

FCEM SAQ January 2010

SAQ 1-Burn

A 70 kg 26 year old man is involved in a house fire in an enclosed room. He has burns to the whole of his head, the ventral aspects of both arms and 3% on his chest.

1. What are the signs that would alert you to an airway problem in this patient? (4pts)
 - Singed nasal hair,
 - carbonaceous sputum,
 - facial burns,
 - hoarse voice, stridor

2. Calculate the % burn

Using rule of nine's 9 (head) + 9 (both arms) + 3 = 21%

3. What would his fluid requirement be for his burn in the first 8 hrs?

$4 \times 21 \times 70 = 5880$ ml Give 2940 ml

4. What analgesia would you give and by what route

- 1 -10 mg of intravenous morphine by 1 mg titrated dose for pain and response

5. What would you aim his urine output to be?

- >50 ml/hr

SAQ 2-Elbow Injury



A 2 year old child is brought into the department having fallen over whilst playing.

1. What 3 abnormalities can you describe on the xray? (3pts)
 - *Minimally displaced supracondylar fracture*
 - *Posterior fat pad*
 - *Soft tissue swelling*
2. name 3 types of childrens fractures (not site) (3 pts)
 - *Greenstick,*
 - *Torus (buckle)*
 - *Epiphyseal*
3. Name 2 soft tissue injuries children sustain at the elbow (2 pts)
 - *Tendonitis / Tenosynovitis*
 - *Bursitis*
 - *pulled elbow*
4. What is myosittis ossificans and what would you advise to avoid it? (1pt)
 - *Calcification occurring within a Haematoma leading to restriction of movement and loss of function (post muscle or joint injury)*
 - *Avoid passive stretching movements of joints*
5. What 2 analgesics could you give and calculate dose (1pt)
 - *Paracetamol 180 mg*
 - *Ibuprofen 60 mg*

SAQ 3-Glaucoma

A 68 year old diabetic patient presents with a red painful eye. The GP thinks this may be acute glaucoma and has sent him in. His VA 20/6

1. Name 2 clinical signs on ocular examination which would point you to the diagnosis of acute glaucoma. (2pts)
 - *Fixed semi dilated ovoid pupil*
 - *corneal oedema*

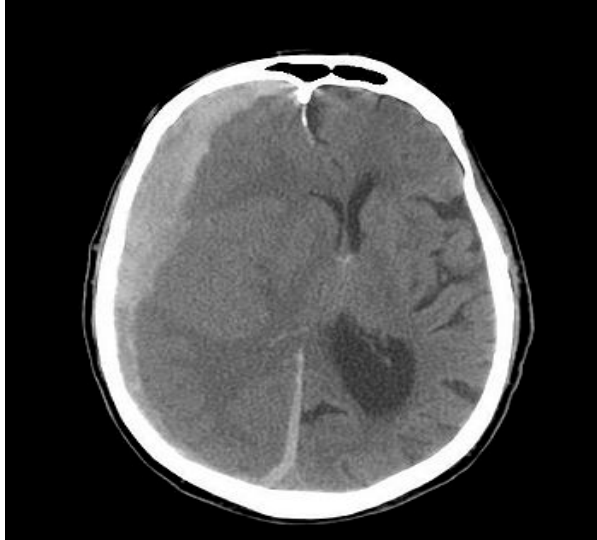
2. Give 4 causes of a non-traumatic unilateral dilated pupil (4pts)
 - *Mydriatic eye drops,*
 - *holmes adie pupil,*
 - *third cranial nerve palsy,*
 - *iris rubeosis*

3. Give 2 medications used in the treatment of acute glaucoma and their mode of action. (2 pts)
 - *Acetazolamide decreases intraocular pressure*
 - *Pilocarpine 2% eye drops muscarinic receptor agonist that causes ciliary muscle to contract thus allowing aqueous humor to leave the eye and decrease iop*

4. Give 2 systemic features of acute glaucoma excluding lethargy and malaise (2pts)
 - *Vomiting and headache*

SAQ 4-Head Injury

A 32 year old man was assaulted with a baseball bat. He has vomited and had a grand mal seizure. His GCS 8/15 on arrival to the ED and he has a right dilated pupil.



1. Describe 4 abnormalities seen on his CT (4pts)
 - *Right subdural haematoma, Midline shift*
 - *Effacement of right lateral ventricle, Tissue oedema*
2. What is the most important first management task? (1 pt)
 - *Maintain airway and call anaesthetists for definitive airway*
3. List 4 indications for an urgent CT based on the NICE/SIGN guidelines (2pts)
 - *NICE - GCS < 13 on assessment in ED,*
 - *GCS < 15 2 hours after injury,*
 - *Post-traumatic seizure,*
 - *focal neurology*
4. Describe the mechanism of the dilated pupil (1 pt)
 - *Raised ICP causes uncal herniation and compression of the Oculomotor nerve III*
5. How would you manage this patient, including drugs and doses if appropriate? (4 lines to write on total of 2 pts)
 - *Nurse head elevated at 30 degrees*
 - *intubate and ventilate aiming for a pCO₂ ~ 4.5 kPa*
 - *BP monitoring (70 mm Hg < MAP < 120 mm Hg)*
 - *Mannitol 0.2-0.5 g/kg IV (1-2.5 mL/kg/dose of 20% solution) over 10-30 minutes every 2 hours as needed*
 - *Refer to neurosurgery*
 - *Frusemide 1mg/kg*

SAQ 5-UTI

A urine culture of a 2 year old child who was discharged 3/7 before is brought to your attention:

RBC casts, epithelial cells and positive for E.coli

1. Comment on the result of the urine culture and what your next actions would be (2 pts)

- Epithelial cells suggest contamination, recall patient or contact gp for repeat sample

2. What are the complications of UTI in this age group and what are the risk factors for UTI? (2pts)

Complications

- Septicaemia
- irreversible renal scarring

Risk Factors

- poor urine flow and dysfunctional voiding,
- history of previous UTI,
- renal abnormality,
- fhx VUR,
- constipation.

3. What are the 3 investigations that paediatricians would undertake and what would they show? (3 pts)

- USS shows the anatomy
- DMSA shows function
- MCUG shows degree of VUR if present

4. Name 3 organisms implicated in UTI in this age group. (3 pts)

- E coli,
- Proteus
- Klebsiella

SAQ 6-Dental Pain

A 32 year old man NFA presents to the ED with dental pain.

1. Name 2 type/class of organisms implicated in dental abscesses (2 pts)
 - *Aerobe/anaerobes or Streptococcus species*
 - *Bacteroides species*
 - *Staphylococcus aureus*
2. Give the medication with doses necessary to treat a dental abscess (2pts)
 - *Amoxicillin 500 mg tds*
 - *Metronidazole 400 mg tds PO for 5/7*
3. You suspect Ludwigs angina. Name the 2 tissue planes involved. (2 pts)
 - *Sub-Mandibular*
 - *Sub-Lingual*
4. How does Ludwigs angina spread to adjacent structures? (2 pts)
 - *Directly by the deep and superficial cervical fascia planes*
5. How can Ludwigs angina cause airway obstruction? (2 pts)
 - *As the Submandibular space expands by the abscess, the floor of the mouth becomes indurated and the tongue is forced upward and backward, causing airway obstruction*

SAQ 7- FB

A 2 year old boy is brought into the ED by his mother after swallowing his older sisters earring. He is drooling.



1. What in the history would alert you to the presence of a foreign body? (4 pts)
 - *Acute onset in previously well child, choking episode, difficulty in breathing*
 - *Drooling,*
 - *Coughing*
2. You review the xray. Do you think the FB is in the trachea or oesophagus and why? (1pt)
 - *Oesophagus as it is at the level of C6 cricopharyngeus where fb often sticks*
3. Where in the oesophagus might a foreign body become lodged? (2pts)
 - *T4 Aortic arch,*
 - *T8 Where the aorta crosses the oesophagus*
 - *T10 GOJ*
4. Describe 3 instances where a FB would need to be removed urgently (3points)
 - *Lodged or leaking button batteries,*
 - *sharp objects,*
 - *complete impaction,*
 - *abdominal pain or obstruction*

SAQ 8-Croup

A 2 year old arrives in the ED having been diagnosed with croup by his GP. He has a classical barking cough, his sats are 98% on air and he has a temperature of 38 degrees celcius.

1. Name the most likely causative organism. (1pt)
 - *Parainfluenza,*
 - *RSV,*
 - *Adenovirus*

2. Give 4 criteria used in grading the severity of croup (4pts)
 - *Westley Score*
 - *Inspiratory stridor, intercostal recession, cyanosis, level of consciousness, air entry*

3. Name 3 drugs with doses you would give to this child (3 pts)
 - *Budesonide neb 2mg*
 - *Dexamethosone PO 0.3mg/kg,*
 - *Adrenaline neb 0.5ml/kg up to 5 ml of 1 in 1000, pred 1mg/kg po*

4. Give 4 common causes of upper airway obstruction in children (2 pts)
 - *Foreign body,*
 - *anaphylaxis,*
 - *quinsy,*
 - *epiglottitis,*
 - *trauma*

SAQ 9-Needlestick Injury

A medical student attends the ED having sustained a needlestick injury from a HIV positive patient

1. Describe the first aid measures (2 pts) (4 lines)
 - *BLEED THE WOUND AND WASH THOUROUGHLY,*
 - *give ATT if not up to date and*
 - *check Hep b immunity, if immunised check hep b titres. Take blood for storage*
 - *if high risk patient gain consent for taking their blood refer to OH*

2. What 2 non-viral infections can you acquire from a needlestick injury? (2 pts)
 - Tetanus,
 - CTJD,
 - MRSA

3. What 3 blood samples would you send? (3 pts)
 - *Blood fo rlong term storage,*
 - *Hep B antibody levels*
 - *FBC*

4. What are the current guidelines for handling body fluids? (2pts) (4 lines)
 - *WEAR GLOVES AT ALL TIMES*
 - *sharp disposal*
 - *wash hands*
 - *appropriate disposal (sluice/incinerator),*
 - *name all bottles by patient bedside checking against identity of patient*

5. What are the current recommendations for the timing of PEP? (1pt)
 - *Maximum effect within one hour, but up to 72 hrs*

SAQ 10-pre-eclampsia

A 36/40 pregnant lady presents complaining of being oedematous. Her blood pressure is 180/110 and she has proteinuria

Hb 9.4	GGT 450
WCC 5.3	ALT 300
Platelets 54	Bilirubin 90
	Albumin 34

1. What is the diagnosis? (2 pts)
 - *HELLP and pre-eclampsia*
2. What drug and by what route would you give for her blood pressure? (2 pts)
 - *Labetolol 10- 20mg IV*

She starts fitting.

3. What 3 drugs may be of benefit? (3pts)
 - *MgSO₄ 4 gm IV*
 - *Lorazepam 4mg IV*
 - *Oxygen*
 - *Labetolol infusion 1-2 mg per minute*

You have called Paeds, anaesthetics, obstetrics and SCBU

4. Describe the further ED management including drug doses and route if appropriate. (3 pts)
 - *Left lateral position*
 - *Further Magnesium bolus*
 - *Intravenous fluid resuscitation*
 - *Prepare resuscitaire*
 - *Inform family of outcome*
 - *Check Rhesus status*
 - *X-match*

SAQ 11-Crush Syndrome



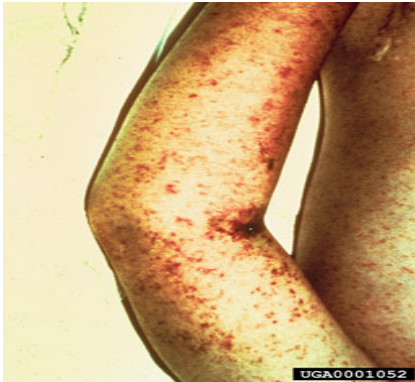
A 19 year old girl is brought in by her friend after an episode of collapse, they had been taking ecstasy and dancing all night. She has a temperature of 39 degrees, HR 140bpm, BP 190/110 She is catheterised with the above urine.

1. What is the diagnosis and what initial treatment would you commence? (2 pts)
 - *Serotonin syndrome leading to rhabdomyolysis*
 - *Intravenous fluids*
2. What is the most important electrolyte result you would want to know before starting treatment and why? (2 pts)
 - *Potassium, in view the patient may require intubation and ventilation and you would want to avoid use of suxamethonium*

The laboratory ring you with an urgent Na result of 112mmol/l

3. Name four further steps in the ED management including drug doses and route where appropriate. (4pts)
 - *Active cooling, consider dantrolene 1mg/kg*
 - *Lorazepam 1-4mg IV for agitation/convulsions*
 - *0.9% saline intravenous aim to increase Na 6mmol/l in 4 hrs*
 - *Consider hypertonic saline*
 - *NaHCO₃ 50mls 8.4%*
 - *Consider Metoprolol 5mg IV for tachycardia*
 - *Lorazepam/Phentolamine 2-5mg IV for hypertension*
4. What 2 intracerebral complications would justify a CT head? (2 pts)
 - *Intracerebral heamorrhage*
 - *Cerebral oedema*

SAQ 12-Purpuric Rash



This 8 year old child present unwell with a temperature of 39 degrees and a capillary refill of 5 seconds

1. What is the differential diagnosis of a nonblanching rash (2 pts) (4 lines)

- Meningococcal septicaemia
- HSP
- ITP
- NAI
- HUS
- viral rash

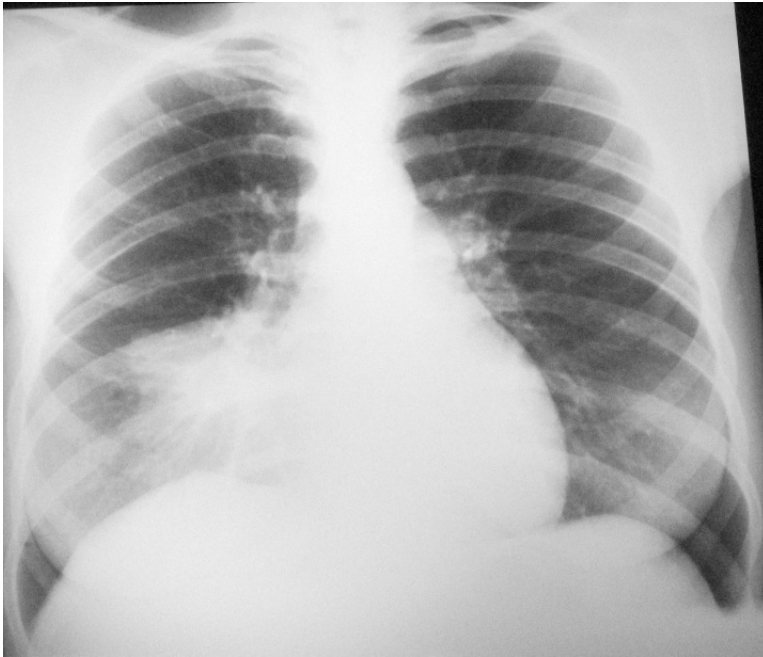
2. What prophylaxis would you offer and so whom? What are the side effects of prophylactic treatment? (4pts)

- Members of family who live in same house or very close contacts
- Hospital staff in direct contact with respiratory secretions
- Rifampicin orange urine or ciprofloxacin (allergy/not work)

3. What is the ED management of the child including drug doses and route where appropriate? (4 pts)

- Oxygen
- Intravenous fluid resuscitation 20ml/kg 0.9% saline
- Consider 4.5% HAS for second and further bolus
- Cefotaxime 80mg/kg IV
- Call anesthetist for elective intubation
- Paracetamol 20mg/kg loading dose if not already had
- Avoid exacerbation of potential raised intracranial pressure with head up, iv mannitol, CO2 4.0-4.5, frusemide IV, dexamethasone IV

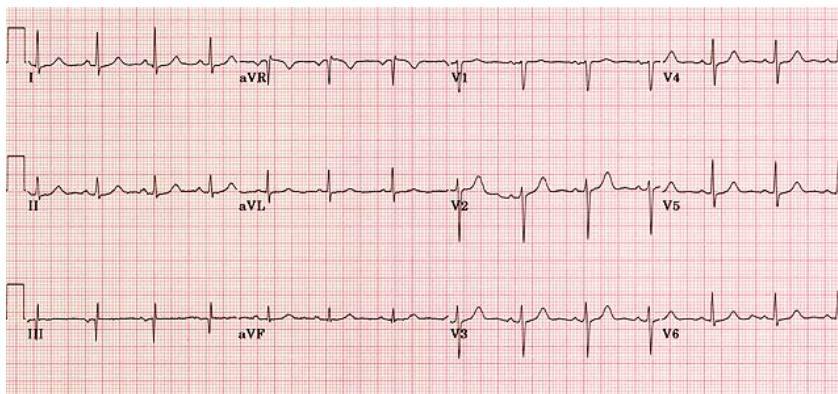
SAQ 13-Pneumonia



1. Describe the radiological appearance and give the diagnosis (2 pts)
 - *Increased shadowing masking the right heart border consistent with consolidation and a diagnosis of Right middle lobe pneumonia*
2. What are the risk factors associated with a poor prognosis (3pts) (6 lines)
 - *New confusion AMT<8*
 - *urea > 7*
 - *RR > 30*
 - *BP systolic <90 diastolic <60*
 - *age >65*
3. Describe any other risk factors that would affect your management? (2 pts)
 - *Comorbidities,*
 - *social circumstances*
4. Name 3 causative organisms in the pathogenesis of pneumonia (3pts)
 - *Streptococcus pneumoniae, , haemophilus influenzae,Morexella catarrhalls*
 - *mycoplasma pneumonia(atypical)*

SAQ 14- Chest Pain

A 70 year old man is admitted with chest pain. He is seen by one of the F2 and diagnosed with ACS and given aspirin, clopidogrel and clexane.



Shortly afterwards he has a VF arrest. He is successfully resuscitated with a return in spontaneous circulation. His GCS is 8/15 post resuscitation.

1. What are the first 2 investigations you would do and why? (2 pts)

- ABG,
- Rpt ECG (MI PCI)
- CXR(dissection)
- CT head(ICH)

2. What is the immediate management? (2 pts)

- *Maintain airway, oxygen*
- *call anaesthetist for definitive airway*

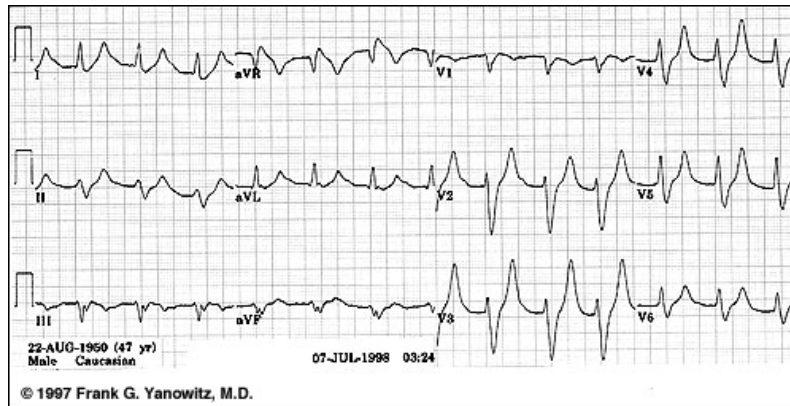
3. What is the further ED management? (4pts)

- *IV fluid resuscitation*
- *Catheterise hrlly urine output*
- *Consider central venous access to monitor CVP*

SAQ 15-Digoxin toxicity

An 84 year old lady who lives in a nursing home presents unwell complaining of seeing yellow flashes in her eyes.

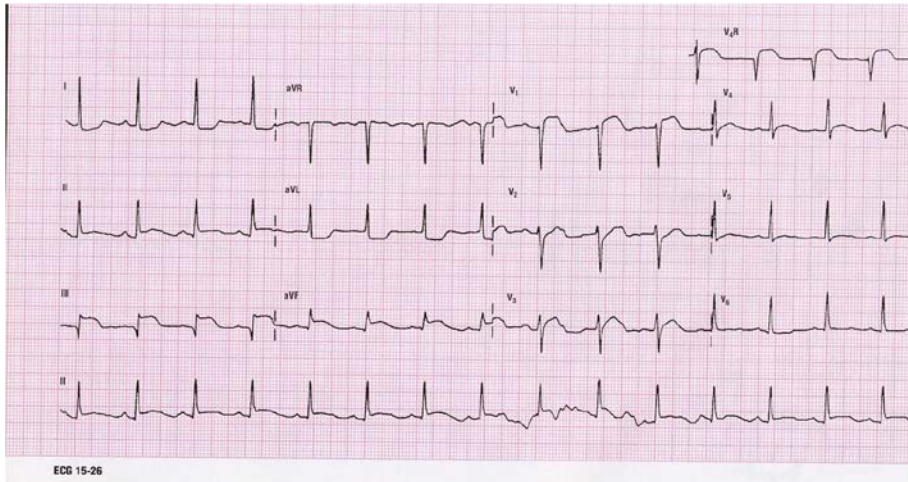
Her medication list include: amiloride, digoxin, aspirin, simvastatin



1. Describe 2 abnormalities seen on the ECG (2 pts)
 - *Broad QRS*
 - *Tall tented T Waves*
2. Describe 4 signs of hyperkalaemia on an ECG (2 pts)
 - *Small or absent P waves,*
 - *AV dissociation,*
 - *ventricular tachycardia or fibrillation,*
 - *sinusoidal pattern*
3. What 4 drugs would you give and describe their mechanism of action (4pts)
 - *10mls 10% Ca gluconate IV anatagonises cardiac membrane excitability*
 - *10 units actrapid in 50mls 50% glucose over 20mins IV, stimulates Na/K pump to uptake K+ into cells*
 - *Salbutamol 5mg Neb K+ drives K+intracellularly*
 - *Digibind to bind digoxin*

SAQ 16- Chest Pain

A 60 year old man presents with sudden onset of chest pain.



1. Describe the abnormalities on the ECG (1 pt)
 - ST elevation lead 3, aVF, right ventricular leads
 - ST depression lead 1, aVL
2. What artery is involved? (1 pt)
 - Right coronary artery
3. What is the diagnosis? (1 pt)
 - Right ventricular MI
4. What medication that you would commonly give to patients with ischaemia would you avoid in this instance and why? (2pts)
 - GTN as vasodilates and would decrease preload and worsen cardiac output as according to Starling Law
5. Would you give a treat hypotension with a fluid bolus and why/not? (2 pts)
 - Yes, as for above increase preload and increase end diastolic RV pressure so increasing cardiac output
6. What drugs have the best evidence base in the treatment of an MI? (3 pts)(6 lines)
 - Aspirin,
 - clopidogrel
 - bblocker
 - ACE inhibitor
 - atorvastatin
 - Thrombolysis

SAQ 17-Sickle Cell Crisis

28 year old man with known sickle cell presents to the department complaining of abdominal pain.

1. What initial treatment would you commence? (2pts) (4 lines)

Oxygen

- *Intravenous analgesia such as morphine up to 10mg titrated to pain*
- *IV fluid resuscitation*
- *Warming with Bair Hugger*
- *IV antibiotics after blood cultures*

2. Explain the pathophysiology of a sickle cell crisis (1 pt)

- *Rigid blood cells unable to deform when pass through capillaries and occlude vessels causing ischaemia and haemolysis*

3. What can trigger a sickle cell crisis? (2 pts) (4 lines)

- *infection,*
- *hypothermia,*
- *post operative,*
- *dehydration,*
- *hypoxia*

4. List 4 complications other than chest and painful crises of sickle cell disease (4 pts)

- *Osteomyelitis*
- *dactylitis,*
- *priapism,*
- *acute splenic sequestration,*
- *cerebral infarct,*
- *aplastic crisis,*
- *cholecystitis*

SAQ 18- Sepsis

An 84 year old man presents to the department having become unwell and drowsy. He has been treated by his GP for a UTI. He is hypotensive and tachycardic.

1. What are the SIRS criteria? (2 pts)
 - Two or more of : Temp $>38/ <36$, pulse >90 , wbc $<4/ >12$, systolic <90
2. Define neutropenia (1pts)
 - *Mild* $1-1.5 \times 10/9$
 - *Mod* $0.5-1.0 \times 10/9$
 - *Sev* $<0.5 \times 10/9$
3. Within what timeframe would you be expected to give antibiotics? (1 pt)
 - *50% within 1 hour/ 90% within 2HR hours and 100% before leaving ED*
4. What ED management should be completed within the first hour? (3pts)
 - *High flow oxygen,*
 - *blood cultures,*
 - *iv antibiotics*
 - *iv fluids,*
 - *lactate,*
 - *uo hourly documentation*
5. What further management issues should be commenced within the ED? (3pts)
 - *Central line for central venous oxygen saturation*
 - *Starting inotropes to maintain BP*
 - *Blood transfusion to maintain HCT*
 - *Consider arterial line for monitoring if for inotropes*

SAQ 19-Chicken Pox



A 6 year old boy presents with coryzal symptoms and a vesicular rash

1. How long is chicken pox infective
 - *Five days before the rash until last lesion crusted*
2. What advice would you give to his family about the need for prophylactic treatment? (2pts)

His mum has had shingles in the past
His dad has never had chicken pox
His 1 year old sister has never had chicken pox
His 8 year old brother had chicken pox last year

 - *No NEED FOR PROPHYLAXIS, brother is immune as is mum, Dad and sister are at risk of catching it*
3. How long are the following infective? (4 pts)
 - *Measles – from initial symptoms post rash*
 - *Mumps – 3 days before to 1 week post salivary gland swelling*
 - *Rubella – 1 week before to 5 days post rash onset*
 - *Hepatitis A – 2 weeks before until one week post jaundice*
4. A pregnant aunt is coming to visit, what advice would you give? (1pt)
 - *<13/40 pregnant = no risk to fetus. If she has had chickenpox she is immune.*
 - *If not should get checked to see if immune*
5. What are the complications of chicken pox? (2 pts)
 - *Secondary bacterial skin infection,*
 - *pneumonia, pneumonitis,*
 - *otitis media,*
 - *encephalitis*

SAQ 20-DKA

A 6-year-old boy presents with abdominal pain, nausea and vomiting for 2 days.

ABGs and bloods are done:

pH 7.1

pO₂ 24 (on oxygen)

pCO₂ 3.0

HCO₃ 12

Na 134

K 5.6

Ur 6

Cr 115

Glucose 35

a) What is the diagnosis? (1)

- *Diabetic Ketoacidosis*

b) What signs are indicative of raised ICP? (3)

- *Headache*
- *Irritability*
- *Altered behaviour*
- *Drowsiness*

c) How could you treat cerebral oedema? (2)

- *Elevate head of the bed to 30 degrees*
- *Decrease fluids to maintenance*
- *Closely monitor Glasgow Coma Scale (GCS) and serum sodium*
- *Avoid hypoxia: Oxygen by mask or intubate and ventilate aiming for a pCO₂ ~ 4.5 kPa*
- *Mannitol 0.2–0.5 g/kg IV (1–2.5 mL/kg/dose of 20% solution) over 10-30 minutes every 2 hours as needed*

d) Name 4 other signs or symptoms of DKA (4)

- *Polydipsia, polyuria*
- *Nocturia and secondary enuresis in a previously continent child*
- *Weight loss*
- *Muscle pains and cramps*
- *SOB*
- *Confusion and coma*