

**PASS PROGRAM CLUES
AND OTHER GOOD STUFF
AKA
(P.P. CLUES)**

The subjects are purposely not in order so that random quizzing is a snap (besides, it would have been too time consuming and too much work to categorize it all).

Mnemonics came from many sources (thank you, Dr. Chavis) in addition to those from Dr. Francis.

Please remember that I had made these sheets for myself only (a one page hand written sheet from an unknown person started this), to help make learning easier for me. You may want to edit, add, delete, etc. for which there is a little space between headings. If these clue sheets make life a bit easier for you, great! Use them, enjoy them and KNOW them.

* in that order
 $M\ominus$ = macrophage XC = exception N \ominus = neutrophil \wedge alert for something LL, ML = Less Likely, More Likely sz = seizure(s)

<u>5 Heart Block</u>	<u>Reiter's Syndrome</u>	<u>Low Complement</u>	<u>Drug Induced SLE</u>	<u>Drugs that blast BM</u>	<u>Comma shaped</u>
Lyme dz.	Chlamydia	Cryoglob. (bugs)	Hydralazine	AZT	Vibrio
Salmonella Typhi (=Typhoid)	Shigella	Influenza	Isoniazid	Benzene	Campylobacter
Chagas Dz. (Whipple's)	Yersinia	Adenovirus	Procainamide	Chloramphenicol	Listeria
Legionella	Crohn's	Mycoplasma	Penicillamine	Vinblastine	H. Pylori
Diphtheria	Irrit. Bowel Ds.	Hep. C	Phenytoin		Corynebacter. = Chinese letters
		EBV	Ethosuximide		
		(= 5 vasculitides assoc. w. SBE)			Giardia lamblia = crescent shaped protozoa

<u>* 6 Low Compl. assoc.</u>					
<u>TB Rx's.</u>	<u>Nephrotic Syndromes</u>	<u>Induce P-450</u>	<u>Inhibit P-450</u>	<u>P-450 Dependent</u>	
Pyrazinamide	(Vasculitides)	Griseofulvin	INH	Warfarin	
Rifampin	Serum sickness	Carbamazepine	Dapsone	Estrogen	
Ethambutol	PSGN	Rifampin	Spironolactones	Phenytoin	
Isoniazid	SLE	Alcohol	Macrolides	Theophylline	
Streptomycin	SBE	Barbiturates	Amiodarone	Digoxin	
	Cryoglobulinemia	Tetracycline	Cimetidine		
	MPGN II	Sulfa drugs	Ketoconazole		
		Quinidine	Quinolones		

Neutrophil deficiency

CGD (Chronic Granulomatous Dz.)

<u>Side Effects of Statins:</u>	<u>Painful genital Lesions</u>	<u>4 Hormones with disulfide bonds</u>	<u>Hookworms</u>
Myositis	Herpes	Prolactin	<i>Necatur Americanis</i>
Hepatitis	Chancroid (<i>Hemophilus ducreyi</i>)	Inhibin	<i>Enterobius Vermicularis</i>
↑ Liver enz.	Lymphogranuloma inguinale	Insulin	<i>Ankylostoma Duodenale</i>
		Growth Hormone	<i>Trichuris Trichurium</i>
			<i>Ascaris Lumbricooides</i>
			<i>Strongyloides</i>

<u>X-linked enzyme deficiencies (=XC)</u>	<u>Screen Newborns</u>	<u>Actions of Steroids</u>	<u>cz Monocytosis</u>
G-6-PD (= MC)	PKU	Kills T-cells & Eosinophils	<i>Salmonella</i> (Typhoid)
CGD (NADPH defic.)	CAH (Congen. Adrenal Hyperplasia)	Inhibit M \ominus migration	TB
Pyruvate DH deficiency	Biotinidase defic.	Inhibits Phospholipase A	EBV
Fabry's	Galactosemia	Inhibits mast cell degranul.	Listeria
Hunter's	Hypothyroidism	Stabilizes (tighten) endothelium	Syphilis
Lesh-Nyhan (are usu. AR)		Stimul. of cell. prtn. synthesis	

<u>E.coli is MCC of</u>	<u>One Dose Tx for</u>	<u>"Big Mama" Anaerobes</u>	<u>"Big Mama" Rx</u>	<u>Low Vol. state</u>
Abdominal abscess	Chlamydia	Strep. Bovis	Clindamycin	(serum)
Ascending cholangitis	Azithromycin	Bacteroides Fragilis	Metranidazole	K+ - ↓
Appendicitis		Clostridium melanogeo-septicus	Cefoxitin	Na+ - ↓
Spont. bact. peritonitis				Cl- - ↓
UTI				pH -- ↑
Cholecystitis				BP - - ↑

<u>One Dose Tx for Gonorrhoea</u>	<u>Psammoma Bodies</u> (Calcified CA's)	<u>Urease +ve bacteria</u> Proteus → struvite stones(90%)	<u>4 indications for PUD surgery</u> Intractable pain Hemorrhage (massive) Obstruction (fr.scarring) Perforation
Ceftriaxone	Papill. CA of thyroid	Pseudomonas	
Cefixime	Serous cystadenoma of ovary	Ureaplasma urealyticum	
Cefoxitin	Meningioma	Nocardia species	
Oflloxacin	Mesothelioma	Cryptococcus neoformans	
Ciprofloxacin		Helicobacter pylori	
Gatifloxacin		(Proteus = swarming motility)	

<u>Cardiac fibrosis</u>	<u>MCC of any ...penia</u>	<u>Salmonella Typhi Triad</u>	<u>Drugs cz. Myositis</u>
Adriamycin	1. Viral	High fever	Rifampin
Phen-Fen	2. Drugs	Intestinal fire	INH
		Rose spots – rash	Prednisone
			Statins

<u>7 Encapsulated Bacteria (G-v)</u>	<u>Jones Criteria</u> (Rheum. Fever)	<u>Eosinophilia</u>	<u>Risk factor for 1° Liver CA</u> (hepatoma)
Salmonella	Polyarthritis	Neoplasms	Hepatitis B, C
Strep.pneum (Gr+ve)XC!	Erythema marginatum	Allergies/Asthma	Aflatoxin
Klebsiella	Carditis	Addison's Dz.	Vinyl Chloride
H. Influenza	Chorea	Collagen Vasc. Dz.	EtOH
Pseudomonas	Sc nodules	Parasites	Carbon Tetrachloride
Neisseria			Anyline dyes
Citrobacter			Smoking
			Hemochromatosis
			Benzene
			Schistosomiasis mansoni

<u>9 Live Vaccines</u>	<u>IgA Nephropathies</u>	<u>Autoimmune Hemolytic Anemia</u>	<u>Autoimmune Thrombocytopenia</u>
Measles	Henoch-Schoenlein P.	PTU	ASA
Mumps	Berger's	Cephalosporins	Heparin
Rubella	Alport's	α-methyldopa	Quinidine
Oral Polio (Sabin)			
Rotavirus ✓			
Small Pox			
BCG			
Yellow Fever			
Varicella			

<u>Drugs containing Sulfa</u>	<u>MI – Enzymes</u>	<u>Silver stains</u>
Sulfonamides	Troponin I – appears in 2 h peaks in 2 d gone in 7 d	Legionella
Sulfonylurea		Pneumocystis carinii
Celebrex – Celecoxib = COX-2 specific;	CKMB – appears in 6 h (6 h) peaks in 12 h (12 h) gone in 2 d (24 h)	H. Pylori
(Vioxx – Rofecoxib = COX-2 spfc; has NO sulfa ∴ NO sulfa allergies)		Bartonella henselae (lymph node)
		Candida (Yeast)
<u>Inhibit dihydrofolate reductase</u>	LDH – appears in 24 h (1 d) peaks in 48 h (2 d) gone in 72 h (3 d)	
Pyremethamine/Sulfadiazine		
Trimethoprim/Sulfamethoxazole		

<u>Drugs cz Pulm. Fibrosis</u>	<u>MØ deficiency:</u> Bleomycin Busulfan Amiodarone Tocainide	<u>S/E of Loops and Thiazides:</u> Chediak-Higashi NADPH-oxidase def.	<u>The only 3 pansystolic M's</u> MR } ↑ on expir. VSD } ↓ on inspir. TR } ↑ on inspir.
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<u>MØ in various tissues</u>	<u>7 Palms & Soles</u>	<u>Every restrictive lung dz and low volume state:</u>
Brain	— microglia	TSS (Tox. Shock Syndr.)
Lung	— pneumocytes type 1	RMSF (Rocky Mtn. Spott. Fever)
Liver	— Kupffer cells	Coxsackie A (Hand/Foot & Mouth Dz.)
Spleen	— RES cells	Kawasaki
Kidney	— mesangial cells	Scarlet Fever
Lymph nodes	— dendritic cells	Syphilis
Skin	— Langerhans cells	SSSS (Staph. Scald. Skin Syndr.) - Exfolitin (<10% = Streptobacillus moniliformis (Rat bite fever – Haverhill form))
Bone	— osteoclasts	
CT	— histiocytes giant cells epithelioid cells	

2nd messengers

1. cAMP — symp., CRH (cortisol)
- cGMP — parasymp.
2. IP₃/DAG — NT, GHRH, all hypothal. horm.
xc CRH, smooth musc. by contraction
3. Ca:Calmodulin — smooth musc. contr by distent.
4. Ca⁺⁺ — Gastrin
5. Tyrosine kinase — Insulin, all GF's
6. NO — Nitrates, Viagra, ANP, LPS

T and B cell deficiency

- WAS (WiskAldSyn.) — Thrombocytopenia, IL-4, Infx,
Eczema, ↓ IgM, (IgE?)
- SCID — Frameshift/nonsense mutation,
Adenosine deaminase deficiency;
T>B; bact. & fungal infections
- CVID — late onset, frameshift/missense mut.
Tyrosine kinase deficiency
- HIV, HTLV-1 — T>B, CD4 rich: Brain, Testicles,
Cervix, blood vessels

ETC poisons

- Complex I — Amytal, Rotenone
Complex II — Malonate
Complex III — Antimycin D
Complex IV — CN-, CO, Chloramphenicol
Complex V — Oligomycin

ETC chem. uncouplers

- DNP
Free Fatty Acids
Aspirin (is a physical uncoupler)

4 sources of acid – Renal

1. plasma
2. urea cycle
3. collecting ducts
4. glutaminase

One Dose Tx

Hemophilus ducreyi	—	Azithromycin 1 gr po Ceftriaxone 250 mg im	Gonorrhea	—	<u>3 cephalosporins</u> Ceftriaxone 250 mg im Cefixime 400 mg po Cefotixin 400 mg po
Chlamydia	—	Azithromycin 1 gr., p.o.			
Candidiasis	—	Ketoconazole 150 mg			
Vaginal candidiasis	—	1 pill – Diflucan			
Trichomonas	—	Metronidazole 2 gr			
Gardnerella	—	Metronidazole 2 gr			

To brk dn glycogen, 4 enz.

- Phosphorylase (Pi)
Debranching enz.
α-1,6-Glucosidase
Phosphatase

To make glycogen, 2 enz.

- Glycogen synthase
Branching enz.
(= Glycogen α-1,4:α-1,6-Glycosyl transferase)

Pulmonary Disease

- Obstructive: ↑ pO₂, N or ↑ pCO₂, ↓ pH
vs
Restrictive: ↓ pO₂, ↓ pCO₂, ↑ pH
(Obstr. Lung Ds → Resp. acidosis)

6 places of TCA where aa's feed in/out

Pyruvate	- Gly, Ala, Ser
Acetyl CoA	- Mr. Pitt (Phe, Iso, Thr, Tyr) + Lys, Leu
α -KG	- Glu, Gln
Succinyl CoA	- Phe, Tryp, Tyr
Fumarate	- Pro
Oxaloacetate	- Asp, Asn

4 steps of β -oxidation

Oxidation	7 NADH	-	21 ATP
Hydration			
Oxidation	7 FADH	-	14 ATP
Thiolysis	8 AcCoA	-	96 ATP

131 ATP -2
to bring it in

Neuromuscular Disease Concept

$\downarrow pO_2$, $\downarrow pCO_2$ } = restrictive
 $\uparrow RR$, $\uparrow pH$ } blood gases
 $\uparrow sz$
 $\downarrow PCWP$ (b/c = press. prob'l.)

4 H's produced by small cell CA

ACTH
ADH
PTH
TSH
(ANP)

Viruses directly cz CA

Papilloma virus
EBV
HVC } liver
HVB } CA
HIV

Autoimmune antibodies

anti-smith	-
anti-cardiolipin	-
anti-double stranded DNA	- }
anti-histone	- drug induced SLE
anti-topoisomerase	- PSS (Progr.Syst.Sclerosis)
anti-TSH receptors	- Graves
anti-centromere	- CREST
anti-GBM	- Goodpasture's ✓ cd say: ab's to T. IV collagen✓
anti-mitochondria	- 1° biliary cirrhosis
anti-hair follicle	- alopecia areata
anti-IgG	- Rheumatoid Arthritis
anti-myelin receptors	- MS
anti-gliaden/gluten	- Celiac Sprue
anti-islet cell recept.	- DM Type I
anti-melanocyte	- Vitiligo
anti-ACh recept.	- MG
anti-ribonuclear prtn	- Mixed CT dz (MCTD)
anti-parietal cell recept.	- Pernicious anemia ✓ cd say: ab's to intrinsic factor✓
anti-epidermal anchoring protein receptors	- Pemphigus vulgaris (+v Nikolsky) ✓ cd say: ab's to intercellular jcts. of epidermal cells✓
anti-epidermal BMr prtn	- Bullous pemphigoid, IgG sub-epidermal blisters, oral, etc.)
anti-platelet	- ITP ✓ cd say ab's to glycoprtn IIb / IIIa✓
anti-thyroglobulin	- Hashimoto's
anti-microsomal	/
anti-smooth muscle	/ - Scleroderma
anti-scl-70	/
anti-rho (SS-A)	\ - Sjögren's
anti-la	/
anti-proteinase	\ - Wegener's
C-ANCA	/
P-ANCA	- Polyarteritis nodosa, assoc.w.Hep B ag, IgM

7 Nephrotic Patterns with Vasculitis

clot in front of renal artery → Renal artery stenosis
 clot off whole ren. art. → Renal Failure
 inflamed glomeruli → GN
 clot in papilla → Papillary necrosis
 clot off medulla → Interstitial nephritis
 clot off pieces of nephron → Focal Segmental GN,
 HIV, drug use assoc.
 clot off lots of nephrons → Rapidly Progress. GN
 (HM=crescent form'n)

MC nephrotic ds in adults → Membranous GN
 MC renal ds in Blacks/Hispanics → Focal Segmental
 MC renal mass = a cyst
 Mc malign. renal tumor = adenocarcinoma in adults
 Mc malign. renal tumor = Wilm's tumor in children
 MCC leading to RPGN = Goodpasture's
 MC nephrotic ds in kids = Min. Δ Ds, 2 wks post-URI

Thrombolytics & Inhibitors

tPA 20mg iv push, 40mg drip	- Aminocaproic acid
Streptokinase	- Aminocaproic acid
Warfarin	- Vitamin K
Heparin	- Protamin Sulfate
Urokinase	- used only for feeding tubes, fistulas, etc.

(Aminocaproic acid = APCAC)
 Streptok.= 750K iv push and then 750K drip)

alopecia areata — patch of hair
 alopecia totalis — entire head bald
 alopecia universalis — entire body hairless

Anytime on Prednisone for > 7 days ⇒ Immunocompromised

PIE Syndrome
Necator Americanus
Ascaris Lumbricoides
Schistosomiasis
Strongyloides
Ankylostoma duodenale

2 enzymes used by B 12
Homocystine methyl transferase
Methyl malonyl mutase

Mitochondrial inheritance
NO male transmission
ALL ♀ pass it on

↑ suspect. to pseudomonas and staph infxs
 Burn patients
 CF
 DM
 Neutropenic pts
 — cover 1 x for St. aureus during 1st wk
 — cover 2 x for pseudo. after 2nd wk

cz of widened S2
 (↑pO₂, ↑vol in R ventricle)
 - blood transfusion
 - giving O₂
 - R side failure
 - pregnancy (↑vol)
 - i.v. fluids
 - ASD
 - deep breathing

8 cavities of blood loss:
Pericardium
Intracranial
Mediastinum
Pleural cavity
Thighs
Retroperitoneum
Abdominal (= big)
Pelvis (= deep)

PCN
 Gr. +ve, BMr suppr;
 Simple anaerobes;
 #1 cz of anaphylax;
 Interstitial nephritis;
 Nonspecific rashes;
 As haptens → cz
 hemolytic anemia,

Crohn's Gifts
Granuloma
Ileum
Fistula
Transmural
Skip lesions

Negative-stranded RNA
 Prodromal period before symptoms = 1-3 wks
 b/c must switch to positive stranded before replication

Positive-stranded RNA
 Symptoms within 1 week or less
 XC = Hanta }
 Ebola } are -ve
 Yellow fever } stranded
 They don't have to switch to positive before replicating

MC cyanotic heart dz
 Transpos. of great art.'s
 Tetr. of Falot - boot shape
 Truncus Arteriosus
 Tricuspid Atresia
 Total Anomalous Pulm Veno. Ret.
 also
 Hypoplastic L heart syndrome
 Ebstein's Anomaly — assoc. w. Lithium/mom
 Aortic atresia
 Pulmonary atresia

LL	to depolarize	ML
hypokalemia	/	Hyperkalemia
Hypermagnesemia	/	hypomagnesemia
Hypercalcemia (xc atrium)	/	hypocalcemia (xc atrium)
Hypernatremia	/	hyponatremia

TLCFN
 TPP — Thiamin — B1
 Lipoic Acid — B4
 CoA — Pantothenic acid — B5
 FAD — Riboflavin — B2
 NAD — Niacin — B3
 (PLAN F)

X-linked inheritance, XR
 Bruton's Agammaglobuli
 CGD (NADPH def.)
 Duchenne
 Color blindness
 G-6-PD
 Hemophilia
 Lesch-Nyhan
 Vit. resist. Rickets (XC = XD)

B-cell deficiency
 Bruton's Agamma.
 (Tyrosine kin. defin.)
 SCID / T-cell overlap
 WAS / T-cell overlap
 CVID (Common
 Variable Imm. Def.,
 = Tyrosine kinase
 deficiency)
 Leukemias
 Lymphomas
 Job-Buckley Syndrome / T-cell overlap

4 itchiest rashes
Scabies
Lichen planus
Urticaria
Dermatitis herpetiformis

<u>Tumor Markers/Oncogenes</u>	
I-myc	small cell lung CA
c-myc	promyelocytic leukemia (Burkitt's lymphoma)
N-myc	- Neuroblastoma Small cell lung CA
c-abl	- CML, ALL
c-myb	- colon CA, AML
c-sis	- osteosarcoma, glioma, fibrosarcoma
c-erb B2	- epiderm. Growth factors receptors
CSF-1	- breast
erb-B2	- breast CA, ovarian, gastric medull. CA of thyroid
ret	-- MEN II, III, Papillary carcinoma
Ki-ras	- lung CA Colon CA
bcl-2	- Burkitts, Follicular lymphoma;
erb	- Retinoblastoma

<u>Ranson's Criteria of acute pancreatitis</u>	
At admission:	Glucose > 200
	Age > 55
	LDH > 350
	AST > 250
	WBC > 16,000
At less than 48 hrs:	Calcium < 8 mg/dl Hct drop of > 10% O_2 < 60 (PaO_2) Base deficit > 4 BUN > 5 mg/dl Sequestration > 6 L

CA: Grade = severity of microscopic changes
 Stage = degree of dissemination of tumor
 (what the surgeon sees)

Hormones produced by placenta

hCG
 Inhibin
 Human Placental Lactogen (HPL)
 Oxytocin (drg lactation pit.gland prod. it also)
 Progesterone
 Estrogen

Pilocarpine

CF
 Glaucoma (painful,
 red, teary eye)

Causing dysquiasias

Metronidazole
 Clarithromycin
 Zn deficiency

Rashes associated with Cancer

Urticaria -- any CA, esp. lymphoma
 (hives)
 Paget's Ds -- intraductal CA
 (ulcers around nipples)
 Seborrheic keratosis -- colon CA or HIV if
 (waxy warts) sudden ↑↑↑ in #
 nl w. aging
 Actinic keratosis -- squam.cell CA of skin
 (dry scaly plaques on sun-exp. skin)
 Dermatomyositis -- colon CA
 (violaceous, heliotropic rash, malar area)
 Akanthosis nigricans -- any visceral CA
 (dark lines in skin folds) end-organ damage
 Erythema nodosum -- anything granulomatous
 (ant. aspect of legs, NOT assoc. w. bacteria
 tender nodules)

Carcinoid Syndrome (Triad)

Flushing do: measure serotonin (5-HIAA)
 Wheezing comes from 1. Pancreas
 Diarrhea 2. Ileum

AVMs

Heart -- machinery murmur
 Elbow -- fistula from dialysis in renal disease
 Abdomen, Brain -- Von Hippel-Lindau
 clot off with coils
 ↑ incid. of Renal Cell CA
 (chrom. 3)

Lungs -- Osler-Weber-Rendu Syndrome

<u>HDL carries</u>	<u>VLDL carries</u>	<u>IDL carries</u>	<u>LDL carries</u>
L-CAT	B-100	B-100	B-100
E	E	E	
C II	C II	C II	
Apo A			

$$\text{LDL} = \text{TC} - \text{HDL} - \frac{\text{Triglyceride}}{5}$$

L-CAT = Lecithin Cholesterol Acetyl Transferase

Chylomicrons take TG's from GI to: a) liver (25%)
 b) endothelium (75%)

↑ cholesterol = LDL

Rashes

Erythema marginatum — little red spots with bright red margins, sandpaper, RF – Jones Criteria

Erythema chronicum migrans — Lyme Disease, Target lesions (Bullseye)

Measles — morbilliform rash, preceded by cough, conjunctivitis

Roseola — fever 2 d, stop, rash pops up = only rash AFTER fever (=HHV 6)

Erythema nodosum — ant. aspect of leg, redness, tender nodules

Erythema multiforme — red macules, target lesions, allergy, viruses, severe =Toxic Epidermal Necrolysis

- mild — MCC = 1. virus, 2. drugs (Sulfa)
- mod. — Stevens-Johnson Syndrome
- severe — Toxic epidermal necrolysis, skin peels off

Seborrheic dermatitis — scaly skin with oily shine on hairline

Seborrheic keratosis — stuck on "warts" – d/t aging

Psoriasis — HLA B 27, extensor surfaces, silvery white plaques, scaly skin, pitted nails

Varicella Zoster — stages - red macules, papules, vesicles, pustules, then scabs; diff. stages at same time(=HHV 3)

Dermatitis herpetiformis — rash/blisters on ext. surfaces, assoc. w. diarrhea d/t Celiac Sprue flare up

Typhoid fever (Salmonella) — Rose spots assoc. with "intestinal fire"

Dermatomyositis — heliotropic rash

Erysipelas — reddened area on skin with raised borders; **does not blanch**

Tinea cruris — redness, itchy groin

Pityriasis rosea — herald patch; dry skin patches that follow skin lines, (HHV 7)

Tinea versicolor — hypopigmented macules on upper back in "V" pattern (upside-down Christmas tree); Tx=Griseofulvin

Scabies -- linear excoriations on belt line and finger webs, etc.
Tx: Lindane, or Permethrin

T-cell deficiency
DiGeorge's (hypokalemia, 3.&4. pharyngeal pouch, deletion of chrom. 22)
HIV (also B-cell, but less so)

Mycosis Fungoides ≠ a fungus! It is a T-cell lymphoma.

Lipoprotein transports

Chylomicrons	- takes TG's from GI to liver + endothelium
VLDL	- takes TG's from liver to adipose
IDL	- takes TG's from adipose to tissue
LDL	- only one to carry cholesterol
xs TG's	- xanthelasma - eyelids/-brows
xs Cholesterol	- xanthoma - elbows
VLDL	- is the only one made in the liver
IDL + LDL	- are break down products of VLDL

Hemophilus Influenza

- "Pleomorphic" Gr -ve rods
- "School of fish"
- H. flu Type **A** = 80%
- non-encapsulated**
- noninvasive; 2. MCC of: sinusitis
otitis
bronchitis
- Type **B** = 20%
- encapsulated** – Polyribosyl Phosphate in capsule,
IgA Protease
- invasive** ds – # 1 cz of EPIGLOTTITIS
– stridor, fever, thumb sign (X-ray)

Meningitis (wrong in 1. AID)

0 - 2 months	- Group B Strep (agalactiae) E. coli Listeria
2 mo - 10 years	- S. pneumoniae Neisseria meningitidis (adolescent yrs only)
10 yrs - 21 yrs	- Neisseria meningitidis
> 21 years old	- S. pneumoniae

Strep. pneumo vaccine is given at 2, 4, 6 months. Covers 23 strains (= 98% of cases)

- Indications for pneumococcal vaccine:
 - Anyone > 65 y/o
 - Anyone splenectomized (Sickle cell)
 - Anyone with end organ damage - CE

Strep. pyogenes

- = MCC of all throat infections
- = 2. MCC of all skin infections (xc 5, where it is # 1)

Staphylococcus

S. aureus — gold pigment
S. epidermidis — white pigment
S. saprophyticus — no pigment

Rusty colored sputum -

Strep. pneumoniae
(pneumococcus)

Infections -- in general:

Skin infections — say Staph. aureus
 Throat infections — say Strep. pyogenes
 Small intestine infections — say E. coli

Hepatitis B:

Hbc ag +, Hbs ag +,	= Acute, recent infection
Hbc ag +, Hbs ag +, Hbc ab +	= Acute, recent infection
Hbs ag + only	= Recent immunization (within past 2 weeks)
Hbs ab + only	= Recent immunization, two weeks later; can be vaccination immunity from long ago
Hbc ab +, Hbs ab +, Hbs ag -	= Had disease, now immune (IgG)
Hbs ag + for > 6 mo. (with or without Hbs ab +)	= Chronic carrier state
Hbe ag +	= Infectious state
Hbe ab +	= Non-infectious state
<i>If RECOVERED from Hep B, have a NEGATIVE Hbs ag test</i>	
<i>If a CHRONIC CARRIER, have a POSITIVE Hbs ag test</i>	
Window period builds HBe abs, IgM Hbc abs; Hbs ag disappears	
Incubation	= 4-26 wks, aver. = 8
Acute disease	= 4 - 12 wks
Convalescence	= 4 - 20 wks
Recovery	= years

Neutrophil deficiency

Job-Buckley Syndr. - IL-4, Hyper IgE,
 (also T, B cell deficiency); red-headed, faircomplexion female)
 NADPH-oxidase defic. (CGD)
 Neutropenia
 Myeloperoxidase

HIV

MC infx	- CMV
MCC of death	- PCP
p41	- is just a marker
GP 120	- attachment to CD 4
Pol	- integration
Reverse transcriptase	- transcription
P 17, p 24 antigens	- assembly

Normal DC 4 count: 800 – 1200 (children: up to 1500)
 < 500 – begin treating with 2 nucleotide inhibitors
 and 1 protease inhibitor (children: at 750)
 < 200 – is AIDS. Now treat also for PCP
 < 100 – now also treat for MAC

Autosomal Dominant

Affects males and females
 Manifests in heterozygote state
Both parents can transmit disease
 New mutations often in germ cells of older fathers
 Often delayed onset (Huntington's)
 Can get reduced penetrance
 Can be expressed differently in individuals
 = variable expressivity
 Adult diagnosis
 Vertical Tm
Physical malformation common
Structural defect

Autosomal Recessive

Trait usu. does not affect parents but siblings/uncle may show the ds.
 Onset often early in life
 Complete penetrance usual
Are almost ALL inborn errors of metabolism
 Results only when BOTH alleles at a locus are mutant
 Childhood diagnosis
 Horizontal Tm
Phys. Malformation uncommon
Enzyme defect

Mitochondrial Inheritance

Affects CNS, heart, skel. musc.
 = d/t uneven cytokinesis during meiosis or oogenesis
ALL offspring are affected
ALL ♀ will pass on disease
NO ♂ transmission

Vitamins

B1 – Thiamine, Beri Beri, EtOH
 B2 – Riboflavin, Angular stomatitis
 B3 – Niacin, 4 D's
 B4 – Lipoic acid
 B5 – Pantothenic acid
 B6 – Pyridoxine → Sz,
 B12 – Cyanocobalamin → Pernic. anemia, neuropathy

The 5 P's of Compartment Syndrome

Pain
 Pallor
 Paresthesia
 Pulselessness
 Poikilothermia

5 Skin infx., Strep = # 1,
 (Staph = # 2 = XCI!)

Necrotizing fasciitis
 Impetigo (NOT bullous)
 Lymphangitis
 Erysepelas
 Scarlett Fever

(Staph. epi = # 1 for shunts & central lines. Staph. aureus = # 1 for regular peripheral lines)

Need E. coli for:Absorption of:Vit. B₁₂Synthesis of:

Vitamin K

Biotin

Folate

Pantothenic acid (B5)

Restriction enzymes

Trypsin	- cuts to R of: Arg + Lys
Chymotrypsin	- cuts to R of bulky aa's: Phe, Tyr, Tryp
Elastase	- cuts to R of: Gly, Ser, Ala
CN Br	- cuts to R of: Methionine
Mercaptoethanol	- cuts to R of: disulfide bonds
Aminopeptidase	- cuts to R of: amino acid terminal
Carboxypeptidase	- cuts to: L of carboxy terminal

Immune System time line – viral, cell-mediated

< 24 hrs	→ swelling
at 24 hrs	→ neutrophils show up
day 3	→ neutrophils peak
day 4	→ T-cells, MØ show up
day 7	→ fibroblasts show up
1 month	→ fibroblasts peak
3-6 months	→ fibroblasts are gone

The ONLY LIVE vaccination indicated in AIDS pts: MMR

Egg allergies: MMR, Influenza (or H. flu??) //

Yeast allergies: Hep B vaccination //

Immunizations: After 6 years old, three infections/vaccinations drop out — Hib, Diphtheria, Pertussis

MC strain of St. pyogenes to cause GN = strain 12

Neutrophils have myeloperoxidase and NADPH oxidase
MØ have only NADPH oxidase ∴ kills only Gr. -ve.
MØ secrete IL - 1 (and IL - 6?)

Painful neuropathy
DDI > DDCThe ONLY mitochondrial diseases we need to know:

- Leigh's Ds – aka subacute necrotizing encephalomyopathy
 - progressively ↓ IQ, sz, atax.
 - cytochrome oxidase defic.
- Leber's hereditary optic atrophy

The only Gr +ve with endotoxin: Listeria

Crosses placenta; toxic part is Lipid A; Monocytogenes;

T-cells & MØ.: granulomas

Sepsis in neonates; raw cabbage, spoiled milk, migrant workers;

Periods of rapid growth/rapidly dividing cells

Birth - 2 months

4 – 7 years old

Puberty

The ONLY immune deficiency with LOW CALCIUM ∴ ↑ P, = DiGeorge's SyndromeAmino Acids

Basic — Lys, Arg

Acidic — Glu, Asp

Keto + Glucogenic — Phe, Iso, Thre, Tyro

Aromatic — Phe, Tyro, Tryp

Sulfur — Met, Cyst

Kinky — Pro

Smallest — Gly

O-Bonds — Ser, Threo, Tryp

N-Bonds — Asn, Gln

Branched — Leu, Iso, Val

HLA—B27

Psoriasis w. arthritis

Ankylosing Spondylitis

Irritable Bowel Syndrome

Reiter's Syndrome

(Psoriasis w/o arthritis = B 13)

Eos secrete:

Histaminase

Arylsulfatase

Heparin

Having IgA proteases:

Strep. pneumonia

H. influenza

Neisseria

∴ resistant to IgA

Mast cells secrete:

acute reaction — Histamine

late reaction -- SRS-A

ECF-A

MCC of atypical pneumonia:

0 – 2 mo. = chlamydia pneumonia

(= interstitial pneumonia)

Heart block - Clue:

High temperature with NORMAL pulse rate!

This should never be! (Each degree ↑ in temp. → 10 beats/min ↑ in pulse rate)

Interleukins

- IL – 1: fever, nonspecific illness, all the symptoms of illness; recruits T_h cells for linking with MHC II complex secreted by $M\phi$;
- IL – 2: most potent of the IL's; recruits everybody; most powerful chemo-attractant; must be inactivated prior to transplantation
- IL – 3: energized $M\phi$; causes B-cell proliferation; labeled by nucleotide Thymidine (use pokeweed mitogen or endotoxin)
- IL – 4: B-cell differentiation; responsible for class switching
- IL – 5 through IL – 14: do exactly what IL – 1 through 4 do
- IL – 10: suppresses cell mediated response—tells $M\phi$ & fibroblasts to stay away if it's bacterial; inhibits MAC activation;
- IL – 12: promotes cell mediated response—recruits $M\phi$ and fibroblasts if it's not bacterial; activates NK cells to secrete IF γ , inhibits IL-4 induced IgE secretion; changes T_h cells to T_{H1} cells

IF α – from leukocytes; inhibits viral replication and tumor growth; \uparrow NK activity; \uparrow MHC class I and II expression; interferes with protein synthesis

$$\uparrow \text{NK activity} \quad \uparrow \text{MHC class I + II} \quad \downarrow \text{Protein synthesis} \therefore \downarrow \text{viral replication and tumor growth}$$

IF β – from fibroblasts; same as IF α

IF γ – from T-cells and NK cells; \uparrow NK activity, \uparrow MHC class I and II
 $\uparrow M\phi$ activity, co-stimulates B-cell growth and differentiation
 \downarrow IgE secretion

TNF α – (cachectin); from monocytes, $M\phi$;

induces IL- 1; \uparrow adhesion molecules and MHC class 1 on endothelial cells; pyrogen; induces IF- γ secretion; cytotoxic / cytostatic effect

TNF β – (lymphotoxin); from T-cells; cytotoxic factor;

TGF α – (transforming growth factors); from solid tumors (carcinoma > sarcoma), monocytes;
 induces: angiogenesis, keratinocyte proliferation, bone resorption, tumor growth

TGF β – from Platelets, placenta, kidney, bone, T + B cells;
 induces: fibroblast proliferation, collagen + fibronectin synthesis;
 inhibits: NK, LAK, CTL, T+B cell proliferation;
 enhances: wound healing and angiogenesis
 (CTL = Cytotoxic T-Lymphocytes, LAK = Lymphokine Activated Killer cells)

Immunoglobulins

IgA – monomer in blood, dimer in secretions; is on mucosal surfaces; in bodily secretions;

IgD – only known function is as surface marker on **MATURE B-cells**

IgE – immmed. **Hypersensitivity (anaphylaxis)**; parasite defense, **WORMS**; Fc regions binds to mast cells and basophils; allergies;
– does not fix complement;

IgG – **memory response at day 3** with 5 x the concentration; highest affinity; **peaks in 5 years, lasts 10 years**;

- opsonizes
- activates complement
- is second to show up for 1° response, only one to show for 2° response
- most abundant Ig in newborns
- 4 subclasses, G₁ – G₄, = antigenic differences in Heavy chains and on nr. and sites of disulfide bonds
 - IgG₁ – **crosses placenta due to Fc portion**
 - IgG₂ – MC subclass deficiency → susceptible to **encapsulated organisms**
 - IgG₃ – **MOST memory antibodies**
 - IgG₄ – is the only IgG **NOT fixing complement**

IgM – primary response; most efficient in **agglutination** and complement fixation; defense against bacteria and viruses

MØ release MHC II
T_{H1} secrete IL-2, IF- γ
T_{H2} secrete IL-4, IL-5, IL-6, IL-10
T_{H0} secrete T_{H1} and T_{H2}

MHC I = CD 8 → T-cytotoxic cells
All T-cells express CD 3 = signal transduction
CD 2 = adherence
CD 4 = T_{Helper} cells
CD 8 = T_{cytotoxic} cells

NØ – have myeloperoxidase, NADPH
kills all Gr +ves, i.e. Hydrogen peroxide kills Gr +ves ($O_2 + H_2O \rightarrow H_2O_2 \rightarrow 2 H_2O$)

T-cells stimulate CD 4 and B 7, CD 28.
So, 4 x 7 = 28

Hyperlipidemias

Type	Mnemonic	↑	Deficiency of enz or receptor
I	C	Chylomir.	enz. – LPL, defect at liver only
MC in gen. popul.	II	LDL	receptor – IIa (or missing B 100) enz & recept. – IIb
	L		
III	I	IDL	recept. – APO E
IV	V	VLDL	enz. – LPL, at adipose
DM (= I & IV)	V	Chylo & VLDL	enz & recept. defect at C II

V = MC in Diabetics;
IIa = deficiency in LDL receptors OR B-100 is missing
IIb = MC in general population, = LDL, VLDL problem,
VLDL is the receptor and LDL is enz. at adipose

Cholesterol → Clue: Xanthomas (elbows), CAD
Triglycerides → Clue: Xanthelasmas (eyelids, face)
Pancreatitis

Tx for Hypercholesterolemia

Statins: P - Provostatin — only one renally excreted
 A - Atorvastatin
 L - Lovastatin } follow liver enz. q 3 mo.
 S - Simvastatin }

Statins inhibit HMG-CoA reductase; (most active from ~ 8:00 p.m. on) ∴ must take at night for max. efficiency
 If Statins are insufficient, add Cholestipol, Cholestyramine (these 2 bind bile salts)
 If all fails, give Probucol, Niacin; they are nonspecific.
 SE of Niacin = flushing, itching

* 4 cz of severe pain

Pancreatitis (EtOH)
 Kidney stones (bloody urine)
 AAA (ripping pain down back)
 Ischemic bowel (bloody diarrhea)

5 causes of SIADH:

Small cell CA of lung
 Increased intracranial pressure (Trauma, Meningitis)
 A = PAin = MC
 Drugs - Carbamazepine
 Hypoxic Lung Disease/
 Restrictive Lung Disease

Cells of neural crest origin

Parafollicular cells of thyroid
 Odontoblasts - predentin
 Pseudounipolar cells
 Spiral membrane of heart
 Chromaffin cells
 All Ganglion cells - Schwann, Adrenal medulla
 Melanocytes
 Laryngeal / Tracheal cartilage

EKG

P-wave	→ atrium	→ Phase 0 — Na^+
P-R interval	→ AV node	→ Phase 2 }
Q-wave	→ Septum	→ Phase 2 }
R-upstroke	→ Anterior wall	→ Phase 2 }
S-downstroke	→ Posterior wall	→ Phase 2 }
S-T interval	→ Ventricle	→ Phase 2 — Ca^{++}
T-wave	→ Ventricle	→ Phase 3 — K^+
U-wave	→ Ventricle	→ Phase 4 — Na^+

Ions

P-wave → Ca^{++}
 QRS complex → Na^+
 S-T → Ca^{++}
 T-wave → K^+
 U-wave → Na^+

Triple Repeat Ds

Huntington's
 Fragile X
 Myotonic Dystrophy
 Spinal/bulbar musc. atrophy (=rare)

Max. sinus rate = 220 – age

Na^+ ch. ⊗ ⇒ wider QRS

Ca^{++} ch. ⊗ ⇒ P-wave widened, PR interval longer

Atrium

Phase 0 — depolarization
 Phase 1 — no name
 Phase 2 — plateau phase (A-V node)
 Phase 3 — repolarization
 Phase 4 — automaticity (S-A node)

2 Low Vol. states with acidosis rather than alkalosis

RTA
 Diarrhea

Cz of Croup & Bronchiolitis
 (> 2y/o bronchiolitis = asthma)

Parainfluenza
 RSV
 Adenovirus
 Influenza

HLA-Antigens

- HLA-DR 2 — Narcolepsy, Allergy (Hay fever), Goodpasture's, MS
- HLA-DR 3 — (DM), Chronic active Hepatitis, Sjögren's, SLE, Celiac Sprue, IDDM (DM type 1)
- HLA-DR 4 alone — Rheumatoid Arthritis, Pemphigus vulgaris
- HLA-DR 5 — JRA (Juv. RA), Pernicious Anemia
- HLA-DR 7 — Nephrotic Syndrome (steroid induced)
- HLA-DR 3 & HLA-B 8 — Celiac Ds.
- HLA-A 3 — Hemochromatosis (chromo. 6, point mut.-cysteine → tyrosine)
- HLA-B 8 — MG
- HLA-B 13 — Psoriasis
- HLA-B 27 — Psoriasis (only if with arthritis)
 Ankylosing Spondylitis, IBD, Reiter's, Postgonococcal Arthritis
- HLA-BW 47 — 21- α -Hydroxylase deficiency (Vitamin D)

4 D's of Pellagra

Diarrhea
 Dermatitis
 Dementia
 Death

Uric Acid Stones

Cysteine
 Ornithine
 Lysine
 Arginine
 (can't transport these 4 amino acids)

<u>Pneumonia</u>		<u>Kidney Stones</u>	
6 wks – 18 yrs → RSV (infants only)		Calcium oxalate (80%) (phosphate) stones	Oxalate stones in 3 y/o white ♂ – check for CF
Mycoplasma		Struvite stones	in 5 y/o black ♂ – check for Celiac Sprue
Chlamydia pneumonia		Uric acid stones	in adult ♂ – check for Whipple's
Strep. pneumonia		Cysteine stones	in adult ♂ or ♀ – check for Crohn's
18 yrs – 40 yrs → Mycoplasma		Oxalate stones	in CF – malabsorption = MC overall (0-20 y/o; die young)
Chlamydia pneumonia			
Strep. pneumonia			
40 yrs – 65 yrs → Strep. pneumonia			
H. influenza			
Anaerobes			
Elderly	Viruses Mycoplasma → Strep. pneumonia Viruses Anaerobes H. influenza Gr-ve rods		<u>Pseudogout</u> – get calcium pyrophosphate crystals (basophilic rhomboid) in joint space. Older patients; both genders. Tx = Colchicine. ♀, ♂

<u>MC non-cyanotic congenital heart ds</u>	<u>4 Enz. NEVER seen in glycolysis</u>	<u>3 Enz. seen ONLY in glycolysis,</u>
VSD – murmur ↑ on expir.	Pyruvate carboxylase	Hexokinase
ASD – fixed wide splitting	PEP carboxykinase	PFK-1
PDA – bounding pulses	F-1,6-dPhosphatase	Pyruvate kinase
Coaert. – differ. pulses	G-6-Phosphatase	
– ↑ incid. w. Turner's		

<u>2 Hormones- acidophilic</u> Prolactin GH	Partially acid-fast Gr +ve: Nocardia Partially acid-fast Protozoa: Cryptosporidium
---------------------------------------------------	---------------------------------------------------------------------------------------

<u>Septic emboli of SBE</u>	<u>4 Statins</u>	<u>Microsteatosis</u>	<u>2 Bacteria release elastase</u>
Mycotic aneurysm	Pravastatin	Acetaminophen	Staph. aureus
Roth spots	Atorvastatin	Reye Syndrome	Pseudomonas
Janeway lesions – toes	Lovastatin	Pregnancy	
Osler's nodes – fingers	Simvastatin		
Splinter hemorrhages	(MOA = they inhibit HMG-CoA reductase; S/E = myositis)		
Endocarditis		<u>Macrosteatosis</u>	<u>2 Bacteria w. toxins inhib. EF-2</u>
(MC bacteria = Strep. viridans)		Alcohol	Pseudomonas
			Diphtheria
			[Diphth: ADP ribosylates EF-2 = stops cell synthesis; = Gr +ve; get exotoxin fr. virus via transduction; heart block; = a Toxoid ∴ give Antitoxin NEVER scrape membrane]

<u>Emphysema Types</u>	<u>Erythropoiesis</u>
Bullous – 1. Staph. aureus	4 mo gestation – yolk sac
2. Pseudomonas	6 mo gestation – spleen, liver, flat bones
Centroacinar – smoking	8 mo gestation – long bones
Distalacinar – aging	1 yr old – long bones
Panacinar – α₁-antitrypsin def.	if long bones bec. damaged after 1 y/o, spleen can resume erythropoiesis ⇒ splenomegaly

Phage mediated toxins

- O – SalmOnella (has "O" antigen)
- B – Botulinum
- E – Erythrogenic toxin
- D - Diphtheria

I sprayed ORTHO on my BUNYA at the ARENA
down in REO to kill SEGMENTED WORMS
(segmented RNA viruses)

Adhesion Molecules

- IgCAM – ICAM-1,2,3
 - homing to lymph nodes, migrat. to inflam. sites
 - find on Tcells, endothel. cells, dendritic cells
 - LFA-3
 - Tcell interaction
 - find on lymphocytes, APCs
 - CD2 (LFA-2)—find on T cells, NK cells

- Integrins – VLA ($\beta 1$)
 - migration through extracellular matrix
 - widely distributed
 - LFA-1($\beta 2$) – **tight** binding to endothelium
 - on lymphocytes
 - CR3($\beta 2$) – **tight** bindg. to epithelium, phagocytosis
 - (Mac-1)
 - (CD-11b/CD18)
 - CR4 ($\beta 2$) – phagocytosis (opsonin receptor)

- Selectins – E-selectin – leukocyte migration and homing
 - (CD62E) find on activated endothelium
 - L-selectin – initial binding to endothelium
 - on leukocytes
 - P-selectin – Leukocyte migration to inflammatory sites
 - on activated endothelium and platelets

- Summary:**
 - IgCAM – binding proteins
 - Integrins – stop the leukocytes
 - Selectins – bind carbohydrates, mediate the rolling to slow leukocytes down

3 Functions of AdhesionMolecules

1. Homing of lymphocytes
2. Inflammation
3. Cell-cell interaction

Allergic response:

1° = **CONTACT** – NØ work
the first 3 days, then B-cells
make IgM (ab's)
IgM shows up at day 3
peaks at day 14
gone in 2 months
ab xs (IgM) \Rightarrow AI ds
In 2 wks, IgG shows
peaks in 2 mo.
gone in 1 yr.

2° = MEMORY

IgG show up at day 3 with 5 x
concentration;
has highest affinity;
peaks in 5 years
stays for 10 years

Inclusion Bodies

- Howell-Jolly – Sickle Cell
- Heinz – G-6-PD
- Zebra – Niemann Pick
- Donovan – Leishmaniasis
- Mallory – Alcoholism
- Negri – Rabies
- Councilman – Yellow fever
- Call-Exner – Ovarian tumors
(granulosa orig.)
- Lewy – Parkinsons
- Pick – Pick's Ds
- Barr b. – ♀
- Aschoff – Rheumatic Fever
- Cowdry Type A inclusions – Herpes virus
- Auer rods – AML
- Globoid – Krabbe's Lysosom. Stor. Ds.
- Russell b. – Mult. Myeloma (IgG)
- Schiller-Duvall b. – Yolk sac tumor
- Basal bodies – only fd. in smooth muscle

Esophageal/Gastric CA

- | |
|---------------------|
| <u>Risk Factors</u> |
| Smoking |
| Alcohol |
| Nitrites |
| Japanese |

Bladder CA Risk Factors

- Smoking
- Aniline dyes / Benzene
- Aflatoxin
- Cyclophosphamide
- Schistosomiasis
- Diseases: 1. Von Hippel-Lindau
2. Tubular Sclerosis

NBT test = Nitro Blue Tetrazolium test
= for screening of CGD
-ve test = +ve for disease

Hypersensitivities

- A - I -- Anaphylaxis / Atopic / IgE (Asthma) binds to mast cell / IgA activates IP₃ cascade-degrades mast cells
 C - II -- Cytotoxic (Humoral) (Rh ds, Goodpasture's, AI hemolyt. anem., HVG, AI Ds -- all xc RA, SLE)
 I - III -- Immune complex med. / Ag-Ab Complement (RA, SLE, some GN?, vasculitides)
 D - IV -- Delayed / cell mediated (TB skin test, contact dermatitis, transplant rejection)

Structures with no known function:

Appendix
 Epithalamus
 Muscle: Palmaris longus
 Hormone: Pancreatic Polypeptide (F-cells)

Progressing to RPGN

1 = Goodpasture's = ML
 DM
 HT
 Wegener's

Causes of Papillary necrosis

Vasculitis
 AIDS

Cystic Fibrosis

Pilocarpine (= also used for glaucoma, = painful, red, teary eye)
 Pilocarpine sweat test = tests for Cl⁻
 > 60 -- CF = definitive
 < 20 -- Normal
 30-60 -- Heterozygous
 2nd messenger: IP₃/DAG
 Chromosome 7

3 Gr +ve spore formers

Bacillus anthracis
 Clostridium perfringens
 Clostridium tetani
 (Ca²⁺ dipicolinate = chemical in spores)

Strep. mutans ferments lactic acid

All sphincters in body have α-receptors

Strep. salivarius ag = used for cold agglutinin testing (M)

Systemic Amyloidosis

- | | |
|--------------------------------|----------------------------------------------------------------------------------------------------------|
| AA amyloid | -- Chronic active disease |
| AL amyloid from Ig light chain | -- Myelomas, et al. |
| Beta 2 microglobulin | -- Chronic hemodialysis |
| AA amyloid from SAA | -- Nephrotic hereditary forms (familial Mediterranean fever) |
| Pre-albumin / transthyretin | -- Cardiomyopathic hereditary forms (senile systemic amyloidosis)
-- Neuropathic hereditary syndromes |

Local Amyloidosis

- | | |
|--------------------------------------------|-----------------------------------------------------------------------|
| Atrial natriuretic peptide fibrils | -- Senile cardiac amyloidosis |
| Cerebral amyloid in Alzheimer's ds, Down's | -- Cerebral amyloidosis |
| Calcitonin precursors | -- Medullary CA of thyroid |
| AL from light chains | -- Isolated, massive, nodular deposits (lung, skin, urogenital tract) |

Pick's Disease: Frontotemporal dementia; atrophy of frontal and temporal cortex with sparing of remaining neocortical regions; (Pick bodies contain altered neurofilaments, tau, and ubiquitin)

Drugs that cause disulfiram reaction

Chlorpropamide
 Lactams (Cefamandole, Cefoperazone)
 Antabuse (Disulfiram)
 Metranidazole

Clostridium Botulinum

MOA: prevents pre-synaptic release of ACh
 (Babies eat spores- honey, dark molasses;
 Adults eat toxin – canned food)

3 Toxins of Bacillus

(Anthrax & Cereus have Poly-D Glutamic acid-we have L-aa's)
 ▶ Lethal factor → black necrosis
 ▶ Protective factor
 ▶ Edema factor

β-blockers

β₁-selective = A -- M
 Nonselective = N -- Z
 ✗ XC's: Carteolol, and Labetolol
 are nonselective ✗

Fanconi Syndrome

- problem in proximal tubule
- can't reabsorb
- low energy state, anemia
- can be d/t old Tetracycline

Glutaminase

- = in collecting duct
- absorbs ammonia if liver fails

3 anatomical spots where renal stones get stuck

1. hilum
2. pelvic brim
3. entering bladder

Streptokinase, tPA, Urokinase -- MOA

Activate plasminogen to plasmin
 (Streptokinase also binds fibrinogen ∴ ↑ bleeding complic.)

SLE -- die of renal failure

Endometrial and cervical CA -- die of renal failure, NOT of infection

All Vasculitides

T-cells and MØs
 Schistocytes
 ↓ PL, ↓ RBCs
 Bleed from mucosal surfaces
 Bleed from skin, GI
 Petechiae
 Ecchymoses
 Expose blood to bmb ⇒ clots, DIC,
 PE, DVT, MI, Stroke
 S/S: Tachypnea, SOB,
 Cz of death = Heart failure

Rate-Lim. enz. in urea cycle = carbamoyl synthase I

in kidney (collecting duct only) = 10%
 in liver = 90%

Heparin = -ve charge

Protamin sulfate = +ve charge

MOAs of drugs

Erythromycin	- inhibits translocation step of ribosomal protein synthesis
Chloramphenicol	- inhibits ribosomal peptidyl transferase in prokaryotes
Puromycin	- inhibits elongation by binding to "A" site and prematurely terminates chain growth in pro- and eukaryotes
Streptomycin	- causes misreading of code during initiation in prokaryotes
Tetracycline	- prevents binding of aminoacyl-t-RNA to ribosome on prokaryotes ∴ inhibits initiation
Cyclohexamide	- inhibits ribosomal peptidyl transferase in eukaryotes (cell wall inhibitor)
Rifampin	- blocks β-subunit of RNA polymerase; prophylaxis for contacts of N.meningitidis
Vancomycin	- cell wall inhibitor; binds irreversibly to Phospholipase carrier; cidal; covers all Gr +ves; (Linezolid)
Warfarin	-- blocks Vitamin K dependent γ-carboxylation of Prothrombin and factors VII, IX, X and Protein C

Renal Tubular Acidosis

(RTA = acidosis, hypokalemia)

- RTA I - high urine pH
 acidosis
 UTI
 stones
 babies die < 1 y/o
- RTA II - acidosis
 urine pH ≈ 2 (NI = 5-6)
 hypokalemia
 have NO carbonic anhydrase
- RTA III - combination of RTA I and II
 nl urine pH
 hypokalemia
- RTA IV - Diabetics
 Hyperkalemia
 NO Aldosterone because JG apparatus has infarcted

Esophageal/Gastric CA**Risk Factors**

- Smoking
 Alcohol
 Nitrites
 Japanese

Bladder CA Risk Factors

- Smoking
 Schistosomiasis
 Benzene
 Aflatoxin/Cyclophosphamide
 Aniline dyes
 Diseases: 1. Von Hippel-Lindau
 2. Tubular Sclerosis

Hemolytic properties of Streptococcus

- α - partial hemolysis → green zone
- β - complete hemolysis → clear zone (d/t Streptokinase)
- γ -- no hemolysis → red zone

2 Gr -ves that are strict anaerobes
 (are exceptions!)
Hemophilus influenza
Neisseria

Recurrent infections with encapsulated organisms:
 = complement problem (C 3)
 Complement fights against Gram negative bacteria

Prerenal Failure

Serum: BUN	> 20
Fractional Na+ excretion	< 1%
Creatinine	> 40

Renal Failure

Serum: BUN	~ 10-15
Fractional Na+ excretion	> 2%
Creatinine	< 20

Adenoma sebaceum = aka Perivascular angiobromata
 Addison's Ds = aka Primary Adrenocortical Insufficiency
 Alkaptonuria = aka Ochronosis
 Churg-Strauss = aka Allergic Granulomatosis and Angitis
 Craniopharyngioma = aka Ameloblastoma (tooth material)
 Crohn's = aka regional enteritis, granulomatous ileitis, ileocolitis
 DeQuervain's = aka Subacute Granulomatous Thyroiditis
 Intraductal CA = aka Comedo CA
 I-Cell Ds = aka Mucolipidosis II
 Kawasaki Ds = aka MLNS = Mucocutaneous Lymph Node Syndrome
 Leydig cells = aka Interstitial cells
 Sertoli cells = aka Sustentacular cells
 Temporal arteritis = aka Giant cell arteritis (granulomatous)
 Waldenstrom's macroglobulinemia = aka Hyperviscosity syndrome

* **Extravasation Order:**

Pavementing
 Margination
 Diapedesis
 Migration

R-L enzymes:

Glycolysis: PFK-1
 Gluconeogenesis:
 Pyruvate Carboxylase

Coumadin	vs	Heparin
Extrinsic		Intrinsic
Tissue activated		Blood activated
PT		PTT
Factor II		Factor III
p.o.		i.v.
8 – 10 h to act		acts immediately
C/I in pregnancy		ok in pregnancy
Inhib.Vit.K depend		DOC f. DVT
clottg prtns in liver		
Remember: keep the PT outside		
∴ PT = extrinsic		
PT = 2 letters ∴ Factor II		
(Cu – Cou madin) Pet is Cujo, Cujo bites ∴ p.o.		
PTT = 3 letters ∴ Factor III		

* **Cell mediated – if resistant, tx next for:**

Viral
 Fungal
 Mycobacterium
 Protozoa
 Parasite
 Neoplasm

Pick up during birth

Strep. Grp B
 Strep. pneumonia
 Herpes simplex virus
 Neisseria gonorrhoea
 Chlamydia

Herpes Virus Types

HHV I – oral, trigeminal ganglia
 HHV II – genital, sacral plexus
 HHV III – Varicella zoster
 HHV IV – EBV, Mononucleosis
 Burkitt's
 HHV V – CMV, inclusion bodies,
 HHV VI – Roseola, Duke's ds,
 (exanthem subitum)
 HHV VII – Pityriasis rosea
 HHV VIII – Kaposi's sarcoma
 (HHV = Human Herpes Virus)

MNEMONICS

Page 1

I AM HE	<u>SPSSCM</u>	<u>GCRABTSQu</u>	<u>IDSMACKQu</u>
HIPPPE	Some	Gas up	I
ABCV	People	Car	Do
WEPTD	Say	Rev it up	S
PIIG	Students	And	M
NEAT AS	Cram	Brake	A
KIISS	Medicine	To	C
STELS		Stop	K
AAA SUC		Quickly	Qu
	<u>GCPFHL</u>	<u>PCBGH</u>	
	God's	Please	
	Children	Check	
	Pray	Before	
	For	Going	
	His	Home	
	Love		

Page 2

PsaMMoma	<u>SSKHPNC</u>	<u>MMRORSBYV</u>
PPUNCH	Some	MMR
IHOP	Strange	OR
RIPS	Killers	Small
PECCS	Have	Blistery
NAACP	Pretty	Yellow
HAVE CASH B.S. (cheesy)	Nice Capsules	Vesicles

Page 3

BBAT
HHhh
TRACKSSS

Page 4

OHOT

Page 5

NASSA
PIMP TRAP
GIFTS
TTTTT HEAP
TLCFN
SLUD

TLCFN
Tender
Loving
Care
For
Nancy

Page 6

GA LAW, C. HOBBS UPS ADAE
PAIR
HEAL
UPS
Attempts
Delivery
All
Evening

Page 8

hI HOPE
NILES

Page 9

PPPPP
ShiN

Page 11

CLIVE
PALS
PKAI
SIADH
POPS CAMeL
PRAI
DDDD
COLA

Page 12

Page 13

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Page 14

OBED

Page 15

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CLAM