NSW TRIAL EXAM MARKING SCHEME (2018:1)

QUESTION 1 - Choking Child Question (10 marks) - Contact Person - Felicity Day

Marking Scheme

7 marks
1 for encourage coughing
1 for responsive or conscious
1 for unresponsive or unconscious
1 for 5 back blows
1 for 5 chest thrusts
1 for start CPR (15:2)
1 for reassess until recovery or deterioration

ii) 3 marks
- No signs of life / Start CPR 15:2
- Shock 4J/kg or 40 joules
- Adrenaline = 0.1ml/kg 1:10000 / 10mcg/kg / 1ml 1:10000
QUESTION 2 - Pneumothorax (13 marks) - Contact Person Kenny Yee

i) (1 mark)

- Left sided pneumothorax
  - (*Subtle pneumomediastinum present difficult to see, do not lose mark if stated)

ii) (3 marks) Accept any 3 of the following:

- Primary
- Secondary - asthma
- Trauma/Fracture Ribs
- Inhalation / insufflation / snorting and IVDU
- Collagen vascular disease, including Marfan syndrome

iii) (9 marks) table - accept any 3 of the following with reasonable advantage & disadvantage

- Conservative - this can include $O_2$ and observation
- Needle Aspiration
- Catheterisation
- Chest Tube
i) (2 marks)
- **Supracondylar fracture (closed)** 1 mark (mandatory)
- Accept any of the following for 1 mark: fat pad sign / soft tissue swelling / dorsal angulation

ii) (6 marks)
- Ulnar n.
- Median n. (or Anterior interosseous n) - for 1 mark
- RADIAL NERVE LESS COMMON - not accepted

iii) (2 marks)
- **Table of Ossification Centres and Age of Ossification**

<table>
<thead>
<tr>
<th>Ossification Centre</th>
<th>Age of Ossification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capitellum</td>
<td>1</td>
</tr>
<tr>
<td>Radial Head</td>
<td>3</td>
</tr>
<tr>
<td>Internal (medial) Epicondyle</td>
<td>5</td>
</tr>
<tr>
<td>Troclea</td>
<td>7</td>
</tr>
<tr>
<td>Olecranon</td>
<td>9</td>
</tr>
<tr>
<td>External (lateral) Epicondyle</td>
<td>11</td>
</tr>
</tbody>
</table>

iv) (3 marks) - Will accept any analgesic that is used in the paediatric trauma setting as long as the route of administration and dose is correct.
Examples include but are not limited to:
Fentanyl IN or IV with correct dose (will only score 1)
Morphine IV
Oxycodone po
Codeine po etc

v) (10 marks)

<table>
<thead>
<tr>
<th></th>
<th>Intra-muscular (i.m)</th>
<th>Intra-venous (i.v)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Initial dose</strong></td>
<td>4-5 mg/kg</td>
<td>1.5-2 mg/kg</td>
</tr>
<tr>
<td><strong>Top-up dose</strong></td>
<td>2mg/kg (rarely needed)</td>
<td>0.5–1 mg/kg</td>
</tr>
<tr>
<td><strong>Peak effect</strong></td>
<td>5 min</td>
<td>1 min</td>
</tr>
<tr>
<td><strong>Duration of action</strong></td>
<td>20-30 min</td>
<td>5-10 min</td>
</tr>
</tbody>
</table>

2 Advantages Needed
1,2,3

- IV not needed
- Longer effect
- No need for repeated doses

Ease of titration
Shorter length of stay
Lesser risk of emesis
QUESTION 4 (10 marks) - Contact Person Rob Edwards and Andrew Coggins

MET-HB

i) VBG or ABG with **MetHB level (mandatory)**
   + Two of ECG, BSL, lactate, Reasonable Toxicological Blood panel
   + Mobile CXR accepted given low SATS
   + No Marks for Urine, non specific blood tests

ii) MET HB
   + G6PD Deficiency

iii) Methylene Blue IV

iv) One of Citric Acid, Exchange Transfusion or Hyperbaric O2.
   High flow O2 **not** accepted

v) Local Anaesthetics, Nitrates, Nitrites, Analine Dye, Dapsone, Acetone, GTN
QUESTION 5 - “Asthma Double Question” (23 marks) - Contact Person Felicity Day

Suggested answer:

Question i (4 marks)
1) Daytime symptoms >/= 2 days per week
2) Need reliever > 2 days per week - increased use of bronchodilators reported by patient/carer
3) Any limitation of activities
4) Any symptoms during night or on waking
5) >3 or 3rd presentation to ED in 1 month
6) Prior ICU admission
7) Poor social situation / health literacy / concordance / compliance

1 mark for each point

Question ii (5 marks)

**Must have asthma action plan**

Should mention interpreter for full marks

1 mark for any of:
- Reducing medication plan
- Medications/scripts and able to buy medications
- Preventer medication
- Check spacer technique (with written and verbal education with interpreter) and has spacer
- Education regarding asthma
- Discharge instructions (medications/asthma plan/follow up and when to return to ED) with interpreter
- Follow up appointment with respiratory physician
- Written information if available in the appropriate language

Question iii (4 marks)

**Pros and Cons of NIV in Asthma**

NIV has a number of theoretical benefits in asthma:

- **Extrinsic PEEP decreases the work of breathing by helping overcome Auto-PEEP**
- **Extrinsic inspiratory positive pressure (IPAP) may increase tidal volume by decreasing the work done against airway resistance**
- **Shorter inspiratory times may increase tidal volumes without causing any extra dynamic hyperinflation**
- **NIV may prevent intubation in a select group of patients**
- **Decreases WOB**
NIV also has a number of theoretical disadvantages.

- May delay intubation
- Inappropriate settings may increase the effort of breathing
- Increased positive airway pressure increases risk of pneumothorax
- Barotrauma
- Addition of extrinsic PEEP which is higher than intrinsic PEEP will exacerbate dynamic hyperinflation
- NIV makes it more difficult to clear secretions if there is a strong infective component.

### Question iv (6 marks)

<table>
<thead>
<tr>
<th>Setting</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tidal Volume</td>
<td>6MLS/KG</td>
</tr>
<tr>
<td></td>
<td>Lung protective /reduce barotrauma</td>
</tr>
<tr>
<td>RR</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Reduce gas trapping, permissive hypercapnia</td>
</tr>
<tr>
<td>I:E ratio</td>
<td>1:3 - 1:4</td>
</tr>
<tr>
<td></td>
<td>Reduce gas trapping/allow adequate time expiration</td>
</tr>
</tbody>
</table>

### Question v (4 marks)

- **Must have dynamic hyperinflation to score full marks (or air trapping)**
- Tension pneumothorax
- Intubation drugs
- Anaphylaxis
- Myocardial depression
- Hypovolaemia
QUESTION 6 - MERS CoV - Contact Person - Geoff Mifsud (14 marks)

(i) 3 marks

(Obtained from Ministry of Health website)
Fever AND pneumonia/pneumonitis/respiratory distress AND
-Recent travel from affected countries in Middle East
-Contact within 14 days with symptomatic traveller from Middle East (fever + respiratory illness)
  OR
Fever and respiratory illness AND within last 14 days
-Being in health care facility with known MERS outbreak
-Being in contact with camels within affected Middle east countries
  OR
Fever OR acute symptoms of MERS and onset within 14 days of contact with confirmed MERS case
  OR
Cluster of patients / healthcare workers with fever/severe acute respiratory illness of unknown aetiology

**Mandatory: Must include respiratory symptoms AND recent travel/contact with suspected cases from Middle East (fever not included here as fever was included in stem. Fever will be marked correct though if listed as one of the symptoms)**

Only 1 mark for any respiratory symptoms (so only 1 mark in total if mentions cough, coryzal symptoms, sore throat etc.)

Maximum 3 marks (if includes respiratory symptoms and contact with suspected cases (or camels) from Middle East)

If fails to mention respiratory symptoms and contact with cases/Middle East affected country, then maximum mark is 1

(ii) 4 marks

- Disaster activation - ***MUST SAY for one mark
- Isolate from other patients
- Negative pressure room if available
- Respiratory precautions (mask)
- Inform public health unit
- PPE protection of staff
- Contact tracing
- Prepare hospital for large numbers of potential MERS presentations (dedicated wards)
- Inform ID
- Arrange transfer to MERS facility (if available)
- Liaise with lab staff to organise testing

**Mandatory: Need to have at least one form of isolation (negative pressure/single room)**

OR respiratory protection for other patients/staff.

Failure to note this will result in zero-mark rule apply for this section
(iii) 4 marks:

***MUST have ‘N95 mask’***
Plus three of the following:
- Appropriate hand hygiene
- Gown
- Gloves
- Airborne transmission precautions / Mucous membrane protection (respiratory / eye)
- Safe handling of waste and sharps
- Goggles
- Single Room / Barrier Nursing

(iv) 3 marks

***Must have ‘duty of care’ or equivalent statement***
Potential infected with communicable disease - Public health risk until diagnoses confirmed
Assess for competency (hypoxia, hypoglycaemia, delirium from sepsis) à if compromised, restrain as Duty of Care
Attempt verbal de-escalation
QUESTION 7 - Contact Person Amith Shetty - Sepsis (13 marks)

i) (3 marks)

<table>
<thead>
<tr>
<th>qSOFA</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>RR &gt; 22bpm</td>
<td>0 = Mortality &lt; 1%</td>
</tr>
<tr>
<td>sBP &lt; 100mmHg</td>
<td>1 = Mortality 2-3%</td>
</tr>
<tr>
<td>Altered GCS</td>
<td>≥2 = Mortality ≥10%</td>
</tr>
</tbody>
</table>

Screening for outcome rather than diagnosis

- **A. Time to antibiotics** within 60 minutes for patients with Sepsis (SOFA>2), septic shock patients which essentially implies anyone with qSOFA and/or organ dysfunction
  
  *** (Mandatory)

- **B. Lactate** measurement and targeting lactate reduction in those who have an elevated as a serial marker

- **C. Blood cultures** before antibiotics (unless significant delay)

- **D. Governance** – Use of ‘sepsis management programs’ (‘Sepsis performance improvement programs should optimally have multi-professional representation (physicians, nurses, affiliate providers, pharmacists, respiratory therapists, dietitians, administrators) with stakeholders from all key disciplines represented in their development and implementation. Successful programs should include protocol development and implementation, targeted metrics to be evaluated, data collection, and ongoing feedback to facilitate continuous performance improvement’)

- **E. Early Empiric broad spectrum Antibiotic** therapy for all sepsis patients (refer to local guidelines)

- **F. Procalcitonin (PCT)** in the Emergency Department (ED) finally gets look in. (From an ED perspective, patients who improve quickly after first dose of antibiotics and PCT normalises – antibiotics could be potentially be stepped down – great role for the sepsis workflow in winter and flu season).

- **G. No mention of C-reactive protein anywhere in document**

- **H. Fluid Challenge** for fluid resuscitation (rather than ‘drip’ method)

  - What fluid? The usual crystalloids first, albumin next (NO ‘GEL’ and NO SPECIAL COLLOIDS)

- **I. Fluid Volume** – up to 30ml/kg

- **J. What about Inotropes?** – Norepinephrine – Vasopressin – Dobutamine OR Adrenaline in that order...

- **K. No routine use Steroids** unless specific other indication(s)

- May need to check for other ‘reasonable answers’ – wide spread of responses
<table>
<thead>
<tr>
<th>History Features</th>
<th>Investigation Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finding 1</td>
<td>Age</td>
</tr>
<tr>
<td></td>
<td><strong>Lactate *** (Mandatory)</strong></td>
</tr>
<tr>
<td>Finding 2</td>
<td>Malignancy</td>
</tr>
<tr>
<td></td>
<td>Certain Blood Culture Results</td>
</tr>
<tr>
<td>Finding 3</td>
<td>Female Gender</td>
</tr>
<tr>
<td></td>
<td>Renal Failure (&lt;eGFR)</td>
</tr>
<tr>
<td></td>
<td>CCF</td>
</tr>
<tr>
<td></td>
<td>MRSA</td>
</tr>
<tr>
<td></td>
<td>Recent Admissions</td>
</tr>
<tr>
<td></td>
<td>&gt;INR</td>
</tr>
<tr>
<td></td>
<td>Cirrhosis</td>
</tr>
<tr>
<td></td>
<td>&lt;Plt</td>
</tr>
<tr>
<td></td>
<td>Ventilated Patient</td>
</tr>
<tr>
<td></td>
<td>Rise in Bilirubin</td>
</tr>
</tbody>
</table>

NB Accept - comorbidities &/or immunosuppression (from any cause)

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**Table 1. Predictors of Increased Mortality in Sepsis Patients**

- Cancer
- Heart failure
- Immunosuppression
- Cirrhosis
- MRSA infection
- Primary bloodstream infection
- Abdominal infection
- *Pseudomonas* spp
- *Enterococcus* spp
- *Acinetobacter* spp
- *Canida albicans*
- Older age
- Female gender
- Medical admission
- Greater disease severity
- Septic shock
- Mechanical ventilation
- Renal replacement therapy

*MRSA: methicillin-resistant Staphylococcus aureus; spp: species. Source: References 1-3, 21.*

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<table>
<thead>
<tr>
<th>Severe Sepsis</th>
<th>Septic Shock</th>
</tr>
</thead>
<tbody>
<tr>
<td>All three must be met within 6 hours:</td>
<td>1. There must be documentation of septic shock present and</td>
</tr>
<tr>
<td>1. Documentation of a <strong>suspected source</strong> of infection</td>
<td>2. <strong>Tissue hypoperfusion</strong> persisting in the hour after crystalloid fluid administration, evidenced by:</td>
</tr>
<tr>
<td>2. Two or more manifestations of SIRS criteria:</td>
<td>a. SBP &lt; 90</td>
</tr>
<tr>
<td>a. Temperature &gt;38.3°C/101°F or</td>
<td>b. MAP &lt; 65</td>
</tr>
<tr>
<td>&lt;36°C/96.8°F</td>
<td>c. Decrease in SBP by &gt;40</td>
</tr>
<tr>
<td>b. Heart rate &gt;90</td>
<td>points from the patient’s baseline</td>
</tr>
<tr>
<td>c. Respiratory rate &gt;20</td>
<td>d. Lactate &gt;4</td>
</tr>
<tr>
<td>d. WBC &gt;12 or &lt;4 or &gt;10% bands</td>
<td>3. Or if the criteria are not met, but there is provider documentation of septic shock or suspected septic shock</td>
</tr>
<tr>
<td>3. <strong>Organ Dysfunction</strong>, evidenced by any one of the following:</td>
<td>4. Or if a provider documents severe sepsis, no sepsis, possible sepsis, or septic shock</td>
</tr>
<tr>
<td>a. SBP &lt; 90 or MAP &lt;65, or a SBP decrease of more than 40 pts</td>
<td></td>
</tr>
</tbody>
</table>
QUESTION 8 - Wrist Fracture - Contact Person Hua Chang (14 marks)

i) Picture Description (2 marks)
   - Grossly deformed, swollen left wrist consistent with Colle’s fracture of distal radius +/- ulnar
   - Obvious dorsal angulation of distal radius suggestion significant fracture angulation and displacement requiring urgent reduction
   - Skin breach with bleeding over site of maximal swelling indicating compound fracture (accept any answer including highlighted words)

ii) Management priorities? (6 marks)
   - Analgesia
     (Specific treatment of the likely open Colle’s fracture)
   - Assess for neurovascular compromise, particularly median nerve
   - XR followed by urgent reduction to minimise neurovascular compromise
   - IV A/B, tetanus immunisation
   - Splint/ immobilisation (dorsal & volar splint/ sugar tong splint)
   - Referral to orthopedics for early ORIF in OT (Causes and other complications of fall)
   - Assess for precipitant/ contributing factors of fall- causes for syncope, ECG
   - Management of open fracture:
     - Prophylactic Antibiotics
     - Tetanus Shot

NB - Reduction & Antibiotics are mandatory Mx priorities

iii) Complications (4 marks)
   Acute
   - median nerve injury
   - compartment syndrome
   Long term
   - Malunion, radioulnar, radiocarpal instability
   - Arthritis > weak, stiff and painful joint

iv) What are the signs of median nerve injury (2 marks)
   - SHORT TERM
     Pain, paraesthesia, numbness in median nerve distribution (first 3 digits and radial half of 4th digit)
   - LONG TERM
     Wasting of thenar eminence and weakness in thumb abduction
QUESTION 9 - Contact Person Jo Koryzna (12 marks)

i) 3 marks

<table>
<thead>
<tr>
<th>Causes of pneumomediastinum</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOST LIKELY</td>
</tr>
<tr>
<td>Other cause 1</td>
</tr>
<tr>
<td>Other cause 2</td>
</tr>
<tr>
<td>Other cause 3</td>
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<tr>
<td></td>
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<td></td>
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</tbody>
</table>

ii) 4 marks

- Aggressive management of septic shock with targeted antibiotics to cover sepsis from likely oesophageal/ GIT source. Need to include antibiotics and doses. Needs a beta lactam + aminoglycoside combo. Examples include ampicillin 2g + gentamycin 7mg/kg OR Tazocin 4.5g + gent / or other combo like cef
- Fluid resuscitation to treat septic shock and restore haemodynamics ie 10-20ml/kg bolus / crystalloid targeted to some kind of end points like falling lactate or UO 0.5mg/kg/hr at a minimum
- Appropriate referral to surgical specialty such as Cardiothoracic for management of possible mediastinitis. (ie Source Control which will need Cardiothoracic team)
- Symptom control: antiemetics and analgesia. Doses please. Fentanyl drug of choice in view of septic shock and hypotension

iii) 5 marks

EDUCATION
- Use as educational opportunity for the individual and the group ie through quality / m & m meetings. MUST INCLUDE POINT ABOUT SENIOR REVIEW IN SHORT STAY FOR ONE MARK

REPORTING – To organisation – to patient

Use a mandatory reporting system for missed Xrays eg IIMS etc, TEL-RAD ‘immediate reporting’

QUALITY: address any systems issues - in terms of radiology reporting and the failure to communicate to ED critical results in a timely fashion

ED PROCESSES
- Ensure x-ray reports are followed up & actioned routinely by ED. Roster for staff to review X-rays

EMR/TECHNOLOGY
- Explore capability in electronic medical record for notification of abnormal results with stakeholders from pathology and radiology

JMO SUPERVISION
- Ensure adequate senior supervision on the ED floor and implement real time review of imaging in the ED by a senior re CXRs
Question 10 - Dr Daya Jeganathan (14 marks)

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Clinical Examination Finding</th>
<th>Investigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Myaesthenia Gravis</td>
<td>Fatigability (any)</td>
<td>CT Thymus</td>
</tr>
<tr>
<td></td>
<td>Ptosis</td>
<td>Tensilon Test</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Resp Monitoring</td>
</tr>
<tr>
<td>GBS</td>
<td>Hyporeflexia</td>
<td>Mostly Clinical by LP would</td>
</tr>
<tr>
<td></td>
<td>Ascending Weakness</td>
<td>show raised protein on most</td>
</tr>
<tr>
<td></td>
<td>Miller Fisher Eye signs</td>
<td>occasions</td>
</tr>
<tr>
<td>MS</td>
<td>Cerebellar Signs</td>
<td>MRI</td>
</tr>
<tr>
<td></td>
<td>Hyperreflexia</td>
<td>LP</td>
</tr>
<tr>
<td></td>
<td>Optic Neuritis</td>
<td></td>
</tr>
<tr>
<td>Toxins accidental (Lead)</td>
<td>Evidence of other ingestions</td>
<td>Lead Level</td>
</tr>
<tr>
<td></td>
<td></td>
<td>FBC and Film (Basophillic Stippling)</td>
</tr>
<tr>
<td>CVA (less likely NOT</td>
<td>Unilateral / Localising Signs</td>
<td>CT B</td>
</tr>
<tr>
<td>sudden onset)</td>
<td></td>
<td>MRI</td>
</tr>
<tr>
<td>DSH - Toxins</td>
<td>Various Toxins (Neuro)</td>
<td>Tox Bloods</td>
</tr>
<tr>
<td>Cord Problems - Syrinx</td>
<td>Hyperreflexia</td>
<td>MRI</td>
</tr>
<tr>
<td>- Transverse Myelitis</td>
<td>Central Cord Findings</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Spasticity</td>
<td></td>
</tr>
<tr>
<td>Infection - Botulism</td>
<td>Global Weakness</td>
<td>Cultures</td>
</tr>
</tbody>
</table>

ii) Resp Monitoring
- Sats are incorrect - (less reliable)
- Serial Gases
- CO2
- Spirometry
- Peak Flow
QUESTION 11 - Blood Gas (Toxicology) - Double Question - Contact Dr Gopi Mann (22 marks)

i) 2 marks
- HAGMA
- Cannot calculate Osmolality
- Respiratory Alkalosis

![Blood Gas Table]

ii) 1 mark
WINTERS = Expected Co2 = 1.5 x HCO3 + 7 +/- (accept 3) - need to calculate - not just write ‘Winters’

iii) State the three (3) MOST likely causes of the abnormal blood gas in this case (3 marks)

ACCEPTABLE
Methanol, Eth Glycol, Aspirin
Other reasonable toxins accepted (below) - Paraldehyde, Prop. Glycol, Isoniazid, Ibuprofen, Paracetamol, Iron
Qualified statement about ‘atypical’ sepsis accepted

UNACCEPTABLE
Unlikely - sepsis (without qualifier), CO, uraemia, DKA

iv) Textbook answer:
- The high lactate can ‘mimic’ ethylene glycol
- Lactate gap (difference between gas and lab values)
- Osmolar Gap

We can also accept ethylene glycol levels or ETOH levels (as they are not available on the gas)

v) 8 marks
Investigation | Justification
---|---
(1) Osmolality | (1) OG Calculation /Contribution
(2) Ethanol Level | (2) AS PER (1)
(3) Calcium | (3) Oxalic Acid COMplexes interacting with calcium leading to hypocalcaemia
(4) Creatinine | (4) Renal Failure from above, acid
Urine for Crystals | Oxalate Crystals

<table>
<thead>
<tr>
<th>Management</th>
<th>Justification</th>
</tr>
</thead>
</table>
| Ethanol via NGT  
3-4 SD loading  
1 SD per hour  
Aim 0.1% ETOH level | ADH inhibition  
Slow metabolism |
| Dialysis  
- CRRT  
- Intermittent Dialysis | Removes Toxic Metabolites  
Definitive Management  
Rx of Acidosis, Renal failure and Hyperkalaemia |
| Pyridoxine  
50mg IV QID for 2 days | Cofactor in metabolism of glyoxylic acid |
| Thiamine 100-300mg IV TDS-QID for 2 days | As Pyridoxine |
| Fomepizole  
(ethanol substitute)  
15mg/kg loading  
10mg/kg every 12 hours maintenance for 4 doses | ADH inhibition (as ETOH) |
QUESTION 12 - Contact Person Dr Rachel Boddy (15 marks)

I)
**MUST** SAY FOR ONE MARK - Hypoglycaemia

OTHER ANSWERS
- Hypoxia
- Intercurrent febrile illness eg CNS infection
- Head trauma
- Toxins
- Other Metabolic Causes

II)
Bedside –
BSL, ABG/VBG, ECG UA
- exclude hypoglycaemia, metabolic, toxin cause

Lab –
EUC, CMP, FBC ETC. – exclude metabolic and infective causes
Note - accept LP – if no focal neurology or altered mental status – and dx meningitis

Cultures

Imaging –
Neuroimaging – MRI – if focal neurology to suggest SOL or encephalitis
- versus’s CTB (ALARA) if TBI

III)
Minimum to pass: administer an anticonvulsant (benzo or Dextrose (if hypoglycaemic))
- **Seek and treat the cause** – IV abi if meningitis, correct electrolytes etc
- **Stop the seizure** – terminate seizure with IV BDZ (midazolam 0.1mg/kg)
- correct hypoglycaemia with 2ml/kg 10% Dextrose
- IV phenytoin 20mg/kg over 20mins (will accept Leviteracetam)
- ABC - supporting airway and breathing, O2
  - Stop / prevent complications –ABCDE cares – avoid hypoxia, hypercapnia
QUESTION 13 - O and G - Contact Person - Dr Danielle Unwin

i) 3 marks:
1. Call for help – ‘O&G, paeds’, either/or (**MUST SAY CALL FOR HELP)
2. Place patient in resus bed
3. Urgent assessment of patient (gather information, examination, USS)
4. Analgesia (Judicious)
5. Prepare for delivery - PPE, trolley, resus equipment

ii) 3 marks

Prematurity
- Uterine malformations
- Fibroids
- Polyhydramnios
- Placenta Praevia
- Foetal abnormalities
- Multiple gestations

iii) 2 marks
- Dry the baby - Provides stimulation to the baby to initiate respiratory effort
- Provide warmth to the baby
- Suction the baby’s mouth under direct vision, especially for meconium
- Provide positive pressure ventilation – avoid high concentrations of O2 if possible
- Commence CPR if HR remains below 60
iv) 8 marks

<table>
<thead>
<tr>
<th>Equipment Category</th>
<th>CANDIDATE SELECTION (2 marks per box)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mother and Foetus – delivery</td>
<td>Episiotomy - LA, Scissors, cord clamps</td>
</tr>
</tbody>
</table>
| Neonate resuscitation - General | - Firm, horizontal, padded resuscitation surface  
- Overhead warmer  
- Light for the area  
- Clock with timer in seconds  
- Warmed towels or similar covering  
- Polyethylene bag or sheet, big enough for a baby less than 1500g birth weight  
- Stethoscope, neonatal size preferred  
- Pulse oximeter plus neonatal probe |

NEONATAL RESUS A  
Equipment for airway management  
- Suction apparatus and suction catheters (6F, 8F, and either 10F or 12F)  
- Oropharyngeal airways (sizes 0 and 00)  
- Intubation equipment:  
  - Laryngoscopes with infant blades (00, 0, 1)  
  - Spare bulbs, and batteries  
  - Endotracheal tubes (sizes 2.5, 3, 3.5, and 4 mm ID, uncuffed, no eye)  
  - Endotracheal stylet or introducer  
  - Supplies for fixing endotracheal tubes (e.g. scissors, tape)  
- End-tidal carbon dioxide detector (to confirm intubation)  
- Meconium suction device (to apply suction directly to endotracheal tube)  
- Magill forceps, neonatal size (optional)  
- Laryngeal Mask airway, size 1
### NEONATAL RESUS B
**Equipment for supporting breathing**
- Face masks (range of sizes suitable for premature and term infants)
- Positive-pressure ventilation device, either: o T-piece device, or; o Flow-inflating bag with a pressure safety valve and manometer; and o Self-inflating bag (approximately 240 ml) with a removable oxygen reservoir
- Medical gases: o Source of medical oxygen (reticulated and/or cylinder, allowing flow rate of up to 10 L/min) with flow meter and tubing o Source of medical air plus air/oxygen blender
- Feeding tubes for gastric decompression (e.g. size 6 & 8F)

### NEONATAL RESUS C
**Equipment for supporting the circulation**
- Umbilical venous catheter (UVC) kit (including UVC size 5F)
- Peripheral IV cannulation kit
- Skin preparation solution suitable for newborn skin
- Tapes/devices to secure UVC/IV cannula
- Syringes and needles (assorted sizes)
- Intraosseous needles

### Drugs and fluids
- **oxytocin/syntocin IM/IV**
  - Adrenaline (epinephrine): 1:10 000 concentration (0.1 mg/mL)
  - Volume expanders
    - Dextrose
    - Normal saline
QUESTION 14 (15 marks) - Contact Person - Dr Khanh Nguyen

i) 2 marks
- Foul smelling rhinorrhoea / purulent discharge
- Unilateral epistaxis
- Unilateral nasal obstruction / mouth breathing
- Pressure necrosis
- Septal necrosis especially with battery or paired disc magnet foreign bodies
- Less specific – facial swelling and fever

ii) 3 marks
- Topical anaesthetic and vasoconstrictor applicator
- Suction (Frazier’s)
- Airway trolley in the event of airway obstruction from bleeding or inadvertently pushing foreign body deeper*
- Optimise lighting with headlamp
- Nasal speculum
- Equipment necessary for removing object
- Appropriate PPE

iii) 1 mark
- Posterior FB not easily visualised
- Chronic or impacted FB with marked inflammation
- Penetrating or hooked FB
- Failure to remove in emergency due to poor cooperation, bleeding, limited instrumentation

iv) 9 marks

<table>
<thead>
<tr>
<th>Technique</th>
<th>Advantage</th>
<th>Disadvantage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct instrumentation</td>
<td>- Can be useful if object easily visualised and lying in anterior nares</td>
<td>- May not be able to grasp object</td>
</tr>
<tr>
<td>- Forceps/ wire loops /</td>
<td></td>
<td>- May lodge object deeper especially if attempting to pass behind and</td>
</tr>
<tr>
<td>right angle hooks / balloon</td>
<td></td>
<td>remove from behind</td>
</tr>
<tr>
<td>catheter</td>
<td></td>
<td>- May cause bleed / mucosal trauma</td>
</tr>
</tbody>
</table>
| Suction catheter | - Can assist in retracting object more anteriorly  
- Can remove blood/mucous | - Noise from suction catheter can scare children  
- Suction may not be strong enough to remove lodged object |
|------------------|---------------------------------|-----------------------------------------------|
| Positive pressure technique | - Occluding unaffected nostril and blowing  
- Air blown into mouth by parent  
- Oxygen applied at flow rate of 10-15L/min in unaffected nostril | - Easy technique if child can cooperate, minimal risk of bleeding or trauma due to lack of instrumentation  
- Can be comforting for child “parent’s kiss”  
- Lack of instrumentation of affected side – less likely to push object in further | - Child may not cooperate or understand instructions  
- Theoretical risk of disease transmission  
- Oxygen can be drying to nasal mucosa at high flow rates |
| Miscellaneous | - Cyanoacrylate glue  
- Magnets | - Can be used on rounded structures e.g. beads  
- Can guide metallic objects out of nasal cavity | - Mess with glue  
- Limited success with these techniques |
QUESTION 15 (12 marks) - Contact Person - Dr Khanh Nguyen

i) 4 marks
- Immunisation status and pre-travel vaccination
- History related to the holiday: location of travel, high-risk activities such as diet, mosquito bites, sick contacts
- Occupation (child care worker, food handling)
- Elaborate on symptoms: pattern of fever, height of fever, night sweats, quality and quantity of stools, rash, petechiae or bleeding from any site, myalgia, headache, abdo pain etc.

ii) 2 marks
- Cultures: blood, stool, urine
- Malaria / Dengue
- CXR

iii) 2 marks
- IV ceftriaxone 2g daily OR
- IV ciprofloxacin 400mg q12h
- Patient has underlying bacteraemia, therefore IV therapy warranted
- Will accept PO azithromycin 1g on day 1 then 500mg daily for day 2-6 OR PO ciprofloxacin 500mg BD for 5-7 days

iv) 2 marks
- Faecal oral route
- Requires isolation as may still have shedding in stools

v) 2 marks
- Ileal perforation due to inflammation of Peyer’s patch. Will require surgical intervention and broader antibiotic cover for peritonitis.
- Relapse of typhoid fever 2-3 weeks post resolution of fever. Will require further course of antibiotics guided by susceptibility testing.
- Chronic carriage: excretion of organism in stool for more than 12 months after acute infection
BACKGROUND: Typhoid fever is endemic in India, Asia, the Middle East, and Central and South America, and is caused by ingestion of food or water contaminated with S. typhi. Its relative obscurity in the U.S., coupled with nonspecific clinical findings, make it difficult to diagnose in this setting. The classic findings of fever with relative bradycardia (Faget's sign) and rose spots are encountered in fewer than half of cases. The efficacy of available vaccines has been reported to be variable. In the U.S., treatment of choice includes a ten-day course of a fluoroquinolone or a five-day course of a third-generation cephalosporin. High-dose dexamethasone is recommended by most experts for severe cases.

METHODS: The authors, from Los Angeles County/USC Medical Center, report on findings in a retrospective series of 21 patients aged 2-60 who were hospitalized with a final diagnosis of typhoid fever.

RESULTS: The U.S. was the country of origin for only three patients, and 14/21 reported recent travel to an endemic area. The most common findings included fever (15), headache (10), abdominal pain (9) and diarrhea (6). Only one patient exhibited rose spots. Associated bradycardia (less than 80/minute) was noted in 12/15 patients with fever. Initial WBC counts were normal in twelve patients. Transaminases were elevated in 10/17 patients tested, and 5/8 urine samples demonstrated proteinuria. Only three patients had an ED diagnosis of presumed typhoid fever. The diagnosis was confirmed by blood culture in 17/21 cases. The Widal antibody test was positive in 7/11 cases. Seven patients were started on a third-generation cephalosporin in the ED.

CONCLUSIONS: Typhoid fever should be considered in the differential diagnosis of febrile patients from Latin America or reporting recent travel to an endemic area.
QUESTION 16 (12 marks) - Contact Person - Dr Kavita Varshney

i) In the following table state how the four (4) types of blast injury are caused (4 marks)

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary</td>
<td>DIRECT FROM BLAST SHOCKWAVE</td>
</tr>
<tr>
<td>Secondary</td>
<td>FRAGMENT IMPACT (SHRAPNEL)</td>
</tr>
<tr>
<td>Tertiary</td>
<td>BODY THROWN INTO AIR BY WAVE/BLAST</td>
</tr>
<tr>
<td>Quaternary</td>
<td>ENVIRONMENTAL CONTAMINATION FROM DEVICE</td>
</tr>
</tbody>
</table>

ii) List four (4) important actions you would take, prior to arrival of the victims. (4 marks).

2. Inform hospital administration/ director/ public relations department
3. Clear all non-urgent patients from the waiting room
   Admit all stable ED patients to wards
4. Set up a casualty reception triage area outside of the ED
5. Have decontaminating showers ready for no-urgent walking casualties.
6. Prepare Resus bay for urgently injured patients
   Remove all unnecessary equipment
   Plastic lining for floors
   Plastic waste bags - double and labelled radioactive
7. Have ready personal protective equipment
8. Notify Hospital Radiation safety officer
9. Brief all staff on specific roles.

This is asking them to consider that there could the possibility of a dirty bomb which is of course essential

1. Activate external disaster to notify all staff members / groups e.g. anaesthesia, icu, surgery, blood bank, pathology, radiology, theatres, media unit, executive
2. Prepare the ed for the influx of patients (send admitted patients to the ward, consider the waiting room patients, brief staff, allocate roles, create teams, request equipment, prepare the resus bay)
3. Consider that there may be chemical or radiological contamination of the bombs which will require, lockdown of ed, one way traffic flow, decontamination of patients, storage and handling of waste with double bagging and labelling, line floors with plastic
4. Triage the patients using disaster triage, with consideration of who will be performing the triage, where it will take place and what system will be used. The same triage system will be used for all patients presenting at the same time
iii) List the MOST likely injuries expected for each category of blast injury (4 marks)

<table>
<thead>
<tr>
<th>Type</th>
<th>Likely Injuries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary</td>
<td>BLAST LUNG, EARDRUM RUPTURE, ABDOMINAL INJURY/PERFORATION, EYE INJURY</td>
</tr>
<tr>
<td>Secondary</td>
<td>PENETRATING BALLISTIC, EYE INJURY</td>
</tr>
<tr>
<td>Tertiary</td>
<td>FRACTURE, AMPUTATION, TBI,</td>
</tr>
<tr>
<td>Quaternary</td>
<td>BURNS, INHALED GASES</td>
</tr>
</tbody>
</table>
QUESTION 17 (15 marks) - Contact Person - Dr John Shirley, Reviews by Dr Kenny Yee

i) List three (3) recognised GENERAL uses of POCUS in the assessment of an adult patient in Cardiac Arrest (3 marks)
   - CARDIAC - Cardiac Output, and Cardiac Standstill
   - CARDIAC - Tamponade
   - LUNGS - Tension Pneumothorax
   - ABDOMEN - Free Fluid in Abdomen - trauma and AAA
   - CHEST - Aortic Dissection
   - CARDIAC/LUNGS - DVT, PE

ii) In the following table list eight (8) readily reversible causes of Cardiac Arrest (8 marks)

<table>
<thead>
<tr>
<th>Cause of Cardiac Arrest</th>
<th>SPECIFIC Sonographic Finding on POCUS exam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tamponade</td>
<td>RV diastolic collapse, Effusion size</td>
</tr>
<tr>
<td>PTx</td>
<td>Sliding, Comet Tails (Absence), Pearl/Bead sign</td>
</tr>
<tr>
<td>Trauma / AAA</td>
<td>Free Fluid in FAST locations AAA, rupture</td>
</tr>
<tr>
<td>Hypovolaemia</td>
<td>Kissing Ventricle, IVC collapse/size</td>
</tr>
<tr>
<td>DVT/PE</td>
<td>Non compressible femoral vein, RV&gt;LV, thrombus seen</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cause of Cardiac Arrest</th>
<th>SPECIFIC Sonographic Finding on POCUS exam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypoglycemia</td>
<td>Tablets or toxins</td>
</tr>
<tr>
<td>Hypovolemia</td>
<td>Cardiac tamponade</td>
</tr>
<tr>
<td>Hypoxia</td>
<td>Tension pneumothorax</td>
</tr>
<tr>
<td>Hydrogen ions (acidosis)</td>
<td>Thrombosis (myocardial infarction)</td>
</tr>
<tr>
<td>Hyperkalemia or</td>
<td>Thromboembolism</td>
</tr>
<tr>
<td>hypokalemia</td>
<td>(pulmonary embolism)</td>
</tr>
<tr>
<td>Hypothermia</td>
<td></td>
</tr>
</tbody>
</table>

iii) For two (2) of the caused listed in Question (ii), list two (2) sonographic findings you would look for on your POCUS (4 marks)
QUESTION 18 (13 marks) - Contact Person - Dr Kavita Varshney

i) 3 marks
Stay safe, Call for help (000), Assist others
Don’t enter dangerous environment
Call walking patients to gather together in a safe location
Plan METHANE call

NO MARKS - call local hospital, provide treatment to patients etc.

ii) 3 marks

Electrical Wires (could be live), other trains, Cliff faces, Heavy objects loose in wreckage (cars), train itself, slope, fuel, chemicals in cars, difficult access for EMS

iii) 7 marks

<table>
<thead>
<tr>
<th>M</th>
<th>MAJOR INCIDENT</th>
<th>Has a major incident or standby been declared? (Yes / No - if no, then complete ETHANE message)</th>
<th>Include the date and time of any declaration.</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>EXACT LOCATION</td>
<td>What is the exact location or geographical area of the incident?</td>
<td>Be as precise as possible, using a system that will be understood by all responders.</td>
</tr>
<tr>
<td>T</td>
<td>TYPE OF INCIDENT</td>
<td>What kind of incident is it?</td>
<td>Consider the likelihood of a hazard and the potential severity of any impact.</td>
</tr>
<tr>
<td>H</td>
<td>HAZARDS</td>
<td>What hazards or potential hazards can be identified?</td>
<td>Include information on inaccessible routes and rendezvous points (RVPs). Remember that services need to be able to leave the scene as well as access it.</td>
</tr>
<tr>
<td>A</td>
<td>ACCESS</td>
<td>What are the best routes for access and egress?</td>
<td>Use an agreed classification system such as ‘P1’, ‘P2’, ‘P3’ and ‘dead’.</td>
</tr>
<tr>
<td>N</td>
<td>NUMBER OF CASUALTIES</td>
<td>How many casualties are there, and what condition are they in?</td>
<td>Consider whether the assets of wider emergency responders, such as local authorities or the voluntary sector, may be required.</td>
</tr>
<tr>
<td>E</td>
<td>EMERGENCY SERVICES</td>
<td>Which, and how many, emergency responder assets and personnel are required or are already on-scene?</td>
<td></td>
</tr>
</tbody>
</table>
QUESTION 19 - Toxicology - Contact Person - Naren Gunja

(i) 3 marks - *Sequelae of poisoning*
   1. Coma, reduced LOC
   2. Seizures
   3. Vomiting
   4. Aspiration

(ii) 4 marks - *Management Priorities*
   • Ensure airway is protected and ventilation is maintained, if not, intervene with intubation and mechanical ventilation
   • Check blood glucose level

Contact Toxicologist or Poisons Centre

   Observe in ED for > 4 hours (or overnight)
   Apply monitoring – ECG, pulse oximetry
   • Examine child, particularly:
     o Neuro exam
     o Airway and chest auscultation
   • Prevent vomiting with anti-emetics (e.g. ondansetron 0.2 mg/kg)
   • Check for aspiration – CXR
   • Treat seizures with benzodiazepines (e.g. midazolam 0.15 mg/kg IV)
   • If no evidence of aspiration, keep NBM for minimum 2 hours; trial of oral fluids after 2h, if alert and no further vomiting
   • Does not need other pathology testing unless intubated or aspirated
   • Confirm history – if non-accidental, refer to child protection services

(iii) 5 marks
   • Agent(s)  
   • Dose(s)  
   • Time since ingestion  
   • Clinical features and progress  
   • Patient factors (weight and co-morbidities)
Your adult tertiary emergency department is planning to purchase a mechanical chest compression device and a new waveform capnography device.

i) List three advantages and three disadvantages of mechanical CPR devices. (8 Marks)

Advantages:
- Decreases staff utilisation
- Minimises interruptions to CPR (once attached)
- Effective and consistent chest compression
- Portability during patient transfers

Disadvantages:
- De-skills providers
- Focuses on device attachment rather than effective CPR and early defibrillation
- Device displacement during compressions
- Blunt chest and abdominal trauma
- Device malfunction

ii) What is the ANZCOR recommendation regarding use of a mechanical CPR device? (2 marks)
- Does not suggest routine use
- Suggest that automated mechanical CPR devices are reasonable alternatives where sustained high quality CPR are impractical or compromise provider safety.

iii) List 4 uses of waveform capnography in the resuscitation of a cardiac arrest resuscitation. (4 marks)
- Adjunct for prognostication (Failure to achieve CO2 > 10 mmHg in 20 min is associated with poor outcomes)
- Identifies ROSC (by an increase in CO2 value)
- Confirms tracheal position and displacement
- Assess the quality of chest compressions
- Ventilation rate monitoring
QUESTION 21 - Contact Person Dr Greg White (13 marks) - Quoted Source - Dunn page 1002 - 1003

(i) 5 marks

- MUST say inconsistent mechanism
- MUST say Inconsistent or incomplete history
- Delayed presentation(s)
- Chronic Disease or Developmental Delay
- Failure to thrive, Age of child VERSUS inappropriate injuries (as in this case Femur#)
- Socioeconomic Status / Blended Family
- Domestic Violence
- Single Parent, Family Dynamics
- Substance Abuse
- Foster Care
- Inappropriate interactions (e.g. child to parent(s))

(ii) 3 marks

- Soft Tissue
  - Any injury in ‘non mobile’ child of this age is a concern
  - Various Bruises
  - Various Ages
  - Circumferential Injuries
  - Usually NOT over bony prominences
- Burns
  - Cigarette burn
  - Immersion pattern on legs
  - Buttocks
  - Genital Areas
  - Hands
- Head Injury
  - Intracranial haemorrhage(s) - various - e.g. EDH
  - Retinal haemorrhage(s)

(iii) 5 marks

Management

- Two expectations demonstrating consultant level thinking are MANDATORY REPORTING and DUTY OF CARE (mom and child cannot leave)

  ****MUST SAY BOTH FOR 2 OF THE MARKS

- Exclude other injuries, full trauma assessment +/- trauma call activation
- Treat Femoral Fracture - analgesia and consult Orthopaedics
- Jundicious Documentation and involve Social Worker early
- Offer / allocate support person to parent
- Documentation - concerns (MUST SAY for 1 mark), call Child protection (local policy) Duty of care AND Act within the law
- Open disclosure VERSUS concern for abuse VERSUS need for divulge to parents need of reporting. Other reasonable management.
(i) 2 marks
  ● Wide Mediastinum (must say for one mark)
  ● Clavicle Fracture
  ● Left Rib fractures and Subtle S/C emphysema
  ● NO MARKS FOR:
    ○ No Chest tubes/apparatus
    ○ No SC Emphysema

(ii) 3 marks
  ● Haemorrhage (up to 4)
    ○ Femoral Fracture
    ○ Chest
    ○ Abdomen
    ○ Pelvis
    ○ NO MARKS FOR SCALP LAC OR EXTERNAL
  ● Neurogenic Shock (less likely in view of tachycardia and stem)
  ● Medication
  ● Aortic dissection/cardiac injury
  ● Anaphylactoid reaction following CT

(iii) **Massive transfusion** is defined, in adults, as replacement of >1 blood volume in 24 hours or
>50% of blood volume in 4 hours (adult blood volume is approximately 70 mL/kg).

OR
>10 u in 24 hours, or persistent losses of >150ml/hour

(iv) state 5 potential complications of a massive transfusion (from liftl):
  a. volume overload
  b. hypothermia
  c. dilutional coagulopathy
  d. TRALI
  e. hyperkalemia
  f. disease transmission
  g. excessive citrate causing m. alk and hypocalcemia
QUESTION 23 - Contact Person Dr Jo Koryzna and Dr Mee Ling - 10 marks - Admin and Bullying

(i) 3 marks
- Ensure Chest Pain patient is safe ***MUST SAY comment in regards to ‘safety’
- Ensure Department is safe, handover to NUM/most senior doctors
- Ensure privacy (discussion in private setting)
- Take (secure) notes - ***MUST SAY
- Aim for hot debrief - not appropriate to go into detail at this time
- Unlikely to be able to commit time to this straightaway - make a risk assessment of any risk / harm and if NO RISK - contract to have a further meeting and investigate

(ii) 3 marks
- Local Uni Dean and/or divisional heads in University
- Student’s Mentor
- University Management
- Director of EM
- Contact with Hospital Executive
- Any patients that have affected by the interactions between the pair
- Potentially other students
- Other reasonable’ stakeholders’

(iii) 4 marks
- Acknowledge complaint and its seriousness and provide support to the student (1)
- Inform the UNI that student may be traumatised by negative experiences (2)
- Gather information about behaviour from other staff; 360 degree. Confidential (3)
- Approach the registrar and get their side of the story (4)
- Management plan for registrar: identify triggers and put in specific strategies addressing D and A/ stress/ burnout/ time frame for review/ advise behaviour is not acceptable (5)
- Minimise Bullying in the future AND education/orientation (Various strategies) (6)
  - Ensure all staff are aware of their obligations not to engage in Unacceptable workplace behaviour
  - Promote an anti-bullying workplace environment by their own conduct and Behaviour in the workplace
  - Ensure that information about what types of behaviours do, and do not, constitute unacceptable behaviour are communicated to all staff
  - Encourage and support staff in the self-resolution of conflict by providing training in conflict resolution
  - Provide a clear process for reporting unacceptable workplace behaviour
  - Ensure there is a process to rapidly respond to complaints related to unacceptable workplace behaviour
  - Ensure orientation of new staff informs them about the no bullying culture and about the department’s anti bullying policy
QUESTION 24 (12 marks) - Contact Person - Dr Mee Ling

(i) 4 marks
Features Favouring Syncope:
- Rapid Neurological Recovery / no post ictal period
- No neurological symptoms
- Postural symptoms
- Pre-syncope symptoms
- An absence of seizure like movements

(ii) 8 marks
A. MUST Say ECTOPIC PREGNANCY -positive FAST
B. Pericardial effusion +/- tamponade (autoimmune stuff can happen in the younger population
- bedside echo showing fluid/RA diastolic collapse
C. Aortic dissection (marfans in young)
bedside echo showing intimal flap
Bedside abdo u/s showing aortic hematoma
CT aortogram, CXR
D. PE
- bedside echo, ecg, ABG, CTPA
E. anything else that the marker thinks is reasonable

Other answers (BOLD FOR ACCEPTABLE)
- Cardiac - MI, Dissection, Pericardial Effusion, Arrhythmia (Brady or Tachy)
- Respiratory - PE
- Abdominal - Ovarian Torsion, AAA (unlikely)
- Neurological (CVA, SAH, Seizure)
- Other - Vasovagal, Vertebral Dissection/insufficiency, carotid sinus
QUESTION 25 - Measles with Prop - Contact Person Dr Shalini Arunanthy

(i) RASH differentials (3 marks)
- No marks for Measles, SLE, Dermatomyositis, HIV or Syphilis
- REASONABLE ANSWERS:
  - Rubella (Rubivirus) - Kawasaki Disease
  - Roseola (HHV 6) - Scarlet Fever
  - Primary Herpes - Drug Reactions, EM, SJS
  - Varicella (Chicken Pox) - Non specific Viral exanthem
  - Erythema Infectiosum (5th Disease) Parvo B19 - Mycoplasma
  - Kawasaki Disease - Rickettsial Infection


(ii) History and Exam (6 marks)

<table>
<thead>
<tr>
<th>History</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rash on D 3 – 5 of fever</td>
</tr>
<tr>
<td>Starts on face and spreads to rest of body</td>
</tr>
<tr>
<td>Unimmunised</td>
</tr>
<tr>
<td>Contact history</td>
</tr>
<tr>
<td>Outbreak of measles</td>
</tr>
<tr>
<td>cough</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Examination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Koplik’s spots – D3</td>
</tr>
<tr>
<td>Conjunctival injection</td>
</tr>
<tr>
<td>Coryza</td>
</tr>
<tr>
<td>Looks toxic</td>
</tr>
<tr>
<td>Maculopapular rash cephalocaudal</td>
</tr>
</tbody>
</table>

(iii) 3 marks
***MUST SAY “NOTIFY PUBLIC HEALTH” or equivalent
- Check rest of family – contact and immunisation status / offer MMR/IG where appropriate
- History - Check for any pregnant staff / high risk contacts
- High risk contacts may need to be admitted and treated in a single room with Measles IG
- Notify staff who had contact with patient- immunisation if required/Staff Health/Infection control . Ensure we have all the appropriate contact numbers for family and staff
- Educate staff- patient should not have been in W/R, should have had resp isolation
- Advice to family about isolation - how long?
- Advice to family about how to get help after they leave the ED today
QUESTION 26 - Wound Care with Prop (14 marks) - Contact Person Dr Andrew Coggins

(i) 1 mark - Wound Dehiscence (Significant) - midline/paramedian laparotomy wound

(ii) 6 marks

<table>
<thead>
<tr>
<th>Patient</th>
<th>Surgical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age &gt; 65</td>
<td>Too much wound tension</td>
</tr>
<tr>
<td>Infection</td>
<td>Inappropriate knot/technique</td>
</tr>
<tr>
<td>Diabetes/anaemia/malnutrition</td>
<td>Inappropriate suture material</td>
</tr>
<tr>
<td>Obesity/steroid use</td>
<td>Hematoma at surgical site</td>
</tr>
<tr>
<td>Increased abdominal pressure/coughing/vomiting</td>
<td>Foreign body</td>
</tr>
<tr>
<td>Emergency laparotomy</td>
<td>Knot was tied loosely</td>
</tr>
<tr>
<td>Perforated viscous/contamination</td>
<td></td>
</tr>
</tbody>
</table>

(iii) 2 marks - should be fairly straight forward marks

- FBC
- PCT
- CRP
- Wound Swab
- Blood Cultures
- BSL/HBA1c
(iv) Wound Closure - 5 marks

<table>
<thead>
<tr>
<th>Method</th>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
</table>
| Tissue adhesive | Cosmetic results are as good as suturing.  
No difference in infection rate compared to suture  
Quick                                      | Risk of Wound dehiscence  
Can not use deep or irregular wound or  
increased wound tension                      |
| Suture       | Good wound approximation/less wound dehiscence            | Time consuming/need local anesthetics/need suture removal            |
| Steristrips  | Easy to apply  
Quick  
Simple wound need approximation  
Allow drainage                                  | Risk of Wound dehiscence  
Can’t apply where tension/movement  
Need to keep dry 72 hrs                      |
| Staple       | Speed                                                                | Cosmetic                                                             |
Question 27 - Hypothermia - Contact Person Dr C De Alwis (13 marks)

(i) 3 marks - NO MARKS FOR J WAVES OR OSBORN WAVES

- 2nd Degree HB - Mobitz 2 (MUST say for ONE mark)
- LVH (severe)
- Borderline Wide QRS Complexes ?LBBB pattern
- LAD/ fascicular block
- Possible inf Q waves

(ii) 3 marks

- Ambient Temperature Increase and ‘BARE hugger’
- Warm Humidified gas with ventilator
- Warm fluids (MUST BE SPECIFIC ABOUT TYPE AND TEMPERATURE)
- VA ECMO
- Bladder, Chest irrigation with warm fluids

(iii) 3 marks

- Depending on rhythm spend up to one min checking for signs of life (controversial)
- Change in the adrenaline interval, may withhold until temperature >30, double duration between drug if temp is 30-35 degrees
- Intubate sooner, rather than later
- Chest may be stiff - makes compressions harder, consider using LUCAS
- Prolonged CPR is indicated
- Early call for ECMO CPR

(iv)

Swiss Staging System

<table>
<thead>
<tr>
<th>Stage</th>
<th>Clinical Symptoms</th>
<th>Typical Core Temperature</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>HT I</td>
<td>Conscious, shivering</td>
<td>15 to 12°C</td>
<td>Warm-environment and clothing, warm sweet drinks, and active movement (if possible)</td>
</tr>
<tr>
<td>HT II</td>
<td>Impaired consciousness, not shivering</td>
<td>&lt;32 to 28°C</td>
<td>Cardiac monitoring, minimal and cautious movements to avoid arrhythmias, horizontal position and immobilization, full body insulation, active external and minimally invasive rewarming techniques (warm ammonium, chemical, electrothermal), or forced-air heating packs or blouses, warm paraffin fluid</td>
</tr>
<tr>
<td>HT III</td>
<td>Unconscious, not shivering; vital signs present</td>
<td>&lt;28 to 24°C</td>
<td>HT II management plus aspiration management as required; ECMO or CPR in cases with cardiac instability that is refractory to medical management</td>
</tr>
<tr>
<td>HT IV</td>
<td>No vital signs</td>
<td>&lt;24°C</td>
<td>HT II and III management plus CPR and up to three doses of epinephrine (at an intravenous or intravenous dose of 1 mg) and defibrillation, with further dosing guided by clinical response; resuscitation with ECMO or CPR (if available) or CPR with active external and alternative internal rewarming</td>
</tr>
</tbody>
</table>

* Hypothermia may be determined clinically or on the basis of vital signs with the use of the Swiss staging system. CPR denotes cardiopulmonary resuscitation, HT hypothermia, CPR cardiopulmonary resuscitation, and ECMO extracorporeal membrane resuscitation.

Measurement of body core temperature is helpful but not mandatory. The risk of cardiac arrest increases as the core temperature drops below 32°C and increases substantially if the temperature is less than 28°C. To convert values for temperature to degrees Fahrenheit, multiply by 9/5 and add 32.


END PAPER