

ADULT BURNS PATIENT

MODULE: Intensive Care Medicine / Trauma

TARGET: ALL ANAESTHETISTS, INTENSIVISTS & ED PHYSICIANS

BACKGROUND:

Severe burns are a significant source of morbidity and mortality and present major challenges to the multi-disciplinary team. Early effective resuscitation, early surgical debridement and prevention of complications in addition to potential transfer to specialist burns centres are among the difficulties that must be overcome.

Major risk factors for mortality are older age, high percentage of burned surface area, inhalational injury and presence of co-existing chronic disease.

RELEVANT AREAS OF THE ANAESTHETIC CURRICULUM

IG_BS_07 AM_BS_04	Demonstrates effective pre-oxygenation, including correct use of the mask, head position and clear explanation to the patient
IG_BS_08	In respect of intravenous induction: <ul style="list-style-type: none"> • Makes necessary explanations to the patient • Demonstrates satisfactory practice in preparing drugs for the induction of anaesthesia • Demonstrates proper technique in injecting drugs at induction of anaesthesia Manages the cardiovascular and respiratory changes associated with induction of general anaesthesia
IG_BS_10 AM_BS_05	In respect of airway management: <ul style="list-style-type: none"> • Demonstrates optimal patient position for airway management • · Manages airway with mask and oral/nasopharyngeal airways • · Demonstrates hand ventilation with bag and mask • · Able to insert and confirm placement of a Laryngeal Mask Airway • · Demonstrates correct head positioning, direct laryngoscopy and successful nasal/oral intubation techniques and • confirms correct tracheal tube placement • · Demonstrates proper use of bougies • Demonstrates correct securing and protection of LMAs/tracheal tubes during movement, positioning and transfer
1.1	Adopts a structured and timely approach to the recognition, assessment and stabilisation of the acutely ill patient with disordered physiology
4.4	Uses fluids and vasoactive / Inotropic drugs to support the circulation
5.2	Performs emergency airway management
CI_BS_01	Demonstrates good non-technical skills such as: [effective communication, team-working, leadership, decision-making and maintenance of high situation awareness]
MT_BS_01	Demonstrates how to perform the Primary survey in a trauma patient [S]
MT_BS_02	Demonstrates correct emergency airway management in the trauma patient including those with actual or potential cervical spine damage [S]
MT_BS_06	Demonstrates the initial resuscitation of patients with trauma and preparation for further interventions including, emergency surgery
CI_IS_01	Demonstrates leadership in resuscitation room/simulation when practicing response protocols with other healthcare professionals
CI_IS_02	Demonstrates appropriate use of team resources when practicing response protocols with other healthcare professionals
RC_IS_05	Demonstrates leadership during resuscitation, including supporting less experienced members of the team
1.5	Assesses and provides initial management of the trauma patient
1.6	Assesses and provides initial management of the patient with burns
MT_HS_01	Demonstrates ability to lead a multi-disciplinary trauma team, co-ordinating and delivering the early hospital care of all types of complex multiply injured patients including the primary survey, resuscitation and secondary survey and appropriate HDU/ICU admission
MT_HS_02	Demonstrates the ability to lead and/or deliver the safe perioperative anaesthetic care to all multiply injured patients including HDU/ICM admission if required for continued care
MT_HS_05	Demonstrates good communication skills with all members of the trauma team when leading the clinical care of the multiply injured patient and seek prompt and active advice from specialties not involved in the initial resuscitation when needed
MT_HS_06	Demonstrates the ability to: Recognise when the patient's needs exceed local resources and specialist expertise and that transfer for further definitive care is necessary
PL_HS_03	Demonstrates correct management of a patient with a severe inhalational injury

INFORMATION FOR FACULTY

LEARNING OBJECTIVES:

- Initial management of a serious burns patient, including recognition of risk of inhalational burn
- Calculation of the fluid resuscitation regime
- Early shock in the burns patient is not likely to be caused by the burn – look for other causes

SCENE INFORMATION:

- Location: Resuscitation Room

ED is extremely busy – they are short staffed and have asked the ICU/Anaesthetic team to manage this patient who has been brought in by paramedics after suffering significant burns in a bedroom fire from a poorly extinguished cigarette. Both the junior and senior anaesthetic trainees commence this scenario together.

EQUIPMENT & CONSUMABLES

- Mannequin: On ED trolley.
Collar, blocks and tape on
Dressings covering face (partially), right
shoulder, arm, hand, RHS torso and back
extending down to groin and thigh.
Pelvic stabilizer T-POD (optional)
- Stocked airway trolley
- Portable monitor
- Portable ventilator
- Syringes, IV fluid and giving sets
- Warming blanket
- O negative blood

PERSONS REQUIRED

Anaesthetic Junior Trainee
Anaesthetic Senior Trainee
Anaesthetic assistant
ED Resus nurse
Paramedic for initial handover (Optional)
Foundation/ED Trainee (Optional)
Outreach nurse (Optional)

PARTICIPANT BRIEFING: (TO BE READ ALOUD TO PARTICIPANT)

Handover from Paramedic or ED Nurse (ATMIST style):

This is a lady in her 80's who was found at her home around an hour ago. We were called to a house fire where the fire crew had rescued her. She was found on her left hand side at the bottom of the stairs, with most of the hallway on fire around her, probably started by a cigarette upstairs. Her clothes and hair was on fire. She was conscious at the scene and calling out for help. It appears she usually uses a frame to walk. She was trapped for at least 40 minutes, but probably longer. Her airway was intact, but there are facial burns and soot around the nose. She is coughing frequently and sounds productive, but her sats are 96% off O2. Her heart rate was 110bpm, and we've established IV access in the left arm. She was confused and crying out with pain, but her pupils were equal and reactive. She has evidence of burns to her face and right arm, chest, abdomen and right thigh which we have dressed. We haven't seen any other injuries. We don't have any other information about her at this time as she lives alone and wasn't able to answer our questions.

'VOICE OF MANIKIN' BRIEFING:

Moaning in pain. No clear words given. No history available..

ADDITIONAL INFORMATION

RADIOMETER ABL 9000 SERIES

ABL900 ED 00:00:00 08-1-2013
 PATIENT REPORT Syringe S195uL Sample# 90.....

Patient ID
 Patient First Name Unknown
 Patient Last Name Female
 Date of Birth 80's
 Sample type Arterial
 FI O₂ 1.0
 Department ED
 Operator

Blood Gas Values

pH	7.15	[7.340 - 7.450]
pCO ₂	4.3 kPa	[4.70 - 6.00]
pO ₂	5.3 kPa	[10.0 - 13.3]
pO ₂ (A-a)e	kPa	

Oximetry Values

ctHb	9.3	g/dL	[12.0 - 16.0]
sO ₂	70	%	[95.0 - 98.0]
fO ₂ Hb		%	[94.0 - 99.0]
fCOHb	45	%	[-]
fHHb		%	[-]
fmetHb		%	[0.02 - 0.06]
Hctc	0.30	%	

Electrolyte Values

cK ⁺	5.9	mmol/L	[3.0 - 5.0]
cNa ⁺	128	mmol/L	[136 - 146]
cCa ²⁺	1.07	mmeq/L	[1.15 - 1.29]
cCl ⁻	97	mmol/L	[98 - 106]

Metabolite Values

cGlu	7	mmol/L	[3.5 - 10.0]
cLac	6.1	mmol/L	[0.5 - 1.6]

Acid Base Status

cBase(Ecf)c	-8.3	mmol/L
cHCO ³⁻ (P,st)c	20	mmol/L

Notes

↑ Value (s) above reference range
 ↓ Value (s) below reference range
 c Calculated Value (s)
 e Estimated Value (s)

RADIOMETER ABL 9000 SERIES

ABL900 ED 00:00:00 08-1-2013
 PATIENT REPORT Syringe S195uL Sample# 90.....

Patient ID
 Patient First Name Unknown
 Patient Last Name Female
 Date of Birth 80's
 Sample type Arterial
 FI O₂ 1.0
 Department ED
 Operator

Blood Gas Values

pH	7.16	[7.340 - 7.450]
pCO ₂	4.9 kPa	[4.70 - 6.00]
pO ₂	7.2 kPa	[10.0 - 13.3]
pO ₂ (A-a)e	kPa	

Oximetry Values

ctHb	8	g/dL	[12.0 - 16.0]
sO ₂	76	%	[95.0 - 98.0]
fO ₂ Hb		%	[94.0 - 99.0]
fCOHb	36	%	[-]
fHHb		%	[-]
fmetHb		%	[0.02 - 0.06]
Hctc	0.27	%	

Electrolyte Values

cK ⁺	5.8	mmol/L	[3.0 - 5.0]
cNa ⁺	128	mmol/L	[136 - 146]
cCa ²⁺	1.06	mmeq/L	[1.15 - 1.29]
cCl ⁻	102	mmol/L	[98 - 106]

Metabolite Values

cGlu	6.6	mmol/L	[3.5 - 10.0]
cLac	6.5	mmol/L	[0.5 - 1.6]

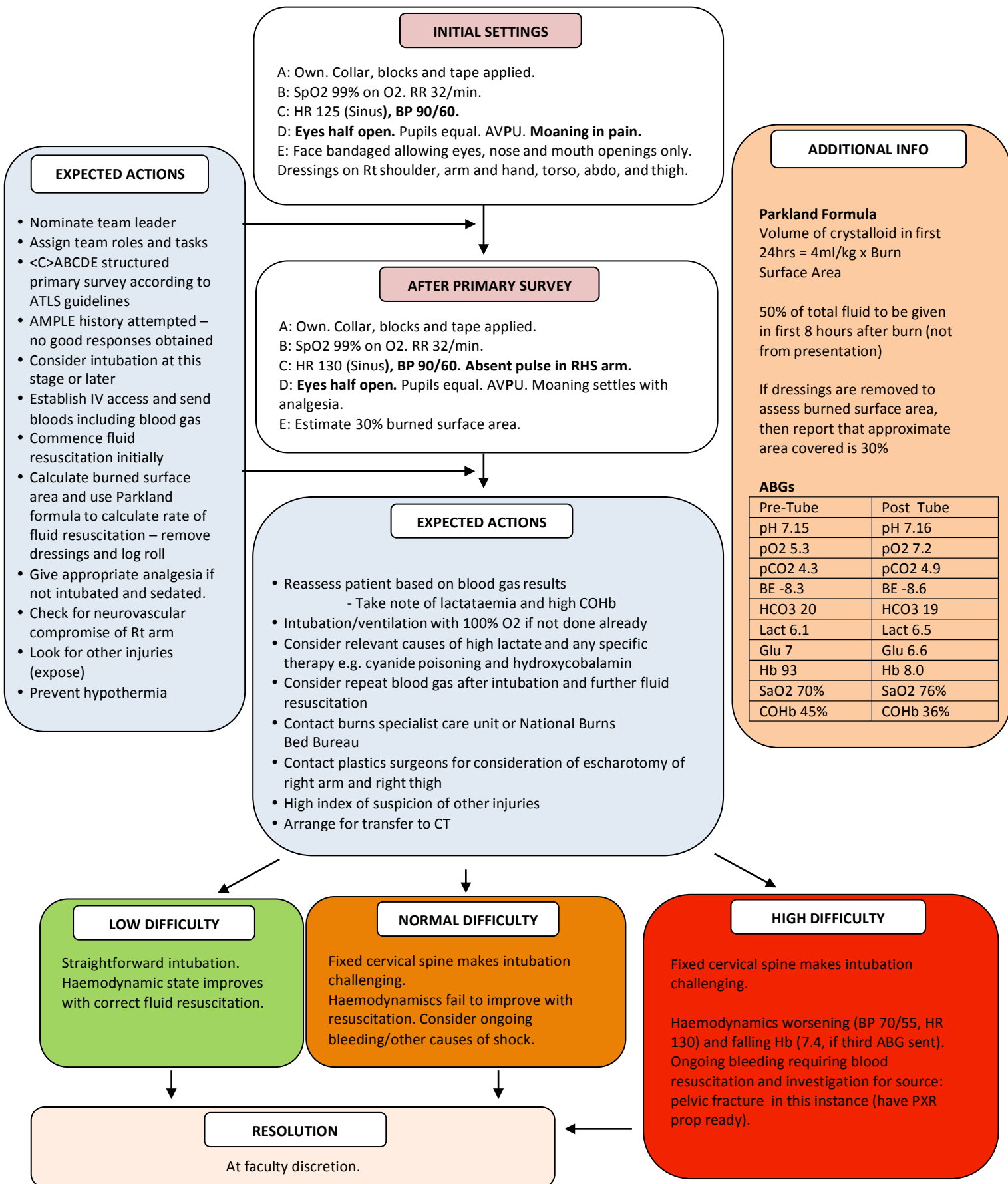
Acid Base Status

cBase(Ecf)c	-8.6	mmol/L
cHCO ³⁻ (P,st)c	19	mmol/L

Notes

↑ Value (s) above reference range
 ↓ Value (s) below reference range
 c Calculated Value (s)
 e Estimated Value (s)

CONDUCT OF SCENARIO



DEBRIEFING

POINTS FOR FURTHER DISCUSSION:

Technical:

- Initial assessment of the trauma patient.
- Management of the patient with severe burns
- Fluid resuscitation in the burns patient
- Estimation of affected body surface area
- Carbon monoxide poisoning
- Management of major haemorrhage secondary to trauma

Non-technical:

- Based on established non-technical skills frameworks e.g. ANTS, NOTECHSetc

DEBRIEFING RESOURCES

1. Bishop S, Maguire S. Anaesthesia and Intensive Care for Major Burns. Continuing Education in Anaesthesia, Critical Care and Pain. Feb 2012
<http://ceaccp.oxfordjournals.org/content/12/3/118>
2. Enoch S, Roshan A, Shah M. Emergency and early management of burns and scalds. BMJ 2009; 338: 1037
<http://www.bmj.com/content/338/bmj.b1037>

INFORMATION FOR PARTICIPANTS

KEY POINTS:

- Initial management of a serious burns patient, including recognition of risk of inhalational burn
- Calculation of the fluid resuscitation regime
- Early shock in the burns patient is not likely to be caused by the burn – look for other causes

RELEVANT AREAS OF THE ANAESTHETIC CURRICULUM

IG_BS_07 AM_BS_04	Demonstrates effective pre-oxygenation, including correct use of the mask, head position and clear explanation to the patient
IG_BS_08	In respect of intravenous induction: <ul style="list-style-type: none"> • Makes necessary explanations to the patient • Demonstrates satisfactory practice in preparing drugs for the induction of anaesthesia • Demonstrates proper technique in injecting drugs at induction of anaesthesia Manages the cardiovascular and respiratory changes associated with induction of general anaesthesia
IG_BS_10 AM_BS_05	In respect of airway management: <ul style="list-style-type: none"> • Demonstrates optimal patient position for airway management • · Manages airway with mask and oral/nasopharyngeal airways • · Demonstrates hand ventilation with bag and mask • · Able to insert and confirm placement of a Laryngeal Mask Airway • · Demonstrates correct head positioning, direct laryngoscopy and successful nasal/oral intubation techniques and • confirms correct tracheal tube placement • · Demonstrates proper use of bougies · Demonstrates correct securing and protection of LMAs/tracheal tubes during movement, positioning and transfer
1.1	Adopts a structured and timely approach to the recognition, assessment and stabilisation of the acutely ill patient with disordered physiology
4.4	Uses fluids and vasoactive / Inotropic drugs to support the circulation
5.2	Performs emergency airway management
CI_BS_01	Demonstrates good non-technical skills such as: [effective communication, team-working, leadership, decision-making and maintenance of high situation awareness]
MT_BS_01	Demonstrates how to perform the Primary survey in a trauma patient [S]
MT_BS_02	Demonstrates correct emergency airway management in the trauma patient including those with actual or potential cervical spine damage [S]
MT_BS_06	Demonstrates the initial resuscitation of patients with trauma and preparation for further interventions including, emergency surgery
CI_IS_01	Demonstrates leadership in resuscitation room/simulation when practicing response protocols with other healthcare professionals
CI_IS_02	Demonstrates appropriate use of team resources when practicing response protocols with other healthcare professionals
RC_IS_05	Demonstrates leadership during resuscitation, including supporting less experienced members of the team
1.5	Assesses and provides initial management of the trauma patient
1.6	Assesses and provides initial management of the patient with burns
MT_HS_01	Demonstrates ability to lead a multi-disciplinary trauma team, co-ordinating and delivering the early hospital care of all types of complex multiply injured patients including the primary survey, resuscitation and secondary survey and appropriate HDU/ICU admission
MT_HS_02	Demonstrates the ability to lead and/or deliver the safe perioperative anaesthetic care to all

	multiply injured patients including HDU/ICM admission if required for continued care
MT_HS_05	Demonstrates good communication skills with all members of the trauma team when leading the clinical care of the multiply injured patient and seek prompt and active advice from specialties not involved in the initial resuscitation when needed
MT_HS_06	Demonstrates the ability to: Recognise when the patient's needs exceed local resources and specialist expertise and that transfer for further definitive care is necessary
PL_HS_03	Demonstrates correct management of a patient with a severe inhalational injury

DEBRIEFING RESOURCES

1. Bishop S, Maguire S. Anaesthesia and Intensive Care for Major Burns. Continuing Education in Anaesthesia, Critical Care and Pain. Feb 2012
<http://ceaccp.oxfordjournals.org/content/12/3/118>
2. Enoch S, Roshan A, Shah M. Emergency and early management of burns and scalds. BMJ 2009; 338: 1037
<http://www.bmj.com/content/338/bmj.b1037>

PARTICIPANT REFLECTION:

What have you learnt from this experience? (Please try to 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	<input type="checkbox"/>
Secondary Participant (e.g. 'Call for Help' responder)	<input type="checkbox"/>
Other health care professional (e.g. nurse/ODP)	<input type="checkbox"/>
Other role (please specify):	<input type="checkbox"/>
Observer	<input type="checkbox"/>

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
I found this scenario useful					
I understand more about the scenario subject					
I have more confidence to deal with this scenario					
The material covered was relevant to me					

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)

FACULTY DEBRIEF – TO BE COMPLETED BY FACULTY TEAM

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?