

PassMed Key Part 1

Endocrine

Orlistat works by inhibiting gastric and pancreatic lipase to reduce the digestion of fat

Gitelman's syndrome: normotension, hypokalaemia + hypocalciuria

Hashimoto's thyroiditis is associated with thyroid lymphoma

Glitazones are agonists of PPAR-gamma receptors, reducing peripheral insulin resistance

HRT: adding a progestogen increases the risk of breast cancer

Infertility in PCOS - clomifene is superior to metformin

Thiazides cause hypercalcaemia

Serum IGF-1 levels are now the first-line test for acromegaly

The short synacthen test is the best test to diagnose Addison's disease

A 10 g monofilament should be used to assess for diabetic neuropathy in the feet

Hypoglycaemia in patients with alcoholic liver disease does not respond to glucagon

In Cushing's disease, cortisol is not suppressed by low-dose dexamethasone but is suppressed by high-dose dexamethasone

Non-functioning pituitary tumours present with hypopituitarism and pressure effects

Gliflozins - SGLT2 inhibitors

Phaeochromocytoma: do 24 hr urinary metanephrines, not catecholamines

Klinefelter's - LH & FSH raised

Kallman's - LH & FSH low-normal

Prolactin - under continuous inhibition

LH surge causes ovulation

HRT: unopposed oestrogen increases risk of endometrial cancer

Exenatide causes vomiting

Thyrotoxicosis with tender goitre = subacute (De Quervain's) thyroiditis

Myxoedemic coma is treated with thyroxine and hydrocortisone

Bilateral idiopathic adrenal hyperplasia is the most common cause of primary hyperaldosteronism

Klinefelter's - 47, XXY

Polycystic ovarian syndrome - ovarian cysts are the most consistent feature

A normal short synacthen test does not exclude adrenocortical insufficiency due to pituitary failure

Cervical cancer: Human papillomavirus infection (particularly 16,18 & 33) is by far the most important risk factor

Glucocorticoid treatment can induce neutrophilia

Klinefelter's syndrome - elevated gonadotrophin levels

Sulfonylureas often cause weight gain

Patients with type I diabetes and a BMI > 25 should be considered for metformin in addition to insulin

During Ramadan, one-third of the normal metformin dose should be taken before sunrise and two-thirds should be taken after sunset

Thinning of pubic and axillary hair is seen in females with Addison's disease due to reduced production of testosterone from the adrenal gland

Riedel's thyroiditis is associated with retroperitoneal fibrosis

Meglitinides - bind to an ATP-dependent $K^+(K_{ATP})$ channel on the cell membrane of pancreatic beta cells

Graves' disease is the most common cause of thyrotoxicosis

Pioglitazone - contraindicated by: heart failure

SGLT-2 inhibitors work by increasing urinary excretion of glucose

(Important as it is the cause of main side effects - increased urine output, weight loss, UTI)

Thyrotoxic storm is treated with beta blockers, propylthiouracil and hydrocortisone

Small cell lung cancer accounts 50-75% of cases of ectopic ACTH

Excessive flatulence is an extremely common side effect of acarbose which is often poorly tolerated

Anaplastic thyroid cancer - aggressive, difficult to treat and often causes pressure symptoms

In sulphonylurea overdoses, patients are at risk of recurrent hypoglycaemia

Exenatide = Glucagon-like peptide-1 (GLP-1) mimetic

Diabetes diagnosis: fasting > 7.0, random > 11.1 - if asymptomatic need two readings

Meglitinides - stimulate insulin release - good for erratic lifestyle

9 am cortisol between 100-500nmol/l is inconclusive and requires further investigation with a short synacthen test

Gitelman's syndrome is due to a reabsorptive defect of the NaCl symporter in the DCT

Acromegaly is caused by excessive growth hormone. Somatostatin directly inhibits the release of growth hormone, and hence somatostatin analogues are used to treat acromegaly

Subacute thyroiditis causes hyper- then hypothyroidism

Acromegaly: increased sweating is caused by sweat gland hypertrophy

Sulfonylureas - bind to an ATP-dependent $K^+(K_{ATP})$ channel on the cell membrane of pancreatic beta cells

Sulfonyureas increase stimulation of insulin secretion by pancreatic B-cells and decrease hepatic clearance of insulin

The overnight dexamethasone suppression test is the best test to diagnosis Cushing's syndrome

The PTH level in primary hyperparathyroidism may be normal

Cerebral oedema is an important complication of fluid resuscitation in DKA, especially in young patients

HPV vaccination should be offered to men who have sex with men under the age of 45 to protect against anal, throat and penile cancers

Octreotide can be used as an adjunct to surgery in patients with acromegaly

Hashimoto's thyroiditis = hypothyroidism + goitre + anti-TPO

Systemic glucocorticoids can cause drug-induced acne. This is characterised as monomorphic papular rash without comedones or cysts. This does not respond to acne treatment but improves on drug discontinuation

Mirabegron is a beta-3 agonist

Causes of raised prolactin - the p's

- pregnancy
- prolactinoma
- physiological
- polycystic ovarian syndrome
- primary hypothyroidism
- phenothiazines, metoclopramide, domperidone

Bartter's syndrome is associated with normotension

First line treatment in diabetic neuropathy is with amitriptyline, duloxetine, gabapentin or pregabalin

Anticholinergics for urge incontinence are associated with confusion in elderly people - mirabegron is a preferable alternative

Klinefelter's? - do a karyotype

Cushing's syndrome - hypokalaemic metabolic alkalosis

Carbimazole blocks thyroid peroxidase from coupling and iodinating the tyrosine residues on thyroglobulin → reducing thyroid hormone production

In type 1 diabetics, a general HbA1c target of 48 mmol/mol (6.5%) should be used

Pioglitazone may cause fluid retention

PHaeochromocytoma - give PHeoxybenzamine before beta-blockers

Patients with acromegaly have an increased risk of colorectal carcinoma

Iron reduces the absorption of thyroxine

Medullary thyroid cancer, pheochromocytoma, marfanoid body habitus - multiple endocrine neoplasia type IIb

Patients on long-term steroids should have their doses doubled during intercurrent illness

Diabetes mellitus - HbA1c of 48 mmol/mol (6.5%) or greater is now diagnostic (WHO 2011)

Metformin is the first line therapy of choice for diabetes in pregnancy

Peptic ulceration, galactorrhoea, hypercalcaemia - multiple endocrine neoplasia type I

Oxybutynin should not be used in frail older women with urinary incontinence due to the risk of impairment of daily functioning, confusion and acute delirium

Graves' disease may present first or become worse during the post-natal period

Gliptins = Dipeptidyl peptidase-4 (DPP-4) inhibitors

Addison's disease is associated with a metabolic acidosis

Congenital adrenal hyperplasia is most commonly due to 21-hydroxylase deficiency

Insulinoma is diagnosed with supervised prolonged fasting

Patients on insulin may now hold a HGV licence if they meet strict DVLA criteria

Gastroenterology

HPV infection is the strongest risk factor for anal cancer

The gastroduodenal artery can be the source of a significant gastrointestinal bleed occurring as a complication of peptic ulcer disease

Co-danthramer is genotoxic and should only be prescribed to palliative patients due to its carcinogenic potential

Gastric adenocarcinoma - signet ring cells

Spontaneous bacterial peritonitis - treatment: intravenous cefotaxime

Obese T2DM with abnormal LFTs - ? non-alcoholic fatty liver disease

Zollinger-Ellison syndrome: epigastric pain and diarrhoea

Hypocalcaemia in pancreatitis is a marker of disease severity

Hepatorenal syndrome is primarily caused by splanchnic vasodilation

PEG insertion is not normally recommended in advanced dementia patients

Amylase: breaks starch down to sugars

In a mild-moderate flare of distal ulcerative colitis, the first-line treatment is topical (rectal) aminosaliclates

If a patient with ulcerative colitis has had a severe relapse or ≥ 2 exacerbations in the past year they should be given either oral azathioprine or oral mercaptopurine to maintain remission

Terlipressin - method of action = constriction of the splanchnic vessels

NICE recommend avoiding lactulose in the management of IBS

Transient elastography is now the investigation of choice to detect liver cirrhosis

Ulcerative colitis - depletion of goblet cells

Sulphasalazine can cause oligospermia and infertility in men

Torsades-des-pointes secondary to hypomagnesaemia can result as a consequence of refeeding syndrome

If a mild-moderate flare of ulcerative colitis does not respond to topical or oral aminosalicylates then oral corticosteroids are added

The gold standard test for achalasia is oesophageal manometry

Liver failure following cardiac arrest think ischaemic hepatitis

FAST scans can be used to assess the presence of fluid in the abdomen and thorax

Primary biliary cirrhosis - the M rule

- IgM
- anti-Mitochondrial antibodies, M2 subtype
- Middle aged females

Liver abscesses are generally managed with a combination of antibiotics & drainage

CT pancreas is the preferred diagnostic test for chronic pancreatitis - looking for pancreatic calcification

Flushing, diarrhoea, bronchospasm, tricuspid stenosis, pellagra → carcinoid with liver mets - diagnosis: urinary 5-HIAA

Angiodysplasia is associated with aortic stenosis

Oesophageal/Gastric Cancer - Endoscopic ultrasound (EUS) is better than CT or MRI in assessing mural invasion

Sjogren's syndrome is common in patients with PBC

HBsAg negative, anti-HBs positive, IgG anti-HBc positive - previous infection, not a carrier

Urea breath test is the only test recommended for *H. pylori* post-eradication therapy

Clindamycin treatment is associated with a high risk of *Clostridium difficile*

If *C. difficile* does not respond to first line metronidazole, oral vancomycin should be used next, except in life-threatening infections

Treatment for Wilson's disease is currently penicillamine

Charcot's cholangitis triad: fever, jaundice and right upper quadrant pain

Haemochromatosis is more common than cystic fibrosis

Faecal elastase is a useful test of exocrine function in chronic pancreatitis

In suspected SBP- diagnosis is by paracentesis. Confirmed by neutrophil count >250 cells/ul
Courvoisier's sign - a palpable gallbladder in the presence of painless jaundice is unlikely to be gallstones

The Alvarado score can be used to suggest the likelihood that a patient has acute appendicitis

Speed of onset can help to differentiate the type of hepatorenal syndrome

Antibiotic prophylaxis reduces mortality in cirrhotic patients with gastrointestinal bleeding

Coeliac disease has a strong association with HLA-DQ2 (present in 95% of patients)

CMV infection is one of the most important in transplant recipients - clinically is characterized by fever, deranged transaminases, leukopenia and thrombocytopenia. Diagnosed by PCR and treated with ganciclovir

Acute pancreatitis is the most common complication of ERCP

Primary biliary cholangitis - the M rule

- IgM
- anti-Mitochondrial antibodies, M2 subtype
- Middle aged females

Haemochromatosis is autosomal recessive

Anal fissure - topical glyceryl trinitrate

A severe flare of ulcerative colitis should be treated in hospital with IV corticosteroid

Diarrhoea, weight, arthralgia, lymphadenopathy, ophthalmoplegia ?Whipple's disease

Corticosteroids are used in the management of severe alcoholic hepatitis

Patients with ascites (and protein concentration ≤ 15 g/L) should be given oral ciprofloxacin or norfloxacin as prophylaxis against spontaneous bacterial peritonitis

Hydrogen breath testing is an appropriate first line test for diagnosis of small bowel overgrowth syndrome

Diarrhoea + hypokalaemia → villous adenoma

Whipple's disease: jejunal biopsy shows deposition of macrophages containing Periodic acid-Schiff (PAS) granules

H. pylori eradication:

- PPI + amoxicillin + clarithromycin, or
- PPI + metronidazole + clarithromycin

SeHCAT is the investigation of choice for bile acid malabsorption

Early stage liver cirrhosis is a common cause of hepatomegaly. The liver may shrink in more advanced disease

Colorectal cancer screening - PPV of FOB = 5 - 15%

Dysphagia affecting both solids and liquids from the start - think achalasia

HBsAg negative, anti-HBs positive, IgG anti-HBc negative - previous immunisation

Positive anti-HBc IgG, negative anti-HBc IgM and negative anti-HBc in the presence of HBsAg implies chronic HBV infection

The splenic flexure is the most commonly affected site in ischaemic colitis

While amylase is an important investigation in the diagnosis of pancreatitis, it does not offer prognostic value

Oesophageal adenocarcinoma is associated with GORD or Barrett's

Give 50% of normal energy intake in starved patients (> 5 days) to avoid refeeding syndrome

Whilst dysphagia of solids and liquids is a classic history for achalasia, certain features such as significant weight loss are not consistent and suggest cancer - 'pseudoachalasia'

Cephalosporins, not just clindamycin, are strongly linked to *Clostridium difficile*

24hr oesophageal pH monitoring is gold standard investigation in GORD

Acute respiratory distress syndrome is a recognised complication of acute pancreatitis

Constipation can be a trigger for liver decompensation in cirrhotic patients

Hepatocellular carcinoma

- hepatitis B most common cause worldwide
- hepatitis C most common cause in Europe

Carcinoid syndrome can affect the right side of the heart. The valvular effects are tricuspid insufficiency and pulmonary stenosis

Ferritin and transferrin saturation are used to monitor treatment in haemochromatosis

Urea breath test - no antibiotics in past 4 weeks, no antisecretory drugs (e.g. PPI) in past 2 weeks

Gastric MALT lymphoma - eradicate *H. pylori*

The most common cause of chronic pancreatitis is alcohol excess

Metabolic ketoacidosis with normal or low glucose: think alcohol

Spontaneous bacterial peritonitis: most common organism found on ascitic fluid culture is *E. coli*

Metronidazole is the first line antibiotic for use in patients with *Clostridium difficile* infection

Ulcerative colitis - the rectum is the most common site affected

Budd-Chiari syndrome - ultrasound with Doppler flow studies is very sensitive and should be the initial radiological investigation

Peutz-Jeghers syndrome - autosomal dominant

TMPT activity should be assessed before offering azathioprine or mercaptopurine therapy in Crohn's disease

Lactulose and rifaximin are used for the secondary prophylaxis of hepatic encephalopathy

ERCP/MRCP are the investigations of choice in primary sclerosing cholangitis

The oral contraceptive pill is associated with drug-induced cholestasis

A severe flare of ulcerative colitis should be treated in hospital with IV corticosteroids

Omeprazole can increase your risk of severe diarrhoea (*Clostridium difficile* infections)

Obesity - NICE bariatric referral cut-offs

- with risk factors (T2DM, BP etc): $> 35 \text{ kg/m}^2$
- no risk factors: $> 40 \text{ kg/m}^2$

Wilson's disease - autosomal recessive

An isolated rise in bilirubin in response to physiological stress is typical of Gilbert's syndrome

High-resolution CT scanning is the diagnostic investigation of choice for pancreatic cancer

Budd-Chiari syndrome is most likely due to a thrombophilia

GORD is the single strongest risk factor for the development of Barrett's oesophagus

Wilson's disease - serum caeruloplasmin is decreased

Weight loss is the best first line management for NAFLD

Brush border enzymes:

- maltase: glucose + glucose
- sucrase: glucose + fructose
- lactase: glucose + galactose

Fidaxomicin is used for *Clostridium difficile* infections that don't respond to metronidazole/vancomycin

A combination of liver and neurological disease points towards Wilson's disease

PPIs are a risk factor for *Clostridium difficile* infection

Screening for haemochromatosis

- general population: transferrin saturation $>$ ferritin
- family members: HFE genetic testing

Causes of villous atrophy (other than coeliacs): tropical sprue, Whipple's, lymphoma, hypogammaglobulinaemia

Insoluble sources of fibre such as bran and wholemeal should be avoided in IBS

In patients with non-alcoholic fatty liver disease, enhanced liver fibrosis (ELF) testing is recommended to aid diagnosis of liver fibrosis

Surgery is indicated in patients with ongoing acute bleeding despite repeated endoscopic therapy

Diarrhoea - biopsy shows pigment laden macrophages = laxative abuse

Flucloxacillin is a well recognised cause of cholestasis

Patients with ascites secondary to liver cirrhosis should be given an aldosterone antagonist

In life-threatening *Clostridium difficile* infection treatment is with ORAL vancomycin and IV metronidazole

In haemochromatosis, cardiomyopathy and skin pigmentation are reversible with treatment

Hypophosphataemia is a characteristic biochemical sign in patients at risk of refeeding syndrome

A non-cardioselective B-blocker (NSBB) is used for the prophylaxis of oesophageal bleeding

Coeliac disease - tissue transglutaminase antibodies are the first-line test

In a mild-moderate flare of ulcerative colitis extending past the left-sided care oral aminosalicylates should be added to rectal aminosalicylates, as enemas only reach so far

Sulphonylureas may cause cholestasis

The splenic flexure is the most likely area to be affected by ischaemic colitis

Familial adenomatous polyposis is due to a mutation in a tumour suppressor gene called adenomatous polyposis coli gene (APC)

Infection

Man returns from trip abroad with maculopapular rash and flu-like illness - think HIV seroconversion

Infectious mononucleosis is generally a self-limiting condition

The Jarisch-Herxheimer reaction is a known phenomenon following syphilis treatment that does not require any specific treatment or investigations other antipyretics

Haematuria + bladder calcification → schistosomiasis

IV ceftriaxone should be used as first-line treatment of Lyme disease with disseminated or central nervous system involvement

Disseminated gonococcal infection triad = tenosynovitis, migratory polyarthritis, dermatitis

All patients with a CD4 count lower than 200/mm³ should receive prophylaxis against *Pneumocystis jiroveci* pneumonia

Eikenella is notable as a cause of infections following human bites

False positive VDRL/RPR: antiphospholipid syndrome can cause a false positive syphilis test due to cardiolipin antibodies

Staphylococcus aureus is associated with cavitating lesions when it causes pneumonia

Pneumocystis jiroveci pneumonia is treated with co-trimoxazole, which is a mix of trimethoprim and sulfamethoxazole

Lassa fever is contracted by contact with the excreta of infected African rats (*Mastomys* rodent) or by person-to-person spread

Ciprofloxacin promotes acquisition of MRSA

Mycoplasma is associated with erythema multiforme

HIV antibody testing is most reliable 3 months post exposure

HIV, neuro symptoms, widespread demyelination - progressive multifocal leukoencephalopathy

The BCG vaccine is unreliable in protecting against pulmonary tuberculosis

Streptococcus pneumoniae is associated with cold sores

Granuloma inguinale - *Klebsiella granulomatis*

Animal bite - co-amoxiclav

Post-exposure prophylaxis for HIV: oral antiretroviral therapy for 4 weeks

Diabetes is the strongest risk factor for the development of melioidosis

Bilateral conjunctivitis, bilateral calf pains and high fevers in a sewage worker suggests leptospirosis

If a sexually active patient presents with genital chlamydia and bowel symptoms, LGV proctocolitis should be considered

Listeria monocytogenes - Gram-positive rod

Non specific (non gonococcal) urethritis is a common presentation where inflammatory cells but no gonococcal bacteria are seen on swab; it requires treatment with doxycycline or azithromycin

Asymptomatic bacteriuria should not be treated except in pregnancy, children younger than 5 years or immunosuppressed patients due to the risk of complications

Hookworms may cause an iron deficiency anaemia in patients returning from travel to endemic areas e.g. the Indian subcontinent

Schizonts and late stages of trophozoites are typically sequestered in *Plasmodium falciparum* infection and their presence on the peripheral smear indicates severe disease

Patients with peritonsillar abscesses can develop Lemierre's syndrome (thrombophlebitis of the IJV)- this can present with neck pain, and can result in septic pulmonary embolism

Kaposi's sarcoma - caused by HHV-8 (human herpes virus 8)

Immune reconstitution inflammatory syndrome can occur in HIV positive patients when starting anti-retrovirals; this is an immune phenomenon that results in the clinical worsening of a pre-existing opportunistic infection

Schistosoma haematobium causes haematuria

Severe falciparum malaria - intravenous artesunate

Dengue is transmitted by the *Aedes aegypti* mosquito

One of the sequelae of diphtheria is cardiovascular disease; notably heart block

Trypanosomiasis: African-form causes sleeping sickness and American-form causes Chagas' disease

Chikungunya can present with debilitating joint pain

Legionella pneumophila is best diagnosed by the urinary antigen test

Leptospirosis - give penicillin or doxycycline

Tetracyclines can cause photosensitivity

Human bites, like animal bites, should be treated with co-amoxiclav

HIV: anti-retrovirals - P450 interaction

- nevirapine (a NNRTI): induces P450
- protease inhibitors: inhibits P450

Bacterial vaginosis: oral metronidazole

Atypical lymphocytes - ?glandular fever

Amoebiasis should be considered in the presentation of dysentery after a long incubation period

HIV, neuro symptoms, multiple brain lesions with ring enhancement - toxoplasmosis

Rabies - following possible exposure give immunoglobulin + vaccination

Primaquine is used in non-falciparum malaria to destroy liver hypnozoites and prevent relapse

Live attenuated vaccines

- BCG
- MMR
- oral polio
- yellow fever
- oral typhoid

Clostridium - Gram-positive rod

Macrolides such as clarithromycin are used to treat *Legionella*

Gonorrhoea is a gram-negative diplococci that can be identified on gram staining

Benznidazole is used in the acute phase of Chagas' disease to manage the illness

Yellow fever - live attenuated

HIV drugs, rule of thumb:

- NRTIs end in 'ine'
- Pis: end in 'vir'
- NNRTIs: nevirapine, efavirenz

Staphylococcus saprophyticus can commonly cause UTI in sexually active young women

Immunocompetent patients with toxoplasmosis don't usually require treatment

Intramuscular ceftriaxone is the treatment of choice for *Gonorrhoea*

Animal bites are generally polymicrobial but the most common isolated organism is *Pasteurella multocida*

Hepatitis C - 55-85% become chronically infected

Leprosy leads to skin hypopigmentation

Renal transplant + infection ?CMV

Heterophile antibodies - infectious mononucleosis

Staphylococcus aureus is a gram+ve bacterium, catalase +ve, coagulase +ve organism

Kaposi's sarcoma is caused by HHV-8 infection in HIV positive individuals

Stereotypical features of *Legionella* include flu-like symptoms and a dry cough, relative bradycardia and confusion. Blood tests may show hyponatraemia

Supportive therapy is the mainstay of treatment in *Cryptosporidium* diarrhoea

EBV: associated malignancies:

- Burkitt's lymphoma
- Hodgkin's lymphoma
- nasopharyngeal carcinoma

Aspergilloma on x-ray may show a fungal ball cavity with a crescent sign

Azithromycin, erythromycin or amoxicillin may be used to treat *Chlamydia* in pregnancy

Coxiella presents may present with culture-negative endocarditis

Cat scratch disease - caused by *Bartonella henselae*

Amphotericin B binds with ergosterol, a component of fungal cell membranes, forming pores that cause lysis of the cell wall and subsequent fungal cell death

Mycoplasma? - serology is diagnostic

ELISA is the first-line investigation for suspected Lyme disease in patients with no history of erythema migrans

HIV, neuro symptoms, single brain lesions with homogenous enhancement - CNS lymphoma

Treatment for invasive amoebiasis should be followed by a luminal amoebicide to eradicate the cystic stage which is resistant to metronidazole and tinidazole (which are used against the invasive stage)

Schistosomiasis is treated with praziquantel

Cryptosporidium can be diagnosed by modified Ziehl-Neelsen staining of stool to reveal red cysts

Enterococci - Gram-positive cocci

Painless black eschar - anthrax

Parasitaemia $> 2\%$ is a feature of severe malaria

Japanese encephalitis can present with Parkinsonism- this is a sign of basal ganglia involvement

Bacillus cereus characteristically occurs after eating rice that has been reheated

Acute toxoplasmosis in the immunocompetent patient can mimic acute EBV infection (low-grade fever, generalised lymphadenopathy with prominent cervical lymph nodes and malaise) and should be suspected with negative EBV serology. Pregnancy testing and counselling is paramount due to the risk of congenital toxoplasmosis

False positive VDRL/RPR: '*SomeTimes Mistakes Happen*' (SLE, TB, malaria, HIV)

P. knowlesi has the shortest erythrocytic replication cycle, leading to high parasite counts in short periods of time

Shigella infection is usually self limiting and does not require antibiotic treatment; antibiotics are indicated for people with severe disease, who are immunocompromised or with bloody diarrhoea

Chickenpox exposure in pregnancy - first step is to check antibodies

A 'hot stool' (a stool examined within 15 minutes of passage, or kept warm) is required to make a microscopic diagnosis of intestinal amoebiasis as once cooled *Entamoeba histolytic* returns to its cystic state and becomes indistinguishable from the non-pathogen *Entamoeba dispar*

Amantadine - inhibits uncoating (M2 protein) of virus in cell. Also releases dopamine from nerve endings

Ribavirin - guanosine analog which inhibits inosine monophosphate (IMP) dehydrogenase, interferes with the capping of viral mRNA

6 years - 60 years age group are at risk from meningitis caused by *Streptococcus pneumoniae*

Botulinum toxin inhibits the release of acetylcholine at synapses

Anthrax presents with a black eschar that is typically painless; it is treated with ciprofloxacin

Latent syphilis (i.e asymptomatic syphilis) can occur at an early and a late stage and requires the same antibiotic treatment

Chancroid causes painful genital ulcers

Severe manifestations of enteric fever include bowel perforation and neurological complication. If these occur it is typically in the third week of illness

Mycoplasma pneumoniae - treat with doxycycline or a macrolide

Schistosomiasis is a risk factor for Squamous cell bladder cancer

Genital wart treatment

- multiple, non-keratinised warts: topical podophyllum
- solitary, keratinised warts: cryotherapy

Aciclovir is much more specific for viral than mammalian DNA polymerase

Parvovirus is a common cause of fetal hydrops during pregnancy and can be treated with fetal transfusion

Mumps meningitis is associated with a low CSF glucose

Anti-retroviral therapy for HIV is now started at the time of diagnosis, rather than waiting for the CD4 count to drop to a particular level

Quinine is no longer recommended as a first-line treatment for complicated/severe falciparum malaria

First line treatment for early Lyme disease is a 14-21 day course of oral doxycycline

Tampon use is a risk factor for staphylococcal toxic shock syndrome

The Jarisch-Herxheimer reaction, unlike an anaphylactic reaction, will not present with hypotension and wheeze

Clostridium botulinum presents with flaccid paralysis, whereas *Clostridium tetani* presents with spastic paralysis

M. tuberculosis can cause hypoadrenalism

URTI symptoms + amoxicillin → rash ?glandular fever

Genital warts - 90% are caused by HPV 6 & 11

Trimethoprim and co-trimoxazole should be avoided in patients on methotrexate

Aciclovir - guanosine analog, phosphorylated by thymidine kinase which in turn inhibits the viral DNA polymerase

Fever and the presence of a eschar in a patient returning from South East Asia is strongly suggestive of scrub typhus (caused by *Orientia tsutsugamushi*) and necessitates urgent treatment with doxycycline

Cutaneous leishmaniasis acquired in South or Central America merits treatment due to the risk of mucocutaneous leishmaniasis whereas disease acquired in Africa or India can be managed more conservatively

p24 testing can be used 4 week after an exposure and is often used in combination with the HIV antibody test in clinical practice

Strongyloides stercoralis gains access to the body by penetrating the skin

Live vaccines given by injection may be either given concomitantly or a minimum interval of 4 weeks apart to prevent risk of immunological interference

Moraxella catarrhalis - Gram-negative cocci

Pneumocystis jiroveci pneumonia - pneumothorax is a common complication

Necrotising fasciitis should be suspected in the setting of a rapidly worsening cellulitis with pain out of keeping with physical features

Dexamethasone improves outcomes in the treatment of bacterial meningitis

Chlamydia - treat with azithromycin or doxycycline

Yellow fever typically presents with flu like illness → brief remission → followed by jaundice and haematemesis

Thick blood films check for parasite burden, thin films allow for speciation

Chickenpox exposure in pregnancy - if not immune give VZIG

Bacterial vaginosis - overgrowth of predominately *Gardnerella vaginalis*

Terbinafine inhibits the fungal enzyme squalene epoxidase, causing cellular death

Non-falciparum malaria (acute infection) , treatment of choice: artemisinin-based combination therapy (ACT) or chloroquine

Severe hepatitis in a pregnant woman - think hepatitis E

Mucocutaneous ulceration following travel? - *Leishmania brasiliensis*

Telbivudine is a synthetic thymidine nucleoside analogue

Nucleic acid amplification tests (NAATs) are the investigation of choice for *Chlamydia*

In the UK all HIV positive women should be advised not to breastfeed

Staph aureus is a coagulase positive Staph

Neisseria gonorrhoeae - Gram-negative cocci

Lymphogranuloma venereum - *Chlamydia trachomatis*

Salmonella typhi infection can cause rose spots on the abdomen

Following treatment for syphilis: TPHA remains positive, VDRL becomes negative

Aerosolized pentamidine is an alternative treatment for *Pneumocystis jiroveci* pneumonia but is less effective with a risk of pneumothorax

Genital ulcers

- painful: herpes much more common than chancroid
- painless: syphilis more common than lymphogranuloma venereum

E. coli is the most common cause of travellers' diarrhoea

Amoxicillin is an alternative to treat early Lyme disease if doxycycline is contraindicated such as in pregnancy

Pubic lice can be treated with either malathion or permethrin

Exchange transfusion should be considered in cases of severe parasitaemia ($>10\%$)

Pneumonia in an alcoholic - Klebsiella

Recurrent herpes outbreaks in pregnancy should be treated with suppressive therapy; risk of transmission to the baby is low and aciclovir is safe to use in pregnant women

Cephalosporins are a type of beta-lactam

Blood

Filgrastim is a granulocyte-colony stimulating factor used to treat neutropenia

Rasburicase - a recombinant version of urate oxidase, an enzyme that metabolizes uric acid to allantoin

CLL is caused by a monoclonal proliferation of B-cell lymphocytes

Cisplatin may cause peripheral neuropathy

Venous thromboembolism - length of warfarin treatment

- provoked (e.g. recent surgery): 3 months
- unprovoked: 6 months

CA 15-3 is a tumour marker in breast cancers

Spread into the liver, bone marrow, lungs or other organs would be classified as stage IV on the Ann Arbor staging system for Hodgkin's lymphoma

Low haptoglobin levels are found in haemolytic anaemias

Malaria prophylaxis (e.g. primaquine) can trigger haemolytic anaemia in those with G6PD deficiency

Warm autoimmune haemolytic anaemia involves IgG-mediated haemolysis

HUS or TTP? Neuro signs point towards TTP

Pancreatic cancer - CA 19-9

Hereditary angioedema - C1-INH deficiency

Factor V Leiden mutation results in activated protein C resistance

For urticarial blood transfusion reactions without anaphylaxis, an antihistamine should be given and the transfusion temporarily stopped

Exposure to aniline dyes is a risk factor for transitional cell carcinoma

An MRI whole spine should be performed in a patient suspected of spinal metastases

The sulfamethoxazole in co-trimoxazole causes haemolysis in G6PD, not the trimethoprim

TRALI is differentiated from TACO by the presence of hypotension in TRALI vs hypertension in TACO

Prostate cancer is the most common primary tumour that metastasises to the bone

Carcinoembryonic Antigen (CEA) is a tumour marker in colorectal cancer and has a role in monitoring disease activity

Chronic myeloid leukaemia - imatinib = tyrosine kinase inhibitor

Acute promyelocytic leukaemia - t(15;17)

'CRAB' features of multiple myeloma = hyperCalcaemia, Renal failure, Anaemia (and thrombocytopenia) and Bone fractures/lytic lesions

Anaphylaxis - serum tryptase levels rise following an acute episode

Hereditary angioedema is caused by deficiency of C1 esterase inhibitor

Desmopressin - induces release of von Willebrand's factor from endothelial cells

AIP - porphobilinogen deAminase; PCT - uroporphyrinogen deCarboxylase

Hodgkin's lymphoma - best prognosis = lymphocyte predominant

Aplastic crises in sickle cell disease are associated with a sudden drop in haemoglobin

Trimethoprim may cause pancytopenia

In acute intermittent porphyria, urinary porphobilinogen is typically raised

Cisplatin is associated with hypomagnesaemia

Extravascular haemolysis - hereditary spherocytosis

Patients with Waldenstrom's macroglobulinaemia often present with issues secondary to hyperviscosity

TTP is caused by the failure to cleave vWF normally

Exposure to aflatoxin is a risk factor for hepatocellular carcinoma

In patients with factor V Leiden, activated factor V is inactivated 10 times more slowly by activated protein C than normal

Burkitt's lymphoma - t(8;14)

ITP should be considered in the presence of symptoms that suggest isolated thrombocytopenia e.g. epistaxis, menorrhagia

Helicobacter pylori infection can lead to gastric lymphoma (MALT)

Acute myeloid leukaemia - poor prognosis: deletion of chromosome 5 or 7

Howell-Jolly bodies and siderocytes are typical blood film findings of hyposplenism

Myelofibrosis is associated with 'tear drop' poikilocytes on blood film

EBV infection is implicated in the pathogenesis of Burkitt's lymphoma

In chronic myeloid leukaemia there is an increase in granulocytes at different stages of maturation +/- thrombocytosis

CLL - immunophenotyping is investigation of choice

HbA2 is raised in patients with beta thalassaemia major

A low fibrinogen level is the major criteria determining the use of cryoprecipitate in bleeding

Howell-Jolly bodies are present in hereditary spherocytosis post-splenectomy

Aprepitant is an anti-emetic which blocks the neurokinin 1 (NK1) receptor

Leukemoid reaction has a high leucocyte alkaline phosphatase score

Platelet transfusions have the highest risk of bacterial contamination compared to other types of blood products

G6PD deficiency: sulph- drugs: sulphonamides, sulphasalazine and sulfonyleureas can trigger haemolysis

Vincristine - peripheral neuropathy

The universal donor of fresh frozen plasma is AB RhD negative blood

Follicular lymphoma is characterised by a t(14:18) translocation

SVC obstruction can cause visual disturbances such as blurred vision

Hereditary angioedema - C4 is the best screening test inbetween attacks

Doxorubicin may cause cardiomyopathy

Methaemoglobinaemia = oxidation of Fe²⁺ in haemoglobin to Fe³⁺

Stage III of the Ann-Arbor clinical staging of lymphomas involve lymph nodes on both sides of the diaphragm

Exposure to asbestos is a risk factor for bronchial carcinoma as well as mesothelioma

Methotrexate - inhibits dihydrofolate reductase and thymidylate synthesis

Factor V Leiden is the commonest inherited thrombophilia

Li-Fraumeni syndrome is caused by germline mutations to p53 tumour suppressor gene

Irradiated blood products are used as they are depleted in T-lymphocytes

TTP - plasma exchange is first-line

ITP - give oral prednisolone

Polycythaemia rubra vera - JAK2 mutation

TTP presents with a pentad of fever, neuro signs, thrombocytopenia, haemolytic anaemia and renal failure

Cyclophosphamide may cause haemorrhagic cystitis

CLL - treatment: Fludarabine, Cyclophosphamide and Rituximab (FCR)

Cyclophosphamide - haemorrhagic cystitis - prevent with mesna

The t(14;18) translocation causes increased BCL-2 transcription and causes follicular lymphoma

IgM paraproteinaemia - ?Waldenstrom's macroglobulinaemia

Hereditary angioedema (HAE) is pathophysiologically separate from anaphylaxis and is treated differently. Therapeutic options are: intravenous infusion of human C1-esterase inhibitor or subcutaneous injection of the bradykinin receptor inhibitor icatibant

Cancer patients with VTE - 6 months of LMWH

Cisplatin - causes cross-linking in DNA

Prothrombin complex concentrate is used for the emergency reversal of anticoagulation in patients with severe bleeding or a head injury

Combined B- and T-cell disorders: SCID WAS ataxic (SCID, Wiskott-Aldrich syndrome, ataxic telangiectasia)

Bombesin is a tumour marker in small cell lung carcinomas

Myelofibrosis - most common presenting symptom - lethargy

In anaphylaxis, biphasic reactions can occur in up to 20% of patients

Acute myeloid leukaemia - good prognosis: t(15;17)

Intravascular haemolysis - paroxysmal nocturnal haemoglobinuria

Waldenstrom's macroglobulinaemia - Organomegaly with no bone lesions

Multiple myeloma - Bone lesions with no organomegaly

CML - Philadelphia chromosome - t(9;22)

Polycythaemia rubra vera - around 5-15% progress to myelofibrosis or AML

In acute intermittent porphyria, the urine classically turns deep red on standing

DIC is associated with schistocytes due to microangiopathic haemolytic anaemia

Wiskott-Aldrich syndrome

- recurrent bacterial infections (e.g. Chest)
- eczema
- thrombocytopenia

Acute intermittent porphyria typically presents with abdominal, neurological and psychiatric symptoms

CKD is the most common cause of antithrombin III deficiency

Raynaud's - Type I cryoglobulinaemia

Hypercalcaemia, renal failure, high total protein = myeloma

Burkitt's lymphoma is a common cause of tumour lysis syndrome

Activated protein C resistance (Factor V Leiden) is the most common inherited thrombophilia

SVC obstruction - dyspnoea is the most common symptom

Vitamin B12 is actively absorbed in the terminal ileum

Sickle cell patients should be started on long term hydroxycarbamide to reduce the incidence of complications and acute crises

Philadelphia translocation, t(9;22) - good prognosis in CML, poor prognosis in AML + ALL

Acquired inhibition of the protein ADAMTS13 which cleaves vWF multimers is the most common cause of TTP

Antiphospholipid syndrome in pregnancy: aspirin + LMWH

Ovarian cancer - CA 125

Normal pO₂ but decreased oxygen saturation is characteristic of methaemoglobinaemia

Taxanes such as docetaxel - prevents microtubule depolymerisation & disassembly, decreasing free tubulin

Leucocyte alkaline phosphatase is low in CML but raised in myelofibrosis

SLE is a risk factor for warm autoimmune haemolytic anaemia

Differentiating chronic myeloid leukaemia from leukaemoid reactions: leukocyte alkaline phosphatase score is low in CML, high in leukaemoid reaction

Hodgkin's lymphoma - most common type = nodular sclerosing

del 17p is associated with a poor prognosis in CLL

Lung adenocarcinoma

- most common type in non-smokers
- peripheral lesion

Disproportionate microcytic anaemia - think beta-thalassaemia trait

Polycythaemia rubra vera is associated with a low ESR

Lead poisoning is often occupational and comprises gastrointestinal and neuropsychiatric symptoms and anaemia due to interruption to the haem biosynthetic pathway.

Burkitt's lymphoma - c-myc gene translocation

Hepatitis C is associated with mixed (type II) cryoglobulinaemia

Hydroxyurea increases the HbF levels and is used in the prophylactic management of sickle cell anemia to prevent painful episodes

Cisplatin may cause ototoxicity

Nephrology

When prescribing fluids, the potassium requirement per day is 1 mmol/kg/day

Renal stones on x-ray

- cystine stones: semi-opaque
- urate + xanthine stones: radio-lucent

Membranoproliferative glomerulonephritis (mesangiocapillary)

- type 1: cryoglobulinaemia, hepatitis C
- type 2: partial lipodystrophy

Alfacalcidol is used as a vitamin D supplement in end-stage renal disease because it does not require activation in the kidneys

The time taken for an arteriovenous fistula to develop is 6 to 8 weeks

Minimal change disease is the most common cause of nephrotic syndrome in a child

Tolvaptan is a vasopressin receptor 2 antagonist

Proteus mirabilis infection predisposes to struvite kidney stones

Stag-horn calculi are composed of struvite and form in alkaline urine (ammonia producing bacteria therefore predispose)

Young female, hypertension and asymmetric kidneys → fibromuscular dysplasia

CKD on haemodialysis - most likely cause of death is IHD

Calciphylaxis lesions are intensely painful, purpuric patches with an area of black necrotic tissue that may form bullae, ulcerate, and leave a hard, firm eschar

Prevention of contrast-induced nephropathy: volume expansion with 0.9% saline

Nephrotic syndrome is associated with a hypercoagulable state due to loss of antithrombin III via the kidneys

ADPKD type 1 = chromosome 16 = 85% of cases

Cytomegalovirus is the most common and important viral infection in solid organ transplant recipients

Coagulase-negative *Staphylococcus* is the most common cause of peritonitis secondary to peritoneal dialysis

Other causes of HUS include *S. pneumoniae*, Shigella (type 1 and 3), HIV and Coxsackie virus

Haemolytic uraemic syndrome - classically caused by E coli 0157:H7

Goodpasture's syndrome

- IgG deposits on renal biopsy
- anti-GBM antibodies

Nephrotic syndrome - malignancies cause membranous glomerulonephritis

Micturating cystography is the investigation of choice for reflux nephropathy

hCG is associated with testicular seminomas

Ultrasound is the screening test for adult polycystic kidney disease

Antimuscarinic drugs are useful in patients with an overactive bladder

ADPKD type 2 = chromosome 4 = 15% of cases

Arteriovenous fistulas are the preferred method of access for haemodialysis

Renal transplant HLA matching - DR is the most important

Alport's syndrome - type IV collagen defect

Nephrogenic diabetes insipidus may be caused genetic mutations:

- the more common form affects the vasopression (ADH) receptor
- the less common form results from a mutation in the gene that encodes the aquaporin 2 channel

Contrast-induced nephropathy occurs 2 -5 days after administration

Ascites - use spironolactone

Guidelines continue to recommend the use of IM diclofenac in the acute management of renal colic

Renal cell carcinoma can cause liver dysfunction in particular cholestasis and hepatosplenomegaly

Urine output of < 0.5 ml/kg/hr over 6 consecutive hours constitutes an acute kidney injury

Uric acid nephrolithiasis are radiolucent, requiring ultrasonography or CT KUB (without contrast)

Mesangiocapillary glomerulonephritis (membranoproliferative)

- type 1: cryoglobulinaemia, hepatitis C
- type 2: partial lipodystrophy

Urine dip can be used to differentiate acute tubular necrosis from acute interstitial nephritis in AKI

The mainstay of rhabdomyolysis treatment is rapid IV fluid rehydration

Flash pulmonary oedema, U&Es worse on ACE inhibitor, asymmetrical kidneys → renal artery stenosis - do MR angiography

Rapidly progressive glomerulonephritis, causes:

- Goodpasture's
- ANCA positive vasculitis

Chronic Kidney Disease often leads to anaemia due to reduced levels of erythropoietin

Eplerenone can be used in patients with troublesome gynaecomastia on spironolactone

PSGN develops 1-2 weeks after URTI. IgA nephropathy develops 1-2 days after URTI

Sterile pyuria and white cell casts in the setting of rash and fever should raise the suspicion of acute interstitial nephritis, which is commonly due to antibiotic therapy

ADPKD is associated with hepatomegaly (due to hepatic cysts)

ATN or prerenal uraemia? In prerenal uraemia think of the kidneys holding on to sodium to preserve volume

Diffuse proliferative glomerulonephritis is the most common and severe form of renal disease in SLE patients

Diffuse proliferative glomerulonephritis, causes:

- post-streptococcal
- SLE

Fanconi syndrome is a reabsorptive defect in PCT where there is increased excretion of nearly all amino acids, glucose, bicarbonate and phosphate

Gentamicin causes an intrinsic AKI

In AKI, hyperkalaemia which is refractory to medical management is an indicator for renal replacement therapy

ADPKD is associated with mitral valve prolapse

Rhabdomyolysis should always be considered in the setting of lactic acidosis, hyperkalaemia and features of acute tubular necrosis

Amyloidosis biopsy findings - Congo red stain shows apple-green birefringence under polarised light

Spironolactone acts on the cortical collecting ducts as a diuretic

eGFR variables - CAGE - Creatinine, Age, Gender, Ethnicity

Idiopathic membranous glomerulonephritis is related to anti-phospholipase A2 antibodies

Alport's syndrome - X-linked dominant (in the majority)

Finasteride treatment of BPH may take 6 months before results are seen

Stag-horn calculi

- composed of Struvite (ammonium magnesium phosphate, triple phosphate)
- form in alkaline urine (ammonia producing bacteria such as *Ureaplasma urealyticum* and *Proteus* therefore predispose)

Ureterosigmoidostomy - normal anion gap metabolic acidosis

A common complication of plasma exchange is hypocalcaemia

The presence of upper respiratory tract signs points towards granulomatosis with polyangiitis in a patient with rapidly progressive glomerulonephritis

Minimal change glomerulonephritis - prednisolone

NSAIDs and ACE-inhibitors/ARB cause prerenal acute kidney injury by decreasing the glomerular filtration

Nephrotic syndrome in children / young adults - minimal change glomerulonephritis

Rhabdomyolysis can cause parenchymal acute kidney injury and is characterised by elevated plasma creatine kinase (CK)

Consider fibromuscular dysplasia in young female patients who develop AKI after the initiation of an ACE inhibitor

NSAIDs should be stopped in AKI except aspirin at cardio-protective dose

Renal tubular acidosis causes a normal anion gap

Use of 0.9% Sodium Chloride for fluid therapy in patients requiring large volumes = risk of hyperchloraemic metabolic acidosis

Patients who have received an organ transplant are at risk of skin cancer (particularly squamous cell carcinoma) due to long-term use of immunosuppressants

CKD: only diagnose stages 1 & 2 if supporting evidence to accompany eGFR

Renal cell carcinoma can metastasise to the lungs, and remains an important differential in the setting of hypertension, hypercalcaemia and haematuria

Rheumatology

Rheumatoid factor is an IgM antibody against IgG

Reactive arthritis: develops after an infection where the organism cannot be recovered from the joint

Patients who are allergic to aspirin may also react to sulfasalazine

L5 lesion features = loss of foot dorsiflexion + sensory loss dorsum of the foot

SLE - antibodies associated with congenital heart block = anti-Ro

Paget's disease of the bone is treated with bisphosphonates

SLE: C3 & C4 low

Patients with Sjogren's syndrome have an increased risk of lymphoid malignancies

Haemochromatosis is a risk factor for pseudogout

cANCA = granulomatosis with polyangiitis; pANCA = Churg-Strauss + others

Repeated cramping and myoglobinuria after short bouts of exercise can point towards McArdle's disease

Previous chemotherapy is a significant risk factor for avascular necrosis

S1 lesion features = Sensory loss of posterolateral aspect of leg and lateral aspect of foot, weakness in plantar flexion of foot, reduced ankle reflex, positive sciatic nerve stretch test

Antiphospholipid syndrome: arterial/venous thrombosis, miscarriage, livedo reticularis

Septic arthritis: IV flucloxacillin

Dermatomyositis is associated with the anti-Jo-1 antibody

External rotation is classically impaired in adhesive capsulitis

Pseudogout - weakly positively birefringent rhomboid-shaped crystals

Polyarteritis nodosa can cause a mononeuritis multiplex syndrome

Osteoarthritis - paracetamol + topical NSAIDs (if knee/hand) first-line

Hydroxychloroquine - may result in a severe and permanent retinopathy

TNF- α inhibitors may reactivate TB

Sulfasalazine is a disease-modifying anti-rheumatic drug which is safe in both pregnancy and breastfeeding

The vast majority of gout is due to decreased renal excretion of uric acid

Ankylosing spondylitis - x-ray findings: subchondral erosions, sclerosis and squaring of lumbar vertebrae

Offer allopurinol to all patients after their first attack of gout

Cubital tunnel syndrome is caused by compression of the ulnar nerve and can present with tingling/numbness of the 4th and 5th finger

Discoid lupus erythematosus - topical steroids $\rightarrow$ oral hydroxychloroquine

Patients with osteopetrosis have normal calcium, phosphate, ALP and PTH levels

Azathioprine - check thiopurine methyltransferase deficiency (TPMT) before treatment

Paget's disease - old man, bone pain, raised ALP

Epoprostenol (amongst other prostaglandins) can be used in the treatment of Raynaud's phenomenon

Bisphosphonates can cause a variety of oesophageal problems

Antiphospholipid syndrome: (paradoxically) prolonged APTT + low platelets

Staphylococcus aureus is the most common cause of osteomyelitis

Azathioprine is metabolised to the active compound mercaptopurine, a purine analogue that inhibits purine synthesis

Ehlers-Danlos syndrome is most commonly associated with a defect in type III collagen

Limited (central) systemic sclerosis = anti-centromere antibodies

Juxta-articular osteoporosis/osteopenia is an early x-ray feature of rheumatoid arthritis

Leflunomide may cause hypertension

Burning thigh pain - ? meralgia paraesthetica - lateral cutaneous nerve of thigh compression

Lateral epicondylitis: worse on resisted wrist extension/supination whilst elbow extended

Spinal stenosis is the most likely diagnosis in a patient with gradual onset leg and back pain, weakness and numbness which is brought on by walking (with a normal clinical examination)

Osteoporosis in a man - check testosterone

Chondrocalcinosis helps to distinguish pseudogout from gout

Langerhans cell histiocytosis is characterized by Birbeck granules on electron microscopy

Isoniazid can cause drug-induced lupus

Marfan's syndrome is caused by a mutation in a protein called fibrillin-1

Osteomalacia

- low: calcium, phosphate
- raised: alkaline phosphatase

Methotrexate works by inhibiting dihydrofolate reductase

Marfan's syndrome - upwards lens dislocation

Nifedipine is a pharmacological option for Raynaud's phenomenon

Bisphosphonates are associated with an increased risk of atypical stress fractures

Thiazide diuretics can precipitate an attack of gout

The major target for pANCA is myeloperoxidase (MPO)

Septic arthritis - most common organism: *Staphylococcus aureus*

Anti-ribonuclear protein (anti-RNP) = mixed connective tissue disease

DEXA scans: the T score is based on bone mass of young reference population

Dermatomyositis antibodies: ANA most common, anti-Mi-2 most specific

Anti-cyclic citrullinated peptide antibodies are associated with rheumatoid arthritis

In patients with a new diagnosis of dermatomyositis, urgent malignancy screen is needed

A Z-score is helpful in diagnosing secondary osteoporosis and should always be used for children, young adults, pre-menopausal women and men under the age of 50

SLE: ANA is 99% sensitive - anti-Sm & anti-dsDNA are 99% specific

Oral ulcers + genital ulcers + anterior uveitis = Behcet's

Urethritis + arthritis + conjunctivitis = reactive arthritis

Rheumatoid arthritis - TNF is key in pathophysiology

Marfan's syndrome - dural ectasia

NICE recommend co-prescribing a PPI with NSAIDs in all patients with osteoarthritis

Osteomyelitis: MRI is the imaging modality of choice

May be able to see apical fibrosis on chest x-ray in later ankylosing spondylitis

Raynaud's disease (i.e. primary) presents in young women with bilateral symptoms

Bisphosphonates inhibit osteoclasts

Ankylosing spondylitis features - the 'A's

- Apical fibrosis
- Anterior uveitis
- Aortic regurgitation
- Achilles tendonitis
- AV node block
- Amyloidosis

Mycophenolate mofetil inhibits of inosine-5'-monophosphate dehydrogenase which is needed for purine synthesis

Rheumatoid arthritis: patients have an increased risk of IHD

Pseudoxanthoma elasticum is associated with mitral valve prolapse and increased risk of ischaemic heart disease

Marfan's syndrome is associated with dilation of the aortic sinuses which may predispose to aortic dissection

Paget's disease - increased serum and urine levels of hydroxyproline

Inflammatory arthritis involving DIP swelling and dactylitis points to a diagnosis of psoriatic arthritis

Radial tunnel syndrome presents similarly to lateral epicondylitis however pain is typically distal to the epicondyle and worse on elbow extension/forearm pronation

An asymmetrical presentation suggests psoriatic arthritis rather than rheumatoid

The concurrent use of methotrexate and trimethoprim containing antibiotics may cause bone marrow suppression and severe or fatal pancytopenia

Respiratory

Bronchiectasis: most common organism = *Haemophilus influenzae*

Light's criteria: Effusion LDH level greater than 2/3rds the upper limit of serum LDH points to exudate

COPD - still breathless despite using SABA/SAMA and asthma/steroid responsive features → add a LABA + ICS

Transfer factor

- raised: asthma, haemorrhage, left-to-right shunts, polycythaemia
- low: everything else

Asbestosis causes pulmonary fibrosis predominantly affecting the lower zones

Sarcoidosis CXR

- 1 = BHL
- 2 = BHL + infiltrates
- 3 = infiltrates
- 4 = fibrosis

Adults with suspected asthma should have both a FeNO test and spirometry with reversibility

Adult with asthma not controlled by a SABA - add a low-dose ICS

Unmasking of Churg-Strauss syndrome: Montelukast

Leukotriene receptor antagonists may trigger eosinophilic granulomatosis with polyangiitis (Churg-Strauss syndrome)

Over rapid aspiration/drainage of pneumothorax can result in re-expansion pulmonary oedema

Saccharopolyspora rectivirgula causes farmer's lung, a type of EAA

PTHrP is a paraneoplastic syndrome associated with squamous cell lung cancer

Aspergillus clavatus causes malt workers' lung, a type of EAA

Symptom control in non-CF bronchiectasis - inspiratory muscle training + postural drainage

COPD - LTOT if 2 measurements of $pO_2 < 7.3$ kPa

Alpha-1 antitrypsin deficiency - autosomal recessive / co-dominant

Isocyanates are the most common cause of occupational asthma

In around 10% of patients subsequently diagnosed with lung cancer the chest x-ray was reported as normal

Confusion in an asthma attack is a life-threatening feature

Bupropion: contraindicated in epilepsy

Upper zones lung fibrosis: hypersensitivity pneumonitis

Calcification in lung metastases is uncommon except in the case of chondrosarcoma or osteosarcoma

NICE only recommend giving oral antibiotics in an acute exacerbation of COPD in the presence of purulent sputum or clinical signs of pneumonia

COPD is the most common cause of secondary pneumothorax

Management of high altitude cerebral edema (HACE) is with descent + dexamethasone

Small cell lung carcinoma secreting ACTH can cause Cushing's syndrome

Contact with camels (including camel products such as milk) is a significant risk factor for MERS-CoV

Flow volume loop is the investigation of choice for upper airway compression

Lung volume reduction surgery can be used in the treatment of alpha-1 antitrypsin deficiency

COPD - reason for using inhaled corticosteroids - reduced exacerbations

Chlamydia psittaci is a cause of pneumonia in bird keepers

A normal pCO_2 in a patient with acute severe asthma is an indicator that the attack may be life-threatening

Serial peak flow measurements at work and at home are used to detect occupational asthma

Asthmatic features/features suggesting steroid responsiveness in COPD:

- previous diagnosis of asthma or atopy
- a higher blood eosinophil count
- substantial variation in FEV1 over time (at least 400 ml)
- substantial diurnal variation in peak expiratory flow (at least 20%)

Pulmonary arterial hypertension is defined as an elevated pulmonary arterial pressure of greater than 25mmHg at rest or 30mmHg after exercise

Erythema nodosum is associated with a good prognosis in sarcoidosis

Polysomnography is diagnostic for obstructive sleep apnoea

Recurrent chest infections + subfertility - think primary ciliary dyskinesia syndrome (Kartagener's syndrome)

Churg-Strauss syndrome - positive pANCA serology

Contraindications to lung cancer surgery include SVC obstruction, $FEV < 1.5$, MALIGNANT pleural effusion, and vocal cord paralysis

Paraneoplastic features of lung cancer

- squamous cell: PTHrp, clubbing, HPOA
- small cell: ADH, ACTH, Lambert-Eaton syndrome

COPD - still breathless despite using SABA/SAMA and no asthma/steroid responsive features
→ add a LABA + LAMA

The triangle of safety for chest drain insertion involves the base of the axilla, lateral edge pectoralis major, 5th intercostal space and the anterior border of latissimus dorsi

Sleep apnoea causes include obesity and macroglossia

Vital capacity - maximum volume of air that can be expired after a maximal inspiration

The majority of patients with sarcoidosis get better without treatment

Lower zones lung fibrosis: amiodarone

Following NICE 2017, patients with asthma who are not controlled with a SABA + ICS should first have a LTRA added, not a LABA

Vital capacity - 4,500ml in males, 3,500 mls in females

Transfer factor

- raised: asthma, haemorrhage, left-to-right shunts, polycythaemia
- low: everything else

Pott's disease (spinal TB) is an important differential in the setting of chronic back pain, fevers and old TB

Catamenial pneumothorax is the cause of 3-6% of spontaneous pneumothoraces occurring in menstruating women

Indications for corticosteroid treatment for sarcoidosis are: parenchymal lung disease, uveitis, hypercalcaemia and neurological or cardiac involvement

Lower zones lung fibrosis: methotrexate

NIV (BiPAP) is indicated in respiratory acidosis or rising $PaCO_2$ resistant to best medical management during an acute exacerbation of COPD

Oxygen dissociation curve

- shifts Left - Lower oxygen delivery - Lower acidity, temp, 2-3 DPG - also HbF, carboxy/methaemoglobin
- shifts Right - Raised oxygen delivery - Raised acidity, temp, 2-3 DPG

Shifts the oxygen dissociation curve to the left - low pCO₂

Basal atelectasis should be suspected in the presentation of dyspnoea and hypoxaemia 72 hours post operatively

Klebsiella most commonly causes a cavitating pneumonia in the upper lobes, mainly in diabetics and alcoholics

Before starting azithromycin do an ECG (to rule out prolonged QT interval) and baseline liver function tests

Neuro

Myasthenia gravis - antibodies against acetylcholine receptors

Parietal lobe lesions may cause acalculia

On CT imaging, a chronic subdural haematoma will appear as a hypodense (dark), crescentic collection around the convexity of the brain

Raised ICP can cause a third nerve palsy due to herniation

Parietal lobe lesions may cause Gerstmann's syndrome

Neurofibromatosis type 2 is associated with bilateral vestibular schwannomas

Obese, young female with headaches / blurred vision think idiopathic intracranial hypertension

Consider glycopyrronium bromide to manage drooling of saliva in people with Parkinson's disease

Triptans are serotonin 5-HT_{1B} and 5-HT_{1D} receptor agonists

Neurofibromatosis type 1 - chromosome 17

Treatment of Bell's Palsy is with prednisolone because it increases the likelihood of complete recovery

Leg crossing, squatting or kneeling may cause a foot drop secondary to a common peroneal neuropathy

Amyotrophic lateral sclerosis is associated with mixed UMN and LMN signs (usually no sensory deficits)

Loss of corneal reflex - think acoustic neuroma

Natalizumab can cause reactivation of the JC virus causing progressive multifocal leukoencephalopathy (PML)

Otosclerosis is characterised by conductive hearing loss, tinnitus and positive family history

Multiple sclerosis is a cause of spastic paraparesis

Motor neuron disease - treatment: NIV is better than riluzole

Posterior circulation stroke must always be considered as a differential in a patient presenting with acute vertigo

Facioscapulohumeral muscular dystrophy is an autosomal dominant disorder

Lambert-Eaton syndrome or myasthenia gravis? Weakness in Lambert Eaton improves after exercise, unlike myasthenia gravis; which worsens after exercise

Levodopa should be offered for patients with newly diagnosed Parkinson's who have motor symptoms affecting their quality of life

Ovarian teratoma is associated with Anti-NMDA receptor encephalitis

Verapamil is used for long-term prophylaxis of cluster headaches

Sodium valproate may cause tremor

Non-contrast CT head scan is the first line radiological investigation for suspected stroke

Parietal lobe lesions may cause astereognosis

Hypertension should not be treated in the initial period following a stroke

Fluctuating consciousness = subdural haemorrhage

Brachial neuritis is characterized by acute onset unilateral severe pain followed by shoulder and scapular weakness several days later

Extensor plantars + absent ankle jerk → mixed UMN + LMN signs- motor neuron disease, subacute combined degeneration of cord, syringomyelia

Procyclidine - antimuscarinic

DVLA advice post stroke or TIA: cannot drive for 1 month

Breast feeding is acceptable with nearly all anti-epileptic drugs

Medication overuse headache

- simple analgesia + triptans: stop abruptly
- opioid analgesia: withdraw gradually

Stroke and TIA are associated with sudden-onset 'negative' symptoms, migraine is more commonly associated with 'positive' symptoms

There is a repeat expansion of CAG trinucleotide in Huntington's disease

Confusion, ataxia, nystagmus + ophthalmoplegia are features of Wernicke's encephalopathy

Antiplatelets

- TIA: clopidogrel
- ischaemic stroke: clopidogrel

Motor neuron disease - riluzole

A combination of thrombolysis AND thrombectomy is recommended for patients with an acute ischaemic stroke who present within 4.5 hours

Fluctuating confusion/consciousness? - subdural haematoma

Carbamazepine is contraindicated in absence seizures

IV lorazepam is the first-line treatment in patients with early status epilepticus

Narcolepsy is associated with low orexin (hypocretin) levels

Painful third nerve palsy = posterior communicating artery aneurysm

Gingival hyperplasia: phenytoin, ciclosporin, calcium channel blockers and AML

Chiari malformations are often associated with syringomyelia due to disturbed cerebrospinal fluid flow at the foramen magnum

Cerebellar stroke patients can present like they are 'drunk'

Syringomyelia - spinothalamic sensory loss (pain and temperature)

Patients with an intracranial extradural haematoma may experience a lucid interval in which they briefly regain consciousness after the injury before progressing into a coma

Apomorphine - dopamine receptor agonist

Uraemic polyneuropathy is predominantly sensory

DVLA advice post multiple TIAs: cannot drive for 3 months

Lip smacking + post-ictal dysphasia are localising features of a temporal lobe seizure

Bitemporal hemianopia

- lesion of optic chiasm
- upper quadrant defect > lower quadrant defect = inferior chiasmal compression, commonly a pituitary tumour

- lower quadrant defect > upper quadrant defect = superior chiasmal compression, commonly a craniopharyngioma

Intravenous phenytoin can cause hypotension

Cervical spondylitic myelopathy is caused by advanced osteoarthritis of the cervical spine causing compression of the cervical cord

Lateral medullary syndrome can be caused by PICA strokes

Broca's dysphasia: speech non-fluent, comprehension normal, repetition good

BPPV

- Dix-Hallpike manoeuvre is diagnostic
- Epley manoeuvre is for treatment

Cardiovascular disease is a contraindication to triptan use

Tuberous sclerosis patients develop renal angiomyolipomata which are prone to haemorrhage

Phenytoin induces vitamin K metabolism, which can cause a relative vitamin K deficiency, creating the potential for haemorrhagic disease of the newborn

Frontal lobe lesions may cause perseveration

Hemiballism is caused by damage to the subthalamic nucleus

The most common pattern for progression of multiple sclerosis is relapsing-remitting

Myoclonic seizures - sodium valproate

Migraine

- acute: triptan + NSAID or triptan + paracetamol
- prophylaxis: topiramate or propranolol

Ropinirole - dopamine receptor agonist

Laughter → fall/collapse ?cataplexy

Brown-Sequard syndrome: ipsilateral weakness, loss of proprioception and vibration sensation, contralateral loss of pain and temperature sensation

'Fasciculations' - think motor neuron disease

Contralateral hemiparesis and sensory loss with the upper extremity being more affected than the lower, contralateral homonymous hemianopia and aphasia - middle cerebral artery

Head injury, lucid interval - extradural (epidural) haematoma

Episodic eye pain, lacrimation, nasal stuffiness occurring daily - cluster headache

In facial nerve palsy, upper motor neuron lesions spare the upper face (i.e. forehead)

Multiple sclerosis diagnosis that requires demyelinating lesions that are separated in space and time

Dystrophia myotonica - DM1

- distal weakness initially
- autosomal dominant
- diabetes
- dysarthria

Transverse myelitis can be caused by viral infection - such as varicella, herpes simplex, EBV and HIV

Sinusitis + focal neurology and fever → ?brain abscess

Sensorineural hearing loss is the most common complication following meningitis

Epilepsy + pregnancy = 5mg folic acid

Chorea is caused by damage to the basal ganglia, in particular the Caudate nucleus

Bilateral spastic paresis and loss of pain and temperature sensation - anterior spinal artery occlusion

Phenytoin use is a cause of the cerebellar syndrome

Nimodipine is used to prevent vasospasm in aneurysmal subarachnoid haemorrhages

FVC is used to monitor respiratory function in Guillain-Barre syndrome

Treatment of neuroleptic malignant syndrome - dantrolene

CT head showing temporal lobe changes - think herpes simplex encephalitis

5-HT3 antagonists such as ondansetron can predispose to prolonged QT interval and increased risk of polymorphic VT

Temporal lobe lesions may cause auditory agnosia

Essential tremor is an AD condition that is made worse when arms are outstretched, made better by alcohol and propranolol

Parkinson's disease - most common psychiatric problem is depression

Miller Fisher syndrome - areflexia, ataxia, ophthalmoplegia

Creutzfeldt-Jakob disease is characterised by rapid onset dementia and myoclonus

Restless legs syndrome - ferritin is the single most important blood test

Syringomyelia classically presents with cape-like loss of pain and temperature sensation due to compression of the spinothalamic tract fibres decussating in the anterior white commissure of the spine

Absence seizures - good prognosis: 90-95% become seizure free in adolescence

CADASIL is a rare cause of multiple cerebral infarctions

To detect a subarachnoid haemorrhage the LP should be done at least 12 hours after the start of the headache

V for Vigabatrin - V for Visual field defects

Trigeminal neuralgia - carbamazepine is first-line

Common peroneal nerve lesion can cause weakness of foot dorsiflexion and foot eversion

Sodium valproate may cause weight gain

Ataxic telangiectasia is characterised by cerebellar ataxia and telangiectasia, onset is in childhood

Stroke thrombolysis - only consider if less than 4.5 hours and haemorrhage excluded

Cluster headache - acute treatment: subcutaneous sumatriptan + 100% O₂

Progressive supranuclear palsy: parkinsonism, impairment of vertical gaze

Restless leg syndrome - management includes dopamine agonists such as ropinirole

Cerebellar abscesses are most commonly caused by otogenic diseases like mastoiditis and sinusitis infections

Klumpke's paralysis: T1 nerve root damage

Brown-Sequard syndrome is a result of lateral hemisection of the spinal cord

Patients cannot drive for 6 months following a seizure

Dix-Hallpike test: rapidly lower a patient to the supine position with an extended neck. A positive test recreates the symptoms of benign paroxysmal positional vertigo

Charcot-Marie-Tooth disease can affect both motor and sensory peripheral nerves

Extradural or subdural haemorrhage? Extradural = lucid period, usually following major head injury. Subdural = fluctuating consciousness, often following trivial injury in the elderly or alcoholics

Use MRI FLAIR sequence in diagnosis of multiple sclerosis vs. MRI STIR in flares of thyroid eye disease

Topiramate can precipitate acute angle closure glaucoma

Spastic paraparesis can be caused by transverse myelitis

Selegiline - MAO-B inhibitor

Lateral medullary syndrome - PICA lesion - cerebellar signs, contralateral sensory loss & ipsilateral Horner's

Always replace vitamin B12 before folate - giving folate to a patient deficient in B12 can precipitate subacute combined degeneration of the cord

Alcohol is a common trigger for cluster headaches

Contralateral hemiparesis and sensory loss with the lower extremity being more affected than the upper - anterior cerebral artery

Pyridostigmine is a long-acting anticholinesterase inhibitor that reduces the breakdown of acetylcholine in the neuromuscular junction, temporarily improving symptoms of myasthenia gravis

Visual field defects:

- left homonymous hemianopia means visual field defect to the left, i.e. lesion of right optic tract
- homonymous quadrantanopias: PITS (Parietal-Inferior, Temporal-Superior)
- incongruous defects = optic tract lesion; congruous defects = optic radiation lesion or occipital cortex

Urinary incontinence + gait abnormality + dementia = normal pressure hydrocephalus

Von Hippel-Lindau syndrome is associated with the development of clear-cell renal cell carcinoma

Anti-NMDA receptor encephalitis is a paraneoplastic syndrome which presents with prominent psychiatric features

If subarachnoid haemorrhage is suspected but the CT head is normal, a lumbar puncture is required to confirm or exclude this diagnosis

Epilepsy medication: first-line

- generalised seizure: sodium valproate
- focal seizure: carbamazepine

Asymmetrical symptoms suggests idiopathic Parkinson's

SIADH is a common consequence of subarachnoid haemorrhage

Subthalamic nucleus of the basal ganglia lesions may cause hemiballism

Charcot-Marie-Tooth is a cause for distal muscle wasting

Cardio

Dentistry in warfarinised patients - check INR 72 hours before procedure, proceed if INR < 4.0

Bendroflumethiazide - inhibits sodium reabsorption by blocking the $\text{Na}^+\text{-Cl}^-$ symporter at the beginning of the distal convoluted tubule

The first-line management of SVT is vagal manoeuvres: e.g. Valsalva manoeuvre or carotid sinus massage

B-type natriuretic peptide is mainly secreted by the ventricular myocardium

Statins inhibit HMG-CoA reductase, the rate-limiting enzyme in hepatic cholesterol synthesis

Patients with very poor dental hygiene - Viridans streptococci e.g. *Streptococcus sanguinis*

Primary percutaneous coronary intervention is the gold-standard treatment for ST-elevation myocardial infarction

Bosentan - endothelin-1 receptor antagonist

Prostacyclins is used in the treatment of primary pulmonary hypertension

JVP: giant v waves in tricuspid regurgitation

Prosthetic heart valves - antithrombotic therapy:

- bioprosthetic: aspirin
- mechanical: warfarin + aspirin

Newly diagnosed patient with hypertension (> 55 years) - add a calcium channel blocker

'Provoked' pulmonary embolisms are typically treated for 3 months

Poorly controlled hypertension, already taking an ACE inhibitor and a calcium channel blocker - add a thiazide diuretic

Complete heart block following a MI? - right coronary artery lesion

Endothelin receptor antagonists decrease pulmonary vascular resistance in patients with primary pulmonary hypertension

IV magnesium sulfate is used to treat torsades de pointes

The two level Well's score can be used in patients presenting with signs and symptoms suggestive of PE to guide the next investigation

J-waves are associated with hypothermia

HOCM is the most common cause of sudden cardiac death in the young

Prosthetic valve endocarditis caused by staphylococci → Flucloxacillin + rifampicin + low-dose gentamicin

Prominent V waves on JVP → tricuspid regurgitation

When treating angina, if there is a poor response to the first-line drug (e.g. a beta-blocker), the dose should be titrated up before adding another drug

Angiotensin-receptor blockers should be used where ACE inhibitors are not tolerated

Irregular cannon 'a' waves points towards complete heart block

Warfarin - clotting factors affected mnemonic - 1972 (10, 9, 7, 2)

Infective endocarditis - indications for surgery:

- severe valvular incompetence
- aortic abscess (often indicated by a lengthening PR interval)
- infections resistant to antibiotics/fungal infections
- cardiac failure refractory to standard medical treatment
- recurrent emboli after antibiotic therapy

Gallop rhythm (S3) is an early sign of LVF

Young man with AF, no TIA or risk factors, no treatment is now preferred to aspirin

Naftidrofuryl is a 5-HT₂ receptor antagonist which can be used for peripheral vascular disease

Ischaemic changes in leads V1-V4 - left anterior descending

Magnesium sulphate - monitor reflexes + respiratory rate

Amiodarone has a very long half-life of 20-100 days - loading doses are therefore often needed

The CURB-65 score can be used for assessing the prognosis of a patient with community acquired pneumonia

Poorly controlled hypertension, already taking an ACE inhibitor, calcium channel blocker and a standard-dose thiazide diuretic. K⁺ > 4.5mmol/l - add an alpha- or beta-blocker

Prinzmetal angina - treatment = dihydropyridine calcium channel blocker

Angiotensin II receptor blockers block the effects of angiotensin 2 at the AT₁ receptor

Women with pulmonary hypertension should avoid becoming pregnant due to very high mortality levels

Tachycardia with a rate of 150/min ?atrial flutter

A single episode of paroxysmal atrial fibrillation, even if provoked, should still prompt consideration of anticoagulation

A prolonged PR interval - aortic root abscess

Hypocalcemia is associated with QT interval prolongation; Hypercalcemia is associated with QT interval shortening

Infective endocarditis - streptococcal infection carries a good prognosis

Ambrisentan - endothelin-1 receptor antagonist

Nitrates should be avoided in the likely diagnosis of right ventricular myocardial infarct due to causing reduced preload

Restrictive cardiomyopathy: amyloid (most common), haemochromatosis, Löffler's syndrome, sarcoidosis, scleroderma

Erythromycin can cause a prolonged QT interval

Statins + erythromycin/clarithromycin - an important and common interaction

Infective endocarditis causing congestive cardiac failure is an indication for emergency valve replacement surgery

A beta-blocker or a calcium channel blocker is used first-line to prevent angina attacks

Furosemide - inhibits the Na-K-Cl cotransporter in the thick ascending limb of the loop of Henle

Poorly controlled hypertension, already taking an ACE inhibitor and a thiazide diuretic - add a calcium channel blocker

For patients of Afro-Caribbean origin taking a calcium channel blocker for hypertension, if they require a second agent consider an angiotensin receptor blocker in preference to an ACE inhibitor

Pulmonary embolism - CTPA is first-line investigation

JVP: y descent = opening of tricuspid valve

Eisenmenger's syndrome - the reversal of a left-to-right shunt

People with cardiac syndrome X have normal coronary angiograms despite ECG changes on exercise stress testing

Patients with recurrent venous thromboembolic disease may be considered for an inferior vena cava filter

AV block can occur following an inferior MI

Aortic stenosis - S4 is a marker of severity

Labetalol is first-line for pregnancy-induced hypertension

Paradoxical embolus - PFO most common cause - do TOE

Aortic stenosis - most common cause:

- younger patients < 65 years: bicuspid aortic valve
- older patients > 65 years: calcification

BNP - actions:

- vasodilator
- diuretic and natriuretic
- suppresses both sympathetic tone and the renin-angiotensin-aldosterone system

Sudden death, unusual collapse in young person - ? HOCM

If high-risk of failure of cardioversion (previous failure), offer electrical cardioversion after at least 4 weeks treatment with amiodarone

Hydralazine - increases cGMP leading to smooth muscle relaxation

Poorly controlled hypertension, already taking an ACE inhibitor, calcium channel blocker and a thiazide diuretic. $K^+ < 4.5\text{mmol/l}$ - add spironolactone

Risk of falls alone is not sufficient reasoning to withhold anticoagulation

DVLA advice post MI - cannot drive for 4 weeks

Aortic dissection

- type A - ascending aorta - control BP(IV labetalol) + surgery
- type B - descending aorta - control BP(IV labetalol)

Aminophylline reduces the effect of adenosine

Amiodarone - MOA: blocks potassium channels

Nicorandil is a potassium channel activator

Right axis deviation - left posterior hemiblock

Complete heart block causes a variable intensity of S1

Pulmonary arterial hypertension patients with negative response to vasodilator testing should be treated with prostacyclin analogues, endothelin receptor antagonists or phosphodiesterase inhibitors. Often combination therapy is required

A potassium above 6mmol/L should prompt cessation of ACE inhibitors in a patient with CKD (once other agents that promote hyperkalemia have been stopped)

Hypokalaemia - U waves on ECG

QT interval: Time between the start of the Q wave and the end of the T wave

Rate-limiting CCBs should be avoided in patients with AF with heart failure with reduced EF (HFrEF) due to their negative inotropic effects

Dipyridamole is a non-specific phosphodiesterase inhibitor and decreases cellular uptake of adenosine

The main ECG abnormality seen with hypercalcaemia is shortening of the QT interval

Beta-blockers e.g. bisoprolol should not be used with verapamil due to the risk of bradycardia, heart block, congestive heart failure

HOCM - poor prognostic factor on echo = septal wall thickness of $> 3\text{cm}$

Second heart sound (S2)

- loud: hypertension
- soft: AS
- fixed split: ASD

- reversed split: LBBB

Arrhythmogenic right ventricular cardiomyopathy is characterised by right ventricular myocardium replaced by fatty and fibrofatty tissue

ALS - give adrenaline in non-shockable rhythm as soon as possible

Nicotinic acid increases HDL levels

Pulmonary embolism - normal CXR

Patients with *stable* CVD who have AF are generally managed on an anticoagulant and the antiplatelets stopped

In management of STEMI if primary PCI cannot be delivered within 120 minutes then thrombolysis should be given

Pulmonary hypertension is a cause of a loud S2 (due to a loud P2)

HOCM is usually due to a mutation in the gene encoding β -myosin heavy chain protein or myosin binding protein C

Ticagrelor has a similar mechanism of action to clopidogrel - inhibits ADP binding to platelet receptors

Atrial myxoma - commonest site = left atrium

Patients with a suspected pulmonary embolism should be initially managed with low-molecular weight heparin

Patients with VT should not be prescribed verapamil

Offer a mineralocorticoid receptor antagonist, in addition to an ACE inhibitor (or ARB) and beta-blocker, to people who have heart failure with reduced ejection fraction if they continue to have symptoms of heart failure

Contrast-enhanced CT coronary angiogram is the first line investigation for stable chest pain of suspected coronary artery disease aetiology

ACE inhibitors can cause first dose hypotension

Aortic regurgitation - early diastolic murmur, high-pitched and 'blowing' in character

Patients with SVT who are haemodynamically stable and who do not respond to vagal manoeuvres, the next step is treating with adenosine

Methadone is a common cause of QT prolongation

Eclampsia - give magnesium sulphate first-line

Symptomatic bradycardia is treated with atropine

Severe pre-eclampsia - restrict fluids

Atrioventricular dissociation suggests VT rather than SVT with aberrant conduction

Bisferiens pulse - mixed aortic valve disease

Patients on warfarin undergoing emergency surgery - give four-factor prothrombin complex concentrate

Sotalol is known to cause long QT syndrome

Aschoff bodies are granulomatous nodules found in rheumatic heart fever

Streptococcus bovis endocarditis is associated with colorectal cancer

Most common cause of endocarditis:

- *Staphylococcus aureus*
- *Staphylococcus epidermidis* if < 2 months post valve surgery

Left parasternal heave is a feature of tricuspid regurgitation

Adenosine

- dipyridamole enhances effect
- aminophylline reduces effect

S4 coincides with the P wave on ECG

Inherited long QT syndrome, sensorineural deafness - Jervell and Lange-Nielsen syndrome

Left axis deviation - Wolff-Parkinson-White syndrome (right-sided accessory pathway)

Hypertension in diabetics - ACE-inhibitors are first-line regardless of age

Clopidogrel inhibits ADP binding to platelet receptors

New onset AF is considered for electrical cardioversion if it presents within 48 hours of presentation

JVP: C wave - closure of the tricuspid valve

Takotsubo cardiomyopathy is a differential for ST-elevation in someone with no obstructive coronary artery disease

Atrial fibrillation: rate control - beta blockers preferable to digoxin

DVLA advice following angioplasty - cannot drive for 1 week

ACE inhibitors have reduced efficacy in black patients and are therefore not used first-line

If angina is not controlled with a beta-blocker, a calcium channel blocker should be added

PCI - patients with drug-eluting stents require a longer duration of clopidogrel therapy

Pulsus alternans - seen in left ventricular failure

Massive PE + hypotension - thrombolyse

Major bleeding - stop warfarin, give intravenous vitamin K 5mg, prothrombin complex concentrate

Third heart sound - constrictive pericarditis

Poorly controlled hypertension, already taking an ACE inhibitor - add a calcium channel blocker or a thiazide-like diuretic

Aortic stenosis management: AVR if symptomatic, otherwise cut-off is gradient of 40 mmHg

Prosthetic heart valves - mechanical valves last longer and tend to be given to younger patients

Complete heart block following an inferior MI is NOT an indication for pacing, unlike with an anterior MI

An undersized blood pressure cuff may lead to an overestimation of blood pressure

Pulmonary arterial hypertension patients with positive response to vasodilator testing should be treated with calcium channel blockers

Inferior MI - right coronary artery lesion

Pulmonary embolism and renal impairment → V/Q scan is the investigation of choice

Aortic dissection

- type A - ascending aorta - control BP(IV labetalol) + surgery
- type B - descending aorta - control BP(IV labetalol)

Atrial fibrillation - cardioversion: amiodarone + flecainide

Takayasu's arteritis is an obliterative arteritis affecting the aorta

ICD means loss of HGV licence, regardless of the circumstances

Staphylococci is the leading organism contributing to mortality in infective endocarditis

Dabigatran is a direct thrombin inhibitor

Infective endocarditis - strongest risk factor is previous episode of infective endocarditis

Palpitations should first be investigated with a Holter monitor after initial bloods/ECG

Tricuspid valve endocarditis can cause tricuspid regurgitation, which may manifest with a new pan-systolic murmur, large V waves and features of pulmonary emboli

Acute vasodilator testing should be used in patients with pulmonary artery hypertension to determine which patient show a significant fall in pulmonary arterial pressure following vasodilators and help guide treatment

Asymmetric septal hypertrophy and systolic anterior movement (SAM) of the anterior leaflet of mitral valve on echocardiogram or cMR support HOCM

The recommended dose of adrenaline to give during advanced ALS is 1mg

Bendroflumethiazides can worsen glucose tolerance

Long QT syndrome - usually due to loss-of-function/blockage of K⁺ channels

PCI: stent thrombosis - withdrawal of antiplatelets biggest risk factor

Poorly controlled hypertension, already taking a calcium channel blocker - add an ACE inhibitor or an angiotensin receptor blocker

Antibiotic prophylaxis to prevent infective endocarditis is not routinely recommended in the UK for dental and other procedures

ACE-inhibitors should be avoided in patients with HOCM

Renal dysfunction (eGFR <60) can cause a raised serum natriuretic peptides

Blood pressure target (< 80 years, clinic reading) - 140/90 mmHg

A stable patient presenting in AF with an obvious precipitating cause may revert to sinus rhythm without specific antiarrhythmic treatment

Witnessed cardiac arrest while on a monitor - up to three successive shocks before CPR

Ventricular tachycardia - verapamil is contraindicated

Thiazide diuretics can cause hyponatraemia, metabolic alkalosis, hypokalaemia and hypocalciuria

Percutaneous mitral commissurotomy is the intervention of choice for severe mitral stenosis

Ivabradine use may be associated with visual disturbances including phosphenes and green luminescence

Myoglobin rises first following a myocardial infarction

Ischaemic changes in leads I, aVL +/- V5-6 - left circumflex

JVP: x descent = fall in atrial pressure during ventricular systole

Hypertension - NICE now recommend ambulatory blood pressure monitoring to aid diagnosis

Pulmonary arterial hypertension most commonly presents with exertional dyspnoea. Patients may also experience exertional chest pain, syncope and peripheral oedema

Mechanical valves - target INR:

- aortic: 3.0
- mitral: 3.5

'Unprovoked' pulmonary embolisms are typically treated for 6 months

INR > 8.0 (no bleeding) - stop warfarin, give oral vitamin K 1-5mg, repeat dose of vitamin K if INR high after 24 hours, restart when INR < 5.0

VF/pulseless VT should be treated with 1 shock as soon as identified

Geriatric and palliative medicine

Visual hallucinations with dementia = Lewy body dementia

In palliative patients increase morphine doses by 30-50% if pain not controlled

Haloperidol is contraindicated in patients with Parkinson's disease

Transdermal opioid patch formulations are first-line choice in palliative care patients whom oral treatment is not suitable

Anti-psychotics should be avoided in delirious patients with a background of Parkinson's disease

Tight control of vascular risk factors, rather than antidementia medication, is recommended by NICE in vascular dementia

Memantine - NMDA receptor antagonist

Neuroimaging is required to diagnose dementia

Headache caused by raised intracranial pressure due to brain cancer (or metastases) can be palliated with dexamethasone

Divide by two for oral to subcutaneous morphine conversion

Constipation can cause delirium in the elderly

Donepezil - acetylcholinesterase inhibitor

Donepezil can cause insomnia

Breakthrough dose = 1/6th of daily morphine dose

Frontotemporal dementia presents with social disinhibition and often has a family history

Donepezil is generally avoided (relative contraindication) in patients with bradycardia and is used with caution in other cardiac abnormalities

Waterlow score - used to identify patients at risk of pressure sores

NICE guidelines do not support the use of memantine in mild dementia

Hiccups in palliative care - chlorpromazine or haloperidol

Buprenorphine or fentanyl are the opioids of choice for pain relief in palliative care patients with severe renal impairment, as they are not renally excreted and therefore are less likely to cause toxicity than morphine

Codeine to morphine - divide by 10

Benzylamine hydrochloride mouthwash or spray may be useful in reducing the discomfort associated with a painful mouth that may occur at the end of life

Oxycodone is a safer opioid to prescribe in a patient with renal failure

Impairment of consciousness indicates a diagnosis of delirium over dementia

Antipsychotics are associated with a significant increase in mortality in dementia patients

Syringe drivers

- respiratory secretions: hyoscine hydrobromide

- bowel colic: hyoscine butylbromide

Metastatic bone pain may respond to analgesia, bisphosphonates or radiotherapy

Clinical pharmacology and toxicology

Tacrolimus is a cause of impaired glucose tolerance

Ciprofloxacin lowers the seizure threshold

NSAIDs are a cause of thrombocytopenia

Penicillin is a common cause of urticaria

Unfractionated heparin can be used in poor renal function for venous thromboembolism prophylaxis, whereas LMWH should not be

Carbamazepine is a P450 enzyme inductor

Beta-blockers can cause sleep disturbance

Cocaine can induce preterm labour

Sarin gas is a highly toxic synthetic organophosphorus compound which causes inhibition of the enzyme acetylcholinesterase

Visual changes secondary to drugs

- blue vision: Viagra ('the blue pill')
- yellow-green vision: digoxin

Carbamazepine can cause agranulocytosis

Oxycodone is a safer opioid to use in patients with moderate to end-stage renal failure

Digoxin - inhibits the Na^+/K^+ ATPase pump

Lithium toxicity can be precipitated by ACE inhibitors

Beta-blocker - atropine, glucagon in resistant cases

Heparin-induced thrombocytopenia - antibodies form against complexes of platelet factor 4 (PF4) and heparin

Rifampicin is a P450 enzyme inductor

Hydroxychloroquine can cause retinopathy

Rituximab - monoclonal antibody against CD20

Sildenafil - phosphodiesterase type V inhibitor

A small proportion (0.5 - 6.5%) of patients with an IgE mediated penicillin allergy will also be allergic to cephalosporins

Biliary stasis and subsequently gallstones is a common adverse effect of octerotide

Amitriptyline can cause urinary retention

Abciximab is a glycoprotein IIb/IIIa receptor antagonist

Rifampicin - inhibits RNA synthesis

Sulphonylureas may cause syndrome of inappropriate ADH

Amiodarone can cause corneal opacities

Quinine toxicity (cinchonism) presents with myriad ECG changes, hypotension, metabolic acidosis, hypoglycaemia and classically tinnitus, flushing and visual disturbances. Flash pulmonary oedema may occur

Allopurinol inhibits xanthine oxidase

Is affected by acetylator status - hydralazine

Heparin can cause drug induced thrombocytopenia

Ciprofloxacin is contraindicated in G6PD deficiency

Ciprofloxacin is a P450 enzyme inhibitor

Nitrofurantoin may cause pulmonary fibrosis

Ciclosporin side-effects: everything is increased - fluid, BP, K⁺, hair, gums, glucose

Cetuximab - monoclonal antibody against the epidermal growth factor receptor

Beta-blocker overdose management: atropine + glucagon

Verapamil can cause constipation

Patients with MI secondary to cocaine use should be given IV benzodiazepines as part of acute (ACS) treatment

Tricyclic overdose - give IV bicarbonate

Patients who take a staggered paracetamol overdose should receive treatment with acetylcysteine

Flecainide blocks the Nav1.5 sodium channels in the heart

Glitazones can cause fluid retention and decompensation of heart failure

Ergot-derived dopamine receptor agonists may cause pulmonary fibrosis

Teicoplanin is similar to vancomycin (e.g. a glycopeptide antibiotic), but has a significantly longer duration of action, allowing once daily administration after the loading dose

Verapamil commonly causes constipation

Trastuzumab (Herceptin) - monoclonal antibody that acts on the HER2/neu receptor

Ciclosporin + tacrolimus: inhibit calcineurin thus decreasing IL-2

Motion sickness - hyoscine > cyclizine > promethazine

Aspirin is a common cause of urticaria

There is no evidence that antibiotics other than enzyme inducing antibiotics such as rifampicin reduce the efficacy of the combined oral contraceptive pill

Screen for HLA-B *5801 allele in a patient at high risk for allopurinol induced severe cutaneous adverse reaction

Glycaemic control in diabetes may be worsened by nicotinic acid

Amiodarone is a cause of photosensitivity

Botulinum toxin is used therapeutically in achalasia

Metformin should be titrated slowly, leave at least 1 week before increasing dose

N-acetylcysteine is a precursor of glutathione

Optic neuritis is common in patients taking ethambutol

Although rare, lactic acidosis is an important side-effect of metformin

SSRIs + MDMA = higher risk of serotonin syndrome

Mercury poisoning can cause visual field defects, hearing loss and paraesthesia

Trastuzumab (Herceptin) - cardiac toxicity is common

Recommend Adult Life Support (ALS) adrenaline doses

- anaphylaxis: 0.5mg - 0.5ml 1:1,000 IM
- cardiac arrest: 1mg - 10ml 1:10,000 IV or 1ml of 1:1000 IV

PDE 5 inhibitors (e.g. sildenafil) - contraindicated by nitrates and nicorandil

Glycaemic control in diabetes may be worsened by interferon-alpha

Organophosphate insecticide poisoning - bradycardia

Phenylephrine is an alpha-1 agonist

Lithium toxicity can be precipitated by thiazides

In carbon monoxide poisoning the oxygen saturation of haemoglobin decreases leading to an early plateau in the oxygen dissociation curve

Isoniazid causes peripheral neuropathy

Smoking is a P450 enzyme inducer

Ethylene glycol toxicity management - fomepizole. Also ethanol / haemodialysis

Carbon monoxide poisoning - most common feature = headache

Tamoxifen may cause hot flushes

Adrenaline induced ischaemia - phentolamine

Combined oral contraceptive pill

- increased risk of breast and cervical cancer
- protective against ovarian and endometrial cancer

Fomepizole - used in ethylene glycol and methanol poisoning - competitive inhibitor of alcohol dehydrogenase

Gastrointestinal side-effects such as diarrhoea and bloating are a common side effect with metformin

Macrolides - inhibits protein synthesis by acting on the 50S subunit of ribosomes

Calcium channel blockers - side-effects: headache, flushing, ankle oedema

Aspirin is a non reversible COX 1 and 2 inhibitor

Ciprofloxacin may lead to tendinopathy

Digoxin normally binds to the ATPase pump on the same site as potassium. Hypokalaemia → digoxin more easily bind to the ATPase pump → increased inhibitory effects

Activated charcoal can be used within an hour of an aspirin overdose

Paracetamol overdose occurs when glutathione stores run-out leading to an increase in NAPQI (N-acetyl-p-benzoquinone imine)

Exhibits zero-order kinetics - phenytoin

Isoniazid inhibits the P450 system

Digoxin may cause yellow-green vision

Early endoscopy and risk stratification is important in patients with symptomatic caustic ingestion

If metformin is not tolerated due to GI side-effects, try a modified-release formulation before switching to a second-line agent

Infliximab is an anti-TNF monoclonal antibody used in the treatment of Crohn's disease

Drugs which exhibit zero-order kinetics include phenytoin, alcohol and salicylates

Metformin acts by activation of the AMP-activated protein kinase (AMPK)

Aminoglycosides inhibit protein synthesis by acting on the 30S ribosomal unit

Severe lithium toxicity is an indication for haemodialysis

Ciclosporin may cause nephrotoxicity

Octreotide is a somatostatin analogue

Cyanide inhibits the enzyme cytochrome c oxidase, resulting in cessation of the mitochondrial electron transfer chain

Thiazides may cause photosensitivity

Unfractionated heparin - activates antithrombin III. Forms a complex that inhibits thrombin, factors Xa, Ixa, Xia and XIIa

Drug metabolism

- phase I: oxidation, reduction, hydrolysis
- phase II: conjugation

Lithium: fine tremor in chronic treatment, coarse tremor in acute toxicity

[Derma](#)

Topical steroids

- moderate: Clobetasone butyrate 0.05%
- potent: Betamethasone valerate 0.1%
- very potent: Clobetasol propionate 0.05%

Acne rosacea features:

- nose, cheeks and forehead
- flushing, erythema, telangiectasia → papules and pustules

Acne rosacea features:

- nose, cheeks and forehead
- flushing, erythema, telangiectasia → papules and pustules

Oral lichen planus typically presents with buccal white-lace pattern lesions and ulcers

Acne vulgaris in pregnancy - use oral erythromycin if treatment needed

Acral lentiginous melanoma: Pigmentation of nail bed affecting proximal nail fold suggests melanoma (Hutchinson's sign)

Dermatitis herpetiformis - caused by IgA deposition in the dermis

Pityriasis versicolor is caused by *Malassezia furfur*

Blisters/bullae

- no mucosal involvement (in exams at least*): bullous pemphigoid

- mucosal involvement: pemphigus vulgaris

Keloid scars - more common in young, black, male adults

HIV is associated with seborrhoeic dermatitis

Tender shin lesions - erythema nodosum

Blisters/bullae

- no mucosal involvement: bullous pemphigoid
- mucosal involvement: pemphigus vulgaris

Diabetic dermopathy is associated with increased age and longer duration of diabetes

Topical aluminium chloride preparations are first-line for hyperhidrosis

Urinary histamine is used to diagnose systemic mastocytosis

Dry skin is the most common side-effect of isotretinoin

Dermatophyte nail infections - use oral terbinafine

Grave's disease, orange peel shin lesions - pretibial myxoedema

Scabies - permethrin treatment: all skin including scalp + leave for 12 hours + retreat in 7 days

Management of venous ulceration - compression bandaging

An itchy rash affecting the face and scalp distribution is commonly caused by seborrhoeic dermatitis

Nodular melanoma: Invade aggressively and metastasise early

Hepatitis C may lead to porphyria cutanea tarda

Eczema herpeticum is a serious condition that requires IV antivirals

Porphyria cutanea tarda - photosensitive rash with blistering and skin fragility on the face and dorsal aspect of hands

Polymorphic eruption of pregnancy is not associated with blistering

Keloid scars are most common on the sternum

Beta-blockers are known to exacerbate plaque psoriasis

Parkinson's disease is associated with seborrhoeic dermatitis

Melanoma: the invasion depth of the tumour is the single most important prognostic factor

Otitis externa and blepharitis are common complications of seborrhoeic dermatitis

Lentigo maligna melanoma: Suspicious freckle on face or scalp of chronically sun-exposed patients

Psoriasis: lithium may trigger an exacerbation

Ketoconazole shampoo is used to treat pityriasis versicolor

Erythema gyratum repens is a paraneoplastic eruption with a 'wood-grain' pattern and figurate erythema commonly seen in patients with lung cancer

Lichen

- planus: purple, pruritic, papular, polygonal rash on flexor surfaces. Wickham's striae over surface. Oral involvement common
- sclerosus: itchy white spots typically seen on the vulva of elderly women

Lichen

- planus: purple, pruritic, papular, polygonal rash on flexor surfaces. Wickham's striae over surface. Oral involvement common
- sclerosus: itchy white spots typically seen on the vulva of elderly women

Topical eflornithine is the treatment of choice for facial hirsutism

Livedo reticularis can be caused by SLE

Diabetes, waxy yellow shin lesions - necrobiosis lipoidica diabetorum

Flexural psoriasis - topical steroid

Same-day referral to a dermatologist is recommended if eczema herpeticum is suspected

An area of rapidly worsening painful eczema is an early sign of eczema herpeticum

Impetigo - topical fusidic acid is first-line

Hereditary haemorrhagic telangiectasia - autosomal dominant

Eczema herpeticum rash can be described as monomorphic punched-out erosions (circular, depressed, ulcerated lesions) usually 1–3 mm in diameter

SCCs arising in a chronic scar are typically more aggressive and carry an increased risk of metastasis

Pompholyx eczema is a subtype of eczema characterised by an intensely pruritic rash on the palms and soles

Eczema herpeticum is a primary infection of the skin caused by herpes simplex virus (HSV) and uncommonly coxsackievirus

A non-healing painless ulcer associated with a chronic scar is indicative of squamous cell carcinoma (SCC)

Pompholyx eczema may be precipitated by humidity (e.g. sweating) and high temperatures

The most common malignancy in the lower lip is a squamous cell carcinoma

Zinc deficiency caused by total parenteral nutrition (TPN) can result in acrodermatitis herpetiformis

Acne rosacea treatment:

- mild/moderate: topical metronidazole
- severe/resistant: oral tetracycline

Deficiency of niacin (B3) causes pellagra

Herpes hominis virus 7 (HHV-7) is thought to play a role in the aetiology of pityriasis rosea

Niacin (B3) deficiency is characterised by dermatitis, diarrhoea and dementia, a condition known as pellagra

Isotretinoin adverse effects

- teratogenicity - females MUST be taking contraception
- low mood
- dry eyes and lips
- raised triglycerides
- hair thinning
- nose bleeds

Seborrhoeic dermatitis - first-line treatment is topical ketoconazole

Ophthalmology

Fundoscopy reveals end organ damage in hypertension

Relative afferent pupillary defect indicates an optic nerve lesion or severe retinal disease

Angioid retinal streaks are a feature of pseudoxanthoma elasticum

Dorzolamide - carbonic anhydrase inhibitor

Vitreous haemorrhage is a cause of sudden painless loss of vision in the context of diabetic retinopathy

Pilocarpine is a muscarinic receptor agonist

Acute angle closure glaucoma is associated with hypermetropia, whereas primary open-angle glaucoma is associated with myopia

Latanoprost is a prostaglandin analog used in glaucoma. It works by increasing uveoscleral outflow

Retinitis pigmentosa - night blindness + tunnel vision

Holmes ADIE = Dilated pupil, females, absent leg reflexes

Hypocalcaemia is a cause of cataracts

Patients with orbital cellulitis require admission to hospital for IV antibiotics due to the risk of cavernous sinus thrombosis and intracranial spread

Monocular transient painless loss of vision (amaurosis fugax) should be treated as a TIA

Vitamin A toxicity is a rare cause of papilloedema

A relative afferent pupillary defect is when the affected and normal eye appears to dilate when light is shone on the affected eye

Flashes and floaters - vitreous/retinal detachment

Scleritis is painful, episcleritis is not painful

Central retinal vein occlusion - sudden painless loss of vision, severe retinal haemorrhages on fundoscopy

Horner's syndrome - anhydrosis determines site of lesion:

- head, arm, trunk = central lesion: stroke, syringomyelia
- just face = pre-ganglionic lesion: Pancoast's, cervical rib
- absent = post-ganglionic lesion: carotid artery

Retinal detachment is a cause of sudden painless loss of vision. It is characterised by a dense shadow starting peripherally and progressing centrally

Treatment of acute glaucoma - acetazolamide + pilocarpine

Flashes + floaters are most commonly caused by a posterior vitreous detachment

Drusen = Dry macular degeneration

Red eye - glaucoma or uveitis?

- glaucoma: severe pain, haloes, 'semi-dilated' pupil
- uveitis: small, fixed oval pupil, ciliary flush

Macular degeneration - smoking is risk factor

Psychiatry

Patients with antisocial personality disorder often fail to conform to social norms, and show lack of remorse, deception and irresponsibility

Paranoid personality disorder may be diagnosed in patients who are overly sensitive and can be unforgiving if insulted, question loyalty of those around them and are reluctant to confide in others

Elderly patients with depression are less likely to complain of low mood and instead may present with health anxiety, agitation and sleep disturbance

Lying or exaggerating for financial gain is malingering, for example someone who fakes whiplash after a road traffic accident for an insurance payment

Histrionic personality disorder is characterised by inappropriate sexual seductiveness, suggestibility and intense relationships

Patients with obsessive-compulsive personality can be rigid with respect to morals, ethics and values and often are reluctant to surrender work to others

Benzodiazepines enhance the effect of GABA, the main inhibitory neurotransmitter

Duloxetine mechanism of action = serotonin and noradrenaline reuptake inhibitor

Antipsychotics may cause akathisia (severe restlessness)

Dosulepin - avoid as dangerous in overdose

Atypical antipsychotics commonly cause weight gain

Borderline personality disorder is associated with impulsivity, feelings of emptiness, fear of abandonment and unstable self image

Antidepressants should be continued for at least 6 months after remission of symptoms to decrease risk of relapse

Confabulation in a patient with chronic alcoholism points towards Korsakoff's syndrome

Conversion disorder - typically involves loss of motor or sensory function. May be caused by stress

When stopping a SSRI the dose should be gradually reduced over a 4 week period

Patients with avoidant personality disorder are fearful of criticism, being unliked, rejection and ridicule

Korsakoff's syndrome is a complication of Wernicke's encephalopathy. It's features include: anterograde amnesia, retrograde amnesia, and confabulation

SSRI + NSAID = GI bleeding risk - give a PPI

Gastrointestinal side-effects such as diarrhoea are seen in SSRI discontinuation syndrome

Sertraline is the SSRI of choice post myocardial infarction

Lofepramine - the safest TCA in overdosage

Anorexia features

- most things low

- G's and C's raised: growth hormone, glucose, salivary glands, cortisol, cholesterol, carotinaemia

Patients with dependant personality disorder require excessive reassurance from others, seek out relationships and require others to take responsibility for major life decisions

Cotard syndrome is associated with severe depression

Olanzapine has a higher risk than other atypicals for dyslipidemia and obesity

Charles-Bonnet syndrome causes unpleasant visual hallucinations in a third of sufferers

If CBT or EMDR therapy are ineffective in PTSD, the first line drug treatments are venlafaxine or a SSRI

PTSD management - trauma-focused cognitive behavioural therapy or EMDR

Tardive kinesia can present as chewing, jaw pouting or excessive blinking due to late onset abnormal involuntary choreoathetoid movements in patients on conventional antipsychotics

A male with a history of alcohol or drug abuse and deliberate self harm should be considered to be at high risk of suicide

Antipsychotics in the elderly - increased risk of stroke and VTE

Severe depression can mimic dementia but gives a pattern of global memory loss rather than short-term memory loss - this is called pseudodementia

Age-related macular degeneration is associated with Charles-Bonnet syndrome

Unexplained symptoms

- Somatisation = Symptoms
- hypoChondria = Cancer

Family history is the strongest risk factor for psychotic disorders

Narcisitic personalities lack empathy, have a sense of entitlement and take advantage of others to achieve their own need

Triptans should be avoided in patients taking a SSRI

Patients with a history of complex withdrawals from alcohol (i.e. delirium tremens, seizures, blackouts) should be admitted to hospital for monitoring until withdrawals stabilised

Agoraphobia is usually managed with sertraline

Paroxetine - higher incidence of discontinuation symptoms

Lithium levels should be checked every 3 months once a stable dose has been achieved

Common features of PTSD

- re-experiencing e.g. flashbacks, nightmares
- avoidance e.g. avoiding people or situations
- hyperarousal e.g. hypervigilance, sleep problems

SSRIs are the first-line pharmacological therapy for generalised anxiety disorder

Cotard syndrome is characterised by a person believing they are dead or non-existent

SSRIs are associated with hyponatraemia

Post-natal depression is seen in around 10% of women

Charles-Bonnet syndrome - peripheral visual impairment is a risk factor

Patients with Charles-Bonnet syndrome experience persistent or recurrent complex visual or auditory hallucinations however generally have full insight into their condition

An obsession is an intrusive, unpleasant and unwanted thought. A compulsion is a senseless action taken to reduce the anxiety caused by the obsession

Alcohol withdrawal

- symptoms: 6-12 hours
- seizures: 36 hours
- delirium tremens: 72 hours

Acute dystonia - sustained muscle contraction such as torticollis or oculogyric crisis

Clinical sciences

HIV uses CD4 to enter cells

SIADH is treated with fluid restriction

Hypocalcaemia: Trousseau's sign is more sensitive and specific than Chvostek's sign

Leptin is secreted by adipose tissue

Goodpasture's syndrome is caused by autoantibodies against collagen type IV

Coxiella burnetii is the causative organism in Q fever

Cushing's syndrome causes hypokalaemia with alkalosis

Acute epiglottitis is caused by *Haemophilus influenzae* type B

Tetracyclines inhibit the 30S subunit of ribosomes

Secretin increases secretion of bicarbonate-rich fluid from pancreas and hepatic duct cells

Non-REM stage 1 (N1) sleep is the lightest sleep which is associated with hypnagogic jerks

Fluorescence in situ hybridization uses fluorescent DNA or RNA probe to bind to specific gene site of interest for direct visualisation of chromosomal anomalies

The main source of IL-1 is macrophages

Patients with hyposplenism should be vaccinated against pneumococcal, Haemophilus type B and meningococcus type C

Renal stones are most commonly composed of calcium oxalate

Meningiomas are typically benign tumours that develop from the dura mater of the meninges

Intravenous calcium gluconate is used for the acute management of hypocalcaemia

Norepinephrine - G protein-coupled receptor

Diabetic nephropathy histological findings- Kimmelstiel-Wilson lesions, nodular glomerulosclerosis

During mitosis, sister chromatids move to opposite ends of the cell during anaphase

Case-control study - the usual outcome measure is the odds ratio

Prolactin release is persistently inhibited by dopamine

Gastrin increases HCL production and gastrointestinal motility

Kearns-Sayre syndrome

- mitochondrial inheritance
- onset < 20-years-old
- external ophthalmoplegia
- retinitis pigmentosa

Nitric oxide - vasodilation + inhibits platelet aggregation

Type I hypersensitivity reaction - anaphylaxis

Odds - remember a ratio of the number of people who incur a particular outcome to the number of people who do not incur the outcome

NOT a ratio of the number of people who incur a particular outcome to the total number of people

Homocystinuria is caused by a deficiency of cystathionine beta synthase

Fish tank granuloma is caused by *Mycobacterium marinum*

Tall, long fingered, downward lens dislocation, learning difficulties, DVT - homocystinuria

Local anesthetic toxicity can be treated with IV 20% lipid emulsion

Molecular biology techniques

- SNOW (South - North - West)
- DROP (DNA - RNA - Protein)

Nondisjunction is the commonest cause of Down's syndrome

X-linked conditions: Duchenne/Becker, haemophilia, G6PD

Cephalosporins act by inhibiting cell wall formation

Tertiary hyperparathyroidism is an important differential in hypercalcaemia post renal replacement therapy

Schistosoma haematobium can be treated with praziquantel

Contrast MRI scan is the gold standard investigation for cerebral metastases - provided no contraindications

B cells mediate hyperacute organ rejection

Positive predictive value = $TP / (TP + FP)$

Absolute risk reduction = (Control event rate) - (Experimental event rate)

Isoniazid therapy can cause a vitamin B6 deficiency causing peripheral neuropathy

n-MYC is an oncogene for neuroblastoma

Bartter's syndrome is a cause of metabolic alkalosis

Gastrin - increases gastric motility

Power = 1 - the probability of a type II error

Cohort study - the usual outcome measure is the relative risk

Antidiuretic hormone (ADH) - site of action = collecting ducts

Standard error of the mean = standard deviation / square root (number of patients)

Down's syndrome risk - 1/1,000 at 30 years then divide by 3 for every 5 years

Atrial natriuretic peptide - powerful vasodilator

The C6 dermatome is located on the index finger and thumb

Somatostatin is produced by D cells in the pancreas & stomach

Fibrates work through activating PPAR alpha receptors resulting in an increase in LPL activity reducing triglyceride levels

Type IV hypersensitivity reaction - scabies

Patients with established CVD should take atorvastatin 80mg on

Homocystinuria - give vitamin B6 (pyridoxine)

Dexamethasone is used to treat cerebral oedema in patients with brain tumours

For a man with mitochondrial disease, none of his children will inherit the condition

Odds - remember a ratio of the number of people who incur a particular outcome to the number of people who do not incur the outcome

NOT a ratio of the number of people who incur a particular outcome to the total number of people

In the primary prevention of CVD using statins aim for a reduction in non-HDL cholesterol of > 40%

Acute severe hyponatraemia can cause cerebral oedema

Avoidance of using hypotonic (0.45%) in paediatric patients - risk of hyponatraemic encephalopathy

Goodpasture's - HLA-DR2

Rickettsia rickettsii is the causative organism for rocky mountain spotted fever

CD15 is found on Reed-Sternberg cells

Specificity - proportion of patients without the condition who have a negative test result

The most common ECG change in hypocalcaemia is prolongation of the QTc interval

Turner's syndrome is associated with aortic coarctation

Obesity hormones

- Leptin Lowers appetite
- Ghrelin Gains appetite

Gaucher's disease is the most common lipid storage disorder and a cause of hepatosplenomegaly

Least abundant isotype in blood serum - IgE

Funnel plots - show publication bias in meta-analyses

Peroxisomes are responsible for the catabolism of long chain fatty acids

Nitric oxide , second messenger = cGMP

Campylobacter infection is often self-limiting but if severe then treatment with clarithromycin may be indicated

Trimethoprim in breastfeeding is considered safe to use

Skewed distributions

- alphabetical order: mean - median - mode
- '>' for positive, '<' for negative

CD21 is the receptor for the Epstein-Barr virus

G1 phase determines cell cycle length

CCK - I cells in upper small intestine

Foam cells are fat-laden macrophages

Vincristine acts during the metaphase

Sensitivity - proportion of patients with the condition who have a positive test result

IL-8 - main functions include: neutrophil chemotaxis

Measles complication - pneumonia

Likelihood ratio for a positive test result = sensitivity / (1 - specificity)

Rheumatoid arthritis - HLA DR4

Acetazolamide causes hypokalaemia

Macrolides inhibit the 50S subunit of ribosomes

Vomiting / aspiration - metabolic alkalosis

Hypercholesterolaemia rather than hypertriglyceridaemia: nephrotic syndrome, cholestasis, hypothyroidism

Amiloride selectively blocks the epithelial sodium transport channels

Congenital heart disease

- cyanotic: TGA most common at birth, Fallot's most common overall
- acyanotic: VSD most common cause

Ubiquitin tagging destines proteins to proteasome for degradation

Type II hypersensitivity reaction - ITP

The thin ascending limb of the loop of Henle is impermeable to water

Anti-A, B blood antibodies - IgM

Dysmorphic red blood cells if found in urine sediment indicates a glomerular origin of hematuria

Refeeding syndrome causes hypophosphataemia

Immune cells bind to the crystallising region (Fc) of immunoglobulins

Campylobacter infection is characterised by a prodrome, abdominal pain and bloody diarrhoea

Acute tubular necrosis is associated with granular, muddy-brown urinary casts

DiGeorge syndrome - a T-cell disorder

E.coli O157: H7 is the strain causing haemolytic uraemic syndrome

Congenital toxoplasmosis

- cerebral calcification
- chorioretinitis

USS is the first line investigation for suspected cholangitis

Tay-Sachs disease typically presents with developmental delay and cherry red spot on the macula, without hepatomegaly or splenomegaly

Hungry bone syndrome is the result of a sudden drop in previously high parathyroid hormone levels

Riboflavin deficiency causes angular cheilitis

Adrenal cortex mnemonic: GFR - ACD

REM sleep is the deepest stage of sleep which is associated with dreaming and loss of muscle tone

Case-control study - compares a group with a disease to a group without, looking at past exposure to a possible causal agent for the condition

A normal temporal artery biopsy in a patient with suspected giant cell arteritis does not exclude the disease because of the potential for skip lesions

Most common organism found in central line infections - *Staphylococcus epidermidis*

Recall bias is a particular problem in case-control studies

Anticipation in trinucleotide repeat disorders = earlier onset in successive generations

C5-9 deficiency predisposes to *Neisseria meningitidis* infections

Suxamethonium is a depolarising muscle relaxant

P value - is the probability of obtaining a result by chance at least as extreme as the one that was actually observed, assuming that the null hypothesis is true

Fibrates may increase the risk of venous thromboembolism

Mitochondrial diseases follow a maternal inheritance pattern

Bartter's syndrome is associated with normotension

Dermatitis herpetiformis is associated with HLA-DR3

Turner's syndrome - most common cardiac defect is bicuspid aortic valve (more common than coarctation of the aorta)

X-linked recessive conditions - no male-to-male transmission

Sjogren's syndrome- HLA- DR3

Congenital adrenal hyperplasia is a cause of metabolic alkalosis

The Cushing reflex is a physiological nervous system response to increased intracranial pressure (ICP) that results in hypertension and bradycardia

Relative risk = EER / CER

Horseshoe kidney is the most common renal abnormality in Turner's syndrome

IV fluid therapy is the first-line management in patients with hypercalcaemia

Antidiuretic hormone promotes water reabsorption by the insertion of aquaporin-2 channels

Vitamin C (ascorbic acid) supplementation can aid iron absorption from the gut by conversion of Fe³⁺ to Fe²⁺

X-linked recessive conditions - there is no male-to-male transmission. Affected males can only have unaffected sons and carrier daughters.

Negative predictive value = $TN / (TN + FN)$

Deletion of chromosome 15

- Prader-Willi - paternal
- Angelman syndrome - maternal

Pulmonary surfactant - main constituent is dipalmitoyl phosphatidylcholine (DPPC)

Autosomal recessive conditions are 'metabolic' - exceptions: inherited ataxias

Autosomal dominant conditions are 'structural' - exceptions: Gilbert's, hyperlipidaemia type II

The spinothalamic tract decussates at the same level the nerve root enters the spinal cord. The corticospinal tract, dorsal column medial lemniscus, and spinocerebellar tracts decussate at the medulla

Dry beriberi is caused by thiamine deficiency and causes peripheral neuropathy

Narcolepsy - HLA-DR2

Patent ductus arteriosus - large volume, bounding, collapsing pulse

Pulmonary arteries vasoconstrict in the presence of hypoxia

Hypokalaemia, nephrocalcinosis - type 1 renal tubular acidosis

Antivirals are of no benefit in the treatment of confirmed viral meningitis

SIADH - drug causes: carbamazepine, sulfonylureas, SSRIs, tricyclics

Rifampicin inhibits RNA synthesis

Burkitt's lymphoma is commonly associated with c-MYC

Skeletal muscle contraction is dependent on acetylcholine which activates nicotinic acetylcholine receptors

Short stature + primary amenorrhoea ?Turner's syndrome

Ketamine is an NMDA receptor antagonist

Behcet's disease is associated with HLA-B51

C8 is the ONLY cervical nerve root that comes out BELOW the vertebra

Atrial natriuretic factor - guanylate cyclase receptor

Specificity = $TN / (TN + FP)$

Familial hypercholesterolaemia is an autosomal dominant condition

Autosomal recessive conditions are 'metabolic' - exceptions: inherited ataxias

Autosomal dominant conditions are 'structural' - exceptions: hyperlipidaemia type II, hypokalaemic periodic paralysis

Golgi adds mannose-6-phosphate to proteins for trafficking to lysosomes

HIV is an RNA retrovirus

Cysticercosis can be treated with bendazoles

CD8 - co-receptor for MHC class I

Troponin C binds to calcium ions

Troponin T binds to tropomyosin, forming a troponin-tropomyosin complex

Relative risk reduction = $(EER - CER) / CER$

Type IV hypersensitivity reaction - allergic contact dermatitis

Deficiency in C1q, C1rs, C2 and C4 predisposes to immune complex disease such as SLE

Cardiac abnormalities of DiGeorge syndrome include truncus arteriosus and tetralogy of Fallot

Troponin I binds to actin to hold the troponin-tropomyosin complex in place

Pellagra is caused by vitamin B3 (niacin) deficiency

Leber's Hereditary Optic Neuropathy: mitochondrial inheritance pattern

Amiodarone in breastfeeding must be avoided

Transposition of great vessels is due to the failure of the aorticopulmonary septum to spiral

Recurrent urease-positive bacteria (eg. proteus mirabilis) infections predispose individuals to struvite renal stones

Scurvy causes gum disease

Epidermis - 5 layers - bottom layer = stratum germinativum which gives rise to keratinocytes and contains melanocytes

CN6 palsy manifesting as diplopia could be the first sign of brain metastasis

Coeliac disease is linked to HLA-DQ2

IgD is involved in the activation of B-cells

Secretin - S cells in upper small intestine

Type II error - the null hypothesis is accepted when it is false

Interferon- γ is responsible for activating macrophages

Type I error - the null hypothesis is rejected when it is true

Gastrin is produced by the G cells in the antrum of the stomach

Shoulder abduction - deltoid muscle - axillary nerve (C5,C6)

Congenital rubella

- sensorineural deafness

-
- congenital cataracts

Nicotinic acetylcholine - ligand-gated ion channel receptor

Lesch-Nyhan syndrome causing hyperuricemia is genetically inherited in an X-linked recessive pattern

Schistocytes are seen on blood smears in DIC

Liddle's syndrome: hypokalaemia + hypertension

$NNT = 1 / \text{Absolute Risk Reduction}$

11-beta hydroxylase deficiency associated with hypertension