Burn and difficult airway

Section 1: Case Summary

Scenario Title:	Burn and Difficult Airway
Keywords:	Burns, Difficult airway
Brief Description of Case:	A 33 year-old female is brought to the ED after having a BBQ grill explode in her face. She has soot on her face, singed eyebrows, and burns to her chest after her shirt caught on fire. She is tachycardic but otherwise hemodynamically stable but appears to be in some respiratory distress. The team should proceed to intubate and fluid resuscitate.

Goals and Objectives	
Educational Goal:	To expose learners to the complex management considerations in a critically ill burn patient with respiratory distress.
Objectives: (Medical and CRM)	CRM: Effectively lead team members through complex critical scenario. Medical: 1) Recognize the need to intubate patient with significant burns, and progress down full pathway of difficult airway to surgical airway. 2) Adequately fluid resuscitate patient with significant burns. 3) Used closed-loop communication and frequent summaries in order to maintain effective communication and a shared mental model.
EPAs Assessed:	F1 Initiating and assisting in resuscitation of critically ill patients C3 Provide airway management and ventilation TD 3: Facilitating communication of information between a patient in the emergency department, caregivers, and members of the health care team to organize care and disposition of the patient

Learners, Setting and Personnel			
Target Learners:	☐ Medical Students	☐ Junior Residents	☒ Senior Residents
	☒ Staff Physicians	☒ Inter-professional	☐ Other
Location:	☐ Sim Lab	☒ In Situ	☐ Other
Recommended Number of Facilitators:	Instructors: 1		
	Confederates: 0		
	Sim Techs: 1		

Scenario Development	
Date of Development:	16/05/2015
Scenario Developer(s):	Dr. Kayla Caners, adapted by Dr. Jared Baylis
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Last Revision Date:	August 29, 2019
Revised By:	Dr. Jared Baylis
Version Number:	2

Section 2A: Initial Patient Information

A. Patient Chart					
Patient Name: Jane Jones		Age: 33	Gender: F		Weight: 70 kg
Presenting complaint: Burns and respiratory distress					
Temp: 36.1	HR: 130 (sinus)	BP: 100/80	RR: 28	O_2Sat: 96%	FiO_2: 2L by NP
Triage note: 33 y.o. female brought in by EMS. Was lighting BBQ grill when it "exploded" in her face. BCEHS has noted significant burns across her chest and face. Patient is in significant respiratory distress and is tachycardic.					
Allergies: Unknown					
Past Medical History: Unknown			Current Medications: Unknown		

Section 2B: Extra Patient Information

A. Further History
Include any relevant history not included in triage note above. What information will only be given to learners if they ask? Who will provide this information (mannequin's voice, confederate, SP, etc.)? N/A

B. Physical Exam
(List any pertinent findings – may be helpful to use ABCDE format.) A – **Soot on face. Signed eyebrows**. **Audible stridor.** B – **Burns to entire chest**. GAEB. No adventious sounds. C – Tachycardic D – **GCS 15**. Eyes closed. **Pupils 4 mm bilat, reactive**. No signs to head injury. E – **Burns to entire chest.** No other signs of trauma. Abdomen soft.

Section 3: Technical Requirements/Room Vision

A. Patient
☒ Mannequin *(specify type and whether infant/child/adult)* Adult
☐ Standardized Patient
☐ Task Trainer
☐ Hybrid
B. Special Equipment Required
Airway equipment (basic, difficult, surgical)
C. Required Medications
RSI medications
D. Moulage
Images or moulage of burns and soot on face
E. Monitors at Case Onset
☐ Patient on monitor with vitals displayed ☒ Patient not yet on monitor
F. Patient Reactions and Exam
Include any relevant physical exam findings that require mannequin programming or cues from patient (e.g. – abnormal breath sounds, moaning when RUQ palpated, etc.) May be helpful to frame in ABCDE format. Stridor with respirations.

Section 4: Confederates and Standardized Patients

Confederate and Standardized Patient Roles and Scripts	
Role	*Description of role, expected behavior, and key moments to intervene/prompt learners. Include any script required (including conveying patient information if patient is unable)*
	N/A

Section 5: Scenario Progression

Scenario States, Modifiers and Triggers				
Patient State/Vitals	Patient Status	Learner Actions, Modifiers & Triggers to Move to Next State		Facilitator Notes
1. Baseline State Rhythm: Sinus HR: 130 BP: 100/60 RR: 28 O_2SAT: 96% 2L NP T: 36.1°C GCS: 15	Occasional crying in pain. Responsive. Respiratory distress. *(show image if no moulage)*	Expected Learner Actions ☐ 2 large bore IVs, bolus 2L ☐ 100% O2 by NRB and NP for preoxygenation/denitrogenation ☐ Monitors ☐ Labs: VBG, carboxyHb, lactacte, coags, trop, lytes, Cr ☐ Check glucose: **6.3** ☐ Td administration ☐ Full exposure, determine burn area (~20% TBSA)	Modifiers *Changes to patient condition based on learner action* - 2 L IVF → HR 110, BP 110/70 - If no discussion of intubation by 5 min, RN to prompt Triggers *For progression to next state* - Intubate → **Phase 2. Intubation** - 7 minutes → **Phase 3. Can't intubate/Can't Ventilate**	
2. Intubation Rhythm: Sinus HR: 110 BP: 110/70 RR: 28 O_2SAT: 92% and ↓ GCS: 13 (E3 V4 M6)	Audible stridor	Expected Learner Actions ☐ Push dose pressors at bedside ☐ Use BP neutral agent (ketamine or etomidate) ☐ Double set-up (possible difficult airway) ☐ Attempt intubation in forced to act situation – all efforts fail	Modifiers - Propofol used → BP 80/30 - Any other agent used → BP 100/60 Triggers - 7 minutes → **Phase 3. Can't intubate/Can't Ventilate**	
3. Can't intubate/Can't Ventilate Rhythm: Sinus HR: 130 BP: 90/55 RR: 0 O_2SAT: 85% and ↓ GCS: 3 (E1 V1 M1)	Paralyzed, CICO	Expected Learner Actions ☐ Attempts with bougie, glidescope, LMA. No view and all unsuccessful with progressing edema ☐ Performs cricothyroidotomy (scalpel/finger/bougie technique) ☐ Reassesses ABCDEs ☐ Orders investigations	Modifiers - - - Triggers - Cricothyroidotomy → **Phase 4. Resolution/Handover**	

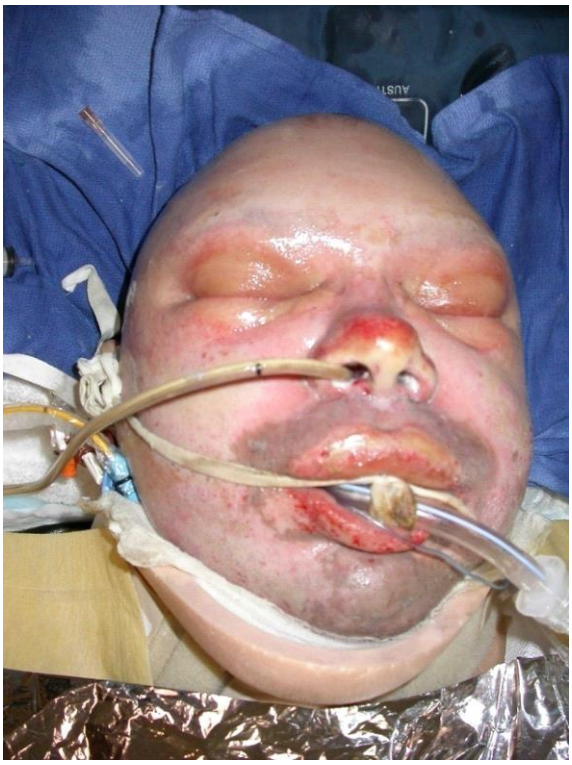
4. Resolution/ Handover Rhythm → sinus tach HR → 110 BP → 95/60	Patient intubated.	Learner Actions -☐ Call ICU/Plastics -☐ Call Poison Centre -☐ Start post intubation analgesia and sedation -☐ Handover to ICU	ICU arrives to manage patient **END CASE**	

Appendix A: Laboratory Results

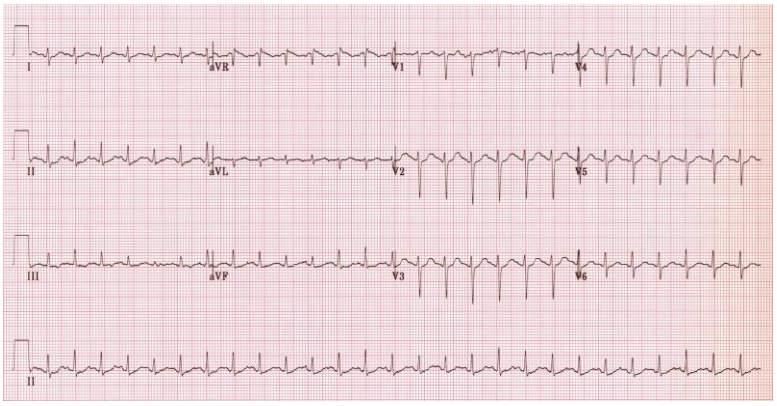
<u>VBG</u> **pH: 7.2** **pCO_2: 45** **pO_2: 70** **HCO_3: 18** **Lactate: 4** **Carboxyhgb: 0.08**	

Appendix B: ECGs, X-rays, Ultrasounds and Pictures

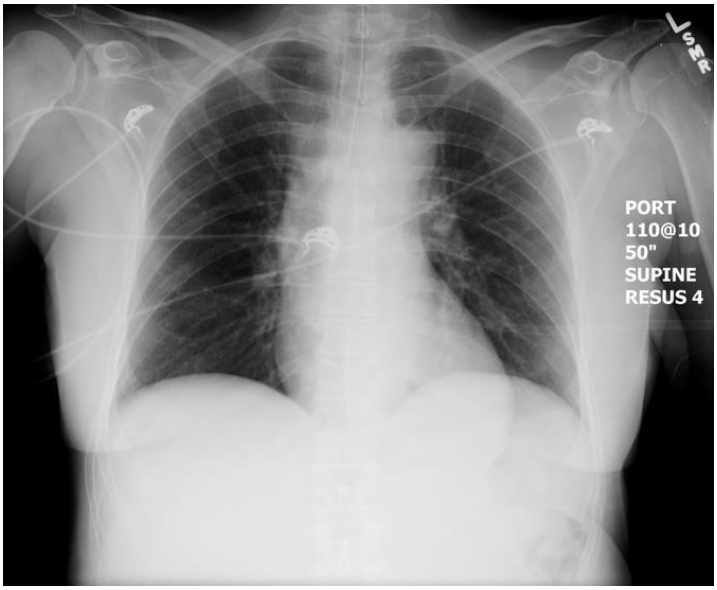
Paste in any auxiliary files required for running the session. Don't forget to include their source so you can find them later!



Picture source: https://trauma.reach.vic.gov.au/guidelines/burns/primary-survey



ECG source: https://lifeinthefastlane.com/ecg-library/sinus-tachycardia/



CXR source: https://emcow.files.wordpress.com/2012/11/normal-intubation2.jp

Appendix C: Facilitator Cheat Sheet & Debriefing Tips

Include key errors to watch for and common challenges with the case. List issues expected to be part of the debriefing discussion. Supplemental information regarding any relevant pathophysiology, guidelines, or management information that may be reviewed during debriefing should be provided for facilitators to have as a reference.

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Sample Debriefing Questions:

1) What were the clues to difficult airway in this patient?
2) How did you progress down the difficult airway pathway?
3) What is the Parkland formula? How would it be applied in this case? (Hint: it's not)
4) What was challenging about this case?
5) How do you feel your team did in working through the critical procedure involved in airway management? Did the leader facilitate input from others?

Key Resources:

1. BC Emergency Network (2018). Major Burns Trauma https://www.bcemergencynetwork.ca/clinical_resource/major-burns-trauma/
2. PHSA Trauma Services BC. Burns resources – under clinical Guidelines http://www.phsa.ca/our-services/programs-services/trauma-services-bc#Resources

References

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2.
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