💊 Therapeutics Final

🔊 Podcast Style Review (Experimental Feature)

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- **NOTE:** Highlighted in **bold** are the important key info!
- Topics are arranged in order of most to least commonly tested
- Check the table of contents below for easier navigation
- Good luck 🍀

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1. Diabetes Mellitus (DM)

General Management & Principles

- Lifestyle modifications are essential for all diabetic patients.
- **Hypoglycemia is the most common and serious side effect of many antidiabetic drugs.** Symptoms include tachycardia, sweating, fatigue.
- **Insulin is used for hospitalized diabetic patients.** Also indicated in Type 2 DM with progressive beta-cell dysfunction.
- Low-dose Aspirin is indicated for secondary cardioprotection in patients with ischemic heart disease.
- Drugs associated with causing/inducing DM:
  - Beta-cell destruction: **Pentamidine, Interferon,** Pyriminil.
  - Insulin resistance: Glucocorticoids, Cyclosporine, Nicotinic acid, Growth hormone, Diazoxide, Clozapine, HIV protease inhibitors.
  - *Spironolactone is NOT known to cause diabetes.*
- DM Prevention: **Metformin,** Liraglutide, Rosiglitazone, Acarbose, weight reduction, physical exercise are mentioned as preventive. *Repaglinide and Glyburide are not used for prevention.*

Type 1 Diabetes Mellitus (T1DM)

- **Diabetic Ketoacidosis (DKA) Treatment:** Requires **IV regular insulin (crystalline zinc insulin).** Symptoms include coma, hyperglycemia, acidosis, rapid breathing, excessive urination/thirst, nausea/vomiting, ketones in urine.
- **Basal-Bolus Regimens:** Aim to mimic physiological insulin secretion. Often use a **long-acting insulin (e.g., Glargine, Detemir) for basal coverage and a rapid-acting insulin (e.g., Lispro, Aspart, Glulisine) before meals.** Lispro has a very short duration of action. Glargine provides basal coverage up to 24 hours.
- **Pramlintide:**
  - Used as an adjunct for **postprandial hyperglycemia** when insulin alone is insufficient (erratic control).
  - Decreases gastric emptying, reduces appetite, can cause moderate weight loss and anorexia.
  - **Must NOT be mixed in the same syringe with insulin.** Should be used prior to meals.

Type 2 Diabetes Mellitus (T2DM)

- **Initial Therapy: Metformin is the first-line agent after lifestyle modifications,** especially for **obese patients** (with high insulin levels). It decreases hepatic glucose production and improves insulin sensitivity.
- **Non-obese patients:** Often treated with insulin secretagogues (e.g., Sulfonylureas).
- **Sulfonylureas (e.g., Glyburide/Glibenclamide, Glimepiride):**
  - Stimulate insulin release.
  - **High risk of hypoglycemia.**
  - **Avoid in severe renal impairment** and caution in the elderly. Glyburide should be discontinued if renal impairment develops. Glibenclamide may be used for normal-weight T2DM with fasting hyperglycemia but is not appropriate for obese patients.
- **Metformin:**
  - **Contraindicated in severe renal impairment,** congestive heart failure, metabolic acidosis, respiratory disease, alcoholism (risk of **lactic acidosis**).
  - Does *not* cause lipodystrophy. Is not contraindicated in dyslipidemia.
- **Thiazolidinediones (TZDs - e.g., Pioglitazone, Rosiglitazone):**
  - Improve insulin sensitivity, decrease hepatic glucose production (Pioglitazone).
  - **Contraindicated in heart failure** due to sodium and fluid retention.
  - Associated with **osteoporosis.**
  - *Not considered first-line treatment.*
- **GLP-1 Receptor Agonists (e.g., Exenatide, Liraglutide):**
  - Stimulate glucose-dependent insulin release, decrease glucagon, slow gastric emptying, reduce appetite, stimulate vagus nerve.
  - Associated with **moderate weight loss.**
  - **Risk of acute pancreatitis (especially Exenatide).**
  - **Exenatide** may increase pancreatic beta-cell mass by decreasing apoptosis. Considered a drug of choice for T2DM with **atherosclerotic CVD.**
- **DPP-4 Inhibitors (e.g., Sitagliptin, Saxagliptin):**
  - Inhibit breakdown of incretin hormones, leading to increased insulin secretion and decreased glucagon release.
  - Common side effect: Nasopharyngitis. *Hypertension is NOT a side effect.*
  - **Sitagliptin is considered relatively safe for elderly patients.** Can be added if Metformin + SU is insufficient, especially if avoiding TZDs/SGLT2i due to osteoporosis.
- **SGLT-2 Inhibitors (e.g., Empagliflozin, Canagliflozin, Dapagliflozin):**
  - Inhibit glucose reabsorption in the kidneys.
  - Useful in patients with **chronic kidney disease (CKD)** (e.g., Empagliflozin).
  - Side effects include hypotension.
  - Associated with **osteoporosis (Canagliflozin).**

- *GFR 60 is NOT a contraindication.* Recurrent UTI is a potential issue but not an absolute contraindication listed.

- **Alpha-glucosidase Inhibitors (e.g., Acarbose, Miglitol):**
  - Inhibit breakdown of complex carbohydrates in the intestine, decreasing postprandial glucose levels.
  - Side effect: Abdominal distention (Acarbose). *Lactic acidosis is NOT associated with Miglitol.*
- **Meglitinides (e.g., Repaglinide):** Stimulate insulin release in a glucose-dependent manner.
- **Combination Therapy:** Metformin + Rosiglitazone + Exenatide may delay beta-cell failure.
- **Specific Comorbidities:**
  - **Hypertension:** Treat with **ACE inhibitors (ACEI) or ARBs.**
  - **Heart Failure: Avoid TZDs (Pioglitazone, Rosiglitazone).**
  - **Renal Impairment: Avoid Metformin and Sulfonylureas** if severe. SGLT-2 inhibitors (Empagliflozin) can be beneficial. Sitagliptin is relatively safe.
  - **Osteoporosis: Avoid TZDs and Canagliflozin.** Sitagliptin may be a preferred add-on.
  - **Atherosclerotic CVD: Exenatide** is a preferred agent.
  - **Elderly: Sitagliptin** is relatively safe. Avoid Glyburide. Amlodipine is a reasonable antihypertensive choice.

Hyperglycemic Crises (DKA/HHS)

- **Treatment: IV Regular Insulin (crystalline zinc insulin).**

Insulin

- Insulin causes weight gain.
- Hypoglycemia can result from high doses.

2. Hypertension (HTN)

General Management & Principles

- Confirm diagnosis via **daily self-monitoring with an approved automated device** if suspected based on family history.
- **Stage 1 HTN Management: Lifestyle modifications** plus **one antihypertensive agent.**
- **First-line agents: ACEI, ARB, Thiazide diuretics, Calcium Channel Blockers (CCB).** *Alpha-1 blockers are not first-line.*
- **Lifestyle Modifications:** Includes diet rich in fruits/vegetables, reduced saturated/total fat, **reducing daily sodium intake to < 1.5g/day.** *Exercising 120 minutes weekly is incorrect (more is needed).* Lifestyle changes can potentially reduce the number of drugs needed.
- **Drug-Induced HTN:** Agents include oral contraceptives, decongestants (phenylephrine), corticosteroids, NSAIDs, Darbepoetin, cocaine, licorice, Ergots, Bevacizumab. *Paracetamol does NOT cause HTN.* Rifampin can cause resistance to antihypertensive drugs.
- Monitoring: **Serum electrolytes** should be monitored with **thiazides and ARBs (Valsartan).** Heart rate should be monitored with verapamil.

Specific Patient Populations & Comorbidities

- **Elderly Patients: Amlodipine** (long-acting dihydropyridine CCB) and **thiazides** (Hydrochlorothiazide) are reasonable choices. Sitagliptin is a safe diabetic drug for the elderly.
- **Diabetes Mellitus: ACEI or ARB** are preferred. If HTN develops and patient is on thiazide, glycemic control may be disrupted (Hydrochlorothiazide effect). Use beta-blockers with caution if treating HTN in diabetics.
- **Chronic Kidney Disease (CKD): ACEI (e.g., enalapril)** is used. Dose may need to be increased if BP is not controlled (e.g., BP 155/92, Cr 2.3 on enalapril → increase enalapril dose).
- **Heart Failure with Reduced Ejection Fraction (HFrEF):** Indicated combination includes **Lisinopril (ACEI), Furosemide (loop diuretic), Bisoprolol (beta-blocker).** Spironolactone may be added.

- **Coronary Artery Disease (CAD)/Ischemic Heart Disease (IHD): Beta-blockers (e.g., Metoprolol, Bisoprolol)** are main drugs.
- **Post-Stroke (Recurrent Stroke Prevention): Thiazide diuretics.**
- **COPD: Avoid non-selective beta-blockers.** Lisinopril (ACEI) use was questioned in COPD context (likely okay, but a specific question stated not to use it). ACEI, CCB, Diuretics were listed as options *to be avoided* in one question (Answer was ACEI). *This seems contradictory based on general guidelines but reflects the questions.*
- **Peripheral Arterial Disease (PAD):** Carvedilol is mentioned. *Propranolol + hydralazine was flagged as a wrong match.*
- **Pregnancy:** See section "Therapy of Certain Disorders During Pregnancy".

Treatment Strategies & Combinations

- If uncontrolled on one agent (e.g., beta-blocker), **add another agent (e.g., ACEI - enalapril).** If uncontrolled on multiple agents (e.g., Enalapril, Metoprolol), **increase the dose of one agent (e.g., Enalapril)** before adding another.
- **Stage 2 HTN:** Combination therapy often required. *Beta-blocker + hydralazine was flagged as a wrong combination.*
- **Alternative for ACEI/ARBs:** Spironolactone + hydralazine; Isosorbide dinitrate + hydralazine.
- Inotropic agent use: Beta-blockers *can* be given (one question flagged this as incorrect regarding HTN treatment).

Hypertensive Urgencies & Emergencies

- **Hypertensive Urgency:** Avoid **rapid-release/sublingual nifedipine.** Labetalol, Clonidine, Captopril are options. Normalize BP over hours to days.
- **Hypertensive Emergency:** Goal is controlled BP reduction, **do NOT decrease BP < 140/90 immediately** (except in specific circumstances). Do not reduce to 130. Do not normalize BP within 36 hours in acute ischemic stroke (this statement was flagged as wrong).
  - Good agent choices: **Labetalol,** Esmolol, Nicardipine, Fenoldopam, Enalaprilat.
  - **Nifedipine is NOT a good choice.**
  - Specific indications:
    - Renal insufficiency: Fenoldopam (caution: sympathetic activity, glaucoma).
    - Aortic dissection: **Esmolol.**
    - Myocardial ischemia: Nicardipine.
    - Eclampsia: **Hydralazine,** Labetalol. *Enalaprilat is NOT matched with eclampsia.*
- **IV Metoprolol** should not be used in acute dyspnea with crackles, high JVP (likely acute decompensated HF).

3. Epilepsy

General Principles & Drug Selection

- **First-line for generalized tonic-clonic and mixed seizures: Carbamazepine.**
- **First-line for absence seizures: Ethosuximide.**
- **First-line for generalized seizures (myoclonic, atonic, absence): Valproic acid.**
- **Drug of choice for myoclonic epilepsy: Valproic acid.**
- **Neuropathic pain + generalized tonic-clonic seizures: Gabapentin.**
- **Elderly Patients: Lamotrigine** is often the medication of choice due to hypoalbuminemia, decreased hepatic blood flow, and renal clearance considerations.
- **Resistant Epilepsy:** If Phenytoin, Valproic acid (VA), and Carbamazepine (CMZ) fail in mixed-seizure epilepsy, **Lamotrigine** is a next step.
- **Liver Disease:** Avoid **Carbamazepine.**
- **Pregnancy:** See section "Therapy of Certain Disorders During Pregnancy". **Lamotrigine** is considered relatively safe. **Valproic acid has the highest risk.**

- **Breastfeeding: Zonisamide is contraindicated.** Phenytoin, valproic acid, levetiracetam, zonisamide distribute to breast milk.

Adverse Effects

- **Common to most AEDs: Impairment of cognition,** ataxia, diplopia, GI upset, weight changes, thrombocytopenia. *Weight loss and GI upset are listed, but impairment of cognition is highlighted as common.*
- **Concentration-dependent:** Diplopia, gingival hyperplasia (Phenytoin).
- **Idiosyncratic: Acute liver failure (Valproic acid),** pseudolymphoma (Phenytoin), severe skin reactions (Phenytoin, Lamotrigine).
- **Chronic:** Osteoporosis (Carbamazepine, Phenytoin - due to Vitamin D metabolism), cerebellar syndrome. GI upset with Ethosuximide is a chronic side effect.
- **Specific Drugs:**
  - **Valproic Acid: Hepatotoxicity (idiosyncratic).** Inhibits carbamazepine metabolism.
  - **Topiramate: Most cognitive impairment.** Carbonic anhydrase inhibitor effect. Can be used for migraine prevention. Inhibits carbamazepine metabolism.
  - **Phenytoin: Lower cognitive side effects than carbamazepine (mostly).** Causes osteoporosis, gingival hyperplasia, pseudolymphoma. Metabolism affected by estrogen. Increased toxicity with isoniazid. Can cause **strong skin reactions** (switch to Valproate if this occurs).
  - **Carbamazepine:** Causes osteoporosis. Metabolized by CYP enzymes (inducer). Metabolism inhibited by valproate. Avoid in liver disease.
  - **Lamotrigine:** Dose-dependent diplopia. Relatively safe in elderly and pregnancy.
  - **Ethosuximide:** Chronic GI upset. Used *only* for absence seizures, *not* neuropathic pain.
  - **Zonisamide:** Kidney stones, underweight. Contraindicated in breastfeeding.
  - **Gabapentin:** Used for neuropathic pain.
  - **Benzodiazepines:** Drowsiness (increased with ethanol).
  - **Phenobarbital:** Increases phenytoin concentration.

Monitoring & Dosing

- **Monitoring:** Drug levels can be useful but **therapeutic endpoint is seizure control vs. side effects.** Interpret levels in clinical context. Higher concentrations needed for focal dyscognitive vs. tonic-clonic seizures. *Monitoring valproic acid at peak is incorrect. Monitoring carbamazepine level was implied as correct if patient develops ataxia/nystagmus at high levels.*
- **Dose Adjustments:** Lower dose if side effects occur (e.g., incoordination with phenytoin). Lower dose again and monitor if symptoms persist.
- **Neonates:** Require *high* doses of AEDs (statement flagged as incorrect, suggesting this is false).
- **Enzyme Inducers:** Carbamazepine, Phenytoin. *Valproic acid and Lamotrigine are NOT inducers.*
- **Enzyme Inhibitors:** Valproate, Topiramate.

Drug Interactions

- **Valproic acid inhibits carbamazepine metabolism,** increasing risk of toxicity (diplopia, ataxia).
- **Isoniazid increases phenytoin toxicity.**
- Phenobarbital increases phenytoin concentration.
- Phenytoin decreases estrogen metabolism.
- Ethanol increases benzodiazepine drowsiness.

4. Antimicrobial Selection and Prophylaxis

Principles of Selection

- **Empirical Therapy:** Based on site of infection, likely pathogens, local antibiogram, patient factors. **Specimen for culture should ideally be taken *before* starting empirical therapy.** *Dependence solely on physician experience is not ideal.* Therapy should cover likely organisms.
- **Combination Therapy Rationale:** Broad-spectrum coverage in severe illness, polymicrobial infections, preventing resistance, decreasing dose-related toxicity. *Covering ALL possible organisms is NOT a valid reason.*
- **Failure of Therapy Causes:** Immunosuppression, foreign bodies, cystic fibrosis, short bowel syndrome. *Concomitant drug inhibiting antibiotic metabolism is NOT a cause of failure.*
- **Rational Prescription:** Includes taking cultures before antibiotics. *Starting antibiotics before culture (e.g., child with UTI) is wrong.*

Dose Adjustment

- **Both Renal and Hepatic Impairment: Piperacillin, Cefotaxime,** Sulfamethoxazole, Nafcillin.
- **Severe Hepatic Impairment:** Clindamycin, Erythromycin, Metronidazole, Rifampin. *Gentamicin does NOT require hepatic adjustment.* Cefotaxime requires adjustment.
- **Renal Impairment:** Hepatic clearance is spared in CKD (statement flagged as wrong, implying some hepatic clearance might be relevant or affected).

Adverse Effects & Interactions

- **QT Prolongation: Fluoroquinolones, Macrolides/Azalides.** Interaction with Class Ia/III antiarrhythmics. *Clindamycin is NOT associated with QT prolongation.*
- **Photosensitivity: Tetracyclines, Sulfamethoxazole, Trimethoprim,** Azithromycin, Quinolones, Pyrazinamide. **Gentamicin does NOT cause photosensitivity.**
- **Clostridium difficile Infection:** Associated with **Penicillins, Cephalosporins, Carbapenems (Imipenem), Clindamycin, Fluoroquinolones.** *Amikacin and Metronidazole are NOT known causes. Gentamicin is the least likely cause of superinfection.*
- **Nephrotoxicity:** Aminoglycosides, Amphotericin B, Radiocontrast, NSAIDs, Vancomycin (esp. with radiocontrast). *Penicillin is NOT listed as nephrotoxic.*
- **Ototoxicity/Neuromuscular Blockade:** Aminoglycosides (enhanced by loop diuretics like furosemide, neuromuscular blockers like vecuronium).
- **Tetracycline Toxicity:** Enhanced by antacids, iron, calcium, sucralfate (chelation). Enhances digoxin toxicity.
- **Macrolide Toxicity:** Enhances digoxin, theophylline toxicity. *Decreased gentamicin concentration is a WRONG interaction.*
- **Metronidazole Toxicity:** Enhanced by ethanol (disulfiram-like reaction). *Interaction with furosemide enhancing toxicity is incorrect.*
- **Rifampin:** Potent enzyme inducer, increases metabolism of cyclosporine, OCPs, warfarin etc.
- **Isoniazid:** Enzyme inhibitor, decreases metabolism of carbamazepine, phenytoin. Vitamin B6 prevents neurotoxicity.
- **Quinolones:** Toxicity enhanced by multivalent cations (antacids, iron etc.).
- **TMP-SMX Side Effects:** Kidney stones, bone marrow suppression, methemoglobinemia. *Hypokalemia is NOT listed.*
- **Linezolid:** Can cause **serotonin syndrome.** Can cause hypertensive crisis with tyramine-rich foods (cheese).
- **Amoxicillin:** Liver toxicity is a mismatched side effect.
- **NSAIDS:** Most serious side effect involves renal dysfunction/peptic ulcer/hypertension (exact answer depends on options, multiple serious effects exist).

Specific Pathogens/Situations

- **MRSA: Vancomycin.** Linezolid is an alternative.
- **Pseudomonas aeruginosa:** Requires antipseudomonal coverage. Often **two antipseudomonal antibiotics if structural lung disease.** Combinations like Meropenem + Ciprofloxacin. *Vancomycin + Ciprofloxacin is NOT adequate coverage for pseudomonas in CA-P inpatient settings.* Piperacillin-tazobactam.
- **Methicillin-Sensitive Staph Aureus (MSSA):** Empiric coverage with **Piperacillin-tazobactam.**

- **Acinetobacter: Ampicillin** (listed as treatment of choice in one question).
- **N. meningitidis Prophylaxis: Ceftriaxone** in pregnancy. Rifampin otherwise.
- **Group B Streptococcus (Maternal):** Drug of choice if penicillin-allergic is **Cefazolin.**
- **Cryptococcus neoformans Meningitis: Amphotericin B + Flucytosine.** *Terbinafine is NOT used.*
- **Brain Abscess: Vancomycin + Ceftriaxone (or Cefotaxime) + Metronidazole.** Treatment duration is typically **4-8 weeks.**
- **Neonatal Chlamydia Meningitis: Azithromycin.**
- **Entamoeba histolytica:** Do NOT use Loperamide.
- **Mycoplasma:** Intrinsically resistant to beta-lactams.
- **G6PD Deficiency: Amikacin** can be given.

Surgical Prophylaxis

- **General Principle:** Cefazolin is common, but coverage depends on site/procedure.
- **Perforated Appendix: Cefazolin + Metronidazole.**
- **Appendectomy (non-perforated): Cefazolin.** *Cefotetan + Metronidazole was listed as correct in one mismatch question. Cefazolin alone was flagged as wrong/insufficient in another. Metronidazole MUST be added if perforation.*
- **Colorectal Surgery (Elective): Oral neomycin + erythromycin.**
- **Craniotomy: Cefazolin.**
- **C-Section: Cefotetan.** *Using Cefotetan was flagged as wrong for C/S in one mismatch question.*
- **Rheumatic Fever Prophylaxis:** Benzathine penicillin. *Cephalosporin use is wrong.*

5. Therapy of Certain Disorders During Pregnancy

General Principles

- Drug concentration changes: Maternal serum penicillin concentration decreases. Clearance of aminoglycosides increases. GFR increases. Fat content increases. Albumin decreases. Weak acidic drug concentration may increase.
- Teratogenicity: **All antimicrobials are NOT teratogenic.** Specific agents are contraindicated.

Constipation & Hemorrhoids

- **First line: Increase fiber and fluid intake.**
- **Second line (safe first choice if fiber fails): Psyllium (bulk-forming).**
- Laxatives to **AVOID: Castor oil.**

GERD (Heartburn)

- Management: Lifestyle/diet modification first.
- Acceptable medications: Ranitidine, Omeprazole, Sucralfate, **Aluminum/Magnesium hydroxide mixtures (Maalox/Antacids).**
- **AVOID: Sodium bicarbonate.**

Nausea & Vomiting (N+V)

- Treatment of choice: **Pyridoxine (B6) + Doxylamine.** Ginger is also an option.

Thromboembolism (VTE/DVT)

- **First-line anticoagulation: Low Molecular Weight Heparin (LMWH).**

Urinary Tract Infections (UTI) / Pyelonephritis

- **Asymptomatic Bacteriuria:** Treat with **Nitrofurantoin.**

- **Pyelonephritis:** Requires hospitalization and IV antibiotics.
  - Empirical treatment (e.g., E. coli): **Ceftriaxone.**
  - **Cefuroxime** is a potential choice.
  - *Nitrofurantoin is NOT used for pyelonephritis.* Levofloxacin, Co-trimoxazole, Amoxicillin are other options listed but potentially less ideal or contraindicated depending on trimester/resistance.

Gestational Diabetes / Pre-existing Diabetes

- Poorly controlled T2DM (HbA1c 8.5) on metformin/glyburide: **Discontinue oral agents and start insulin.**

Hypertension / Preeclampsia / Eclampsia

- **Chronic HTN:** Drugs that **should NOT be used: ACE Inhibitors (Lisinopril, Enalapril), ARBs (Losartan, Valsartan).** These are **absolutely contraindicated** and can cause fetal skeletal/renal abnormalities, oligohydramnios.
- **Acceptable Antihypertensives:** Methyldopa, Labetalol, Hydralazine. Magnesium sulfate is used for eclampsia seizure prophylaxis/treatment.
- **Preeclampsia (Elevated BP + proteinuria at >20 weeks):** Can use Methyldopa, Labetalol, Hydralazine, Magnesium sulfate. **AVOID ACEI/ARBs.**
- **Eclamptic Seizures: IV Magnesium Sulfate** is the best drug.

Preterm Labor

- **Concerns/Diagnosis:** Regular uterine contractions (e.g., every 3 min), closed/elongated cervix at <37 weeks.
- **Management:**
  - **Corticosteroids (Dexamethasone):** Administer to mother near term (e.g., 28 weeks) to **prevent Respiratory Distress Syndrome (RDS)** in the preterm infant. Typically given over 2 days.
  - **Tocolytics:** Used to suppress contractions. Options include beta-mimetics (ritodrine - risk of hypokalemia), magnesium sulfate, CCBs (nifedipine - risk of hypotension), NSAIDs. *Abnormal vaginal bleeding is a contraindication. Diazepam is NOT used as a tocolytic.* Use in 3rd trimester requires caution.

Cervical Ripening / Labor Induction

- Indication: e.g., Post-term pregnancy (42 weeks).
- Agent: **Dinoprostone (prostaglandin E2)**, often given intracervically.

Epilepsy

- **Highest Risk AED: Valproic acid.** Also Phenytoin, Carbamazepine.
- **Relatively Safe AED: Lamotrigine.**
- Avoid all AEDs if possible, especially during the first trimester (e.g., if pregnant at 6 weeks, avoid all except maybe carbamazepine - this seems contradictory). *Valproic acid is definitely high risk.*

Hyperthyroidism

- Treatment: **Propylthiouracil (PTU)** initially, may switch to Methimazole later.

Group B Streptococcus (GBS) Carrier

- Prophylaxis during labor to prevent neonatal transmission.
- **Drug of choice if penicillin-allergic: Cefazolin.** (Ampicillin is standard if not allergic).

Other Considerations

- **Methotrexate:** Must be stopped **3 months (or 6-9 months)** before attempting pregnancy.
- **Antibiotics Contraindicated: Tetracyclines** (teeth staining after 5 months), **Trimethoprim** (folate antagonism - risk of hemolytic anemia if G6PD deficient), Co-trimoxazole (hemolytic anemia).

- **Smoking during pregnancy:** Associated with small baby, preterm birth, craniosynostosis, later intellectual issues.
- **Thiopental (Anesthesia for Cesarean):** Can cause sedation and apnea in the neonate.
- **Oral Contraceptives (OCPs):**
  - Starting first time: Monophasic.
  - Stop immediately if: Abdominal pain, severe leg pain, retinal problems. *Amenorrhea, stroke, B6 deficiency are NOT necessarily immediate stop indications.*
  - Breakthrough bleeding: Options include stopping and using non-hormonal method, or giving progestogen with androgen activity (less preferred).
  - Smoking + Migraine after starting OCP: Switch to alternative like DMPA.
- **DMPA (Depot Medroxyprogesterone Acetate):** Indicated if contraindication to estrogen, breastfeeding after 6 months. Risk of **osteoporosis.** *Inadherence is NOT an indication.*
- **Drospirenone:** Can increase potassium (K+).
- **Chronic Peptic Ulcer/Menorrhagia/Iron Deficiency Anemia (Hb 8):** Ferrous sulfate 150mg daily for 6 months.
- **Epoetin Alfa Precaution:** Should not increase Hb by more than 1 g/dL every 2 weeks.

6. Heart Failure (HF)

General Principles & Staging

- **Pre-HF (Stage A/B):** Patients with risk factors (HTN, DM, Dyslipidemia) but no structural heart disease or symptoms.
  - Stage A management: Manage risk factors.
  - **Stage B management (structural disease, no symptoms):** Start **ACEI (or ARB) + Beta-blocker. Statins** are also used if dyslipidemia/CAD present. Example: Patient with HTN but no symptoms → Bisoprolol + Statin + Valsartan to improve mortality.
- **HFrEF (HF with Reduced Ejection Fraction):** Systolic dysfunction.
  - Standard therapy cornerstone: **ACEI (or ARB), Beta-blocker, Diuretic (loop if fluid overload).**
  - **Aldosterone Antagonists (Spironolactone):** Add if symptoms persist despite ACEI/BB therapy (e.g., symptoms on less than ordinary exertion). Reduces mortality, attenuates fibrosis/atherogenesis, inhibits collagen deposition. *Does NOT enhance calcium excretion.* Monitor potassium. Incorrect to use high dose in renal impairment.
  - **ARNI (Valsartan/Sacubitril):** Alternative to ACEI/ARB, especially if symptoms persist. *Do NOT add ARNI directly to ACEI therapy.*
  - **Hydralazine + Isosorbide Dinitrate:** Alternative combination if **ACEI/ARB are contraindicated.**
  - **Digoxin:** Can be used for symptom control, but *does NOT reduce mortality.*
  - Drugs **NOT used/Contraindicated: Non-dihydropyridine CCBs (Verapamil, Diltiazem)**, **Amlodipine** (Dihydropyridine CCB), **TZDs (Rosiglitazone).** NSAIDs can precipitate HF.
- **HFpEF (HF with Preserved Ejection Fraction):** Diastolic dysfunction.
  - Management focuses on controlling BP, heart rate, and fluid status.
  - **Loop diuretics used at lower doses** than HFrEF to avoid hypoperfusion/renal failure/low cardiac output. *Reduction of prostaglandin synthesis is NOT the reason for lower doses.*
  - Role of RAAS inhibition (ACEI/ARB) is less established than in HFrEF (*statement suggesting no role was flagged as incorrect*).
- **Acute Decompensated HF (ADHF):**
  - Symptoms: Acute onset dyspnea, elevated JVP, S3 sound, crackles, maybe chest pain, tachycardia.
  - Drugs **NOT to use acutely: IV Beta-blockers (Metoprolol)** if signs of cardiogenic shock/decompensation. **Carvedilol** not used in acute decompensation.
  - Clevidipine mentioned in context of acute HF.

Drugs Causing/Exacerbating HF

- **Cardiotoxicity: Bevacizumab,** Doxorubicin. *Disopyramide, Diltiazem, Propranolol also mentioned but Bevacizumab was the answer.* Uzumab mentioned for cardiotoxicity.
- **Negative Inotropic Effects: Diltiazem, Verapamil,** Flecainide, Beta-blockers (acutely).
- **Sodium and Water Retention: TZDs (Rosiglitazone),** NSAIDs, Corticosteroids, **Ticarcillin disodium.**
- **Cardiac Decompensation/Heart Block: Diltiazem.**

Specific Drug Considerations

- **ACE Inhibitors (e.g., Lisinopril):** Reduce ventricular remodeling, myocardial fibrosis, norepinephrine release, sodium/water retention. *Do NOT reduce vasodilator prostaglandins.* Dose may need increasing if HFrEF patient has renal impairment (Cr 2.5) but stable BP.
- **Beta-Blockers (e.g., Bisoprolol, Carvedilol):** Improve mortality in HFrEF. Contraindicated if patient needs inotropic support. **IV BB contraindicated in early cardiogenic shock.**
- **Ivabradine:** Used in HFrEF if contraindication to beta-blockers or heart rate remains high despite BBs. Adverse effects: **Atrial fibrillation, vision problems, hypotension.**
- **Diuretics (Loop - Furosemide; Thiazide; Aldosterone Antag - Spironolactone):** Used for symptom relief (fluid retention). **Do NOT stop disease progression.** Doses for HFpEF are smaller than for HFrEF.
- **CCBs:** Dihydropyridines (Amlodipine) and Non-dihydropyridines (Verapamil, Diltiazem) are generally avoided in HFrEF. Bradycardia is a side effect differing non-DHP from DHP. Edema, headache, flushing, dizziness common to both.
- **Prostaglandin E:** *Not involved* in the pathogenesis of CHF.

7. Acute Coronary Syndromes (ACS)

Initial Management

- **Morphine:** Used for pain relief. **Disadvantage: Slows aspirin absorption.** Does *not* decrease mortality. Does *not* prevent remodeling.
- **Oxygen:** If hypoxic.
- **Nitrates (e.g., Nitroglycerin):** Vasodilator, symptom relief. Does *not* prevent remodeling. Side effects: Hypotension, bradycardia (mismatched effect).
- **Aspirin:** Antiplatelet therapy, given immediately. Decreases mortality.
- **Beta-Blockers (e.g., Bisoprolol):** Decrease mortality, re-infarction. Start within 24 hours if no contraindications. **IV beta-blockers are NOT beneficial and potentially harmful in early cardiogenic shock.**
- **Anticoagulation:** Indicated for most ACS patients (fibrinolysis, PCI, no reperfusion, NSTE-ACS).
    - Options/Durations: Bivalirudin (up to 3 days), Enoxaparin (up to 8 days), UFH (2 days). *Fondaparinux duration of 21 days is incorrect. Enoxaparin 21 days is incorrect.*

Reperfusion Therapy (STEMI)

- **Primary Percutaneous Coronary Intervention (PCI):** Preferred if available promptly. Aggressive statin before PCI.
- **Fibrinolytic Therapy (e.g., Alteplase):** Use if PCI unavailable/delayed. Indicated within **12 hours of symptom onset.** *Not indicated if presentation delayed beyond 24 hours.*
    - Contraindications: Active bleeding, recent major surgery, intracranial hemorrhage. *History of streptokinase use is NOT a contraindication for alteplase.*

Secondary Prevention (Post-MI / Hospital Discharge)

- **Essential Medications (proven to decrease mortality, HF, re-infarction, stroke, stent thrombosis):**
    - **Aspirin** (lifelong).
    - **P2Y12 Inhibitor (e.g., Clopidogrel):** Duration typically **12 months.**
    - **Beta-Blocker (e.g., Bisoprolol).**
    - **High-Intensity Statin (e.g., Atorvastatin, Rosuvastatin).**

- **ACE Inhibitor (e.g., Lisinopril) or ARB:** Especially if LVEF <40%, HTN, DM, CKD. *Should be started in patients with LVEF <0.4 within one week AFTER ACS (statement about starting ALL patients one week after was flagged as incorrect).*

- **Aldosterone Antagonist (Spironolactone):** Consider if LVEF ≤40% AND either HF symptoms or DM, provided no significant renal dysfunction or hyperkalemia. Patient must be on ACEI/ARB and beta-blocker. **Monitor serum potassium.** *EF of at least 0.55 is NOT the correct threshold.*
- **Drugs NOT routinely used for secondary prevention:** Organic nitrates, Amlodipine, Verapamil, Loop diuretics (used for symptoms, don't prevent remodeling), Morphine, Non-dihydropyridine CCBs.

8. Pneumonia

Community-Acquired Pneumonia (CAP)

- **Outpatient, Otherwise Healthy Adult, No Comorbidities:**
  - First-line: **Amoxicillin** or Doxycycline or Macrolide (e.g., **Azithromycin** if previously healthy). *Amoxiclav + Doxycycline is also an option.*
- **Outpatient, Comorbidities (e.g., Asthma): Amoxicillin-clavulanate + Azithromycin.**
- **Inpatient, Non-severe (e.g., patchy interstitial infiltrate):** Respiratory fluoroquinolone (**Levofloxacin**) OR Beta-lactam + Macrolide. *Levofloxacin mentioned multiple times.* Azithromycin monotherapy is an option for low-risk.
- **Inpatient, Severe / Risk Factors for Drug-Resistant Pathogens:**
  - Empirical choice: Beta-lactam (e.g., Ceftriaxone) + Macrolide (Azithromycin) OR Beta-lactam + Fluoroquinolone.
  - If **Pseudomonas** risk: Antipseudomonal beta-lactam (**Piperacillin-tazobactam,** Cefepime, Meropenem) + Ciprofloxacin or Levofloxacin. *Meropenem + Ciprofloxacin* specifically mentioned. *Combinations NOT covering Pseudomonas: Vancomycin + Ciprofloxacin.*
  - If **MRSA** risk: Add **Vancomycin** or Linezolid.
- **Specific Pathogens:**
  - **Penicillin-resistant Strep. pneumoniae: Ceftriaxone** or Vancomycin or Levofloxacin.
  - **Acinetobacter: Ampicillin** (listed as treatment choice).
- **Aspiration Pneumonia (e.g., neurologic problem, choking):** Regimen needs anaerobic coverage. **Amoxicillin + Azithromycin + Metronidazole** or Clindamycin. *Amoxicillin only, Amox/Azithro only, Azithro only are insufficient.*
- **Treatment Duration (Uncomplicated CAP, immunocompetent): 7-10 days.**
- **Risk Factors for Drug-Resistant Pathogens:** Age > 65, recent hospitalization, COPD. *Smoking history is a general risk factor for pneumonia but listed as NOT a risk for drug-resistant pathogens.*

Hospital-Acquired / Ventilator-Associated Pneumonia (HAP/VAP)

- Often involves resistant organisms (Pseudomonas, MRSA).
- **Empirical Therapy:** Broad coverage needed.
  - Antipseudomonal beta-lactam (e.g., Piperacillin-tazobactam) + Antipseudomonal fluoroquinolone (Cipro/Levo) OR Aminoglycoside.
  - Add **Vancomycin** or Linezolid if MRSA suspected.
  - Example: Patient on ventilator develops VAP, cultures grow MRSA → **Vancomycin.**
  - Example: HAP progressing to meningitis → **Cefepime + Vancomycin.**
  - Combinations for VAP: Ceftazidime+Levo, Imipenem+Levo, Pip-Tazo+Gentamicin. *Clarithromycin+Nafcillin is NOT appropriate.*
- **Structural Lung Disease:** Often requires **two antipseudomonal antibiotics.**

Other Considerations

- **Post-Herpetic Neuralgia:** Gabapentin, Acetaminophen, TCA, Sertraline, NSAIDs failed → Add Oxycodone PRN.

- **Isoniazid Neurotoxicity Prevention:** Vitamin B6.
- **Neonatal Pneumonia (Chlamydia trachomatis): Azithromycin.**
- **Mycoplasma:** Intrinsically resistant to beta-lactams.

9. Schizophrenia

Core Features & Symptoms

- **Key Features:** Disorganized/bizarre thoughts, delusions, hallucinations, inappropriate affect, impaired psychosocial functioning.
- **Positive Symptoms:** Delusions, Hallucinations, Disorganized speech.
- **Negative Symptoms:** Flat affect, Apathy, Alogia, Avolition.
- **Cognitive Symptoms:** Impaired attention, memory, executive function (associated with negative symptoms).
- **Neurotransmitter Dysfunctions:** Primarily **Dopamine** dysregulation. Serotonin and Glutamate also involved.
- **Onset:** Most common age is **early adulthood** or adolescence.

Treatment Goals & Approaches

- **Acute Psychotic Episode Goals: Reduction of symptoms, normalization of sleep/eating patterns.** Complete elimination of symptoms may not be realistic initially.
- **Long-Term Goals:** Prevent relapse, increase adaptive functioning, avoid adverse effects.
- **First-Line Treatment (Acute): Antipsychotic medications.**
- **Maintenance Treatment: Lifelong** antipsychotic treatment recommended for most patients.
- **Treatment-Resistant Schizophrenia: Clozapine** (an atypical/SGA) is primarily used in this situation.
- **Psychosocial Rehabilitation:** Important **in combination with antipsychotic treatment** to manage symptoms and improve daily functioning. Not a sole treatment. Cognitive Behavioral Therapy (CBT) is a key therapy approach.
- **Substance Abuse:** Common comorbidity, associated with **poor response to medications and poor prognosis.**

Antipsychotic Medications

- **Mechanism:** Primarily block dopamine receptors.
- **First-Generation (Typical) Antipsychotics (FGAs):**
  - Examples: **Chlorpromazine, Haloperidol, Thiothixine.**
  - Mechanism: Primarily D2 receptor blockade.
  - **Higher risk of Extrapyramidal Side Effects (EPS).**
  - **Chlorpromazine** can cause severe hypotension.
- **Second-Generation (Atypical) Antipsychotics (SGAs):**
  - Examples: Clozapine, Risperidone, Olanzapine, Aripiprazole.
  - Mechanism: Block D2 and **5-HT2A serotonin receptors.**
  - **Major Advantage: Lower risk of neurologic/motor adverse effects (EPS)** compared to FGAs.
  - Higher efficacy in treating positive symptoms, faster onset (these were presented as potential advantages but lower EPS risk is the main one).
  - **Higher risk of metabolic adverse effects** (weight gain, diabetes, dyslipidemia).
  - **Clozapine:** Most effective, reserved for treatment resistance due to side effects.
    - Side Effects: **Agranulocytosis (requires monitoring),** Sedation, Seizures, Weight gain, Metabolic issues. *Weight loss is NOT a side effect.*
  - **Risperidone:** Can cause akathisia.
  - **Haloperidol:** High risk of EPS (e.g., akathisia).

- **Adverse Effect Management:**
  - **Extrapyramidal Side Effects (EPS):** Manage with anticholinergic agents like **Benztropine.** Akathisia (severe restlessness) can occur (e.g., with Haloperidol, Risperidone).
  - **Hypotension:** Can be severe with **Chlorpromazine.**
- **Drug Selection:** Consider the **adverse effect profile** when choosing an agent. Monotherapy is preferred initially. Avoid high-risk combinations if possible.

Other Considerations

- **Medical Conditions Causing Psychosis:** HIV/AIDS, Alzheimer's disease, Parkinson's disease.
- **Substances Causing Psychosis:** Cannabis, Cocaine, Amphetamines, LSD. *Nicotine does NOT cause psychosis.*

10. Medication Errors

Definition & Scope

- **Definition: Any preventable event** that may cause inappropriate medication use or patient harm while the medication is in the control of the healthcare professional or patient.
- Impact: Constitute a significant portion of medical errors (though perhaps not two-thirds), lead to **significant morbidity and mortality,** and decrease patient satisfaction.
- Prevalence: Approximately 6,800 prescription medications available in the US.
- **Medication errors are preventable.**
- Ranking: **Third-leading cause of death** in the USA (including all medical errors).

Causes & Contributing Factors

- **Point of Occurrence:** Most commonly occur at the **ordering/prescribing stage** (approx. 50%). Administration errors (incorrect route, wrong patient, extra dose) also occur. Monitoring errors (failing to account for renal/liver function, allergies, interactions) happen. Dispensing errors.
- **Common Reasons:**
  - **Failure to communicate drug orders.**
  - **Illegible handwriting.**
  - **Confusion over similarly named drugs.**
  - Errors involving dosing units or weight.
  - Incorrect drug selection from drop-down menus.
  - Expired products (due to improper storage or use).
  - Incorrect strength (calculation errors, incorrect unit conversion).
  - *Accurate use of similar drug names is NOT a reason for errors.*
- **System Failures:**
  - **Flawed system:** Weak, imperfect, inadequate backup to detect mistakes. *Not necessarily overly complex or outdated.*
  - **Inaccurate order transcription.**
  - Poor drug knowledge dissemination.
  - **Failing to obtain allergy history.**
  - Poor professional communication.
  - *Adequate order checking is NOT a system failure.*
- **Human Errors:** Mistakes by physicians, pharmacists, nurses. Judgment errors, mechanical errors, distraction (most common cause for physicians).

- **Patient Factors:** Interactions involving prescription meds, OTC drugs, health supplements, herbs, alternative medicines.
- **Sensitive Populations: Elderly and children.** Pregnant women and infants, adults/teenagers, middle-aged/adolescents also mentioned, but elderly/children highlighted.

Prevention Strategies

- Implement medication safety protocols.
- Conduct regular medication reconciliation.
- Enhance patient education on medications.
- Follow established protocols and guidelines.
- Practice effective communication and teamwork.
- Report and learn from errors.
- Avoid unclear prescriptions (e.g., "2.0 mg" is not preferred over "2 mg"). Use leading zeros, avoid trailing zeros. Avoid ambiguous abbreviations.

11. Migraine

Acute (Abortive) Treatment

- **First-line:** NSAIDs or Triptans. *Acetaminophen is NOT recommended/used for mild migraine.*
- **Triptans (e.g., Sumatriptan, Naratriptan, Frovatriptan):**
  - Serotonin 1B/1D agonists.
  - Recommended duration of use for acute attack: **3 days.**
  - **Contraindications:** History of ischemic heart disease, stroke, uncontrolled HTN. *Age over 35 is NOT a contraindication.*
  - *Naratriptan does NOT have a rapid onset of action.*
  - **Frovatriptan:** Has a long duration of action.
- **Ergotamine:** Older abortive agent. Side effects include hypotension, chest tightness, severe ischemia, nausea/vomiting, rebound headache. *Use in combination with triptans in refractory migraine is NOT true.*
- **Adjunctive Therapy:**
  - **Antiemetics (e.g., Metoclopramide):** For nausea/vomiting. *Use every 12 hours was flagged as not true.* Increases absorption of other drugs. Can be used in combination to decrease rebound headache (statement flagged as wrong). Used in refractory migraine.
  - **Corticosteroids:** Can be added to triptans.
- **Mild Migraine:** Aspirin/caffeine, Diclofenac, Ibuprofen are options. **Acetaminophen is not used.**

Prophylactic (Preventive) Treatment

- Indication: Frequent or severe migraines.
- **Commonly Used Agents:**
  - **Beta-blockers (Propranolol).**
  - **Antiepileptics (Topiramate, Valproic acid/Divalproex).** *Carbamazepine is NOT preventive.*
  - Tricyclic antidepressants (Amitriptyline).
- **Recommended Agent (based on questions): Topiramate.** Also **Propranolol. Valproic acid** can be used.
- **Specific Situations:** Patient with asthma, kidney stones, renal problems → **Divalproex.** Patient needing prevention + anxiety treatment → **Topiramate.**
- **CGRP Receptor Antagonists (e.g., Erenumab):** Newer class for migraine prevention.
- **Duration:** Recommended duration for chronic migraine prevention is potentially **indefinite,** or at least **6-12 months.**

- **Frovatriptan:** Long duration, used for prevention (likely menstrual migraine).

Medication Overuse Headache (MOH)

- Caused by frequent use of abortive medications.
- *Metoclopramide is NOT used as a primary drug to treat MOH.*

12. Meningitis

Empirical Therapy (Based on Age/Situation)

- **Neonate (<1 month): Ampicillin + Cefotaxime** (or Gentamicin). Covers GBS, E. coli, Listeria. *Vancomycin + Ceftriaxone is NOT standard. Cefepime + Metronidazole is incorrect. Vancomycin + Ampicillin is incorrect.*
- **Infant/Child/Adult (1 month - 50 years): Vancomycin + Ceftriaxone** (or Cefotaxime). Covers S. pneumoniae, N. meningitidis.
- **Older Adult (>50 years) or Immunocompromised: Vancomycin + Ceftriaxone (or Cefotaxime) + Ampicillin** (to cover Listeria). Example: 55-year-old man → Vancomycin + Ampicillin + Ceftriaxone. Example: 65-year-old, CSF hazy, no culture → Vancomycin + Ceftriaxone + Ampicillin.
- **Healthcare Worker Exposure:** If symptomatic, treat empirically based on likely pathogens (e.g., **Vancomycin + Ceftriaxone** for 43yo nurse).
- **Post-Neurosurgery/Trauma:** Broader coverage often needed, including anti-pseudomonal and MRSA coverage.

Pathogen-Specific Therapy

- **Penicillin-Resistant Strep. pneumoniae: Vancomycin + Ceftriaxone** (or Cefotaxime).
- **N. meningitidis:** Ceftriaxone. Prophylaxis for contacts (Rifampin, Cipro, or Ceftriaxone - Ceftriaxone if pregnant). *No need for rifampin in adult contacts if treating child with G(-) diplococci (wrong statement). No need for prophylaxis for contacts of neonate with G(-) bacilli (mostly true).*
- **Listeria monocytogenes:** Ampicillin or Penicillin G (+ Gentamicin often).
- **Group B Streptococcus:** Penicillin G or Ampicillin.
- **Staph. epidermidis:** Vancomycin.
- **Hemophilus influenzae:** Ceftriaxone.
- **E. coli / Gram-negative bacilli:** Third-gen cephalosporin (Ceftriaxone/Cefotaxime).
- **Cryptococcus neoformans: Amphotericin B + Flucytosine.** *Terbinafine is NOT used.* Corticosteroids can be detrimental. Fluconazole is fungistatic, not ideal alone initially. Affects immunocompromised more but can affect immunocompetent. Amphotericin B remains a key drug.

Duration of Therapy (Mismatches Highlighted)

- Group B Strep: 14-21 days (7-10 days is mismatch).
- H. influenzae: 7-10 days.
- S. pneumoniae: 10-14 days.
- N. meningitidis: 7 days (21 days is wrong).
- Listeria: >= 21 days (14-21 days listed).
- Gram-negative bacilli (E. coli): >= 21 days (2 months is wrong).
- Staph. Epidermidis: 14-21 days.
- Antifungal treatment duration: 5 days is incorrect (much longer needed).

Brain Abscess

- Often polymicrobial.

- Empirical Treatment: **Vancomycin + Cefepime (or Ceftriaxone/Cefotaxime) + Metronidazole.** (Example: 65yo woman with fever/altered mental status).
- Duration: Usually **4-8 weeks.** Treatment duration is *not* the same for all patients; multiloculated may take longer (statement suggesting less time is wrong).

Other Considerations

- Antibiotic penetration: **Levofloxacin** penetrates well regardless of inflammation.
- Adjunctive Dexamethasone: May be used in bacterial meningitis (esp. H. influenzae, S. pneumoniae) but controversial.

13. Depression

General Principles

- **First-line Treatment for Major Depression: Selective Serotonin Reuptake Inhibitors (SSRIs).** *TCAs and MAOIs are not first-line.*
- **Recommended Duration (First Episode): 6 months** after remission.

Drug Classes & Specific Agents

- **SSRIs:**
  - First choice, particularly in the elderly.
  - Adverse effects may appear early, therapeutic effects delayed (not necessarily after 3 weeks).
  - **Serotonin Syndrome:** Risk when SSRIs interact with other serotonergic agents, such as **Linezolid** or MAOIs.
  - *Wrong statement about SSRIs: adverse effects appear after 3 weeks.*
- **SNRIs (e.g., Venlafaxine):** Can be used.
- **Atypical Antidepressants:**
  - **Bupropion:** Used for depression and **smoking cessation.**
  - Mirtazapine: Sedating, appetite stimulant.
  - Trazodone: Sedating, used for insomnia.
- **Tricyclic Antidepressants (TCAs):** Not first-line due to side effect profile (anticholinergic, cardiac).
- **Monoamine Oxidase Inhibitors (MAOIs - e.g., Phenelzine):**
  - Effective but many interactions.
  - **Dietary Restrictions: Avoid tyramine-rich foods (e.g., fermented cheese)** to prevent hypertensive crisis.
- **Smoking Cessation: Bupropion.**

Drug-Induced Depression

- Drugs that can cause depression: Methyldopa, Isotretinoin, Steroids, Interferon.
- Drugs that do **NOT** cause depression (based on options): **Triptans, Carbamazepine.**

Related Symptoms

- **Apathy:** Term for loss of interest, motivation, and emotional responsiveness (can be seen in schizophrenia or depression).