19 marks SAQ 19 - Answer

You are a Consultant working a busy Resus shift in a Major Tertiary ED.

You receive a pre-alert from the ambulance service

- 78 yo male
- Fall from ladder
- Head and abdominal injuries
- BP 85 / 60
- PR 130 irregular
- GCS 10
- 10 minutes away

a. List 4 important classes of medications this patient may be taking that may alter your assessment or management of him? (4 marks)

1. Anticoagulants
2. Antiplatelets
3. Negative chronotropic agents – BB, verapamil, amiodarone
4. Anti-hypertensives
5. Opioids
6. Sedatives
7. Hypoglycaemics – BSL

b. In the following table, list 5 causes for his hypotension and the most effective way you would diagnose the cause whilst still in the Resuscitation room? (5 marks)

Cause for Hypotension	Most effective method to diagnose whilst still in the Resuscitation room
Haemothorax	CXR or eFAST
Tension Pneumothorax	Clinical exam or CXR
Tamponade	eFAST

Intraperitoneal haemorrhage	FAST
Neurogenic	Clinical exam
Pelvic haemorrhage	PXR

Femur fracture XR

c. List 5 common components of a massive transfusion pack? (5 Marks)

1. PRBC
2. FFP
3. Platelets
4. Cryoprecipitate
5. Tranexamic acid
6. Calcium chloride or gluconate

e. Apart from a normal INR / APTT, list 5 targets you would like to achieve to ensure adequate coagulation? (5 marks)

1. Ion $Ca^{2+} > 1.1$ mmol / L
2. pH > 7.2
3. Temperature > 35
4. Platelets > 50 x 10^6 / L
5. Fibrinogen > 1.0 g / L

Graduate 41

SAQ 20

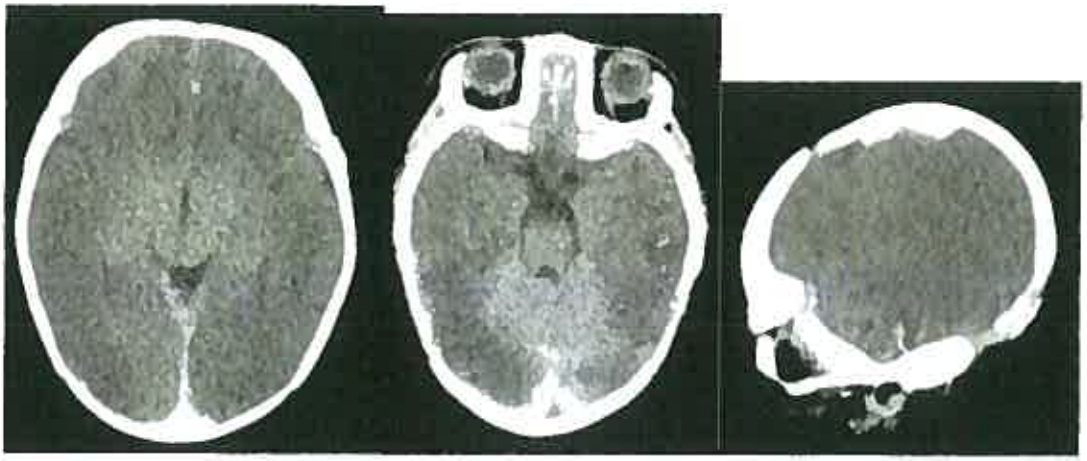
SAQ X. Floppy infant (14 marks)

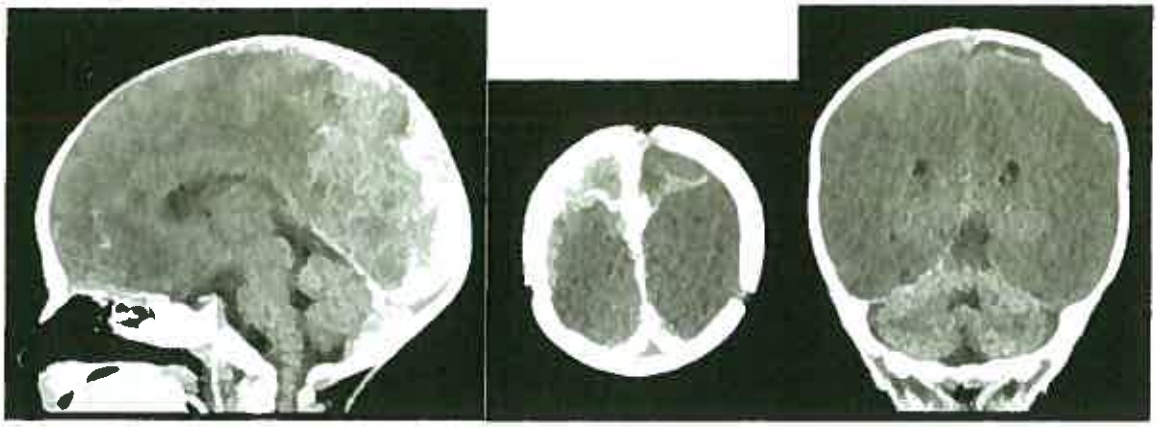
Whilst you are at triage, a 3 month infant is brought to ED by his father.
His father states that the infant has been sleepy all day and is not interested in feeds.
He also reports the baby has also had a recent cough and a fever.

The following observations are recorded
RR 14 (poor respiratory effort)
Oxygen saturation 84% in air
HR 50
BP 95/50
Temp 34.8

The infant appears pale, quiet, and is unresponsive responsive. Faint bruising is noted on the cheeks.
a) Explain your immediate management of this infant. (6 marks)
Move to appropriate resuscitation area.
Assist ventilation with bag and mask to RR of 30/min.or 15:2 ratio
Supplemental O2 to achieve SpO2 > 90-92%
Obtain vascular access or intraosseous within 2 minutes
Urgent Glucose
Intubation with rapid sequence approach unless becomes responsive with O2 or correction of hypoglycaemia
Atropine if remains bradycardic or as intubation adjunct
IV fluid bolus 10 or 20ml/kg
Broad spectrum IV antibiotics Cefotaxime
Obtain more detailed history

b)An urgent CT of his Brain is performed
Describe the relevant findings on the selected images provided (4 marks)





Subdural haemorrhage – left parietal, 2-3mm thick – location and size required for 2 marks
Subarachnoid haemorrhage – frontal /occipital – location required for 2 marks
Diffuse ventricular compression / Cerebral oedema – 1 mark only

c) List 2 other services that need to be informed because of these findings (2 marks)
Urgent neurosurgery consultation
Child protection unit
Intensive care unit

d) The patient's mother arrives in the department, visibly distraught. Outline your approach to explaining your findings to her. (2 marks)
Ensure another person is present with you - Chaperone/Social Worker present
Consider need for security presence

Openly disclose suspicion of NAI
Inform of legal requirement to inform DCP and Child protection

Additional notes re floppy baby case

Initial impression is that of an infant who may have a respiratory complaint, but with no features of increased respiratory effort. However, the infant is floppy and unresponsive (U on AVPU scale), so immediate attention needs to be to secure an airway (esp. with history of vomiting as well) and assisted ventilation. Moving the infant to an appropriate resuscitation area (resuscitaire would significantly aid response to treatment (e.g. Management in acute area/on large bed only exacerbates hypothermia leading to refractory arrhythmias).
Specific care needs to be taken during intubation attempts (either soon after suctioning or during placement of ETT), not to cause undue vagal stimulation which may result in reflex bradycardia as this may falsely be interpreted as signs of raised ICP. Correct treatment therefore would be to commence ECM and give atropine IV/IO depending on access obtained. Adequate muscle relaxant and sedation (morph/midaz/fentanyl) should be given prior to intubation.
The candidate should realise that the history above does not adequately explain the life-threatening condition of this young infant with altered LOC. Sepsis should also be considered. ED Consultant assistance or code #33 called early. PICU/ Radiology warned. Neurosurgical Team specifically contacted. Social worker attendance requested if available.

SAQ21

SAQ: Pleural effusion (12 marks)

A 64-year-old lady, who recently emigrated from Sri Lanka, has presented with increasing shortness of breath and pleuritic chest pain on the background of 1 month of cough, intermittent fever and mild weight loss. She had recently completed a course of oral antibiotics form her GP.

Chest x-ray revealed a moderate left-sided pleural effusion. A diagnostic tap has been performed, with the results available below:

Macroscopic:	Straw yellow		Serum Results:		
Protein	44	g/L	Protein	66	g/L
Albumin	20	g/L	Albumin	23	g/L
Cholesterol	2.7	mmol/L	LDH	327	U/L
LDH	255	U/L			
WCC	3987.0	$x10^6$/L			
Polymorphs	28%				
Mononuclear	72%				

1. List 3 criteria that may help differentiate an exudate from a transudate effusion (3 marks)
   1. _____
   2. _____
   3. _____

Light's criteria:

- Pleural fluid protein to serum protein ratio >0.5
- Pleural fluid LDH to serum LDH ratio >0.6
- Pleural fluid level >2/3 of upper value for serum LDH
- (optional) Serum albumin – pleural fluid albumin <1.2g/dL
- Pleural fluid albumin > 30g/L

2. List your three (3) most likely differential diagnoses based on the case and results above. (3 marks)
   1. _____
   2. _____
   3. _____

SAQ 22

SA Trial Exam 2019.1 Booklet 3

Q4 (13 Marks)

A 29 year old women presents to the ED with a 6 hour history of mild abdominal cramping and vaginal bleeding for which she has used 2 sanitary pads over the 6 hours. Her last menstrual period was 8 weeks ago and she usually has a 28 day cycle. She is sexually active with a single long term partner and not using contraception as they are trying to start a family. She is concerned she is having a miscarriage.

Her observations are:
HR: 78
BP 120/74
T 37C
RR 18

a) List 3 of the most important factors that would increase her risk of ectopic pregnancy (3 marks)

Assisted reproductive technology (IVF)
Previous ectopic pregnancy
History of PID/salpingitis
Abnormal uterine anatomy
NOT – IUD, OCP, tubal ligation (increased risk of ectopic if pregnancy occurs whilst using them, but overall decreases the risk of a pregnancy being ectopic) – she is also trying to get pregnant so would be unlikely to be using them.

b) Complete the table below detailing Vaginal examination findings in Miscarriage (5 Marks) (must have both on each line to score 1 mark)

Type of Miscarriage	Cervix	Products of conception passed
Threatened	Closed	None
Incomplete	Open	Partial
Complete	Closed or open	All
Inevitable	Open	None
Missed	Closed	None

c) List 3 criteria on pelvic US you would need to satisfy to safely exclude ectopic pregnancy as the cause for her symptoms. (3 marks)
IUP with fetal heart beat, yolk sac or fetal pole
No abnormal adnexal mass visualised
No increased pelvic free fluid

c) List 2 criteria on pelvic US that would characterise a pregnancy of uncertain location (2 marks)

Intrauterine sac without visible fetal heart beat, yolk sac or fetal pole

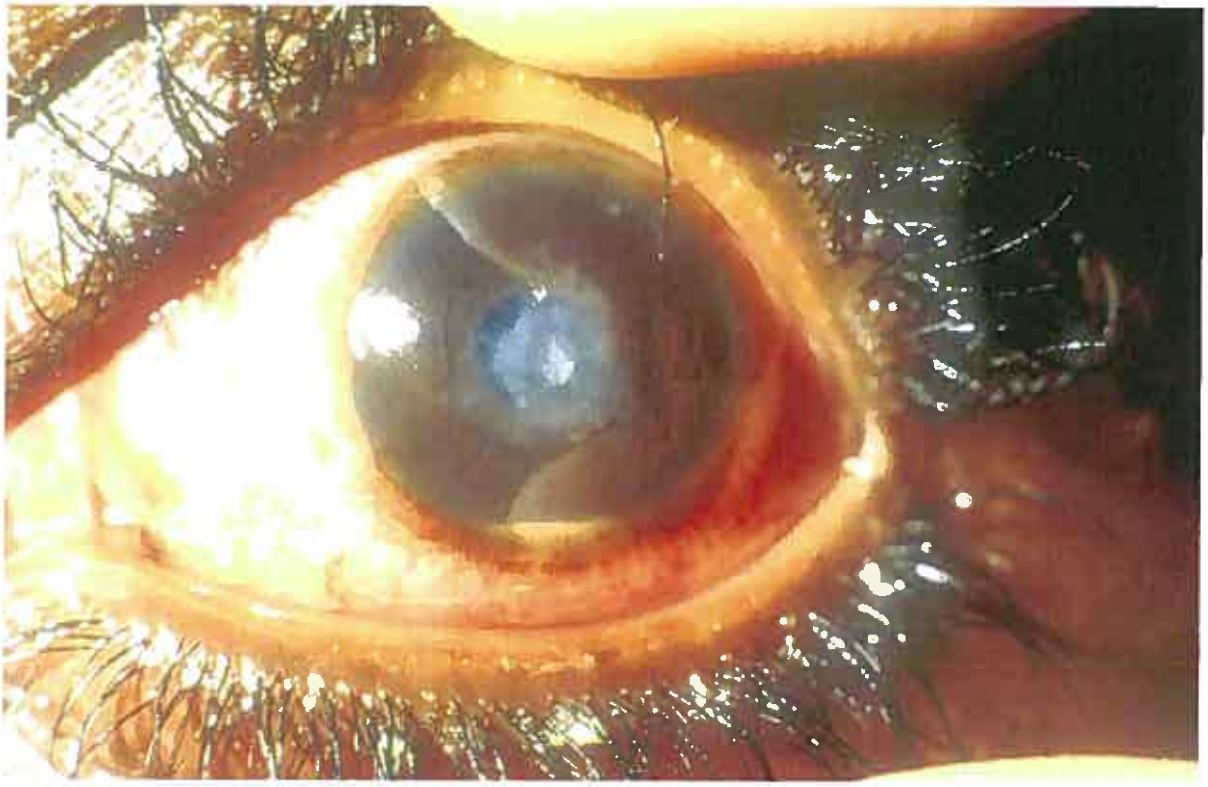
No abnormal adnexal mass visualised

SAQ 23

SAQ X (12 marks)

A 35 year old man of no fixed address presents to the ED with a complaint of a painful red eye for the past 3 days associated with worsening visual acuity. He is not forthcoming with more history.

On initial inspection with the patient sitting up using normal light, this is what you see:



a) List the 4 most significant findings on the image (4 marks)

Central corneal opacity
Surrounding arcuate corneal opacity (appears raised) with possibly linear streaking medially
Single eyelash that may be entropic causing corneal abrasion
Small **hypopyon** in the anterior chamber
Marked conjunctival injection especially laterally (difficult to see in this image) and around the limbus
Slightly irregular pupil

b) List the 3 most important other aspects of the ocular evaluation should be performed and your expected findings (3 marks)
Visual acuity – likely significantly reduced due to central corneal opacity
Intraocular pressure – likely normal or raised due to synechiae

Examination under slit lamp – any one of - fluorescein uptake on ulcer, raised corneal, cells/flare in anterior chamber
Corneal scraping for culture (central severe ulcer) – likely bacterial growth

b) List the 2 most important next things in managing this patient (2 marks)
Urgent Ophthalmology referral
Broad spectrum antibiotic drops (need broad spectrum to get mark)
Analgesia (topical)
Cycloplegics

c) List 3 possible complications of this if left untreated (3 marks):
Opacification of the cornea and scarring (sight threatening)
Synechiae formation
Increased intraocular pressure /secondary glaucoma
Corneal perforation of the cornea

SAQ 24

SAQ (10 marks)

A 78 year old man is brought to your ED by ambulance after a carer found him drowsy in bed this morning at 0900. The patient admitted to taking 10 X 10mg temazepam capsules and a glass of whisky at 2200 the night before with the intent of 'having a long sleep'.
He denies ingestion of any other substances and detailed further assessment does not suggest ingestion of any other agent.
He has a past history of hypertension, hypercholesterolaemia and an uncomplicated cholecystectomy 12 years ago. He had a left sided MCA infarct 8 months ago and can only walk with the aid of a frame. He is widowed and lives alone on a small farm on the outskirts of town.

a) List 5 risk factors he has for a subsequent successful suicide attempt in the following month? (5 marks)
Non disclosed attempt
Male gender
Age > 75 years
Chronic disability/medical illness
Potential social isolation (lives alone, social isolation)

Examiners comments
Better scoring candidates answered the question based on the facts presented in the stem.
Lower scoring candidates made assumptions about the patient and their circumstances that may not have been true. These candidates also tended to state multiple examples of the same concept on separate lines, making it hard for them to gain marks. A few of these candidates also appeared to think that the current attempt means that he has had a previous attempt, despite there being no mention of a previous attempt in the question stem.

There is a significant difference between alcohol use and alcohol abuse - one glass of whisky is not evidence of alcohol abuse.
Just because you live on a farm does not mean you automatically have access to firearms and high lethality poisons.
Temazepam in the dose used is probably not a high lethality medication, even in a 78 year old with co-morbidities.
Social isolation only scored one point, no matter how many examples of it were used.

b) List 5 additional risk factors for subsequent suicide that you be seeking when your assess him? (5 marks)
Hopelessness
Suicidal ideation
Established plan
Access to high risk means (e.g. beta blockers, firearms, high lethality substances (farmer))
PHx Suicide attempt
PHx Depression
Alcohol/substance abuse

SAQ25

Question x (14 marks)

You are assessing a patient with vertigo.

a) Describe 4 features of nystagmus that is present that suggests a central cause (4 marks)

Direction-changing
Vertical or purely rotational direction
Non fatiguable/sustained
No latency to onset (< 6 seconds after Dix Hallpike)
Fixation does not inhibit or worsens
Spontaneous

Examiners comments
Nystagmus can still change with movement when due to a central cause – it is just more obviously worse with head movement when peripheral.

b) Complete the following table of expected findings for a patient who has central vertigo. (4 marks)

Other component of the HINTS exam (2 marks)	**Findings in central vertigo (2 marks)**
Head impulse test	• Normal test – eyes remain on target or • No saccadic correction
Test of skew	• Vertical deviation seen

Examiners comments
The findings of each test were asked for (i.e. what would you see). "Positive" or "Negative" responses did not get a mark.

c) List six (6) other findings on history or examination that are **not** part of the HINTS examination that would suggest a central cause of vertigo. (6 marks)

Difficulty walking/ataxia
Past pointing
Dysdiadochokinesis
Headache or neck pain
Speech disturbance
Visual loss
Hypotonia
Arm drift/rebound
Normal hearing
Non cranial nerve VII or VIII deficits
Sensory or motor limb deficits (both do not get 2 marks)
No worsening on head movement
Absent/minimal nausea or vomiting

Examiners comments
A positive Rhomberg's test is more common with a vestibular (peripheral) cause, than a central one but is so poorly sensitive (c 20%) to not be of any use, so was not given a mark. It is also a test of proprioception, not of cerebellar or vestibular function.
Hearing loss is more suggestive of a peripheral cause – a significant number of candidates incorrectly indicated it was suggestive of a central cause.
Risk factors for cerebrovascular disease were not considered important enough to be given a mark. Many elderly

SAQ 26 (11 marks)

An 8-year old boy fell and injured his elbow.

a. Name three 3 ossification centres of the elbow you would expect to see on radiographs in a normal 8 year old boy. (3 marks)

Capitellum
Radial head
Medial epicondyle
Trochlea

b. List 4 radiological features that you should look for in a patient that suggest the presence of a supracondylar fracture of the humerus. (4 marks)

Supracondylar lucency suggestive of fracture line
Cortical break on anterior surface of lower humerus on lateral view
Anterior humeral line that does not bisect the capitellum on the lateral view
Change in the angle between a line through the centre of the capitellum on the lateral view and the anterior humeral line
Change in the between the physeal line of the lateral condyle of the humerus and a line perpendicular to the long axis of the humeral shaft (Bauman angle)
Anterior fat pad sign
Posterior fat pad sign

c. List four (4) indications for reduction of a supracondylar fracture (4 marks)

Features of distal ischaemia
< 50% bony apposition in any direction
Dorsal angulation > 15 degrees
Lateral or medial tilt > 10 degrees
Neurological injury

SAQ 27

SAQ X Child with breathing difficulty (13 marks)

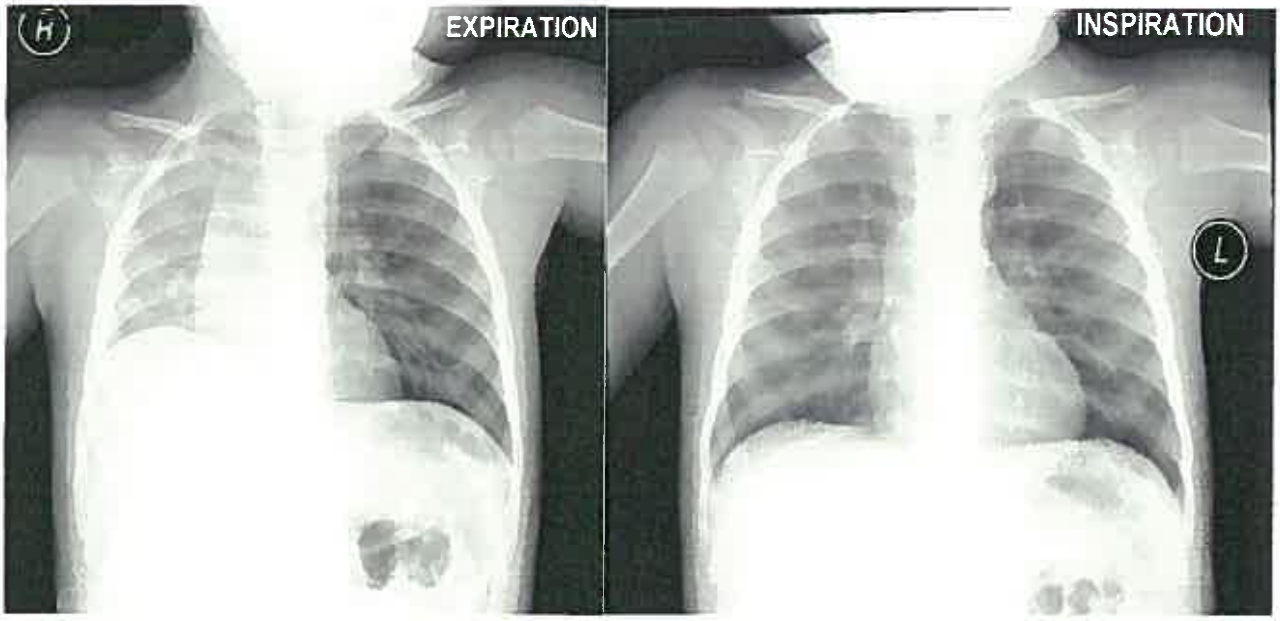
A one year old boy has been unwell with cough for a week. Today he was eating spaghetti when he seemed to gag and have difficulty breathing over a period of 1 minute. His mum reports he is now clingy with a 'strange cough'.
The following observations are recorded:
HR 120
Blood pressure 90/50
Oxygen saturation 90% in air
Respiratory rate 24
Temp 37.5
Weight 10kg

On examination he is alert and responsive and comfortable in his mother's arms.
On examination he has multiple petechiae around his eyes, and an intermittent unusual cough.
Cardiovascular examination is normal. He has mild indrawing of intercostal muscles and mild tracheal tug, but no stridor.

a) Provide an explanation for the examination findings. (3 marks)

Petechiae due to high venous pressure suggestive of significant choking episode
Cough due to tracheobronchial irritation
Indrawing and tracheal tug in absence of stridor suggestive of intrathoracic airway obstruction.

His Xrays are shown below



a) Describe the findings on CXR (3 marks)

Mediastinal shift to the right on expiratory film
Increased lucency left lung on expiration
Hyperexpansion left lung on expiration
Normal inspiratory film

b) Indicate your preferred diagnosis (2marks)

Inhaled foreign body in left main bronchus (needs correct side for both marks)

After a short coughing spell the infant becomes cyanosed and unresponsive.
No chest movement is obtained despite with good self inflating bag/ and mask ventilation. The child remains cyanosed and no oxygen saturations can be obtained. Chest thrusts have been given without effect.
c) Describe your management of the infant's airway. (5 marks)
Attempt Bag/ and Mask ventilation with anaesthetic circuit (can generate higher pressures relative to self inflating bag)
Perform direct laryngoscopy with Magills forceps on hand to remove foreign body
Intubate if unable to remove FB (adjust TV to prevent barotrauma as ventilation of only part of the lung may occur)– plan A
Insert LMA – plan B
Needle cricothyroidotomy if AB fails
    Insert above cricoid, below thyroid
    oxygenate with occlusion of Y connector on 1 off 4 seconds
To OT for EUA by ENT if able to adequately oxygenate

Additonal notes
Needle Technique ETM®:
Setup for full RSI with paralytics
If possible extend neck to allow better palpation of anatomy by placing a pillow well under the patient's shoulders, allowing head/neck to extend – not possible if c-spine injury suspected
If right handed, stand on patient's left
Draw 2-3ml of saline into 5ml syringe
Remove proximal end of flash chamber of 14G cannula and attach syringe to proximal end of cannula flash chamber
Palpate the larynx with the left hand and find cricothyroid membrane with left index finger
Approach skin with cannula at 30-45 degree angle, aiming toward patient's feet with syringe over patient's chin
Aspirate on syringe as you advance cannula into trachea – successful entry into trachea signaled by aspirating air (seen as bubbles in the saline in syringe barrel)
Advance the cannula off the needle into trachea
Remove the needle from the syringe, and attach syringe to the orange hub of the cannula in the neck and perform a 2nd aspiration to confirm that air can still be aspirated and the cannula is still in trachea
Attach oxygen delivery device to cannula
If using a Rapid-O2 or LeRoy device deliver and initial 4-5 second jet of oxygen
Wait 20 seconds to check for a response in oxygen saturation. If there is no response deliver a further 2 second
Base further delivery on oxygen on the oxygen saturation level: if the saturations drop by 5% or more, deliver further 2 second jets of oxygen.
Cannula Insertion
Jet ventilation