INTERN GUIDE TO OUTPATIENT MEDICINE

2017-2018
Internal Medicine Associates

Special thanks to Dr. Andy Coyle

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1. Health Care Maintenance

By Brittney Zimmerman

Overview:

CANCER SCREENING	Demographic/When to Screen	Options	EBM/Notes
Breast Cancer	Females starting at age 40-50 (depending on the society guidelines) USPSTF Grade B: 50-74yo ACS: Start at age 45 ACOG: Start at age 40	Screening mammogram q1-2 years	Canadian National Breast Screening Trial (BMJ 2014): mammo did not reduce BC specific mortality Lancet Meta-analysis (2012): 20% RRR NNS ~1000-2000
Colon Cancer	Men/women starting at age 50 If family hx, start 10 years prior to age of diagnosis	Colonoscopy Q10yr Flex Sigmoidoscopy Q5yr Stool DNA, FOBT, or FIT Q1yr	Grade A: Screen 50-75yo Grade C: Screen 75-85yo National Polyp Study (NPS)– 58% reduction in colorectal cancer-related death
Prostate Cancer	Screening should be discussed with average-risk men beginning at age 50	PSA	Very controversial! Little to no mortality benefit (depending on the study), and potential harms (ED, incontinence, false +)
Lung Cancer	Patients age 55-80yo with >30 pack year smoking hx who are either current smoker or quit within the past 15 years	Low dose chest CT yearly	USPSTF Grade B National Lung Cancer Screening Trial (NEJM 2011). NNS = 320, 20% relative mortality reduction
Cervical Cancer	Women 21-65 years old. Stop if they had a hysterectomy for fibroids or >65yo with neg pap's x 10 years (or 3 neg paps)	Cytology (q3 years) Cytology+HPV (q5 years) **No HPV testing before age 30*	Do not check HPV in those < 30yo. (USPSTF) Screening programs have reduced deaths from cervical cancer by > 70% NNS >1000

OTHER HCM:	Demographic	Options
AAA	1 time for men age 65-75 who have ever smoked	Abdominal Ultrasound
HIV	Everyone!! Check at least once, more frequently if increased RF (IVDU, new sexual partners)	HIV Ab/Ag
Syphilis	If at increased risk or HIV infected	RPR
Gonorrhea/Chlamydia	<26yo F, annually	Urine G/C
Hepatitis B	One time screen if: endemic country, immunosuppression, ESRD	Hep B surface Ag + Ab, Hep B core Ab
Hepatitis C	One time screen for patients born between 1945-1965	Hep C surface Ab with reflex to RNA PCR
Osteoporosis	Women >65yo, or <65yo with: previous fracture, steroid use, parent with hip fracture, current smoker, RA, IBD	DEXA- Axial

Options at IMA:

Breast Cancer:

- Order: "screening mammogram"
- CAM Radiology is on the 6th Floor on the East Side. When you order a mammogram, order requisition will print with location/phone # so patients can either:
  - Walk down immediately after visit to get mammogram (often done within an hour) or can walk-in at another time
  - Can call 212-824-7700

Colon Cancer:

- Colonoscopy

- Order: “screening colonoscopy,” fill out patient information, GI consult if patient is on blood thinners or had previous abnormal scope
- E-prescribe 1 day prep: **Miralax powder 238g (17 packets)**
- Endoscopy scheduler should call the patient to review the prep and schedule the c-scope
- Patients can call 212-659-8770 to follow up

- **FIT test**
  - Give VERBAL order to your MA to give patient FIT card before they leave the clinic
  - Patient needs to return card to IMA
  - Once you get results, make sure to update Health Maintenance section and Edit Modifier to "1 year" intervals

Prostate Cancer

- Order: “PSA” after careful discussion of risks/benefits with patient

Finding prostate cancer may not improve health or help a man liver longer.

False positives can occur.

Follow up invasive procedures may be needed (biopsy) which has risks.

Lung Cancer

- Order: “Low dose CT chest”
- Email for prior authorization # IMA Radiology Cardiology Prior Approval Orders (search “CT scan” on the IMA app)

Cervical Cancer Screening

- Order: “cytology” w/ HPV co-testing if >30 years old.
- Options:
  - 1. Do pap yourself during visit→ need chaperone & get supplies in cart in Area D.
  - 2. Refer to IMA GYN→ order: “consult to Well Women’s Clinic”
  - 3. Refer to GYN clinic (OB/GYN staffed)→ order: “consult to gynecology”

AAA Screen:

- Order: “US Doppler Aorta and Iliac Arteries (Vascular Lab)” ICD 441.4 in EPIC
  - Make sure to write the indication “AAA screen”
  - Ask patient to schedule appointment by calling 212-731-6906

HIV:

- Order: “HIV Ab/Ag”
  - Make sure to document verbal consent in your note
- If very high risk or concerned, can have RN do swab testing however there are false positives
- If positive, refer to Jack Martin Fund Clinic for treatment.

Hepatitis B:

- Order: "Hep B surface Ag + Ab, Hep B core Ab"

Hepatitis C:

- Order: "Hep C surface Ab with reflex to RNA PCR"
- If positive, can refer to IMA Liver; however if decompensated cirrhosis, then refer to Liver Medicine

DEXA:

- Order: “DEXA- Axial Skeleton”
- Patients can call 212-241-3247, Radiology Associated 1176 5th Ave MC level

Useful tools!

USPSTF App: “ePSS”

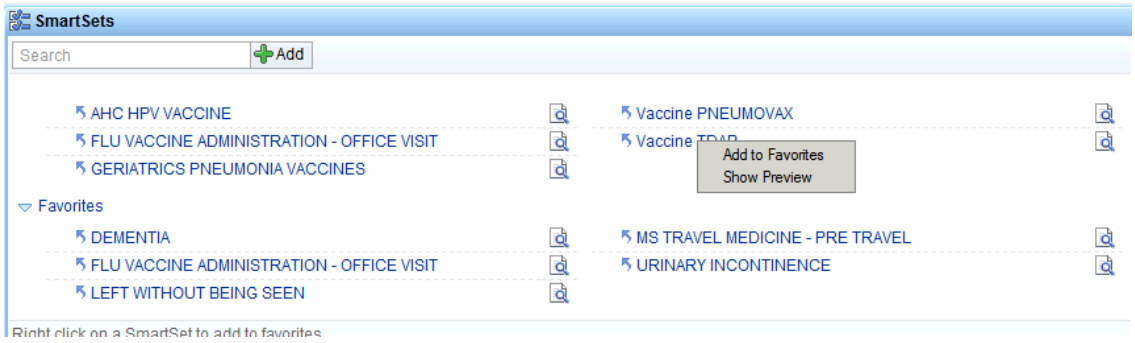
- *Can enter patient’s sex, age, smoking history and it will give you the appropriate screening recommendations*

IMA app for phone numbers and prior authorization emails

Immunizations

IMMUNIZATION	Demographic	Options	EBM/Notes
Shingles	Patients >60 years old Patients >50 years old if: chronic pain, chronic skin conditions, immunosuppressive therapy	Live attenuated VZV vaccine ("zoster vaccine")	NNV = 50 to prevent 1 infection (Cochrane, 2016) *Avoid in patients who are immunosuppressed (immunodeficiency, cancer, HIV with CD4 <200), pregnancy or on DMARDS
Pneumovax	All adults ≥65yo Adults age 19-64 if cigarette smoking, CHF, asthma, COPD, DM, alcoholism, chronic liver disease	Pneumovax 23 (PPSV23)	*Repeat pneumovax after age 65 (or after 5 years since last vaccination) *For asplenia or functional asplenia, vaccinate q5 years
Prevnar	All adults >65yo (Give 1 year before Pneumovax!) Age 19-64 if immunocomp., functional asplenia, CSF leak, cochlear implant	PCV 13; Prevnar * PCV13 should be given first, followed by PPSV23	
HPV / Gardasil	Females age 9-26 Males age 9-21 "Catch up" Males 22-26 if MSM, HIV+	Gardasil: HPV 6, 11, 16, 18 Gardasil-9: HPV 6, 11, 16, 18, 31, 33, 45, 52, 58	Three doses at 0, 2 & 6 months. **Minimum:** 4 weeks between dose 1 & 2 12 weeks between dose 2 & 3 5 months between dose 1 & 3
Influenza	*Everyone! Every year!* *Do not give to patients with egg allergy or prior allergic reaction *Safe in pregnancy	Influenza vaccine High dose influenza vaccine (patients >65yo)	Annual vaccination reduces mortality from influenza by 41% (Lancet 1995) Multicenter trial 31K adults ≥65 years of age, high-dose was modestly more effective than standard-dose (NEJM 2014)

- Place order for vaccine using **Smart set** (contains both the vaccine & order to administer)
- If RN/LPN are available they can give the vaccine while you are waiting to precept (or can be given after the visit)



Social Determinants of Health:

- **Zoster vaccine:** Low utilization <25% of patients over 60yo, most expensive vaccine, only stocked in ~50% of general internist offices

Population Health / Systems-Based Practice:

- ✓ Make sure to document all completed screening in the **Health Care Maintenance Tab**
- ✓ **EDIT Modifiers so they are appropriate for your patients!**
  - **Example: screen with fit test q1 year instead of q10 year for c-scope**
- ✓ Make sure to include future screening/ appointments in the patient instructions

YOU ONLY GET CREDIT FOR WHAT YOU DOCUMENT!

2. Diabetes

By Hannah Levavi

Overview:

(a) Who to screen: obese adults 40-70 years old

- **USPSTF**: Adults 40-70yo with BMI > 25. Screen Q3 years.
- **ADA**: All adults with BMI > 25 and ≥ 1 risk factor OR those > 45yo. Screen Q3 years.

(b) Screening Tests:

	Diabetes	Pre-Diabetes
Hemoglobin A1C	>6.5%	5.7-6.4%
Fasting Plasma Glucose	> 126	> 100-125
Random Plasma Glucose	>200 and symptomatic	
OGTT	>200 after 2 hours	

- Need to confirm any positive tests!
- Can repeat every 1-2 years unless significant changes in risk factors or concerning symptoms.

(c) Type I DM Testing (patients with LADA—Latent Autoimmune Diabetes of Adulthood—will also have +Abs)

- Anti-islet cell antibodies
- GAD-65 (Glutamine Decarboxylase) antibodies

(d) Routine Care for Diabetic Patients:

- Eye Examination (annual)
- Foot Examination (every visit)
- Nephropathy Screening (Microalbumin/Cr ratio)—need ≥ 2 positive tests
  - Screen starting at diagnosis for T2DM
  - Start screening 5 yrs after diagnosis for T1DM
  - If microalbuminuria is seen on ≥2 screenings, start ACEi
- Dietary/Lifestyle Counseling
- Smoking Cessation Counseling
- ? ASA Therapy—controversial whether ASA is indicated in primary prevention
- Statin Therapy in diabetes (USPSTF 2016):

Age	ASCVD Risk Score	Statin?
40-75yo	7.5-10%	Consider low- to moderate intensity
	>10%	Low- to moderate intensity statin
76+	Any	Insufficient evidence for statin recommendations

(e) A1c Goals:

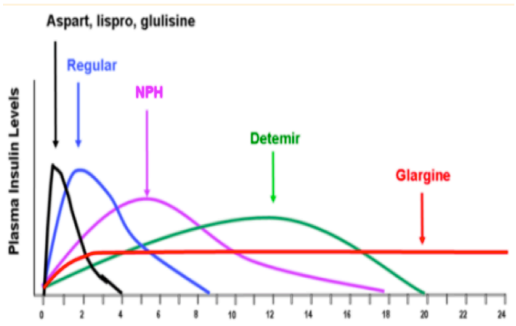
- Most patients: ≤ 7
- Elderly patients: <8

(f) Initial Medical Management of DM:

- Unless there is a contraindication, all patients with T2DM should be on metformin

Drug Class	Examples	A1c Reduction	Side Effects	Comments	Healthfirst Medicaid	Fidelis Medicaid	Healthfirst Medicare
Biguanides	Metformin Metformin ER	1-2%	GI distress. Lactic Acidosis (rare but can be seen in those with CKD).	Weight neutral. No hypoglycemia. Okay to use in stable CHF.	Metformin Metformin ER	Metformin Metformin-ER	Metformin Metformin ER
Sulfonylureas	Glipizide Glipizide XL Glyburide Glimperide	1-2%	HYPOGLYCEMIA	Efficacy wanes over time.	Glipizide Glipizide XL Glimepiride	Glipizide Glipizide XL Glyburide Glimepiride	Glipizide Glipizide XL Glimepiride
Meglitinides	Repaglinide (Prandin) Nateglinide (Starlix)	1-2%	HYPOGLYCEMIA	Short-acting. Prandin is cleared via liver (so can use in CKD)	Repaglinide Nateglinide	Nateglinide	Repaglinide Nateglinide
Thiazolidinediones (TZDs)	Rosiglitazone (Avanda) Pioglitazone (Actos)	1%	Increased incidence of HF (Avandia), increases LDL, hypoglycemia, weight gain, osteoporosis, Bladder cancer (Actos)		Pioglitazone	Pioglitazone	Pioglitazone
Alpha Glucosidase Inhibitors	Acarbose	0.5%	Flatulence, diarrhea, and abdominal discomfort are all common		Acarbose	Acarbose	Acarbose
SGLT-2 Inhibitors	Canagliflozin (Invokana) Empagliflozin (Jardiance) Dapagliflozin (Farxiga)	0.5-1%	Polyuria, Increased UTIs, increased genital infections, hyperkalemia; increased risk of amputations (black box warning)	Improves CV outcomes (EMPA-REG OUTCOME Trial)	Canagliflozin (ST) Empagliflozin (ST)	Canagliflozin (ST)	Dapagliflozin Canagliflozin
DPP-4 Inhibitors	Sitagliptan (Januvia) Saxagliptan Linagliptan (Tradjenta)	0.5%	Headaches, GI upset. Slight increase in risk of URIs. ? Risk of arthralgias	No CV benefit. No definitive link to pancreatitis.	Linagliptan Sitagliptan	Sitagliptan (ST)	Sitagliptan Linagliptan
GLP-1 Agonists	Exenatide (Byetta) Exenatide XR (Bydureon) Liraglutide (Victoza) Dulaglutide (Trulicity) Albiglutide (Tanezum)	~ 1.0%	Injection site reactions. ? Risk of pancreatitis, medullary thyroid cancer. Nausea/Vomiting common.	Associated with weight loss (~3kg on average). No risk of hypoglycemia. Improves CV outcomes (LEADER Trial)	Albiglutide (ST) Exenatide XR (ST) Liraglutide (ST)	Albiglutide (ST) Liraglutide (ST)	Dulaglutide Liraglutide
Combo Pills					Glip-met Lina-met Pio-met	Glip-met Lina-met Pio-met	Janu-met Glip-met Cana-met

(g) Starting Insulin:



- **Who to start on insulin:**
  - A1c >10% at diagnosis
  - A1c >9% and already on metformin
  - A1c >8-8.5% and already on metformin + sulfonylurea
- **Steps to Starting Insulin**
  - **Step 1**: Start Basal Insulin
    - 0.2-0.3 units/kg/day; minimum of 10U to start
    - Glargine in AM or PM; Determir only in PM
    - Decrease if renal dysfunction, elderly, or insulin naïve
  - **Step 2**: Titrate Basal Insulin to good fasting control
    - Goal 70-130 fasting in AM
    - Patient can increase insulin by 2-3U every 3 days as long as FSG is above goal
  - **Step 3**: Start checking FSG pre-lunch, pre-dinner, and bedtime.
    - If control inadequate, start prandial insulin or adjuncts.
  - **Step 4** (If needed): Start Prandial insulin with 4-6 units and titrate to good pre-meal control
    - Goal pre-meal FSG 70-130
    - Increase by 2U q3 days until adequate control achieved
    - If pre-lunch FSG is high: Adjust AM prandial insulin
    - If pre-dinner FSG is high: Adjust lunch-time prandial insulin
    - If bed-time FSG is high: Adjust dinner-time prandial insulin
  - **Step 5**: Assess need for further titrations, other adjuncts

Treating Diabetes at IMA:

- Order: "hemoglobin A1C"
  - For patients in whom you highly suspect a new diagnosis of diabetes or who are coming in for routine diabetes care and whose management would be changed by an A1c during the visit, order the "**Hemoglobin A1c (POCT)**" before you leave the room to precept. Inform the MA of the order so that the point of care test can be run as you precept and be done by the time you go back to see the patient.
  - In other patients who are getting screened but with only a few risk factors, or whose management in that visit may not change significantly with a rapid A1c, order the regular "Hemoglobin A1c."

- *Diabetic Foot Exam*:
  - **Inspect** for skin integrity, calluses, gait, balance
  - Palpate **pulses**, ask about claudication
  - Test **sensation** using monofilament + vibration v. pinprick v. proprioception

- *Eye Exam:*
  - IMA Retinal Camera
    - Order: "OPH1120" and notify the MA
  - Fromer's
    - Order: "consult to ophthalmology" and use ".fromer" dot phrase in the AVS for the locations and phone numbers
    - The front desk at IMA can now schedule Fromer eye appointments!
- *Who needs referrals?*

	Intervention	**How to Do It**
A1c >12% DM1 Pregnant women	Refer to Hospital Diabetes Clinic	Epic referral to "Hospital Diabetes Clinic" Can call the clinic to make appointment
A1c 8 - 12%	Diabetes Educator	Order "consult to IMA Diabetes Educator"
	City Health Works	Fill out form in referral box in each team room
	PCP f/u Q 2-3 months	
A1c 5.7 – 6.4%	YMCA Diabetes Prevention Program	Use ".diabetesprevention" in AVS

		Fax a copy of the form
	Nutrition consult	Order "Consult to Nutrition" in Epic

Social determinants of health:

- Individuals with lower income and education are 2-4 times more likely to get T2DM
- The physical environment in low-income areas often is not conducive to outdoor exercise (sidewalks in disrepair, lack of neighborhood safety)
- Food insecurity and food deserts may be correlated with worse outcomes in diabetes

Community Resources:

- City Health Works
  - Health coaches for patients in eligible zip codes
  - Consider for patients with low health literacy, those who do not keep appointment, or frequently run out of medications, those who utilize the ER for ambulatory sensitive needs, or get lost to follow-up easily.
- YMCA Diabetes Prevention Program
  - For patients with pre-DM to work on diet and exercise in a group setting.
- Screen patients for food insecurity using tool in Epic under rooming
  - If positive, refer to SW
  - For more fresh and healthy food options, some farmer's markets accept SNAP/food stamps
  - Use ".foodresources" or ".food[borough" for pantry resources or find a list of nearby locations: https://nyccah.org/hungermaps
  - Let your patient know about an on-going study to get access to healthier foods and then email the principal investigator Dr. Mayer (Victoria.mayer@mountsinai.org)
- For women with diabetes, inform them of the exercise intervention on going at IMA

Population health/systems-based practice:

- ✓ Make sure to satisfy the BPAs for eye exams, nephropathy screening and foot exams in the Health Maintenance tab

Make a smart-phrase for documenting DM in your note and include:

HgbA1C ***
Current Medications: ***
FSG
  AM: ***
  Meals: ***
Last foot exam: ***
Last eye exam: ***
Lipid panel: ***
Microalbuminuria: ***

3. Obesity & Clinical Nutrition — By Danny Mays

Overview:

- Weight is all about **energy balance**: resting energy expenditure (organ and muscle function) + additional expenditure from physical activity.
  - **Weight gain**: 5% energy mismatch (intake>expenditure) for 1 year = 15kg weight gain.
  - **Weight loss**: energy balance must be net negative. Goal deficit ~3500 calories/week ≈ 1 lb body fat, achieve through calorie restriction (more vegetables, whole grains) and increased physical activity.
  - Muscle is highly metabolically active, even at rest, so **add strength training** to maintain healthy weight.
- **BMI**:
  - "Normal" weight 18.5-20
  - **Overweight 25-30**
  - **Obese 30+** (class I 30-35, II 35-40, III 40+)
    - These cutoffs are somewhat arbitrary, don't account for things like muscle mass and don't apply to all populations equally, e.g. a healthy maximum BMI for Asians tends closer to 20. But we use to this to approximate disease risk.
- **Nutrition essentials:**
  - The **type of fat** (unsaturated, fish oils) is more important than total fat.
  - **Fruit/vegetables** (~5 servings daily) associated with decreased risk of CVD, breast cancer, mortality.
  - **Limit refined carbs/sugar** (↑CHD and DM risk).
  - High **salt** intake linked with HTN, CVD…increases intravascular volume→increasing afterload and ultimately long-term vascular remodeling.
  - **Food labels**: ingredients are listed by weight. Avoid food with sugar in the first 3 ingredients.

Obesity at IMA

- Cannot fix at 1 visit! Must build rapport and bring the patient back often to monitor progress
- **Initial assessment** can be a **24-hr diet recall** or the **3-day food diary**.
- Assess how food is obtained and prepared.
- Assess **cultural norms** and **time/financial constraints**.
- Assess the stage of change and ask "what do you think you can do to improve your diet?"
- Set attainable goals
- **No compelling evidence for one diet vs. another** (low fat, low carb, etc.).
- **Goal = energy deficit** through healthy eating and regular exercise.
- Referral to **"IMA Nutrition"** and can make an appointment at the front desk.

Population Health

- Nationwide, **71%** overweight and **38%** obese.
- In recent decades, large increases in obesity with parallel increases in diabetes, CVD
- **Disproportionately high obesity prevalence in populations of color, notably Black and Hispanic.**
- **Disproportionately high obesity prevalence in Harlem and the Bronx, where most IMA patients live.**
- **Population health impact of healthy lifestyle change**: Huge, better than putting all pre-diabetics on metformin (Diabetes Prevention Program, NEJM 2002).
- Sustained weight loss of 3-5% body weight produces clinically meaningful reductions in CV risk factors. Recommend 5-10% weight loss as initial 6-month goal for greater benefits.

Socioeconomic barriers to healthy nutrition:

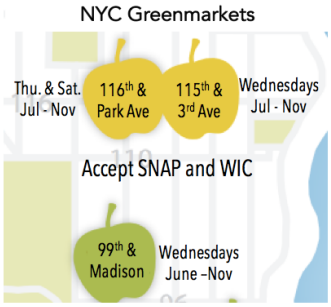
- Poor availability of healthy foods, high availability of unhealthy foods. Poverty, lack of safe green space, and stress (↑cortisol→glycemia)

Community Resources:

Nutrition resources: **SNAP** (food purchasing assistance for low income people, ~$125/month), **WIC** (supplemental nutrition program for Women, Infants, and Children).

City Health Works: Health coaching for diabetics with A1c > 8 in Manhattan. Referral forms in the preceptor rooms.

YMCA Diabetes Prevention: For patients overweight with pre-diabetic range A1c. Epic dotphrase to refer patients: .diabetesprevention (type in patient instructions in the wrap-up tab).



4. Hyperlipidemia

By Ilana Ramer Bass

Overview:

Elevated LDL is associated with CV events and mortality → lowering LDL levels reduces CV events in patients with and without CVD; therefore our goal is to lower patient's risk using therapeutic lifestyle changes and medications.

(a) Who to screen?

- Screen average-risk men starting age 35 and women starting age 45 then repeat every 5 years
- Screen high risk population at age 25 in men and 35 in women then repeat every 3 years
- **Who is at "high risk?"**
  - Prior CVD event
  - Diabetes
  - CKD (GFR <45)
  - Obesity
  - HTN
  - Smoker
  - Older age
  - Family history of CVD

Download the ASCVD risk calculator app to determine your patient's risk score!

(b) Primary Prevention- patients *without* known atherosclerotic disease

- Decide who to treat based on risk assessment
  - ACC/AHA Risk score >7.5% 10 yr risk→ treat (JAMA 2015)
  - No studies to compare low/moderate/high intensity dosing

(c) Secondary Prevention- patients with known atherosclerotic cardiovascular disease (CAD, carotid artery disease, PVD, AAA)

- Treat with high-intensity statin therapy
- Goal: 50% reduction in LDL
- Also treat with ASA

(d) Statin therapy

High intensity	Atorvastatin 40-80mg	Covered by NYS Medicaid
	Rosuvastatin 20-40mg	Most potent
Moderate intensity	Lovastatin 40mg	
	Pravastatin 40mg	Lowest risk of myopathy Covered by NYS Medicaid
	Simvastatin 40mg	
	Atorvastatin 10-20mg	

- Side effects/ interactions:
  - Myopathy
    - Strategies to overcome myopathy: re-trial at lower dose, replete vitamin D, switch to lower risk statin, or every other day dosing
  - Interactions with cyclosporine, protease inhibitors, calcium channel blockers, gemfibrozil
- Other non-statin options (see EBM chart below):
  - PCSK9 inhibitors
  - Niacin
  - Ezetimibe
  - Cholestyramine (bile acid resin)- no role
  - Fibrates- no role outside of hypertriglyceridemia (FIELD Study, Lancet 2005)

(e) Hypertriglyceridemia

- Linked with CV events but no evidence of causation
- Treatment:
  - If only high TG, treat with fibrates if >500-1000
  - If high TG and LDL, treat with statin if TG <500, if >500 start fibrate and THEN statin once TG under control

Treating HLD at IMA

- Order: "Lipid panel"- does not need to be fasting!
  - *Non-fasting samples mostly elevate triglycerides, with minimal changes to TC or HDL and artificially lowers LDL; therefore if there is a high LDL on a non-fasting lipid panel then it is most definitely high!*
  - Total cholesterol: HDL ratio is most predictive (JAMA 2007, 2009) hence their use in the ACC/AHA risk calculator

Social Determinants of Health:

- Food access—access to affordable and **heart healthy foods—whole grains, beans, nuts, seeds, vegetables, fruit**
  - Food desert- residents have low access to a supermarket or large grocery store
  - Food swamp- abundance of low nutrient foods (read: fast food) compared to healthy food options
  - **Fast food is high in saturated fats and oils** (butter, bacon, hamburgers, hotdogs, fried chicken, milk products, cookies, chips)

Community Resources:

- Supplemental Nutrition Assistant Program (SNAP)
- Farmer's Markets- some accept SNAP/food stamps
  - Sinai's Greenmarket – SNAP users get a $2 bonus for every $5 they spend

Check out snaptohealth.org

Evidence Based Medicine:

Study	Finding	Comments
West of Scotland Coronary Prevention Study (WOSCOPs) (NEJM 1995)	Pravastatin reduced non-fatal MI rates and cardiac mortality in men with LDL >150. NNT 217. 22% reduction in all cause mortality of borderline statistical significance.	
Scandinavian Simvastatin Survival Study (4S, Lancet 1994)	Patients with HLD and CAD; 4% reduction in total mortality at 5.4 years with significant reductions in CV events.	Established statins as standard of care in both primary and secondary prevention of cardiovascular events.
ODYSSEY Trial (NEJM 2015)	Patients at high risk for CV events, the use of monoclonal Ab alirocumab in addition to high intensity statin therapy resulted in additional 62% reduction in LDL.	
AIM High Trial (NEJM 2011)	Compared simvastatin vs. simvastatin + niacin. Did significantly increase HDL levels but failed to reduce cardiovascular events.	No clinical benefit of niacin.
IMPROVE IT (NEJM 2015)	Compared simvastatin vs. simvastatin + ezetimibe. Reduction in CV mortality, major CV event or nonfatal stroke. NNT 50.	

5. Hypertension

By Hannah Levavi

Overview

- HTN is the #1 reason for non-pregnant adults to visit a medical office
- Affects ~30% of adults; only 50% of those affected are controlled
- HTN is the most important *modifiable* risk factor for CVD and CVAs

Measuring BP:

- Ambulatory BP
  - Ambulatory BP measurement is a much better predictor of CV events than office readings
  - Threshold for diagnosing HTN in ambulatory readings is >130/80 (lower than in office readings)
  - Should be used in pts with white-coat HTN, resistant HTN, episodic HTN
- Office BP measurement→ for diagnosis, must have ≥ 3 values over 2 visits:
  - Seated position, arm at level of the heart
  - Appropriate cuff size, not placed over clothing
  - Patient seated quietly for 5 minutes prior to measurement
  - Limit background noise, stressors

Secondary HTN

- When to worry about *Secondary* HTN:
  - Resistant HTN
  - HTN emergency or Malignant HTN
  - Acute rise in BP after previously stable values
  - HTN in <30yo non-obese patient with no FHx
  - Onset before puberty
- Causes of Secondary HTN

Medications	NSAIDs, Steroids, OCPs, SSRIs/SNRIs, EPO, HAART, Decongestants	Renovascular Disease	Renal Artery Stenosis Fibromuscular Dysplasia
Drugs	Caffeine, Amphetamines, Cocaine, MDMA, EtOH	Endocrine Disorders	Pheochromocytoma Cushing's Disease Hyperaldosteronism Hyperthyroidism Hyperparathyroidism
Renal Disease	CKD Nephritic Syndrome	OSA	
Renovascular Disease	Renal Artery Stenosis Fibromuscular Dysplasia	Aortic Coarctation	

HTN Risk factors:

- Age, obesity, family history, race, high salt diet, excessive alcohol, physical inactivity, stress

BP Targets

- Varies depending on recommending body and target population:

	Population	**BP Goal**
JNC-8	Adults <60	<140/90
	Adults >60	<150/90
	Adults >60 with DM or proteinuric	<140/90

	kidney disease	
ACC/AHA	Patients with CAD	<130/80
SPRINT trial	Patients with CAD	<120/80
KDIGO	Non-diabetic, proteinuric CKD (>0.5-1.0g/day proteinuria)	<130/80

Workup of Patients with HTN:

- Look for signs of end-organ damage and/or curable causes of secondary HTN, if indicated
  - BMP, hgbA1C, lipid panel, UA, EKG

HTN Treatment:

- Lifestyle modifications:
  - Weight loss
  - Diet
    - Na+ restriction <2400mg/day
    - DASH diet Exercise
    - ↓EtOH

First Line			
Class	**Examples**	**Side Effects**	**Contraindications**
ACEis	Lisinopril, Enalapril, Captopril, Ramipril, Benzapril	Dry cough Angioedema Hyperkalemia	Angioedema Pregnancy
ARBs	Losartan, Candesartan, Valsartan	(same as above, but less common)	
Dihydropyridine CCBs	Nifedipine Amlodipine	LE edema HA, flushing, constipation	
Thiazide Diuretics	Chlorthalidone HCTZ	Hyperglycemia Hyperuricemia Hypokalemia Hyponatremia	Gout Sulfa allergy

Second Line	
Loop Diuretics	Furosemide Bumetanide Torsemide
β -blockers	Labetalol Carvedilol
Vasodilators	Hydralazine
α -blockers	Clonidine Doxazosin
Aldosterone Antagonists	Spironolactone Epleronone Amiloride Triamterene

HTN AT IMA

- At IMA If BP is >140/90 (or >other target BP), recheck once your patient is in the room (BP often is taken with clothes on, without adequate rest time, etc., in triage)
- If BP is persistently elevated, do a med rec and make sure your patient is taking all of their home anti-hypertensives (did they run out of refills? Are they taking them correctly?). Also check for any BP-raising meds).
- If concerned for true lack of BP control, optimize current medication dosages before adding other agents. Have patient return for a BP check in 2 weeks (can be an MD-visit or an NP-visit or an RN-visit, depending on need) to see whether your intervention is helping.
    - Use .BPINSTRUCTIONS at bottom of your note to give specific instructions about how to titrate BP medications when they return for follow up

6. Cardiac Symptom Evaluation — By Andrew Bromley

(a) Palpitations

Overview

- Common ambulatory complaint
- Symptom timing and cardiac causes:
  - Transient palpitations often due to premature beats
  - Slow onset and offset more consistent with sinus tachycardia
  - Rapid onset and termination may suggest SVT or VT
- Differential to consider in work-up of palpitations:
  - *Cardiac*: arrhythmias, valvular heart disease, atrial myxoma, cardiomyopathy
  - *Endocrine/Metabolic*: thyrotoxicosis, hypoglycemia, pheochromocytoma
  - *Medications*: nicotine, caffeine, cocaine, amphetamines, sympathomimetic agents, vasodilators (e.g. CCBs), anticholinergic medications, BB withdrawal
  - Psych: panic disorder, GAD, depression w/ anxiety, somatization
  - *Other*: anemia, pregnancy, high fevers, stress

The cause is cardiac in nature <10% of the time in patients without known prior cardiac disease

At IMA:

- Work-up:
  - **12-lead ECG**
  - **Lab work**: CBC, TSH, BMP
  - **Imaging**: TTE in pts w/ signs/sxs/risk for structural heart disease
  - **Ambulatory EKG monitoring**: may be necessary in pts whose evaluation suggests an arrhythmia, those at higher risk (male gender, event duration >5 mins, irregular rhythm, hx of cardiac disease)
    - Holter Monitor (Ambulatory EKG)
    - Event Monitor
    - Loop Recorder
- How to order ambulatory EKG monitoring:
  - Pt must be seen by a Mount Sinai Cardiologist. Therefore…
    - Pt has a Mount Sinai Cardiologist: order “Holter Monitor”
    - Pt does not have Mount Sinai Cardiologist: order “consult to cardiology.” Pt can call (212) 427-1540 to schedule appointment.

(b) Chest Pain Evaluation

Overview:

- Differential Diagnosis:
  - **MSK**: costochondritis, muscle strain
  - **CV**: CAD, coronary vasospasm, pericarditis, Dissection
  - **GI**: GERD, Achalasia, DES, Esophagitis
  - **Pulm**: PE, Lung Cancer, Pneumonia, Pneumothorax, Pleuritis
  - **Other**: Anxiety, Zoster
- Defining chest pain:
  - **1)** substernal chest discomfort of characteristic quality (i.e., pressure, heaviness) and duration (seconds to minutes, not hours to days) **2)** exacerbated by exertion and **3)** relieved by rest or SL nitroglycerin
    - **Typical**: fits all three characteristics
    - **Atypical**: two of the characteristics
    - **Non-anginal** or **non-cardiac chest pain**: only one of the characteristics or none
- Risk Stratification: by type of chest pain, age, and gender

Pretest Probability of Coronary Artery Disease by Age, Gender, and Symptoms[1]

Age (y)	Gender	Typical/Definite Angina Pectoris	Atypical/Probable Angina Pectoris	Nonanginal Chest Pain	Asymptomatic
30–39	Men	Intermediate	Intermediate	Low	Very low
	Women	Intermediate	Very low	Very low	Very low
40–49	Men	High	Intermediate	Intermediate	Low
	Women	Intermediate	Low	Very low	Very low
50–59	Men	High	Intermediate	Intermediate	Low
	Women	Intermediate	Intermediate	Low	Very low
60–69	Men	High	Intermediate	Intermediate	Low
	Women	High	Intermediate	Intermediate	Low

- Management:
  - **Low risk**→ no intervention
  - **Intermediate risk**→
    - Ideal candidate for a stress test
    - To determine what type of stress test to order, see below
  - **High risk**→
    - Refer to cardiology for catheterization

A negative stress test in a high-risk patient is not enough to rule out CAD!

Stress Testing

- There are multiple modalities at our disposal for the evaluation of CAD
- Determining the need for stress test must take into account the **pre-test probability** that the patient's chest pain is related to CAD:

Age (year)	Nonanginal chest pain		Atypical angina		Typical angina	
	Men	Women	Men	Women	Men	Women
35	3-35	1-19	8-59	2-39	30-88	10-78
45	9-47	2-22	21-70	5-43	51-92	20-79
55	23-59	4-21	45-79	10-47	80-95	38-82
65	49-69	9-29	71-86	20-51	93-97	56-84

  - 1st: Determine the type of chest pain your patient is having (see above)
  - 2nd„ Determine whether your patient falls into a low, intermediate, or high-risk group
    - Stress test is most appropriate and of highest yield for patients with **intermediate-risk**
    - Before considering a stress test for your patient, be sure that you would want to pursue the further workup involved with a positive stress test. Would you and your patient pursue a **left-heart catheterization**? If the answer is no, consider whether it is then worthwhile to even get a stress test.

Types of Stress Tests:

	ECG	Echo	Nuclear
Exercise	Sens: 68% Spec: 77%	Sens: 86% Spec: 81%	Sens: 87% Spec: 73%
Pharmacologic	*Not an option*	Dobutamine	Adenosine *or* Dipyridamole
What is studied	ST-segment changes, T wave inversions, or arrhythmias w/ exercise	Regional wall motion abnormalities	Myocardial perfusion and viability
Pro	Simple, inexpensive, well-validated. Physiologic. Assesses exercise capacity.	Well-validated No radiation exposure Can be exercise or pharmacologic Shows myocardial	Most sensitive Provides anatomic details and LV function Provides prognostic information

	No need for IV access or radiation	function and regional wall motion abnormalities	Provides assessment of myocardial viability
Con	Less sensitive (especially in women) Requires good exercise tolerance Cannot be used in pts w/ pre-existing ECG abnormalities: 1) underlying BBB 2) ST-segment depressions 3) on Digoxin 4) repolarization abnormalities 5) WPW	Hypertensive response to stress may result in FPs (reversible wall motion abnormalities) Very obese pts may have poor windows for echo	Expensive Radiation exposure Slow More prone to artifact Adenosine must be avoided in asthma pts

- Thinking through which stress test to order for your patient?
    - *1) Can the patient exercise?*
        - **Yes**:
            - *2) Are there underlying ECG abnormalities?*
                - **No** → Exercise ECG
                - **Yes**:
                    - *3) Wall motion abnormalities?*
                        - **No** → Exercise ECHO
                        - **Yes** → MPI
        - **No**:
            - *3) Wall motion abnormalities?*
                - **No** → Pharmacologic stress ECHO
                - **Yes** → MPI

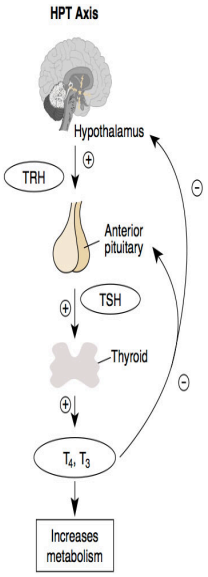
At IMA:

- Tests that we can order from IMA:
    - Exercise stress test
    - Myocardial perfusion stress test
    - Dobutamine Stress test
- Once ordered, have your patient schedule the test by calling (855) 674-3278.
- For all other tests or complex decisions, consider referring your patient to cardiology: "Consult to Cardiology" and patient can call (212) 427-1540 to schedule.
- If an expedited appointment is needed, you can email the schedulers listed in the IMA app under the "Cardiology" section

7. Hypothyroidism

By Ilana Ramer Bass

Overview:



Types of Hypothyroidism:

(a) Primary hypothyroidism (problem in the gland itself): **low T3/T4, high TSH**

- Accounts for 95% of cases of hypothyroidism
- Causes: autoimmune thyroiditis, Hashimoto's, previous Graves/de Quervains or painless thyroiditis, Down' syndrome, Turner's syndrome, previous thyroidectomy or other neck surgery, previous iodine therapy, external radiation

(b) Subclinical hypothyroidism**: high TSH but normal T3/T4**

(c) Secondary/Tertiary/Central hypothyroidism (problem in the pituitary/hypothalamus glands): **low T3/T4 and low/inappropriately normal TSH**

- Causes: hypothalamic or suprasellar mass, history of radiotherapy/surgery to the brain, infiltrative disease (sarcoid, hemochromatosis); pituitary tumor, hx of pituitary surgery/radiotherapy, Sheehan's syndrome

Pathophysiology/Clinical Signs/Symptoms:

- Generalized slowing of metabolic processes
  - → fatigue, weakness, cold intolerance, weight gain, constipation
- Accumulation of matrix substances
  - → coarse hair/skin, loss of lateral eyebrows, periorbital edema, carpal tunnel syndrome
- TRH increases prolactin levels which inhibit GnRH
  - → oligo or amenorrhea, infertility
- Exam findings:
  - Delayed relaxation of DTRs, bradycardia, non-pitting edema, goiter
- Lab abnormalities:
  - Normocytic anemia, hypercholesterolemia, hyponatremia (SIADH), hyperprolactinemia, CK elevation

Treatment:

- Thyroid replacement therapy: levothyroxine/synthroid
  - Initial dose: 1.6 mcg/kg body weight per day (112 mcg/day in a 70-kg adult)
  - Re-check TSH in 6-8 weeks (takes 6 weeks to reach steady state)→ if TSH still elevated, increase by 12-25mcg/day and then re-check TSH in another 6 weeks
  - Goal TSH 0.5-5.0 mU/L
- Special situations:
  - Elderly patients >50-60 years old: initial dose 50mcg/day
  - History of CAD: initial dose 25mcg/day
  - Pregnancy: increased T4 requirements due to increased TBG
  - Poorly compliant patients: may give their weekly dose of T4 once per week
    - J Clin Endocrinol Metab 1997—achieve euthyroidism and no difference in symptoms between daily or weekly dosing

Synthroid should be taken on an empty stomach with water; 1 hour before breakfast/other medications

Treating Hypothyroidism at IMA:

- Order: "TSH with reflex T4"
- Who to test?
  - NO population-based screening for hypothyroidism
  - Only test if patient is symptomatic or if asymptomatic but <u>at risk:</u>
    - History of goiter, history of autoimmune disease, family history of thyroid disease, previous radioactive iodine therapy, and/or head and neck irradiation, family history of thyroid disease; on medications such as lithium, amiodarone
- Endocrine E-Consult

- Allows you to submit clinical questions to Sinai endocrinologists and get timely responses/ recommendations
- Order: “E-consult” and complete the referral template in the comment box

“The American Thyroid Association (ATA) and the American Association of Clinical Endocrinologists (AACE) recommend measurement of TSH in any individual at risk for hypothyroidism (eg, personal history of type 1 diabetes or other autoimmune disease, family history of thyroid disease, history of neck radiation to the thyroid, history of thyroid surgery) and consideration of measurement of TSH in patients over the age of 60 years”

8. Abnormal LFTs

By Yuying Luo

Overview:

- Patterns of abnormal liver function tests:
  - **Hepatocellular Damage:** predominately elevated AST, ALT
    - AST: ALT = 1
      - >300s: ischemic, viral, drug-induced
      - <300 (mildly elevated): NASH, EtOH, medications
    - AST:ALT >2.5: EtOH hepatitis
      - Alcohol induced deficiency of pyrodixal phosphate
      - Usually < 200s
  - **Cholestatic pattern:** elevated alk phosphatase, GGT, bilirubin
    - Alkaline phosphatase: produced in hepatocytes, bone, placenta, small intestine
    - GGT: liver specific and a sensitive marker of EtOH ingestion
    - Bilirubin:
      - Isolated hyperbilirubinemia: unconjugated vs conjugated
        - Unconjugated: hemolysis, drugs, genetic diseases (Gilbert's)
        - Conjugated: obstructive most commonly
- Markers of synthetic function:
  - PT/INR, albumin
- Approach to abnormal LFTs:
  - Discontinue any hepatotoxic medications, alcohol use, evaluate for metabolic syndrome and then repeat testing in 2-4 weeks
    - If alk phos is elevated, check GGT
  - Persistent or unexplained ALT and AST abnormalities should be worked-up further:
    - HCV, HBV; serum iron, ferritin, TIBC; INR, albumin, CBC
    - Consider RUQ U/S

All coagulation factors are synthesized in the liver except factor VIII

AT IMA

- **Who to screen for hepatitis C?**
  - Persons at high risk for infection (e.g. IVDU)
  - One time screening in adults born between 1945 and 1965
- Order: "Hep C surface Ab with reflex to RNA PCR"
- If positive→
  - All patients with virologic evidence of chronic HCV infection (detectable HCV viral level over a six-month period) should be considered for antiviral treatment and referred to IMA Liver
  - IMA liver = hepatitis C clinic – Tues PM, Wed AM, Fri PM
    - This clinic has care coordinators and on-staff psychologists who help run support group meetings. There is a lot of psychosocial support for these patients, so event more of a reason to refer patients!
- After initiation of treatment→
  - Quantitative HCV RNA is repeated at week 4 of therapy
  - Sustained Virologic Response (SVR) defined as undetectable viral load at 12 weeks following cessation of therapy

25% of patients will clear HCV within 2-6 months but will have +HCV antibodies

Community Resources:

- For patients with presumed NASH and poor dietary habits, consider screening for food insecurity
- New York syringe exchange programs for IVDU: **https://nasen.org/directory/ny/**

9. Anorectal Complaints/Constipation — By Casey Sanossian

Overview:

(a) Constipation

- Risk factors: advanced age, physical inactivity, low income and education status, depression
- Rome III Constipation definition:
  - 1-2+ of following for 12 weeks in 6 month period:
    - Straining during >=25% defecations
    - Lumpy or hard stools >=25% defecations
    - Sensation of incomplete evacuation >=25% of time
    - Manual maneuvers to facilitate defecation of >=25% of time
    - <3 defecations/week
    - Loose stools rarely present w/o laxative
    - Insufficient criteria for IBS
- Causes include:
  - Normal transit/functional constipation, slow transit (medications, hypothyroidism, hypercalcemia, spinal cord disease), outlet obstruction (rectal mass, pelvic floor dysfunction), lifestyle (low fluid/fiber intake), eating disorders
- Treatment:
  - Address underlying cause if one exists
  - Drink at least 2L/water/day
  - Recommend 20-35 g fiber/day
  - Encourage regular exercise
  - If needed, use fiber supplements/bulk-forming laxatives→ osmotic laxatives→ stimulants and stool softeners (see below)
  - If refractory, biofeedback (effective to re-train muscles used in defecation if pelvic floor dysfunction) or surgery (abdominal colectomy + ileorectal anastomosis)

	Medication	Mechanism of Action
Fiber supplements/Bulk forming agents	Methylcellulose (Citrucel) Polycarbophil (FiberCon) Psyllium (Metamucil)	Absorb liquid in the intestines to form bulky stools
Osmotic laxatives	Milk of magnesia Lactulose Polyethylene glycol (Miralax)	Pulls water into the intestinal lumen
Stimulant laxatives	Senna (senokot) Bisacodyl (dulcolax)	Stimulate colonic contractions to propel stool forward
Stool softeners	Docusate sodium (Colace)	Soften stool to make it easier to pass
Newer medications	Lubiprostone Linactolide	Stimulate chloride and water secretion into the intestinal lumen

(b) Hemorrhoids

- Symptoms: itching, pain, bleeding; ~75% of patients will have at some point in their life!
- Types:
  - External: painful 2/2 innervation by somatic nerves
  - Internal: generally present as painless rectal bleeding because covered by insensate columnar epithelium
- Treatment:
  - Anesthetics
  - Astringents and protectants→ witch hazel, zinc oxide
  - Bulk-forming laxatives
  - Topical corticosteroids (Preparation H)
  - Stool softeners
  - If more severe: external (surgical excision); internal (band ligation, radiofrequency treatment

(c) Pruritis Ani

- Symptoms: itch or burn in perianal area
- Etiology: usually idiopathic or due to "ITCH:" Infection, Topical irritants, Cutaneous/Cancer,

Hypersensitivity
- Treatment:
  - Keep stools soft, stop itching and/or excessive cleansing, sitz baths (4X/d), avoid tight clothing/moisture trapping fabrics, witch hazel pads (topical anti-pruritic), topical hydrocortisone (max 1-2 weeks otherwise risk skin atrophy), antihistamines (atarax for symptom relief)

(d) Anal Fissure- tears occurring distal to dentate line in anal canal

Lateral fissure—think syphilis, TB, carcinoma, HSV, IBD

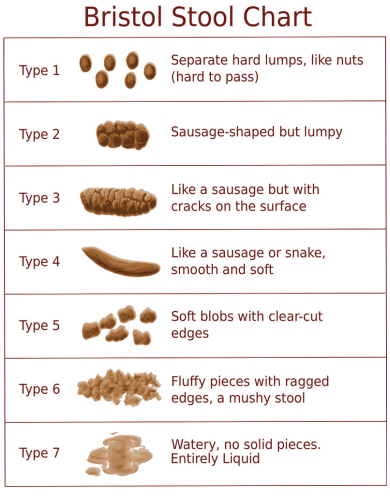
- Etiology: usually due to hard BMs/straining
  - *Usually ANTERIOR or POSTERIOR to ANUS*
- Treatment:
  - Keep stools soft, sitz baths, rectal suppository (containing topical steroids, local anesthetics), topical lidocaine, NTG ointment or topical CCB (relaxes internal anal sphincter)

(e) Rectal Bleeding
- Causes of bright red blood:
  - Hemorrhoids, diverticula, UC, infectious colitis, cancer, polyps, AVM, fistula, fissure, chronic solitary ulcer
- Causes of occult bleeding:
  - Gastritis, gastric ulcer, gastric CA, esophageal varices, AVM, esophagitis, duodenitis, duodenal ulcer, polyps, cancer

(f) Condyloma acuminatum
- Etiology: HPV
  - Once infected with HPV, entire anogenital tract is involved!
  - If one lesion present→ complete anogenital exam to detect additional growths
- Higher risk if anal intercourse, but majority of patients with perianal condylomata have NOT engaged in anal intercourse!
- HPV infection also increases risk of anal cancers→ high risk patients need annual anal pap smears

(g) Fistula
- Most common cause = infection of anal glands
- High index of suspicion for Crohn's Disease

(h) Skin tags
- Usually asymptomatic, remnants of previously thrombosed external hemorrhoids (removed only if symptomatic)



At IMA:
- History—ask patients about:
  - BM frequency, consistency, any change in stools, fluid intake, diet, opioid use
- Evaluate for tenderness, skin breakdown, fistulae, fissures, masses on exam
- Labs: CBC, TSH, BMP
- Consider colonoscopy in patients with alarm symptoms or age >50
- Diet/exercise counseling!

Social determinants of health:
- Many patients are uncomfortable discussing this topic, but be sure to ask about it in your ROS!
- Major sources of dietary fiber include fruits and vegetables which may not be as available (physically- and financially-speaking) – look into whether patients would qualify for SNAP; discuss farmer's markets and other creative ways of increasing their intake of fruits/vegetables/whole grains

10. GERD/ Dyspepsia — by Sarah Lopatin

Overview:

- Definition of Dyspepsia (ROME IV criteria)
  - >1 of the following symptoms:
    - Postprandial fullness
    - Early satiation
    - Epigastric pain or burning
- Etiologies: ~25% underlying organic causes, ~75% functional/idiopathic
  - Organic/structural: PUD, GERD, Gastritis, Malignancy
  - Functional: meeting ROME IV criteria with no underlying structural disease (diagnosis of exclusion)

Etiology	Key historical features
Peptic ulcer disease	ASA, NSAID use History of H. Pylori
GERD	Heartburn, regurgitation, cough
Malignancy	Weight loss, early satiety, dysphagia, odynophagia
Cholelithiasis	Postprandial RUQ pain
Functional	None of the above

- Selected differential diagnosis
  - *Coronary artery disease*
  - Biliary tract disease
  - Pancreatitis
  - Metabolic derangements (hypercalcemia)
  - Chronic mesenteric ischemia
  - Gastroparesis
  - Medications
- Initial workup
  - History & physical: **rule out ALARM FEATURES:**
    - Onset age >55
    - Family history of upper GI malignancy
    - Weight loss
    - GI bleeding
    - Progressive dysphagia, odynophagia
    - Iron deficiency anemia
    - Vomiting
    - Palpable mass, lymphadenopathy
    - Jaundice
- Management
  - Labs: CBC (for iron deficiency anemia), CMP (hepatobiliary etiologies)
  - If age >55 or + alarm symptoms → referral to GI for early endoscopy
  - If age <55 and – alarm symptoms → test for H. pylori
    - If H. pylori positive, treat with triple therapy (clarithromycin, amoxicillin, PPI)
    - If H. pylori negative, PPI trial x 8 weeks (no benefit of any specific PPI)
  - If typical GERD symptoms, educate on diet/lifestyle modifications and consider PPI
  - If fails, reassess diagnosis, consider referral to GI for endoscopy

Test and treat vs. empiric PPI strategy depends on prevalence of H. pylori
*** If prev >10% (Asia, Eastern Europe, Mexico, Latin and S. America), test and treat if positive*
*** If prev <10%, PPI trial*

AT IMA

- Order "Stool H. Pylori Ag (Feces)"
  - NOT serum Ag as it will be positive if someone has had H. pylori in the past and had been treated
    - If patient can give sample in office, order as "current" order
    - If patient cannot give sample, give specimen cup for home and place order as "future"
- Order "Consult to Gastroenterology" if + alarm symptoms and needs evaluation for endoscopy

Social Determinants of Health

- 50% of adults in US have + H. pylori serology by age 60
- Younger age/higher prevalence in developing countries linked to socioecomonic status (overcrowding, bed sharing, lack of running water)

11. Dysuria/UTI

by Danielle Brooks

Overview:

Urinalysis: essential to diagnose conditions such as calculi, urinary tract infection, and even malignancy.

- **Dipstick urinalysis:**
  - Specific gravity: correlates with urine osmolality and concentrating ability of kidneys.
    - Normal: 1.003-1.030
    - <1.010 = relative hydration
    - >1.020 = relative dehydration
  - pH: normal pH 5.5-6.5. Often correlates with serum pH.
    - Useful in UTI, for example: alkaline urine indicates urea-splitting organism
  - Hematuria: 3+ RBCs per high-powered field in 2/3 urine samples.
    - Dipstick test detects RBC's peroxidase activity, so a positive test can also mean myoglobinuria or hemoglobinuria.
    - 20% of patients with gross hematuria have urinary tract malignancy→ require further work up with cystoscopy and abdominal imaging.
  - Proteinuria: urine protein excretion >150 mg/day (microalbuminuria is 30-150 mg/day).
    - U-dip is typically sensitive to albumin and will be positive at concentrations 5-10 mg/dL.
    - 1+ is about 30 mg/dL; 2+ is about 100 mg/dL; 3+ is about 300 mg/dL; 4+ is about 1,000 mg/dL.
  - Glycosuria: will be positive if glucose is present at 180-200 mg/dL.
  - Ketonuria: Uncontrolled diabetes, pregnancy, carb-free diets, starvation
  - Nitrites: Present when certain gram-negative and gram-positive bacteria reduce nitrates.
    - Bacteria load is >10,000/mL if positive.
    - Highly specific but not sensitive so a negative result does **not** rule out UTI!
  - Leukocyte esterase: Produced by neutrophils. Suggests pyuria.
- **Microscopic urinalysis:** used to detect cells, casts, crystals, and bacteria.
  - Cells: squamous epithelial cells suggest contamination; transitional epithelial cells are normal; renal tubule cells suggest kidney pathology.
  - Casts: can help localize disease to specific part of GU tract
  - Crystals: calcium oxalate, uric acid, triple phosphate (often seen in alkaline urine, UTI), cysteine
  - Bacteria: 5 bacteria per HPF equates to about 100,000 CFU/mL

Specimen collection: mid-stream and clean-catch; no proven benefit to external cleansing.

Urinary Tract Infections: Outpatient Management

- The most common form of UTI is **acute uncomplicated cystitis**:
  - Symptoms: dysuria, urinary frequency or urgency in healthy, non-pregnant female patients
  - Physical exam: usually normal, but may see suprapubic tenderness in 10-20%.
  - Diagnosis: defined as symptoms above + positive urine culture ($\geq 10^3$ CFU/mL of bacteria).
    - Note, however, that empiric treatment *without* urine culture results is the mainstay of management in the outpatient setting.

Regimens in Acute Uncomplicated Cystitis:	**Dosing:**
First Line Therapy:	
• Trimethoprim-Sulfamethoxazole	160/800 mg BID x 3 days (Avoid if resistance prevalence >20% or if used to treat UTI in last 3 months)
• Nitrofurantoin	100 mg BID x 5 days
• Fosfomycin	3 g single dose
Other options:	
• Fluoroquinolones	Increasing *E. coli* resistance may hinder empiric use. Usually reserved for more invasive infections and non-GU disease. • Ciprofloxacin 250 mg BID x 3 days • Ciprofloxacin, extended release 500 mg daily x 3 days • Levofloxacin 250 mg daily x 3 days • Oflaxacin 200 mg daily x 3 days or 400-mg

	single dose
• β-lactams	Increasing *E. coli* resistance. • Amoxicillin-clavulanate 500/125 mg BID x 7 days • Cefdinir 300 mg BID x 10 days • Cefpodoxime 100 mg BID x 7 days

At IMA:

- Order: urine-dip and urinalysis for patients with urinary symptoms
  - If there are WBCs, +nitrite, +leuk esterase→ treat empirically
  - +Nitrite is more useful than +leuk esterase
  - If both nitrite and leuk esterase are negative, the chance of UTI is reduced by 40-60%
- Order urine culture if history of recurrent UTIs or if no improvement with empiric treatment
- Patient-initiated therapy: women with history of UTI are given a prescription with instructions to initiate treatment at symptom onset

References:

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12. Low Back Pain

By Ilana Ramer Bass

Overview

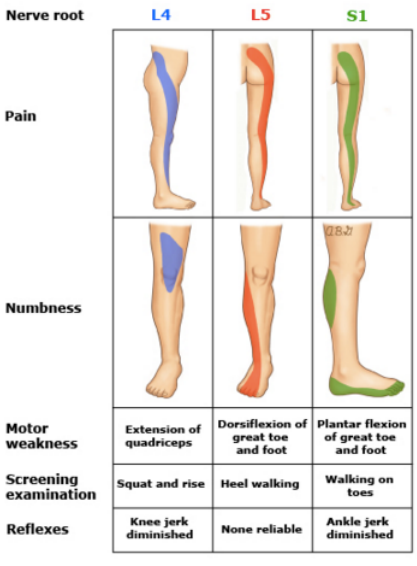
- Very common, ~80% of adults will have low back pain at some time in their lives
  - Vast majority of cases will be non-specific low back pain
  - Usually lasts 6-8 weeks and will have at least 1 recurrence
  - Rarely a harbinger of serious medical illness
- Risk factors:
  - Occupation/strenuous work, obesity, age >30, female gender, physical inactivity, arthritis, stress, depression, smoking
- Acuity
  - Acute <4 weeks
  - Subacute 4-12 weeks
  - Chronic >12 weeks
- Differential diagnosis:

Etiologies	Findings
Musculoskeletal	History of an inciting event/trauma
Spinal Stenosis (bony overgrowth)	Bilateral radiation; worse with ambulation, better with sitting or leaning forward
Herniated disc	Unilateral radiation
Osteoarthritis	Older age, associated with activity and relieved by rest
Metastatic disease	Hx of cancer- breast, lung, thyroid, kidney, prostate
Spinal epidural abscess	Fever, malaise, hx of IVDU or spinal manipulation (ex: epidural)
Vertebral osteomyelitis	Post-procedural, immunocompromise, IVDU
Vertebral compression fracture	Acute onset localized back pain; osteoporosis
Outside the back: pyelonephritis, pancreatitis, nephrolithiasis, Herpes Zoster	

*_Sciatica_= a sharp or burning pain radiating down from the buttock along the course of the sciatic nerve. Most is attributable to radiculopathy at L5 or S1 level; pain travels posterior or lateral aspect of the leg usually to the foot or ankle.

** Radicular pain is caused by damage to the spinal nerve root.

- **RED FLAGS** for cord compression/cauda equine syndrome:
  - Bladder/bowel dysfunction, saddle anesthesia, weakness, numbness, B-symptoms (fever, weight loss, night sweats), history of cancer, IVDU
- Physical exam:
  - Inspection: rash, asymmetry, deformity
  - Palpation: point tenderness vs. paraspinal muscle tenderness
  - Range of motion, sensation, strength, reflexes
  - Special maneuvers:
    - Straight leg raise (sen 90%, spec 30%)—passively raise leg with ankle dorsiflexed; if elicits pain at 30-60 degree angle then positive
- Immediate Imaging with MRI:
  - Major risk factor for cancer
  - Recent infection
  - Signs of cauda equina syndrome
  - Severe/progressive neuro deficits
    - If concerned for malignancy or infection but suspicion is not high; can get x-ray and ESR



- Treatment:
    - High dose NSAIDs
        - Naproxen 500mg q12hrs or ibuprofen 400-600mg q6hrs standing x7-10 days
            - If cannot tolerate, give high dose tylenol
    - Muscle relaxants (flexeril, tizanidine)—advise patient to take at bedtime as can cause drowsiness
    - Gabapentin/pregabalin if radicular pain
    - Physical therapy
    - NO bed rest!!

Back Pain at IMA

- Patient education is important—provide information as to the cause of their back pain, the favorable prognosis and minimal value of diagnostic testing and advise them to stay active!
    - 70-90% improve within 7 weeks
    - Recurrences are common (50% within 6 months) but recurrences also have a favorable prognosis
- Predictors of disabling chronic low back pain:
    - Maladaptive pain coping behaviors (ex: avoid activity out of fear), functional impairment, poor general health status, presence of psychiatric comorbidities or nonorganic signs
- Referral to “Physical Therapy”
    - Will automatically print a prescription and a list of physical therapy places/contact information
- Provide exercises using the “References” tab and forward them to your patient instructions so that they print with the AVS

13. Gout

By Ilana Ramer Bass

Overview:

Gout = monosodium urate crystal depositon disease

- Caused by extracellular fluid urate saturation which exceeds solubility and the deposits in the joint spaces
- Natural history:
  - Acute gouty arthritis
  - Intercritical (or interval) gout (asymptomatic)
    - 62% have a 2nd attack within the 1st year; 78% within 2 years, 93% within 10 years
  - Chronic articular and tophaceous gout
- Acute Gouty Arthritis
  - First presentation is usually monarticular
  - 80% of initial attacks involve the lower extremity, most often the base of the great toe (first MTP joint) called podagra
    - Severe pain, redness, warmth, swelling and disability
    - Onset more often at night—low cortisol levels
  - Provoking factors:
    - Trauma, surgery, starvation, fatty foods, dehydration, any drugs that raise or lower serum urate concentrations (allopurinol, thiazide or loop diuretics, ASA), alcohol consumption, ingestion of meat/seafood
- Chronic tophaceous gout
  - Collections of solid urate accompanied by chronic inflammatory and often destructive changes in the surrounding connective tissue

Gout at IMA

- If suspect gout, must confirm diagnosis with arthrocentesis and analysis of synovial fluid
- Refer to “MSK clinic” or “Rheumatology” for joint aspiration
  - They will send cell count, differential, gram stain, culture, and look under polarizing light microscopy for crystals
  - Must rule out: septic arthritis, trauma, pseudogout (calcium pyrophosphate depositon)
- Treatment algorithm:
  - Any contraindication to NSAIDs (AKI, CKD, CHF, PUD, on A/C)?
    - → If not, then treat with NSAIDs- naproxen 500mg q12hrs or indomethacin 50mg q8hrs
    - → If yes, then treat with colchicine- not to exceed 1.8mg on the first day (can be taken 0.6mg three times that day or first dose 1.2mg followed by 0.6mg an hour later)
      - → If colchicine contraindicated (severe renal or liver disease) and only 1 joint involved, consider intra-articular glucocorticoids
        - → If >2 joints involved, consider oral glucocorticoids (prednisone 30-40mg daily until resolution begins, then taper over 7-10 days)
  - Start allopurinol AFTER the acute gouty attack
  - Avoid thiazide/loop diuretics for blood pressure control in these patients

14. Depression

By Ilana Ramer Bass

Overview

Screening:

- **PHQ-2** for every patient once a year
  - (1) During the last month, have you often been bothered by feeling down, depressed or hopeless? (yes/no)
  - (2) During the last month, have you often been bothered by having little interest or pleasure in doing things? (yes/no)

Diagnosis:

- Administer the **PHQ-9** if screen positive with PHQ-2
  - Both 89% sensitive and 78% specific
  - Consider a depressive disorder if score >5
  - Major Depressive Disorder—5 out of 9 for > 2 weeks; must include question #1 or #2

PATIENT HEALTH QUESTIONNAIRE (PHQ-9)

NAME: _____ DATE: _____

Over the *last 2 weeks*, how often have you been bothered by any of the following problems? *(use "✓" to indicate your answer)*	Not at all	Several days	More than half the days	Nearly every day
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless	0	1	2	3
3. Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself—or that you are a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed. Or the opposite—being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
9. Thoughts that you would be better off dead, or of hurting yourself in some way	0	1	2	3
		add columns:	+	+
		(Healthcare professional: For interpretation of TOTAL, please refer to accompanying scoring card.)	**TOTAL:**	

10. If you checked off *any* problems, how *difficult* have these problems made it for you to do your work, take care of things at home, or get along with other people?

- **Not difficult at all** _____
- **Somewhat difficult** _____
- **Very difficult** _____
- **Extremely difficult** _____

- Also must consider:
  - Bipolar disease, substance abuse, seasonal affective disorder, adjustment disorder, borderline personality, bereavement, post-partum depression
  - Medications (steroids, beta blockers, interferon), dementia, hypothyroidism, pancreatic cancer, Parkinson's disease, hypercalcemia

Treatment:

- Psychotherapy vs. pharmacotherapy

"**+**" signifies that, on average, the medication is more likely to cause the given side-effect

Medication	Usual dose range	Drowsy/ sedating	Insomnia/ activating	Weight gain	Sexual side effects	GI upset	P-450 inhibition	Notes
SSRIs								
escitalopram *Lexapro*	10-20mg qd	0	1+	1+	1+	1+	1+	Tolerated Efficacy
sertraline *Zoloft*	50-200mg qd	0	2+	1+	2+	2+	1+	Tolerated Efficacy
fluoxetine *Prozac*	20-80mg qd	0	2+	0	2+	3+	2+	Wt neutral, no w/drawal
citalopram *Celexa>*	10-40mg qd	0	1+	1+	1+	1+	1+	QT:ECG Monitor
paroxetine *Paxil*	20-60mg qd	2+	1+	1+	3+	2+	2+	SE ++, + w/drawal
SNRIs								
venlafaxine *Effexor XR*†	75-375mg qd	0	2+	0	1+	2+	1+	Tx hot flash, w/drawal
duloxetine *Cymbalta*‡	30-60mg bid	0	2+	0	1+	2+	2+	Tx pain fibromyalgia, np
DNRI								
bupropion *Wellbutrin XL*§	150-450mg qd	0	2+	-1∫	0	1+	1+	-Smoking +seizures mild wt loss
NSSA								
mirtazepine *Remeron*)	15-45mg qhs	4+	0	3+	0/1+	0	0/1+	Sleep and eat

> may prolong QT – max dose 40mg – check ECG prior to start and upon each titration.
† may raise blood pressure
‡indicated for chronic pain
§lowers seizure threshold
) paradoxical effect of increased sedation at lower doses
∫ bupropion is associated with mild weight loss, on average

AT IMA

- PHQ-2 is administered by the MA before the encounter → if positive, administer the PHQ-9 form
  - Calculate the score and enter it into Epic by going to "flowsheets"→ search "PHQ-9" and enter their score for each question (0-3)→ press "file" to save
  - Sometimes the patient screens positive but does not get the PHQ-9 form; in that case, you will see a BPA notification to proceed to PHQ-9
- Options for mental health referral—*there are many options and this is always changing so confirm referral pathways using the IMA app***
  - (1) IMA Eval—consult "IMA Mental Health Evaluation"
    - Wednesday mornings; 2nd year residents precepted by Dr. Small and Dr. Peccoralo
    - For further evaluation and medical management of patients with depression and anxiety
  - (2) Depression Care Program: consult "IMA behavioral health"
    - Short term (~6 month) talk therapy with SWs Samantha Herrera and Lizbeth Valencia
    - Must have PHQ-9 >9 and Medicaid insurance

- (3) IMA psych
  - For patients with bipolar disorder, personality disorder, ADD/ADHD, OCD, refractory or severe depression, PTSD, severe anxiety with functional impairment, SI/HI
- (4) External referral
  - IMA SW Triage can assists with identifying resources and making appointments
- (5) If active SI/HI, consider sending patient to psych ED—*follow directions in the app*

Social Determinants of Health:

- Risk factors for depression:
  - Single/divorced, substance use, lack of support system, adverse childhood experiences/trauma, chronic illnesses, high frequency utilizers
- Risk factors for suicide:
  - Isolation, substance abuse, new diagnosis, old white men, young adults, weapon owners, socioeconomic status, unemployment, history of psychiatric illness
- Protective factors:
  - Social support, religion/faith, caregiver role, forward-thinking

Community Resources: see app for further details

- Institute for Family Health – 212-423-4200→ can do long-term counseling
- Union Settlement – 212-828-6144
- Metropolitan Hospital – 212-423-6645→ fastest way to get psychiatric evaluation but can be hard to get information/records from them

Population Health

- Depression is the most common psychiatric disorder and the most common mental health condition among patients seen in primary care.
- Screening is important because depression can be difficult to detect; untreated depression is associated with decreased quality of life, increased mortality and increased economic burden.

15. Anxiety

By Ilana Ramer Bass

Overview:

- **Generalized Anxiety Disorder (DSM-5):**
  - Excessive anxiety and worry (apprehensive expectation), occurring more days than not for at least six months, about a number of events or activities (such as work or school performance)
  - The individual finds it difficult to control the worry.
  - The anxiety and worry are associated with three (or more) of the following six symptoms (with at least some symptoms having been present for more days than not for the past six months):
    - 1. Restlessness or feeling keyed up or on edge
    - 2. Being easily fatigued
    - 3. Difficulty concentrating or mind going blank
    - 4. Irritability
    - 5. Muscle tension
    - 6. Sleep disturbance (difficulty falling or staying asleep, or restless, unsatisfying sleep)
  - The anxiety, worry, or physical symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.
  - The disturbance is not attributable to the physiological effects of a substance (eg, a drug of abuse, a medication) or another medical condition (eg, hyperthyroidism).
  - The disturbance is not better explained by another mental disorder
- Consider alternate vs. concurrent diagnosis:
  - Panic disorder—panic attacks characterized by episodes of intense anxiety, diaphoresis, dyspnea
  - Social phobia
  - Obsessive Compulsive Disorder
  - Post traumatic Stress Disorder
  - Depression
  - Hypochondriasis—worried principally about medically unexplained symptoms
- Risk factors:
  - Female sex, poverty, recent adverse life events, chronic physical illness, chronic mental disorder, parental loss or separation, low affective support during childhood, history of mental problems in parents

AT IMA

- Screen with GAD-7—positive score is >8 points
  - 5-9- mild
  - 10-14- moderate
  - 15-21- severe; treatment warranted

Over the past two weeks, how often have you been bothered by the following problems?

	Not at all	*Several days*	*More than one half of the days*	*Nearly every day*
Feeling nervous, anxious, or on edge	0	1	2	3
Being unable to stop or control worrying	0	1	2	3
Total GAD-2 score		_____ +	_____ +	_____
Worrying too much about different things	0	1	2	3
Having trouble relaxing	0	1	2	3
Being so restless that it is hard to sit still	0	1	2	3
Becoming easily annoyed or irritable	0	1	2	3
Feeling afraid, as if something awful might happen	0	1	2	3
Total GAD-7 score		_____ +	_____ +	_____

Interpretation: a positive GAD-2 result is a score of at least 3 points; a positive GAD-7 result is a score of at least 8 points.

Total score (points)	*LR+*	*LR–*	*PPV (%)**	*NPV (%)**
Generalized anxiety disorder				
GAD-2 ≥ 3	5.1	0.17	22	78
GAD-7 ≥ 8	3.8	0.11	29	71
Panic disorder				
GAD-2 ≥ 3	4.0	0.30	23	77
GAD-7 ≥ 8	3.3	0.24	29	71

GAD-2 = two-item Generalized Anxiety Disorder scale; GAD-7 = seven-item Generalized Anxiety Disorder scale; LR+ = positive likelihood ratio; LR– = negative likelihood ratio; NPV = negative predictive value; PPV = positive predictive value.

**—Assumes pretest probability of 20 percent.*

- History: ask about substance abuse, medical history, family history of psychiatric illness, social history (history of sexual/physical/emotional abuse); consider side effects from medications
- Labs to rule out organic causes: TSH, CBC, BMP, EKG or U.tox
- Treatment:
    - Cognitive-behavioral therapy
    - 1st line pharmacotherapy: SSRIs and SNRIs (see chart under section 14 Depression)
    - Other: buspirone, pregabalin
    - Benzodiazepines are effective however risk of dependence and tolerance
    - Referral to IMA Eval for further evaluation of anxiety or to optimize medications (ex: taper off benzos, up-titrate SSRI)

16. Alcohol and Drug Screening — By ilana Ramer Bass

Overview:

- Unhealthy alcohol and other drug use are among the most common causes of preventable death and often goes unrecognized
- Goal: screen all adult primary care patients annually to identify individuals with unhealthy use and to provide a brief intervention
  - = SBIRT (**S**creen, **B**rief **I**ntervention, **R**eferral to **T**reatment)
- Recommended limits of alcohol use:
  - For healthy men up to age 65: no more than 4 drinks/day AND no more than 14 drinks/week
  - For healthy women, and for men over age 65: no more than 3 drinks/day and no more than 7 drinks/week
- Tools:
  - AUDIT-C: brief 3 question alcohol screen that can help identify persons who are hazardous drinkers or have active alcohol use disorders
  - DAST-10: 10 yes/no items; has some utility in assessing severity

Alcohol/Substance Abuse Screening at IMA

1st: Single-Item Screening Questionnaire is administered by MAs:

- Do you sometimes drink beer, wine, or other alcoholic beverages:
  - If yes, how many times in the past year have you had 4 (for women) or 5 (for men) drinks in a day?
- How many times in the past year have you used an illegal drug or used a prescription medication for non-medical reasons?

2nd: If positive, patient is handed the Audit-C (for alcohol) or the DAST-10 (for drug use)

- Intervene based on risk:

	AUDIT-C	DAST-10	Intervention
Low Risk	0-2 women, 0-3 men	0-2	Update alcohol history
Moderate Risk	3-7 women, 4-7 men	3-5	Brief intervention using .alcoholdruginterventiondotphrase
High Risk	8+	6+	Refer to SW and provide warm handoff for more extensive substance abuse treatment

Components of the Brief Intervention:

- Feedback on the patient's personal risk or impairment including physical or lab findings
- Open-ended question asking what the patient thinks of the feedback
- Explain why change is important
- Provide clear advice to change (example: abstinence vs. cutting down vs. drinking in less risky situations)
- Generate goals and discuss strategies to achieve them

Important dotphrases:

- Educational:
  - ,alcoholeducation; .marijuanaeducation; .cocaineeducation; .opioideducation; .otherdrugeducation
- Goals:
  - .alcoholgoalworksheet; .druggoalsworksheet

Community Resources (see app for contact info):

- Mount Sinai West Addiction Institute of NY
- Mount Sinai Beth Israel OTP
- Mount Sinai St. Luke's Treatment Center
- Lower Eastside Service Center (LESC)

17. Smoking Cessation — By Ilana Ramer Bass

Overview:

- Smoking is the leading preventable cause of mortality
- 2/3rd of smokers say they want to quit and 50% of smokers report attempting to quit within the past year; however, only 3-6% of smokers who make an unaided quit attempt at still abstinent 1 year later
- Primary barrier to quitting is addictiveness of nicotine and withdrawal syndrome
    - Symptoms peak in first 3 days of cessation and subside over the next 3-4 weeks
    - Symptoms include increased appetite, weight gain, changes in mood, insomnia, irritability, anxiety, difficulty concentrating, restlessness

5 A's Algorithm:

- Ask- must ask all patients if they have ever smoked cigarettes (and ask about 2nd hand smoke!)
    - If yes→ frequency of use, products used (cigars, hookahs, e-cigs), degree of nicotine dependence (ex: how soon after waking up?), history of previous quit attempts, readiness to quit
- Advise
    - Clear evidence that brief clinician advice to quit (< 5 minutes) at each encounter can increase smoking abstinence rates
- Assess readiness to change
    - Pre-contemplation (not ready to quit)
    - Contemplation (considering a quit attempt)
    - Preparation (actively planning a quit attempt)
    - Action (actively involved in a quit attempt)
    - Maintenance (achieved smoking cessation)
- Assist
    - Set a quit date and ensure access to appropriate resources
    - Have a treatment plan that combines behavioral and pharmacologic treatments
        - (1) Nicotine withdrawal symptoms→ nicotine replacement pharmacotherapy
        - (2) Situations where they usually smoke (ex: with their morning coffee, end of a meal)→ counseling
- Arrange follow-up within 1 week of the patient's quit date to provide reinforcement

Pharmacologic Options:

- **Nicotine replacement therapy (NRT)—**combination NRT is most effective
    - Patch is used to control baseline nicotine withdrawal symptoms
        - Initial dose of patch depends on # of cigarettes smoked and then gradually tapered as nicotine withdrawal symptoms subside
    - Add a short-acting form (lozenge/gum) to control cravings on an as-needed basis
        - *"Chew and park"* is recommended—chew until the nicotine taste appears, then park in the buccal mucosa until taste disappears → chew more and repeat for 30 minutes until all the nicotine has been released
- **Varenicline (Chantix)**
    - Partial agonist at the alpha-4-beta-2 subunit of the nicotinic acetylcholine receptor which works to (1) partially stimulate the receptor and decrease symptoms of nicotine withdrawal and (2) blocks nicotine from tobacco smoke from binding to the receptor thereby decreasing the rewarding aspects of smoking
    - Advise patients to quit 1 week after starting varenicline
    - Dose: 0.5mg daily x3 days→ 0.5mg BID x 4 days→ 1mg BID x 12 week course
- **Bupropion (Zyban)-** enhances CNS noradrenergic and dopaminergic release
    - Also takes 5-7 days to reach steady state so advise patient to quit 1 week after starting
    - Dose: 150mg/day x 3 days then 150mg BID thereafter x12 weeks

Community Resources:

- 1-800-QUIT-NOW
- Acupuncture

Population Health:

- In the US, insurance plans are required to cover tobacco-cessation interventions including behavioral counseling and medications approved by the FDA

18. Asthma — By Ilana Ramer Bass

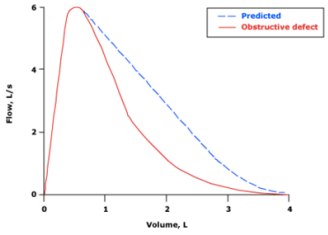
Overview:

Asthma= chronic inflammatory disorder of the airways characterized by bronchial hyper-responsiveness, or the tendency of airways to narrow excessively in response to a variety of stimuli

- Typically diagnosed at a young age (75% before age 7) but can develop at any age
- History— recurring, episodic symptoms of dyspnea, wheezing, cough and presence of triggers
  - Common triggers: exercise, cold air, allergens (pollen, trees, grass, weeds), pets, mites, molds, cockroaches, rodents, moisture/dampness
- Exam findings: wheezing; can also look for nasal polyps, skin changes consistent with atopic dermatitis

Evaluation:

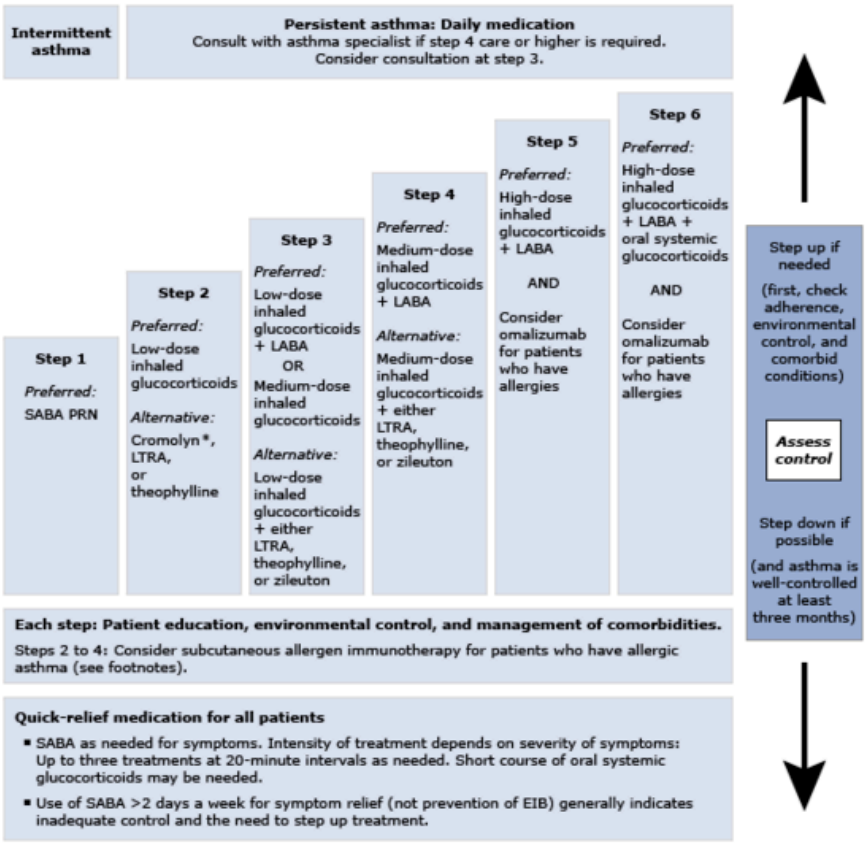
- History or presence of respiratory symptoms that are episodic + documented variable expiratory airflow obstruction
- **Pulmonary Function Testing—used to:**
  - Calculate FEV1/FVC ratio
    - Restrictive- normal ratio and FVC <80% predicted
    - Obstruction- reduced ratio (0.70) or scooped/concave appearance to expiratory portion of flow-volume loop
  - Assess reversibility of obstruction with administration of a bronchodilator
  - Characterize severity of obstruction (% of normal predicted value)
  - If normal baseline airflow, can use bronchoprovication testing (methacholine) to stimulate bronchoconstriction and prove hyperresponsiveness



- **Determine Severity:**
  - *Intermittent*= <2 days/week and <2x/month nighttime awakenings
    - Use SABA < 2 days/week
  - *Persistent*
    - Mild: >2 days/week but not daily and 3-4x/month nighttime awakenings
    - Moderate: daily symptoms and >1x/week nighttime awakenings but not nightly
    - Severe: throughout the day, nightly awakenings, need to use SABA several times/day

Management:

- 4 components:
  - Routine monitoring of symptoms and lung function
    - Monitor with peak expiratory flow (PEF)
  - Patient education
    - Must understand how to use inhalers properly!!
  - Controlling environmental triggers
  - Pharmacologic therapy
- Step Therapy:



**SABA= albuterol
**ICS= beclomethasone, budesonide, flunisolide, fluticasone, triamcinolone acetonide, mometasone
**Combination ICS + LABA= advair (fluticasone/salmeterol) or symbicort (budesonide/fomoterol)
**LTRA= leukotriene receptor atagonists such as montelukast (singulair)

Asthma at IMA:

- Suspect asthma? Order: "Respiratory Flow Volume Loop" and insert smartphrase ".spirometry" in the comments section and direct patient to the MA
- If you need full PFTs, must order: "Pulmonary Function test" and specific which components (spriometry, lung volumes, DLCO, with/without bronchodilator) and provide patient with phone number to schedule
- When to refer:
    - Pulmonology if diagnosis is uncertain, asthma is difficult to control, or frequent exacerbations/hospitalizations
    - Allergy/Immunology if allergic triggers need further evaluation

Social Determinants of Health:

- Higher rates of asthma in low-income neighborhoods/public housing due to poor air quality
- East Harlem is ranked #1 in NYC for asthma ER visits for children (71.6 per 1,000 children)

19. Sinusitis/Pharyngitis

By Anita Geevarghese

Overview:

- **Acute Viral Rhinosinusitis:**
  - Most common organisms: *Rhinovirus, parainfluenza virus, coronavirus*
  - Symptoms usually resolve or begin to improve after 7-10 days
  - Symptoms peak in severity between days 3-6
  - Usually no fevers
  - Management:
    - No treatments have been shown to shorten clinical course
    - Supportive care
      - NSAIDs, acetaminophen
      - Saline irrigation
      - Oral decongestants (pseudoephedrine), intranasal decongestants (afrin)
- **Acute Bacterial Rhinosinusitis:**
  - Bacterial etiology accounts for only 2% of cases of rhinosinusitis
  - Most common organisms: *Strep pneumo, H. flu, Moraxella*
  - Diagnosis with IDSA Criteria:
    - Symptoms more than 10 days without improvement, OR
    - Onset of severe symptoms or signs of high fever and purulent discharge/facial pain for at least 3 consecutive days at beginning of illness
    - Symptoms of typical viral illness that are slowly improving but then worsen again with more severe symptoms after 5-7 days
  - Treatment
    - Patients with stable symptoms can be observed for additional 7-10 days if low risk for complications without giving antibiotics
    - Antibiotics result in small reduction in symptom burden and duration, but at the cost of increased adverse events (often minor, such as GI upset from antibiotics)
    - Recommend supportive care
    - If decision made to give antibiotics:
      - First-line augmentin 875/125mg BID for 5-7 days

Antibiotics for ABRS: NNT 10-15, NNH 8 and ~80% resolve on their own

- **Pharyngitis**
  - Differential of etiologies:
    - Bacterial: Group A Strep, Group C/Group G Strep, less common are Chlamydia, Mycoplasma, Diphtheria (tightly adherent grey membranes), Fusobacterium, Neisseria gonorrhea
    - Viral etiologies (> 50% of cases): rhinovirus, adenovirus, influenza, coxsackie, coronavirus, HSV-1
    - Infectious mononucleosis (EBV, CMV)
    - Primary HIV: present with fever, rash, adenopathy, fatigue, myalgias
    - Epiglottitis: sore throat, fever, odynophagia, fever, muffled voice, drooling, stridor
    - Peritonsillar abscess: severe sore throat, fever, “hot potato” voice, pooling of saliva, trismus (spasm of jaw muscles)
    - Submandibular infections (Ludwig’s angina): fever, chills, mouth pain, stiff neck, drooling, dysphagia
    - GERD, post-nasal drip, thyroiditis foreign body
  - **Centor Criteria:** used to decide on rapid strep testing/throat culture, estimates probability that pharyngitis is streptococcal
    - **(1) Age**
    - **(2) Fever >38 C**
    - **(3) Tonsillar exudate**
    - **(4) Tender anterior cervical LAD**
    - **(5) Absence of cough**
      - If score -1, 0, 1: no testing, no empiric treatment
      - If score 2-5: rapid strep testing and treat if positive

Rapid Ag Detection Test sens 70-90% and spec 90% therefore in most cases you do not need to obtain cultures

  - Why treat Strep pharyngitis?
    - Reduce severity and duration of symptoms
    - Reduce risk of complications:
      - Abscess, otitis media, sinusitis

            - Scarlet fever
            - Glomerulonephritis
            - Rheumatic Fever
            - Strep Toxic Shock Syndrome
        - Reduce risk of transmission by decreasing infectivity
- Treatment:
    - First line: PO Penicillin V: 500mg BID or TID for 10 days
    - Alternates: amoxicillin 500mg BID x 10 days
    - If penicilin allergy: cephalexin, azithromycin, clindamycin
    - No longer contagious after 24hrs of antibiotics

20. Upper Respiratory Infections — By Andy Coyle

Overview

- Main role is TRIAGE: Differentiating bacterial syndromes (Strep pharyngitis, Pneumonia, Sinusitis) vs. Influenza vs. "Viral URI" ("the common cold")
- Illness Scripts for common items in differential:
    - Strep Pharyngitis: Fever, pain worst near onset of symptoms, lack of cough. On exam, tonsillar erythema/exudates and tender anterior cervical lymphadenopathy
    - Bacterial Pneumonia: Fever, productive cough. Abnormal pulmonary examination.
    - Bacterial Sinusitis: Fevers, sinus pain/pressure, purulent nasal discharge
    - Allergies: History of similar symptoms in preceding years, history of atopy or other allergies, watery nasal discharge with post-nasal drip → Cough.

Non-Influenza Viral Upper Respiratory Infection (= Viral URI = Common Cold)

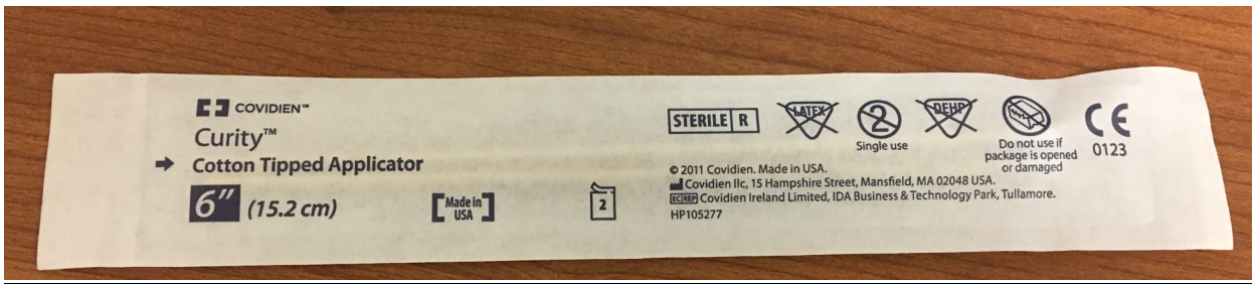
- > 200 viruses can cause the common cold
- Symptoms: sore throat, cough, mild fatigue, runny nose with clear nasal discharge. Fevers are unusual. Examination is typically normal or with minimal abnormalities.
- Management: Nearly all therapies for viral URIs have limited efficacy and evidence, so goal is often to **target most bothersome symptoms with 1-2 medications**. By symptom, options include:
    - PAIN: Acetaminophen, NSAIDs
    - RUNNY NOSE: Antihistamines, Nasal Saline, Intranasal Ipratropium, Decongestants (pseudoephedrine, phenylephrine)
    - COUGH: Robitussin (Dextromethorphan-Guaifenesin), Benzonatate(Tessalon),
- Other therapies have generally not proven effective. Vitamin C does not reduce duration of symptoms. Zinc has some benefit in reducing duration of symptoms but has been associated with anosmia (especially the intranasal formulation) so is often avoided.

Influenza

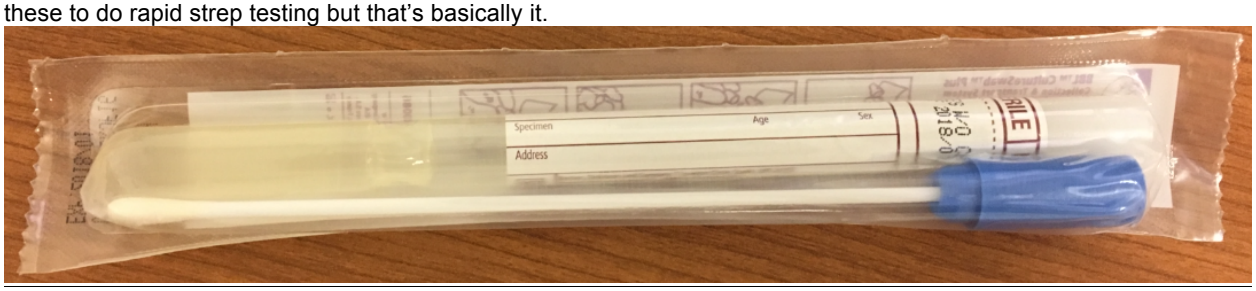
- Influenza: Fever, productive cough, myalgias, significant fatigue.
- TESTING FOR INFLUENZA:
    - During influenza season, testing should be obtained for patients who have consistent symptoms and are: 1) Immunocompetent patients at high-risk for influenza complications (e.g. significant COPD, unstable CAD), 2) Immunocompromised patients, OR 3) Hospitalized patients
    - **OF NOTE**, immunocompetent patients who are not at high risk for complications DO NOT NEED TO BE TESTED. Decisions re: management should be made based on clinical judgement alone. This is because the rapid test has limited sensitivity and viral culture is too slow to impact antiviral medication decisions.
- Management
    - Supportive care and therapies as for other viral URIs (as above)
- LOW-RISK patients who present within 48 hours of symptom onset with strongly suggestive symptoms can be treated with oseltamivir (Tamiflu) to reduce symptom duration. Oseltamivir 75mg BID x 5 days is standard.
- HIGH-RISK patients are generally tested for influenza. IF test is + OR if your pre-test probability of influenza is very high, would treat with Oseltamivir (75 mg BID x 5 days) regardless of symptom onset (e.g. even if > 48 hours after onset).

VIRAL URI / INFLUENZA AT IMA

Relatively rare that we need to swab for Influenza in IMA (generally will choose to treat or not based on symptom duration and severity), but each room has 3 different types of swabs:



The "Cotton Tipped Applicator" are the general swabs and not used for anything sent out. You can use these to do rapid strep testing but that's basically it.



These blue top swabs are the culture swabs that are sent to the lab for anything bacterial. We use these for Gonorrhea/Chlamydia (on speculum exams), wound cultures, etc. You might use these for a Respiratory Infection if testing for a non-strep bacterial pharyngitis (such as gonoccocal pharyngitis) or you were extremely suspicious for strep pharyngitis but had a negative rapid test (and thus want to send formal culture).

The last swab in the drawer will be the viral culture swab used for influenza. They seem to look different every year, but you can tell them apart as they are flexible (you'd have a hard time getting the stiff culture swab down someone's nose to the nasopharynx!).

Population health/Systems-based practice:

- All patients should be offered vaccinations. The vaccine becomes available at IMA in early September and is given through the end of Influenza season (mid-to-late spring depending on CDC guidance).
- If patients decline, mark it DECLINED in the health maintenance section→*it's one of the only metrics that you get credit for just asking – either giving the vaccine or noting that the patient declined will get you credit for you influenza vaccination percentage on the care gap reports!*

21. Headaches — by Andy Coyle

Overview:

For PCPs in the outpatient setting, goal is to TRIAGE and treat low-risk headache syndromes

- OUR TASK:
  - 1) Quickly rule out unusual primary headache syndromes AND concerning secondary headaches
  - 2) Differentiate Tension-Type and Migraine Headaches
- Causes of primary headaches:
  - Most common: tension-type and migraine
  - Cluster headaches
  - Trigeminal neuralgia
  - Hemicrania continua
  - Primary stabling headache
  - Exertional headache
- Causes of secondary headaches—to consider briefly
  - Sinusitis
  - Cerebral Hemorrhage (Subdural, SAH)
  - Temporal Arteritis
  - CNS Malignancy
  - Meningitis
  - Glaucoma
  - Hypertensive Emergency
- Ruling out concerning headaches: RED FLAG SIGNS:
  - New headache in older (age > 50) adults
  - Head trauma
  - Previous headache history but with significant change in frequency/severity
  - Systemic illnesses (immunocompromised, malignancy)
  - Neurologic abnormalities on examination

Tension-Type vs. Migraine Headache

- 3 most important features that distinguish migraines from tension-type headaches:
  - 1) Disabling pain (e.g. patient will leave work, stop their activities; may go lie down in dark room) 2) Nausea, and/or 3) Photophobia
- TENSION-TYPE HEADACHES:
  - Generally lack associated symptoms
  - Abortive Treatment:
    - Acetaminophen (1000mg) vs. NSAIDs first-line (ibuprofen 800mg)
    - Excedrin (Acetaminophen + ASA + Caffeine) can be effective as second-line therapy
  - Prophylactic Treatment: TCAs can be effective
- MIGRAINE HEADACHES:
  - Abortive Treatment—*early aggressive treatment!*
    - Triptans for all but the mildest migraines
  - Prophylactic Treatment: Lots of options, need to carefully consider patient characteristics and potential for side effects.
    - Anti-hypertensives such as BBs (especially propranolol)
      - Propanolol IR 40mg BID vs. ER 80mg daily to start, titrate to 160-240mg
    - Anti-depressants such as TCAs or Venlafaxine
      - Amitriptyline at 10mg qhs and titrate to 20-50mg qhs
    - Anti-convulsants such as Topiramate or Valproic Acid
      - Topiramate 25mg daily to start, titrate by 25mg/week to max 100mg BID

Triptan dosing:
PO: *50mg is better than 25mg*
Start with 50mg at onset of headache→ can repeat 2 hours later if no relief
No more than 8-10x/month

Intranasal:
20mg/spray
Max of 12x/month

HEADACHES AT IMA

- For treatment-resistant or unclear headache patterns, can refer to neurology clinic
  - If concerned, can expedite appt using the app!

- They may refer to their headache-specialty clinic after initial neurology consultation

- Sumatriptan (PO and Intranasal) is covered by all managed Medicaid and Medicare plans in NYS so is generally the go-to Triptan in clinic (no data exists suggesting one triptan is superior to another)
- Propanolol, Amitriptyline, and Topiramate are generally available from all insurance plans, so have lots of options for prophylactic therapies for migraines.
- If you want patients to track their headaches, there are a number of free and easy-to-use migraine logs available as apps→ Migraine eDiary from Pfizer

22. Dizziness

by Rui Jiang

Overview:

Common Causes of dizziness (adapted from Table 1 of Molnar and McGee)

Causes	Emergency room (n=907) (%)	Primary care, elderly (n=1708) (%)	Specialized dizziness clinic (n=125) (%)
Peripheral Vestibular Disease *	32	40	38
Orthostatic syndrome	15	10	--
Multiple sensory deficits **	--	8	13
Psychiatric	2	6	9
Infection	4	4	--
Central Neurologic (serious)	5	4	5
Drug – related	5	3	--
Cardiac (serious)	4	2	4
Unknown	22	16	9

*Peripheral vestibular disease includes benign positional vertigo, vestibular neuronitis, Meniere disease.
**Multi-sensory deficits is most common in the elderly. Commonly includes decreased vision, vestibular disease, peripheral neuropathy, poor perfusion of the brain, and orthopedic disorders.

Pathophysiology:

- *Benign positional vertigo:*
  - Caused by abnormal movement of endolymph due to detached otoliths that settles in the most dependent portion of the inner ear, usually the posterior semicircular canal.
- *Meniere disease:*
  - Poorly understood pathophysiology
  - Most commonly thought to be due to increased endolymph pressure, leading to breaks in the intralabyrinthine membranes, and subsequently vertigo.
- *Vestibular neuronitis* (also known as viral neuronitis, acute vestibulopathy, epidemic vertigo, and acute labyrinthitis)
  - Caused by spontaneous mononeuropathy of the vestibular division of the eighth cranial nerve on one side. Mostly thought to be virally mediated.

Clinical findings (adapted from Table 2 of Moinar and McGee)

Questions	Purpose	Answers: suggested diagnoses
What do you mean by "dizzy?"	Further elicit historical points without prejudicing a particular diagnosis	Vertigo, light-headedness, disequilibrium
What brings on the dizziness?	Ascertain the type	Turning my head: vertigo Rolling over in bed: vertigo Standing up: presyncope Stress: psychiatric Walking: disequilibrium or multiple sensory deficit Darkness or uneven ground: disequilibrium or multiple sensory deficit
How long does the dizziness last?	Helpful to subtyping vertigo	Less than 1 min: BPPV Hours: Meniere Days: Vestibular neuritis
What other symptoms have you had?	Helpful to evaluating for serious causes and subtyping vertigo	Other neurologic: central vestibular disease Hearing loss/tinnitus: Meniere disease Palpitations: cardiac arrhythmia Fever: infection Viral prodrome: vestibular neuronitis
Any recent toxic exposures	Helpful in evaluating for	Gas heat in cold winter months: carbon monoxide

or medication changes?	precipitating causes	poisoning Recent medication changes: untoward effect of medication

Special Maneuvers (see Appendix below)

- [a]*Dix Hallpike maneuver:* designed to reproduce **peripheral vertigo**
  - Positive test must have 3 components
    - Reproduces the patient's vertigo and nystagmus
    - Has a latency period of several seconds to a minute before the vertigo and nystagmus are provoked
    - The vertigo and nystagmus resolve in <1 minute.
- [b]*Spine roll:* designed to detect lateral or horizontal canalithiasis
- [c]*Head impulse test:* designed to **distinguish central and peripheral causes**
  - ONLY perform in patients with sustained vertigo!
  - Peripheral disease is suspected when patient has abnormal test results
- **Other tests:**
  - *Orthostatic hypotension:* check for anemia, electrolytes, and renal function
  - *Meniere:* audiometry, syphilis testing
  - *Suspected posterior fossa disease:* truncal ataxia, skew deviation, saccadic pursuit, and direction-changing nystagmus, MRI

Treatment

- *BPPV:*
  - [d]Epley maneuver: designed to move the patient through sequential positions to rid the affected canal of the abnormal otoliths, move them back into the saccule. Effective to resolve symptoms in 1 week for 74% of patients treated.
    - Indicated in patients with positional vertigo and a positive Dix-Hallpike test. Not shown to be very effective with positive spine roll.
  - Self-administered canalith repositioning can be done at home with instructions (can refer to youtube)
  - Medications: literature strongly advises against antihistamines and benzodiazepines because they increase rates of falls and urinary retention in older adults.
    - **Meclizine:** H1 antagonist. Start at 25mg, and can go up to 100mg daily in divided doses.
- *Meniere disease:*
  - Referral to audiologist or otolaryngologist as hearing loss may worsen over time.
  - Vestibular rehabilitation: physical therapy that allows patient to improve central nervous system compensation.
  - Sodium restriction
  - Thiazide diuretics
- *Vestibular neuronitis:*
  - Difficult to treat, but usually resolves with time. Steroids did not show to help significantly with symptoms.
- *Light-headedness:* usually involves mediation adjustment or treatment of underlying cause.
- *Multiple sensory deficits:* can use physical therapy, home evaluation for environment changes as well giving assistive devices to patients can help.

Prognosis:

- Follow up in 1 month. Most dizziness will resolve in 1 month.
- For BPPV, if symptoms do not resolve, can repeat Epley maneuver again.
- Must consider patient's safety! Evaluate whether their job situation is safe, and see if there is family support for the patient.

Appendix for Dizziness:

(a)

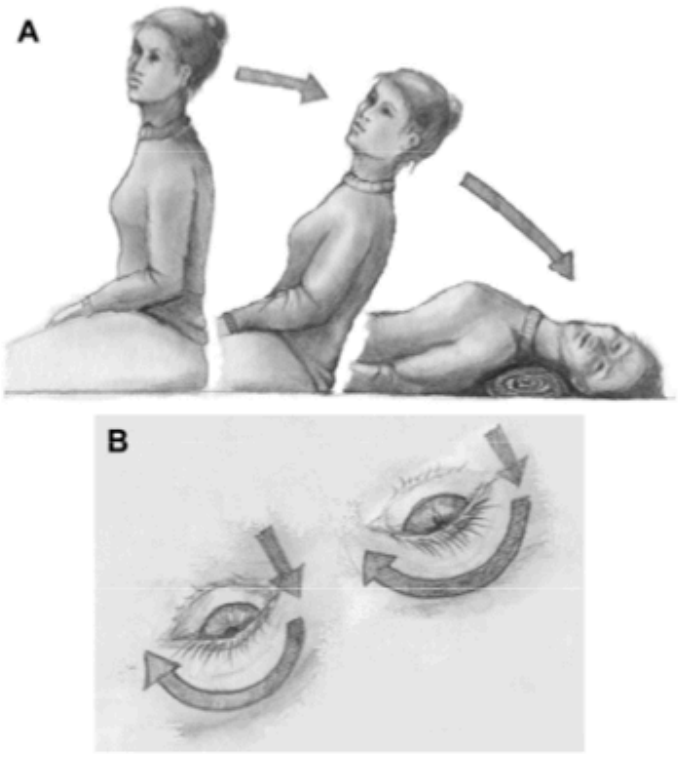


Fig. 1. (*A*, *B*) Dix-Hallpike maneuver[22] to diagnose posterior canal BPPV (85%–90% of cases of BPPV). Remember to test both sides. The undermost ear is the one being tested. To maximize the sensitivity of the test, the movement from upright to supine should take 1 to 2 seconds. It is important to warn the patient that this maneuver reproduces the vertigo and possibly even nausea, but the symptoms should resolve rapidly. Despite these symptoms, counsel the patient to keep their eyes wide open and focused on the examiner, so that the examiner may watch for nystagmus. The direction of the nystagmus (quick component) is upward and torsional, with the superior pole of the eyes rotating down toward the undermost ear. One often has to remind the patient throughout the maneuver about the importance of keeping the eyes open, because it is a natural reaction to close the eyes in response to the vertiginous symptoms. Usually, the examiner does not have the patient's head dangling off the end of the table as initially described,[23] because of the layout of many examination rooms and concerns about patient safety. Instead, the patient lies back with head fully supported by the table but the shoulders elevated on several rolled towels or a pillow, as shown in (*A*). (*Courtesy of* Jessica Stanton, MD.)

(b)

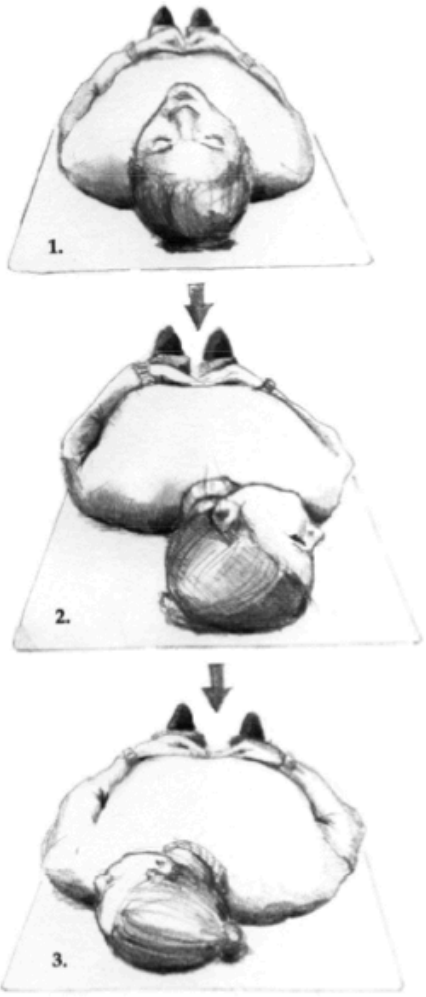


Fig. 2. The supine roll maneuver for diagnosis of lateral canal BPPV (10%–15% of cases of BPPV).[25] Remember to test both sides. The downward ear is the one being tested. (1) Lie supine facing the ceiling. (2) Quickly turn head to face right. If this provokes symptoms, the affected ear is the right ear. Return to facing the ceiling. (3) Quickly turn head to face left. If this provokes symptoms, the affected ear is the left ear. (*Courtesy of* Jessica Stanton, MD.)

(c)

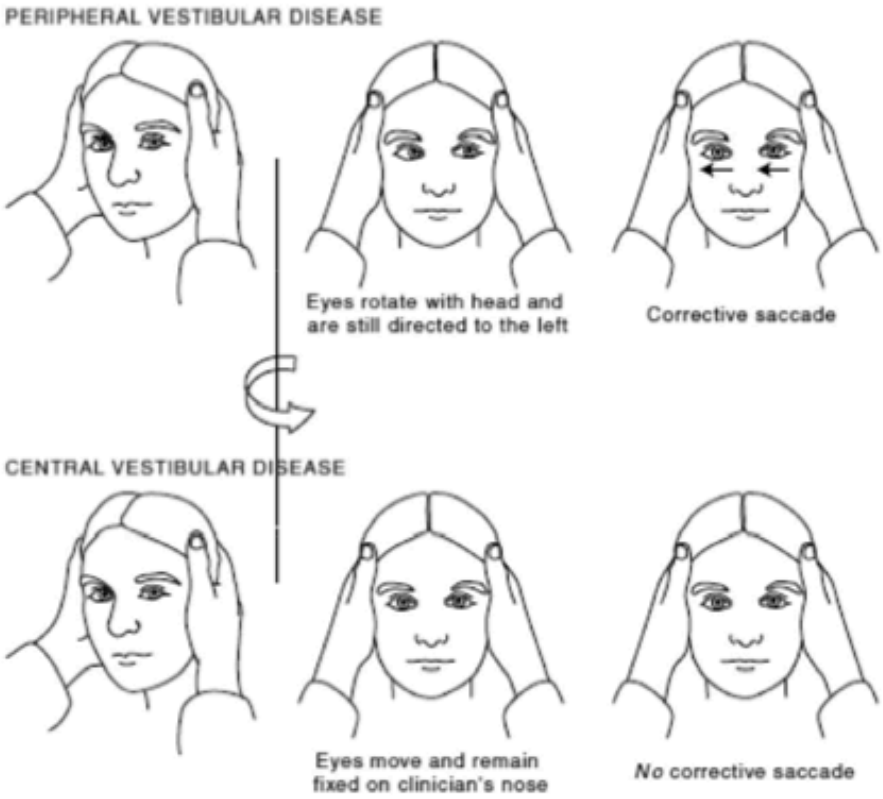


Fig. 3. The head impulse test[26] may be used to distinguish between a peripheral vestibular disease (such as vestibular neuronitis or Ménière disease[27]) and a central lesion (such as stroke or mass). The examiner sits in front of the patient and places a hand on each side of the patient's head. The patient is instructed to focus on the examiner's nose and the examiner focuses on the patient's eyes. The patient should keep their eyes open even if vertiginous symptoms worsen. An abnormal vestibulo-ocular reflex (peripheral disease) causes the eyes to move away with the head movement toward the abnormal side. At the end of rotation, the patient's eyes move quickly back to return the gaze to the clinician's nose. This is the corrective saccade. A normal vestibulo-ocular reflex (central disease) allows the patient to maintain gaze on the clinician's nose during rapid head movements to both sides without corrective saccades. There is improved sensitivity if the test is performed rapidly to aid in detection. The examiner should repeat the examination if initially normal or negative to make sure that saccades are not missed.[28] (*From* McGee SR. Evidence-based physical diagnosis. 3rd edition. Philadelphia: Elsevier/Saunders; 2012. p. 663; with permission.)

(d)

Fig. 5. Epley maneuver[31] shown for left ear (left ear downward initially). (1) Start by seating the patient on the table with the head turned 45° to the left. Place a pillow or rolled towel on the table so that on lying back it is under the shoulders. (2, 3) Lay the patient back quickly with shoulders on the pillow, neck extended, and head resting on the bed. In this position, the affected (left) ear is underneath. Wait for 30 seconds. (4) Turn the head 90° to the right (without raising it), and wait again for 30 seconds. (5, 6) Turn the body and head another 90° to the right, turning the head so that it is facing the ground, and wait for another 30 seconds. (7) Sit the patient up on the right side. Next to the patient positions are illustrations of the displaced otoliths moving through the semicircular canal with each position. Repeat maneuvers may be helpful. (*Courtesy of* Jessica Stanton, MD.)

Reference:
Molnar, A. and McGee, S. (2014). "Diagnosing and Treating Dizziness." *Medical Clinics of North America*. 98:583-596.