1) What is the diagnosis?

Butterfly rash of SLE.

This is a chronic autoimmune disorder characterised by the production of a range of autoantibodies, most commonly ANA. Commoner in young women.

Patients may present as a new diagnosis or with a flare up of the disease.

Clinical features (in descending order of frequency);

Constitutional	fever, malaise, weight loss
Musculoskeletal	athralgia, myalgia
Cutaneous	butterfly rash, photosensitive rash, discoid lupus, Raynaud's
Haematological	thrombocytopenia, anaemia, leucopenia
Neuropsychiatric	depression, psychosis, fits, CN lesions, ataxia
Renal	glomerulonephritis, nephritic syndrome
CVS or RS	pleurisy, pericarditis, pericardial/ pleural effusions
Apthous ulcers	

What 4 important emergency investigations would you now consider?

FBC, U&E, CRP, CXR, urinalysis, ECG

Other investigations include ANA, DNA, ENA, ACA, complement levels, viral serology, 24hr urine collection.

80% of patients are ANA +ve. Pneumococcal and meningococcal infections are more common in patients with SLE as a consequence of deficiencies of the complement pathway.

Treatment is with steroids, immunosuppresants e.g. azathioprine, antibiotics if infection suspected.

2) A 35 year old woman presents with atraumatic pain and swelling in the left calf. According to the Wells criteria she has a moderate risk of DVT.

What information is required to calculate a Wells score?

Wells et al 2001:

1)	active cancer (treatment ongoing or within 6 months of palliative)	1
2)	paralysis, paresis or immobilisation of lower limb	1
3)	recently bedridden >3 days or major surgery within 4 weeks	1
4)	localised tenderness along the deep veins	1
5)	entire leg swollen	1
6)	calf swelling 3cm more than asymptomatic side	1
7)	pitting oedema confined to affected leg	1
8)	dilated superficial veins	1
9)	alternative diagnosis as likely or greater than DVT	-2

Wells categorized patients into;

Low risk	(score ≤0)
Moderate risk	(score 1 or 2)
High risk	(score ≥3)

The use of the Wells score is as a 'rule out' test in combination with D-dimer testing; i.e. those patients who have a low risk and a -ve D-dimer do not require further investigation for DVT. Anyone with a moderate risk should undergo duplex USS.

3) An obese 57 year old man presents with a history of sudden visual disturbance. This affected his left eye, came on over a few seconds and obscured all vision in that eye. He also noticed at the same time his handwriting deteriorated and he had difficulty holding a pen.

Which artery has been affected?

Amaurosis fugax ~ left internal carotid. Other features of carotid TIA may be hemiparesis or dysphasia. Most TIAs result from thrombo-embolic disease involving either the heart or extra-cranial vessels.

Differential diagnosis includes cerebral tumour, focal migraine, Todd's paresis, hypoglycaemic episode and other causes of monocular visual loss e.g. retinal vessel occlusion, temporal arteritis, vitreous haemorrhage etc.

Ask about risk factors e.g. hypertension, polycythaemia, anaemia, vascultits, sickle cell disease. Look for AF, heart murmurs (mitral stenosis, artificial valves), carotid bruit, evidence of AMI.

Check BM, send bloods and get ECG and CXR.

4) A 45 year old woman with a long-standing history of RA presents with a 6-month history of worsening dyspnoea. She does not experience orthopnea. No raised JVP, heart sounds normal. ECG is normal. Blood gases on air show type 1 respiratory failure, no acidosis.

What is the probable diagnosis?

Pulmonary fibrosis 2° to RA. Other extra-articular features may include SC nodules, vasculitis, splenomegaly, neuropathy, anaemia, pleurisy, pericarditis and eye problems.

What other physical signs would you look for?

RA is a symmetrical polyarthritis typically affecting the hands and feet of young women. Remember cspine involvement. X-rays show soft tissue swelling, peri-articular erosions and joint space narrowing, deformities.

She should undergo CXR, ? CT chest and spirometry.

5) A 65 year old woman presents c/o severe headaches for several weeks and of now having lost vision in one eye. The eye is not red or painful.

Investigations show FBC normal, ESR 90.

What is the probable diagnosis?

Temporal arteritis. Beware in any patient >50yrs who presents with new headache or change in headache, weight loss, night sweats and jaw claudication. There is an association with polymyalgia.

What features would be important in the physical examination?

i) tenderness over temporal artery or loss of pulsation.
ii) fundoscopy – papilloedema may occur late in the disease.
iii) if the patient is in AF or has a carotid bruit then need to consider other causes of painless monocular visual loss, e.g. central retinal artery occlusion, stroke.

What diagnostic test will confirm this diagnosis and what treatment is indicated in the ED?

Temporal artery biopsy. Hydrocortisone 200mg IV.

What may be the SE of steroids in the elderly?

Loss of diabetic control, peptic ulceration, hypertension, thinning of skin (bruise easily), osteoporosis.

6) A 45 year old man presents with a one day history of a painful, watering eye. He has had similar symptoms before but never this badly; he can recall no trauma.

Give five differential diagnoses.

i.e. list 5 causes of a painful red eye ~ should know something about all of these.

i) conjunctivitis
ii) foreign body in eye/ corneal abrasion
iii) acute uveitis
iv) acute closed angle glaucoma
v) ulcerative keratitis

Which is most likely and why?

Acute uveitis. The pupil is irregular due to previous adhesions.

Give 5 associated diseases.

Ankylosing spondylitis, ulcerative colitis, sarcoid, AIDS, Behcet's syndrome.

Outline your management plan.

Give analgesia. Check VA. Pain on accommodation as pupils react is called Talbot's test. Fundoscopy, slit lamp examination. Refer to ophthalmology for steroid eye drops.

7) A 76 year old woman presents following a three day history of polydipsia and urinary frequency. On examination she is pyrexial, drowsy and severely dehydrated.

Investigations:

Hb	16.2
WCC	19.6
Plt	410
Na	160
K	5.2
Cl	128
HCO_3	23
Urea	31
Creat	160

Urinalysis ~ glucose +++, ketones +

What is the likely diagnosis?

HONK. This usually occurs in elderly patients with NIDDM and can develop over days or weeks; glucose levels are often >30mmol/l. It often occurs with intercurrent illness, especially infection. Patients are usually severely dehydrated and there is impairment of consciousness.

Diagnosis is made by:

i) hyperglycaemia with osmolality >350mmol/l (normal 280-305)
ii) no acidosis
ii) <++ ketones on urinalysis

There *may* be a coexistent lactic acidosis (which implies a poor prognosis).

Suggest 4 essential investigations.

ABG, blood glucose, septic screen, ECG ~ look for evidence of infection and AMI or myocardial ischaemia.

Apart from ABC, what should the initial treatment be?

Mainstays of treatment are fluid resuscitation and insulin.

IV fluids:

1l in 1hr
1l in 2hrs
1l in 2 hrs
then continue with 1l every 4hrs.

if Na^+ <160mmol/l use normal saline
if Na^+ >160mmol/l use ½ normal saline

K^+ is usually normal; no K^+ in first litre of fluid, subsequent replacement depends on K^+ level.

Insulin infusion commenced (50U Actrapid in 50ml N/saline – start at 3U/hr) to maintain fall of about 3-6mmol/hr.

Full anticoagulation with heparin.

May need catheter and CVP line.

NG tube if consciousness impaired.

Treat underlying cause if found e.g. UTI.

ICU/ HDU admission.

8) Outline the current guidelines for tetanus prophylaxis.

Standard active immunisation involves an initial course of 3 doses of tetanus toxoid at 2, 3 and 4 months of age followed by booster doses at 4yrs and 14yrs. A full course of 5 doses is considered to give lifelong immunity. Inadequate immunity against tetanus is likely in immigrants, the elderly, patients who are immunosuppressed and those who have refused vaccination.

The following wounds are regarded as 'tetanus prone':

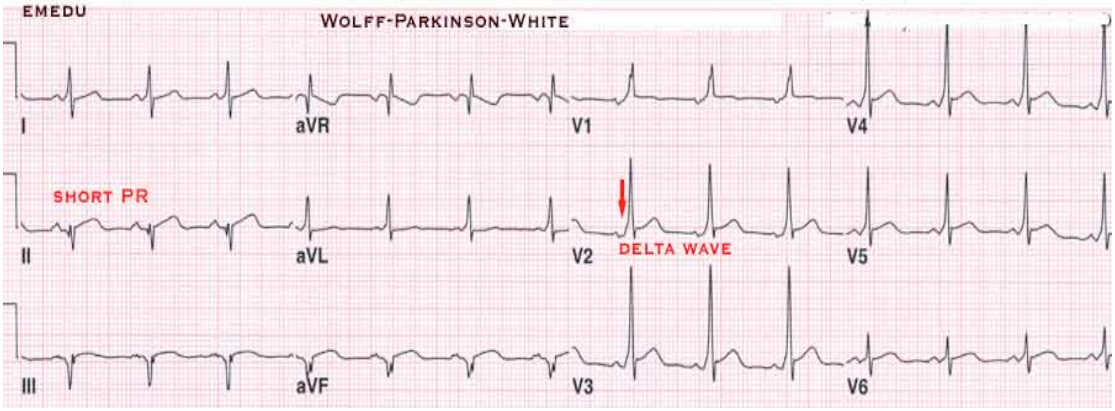
i) heavy contamination (esp. soil or faeces)
ii) devitalised tissue
iii) infected or wounds >6hrs old
iv) puncture wounds and animal bites

For fully immunised patients, a dose of human anti-tetanus immunoglobulin (HATI, 250U IM) is only necessary for very high-risk wounds. For other patients, continue/ begin the standard schedule and give HATI for tetanus-prone wounds.

Standard immunisation schedule:

2 months	D, T, P, polio, Hib, meningitis C
3 months	D, T, P, polio, Hib, meningitis C
4 months	D, T, P, polio, Hib, meningitis C
12-15 months	MMR
3-5yrs	D, T, P, polio, MMR
10-14yrs	BCG
13-18yrs	D, T, polio

9) WPW question.



Impulses are conducted from the atria via the AV node and an accessory pathway (bundle of Kent). The accessory pathway conducts more quickly than the AV node so the PR interval is short. The region of ventricle activated by the accessory pathway slowly depolarises giving rise to a delta wave. Shortly afterwards the rest of the ventricular muscle is depolarised by the arrival of the impulse from the AV node.

It is one of the commonest causes of tachyarrhythmias in children (may be accompanied by palpitations, dizziness, faints, chest pain) but can be asymptomatic. In infancy 80% are idiopathic but other causes include ASD and cardiomyopathy. It can present with AF associated with WPW ~ consult cardiology as this a potentially dangerous rhythm.

Patients with WPW should not be given drugs that block the AV node (digoxin, calcium channel blockers) as this can result in acceleration of conduction through the accessory pathway leading to VF.

Treat tachyarrhythmias as per Resuscitation Council tachyarrhythmia guideline. Adenosine is OK if the tachyarrhythmia is regular but if in doubt consult cardiology. Cure may be achieved by radiofrequency ablation.

Adenosine acts by slowing conduction through the AV node. Maximum dose is 12mg. It has a very short half-life. CI include 2nd or 3rd degree heart block, sick sinus syndrome, AF and atrial flutter. Caution in patients with asthma as it may induce bronchoconstriction.

10) Burn question: person with 36% burns. What are the fluid requirements?

4ml X (burn surface area) X (body weight (kg))
4 X 36 X 70 = 10,080ml

50% given in first 8 hours, 50% over next 16 hours. Object is to obtain urine output of 1ml/kg/hr.

Children receive *maintenance requirements* in addition to above amount.

11) A 3 year old child presents after 4 days of D&V. He is afebrile with a dry mouth and a pulse rate of 150.

What is his maintenance fluid requirement?

Need to calculate percentage dehydration:

Mild (<5%)
Thirst
Dry mouth
Concentrated urine

Moderate (5-10%)
Sunken fontanelle/ sunken eyes
↓urinary output (<4 wet nappies/24hrs in a baby)
Tachypnoea
Tachycardia

Severe (>10%)
Hypotension (very late)
Skin turgor
Drowsiness/ irritability

Maintenance requirements are:

100ml/kg/day for first 10kg
50ml/kg/day for next 10kg
20ml/kg/day for each subsequent kg

So his maintenance requirements are:

Estimated weight (age+4) X 2 = 14kg
(10 X 100) + (4 X 50) = 1200ml

Assume deficit of 10%:

10 X 10(%) X 14 = 1400ml

So total daily requirement is 2,600ml. Use 0.45% saline/ 5% dextrose if not able to tolerate oral rehydration or is deteriorating.

12) Neonatal resuscitation question ~ know the Resuscitation Council Guideline (2005).

APGAR scores:

APGAR scores are done at 1 and 5 minutes post delivery.

	2	1	0
Heart rate	>100	<100	Absent
Respirations	Good, crying	Slow, irregular	Absent
Muscle tone	Active motion	Some flexion	Limp
Reflex irritability (catheter in nares)	Cough or sneeze	grimace	No response
Colour	Completely pink	Pink body, blue limbs	Blue or pale

Remember if you need to cannulate the umbilical vein (fastest method of venous access in newborn) it is the single large dilated vessel adjacent to the 2 constricted arteries. Insert a 5F catheter 5cm into the vein and secure with a tie.

There was another question about a 10 week old baby with feeding difficulty since birth ~ picture showed floppy baby.

Causes:

i) Muscle weakness – NMJ problem or spinal cord lesion.
ii) Normal muscle strength – cerebral palsy, Prader-Willi, Downs, hypothyroidism.

One more question about chickenpox pneumonia in a child ~ remember this is usually staphylococcal in children.