

Mock exam in September 2006

6 minutes each question
18 questions in 1 hour and 48
minutes

Question1 Picture A



Question 1 Picture B



Questions for question 1

- A 25 year old cricketer catches a ball during a match, misjudges the catch and the ball strikes his thumb. He presents to the ED with a painful thumb and decreased range of movement.
- Picture A is his xray. Describe in full the radiographic abnormality seen
- What eponym is used to describe this abnormality
- Describe how this abnormality is returned to its correct anatomical position
- Picture B shows a severe variant, what is it called
- What is the shape of the first metacarpal-carpal joint
- Name the bones which constitute the distal carpal row in order radial to ulna

Answers to question 1

- An **oblique fracture of the base of the first metacarpal** extending proximally to involve the **articular surface**, with **subluxation** of the carpo-metacarpal joint
- **Bennetts** fracture
- **Traction** with **extension** of the thumb and **pressure** over the base of the first metacarpal, then POP in that position
- **Rolando** fracture
- Saddle shape
- Trapezium, trapezoid, capitate hamate

Question 2

- A 35 year old is seen in emergency with emphysema, he tells you it is genetic
 - What is the most likely diagnosis
 - Briefly explain the pathophysiology
 - What is the inheritance
 - How does the xray differ from usual
 - How does the lung tissue differ from usual
 - What other organ involved and how
 - What blood test would give you the diagnosis
 - Why might you get a false negative
 - Main treatment
 - In emphysema what are the indications for long term oxygen therapy

Answers to question 2

- Alpha 1 antitrypsin deficiency
- Proteases are enzymes that destroy foreign substances in the body but they must be regulated otherwise they attack normal tissue, alpha 1 antitrypsin is the commonest protease inhibitor, produced by the liver
- Autosomal recessive
- Predominantly basal rather than apical disease
- Panacinar ie alveoli and bronchioles rather than just bronchioles
- Defective enzyme accumulates in the liver causing cirrhosis. Can present as neonatal liver disease
- Measure alpha 1 antitrypsin
- Alpha 1 antitrypsin is an acute phase protein so levels will rise in infection
- Stop smoking
- Long term oxygen therapy is indicated in patients with COPD who have
 - Pao₂ less than 7.3kPa when stable or
 - Pao₂ between 7.3 and 8.0 with one of peripheral oedema, pulmonary hypertension, polycythemia, nocturnal hypoxaemia

Question 3



- A Pi Go 21/40 week woman attends the ED with PVB. She is very distressed and she has been told by her mid-wife that if she has an PVBing she must attend the ED immediately for an injection.

Question 3

1. What further History would you taken from this lady? (1)
2. What 2 blood test would you do and why ? (2)
3. Name Four Rhesus Sensitising events (2)
4. When would you given Anti D in pregnancy and at what doses ? (5)

Question 3 Answers

1. Take full antenatal Hx, including Hx of the episode of PVB, and check Rhesus status
2. G+S to check Rhesus Status, Kleihauer test to confirm Transplacental blood loss from foetus to mother – may be falsely negative if fetal cell have haemolysis i.e. blood group incompatibly
3. PVB, Abortion –spontaneous/ complete/incomplete, TOP, Ectopic pregnancy, Closed Abdo injury, IUD, Still birth, fetal blood sampling
4. <12/40 – only give 250iu if TOP or an Ectopic
12-40 – given 250iu with sensitising event
> 20/40 given 500iu with sensitising event after doing Kleihauer Test. Further dose if Heam advise
Must be given in deltoid and decrease absorption

Question 4

- *A 17 year old man was driving his car at approximately 50mph when it skidded out of control and ploughed into a lorry. All three passengers died on scene. The driver was extricated and taken to the emergency department*



Question 4

- What are the six life-threatening chest injuries in trauma and what is the definitive treatment?
- What are the **ACCEPTED** indications for thoracotomy in the ED?
- What components make up the Revised Trauma Score?
- Draw a diagram to illustrate the landmarks for the correct measurement of a stiff-neck collar.

Answers

- **Airway-** cuffed tube in trachea
- **Tension-** large bore needle 2nd intercostal space mid-clavicular line
- **Open pneumothorax-** Dressing taped on three-sides only
- **Massive haemothorax-** Chest drain BUT iv access FIRST
- **Flail Chest-** Adequate analgesia/anaesthetic input +/- intubation and ventilation
- **Cardiac tamponade-** long needle inserted at xyphisternum angled at 45° towards base of left scapula (patient must have cardiac monitoring in place)

Answers

Accepted indications

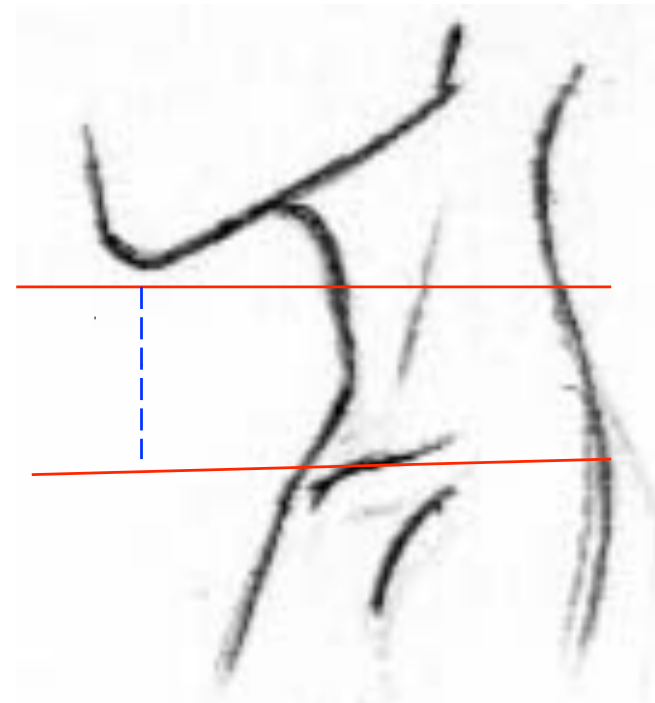
- Penetrating thoracic injury
 - Traumatic arrest with previously witnessed activity (pre-hospital or in-hospital)
 - Unresponsive hypotension (BP <70mmHg)

Blunt thoracic injury

- Unresponsive hypotension (BP < 70mmHg)
- Rapid exsanguination from chest tube (>1500ml)

Answers

- Revised Trauma Score
- GCS + RR + Systolic BP
- The picture should demonstrate the following: The blue line indicates the length that should be measured using the clinicians fingers when the hand is in a position parallel with the horizontal lines



Question 5

A pleasant woman presents to you complaining of a one day history of facial weakness:



Question 5

- a) What is your differential diagnosis?
- b) If your diagnosis is Bells Palsy what is the prognosis (in %)
- c) Your patient asks what the poor prognostic factors are, what do you tell her?
- d) What is the name of the system used to grade the severity of facial weakness?
- e) What treatments may be considered?

Bells palsy:

- Men=women (increased in pregnant women),
- Most common 15-60 years
- House-Brackmann scale:
I - normal facial function
VI - total paralysis

Differential diagnosis:

CNS lesion (stroke, intracranial tumour),
Ramsay-Hunt syndrome,
Chronic otitis media (especially with a
cholesteatoma),
Parotid tumour,
Tumour at base of skull,
Lyme disease,
DM,
MS,
(sarcoid + GB syn but usually bilat)

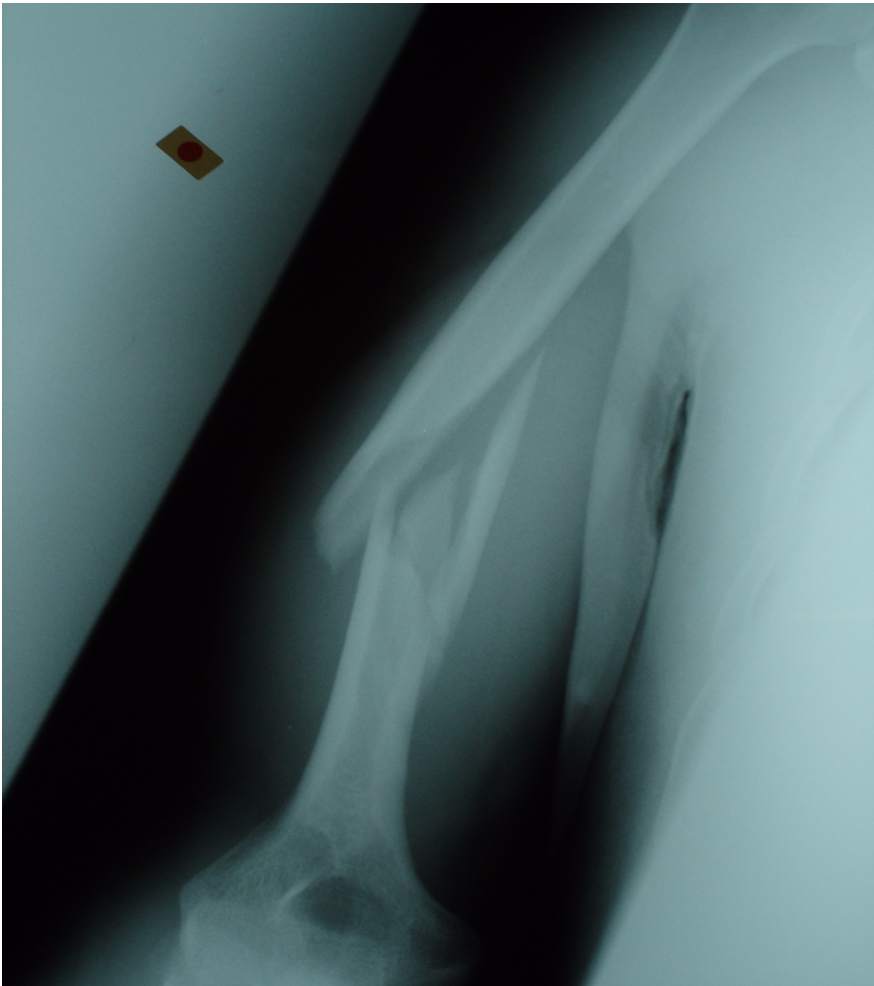
Poor prognostic factors:

- Increasing age,
- complete facial palsy,
- severe pain,
- reduced lacrimal function,
- no stapedial reflex (on audiological testing),
- severe degeneration of nerve on electrophysiological testing,
- Increasing time to initial improvement

Possible treatments, evidence for all of these is lacking!

- Antivirals, aciclovir (or prodrug valaciclovir)
- Steroids
- Acupuncture
- Physiotherapy
- Surgery (cosmetic)
- NB Protect eye / artificial tears
- ??Botox in future (again cosmetic), no current studies

Questions 6



Right hand financial advisor attends the ED following an alleged assault. He is complaining of pain in his R shoulder and difficulty moving his hand.

Questions 6

1. Described the x-ray. What is this injury called?
(2)
2. What structure could be involved and why? (3)
3. How would this manifest? How do you test ?(4)
4. Name 4 other causes for this Nerve injury? (2)

Answers 6

1. AP of humerus showing a comminuted # of distal shaft of humerus.
Holstein-Lewis #
2. Radial nerve. It is at risk of injury with mid shaft/distal humerus as the radial nerve emerges from the spiral groove and is tethered as enters the muscle. Increased risk if there is lateral displacement of the fracture.
3. Paralysis/Weakness of the extensor muscle to the wrist and fingers, including the extension and abduction of the Thumb. Weakness forearm supinators may occur though they maybe spared. Paraesthesia of the dorsoradial aspect of the forearm, and the dorsal aspect hand/fingers (thumb – middle of ringer finger). To test wrist drop – to extend wrist when elbow flexed and forearm pronated. Do not test sensation on fingers.
4. “Crutch Palsy” – caused by the compression of the nerve in the spinal groove by the crutch.
“Saturday Night Palsy” – compression of the upper arm on the medial aspect e.g. by hanging arm over chair
Dislocation or # of elbow
Healing callus of humeral #

Question 7



20 year female attends the ED with a rash which had been present for 2 days. She also has a headache and fever. She had been camping in the New Forest in the previous week.

Questions 7

1. Describe the rash. What is called (1)
2. What is the diagnosis and name of the organism and the genus of the tick? (2)
3. Give 4 complications of this disease (4)
4. How do you investigate and treat ? (3)

Answers 7

1. Erythema Migrans. Annular rash, slightly raised. Note it will be none painful/ non itchy.
3. It's Lyme Disease, the organism is *Borrelia burgdorferi*, the tick is from the Genus Ixodes
5. Complication of the disease : **CVS** – myopericarditis, and heart block. (8%) dilated, cardiomyopathy **CNS** – meningoradiculoneuritis (Bannwarth's syndrome) meningitis ,cranial neuritis - usually VII, with palsy - very hard to distinguish from Bell's palsy ,radicular neuritis (15%), chronic progressive encephalitis and encephalomyelitis (rare). Lyme encephalitis can be differentiated from multiple sclerosis because of the presence of a specific antibody in the CSF and a higher cell count. **MSK** – brief attacks of arthritis, and oligoarticular arthritis usually of the large joints, particularly the knee (60%), erosive arthritis: mono- or oligoarticular ,intermittent or chronic. **Ophthalmic** – conjunctivitis, iridocyclitis, choroiditis, optic neuropathy with papilloedema **Liver** – hepatomegaly, hepatitis. **Skin** – acrodermatitis chronica atrophicans, dermatomyositis-like syndrome

Answer 7

4. Treatment for early disease with out CVS/CNS symptoms is Doxycycline 200mg od for 14 days, or Amoxicillin 500mg TDS for 14 days for children or people allergic to Doxycycline. MSK oral antibiotics for 30 days. CVS/CNS symptoms IV Ceftriazone 2g for 2 weeks. Prophylaxis is consider if suspect high risk of tick/infection exposure. Oral antibiotics for 10 – 24 days.

Investigation is serology Lyme Disease. HOWEVER, it can take weeks to seroconvert, so if you suspect disease, do not delay treatment in the ED. If had disease in past or vaccination may be +ve so may not indicate disease. New test, e.g. C6 peptide and VsIE have the potential to remove these problems.

Question 8



- 60 yr old man presents with new onset of mild chest pain on 6 months of progressive shortness of breath
- Non smoker, no fevers, chills wt loss haemoptysis
- PA and lateral chest xray with CT as shown
- Afebrile, sats of 99% on air

Question 8

- Describe the chest xray
- What is the most likely diagnosis and the differential
- Describe symptoms and structures involved with pathology in this area of the chest
- With what systemic disorder is this associated

Answers 8

- Lobulated, well defined **soft tissue** mass in **anterior mediastinum** (1)
- **Thymoma**, (1) Lymphoma, retrosternal goitre, dermoid and other germ cell tumours, metastatic lymphadenopathy (3)
- Oesophagus, recurrent laryngeal nerve, Horner's, phrenic, bronchus (4)
- **Myasthenia gravis** (1)

Question 9



Question 9

- A 50 year old man presents with neck swelling as shown
- The lesion has increased in size over the last week preceeded by a sore throat
- Systemically otherwise well
- Smooth mass elevates on swallowing and tongue protrusion
- Oropharynx mildly red

Question 9

- What is the diagnosis
- What treatment needed if condition persists
- If the lesion was painful, more diffuse, moved only on swallowing what would be the diagnosis, give 2 aetiologies
- Give 5 well recognised features of an underactive thyroid affecting the nervous system or/and the muscles

Answers 9

- Thyroglossal cyst (1)
- Surgical resection (1)
- Thyroiditis, viral or autoimmune (3)
- Carpal tunnel syndrome, proximal myopathy, myotonia, reduced reflexes, ataxia, poverty of movement, muscular hypertrophy (5)

Question 10



Write a METHANE message for the above incident

Question 10

- What is Triage Sieve?
- What three categories are used for Triage Sieve?
- What is Triage Sort?

Question 10

Triage Sieve the following patients:

- *A young child is wandering around crying for his mother. He has a large laceration to his head and a deformed left wrist*
- *A young man is lying on the ground, both legs have been blown off. His respiratory rate is 35*
- *A woman is slumped in her seat. Her Respiratory rate is 14 and her capillary refill is < 2secs. Her right arm has been partially amputated and she has a large piece of metal stuck in her left thigh*

Answers 10

- **M** Major Incident Declared
- **E** Location (Tavistock Square Grid Reference)
- **T** Explosion on bus
- **H** Further explosions possible and fire
- **A** Road access from any direction acceptable (given map not available)
- **N** 50 casualties 30 severely injured with blast type injuries
- **E** Police, Fire and Ambulance all required

Answers 10

- Triage Sieve is a first look triage to quickly sort patients into priorities
- The three categories used are:
- T1 Immediate; T2 Urgent; T3 delayed
- Triage Sort is the use of the Triage Revised Trauma Score (TRTS) to more accurately re-assign the categories used in Triage Sieve
- T3; T1; T2

Question 11



Question 11

- Paramedics bring a 50 yr old woman who has been shot with a low velocity air gun into the soft tissue above the right eye as shown
- She complains of markedly deteriorating vision
- Eye is proptotic and chemotic with no light perception

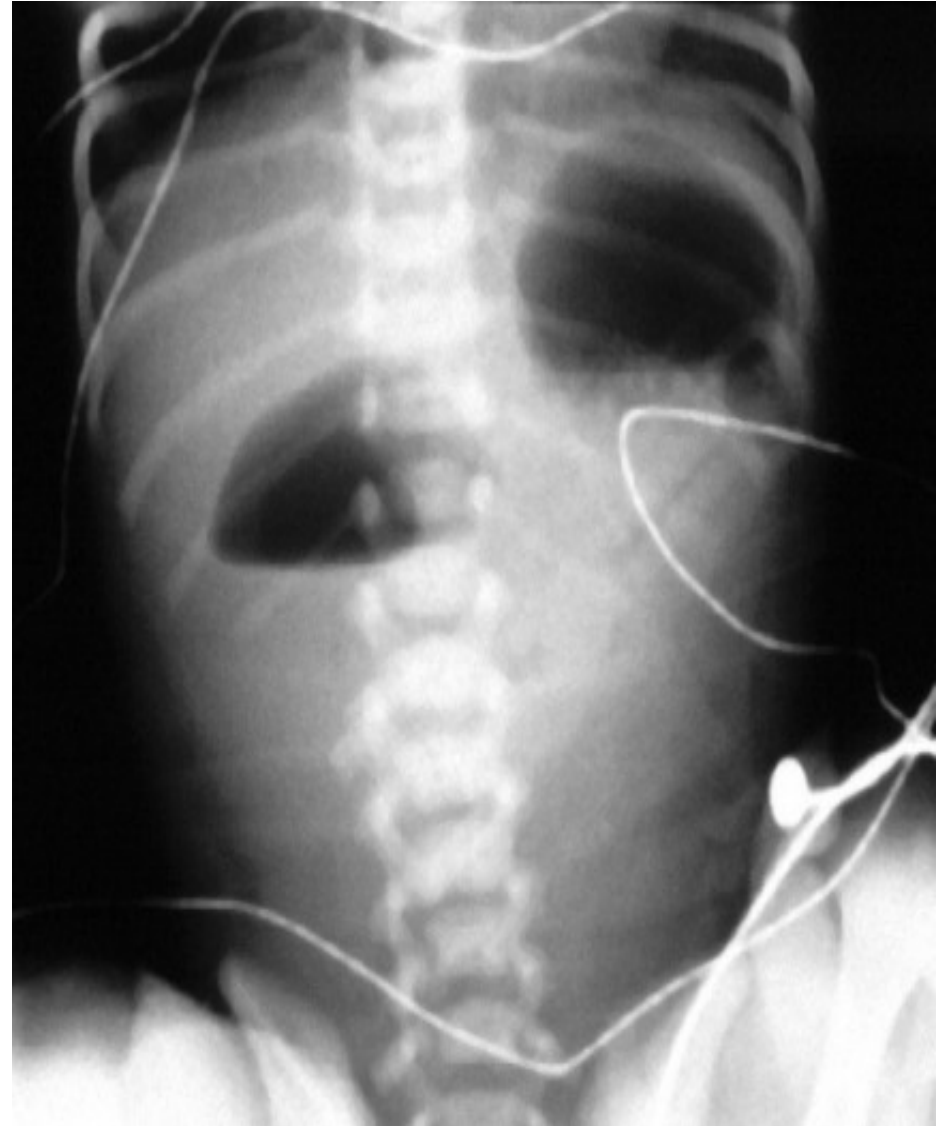
Question 11

- What emergency ophthalmic condition is present
- What is the management
- Of what main artery is the ophthalmic artery a branch
- List the treatments for acute closed angle glaucoma and their mode of action

Answers 11

- Acute orbital compartment syndrome or similar (1)
- Decompression by lateral canthotomy (1)
- Internal carotid artery (1)
- Topical beta blockers reduce aqueous humour production (2)
- Topical Pilocarpine, miotic opens up drainage, parasympathomimetic (2)
- Acetazolamide, carbonic anhydrase inhibitor, reduces aqueous humour production (2)
- Mannitol, osmotic diuretic (1)

Question 12



Question 12

- What does the first xray and CT show, what are the lines across the bowel called
- What is the diagnosis in the paediatric xray
- How does intussusception present in children, what are the signs, how is it diagnosed and what is the treatment
- Name the 3 commonest causes of adult bowel obstruction in UK in order

Answers 12

- Multiple dilated small bowel with air fluid levels on CT, also previous right hip surgery and OA, valvulae conniventes (3)
- Duodenal atresia causing double bubble (1)
- 5-10 month old male, sudden intermittent severe abdo pain, most begin near the valve into the colon, sausage mass, rectal bleed or redcurrant jelly, ultrasound shows double lumen, enema is diagnostic and therapeutic (4)
- **Adhesions**, malignancy, inflammatory bowel (2)

Question 13 a



- History:
 - A child presents with a 5 day history of a pruritic rash 2 weeks after visiting a cousin with a similar exanthem.
 - Rash was preceded by 24 hours of raised temperature (T38) and malaise.
- Examination:
 - T 37.2
 - Clear fluid filled vesicles

Questions 13 a:

1. What is the most likely diagnosis?
2. Are there any groups in whom you would consider specific treatment?
3. His mother is 13 weeks pregnant. List one investigation and briefly the management of the mother.
4. She asks what the risks to her unborn baby are if she contracts this illness and what special management may be required in the antenatal period. What would you tell her?

Question 13 b



What is this rash

Question 13c



- What is the diagnosis
- What is the treatment

Answers 13

1. Varicella zoster
2. Children over 1 year with chronic cutaneous or pulmonary disorders, immunocompromised individuals, non pregnant and over the age of 13years (ref Nelson + BNF)
3. VZ IgG.

If positive – no further action

If negative – vaccinate with VZIG within 7 days of the contact (ideally within 96 hours)

Answers 13

- At 12-28 weeks if maternal infection in 1.4 % the foetus will develop acute varicella syndrome which consists of:
 - skin scarring
 - eye defects
 - limb hypoplasia
 - microcephaly
 - mental retardation
- If develops VZ +/- aciclovir, isolate from other pregnant women, antenatal specialist and detailed ultrasound

Question 13 b and c answers

- Molluscum (1)
- Kerion
 - (tinea capitis) (3)
 - Local fungal infection
 - Oral antifungals
 - Anti fungal shampoo
 - Will gradually lift off

Question 14

- Define the following
 - **Epidemic**
 - **Endemic**
 - **Pandemic**
- What are / were the causative organisms in the following outbreaks
 - **SARS**
 - **Avian flu**
 - **Bubonic plague**
- If you have a suspected case of avian influenza at your hospital what agency would you inform and what samples will they require to confirm this diagnosis (both options)?

Answers 14

- Definition of **Endemic**: (1)
 - An **endemic** is present in a community at all times but in low frequency.
- Definition of **Epidemic**: (1)
 - The occurrence of more cases of a disease than would be expected in a community or region during a given time period.
 - From the Greek "epi-", "upon" + "demos", "people or population" = "epidemos" = "upon the population."

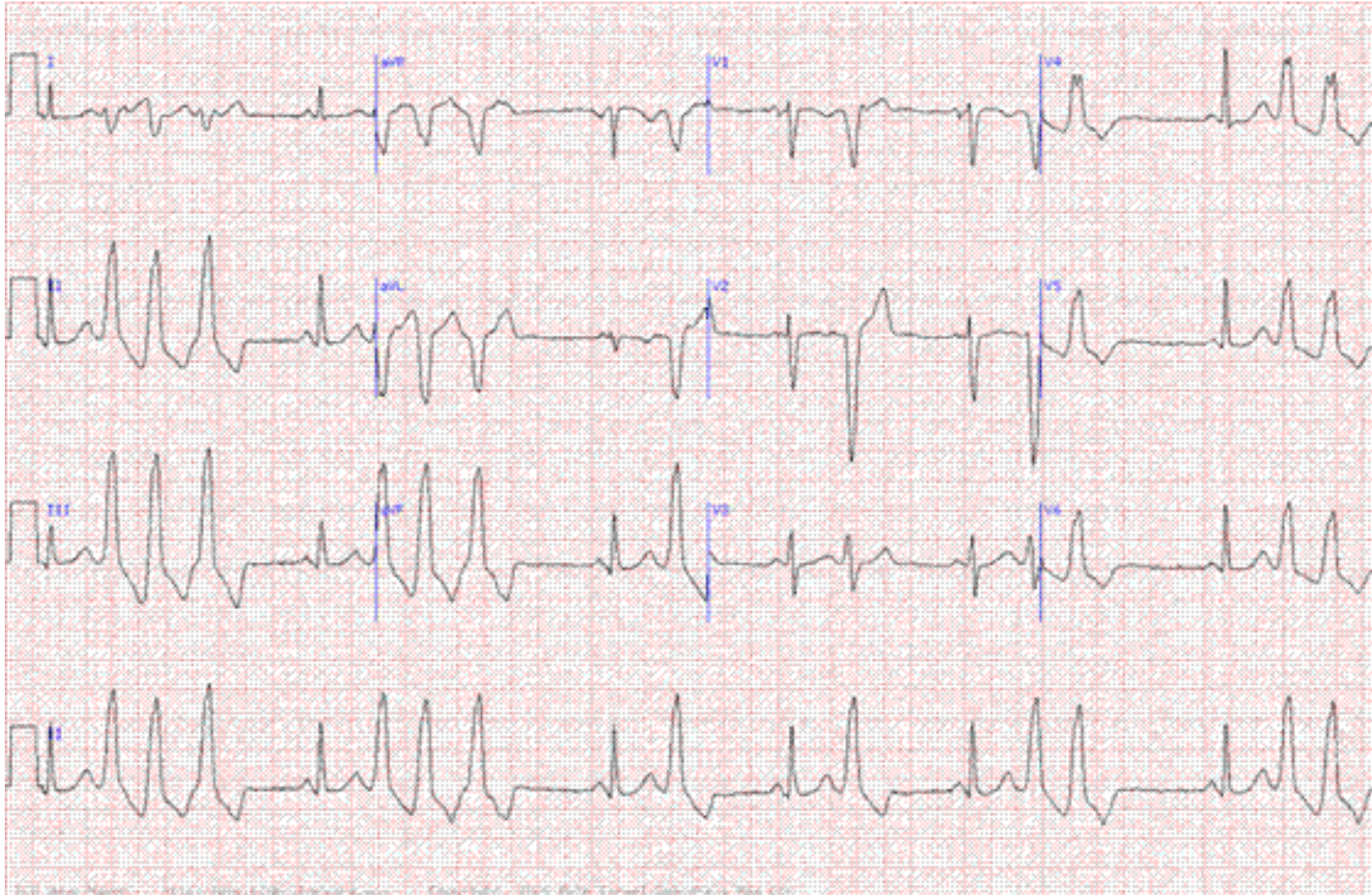
Answers 14

- Definition of **Pandemic**: (1)
 - An epidemic (a sudden outbreak) that becomes very widespread and affects a whole region, a continent, or the world.
 - The word "pandemic" comes from the Greek "pan-", "all" + "demos", "people or population" = "pandemos" = "all the people." A pandemic affects all (nearly all) of the people. By contrast, "epi-" means "upon." An epidemic is visited upon the people. And "en-" means "in." An endemic is in the people.

Answers 14

- SARS (1)
 - SARS is a very contagious form of pneumonia caused by a coronavirus which causes mild to moderate upper-respiratory illness in humans and is associated with respiratory, gastrointestinal, liver and neurologic disease in animals.
- Avian Flu (1)
 - The current avian flu in the news is caused by Influenza A with H5 N1 subgroups. There are 16 H types and 9 N subtypes. Birds get H5 and H7 forms. The new H5N1 virus is now considered endemic in Indonesia, Vietnam and some parts of Cambodia, China and Thailand.
- Bubonic plague (1)
 - *Yersinia pestis*
- Call the Health Protection Agency – 0208 200 4400 (1)
- Respiratory sample ie nasopharyngeal aspirate (1) or combined nose and throat swab in virus transport medium (1)

Question 15



Questions 15

- Describe the ECG
- What is the normal PR interval and QRS width
- Describe 5 simple ways to differentiate VT from SVT with aberrant conduction
- What 4 signs of instability does the ALS consider in the tachycardia algorithm

Answers 15

- Non sustained VT, short pr
- PR 0.12-0.20 sec
- QRS less than 0.12 sec
- Differentiation
 - Width over 0.14 suggests VT
 - Concordance, all the chest leads are positive, tall R or all negative, deep QS suggests VT esp negative
 - Capture beat suggests VT
 - Fusion beat suggests VT
 - Slight irregularity of the RR interval suggests VT, SVT normally very regular
 - Over 50 and post MI probable VT
 - Under 30 probable SVT
 - Av dissociation such as a cannon wave
- Reduced conscious level, systolic BP below 90, chest pain, heart failure

Question 16

- Patient 1
- Acute pulmonary oedema
- ABG on 10 litres
 - pH 7.29
 - pO₂ 6.8
 - pCO₂ 4.6
- Patient 2
- Exacerbation COPD
- ABG on 4 litres
 - pH 7.29
 - pO₂ 6.8
 - pCO₂ 9.8

Question 16

- You have two patients in resus
- Non invasive ventilation would be ideal for both
- Give the Mode and settings for each patient that you would start the machines on
- Give 4 contraindications to use of non-invasive ventilation

Answers 16

- Patient 1
 - CPAP (1)
 - High flow oxygen to keepsatn > 94% (1)
 - PEEP +5 (1)
- Patient 2
 - BIPAP (1)
 - Spontaneous/timed with back up 8-10 per min (2)
 - IPAP 12 (1pt 10-15)
 - EPAP 4 (1pt 4-5)
- Contraindications (2pts for 4)
 - Vomiting
 - Decreased level of consciousness
 - Indication for intubation
 - Pneumothorax
 - Asthma
 - Agitated not tolerated

Question 17

- REGIONAL ANAESTHETIC BLOCK TO FOOT
- An 18 yr old has a 1cm glass FB embedded in the soft tissues on the plantar surface of her foot. The x ray shows it overlying the distal head of her 4th metatarsal.
- Describe how you would position the patient
- The nerve(s) you wish to block and the area where you would inject local anaesthetic to achieve this block.

Question 17

- The patient weighs 60kg
- Your regional block failed and you are concerned that you might have exceeded a safe dose.
- Show your calculation for an upper limit (ml) of 2% lidocaine you can use for this patient
- Up to what vol would be safe if lidocaine with adrenaline was used?

Answers 17

- Patient to lie prone (1)
- Tibial nerve, most of sole of foot (1)
- Inject at level of upper border of medial malleolus (1)
- Between posterior tibial artery and medial to Achilles tendon (1)
- Sural nerve, supplies lateral sole (1)
- Level, 1cm above the base of the lateral malleolus (1)
- Infiltrate subcutaneously lateral to Achilles tendon to lateral malleolus (1)
- Calculation:
- $0.1\% \times 10 = 20 \text{ mg/ml}$
- Safe dose 3 mg/kg
- $3 \times 60 = 180 \text{ mg}$
- $180/20 = 9 \text{ mls}$ (1pt for calc, 1pt for answer)
- With adrenaline 21mls (1)

Question 18



- Patient with dementia developed rash after levofloxacin for UTI
- Completely well, afebrile and normal vital signs

Question 18

- What is the differential diagnosis
- What sign might be elicited at the edge of the lesions
- How do you confirm the diagnosis
- What is the treatment

Answers 18

- Differential diagnosis
 - Pemphigoid
 - Bullous drug eruption
 - Pemphigus
 - StevensJohnson/Erythema Multiforme
 - Toxic epidermal necrolysis
 - Staph scalded skin
 - Dermatitis herpetiformis
- Nikolsky
- Skin biopsy
- Stop the antibiotic, oral steroids