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HY Risk Factors

People have been asking me to write about "risk factors" for USMLE for a long time.

In theory, we could take basically any concept/disease in medicine and convert it into some form of "risk factor"-type statement, where we could come up with a 100+ page PDF, but that's not the point here. My aim is to stay concise and targeted.

This PDF is an amalgamation of Step 1 and 2CK concepts, I'd say likely with a 2CK-tilt, as "risk factors" largely comprise principles of family and internal medicine, with the exam wanting to know about HY management.

I know for some of you studying for Step 1, you don't want to waste any time whatsoever on 2CK-ish material and often ask me which of my PDFs are Step 1 vs 2CK. My advice is to just run through this PDF regardless. It's one of my shorter pieces, where you could likely knock it off in one study sesh, and you're going to have to eventually ace 2CK anyway.

HY Risk Factors

- 45M + BMI of 40 + Hx of hypertension (HTN) + 10-pack-yr Hx of smoking; Q asks what is most likely to be beneficial for this patient → answer = smoking cessation.

    o When in doubt, "smoking cessation" is the most common overall answer on NBME/USMLE for the #1 way to improve general health. The stem might be a long, rambling vignette where the dude is overweight, smokes, has high blood pressure, etc., and they ask broadly/vaguely what is most likely to improve mortality/morbidity → answer = smoking cessation.

- 67F + diabetic + smoker + HTN; Q asks which of the following is biggest risk factor for developing an MI in this patient → answer = diabetes.

    o Diabetes (I and II), followed by smoking, followed by HTN, in that order, are the most acceleratory (i.e., worst) risk factors for atherosclerosis. Patients with diabetes are managed as a cardiovascular disease equivalent.

    o HTN is *most common* risk factor in the population for atherosclerosis, but diabetes, followed by smoking, are the two *most acceleratory* / worst. HTN doesn't cause plaque development as fast as diabetes or smoking.

    o HTN is only most acceleratory for atherosclerosis of the *carotid arteries*, which I will discuss in detail below. *If not the carotids*, we have diabetes → smoking → HTN.

    o If Q asks about how to decrease peri- or post-operative MI risk, answer will be smoking cessation on NBME. This is presumably because smoking cessation acutely improves blood flow + oxygen utilization at myocardium.

- 67F + smoker + HTN + high BMI; Q asks biggest risk factor for developing an MI in this patient → answer = smoking. As we said above, the order of importance for atherosclerosis leading to MI is diabetes → smoking → HTN. This is asked on one of the NBME exams, where it's a 1-2-liner Q followed by smoking being correct over HTN.

- 60F + diabetic + HTN + smoker + about to undergo hip surgery; Q asks for the best way to reduce perioperative MI risk → answer = smoking cessation. As mentioned above, smoking cessation is #1 way to reduce peri- and post-operative MI risk, since acute smoking cessation improves myocardial oxygenation and coronary autoregulation.

- 65F + 80-pack-year Hx of smoking + CXR shows hyperinflation + loud P2 on auscultation + JVD + ECG shows right-axis deviation + 2-year Hx of type II diabetes; Q asks what is most likely to reduce MI risk in this patient → answer = smoking cessation. Inflated lung fields mean COPD. Loud P2 means pulmonary hypertension (pulmonic valve slams shut due to high distal pressure). JVD means impaired right-heart filling. Right-axis deviation means right ventricular hypertrophy. You need to avoid being intransigently rigid when approaching questions. If the vignette overwhelmingly emphasizes one presentation over another (i.e., obvious cor pulmonale versus mere peripheral mention of recent diabetes), you need to be able to reason that the Q wants a particular answer (i.e., smoking here over diabetes).

- 60F + Hx of MI 5 years ago + diabetic + smoker + HTN; Q asks number-one risk factor for an MI occurring in this patient → answer = "Hx of myocardial infarction." Not complicated. Akin to psych questions that want you to know biggest risk factor for suicide is Hx of previous suicide attempt.

- Question gives 40s male with duodenal ulcers caused by *H. pylori*. Following antibiotic treatment, they ask what lifestyle variable is most likely to promote healing of ulcers → answer = smoking cessation. Reducing alcohol intake can also help, but I've seen smoking cessation as answer on NBME, where they don't have abstinence from alcohol as an answer.

- Patient has autoimmune disease (i.e., SLE, RA, etc.); question wants to know how to decrease recurrence of flares → answer = smoking cessation.

- 4F + recurrent otitis media + parents smoke but only outside; Q asks #1 way to decrease recurrence of otitis media in this patient (answers are all lifestyle/household variables); answer = parental smoking cessation; even though "only outside," second-hand smoke is important cause of recurrent upper respiratory tract/ear infections and sudden infant death syndrome on USMLE.

- 11F + rhinoconjunctivitis past month; Q asks what to ask parents about → answer = "recent pets in household"; if recent allergy-like presentation in a patient with no prior Hx, inquire about pets.

- 55M + gangrene of the fingers + HTN + drinks alcohol and smokes; Q wants to know #1 way to improve this patient's condition → answer = smoking cessation; diagnosis is Buerger disease (thromboangiitis obliterans), which is idiopathic digital gangrene, generally in middle-age men who are heavy smokers.

- 66M + experiences stroke + has Hx of hypertension and smoking; Q asks #1 way to decrease risk of recurrent stroke → **answer = lisinopril; smoking cessation is wrong answer.** This vignette is exceedingly HY, particularly for 2CK. You need to know hypertension eclipses smoking as the bigger risk factor for stroke. The order of risk factors for stroke on NBME/USMLE is: atrial fibrillation (AF) → HTN → smoking.

    o The answer on USMLE for reducing stroke risk in a hypertensive patient without AF will often just be "lisinopril," rather than "management of hypertension." Lisinopril, to my observation, is a favorite drug on NBME forms. Patients who have stroke risk need to be on an ACEi or ARB.

    o High blood pressure leads to a strong systolic impulse pounding the carotids → endothelial damage → atheromata development (carotid stenosis due to atherosclerosis) → plaque launches off to the brain/eye causing stroke, TIA, and retinal artery occlusion.

    o Should be noted that of course smoking cessation should be implemented in patients at risk for stroke, but HTN eclipses smoking for risk factor importance.

    o Patients who have diabetes and/or are smokers who don't have HTN will absolutely develop diffuse atherosclerosis, but vessels such as the abdominal aorta, coronaries, and popliteals classically develop plaques first. It is specifically hypertension that affects the *carotids*.

- 66M + experiences retinal artery occlusion + has Hx of hypertension and smoking; last line of the Q says "carotid duplex ultrasonography shows 90% occlusion"; Q asks what's the best way to decrease recurrence of stroke → answer = carotid endarterectomy; lisinopril is wrong answer (offline NBME 8 for 2CK). Student says, "Wait, didn't you just say lisinopril is the answer they want for reducing risk of stroke → You're right. But if they tell you specifically that the patient has high degree of occlusion on carotid ultrasound, then answer = carotid endarterectomy over lisinopril.

    o When to do carotid endarterectomy: symptomatic carotid stenosis >70% (i.e., Hx of stroke, TIA, or retinal artery occlusion) or asymptomatic carotid stenosis >80% (i.e., no Hx of stroke, TIA, or retinal artery occlusion; mere presence of a carotid bruit does *not* refer to symptoms).

    o Students get pedantic about the above %s, but in reality, the NBME won't make the degree of occlusion borderline. They'll either say something like 90% or 30%.

- o If patient is under endarterectomy % thresholds, the treatment = the triad of 1) antiplatelet therapy (usually aspirin alone is answer on NBME, but can be combo of aspirin + dipyridamole, OR clopidogrel alone); 2) statin; 3) ACEi or ARB.

- 65M + S4 heart sound + paradoxical splitting of S2 + left bundle branch block + lateralized apical impulse + ECG shows left-axis deviation + BP is 160/95 + smoker past 20 years; Q asks what is most likely to have prevented this patient's findings? → answer = "management of hypertension"; smoking cessation is wrong answer. **Before you freak out,** I'll unpack the above findings:

  - o S4 heart sounds on USMLE = stiff left ventricle from high afterload (usually systemic hypertension, but can be aortic stenosis). When you see S4, you should be thinking "ok that's diastolic dysfunction and a stiff LV from some form of afterload, most likely AS or HTN."

  - o Paradoxical splitting of S2 (when A2 occurs after P2), LBBB, and left-axis deviation on ECG all = left ventricular hypertrophy. That's it. You don't need to worry about mechanisms or anything more.

  - o So the above vignette, if we summarize it, basically screams hypertensive heart disease. The patient has LVH due to HTN. The smoking is bad, yes, but the focus of the vignette is clearly the HTN. This is a 2CK-level Q. For those of you studying for Step 1 confused about cardio stuff, my HY Cardio PDF discusses these things in more detail.

- 79M + irregularly irregular rhythm on ECG + history of HTN; Q asks most important risk factor for stroke in this patient → answer = atrial fibrillation, not hypertension. Once again, the order for stroke risk on NBME/USMLE is atrial fibrillation → hypertension → smoking. If they mention any of these in the same patient, AF eclipses HTN, which eclipses smoking. This is on NBMEs, not my opinion.

  - o AF can cause left atrial mural thrombi that launch off to the brain/eye; HTN causes carotid atheromatous plaques that launch off.

  - o AF is most common in patients over 75, or occasionally in select patient groups such as those with hyperthyroidism.

- 79M + atrial fibrillation + HTN; Q wants to know best way to decrease stroke risk in this patient → answer = warfarin; aspirin is wrong answer; USMLE wants you to know CHADS2 score (there are variations, but this simple one suffices).

  - o Each component is one point → Congestive heart failure; Hypertension, Age >75, Diabetes.

- o Stroke or TIA is 2 points.

- o If patient has Afib and 0 or 1 points from CHADS2 score, give aspirin; if 2+ points, give

    warfarin.

- o NBME doesn't really assess the non-warfarin NOACs. The exam-writers seem to be pretty

    old-school and just stick with warfarin, likely because it avoids ambiguity for NOAC use cases.

- 45M + HTN + smoker + BMI of 30; Q wants to know best way to decrease BP in this patient; answer =

  weight loss; smoking cessation is wrong answer; HY you are aware that weight loss is more important

  than smoking cessation to decrease BP. Yes, smoking cessation helps, but weight loss is the most

  effective lifestyle modification.

    - o Since HTN is biggest risk factor for stroke (in patients without Afib), and the best way to

        decrease BP is weight loss, this means weight reduction is crucial for decreasing stroke risk.

- 45M + big paragraph vignette that mentions Hx of prosthetic valve and venous disease; Q asks most

  important indication for anticoagulation in this patient (in other words, what's biggest risk factor for a

  clot) → answer = prosthetic valve. USMLE wants prosthetic valve as most important indication for

  using warfarin. The other two HY indications are post-heparin for DVT and elevated CHADS2 for AF.

  "Venous disease" does not refer to DVT; venous disease simply means valvular insufficiency causing

  brawny edema/pigmentation of lower extremities, or sometimes just varicose veins; venous disease

  is of course an important risk factor for an eventual DVT. USMLE will not give prosthetic valve and

  DVT for the same Q (some students proceed to ask annoying what-ifs like that).

- 53F + cirrhosis + lung cancer + severe abdominal pain requiring surgery + laparotomy shows purple,

  necrosed bowel; diagnosis + risk factors? → Dx is mesenteric venous thrombosis; risk factors are both

  the cirrhosis (portal vein entering liver is formed from superior mesenteric vein and splenic vein, so

  cirrhosis means increased pressure/stasis in any of these veins), as well as hypercoagulable state due

  to malignancy. You should know that cancer/malignancy is important risk factor for clots/DVT, and

  even marantic endocarditis for that matter.

- 53M + cirrhosis + blood in stool + no pain; Dx + risk factor? → internal hemorrhoids (painless; external

  are painful); risk factor is increased venous pressure in superior rectal veins from cirrhosis (for

  external hemorrhoids choose inferior rectal veins); other important risk factor is third trimester of

  pregnancy.

- 53M + cirrhosis + vomiting copious blood; Dx + risk factor? → ruptured esophageal varices; risk factor is increased pressure in left gastric vein due to cirrhosis (esophageal veins feed into left gastric, which feeds into portal). Mallory-Weiss tears due to alcoholism with retching/vomiting often present with "just a little blood"; classically, varices = lots of blood. This isn't a 100% rule, but it's usually the case that varices = lots of blood; MW tear = little blood.

- 50M + undergoing dental procedure; Q asks about risk for endocarditis and if prophylaxis is indicated → answer on USMLE is almost always do **not** give prophylaxis. Only indications are the presence of prosthetic material in the heart or incompletely/unrepaired cyanotic congenital heart disease. The mere presence of a mitral valve prolapse or small ASD/VSD that never became cyanotic is **not** an indication for prophylaxis. Hx of prior endocarditis is other obvious indication.

- 45F + HTN + high LDL and TGAs + low HDL + BMI of 23; Q asks most important modification in this patient → answer = "exercise program"; weight loss program is wrong answer (makes sense, since BMI is normal); smoking not listed as answer (if it were, it would be correct answer); this Q shows up on 2CK FM form.

- 60M + HTN + LV ejection fraction of 35%; Q asks which drug would improve mortality the most → answer = lisinopril; ACEi or ARB is first-line for heart failure, as well as for HTN in patients who have diabetes, pre-diabetes, atherosclerotic disease, proteinuria, and/or elevated creatinine or renin. This is not some arbitrary list; this is exceedingly HY for 2CK. If patient has HTN but does not bear any of the aforementioned scenarios, first-line for HTN is a dihydropyridine CCB (e.g., nifedipine) or HCTZ. It should also be noted that HTN in diabetes is >130/80, whereas everyone else it's >140/90.

- 48M + BP 150/90 on multiple visits + normal BMI + non-diabetic; Q wants to know the best therapy for this patient → answer = hydrochlorothiazide; answer can also be a dCCB. Vignette doesn't mention diabetes, pre-diabetes, atherosclerotic disease, or proteinuria (otherwise answer would be ACEi or ARB); if patient is non-diabetic with HTN and has mere elevation in renin or creatinine, I have not seen the NBME force a specific drug here, but I would choose the ACEi or ARB unless the patient has renal artery stenosis or fibromuscular dysplasia (don't give ACEi or ARB in the latter patients).

- 38M + diabetic + no protein in the urine + LDL 95 mg/dL + BP 135/80 + HbA1c of 7%; Q asks what is most likely to decrease morbidity in this patient → answer = lisinopril; as mentioned above, HTN in

diabetes is >130/80; first-line is ACEi or ARB. LDL should be <70-100 mg/dL (but on NBME, if <100 a statin isn't indicated); HbA1c should be in the 7s or below.

- 38M + diabetic + mild proteinuria + LDL 95 mg/dL + BP 120/80 + HbA1c of 7%; Q asks what is most likely to decrease morbidity in this patient? → answer = lisinopril; once again, start an ACEi or ARB in a diabetic if there is 1) any proteinuria; 2) any elevation in creatinine or renin; or 3) BP >130/80.

- 38M + diabetic + no proteinuria + LDL 110 mg/dL + BP 120/80 + HbA1c of 7%; Q asks what is most likely to decrease morbidity in this patient? → answer = statin. LDL should be under 100 mg/dL in diabetics on NBME (the literature says <70-100 depending on the source, but I've seen NBME Qs where 95 mg/dL LDL is written in vignette and statin isn't indicated).

- 38M + no proteinuria + LDL 95 mg/dL + BP 120/80 + HbA1c of 10%; Q asks what is most likely to decrease morbidity in this patient? → answer = commence metformin; patient clearly has diabetes with an HbA1c >7s.

    o Diagnosis of diabetes is any of the following: HbA1c >6.5%; two fasting glucose measurements 126 mg/dL or greater; any one random glucose 200 mg/dL or greater.

    o Patients can have normal glucose levels but high HbA1c and therefore be diabetic.

    o It's to my observation on NBMEs that if the Q wants glycemic control (e.g., "commence metformin") as the answer, they will give HbA1c as >9%, even though technically any elevation in HbA1c could warrant its commencement.

    o The USMLE Q will often give HbA1c in the 7s as tolerable in a diabetic, where they will make the focus of the Q something else, e.g., LDL >100 (answer = statin) or proteinuria (answer = lisinopril).

- 50M + diabetic + high LDL + low HDL + high BMI; Q asks best way to decrease long-term complications in this patient → answer = "good glycemic control"; generic answer, similar to smoking cessation, but this is HY.

- 50M + diabetic on metformin and glyburide + HbA1c is 12% + bicarb of 20; Q asks #1 way to improve glycemic control → answer = "switch from metformin and glyburide to intermediate-acting insulin."

    o This above Q is on an FM form and is one of the most frequently asked-about Qs I know of. Students lose the forest for the trees, thinking the USMLE gives a fuck about hyper-specific Tx regimens. They don't. Notice the patient has low bicarb (NR 22-28). So you know right

away metformin needs to be discontinued (the Q only gives two answers where metformin is discontinued).

- o If patient is already on glyburide and HbA1c is very high, the assumption is pancreatic burnout has already occurred (patient needs functioning β-cells for sulfonylureas to work), so increasing dose of glyburide won't work. The remaining answer is just switching to insulin.

- o Since metformin causes lactic acidosis, it is important you know to stop / don't commence it if patient has low bicarb or creatinine 1.5 or greater (renal insufficiency can increase risk for lactic acidosis due to metformin); there is an NBME Q where patient has creatinine of 1.4 mg/dL and HbA1c of 12.5% and answer is commence metformin. Although normal creatinine is 0.7-1.2 mg/dL, I've observed across NBME Qs that a max of 1.3-1.4 can be considered "normal" if very old (mid-80s+) or urgently requiring glycemic regulation.

- 50M + on metformin + received IV contrast + now has creatinine of 1.5 mg/dL; Q wants to know what would have prevented this condition → answer = intravenous hydration; Dx is contrast nephropathy; metformin does not cause high creatinine; it is merely the case that if a patient has high creatinine, then we discontinue metformin due to lactic acidosis risk.

- 50M + heavy smoker + Hx of HTN + BMI of 30; Q wants to know best way to decrease diabetes risk in this patient → answer = weight loss; smoking cessation is wrong answer. For development of type II diabetes, maintaining a normal BMI is most crucial. The answer can also sometimes be "low calorie diet" for these Qs; "low carbohydrate diet" is wrong answer.

- 65M + long history of alcoholism and smoking + pulsatile mass in epigastrium; Q wants to know #1 way to have prevented this patient's condition → answer = smoking cessation; the demographic that classically gets AAA is: elderly males who are ever-smokers; alcohol is not salient risk factor; diabetes is actually slightly *protective* of AAA due to the stiffening effect of glycosylation on endothelium.

- o Guidelines vary on screening for AAA, but updated literature says both men and women 65-75 who have ever-smoked should get a one-off abdominal ultrasound to screen for AAA. Lower thresholds can be used in patients with family history.

- 50F + subarachnoid hemorrhage; Q asks biggest risk factor → answer = HTN most common overall in general population; otherwise, if patient has ADPKS or Ehlers-Danlos, those would be more specific.

- 82F + wobbly gait for 4 months + head CT shows crescent-shaped bleed; what is biggest risk factor? → diagnosis is subdural hematoma; often slow-accumulating; elderly have reduced cerebral volume, making superior cerebral (bridging) veins more susceptible to friability; other notable risk factors are alcoholism, dementia (further reduction in brain mass), deceleration injury (car accident or shaken-baby syndrome). There is no lucid interval.

- 14M + hits head while skateboarding + loses consciousness briefly + head CT shows biconvex-shaped bleed; what is major risk factor → answer = head temporal trauma resulting in rupture of middle meningeal artery.

- 81M + Alzheimer + recurrent hemorrhagic stroke; what is major risk factor for the bleeds? → Alzheimer → can lead to amyloid angiopathy, causing intracerebral/intraparenchymal hemorrhage that presents as recurrent hemorrhagic stroke.

- 50F + has diabetic foot ulcer; Q asks how this condition could have best been prevented → answer = wearing comfortable-fitting shoes; wrong answer is nightly foot checks. This is asked on 2CK NBME. Both are important to prevent foot ulcers, but if both choices are listed together, choose wearing comfortable-fitting shoes.

- 62F + smoker + HTN + pain in legs with walking + diminished peripheral pulses + punched-out ulcer on bottom of foot + ankle-brachial indices are reduced; Q asks, in addition to smoking cessation and BP control, which of the following is indicated for this patient → answer = recommend an exercise/walking program; diagnosis is peripheral arterial disease (PAD).
    - Since PAD is caused by atherosclerosis, we'd have the same risk factors as before – i.e., diabetes > smoking > HTN, with the caveat being that if the vignette hyper-emphasizes / pushes one risk factor onto you (e.g., they give you a 12-line paragraph where 10 lines are just about HTN), then obviously choose the emphasized factor.
    - HY first step in diagnosis is measuring ABIs (<0.9 is diagnostic).
    - After low ABIs are measured, the next step, if listed, is doing an exercise stress test to determine exercise tolerance.
    - If exercise stress test not listed, answer = recommend walking/exercise program. Do not choose cilostazol first. This is a wrong answer almost always.

- 51M + brawny edema and hyperpigmentation of lower legs + large, sloughy ulcer at left medial malleolus + peripheral pulses strong + ultrasound confirms diagnosis; Q asks next step in management → answer = compression stockings; diagnosis is venous disease.
    - Biggest risk factor for venous disease is valvular insufficiency (often idiopathic/familial).
    - USMLE wants duplex ultrasonography of the legs to diagnose, followed by compression stockings as next best step.
    - If patient has active superficial thrombophlebitis (i.e., painful, palpable cord at the ankle), choose subcutaneous enoxaparin, not compression stockings as next best step. This must be treated with heparin, same as DVT. This is easy to get wrong, since compression stockings are the answer almost always for venous disease.
    - Strong peripheral pulses tells you it's not arterial disease (hence in this case, venous disease).
- 50M + being treated for Hodgkin + develops cardiomegaly + bilateral crackles; what is most likely risk factor for this acute presentation → doxorubicin/Adriamycin causing dilated cardiomyopathy.
- 50M + being treated for Hodgkin + develops progressive dry cough + CXR shows reticulonodular pattern; what is most likely risk factor for this acute presentation → bleomycin causing pulmonary fibrosis; reticular, or reticulonodular, or bilateral granular patterning = "honeycombing" = HY for pulmonary fibrosis.
- 50F + being treated for breast cancer + develops cardiomegaly; Q asks biggest risk factor → answer = trastuzumab causing cardiotoxicity.
- 44M + worked in shipyard 20 years ago part-time + 6-month history of shortness of breath; CXR shows supra-diaphragmatic soft tissue densities; Q wants diagnosis → answer = asbestosis; risk factor is working in construction involving insulation, or shipyards; pleural and supra-diaphragmatic plaques are HY for asbestosis; mesothelioma will present as grossly white cancer that circumferentially envelopes the lungs.
- 66M + worked in aerospace industry for 30 years + 1-year Hx of declining pulmonary function; biopsy of lung parenchyma shows non-caseating granulomas; Q asks diagnosis → answer = berylliosis; risk factor is working in aeronautical industry; this is one of the three HY lung conditions causing granulomas (sarcoidosis + berylliosis are both non-caseating; TB is caseating).

- 32F + smoked for 5 years + loud P2 heart sound + JVD + bullous changes seen on CXR + father died of alcoholic cirrhosis; Q wants risk factor for this patient's condition → answer = "deficiency of neutrophil elastase"; diagnosis is cor pulmonale due to COPD from α1-antitrypsin deficiency; latter leads to pan-acinar emphysema (bullous changes on CXR are buzzy/HY for emphysema); can also cause cirrhosis; vignettes can absolutely mention smoking or alcohol Hx, where patients are at increased/accelerated risk for emphysema and cirrhosis (i.e., 5 years is too fast typically for COPD to develop). The loud P2 means pulmonary hypertension. JVD means we have right heart failure. Since the etiology of the right heart failure is pulmonary (i.e., not left heart), we call it cor pulmonale.

- 42F + long-standing history of rheumatoid arthritis managed with prednisone + undergoes appendectomy + experiences drop of BP to 80/40 during surgery; risk factor for this precipitous drop in BP? → chronic prednisone use causing adrenal suppression → can't mount stress response in setting of stressor (i.e., surgery, trauma, infection) → can cause BP to fall precipitously → after IV fluids, give hydrocortisone. Normally, cortisol (i.e., glucocorticoid) from the adrenals helps maintain BP by upregulating alpha-1 receptors on arterioles; NE and E (catecholamines) agonize alpha-1 to maintain BP; this is called permissive effects of glucocorticoids on catecholamines. Patients with suppressed adrenals have insufficient cortisol after exogenous prednisone is consumed in setting of stressor → insufficient alpha-1 expression on arterioles → drop in BP; hydrocortisone is Tx because without the glucocorticoid, NE and E can't do their job.

- 42F + long-standing rheumatoid arthritis managed with multiple medications + 6-month Hx of dry cough + CXR shows reticular pattern; what's the risk factor for this condition? → answer = methotrexate-induced pulmonary fibrosis + rheumatoid lung (the autoimmune disease itself, independent of methotrexate, can cause pulmonary fibrosis, so patients will have restrictive lung disease due to both methotrexate and the RA).

- 39F + rheumatoid arthritis + low RBCs, WBCs and platelets + splenomegaly; Q wants risk factor for this condition → answer = rheumatoid arthritis; diagnosis is Felty syndrome (RA + neutropenia + splenomegaly); sometimes RBCs and platelets can be down as well.

- 50F + BMI 40 + smoker + HTN; Q asks #1 way to decrease risk of osteoarthritis in this patient → answer = weight loss (exceedingly HY).

- 62F + has peripheral edema + using high doses of naproxen for past 6 weeks to manage her osteoarthritis; Q wants to know #1 way to minimize risk for this patient's condition → answer = avoidance of NSAIDs; patient has fluid retention due to NSAIDs (decreased renal blood flow causes kidney to reabsorb fluid to compensate).

- 50M + 6-month history of declining mental function + microcytic anemia + drinks home-distilled liquor + smoker; Q wants to know biggest risk factor for this patient's condition → answer = home-distilled alcohol; diagnosis is lead poisoning; in this case, you need to be aware old-school home distillation equipment is a cause of lead poisoning, which can cause microcytic anemia.

- 50M + swollen big toe + smoker + works on farm in California + drinks home-distilled liquor; Q wants to know biggest risk factor for this patient's condition → answer = home-distilled liquor; patient has podagra (gout of big toe) from alcohol; the fact that it's home-distilled doesn't mean lead poisoning in this context, but this is on NBME. Smoking doesn't cause gout; farming can be risk factor for organophosphate poisoning.

- 70M + high creatinine + taking amitriptyline; Q wants to know best way to prevent this patient's condition → answer = avoidance of anticholinergic medications; patient has high creatinine due to post-renal obstruction → BPH in the setting of a TCA, which is anticholinergic (urinary retention).
    - In elderly, be very cautious administering TCAs, anti-psychotics, or 1st-generation H1-blockers (i.e., diphenhydramine). They can cause delirium, worsening of dementia, and in old men in particular, exacerbation of BPH.

- 23F + works on fruit farm + doesn't wear mask + doesn't wear gloves + develops pinpoint pupils and salivation; Q wants to know what would most likely have prevented this patient's condition → answer = wearing gloves; wrong answer = face mask; organophosphate poisoning occurs through the skin, not inhalation (on NBME).

- 16F + consumed pills + now has tinnitus + low bicarb, low CO2, and high anion-gap; risk factor? → aspirin (salicylate) causing high anion-gap mixed metabolic acidosis / respiratory alkalosis.

- 25M + uses a variety of illicit drugs + develops Parkinsonism; risk factor? → MPTP use (synthetic heroin) can cause Parkinsonism.

- 16F + consumed bottle of pills in suicide attempt + now has severe elevation in ALT and AST; what is risk factor for this presentation → acetaminophen toxicity; antidote = N-acetylcysteine.

- 55M + high BMI + high blood lipids + does not drink or smoke + ALT and AST very slightly elevated; Q asks #1 way to have prevented this condition → answer = weight loss; non-alcoholic steatohepatitis (NASH) occurs in patients with metabolic syndrome / high BMI → it's assumed most chronically overweight patients will have some degree of fatty liver.

    o Patients will start out with **no change** in their hepatic enzymes; this is very important.

    o There are a couple of NBME Qs for 2CK where they give patient with metabolic syndrome and normal liver enzymes, and then the answer is just NASH (you can eliminate other answers as obviously wrong); student will ask how this makes sense if labs are all normal; my response is, once again, that labs start out normal in NASH, but it assumed that most people with obesity have some degree of ensuing steatosis.

- 55M + drinks 2 beers a day + smokes a pack a day + all laboratory findings normal except slight elevation in both AST and ALT (AST slightly higher than ALT); Q asks what is most likely to have prevented the findings in this patient → answer = cessation of alcohol; students should know smoking isn't a significant risk factor for hepatic disease; alcoholic liver disease need not present with significant alcohol intake or with prominent elevations in transaminases where AST/ALT is 2:1.

- 55M + obese + gurgling sounds when swallowing + sometimes regurgitates undigested food + halitosis; Dx + risk factor? → Zenker; risk factor is obesity; can also be seen in setting of dysphagia (e.g., from stroke Hx) due to increased oropharyngeal pressure → increased risk of outpouching.

- 28F + spoon-shaped nails + chapped lips + trouble swallowing; Dx + risk factor? → Plummer-Vinson syndrome; risk factor is iron deficiency anemia. PV syndrome is triad of 1) iron deficiency anemia (can present as koilonychia), 2) angular cheilitis, and 3) esophageal webs (dysphagia).

- 28F + eating clay, starch, and ice; Dx + risk factor? → pica due to iron deficiency.

- 40M + dysphagia to solids and liquids + barium swallow shows birds beak appearance; Dx + risk factor? → achalasia; loss of myenteric plexus; often idiopathic; can be due to *Trypanosoma cruzi* (Chagas disease) as risk factor; latter can also cause dilated cardiomyopathy.

- 40M + Hx of heavy smoking/alcohol + new-onset dysphagia; Dx + risk factor? → squamous cell carcinoma of esophagus; heavy smoking/alcohol are major risk factors; do immediate endoscopy.

- 40M + Hx of GERD + new-onset dysphagia; Dx + risk factor? → adenocarcinoma of esophagus; GERD / Barrett is major risk factor; do immediate endoscopy.

- o In short, do immediate endoscopy on USMLE to look for esophageal cancer in any patient with new-onset dysphagia who has Hx of GERD or heavy smoking/alcohol.

- o Progression of dysphagia from solids only to solids + liquids is HY for cancer.

- o Dysphagia to solids + liquids from the start suggests neurogenic etiology (achalasia).

- 45M + abdo pain an hour after meals + no other PMHx; Dx + risk factor? → duodenal ulcer due to *H. pylori*; can also be gastrinoma. If they give you no information apart from duodenal ulcer presentation, *H. pylori* is answer. Gastrinoma is patient who has recurrent duodenal ulcers despite *H. pylori* Tx. Gastrinoma can also be part of MEN 1.

- 67M + abdo pain an hour after meals + Hx of CABG four years ago + intermittent claudication; Dx + risk factor? → chronic mesenteric ischemia due to atherosclerosis of SMA/IMA; don't confuse with duodenal ulcers; will sound like duodenal ulcer except will be an older patient with extensive cardiovascular history. The abdo pain is angina of the bowel (↑ oxygen demand during digestion).

- 65M + long-standing diabetes + diarrhea; Dx + risk factor? → diabetic neuropathy to bowel affecting hypogastric nerves (loss of anti-peristalsis sympathetic nerves → causes too much peristalsis).

- 65M + long-standing diabetes + constipation; Dx + risk factor? → diabetic neuropathy to bowel affecting pelvic splanchnic nerves (loss of pro-peristalsis parasympathetic nerves).

- 65M + long-standing diabetes + new-onset GERD; Dx + risk factor? → diabetic gastroparesis; do endoscopy first to rule out physical obstruction, followed by gastric-emptying scintigraphy to diagnose; can give metoclopramide and/or erythromycin (motilin receptor agonist) to Tx.

- 27F + exophthalmos + tachycardia + diarrhea; Dx + risk factor for GIT symptoms? → "motility disorder" due to hyperthyroid state (in this case, Graves); "motility disorder" is also answer for hypothyroidism causing constipation, as well as for the diabetes conditions above.

- 44M + alcoholic + low calcium; following administration of calcium, serum levels do not rise appreciably; what is risk factor/cause → alcoholism causing hypomagnesemia; latter can cause hypocalcemia and/or hypokalemia refractory to supplementation.

- 23M + lost in woods for 3 weeks without food + given big meal following rescue + develops arrhythmia; Q wants Dx + risk factor? → refeeding syndrome; presents as hypophosphatemia causing arrhythmia; patient can have normal BMI; being given food after a long time without can cause a surge production of glycolytic intermediates that trap phosphate within the liver.

- 27F + painful thyroid + low uptake of radioiodine on scan; Dx + risk factor? → subacute granulomatous thyroiditis (aka deQuervain); risk factor is viral infection; answer on USMLE for tender/painful thyroid.

- 27F + gave birth 4 weeks ago + non-tender thyroid + hypothyroid state; Dx + risk factor? → post-partum thyroiditis; risk factor is recent pregnancy (makes sense).

- 55F + started on new medication regimen + now has hypothyroidism; Dx + risk factor? → drug-induced thyroiditis; lithium and amiodarone are HY causes.

- 55F + started on new medication regimen + now has mouth ulcers; Dx + risk factor? → drug-induced neutropenia (agranulocytosis); HY drugs are clozapine, methimazole, PTU, ganciclovir, methotrexate.

- 44M + ataxia + confusion + ophthalmoplegia + confabulations; what is risk factor for this condition → alcoholism causing thiamine deficiency, resulting in Wernicke-Korsakoff syndrome (WKS). ACOW → Ataxia, Confusion, Ophthalmoplegia = Wernicke. If we add confabulations (Korsakoff psychosis) on top of ACOW, we now call it WKS.

- 60M + had gastrectomy performed 6 months ago + now has neuropathy; Dx + risk factor? → B12 deficiency due to gastrectomy (loss of parietal cells which produce intrinsic factor).

- 60M + had gastrectomy performed 6 months ago + now has neuropathy and confusion; Dx + risk factor → thiamine (B1) deficiency due to gastrectomy; if confusion is present, this is suggestive of Wernicke; the neuropathy can be dry beri beri. Absolutely asinine question, but asked twice on 2CK NBME material. In other words, just be vigilant for B1 deficiency after gastrectomy, not just B12.

- 24F + vegan + high MCV + hyper-segmented neutrophil on smear; Dx + risk factor? → B12 deficiency due to veganism (can also be strict vegetarianism).

- 40F + moving around legs in bed aimlessly at night; Dx + risk factor? → restless leg syndrome; risk factor is iron deficiency anemia (always check iron and ferritin first); otherwise, patient is at risk for developing Parkinson disease later; Tx with gabapentin or D2 agonist (e.g., pramipexole / ropinirole).

- 44M + fever 103F + diffuse abdominal pain with fluid wave; Dx + risk factor? → spontaneous bacterial peritonitis (SBP); major risk factors are cirrhosis, recent peritoneal dialysis, or nephrotic syndrome (any cause of ascites, but those are the ones I've seen on NBME forms); next best step is paracentesis; in terms of what we look for, choose "white cell count and differential" before "gram stain and culture of the fluid" if both are listed. That sequence is assessed on 2CK NBMEs.

- 36F + new-onset shortness of breath and tachycardia; patient has 5-pack-year Hx of smoking + recently prescribed combined oral contraceptive pill; Q asks which of the following would have prevented this patient's acute presentation → answer = avoidance of combined contraceptives; diagnosis is pulmonary embolism; combined contraceptives (i.e., containing estrogen in addition to progesterone in order to minimize breakthrough bleeding) are contraindicated in women 35+ who are smokers. They are also contraindicated in women who have migraines with aura, active breast cancer, or Hx of thromboembolic disease. This is because estrogen-containing contraception (and HRT) increases risk of thromboembolic events (estrogen upregulates fibrinogen and factors V and VIII).

- 55F + perimenopausal + family Hx of osteoporosis + severe vasomotor symptoms; Q wants to know which aspect of patient's history makes HRT a consideration; answer = severe vasomotor symptoms (i.e., hot flashes, vaginal dryness, urge incontinence); this is the only approved indication for HRT; preservation of bone density is not an indication; this is because the increased risk of breast cancer and thromboemboli (i.e., DVT, stroke, MI) negatively outweigh the bone-preserving effects in most circumstances.

- 55F + perimenopausal + severe hot flashes + started on HRT a few months ago + stopped taking the progesterone component because of effects on her moods; Q asks what is most likely to be seen in this patient? → answer = endometrial hyperplasia; unopposed estrogen is risk factor for endometrial hyperplasia, which in turn can lead to endometrial cancer (↑ cell proliferation = ↑ risk of mutation).

- 55F + started taking HRT three months ago + has appearance of new breast cyst + mammogram prior to HRT showed no such cyst; Q asks next best step in management; answer = biopsy of the cyst; HRT is risk factor for breast cancer, even when it is combined with progesterone (the only role progesterone has as part of HRT is to prevent endometrial cancer); 2CK CMS form has vignette of new-onset simple (i.e., clear; hypoechoic) cyst following HRT where biopsy is answer.

- 50F + BMI of 30 + irregular menses for many years + new-onset heavier vaginal bleeding; Q asks what is most likely risk factor for this patient's condition → answer = anovulation; diagnosis is endometrial cancer due to history of anovulation/PCOS. Mechanism: high BMI → insulin resistance → abnormal GnRH pulsation → high LH/FSH ratio → high LH over-stimulates theca interna cells (hirsutism); low FSH leads to poor follicular development (anovulation / retention of follicles as cysts) → lack of

ovulation means no formation of corpus luteum → since corpus luteum normally secretes progesterone, there is no progesterone production → unopposed estrogen → endometrial hyperplasia and increased risk of endometrial cancer (progesterone normally limits growth of endometrium; estrogen stimulates it).

- 65F + started on tamoxifen as part of her breast cancer chemotherapy regimen; Q asks what aspect of her history makes her best candidate for this treatment → answer = history of hysterectomy; tamoxifen is risk factor for endometrial cancer due to its partial agonist effects at endometrium. Raloxifene is the classic SERM used in most patients who still have a uterus, as it is not a partial agonist at endometrium; both agents are antagonists at breast and partial agonists at bone.

- 16F + concerned about risk for ovarian cancer because her great aunt was diagnosed with it; there is no family Hx of BRCA mutations; Q asks next best step in management for this patient → answer = oral contraceptive pills (any type); random factoid you need to know is that OCPs decrease risk of ovarian cancer by ~50%, presumably due to synchronization of cycles. In summary regarding OCPs in relation to cancer risk: ↓↓ ovarian cancer (~50%); ↓ endometrial cancer; ↑ cervical cancer (not direct effect; cause is ↑ HPV exposure due to ↓ condom use); no change breast cancer (some studies have suggested a possible increased risk, but there is no significance across meta-analyses).

- 28F + pregnant at 35 weeks' gestation + cocaine use + painful contractions of abdomen + vaginal bleeding; Dx + risk factors? → abruptio placentae; risk factors are cocaine use and deceleration injury (i.e., fall or car accident). Presents as painful third-trimester bleeding.

- 28F + pregnant at 35 weeks' gestation + painless vaginal bleeding; Dx + risk factors? → placenta previa; notable risk factor is previous C-section (on Obgyn CMS form); implication is, if lining of uterus has been disturbed, it makes sense that there would be future risk of abnormal implantation. Presents as painless third-trimester bleeding.

- 28F + post-partum hemorrhage + placenta is seen attached to myometrial layer; Dx + risk factor? → placenta accreta (placental attachment to surface of myometrium); risk factor is previous C-section, as well as concurrent placenta previa (latter sounds weird but is asked on Obgyn form) – i.e., placental attachment over the internal os increases risk of deeper attachment. Same deal holds true for placenta increta (attachment into myometrium) and percreta (attachment through myometrium). Should be noted in general that the most common cause of post-partum bleeding is uterine atony.

- 34F + giving birth + fetal anterior shoulder caught behind mother's pubic symphysis; Dx + risk factor? → shoulder dystocia; risk factor is fetal macrosomia due to maternal diabetes (causes big baby). This can cause clavicular fracture in the newborn.

- Above 34F + experiences excessive vaginal bleeding despite McRobert's maneuver to deliver in setting of shoulder dystocia; Dx + risk factor? → vaginal laceration due to macrosomia from maternal diabetes.

    o In short: maternal diabetes causes fetal macrosomia → results in shoulder dystocia → results in fetal clavicular fracture + maternal vaginal laceration during delivery.

- 32F + one-year Hx of amenorrhea + had dilation & curettage performed to remove miscarriage last year; Dx + risk factor? → Asherman syndrome; uterine synechiae (scarring) due to instrumentation within the uterus; NBME likes amenorrhea as the major symptom.

- 30F + 38 weeks' gestation + fever 103F + CVA tenderness; Dx + risk factor? → pyelonephritis; uterus can compress ureters in third trimester, increasing risk for pyelo; in addition, progesterone slows ureteral peristalsis.

- 30F + pregnant + severe epigastric pain after meals starting during third-trimester; Dx + risk factor? → cholelithiasis; progesterone slows biliary peristalsis (causing biliary sludge) + estrogen upregulates HMG-CoA reductase (increasing cholesterol concentration within bile).

- 4-month-old girl + small amount of blood in stool + exclusively breastfed until age 2 months + on formula since; Q wants to know biggest risk factor for this patient's condition → answer = "not being exclusively breastfed until 6 months of life"; diagnosis is milk-protein allergy; for whatever reason it can cause blood in the stool, but this is a HY part of the vignette and confuses students; Tx is switching to a hydrolyzed casein formula; switching to soy formula is wrong answer as there is an allergy crossover in up to 25% of cases (literature varies on exact %). Vignette can also mention kid is started right away on soy formula (not cow-milk-based); answer is still switch to hydrolyzed casein formula. I talk about this stuff in high detail in my HY Pediatrics PDF.

- 2M + iron deficiency anemia + drinks lots of cows milk; what is risk factor for anemia? → answer = drinking greater than 24 oz of cows milk daily; sounds weird, but 2CK Peds component wants you to know that is a risk factor for iron deficiency in kids under age 2.

- 2M + recent viral infection + now has intermittent vomiting and crying with blood in the stool; Dx + risk factor? → intussusception; risk factor is recent viral infection; can cause adenitis of bowel leading to telescoping; almost all intussusceptions occur under age 2; if elderly, can be colorectal cancer.

- 67 + chest pain when arguing with wife + blood in stool; Dx + risk factor? → angiodysplasia; risk factor is aortic stenosis (combo of angiodysplasia + aortic stenosis + acquired vWD = Heyde syndrome); angiodysplasia is tortuosity of superficial vessels within the colon that are prone to painlessly bleed; third most common cause of GI bleeding in elderly after diverticulosis and cancer; Q on offline Step 1 NBME gives old guy arguing with his wife + gets chest pain + blood in stool; answer = angiodysplasia.

- 35F + Hx of recurrent miscarriages + positive VDRL test; Dx + risk factor? → SLE causing antiphospholipid syndrome, resulting in recurrent miscarriages due to uteroplacental microthromboses; antiphospholipid syndrome can cause a false (+) VDRL syphilis test.

- 35F + pregnant + fetus shows intrauterine growth restriction; risk factor? → often uteroplacental insufficiency, e.g., from smoking, cocaine use, HTN, SLE.

- Family Med Q shows glowing red rash on face in someone being treated for acne; Q asks best way to minimize this condition → answer = avoidance of sun exposure; topic tretinoin (vitamin A) can cause photosensitivity (usually red rash); oral tetracycline sometimes used for acne tends to cause more of a blistering photosensitivity. Oral isotretinoin (high-dose vitamin A used for severe acne) is big risk teratogen; must do pregnancy test + recommend contraception before commencing.

- Neonate born with small right ventricle; risk factor? → lithium during pregnancy is risk factor for Ebstein anomaly (atrialization of right ventricle).

- Neonate born with spina bifida in mother who takes various medications; risk factor? → anti-epileptics (especially valproic acid) cause B9 (folate) malabsorption and neural tube defects.

- 35F + pregnant + abnormal AFP measurement; risk factor? → dating error is most common cause of abnormal AFP measurement; next best step is fetal ultrasound to get correct dates (i.e., crown-rump length); re-measure AFP is wrong answer (the lab result wasn't wrong, just the ultrasound date estimate was).

- 35F + pregnant + high AFP measurement despite correct dates; Dx + risk factor? → likely neural tube defect (i.e., spina bifida) due to folate (B9) deficiency; B9 required during first 3-4 weeks of gestation

for neural tube development; high AFP can also be due to anencephaly, multiple-gestation pregnancy, omphalocele, or gastroschisis.

- 40F + pregnant + low AFP + low estriol + high β-hCG + high inhibin A; Dx + risk factor? → Down syndrome due to increased maternal age.

- Neonate + duodenal atresia and/or Hirschsprung; risk factor? –> Down syndrome is HY cause of these two findings.

- Young child born to mother age 41 + long, smooth philtrum + widely spaced eyes + single palmar crease + slanted palpebral fissures; risk factor? → fetal alcohol syndrome; Down syndrome is wrong answer → if Q mentions any change whatsoever regarding the philtrum, the answer is fetal alcohol syndrome, not Down; there is a hard Q on the 2CK Psych CMS form that sounds like Down syndrome, but answer is FAS due to the philtrum changes.

- 8F + long Hx of recurrent pulmonary infections + 6-month history of peripheral neuropathy; Dx + risk factor? → cystic fibrosis resulting in vitamin E deficiency (can present as neuropathy). This sounds low-yield and weird, but it's all over the NBME exams for Step 1 (i.e., vitamin E deficiency due to CF).

- 4M + low Hb + Hx of diarrhea after meals; Dx + risk factor for the anemia? → Celiac disease; major risk factor for anemia in peds (flattening of villi causes impaired iron absorption in duodenum.

- 4M + recent gastroenteritis + now has diarrhea after meals; Dx + risk factor? → lactose intolerance; risk factor is recent GI viral infection; the latter can cause transient lactose intolerance due to sloughing of brush border (hence losing disaccharidase).

- 4M + small, shrunken kidney + tubular atrophy seen on biopsy; Dx + risk factor? → chronic pyelonephritis; major risk factor is recurrent acute pyelo, either from vesicoureteral reflux or posterior urethral valves (can be written on NBME as "congenital urethral obstruction").

- 8F + puffy eyes and ankles + ascites + protein in urine; Dx + risk factor? → minimal change disease; risk factor is viral infection; if presents in adult, can be Hodgkin lymphoma.

- 27M + sickle cell + nephrotic syndrome; Dx + risk factor? → focal segmental glomerulosclerosis caused by sickle cell; in short, FSGS is the answer if patient has nephrotic syndrome in sickle cell. Can also rarely be caused by HIV / heroin use.

- 27M + sickle cell + dark urine; Dx + risk factor? → renal papillary necrosis; this is answer on USMLE if patient has blood in the urine in sickle cell.

- 26F + IV drug user + recently treated with 6 weeks of nafcillin for MSSA endocarditis + now has rash and eosinophils in the urine; Dx + risk factor for renal condition? → interstitial nephropathy (aka tubulointerstitial nephropathy/-nephritis); risk factor is beta-lactam, cephalosporin, or NSAID; answer on USMLE if patient gets WBCs (eosinophils) in urine +/- maculopapular rash following any of the aforementioned drugs; these agents do **not** classically cause acute tubular necrosis.

- 26F + IV drug user + develops oliguria following gentamicin and vancomycin empiric Tx for endocarditis; Dx + risk factor? → acute tubular necrosis due to gentamicin (aminoglycoside).

- 38F + rheumatoid arthritis + took gold salts for treatment + develops proteinuria; Dx + risk factor? → gold salts causing membranous glomerulonephritis; dapsone can also cause this.

- 40F + history of hepatitis B + proteinuria; Dx + risk factor? → membranous glomerulonephritis due to hepatitis B; this is renal Dx if patient has nephrotic syndrome in setting of hepatitis B or C.

- 40F + history of hepatitis C + blood in urine; Dx + risk factor? → membranoproliferative glomerulonephritis; this is answer on USMLE if patient has nephritic syndrome in hepatitis B or C.

- 45M + various medium-sized arteries with fibrinoid necrosis and segmental, beaded, "rosary sign"; diagnosis + risk factor? → polyarteritis nodosa; major risk factor is hepatitis B (30% of patients with PA are seropositive for HepB).

- 40F + SLE + blood in urine; Dx + risk factor? → diffuse proliferative glomerulonephritis due to SLE; answer on USMLE if patient has nephritic syndrome in SLE; if nephrotic syndrome in SLE, patient just has regular membranous glomerulonephritis. But DPGN is >>> higher yield for SLE.

- 12F + blood in urine 1-3 **days** after sore throat; Dx + risk factor? → IgA nephropathy; answer on USMLE when patient has blood in urine 1-3 **days** following sore throat (viral infection).

- 12F + blood in urine 1-3 **weeks** after sore throat; Dx + risk factor? → IgA nephropathy; answer on USMLE when patient has blood in urine 1-3 **weeks** following sore throat (group A strep infection).

- 50M + flank pain + blood in urine + high serum calcium + high hemoglobin; Dx + risk factor? → renal cell carcinoma; major risk factor is smoking; can produce ectopic PTHrp (similar to squamous cell of lung) and EPO.

- 50M + blood in urine + Hx of smoking; Dx + risk factor? → bladder cancer (transitional cell carcinoma); major risk factor is smoking. Aniline dyes (industrial dyes) and naphthylamine (moth balls) are also assessed for causing transitional cell carcinoma of bladder.

- 23M + swam in lake in Africa + now has blood in urine; Dx + risk factor? → squamous cell carcinoma of the bladder due to *Schistosoma hematobium*; risk factor is swimming in fresh water in Africa.

- 40M + comes back from Africa with hemolytic condition + image shows schizonts of malaria; Q asks what patient is at greatest risk for → answer = hypoglycemia; you need to know malaria (particularly *P. falciparum*) can lead to hypoglycemia. If you think it's weird, don't take it up with me. It's on one of the Step 1 NBME exams.

- 7F + running around barefoot in rural Louisiana + gets microcytic anemia + high eosinophils; Dx + risk factor? → Dx = hookworms; risk factor is running around barefoot (USMLE wants you to know you get them through your feet, not from food); they cause microcytic anemia.

- 60F + low serum sodium + concentrated urine + history of weight loss; Dx + risk factor? → SIADH due to small cell lung cancer; smoking is risk factor.

- 60F + high calcium + lung cancer; Dx + risk factor? → squamous cell carcinoma secreting PTHrp.

- 60F + lung cancer + difficulty getting up from chair a few times; Dx + risk factor? → Lambert-Eaton due to small cell (anti-presynaptic voltage-gated Ca channel antibodies).

- 60F + lung cancer + ataxia; Dx + risk factor? → small cell cerebellar dysfunction (anti-Hu/-Yo) Abs.

- 35F + worsening diplopia, dysphagia, and eyelid ptosis over the course of a day; Dx and risk factor? → myasthenia gravis (Abs against post-synaptic nicotinic acetylcholine receptors); often idiopathic, but can be due to thymoma as risk factor.

- 35F + ovarian mass + purple discoloration of knuckles + violaceous eyelids + proximal muscle weakness; Dx + risk factor? → dermatomyositis due to ovarian cancer. Dermatomyositis usually idiopathic, but a risk factor for it that's assessed is ovarian cancer.

- 64F + back pain + nephrotic syndrome + S4 heart sound; Dx + risk factor? → renal amyloidosis and cardiac amyloidosis; major risk factor for amyloidosis on USMLE is multiple myeloma.

- 2M + enucleation of eye for retinoblastoma; Q asks about this being risk factor for which of the following in the future? → answer = osteosarcoma; hereditary retinoblastoma can also lead to osteosarcoma.

YouTube

@mehlmanmedical

Instagram

@mehlman_medical

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