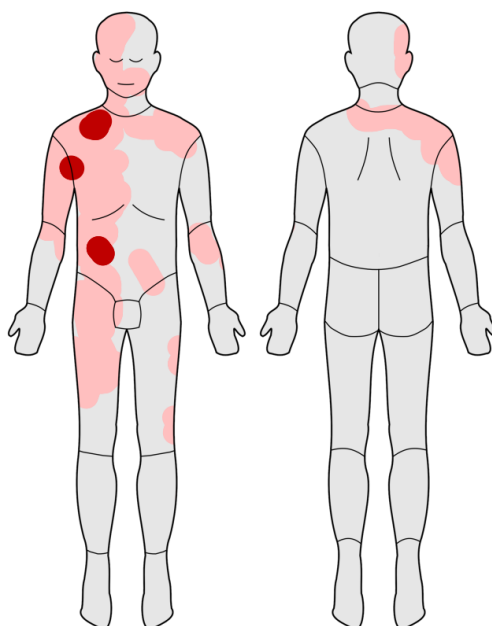
Finaal 6 - Resultaten

Bloedgas:

pH	7.1
pO ₂	45 mmHg (6.0 kPa)
pCO ₂	64 mmHg (8.5 kPa)
HCO ₃	18 mmol/l
BE	-4 mmol/l
Lactaat	4.5 mmol/l

Glycemie 99 mg/dl(5.5mmol/l)

Final 6 - Burn TBSA:



Faculty helper information – Final 6

When candidate requests information regarding observations please give the following in “real-time” (e.g., wait for blood pressure to cycle, saturation trace to be achieved). If key treatment points are not undertaken, consider a “prompt” that would be visible in a child.

Assess	Observation	Example prompt
<c>	No signs of bleeding.	Assess
A	Gurgling	Make airway noise evident (through mimicking or mentioning directly) “Sounds noisy, may be drooling” “Should I suction the airway?”
B	RR 20/min with shallow breaths. Equal air entry. SpO₂ 93% in air with a poor trace.	If no oxygen applied prompt that sats trace is alarming and child looks pale
C	HR 90/min, CRT 4sec, BP 60/35mmHg Cold and mottled skin all over.	“His skin is really mottled” Count out loud when checking capillary refill. If IO is requested “I have not done one before” If “bloods” prompt and ask “which ones” Cycle blood pressure: “Is that BP ok for this age?”
D	Moaning and responding to voice, GCS 12 (E3V4M5). BM 72mg/dl (4mmol/l) . Pupils 4mm, reflexes brisk	“They’re moaning a lot. Do you think that is pain, or something else?” “Do you want a blood glucose?”
E	Scalds to face, around the mouth and neck, right arm and right leg. Temp 31	“Feels icy cold. How long was he cooled for?” “Should I check a temperature?” “Almost the whole face is burned”

Reassessment – Final 6

Assess	Observation	Example prompt
A	Quiet stridor	“The breathing is louder”, “That cry is sounding softer”, “It isn’t getting better even with suction” If airway adjunct in: “Do you think the adjunct is causing a problem now?”
B	RR 10/min with shallow breaths. Equal air entry. SpO₂ 82% in face-mask oxygen.	If inadequate respiration not recognised and BMV not started bring attention to it: “They look like they are really gasping for breath now. I’ve listened in and can’t hear much air moving” Keep checking and emphasising chest signs. Prompt if not anticipating airway loss: “It is becoming impossible to bag them, what do you think we should do?”
C	HR 70/min, CRT 10sec, BP 40/15mmHg Radial pulse no longer palpable. Pale with cold peripheries	Cycle BP and communicate heart rate and BP. If change not recognised, confirm heart rate and BP have fallen since last check.
D	Unresponsive, GCS 3 (E1V1M1) . Pupils 4mm. BM 72 mg/dl (4mmol/l)	“They’re not making any sounds anymore” “They didn’t react as much to a painful stimulus”
E	Burns unchanged but swelling of lips and intraoral mucosal injury evident	“The lips look much more swollen than they did”