

Staphylococci	Name	Morphology	Hem	Special Features
	S. Aureus	G+ cocci, non motile, no spores	B	Catalase+ Antihpagocitic Capsule Protein A - bind Ig Gold Colonies Phage Typing (strains) Only staph to make exotoxins Coagulase Pos
	S. Epidermitis		O	Coagulase Neg Novobiocin sensitive Attaches to plastic
	S. Saprophyticus		O	Coagulase Neg Novobiocin resistant
Streptococci		G+ cocci in chains		Pilli for attachment Lancfield types Sugar fermentation typing
	S. pyogenes		B	Group A Streptolysin O - antigenic but not virulent Bacitracin sen all other strep resist
	S. Agalactiae		B	Group B
	S. Pneumo		A	No Group Leading Cause of comm acquired Pneumo
	S Fecalis		O	Group D Bile resist
	S. Viridians		A	No Group
	Peptostreptoc.		O	No Group Obligat Anaerobes

Veillonella	V. Alcalescens V. Parvula	G neg cocci / anaerobic		Low virulence
Neisseria		G neg cocci / aerobic		Oxidase + Slow growing, need enriched media, environment susept. i.e. cold, heat, dry ML Medium or NYC Medium Need CO2 Pyogenic
	N. Meningitidis			Maltose + Glucose Intracellular
	N. Gonorrhoeae			Glucose only POMP surface antigen antibodies to it prev. dise. 2nd lead. of bact. Dx
Moraxella	M Catarhalis	formerly Neisseria		
Haemophilus		G neg coccobacillus / oblig aerob no spores / non motile		Fastidious (Hemen+NAD) Satellite - around staph. No Sheep Blood (NADase) Horse or Rab blood Choc Agar (heat kill NADase) envir suscep / CO2 loving
	H. Influenzae			Transplacental Immunity
	H. Ducryei			
	H. Aegypticus			
Bordatella		G neg rods / aerobic no spores / non motile		Fastidious and need blood but not X or V fact (hemen + NAD) Extremely Delicate (eviron)
	B. Pertussis			No transplacent. Immun (ped) Pilli/Fimbriae attach to trach. subepith necrosis thick mucus secretion Regan-Lowe med(charcoal) need to request pert culture
Corynebacteria		Gram+ (stain irreg) / aerobic rod no capsule/ no spores/ non motile		

		metachr granules in chinese letter (Babes-Ernst granules) like mycobacteria + nocardia but not acid fast	
	dipteroides		saprophytes - low virulence
	C. diphtheriae		Loeffler/ Pai media - nutrient inadequate --> unbal cell wall synth (pleomorph w. meth blue stain) Tellurite medium --> reduces to telluride (brown-black col) aka Tinsdale (differential)
	C. jeikeium		glycocalyx
Gardnerella	G. Vaginalis	formally Corynebacteria	Clue cells / fishlike smell sniff-wiff test affirm 3 molec test
Anaerobes			No SOD --> free O2 radicals dec perfusion is a risk --> lowered redox potential infects are polybacterial
Fusobacterium	F. Nucleatum F. Necrophorum F. Varium	Gram neg rods	
Bacteroides	B. Fragilis B. Oralis B. Corrodens	Gram neg rods	
Prevotella	P. Melaninogenica P. Asachorylitica P. Gingivalis	formally bacteroides	black pigm colonies
Propionobacterium	P. Acnes	Gram + rods	
Actinomyces	A. Israeli		
also see above for cocci Peptostrep (G+) and Veillonella (G-)			
Clostridia		Gram + rods w. SPORES	monobacterial histotoxic and neurotoxic
	C. Perfringens	histotoxic	cherry red urine (hemoglobinuria)
	C. Difficile	histotoxic	#1 cause nosoc. Diarrhea antibiotics are risk (cephalosporins, lincosamides) no culture --> EIA
	C. Botulinum	neurotoxic	ask lab to look for toxin not bacteria
	C. Tetani	neurotoxic	dif to isolate organism
<b>ENTERICS</b>		Oxidase neg exc Plesimo, pseudom Non-Fastidious (grow on MacKon)	Ferment Glucose, reduce nitr

Shigella		Gram neg rods / aerobic NLF		Poor fecal-mouth habits (i.e. kids) Low inoculum (10 organisms) lab looks for NLF + biochem test for Shigella and serogrp
	S. Dysenteriae		A	not common in USA toxin is cyto/emtero/neuro damges blood vessels
	S. Sonnei		D	Common in USA
Salamonella		NLF		High inoculum can exist in gall-stones --> carrier state (Typhoid Mary) same lab stuff as Shigella
	S. Typhi			Special type request urine culture for Salm do blood cult - systemic dx
Eschericia	E.Coli	LF		Low inoculum (100 organism) O157:H7 Lab look for LF in stool screen for STX1/STX2 w EIA
Yersinia	Y. enterocolitica			Lab doesn't screen for it must ask lab to look in stool
Pseudomonas	P. Aeruginosa	NLF / Oxidase +/Oblig Aerobe		
Burkholderia	B. Cepacia			Pathogen in pts w Cyst Fibr
	B. pseudomallei			asymptomatic to sepsis in pulm or cutan infection multiple abscess in resp orgn and skin, bone, joint SE Asia, North Australia
Bacillus				Not looked for in lab
<b>OXIDASE POSITIVE CUVED G- RODS</b>				
Campylobacter (curved rod)		Formerly Vibrio		
	C. Jejuni			Thermophil/Microaero CAMPY-BAR agar @42deg more enteritis than salm+shig
	C. Coli			
	C. Fetus			Growth @35deg
Helicobacter	H. Pylori	Formerly camylobacter		Diag by biopsy CLO (campy-like-organism) test for breakdown of Urea aka Rapid Urease test - chng pH of media Urea breath test no culture --> diff to grow serology - active vs. inactive ? newest test - stool for HPSA (H., Pylory Stool Antigen)
Vibrio				halophilic and non halophilic

	V. Cholerae			non-halophilic Large enoculum In US - along coast improp cooked seafood Clinical Diag in endem areas TCBS select media
	V. mimicuse			Similar to Cholerae assoc. w raw oysters
	V. Parahemolyticus	Halophilic		Gastroenter in Japan TCBS culture
	V. Vulnificus	Halophilic		
	V. Alginolyticus	Halophilic		Similar to Vulnificus
Rickettsia		Obligate intracellular		Diag by special lab
	R. Prowazeckii			multiply in cytoplasm/ cell lysis
	R. Typhi			multiply in cytoplasm/ cell lysis
	R. Rickettsii			multiply in nucleus/ exosyctos:
	R. Akari			multiply in nucleus/cell lysis
Orientia	O. Tsutsugamushi	Obligate intracellular		mult in cyto/ exosytosis
Coxiella	C. burnetii	Obligate intracellular		mult vacuoles / cell lysis
Ehrlichia		Obligate intracellular		mult vacuoles / cell lysis
	E. Equi			
	E. Chaffensis			
	E. Sennetsu			
Bartonella				
	B. Bacilliformis			destroys RBC's
	B. Quintana			Can be cultured Cell-Free
	B.Henselae			
Mycobacteria		no motil /no spores /AEROBIC		Fastidious, slow growing MYCOLIC Acid cell wall resist envir (except heat) diff to stain (Acid Fast) Ziehl-Nielsen / Kinyoun stains Lowenstein-Jensen medium MOTT (Runyan grp)
	M. Tuberculosis M. Africanum M. Bovis			Very antigenic Culture - slow but sensitive Smear - only if losts of orgnsm Bactec - broth cluture, fast Probe/PCR best
	M. Avium M. Genavense M. Marinum M. Scrofulaceum			In AIDS In AIDS Awquarium owners Swolen lymph nodes in peds
	M. Leprae			never cultured in dish only cultured in armadillo
Nocardia		Branching rods		weakly acid fast

	N. Asteroides N. Brasiliensis			
Chlamydia		Obligate Intracellular No cell wall (cross linked protein)		Elem. Bodies - infectious Retic. Bodies - intracellular Hemaglut attaches to cells inclusion bodies stain w Iodine
	C. Trachomatis		A-C D-K L	common cause of blindness most common STD
	C. Psttaci			
	C. Pneumoniae			assoc. w. artheroscl / hrt dz
Mycoplasma		no cell wall		nutritionally exacting slow-growing, fried-egg colony antiB to surf antiG inhib growth
	M. Pneumoniae			cholest needed /attch to sialo glycoprotein on trach epithel cold aglut (IgM) agnst erythro
	U. Urealyticum			urea needed
	M. Genitalium			
	M. Hominis			
	M. Fermantans			
	M. Pirum			
Treponema		Spiral Shaped Anaerobic		can't cultivate, cant gram stain use silver stain or dark-field or immunoflorescence
	T. Pertenuae			
	T. Carateum			
	T. Pallidum			infect blood ves. + lymphatics Hard Chancre - primary Localazided Rash - secondary VDRL/RPR - Screening FTA/MHA - Confirmatory Serology not valid in HIV
Borrelia		microaerophilic		can cultivate, stain w. aniline dye (Wright or Giemsa)
	B. Recurrentis			antigenic variation in VMP cultiv in liq media w. blood or chick embryo or mice
	B. Hermsii			antigenic variation in VMP cultiv in liq media w. blood or chick embryo or mice
	B. Burgdorfrei			incidence high in summer Barbour-Stoener-Kelly (BSK) medium - low yield Serology not reliable
Leptospira	L. Interrogans			lumen of nephritic tubule of animals - shed in urine Flecher's medium, serology
Legionella	L. Pneumophila	Obligate Aerob, poor stain, no motil/spr need special stain (Diederle silver) Facultatively Intracellular		Fastidious - Buffered Charcl Yeas Extract (BCYE) medium Need l-cystine + ferric Iron

		in monocytes and macrophages		
Bacillus	B. Anthracis	makes SPORES		not communicable enlarged mediastinum on CX
Francisella	F. Tularensis	aerobic		Cultural recovery dangerous for lab personnel
Brucella		intracellular		
Listeria	L. Monocytogenes	intracellular		immunocompromised
Pasteurella	P. Maltasata			
Shigella>Campylobacter>Salmonella>Escherichia>Vibrio				---> most to least potent / lowest to highest inocul
Otitis media	Mening (newborn)	Mening (kids)		UTI
1 pneumo	1 E. Coli	1. Pneumococ		1. E. Coli
2 H Infl	2. Gr. B Strep	2 Meningococ		
3 Moraxella	3. Listeria	3 H. Influenza		

Toxins	Diseases	Reservoirs	Transmission	Treatment
Coagulase Enterotoxin Exfoliatin Leukocidin Protein A TSST	Skin (suppuration) Food Poisoning Endocarditis Pneumo Osteomyelitis TSS Scalded Skin	Nose, Skin esp. axilla/inguinal	Contact Fomites	Drain abscess Cloxacillin, nafcillin vanco, ceph Penic resist - plsm d b-lactamase
	Infection	Skin, Muc Memb.	Catheters Shunts i.v. lines	
	UTI "Honeymoon cystitis"			
Streptokinase Streptodornase Hyaluranidase Pyrogenic tox Erythrogenic tox	Sore Throat w. -tonsillitis -mastoiditis -middle ear inf -meningitis -scarlet fever Skin inf. (w. staph) Spread to bld/lymph -Erysipelas -Puerperal Fever -Necrotizing fasciitis Post Strep - 3 weeks -Acute Glomeruloneph skin infection -Rheumatic Fever sore throat	Throat Skin Rectum	Contact	Penic G erythro
	Neonatal Meningitis + Sepsis	Female Genit Trac	at birth	
Capsule is antigenic and virulent	Pneumo or Bronchitis w. poor drainage or bad epiglottis Meningitis or Endocard w. bacteremia			3rd cephalo penic resist by altering PBP
	Abdom. Abscess UTI / Endocard	Colon		Penic + aminogl penic G resist
Acids	Dental Caries Endocard - risk fact -prev. rheumatic fev -open heart surg -prosthetic joints	Mouth Female Genit Trac		
	Abscesses	Mouth, Resp Trac. Female Genit Trac Bowel		

	?periodont, soft tis ?	UR / GI / Vagina		Penic / clindo
			Human Only	
CAPSULE (13 grp) Endotoxin IgA protease	Meningococemia Meningitis Cutaneous / sft tiss Waterh-Fredric (adrenal)	Upper Airway	Overcrowding Fatigue	Penic - disease rifampin - carry. cipro - carry. but not children 3rd cephalo Plasmid B lactamase
PILLI LPS A-comm to gon O - comm to G- Capsule IgA protease Colonial (T1-5, 1/2 virulent)	Venereal 80% Fem asympto Most males sympto PID in fem	Human		
	Acute Otit Media (3rd) Sinusitis Penumo - elderly	Upper Airway		penic resist by B-lactamse ceph, erythro
				tetracyc, bactrm ampi+clav acid
CAPSULE (b most pathogenic) - spread no capsule - local	Acute bact meningitis -lead peds mening Otitis Media Acute epiglottitis cellulitis Pink eye, pneumo, etc	Upper Airway		Ampicillin 25-40% resist by RTF B-lac-se 3rd cepha
	Soft chancre Chancroid Acute Conjunctivitis	Not norm flora	STD	Ampicillin
		Resp. Tract		
Pertussis toxin Pilli/Fimbrae Capsule (phase growth imp in vac prod)	Whooping cough			Usually resolves Tetracycl or eryth makes non-inf do not alter dx

	opportunistic inf	Skin/ muc memb		
O-antig heat stable in all coryne K-antig heat labile only in diph Cord factor - very tox Exotoxin	Toxemia by "tox" gene strains lysogenized by Beta-prophage preff myocard / perip nerve			Antitoxin 1st pencillin 2nd
		Skin	catheters/ ports	vanco very resist - drug cant reach target Ampicillin
	bacter. Vaginosis most comm cause other - yst/protozoa			
no toxins but combo of factors --> foul smell		soil skin<mouth< colon		Surgical penic exc. Bacteroides
	inf below diaphragm			penic resist metranidazole clindamycin penic susept
	inf above diaphrag			
	zits			
	lumpy jaw/cx/abd inf			
make exotoxins				
Lecithinase C	gass ganrene	exogen /endog endog more comm		penic surg drain nec
Tox A -enterotoxin Tox B -cytotoxin Test for toxin in stool not in peds (toxin w. no dx) Enzyme Immuno Assay (EIA)	diarhea/ pseudomemb ranous collitis	bowel / nosocomial		vanco / flagil
blocks AtCh release very toxic inactivated by heat		soil/canned food	ingestion of grp A/B/E toxin	antitoxin
exotoxin	Lockjaw	soil/GI		tetanus Ig penic
endotoxin, capsule				

	Dysentery	Humans only	Ingestion of contaminated stuff	Antibio shrtns duration of symp Bactrim Quinolones
Shiga toxin	Clasic tropic dysentery			
	enterocolitis incub 6-48h	Human/Animal GI	Ingestion	Self-limited tx may prolong dx/carrier state
	Enteric fever incub 10-14d no diarrhea	Human only		bactrim quinilones broad cephalo
Shiga toxin -STX (plasmid aquired)	Sepsis, UTI, meningitis gastroenteritis, etc.	Endo/exogenous	inges of uncooked meat or unpasteurized juice	do not tx w antibiotic (hyperstimulate toxin plasmid)
	mesenteric lymphadenitis (like apendicitis)	animals	ingestion	Self-limited (ceph/tetracyc bactrim if severe)
	Opportunistic	Nosocomial soil/water	multi-drug resist	
	meliodosis	soil/water	inhalation/contact	
	very shrt lived poisoning	in the air, envorn.		
	Abd pain, nausea, fevr headache, diarr.	Primarily animals	ingestion	
	Gastroenteritis			usually none Bactrim, cypro erythro if severe
	Gastroenteritis Systemic illness typically no diarrhea			ampicil, aminoglyc
Potent urease - neutr gastric acids	Peptic Ulcer Dx			Bismuth salt, amox, or tetracycl, metro, or clarithro and PPI
?				

Enterotoxin causes secr of ions	Rice water Stools Severe dehydr. (24L/day) Asymptom in endemic areas	Fecal infect. H2O	Ingestion	restore fluids and electrolites Bactr. Cipro, tetracy in severe
				self limited
	Septicimia (raw oyster) Wound infection	Marine envir.		
				Doxy/ Tetra/Chlora
	Epidemic typhus Brill-Zinsser (Recrudec)	Human	Louse	
	Endemic Typhus	Rat	Flea	
	Rocky Mt. Spotted Feve	Rodent	Tick	
	Ricketisial Pox	Mouse	Mite	
	Scrub typhus	Various	Chiger	Doxy/ Tetra/Chlora
	Q Fever	Cattle	Respiratory	Doxy/ Tetra/Chlora
		dog, deer	Tick	Doxy/ Tetra/Chlora
	Granulocytic Ehrlich			
	Monocytic Ehrlichiosis			
	Sennetsu Fever			
	bacillary angiomatosis Peliosis			combine w rifampin for more serios dz
	Oroya Fever	man	sandfly	
	Tranch Fever	man	louse	Cephalo/ Gento
	Cat Scratch	cat	none, scratch	Azithro
		Environment nl. Human flora		
None - T-cells cause dz	TB	humans/primates	droplet nuclei	INH - prohylaxis add rifampin for tx
			Scrofula	multi resist /hard tx multi resist /hard tx multi resist /hard tx multi resist /hard tx
	Tuberculoid Leprosy Lepramatous Leprasy		contamination of wounds by nasal secretiuons	dapsone (sulfa) rifampin to lower drig resistance tx for long time (yrs)
	pulmonary (in pts	soil	inhalation	sulfa

	w. other dz) cutaneous (garden)		skin contact	Bactrim
				Tetra/Erythro
	Hyperendem. Trachoma Incl Conjunct, UTI, pneum of newborns Lymphogr. Venereum			Direct contact/ fomites STD/ birth
	Parrot Fever	Birds	Resp. / excrement	
		plant/animal/soil/man		Tetra/Erythro
	mild URI		Close contact in winter ages 5-9	
	UTI		Sexual	
	UTI			
	UTI			
	infect in AIDS			
	infect in AIDS			
	relapse + remission primary lesion, antibody response	nl flora on muc mem	abraded skin	Penicilin
	Yaws, frambesia	tropics	non-venereal	
	Pinta	centr, south america	non-venereal	
			sexual or non	
			Arthropod	Penicilin / Tetra
	Epidemic relps fever	Human	Louse	
	Endemic relaps fever	Rodents	soft shell tick	
	Lyme Dz	Deer, etc.	hard shelled tick	ceftriaxone in later stages
	Hemorr. Conjun. acute phase, leptospir or immune phase		contamin. Water	
impairs abil of phago- cytes to use O2	Pontiac Fever Legionaires DZ	Fresh Water	Aerosoles	Macrolides (azithro clarithro) / Quinolns (cipro, levoflaxn)

edematous swell (R)	sepsis, death from toxin	soil infected animals	contact - comon inhal/GI - not com	Penicilin - best erythro/tetra ??
	Tullaremia lesion @ orig site and swollen lymph n	Animals	skin abrasion blood aerosol eating, tick/flea	tetra or aminoglyc
	chronic malaise, weak, fever late in day	Animals	contact, milk	tetra or aminoglyc
	neonatal meiningitis	animals, soil, water plants, milk, GI, vgn	ingestion, bitrht effect old /young	ampicil / aminoglyc
		Dog/Cat	Bite	Ampicillin
lum Commun Pneumo 1. Pneumococ	Bacterimia 1. Escheric 2. Klebsiella 3. Enterobacter	Diarrhea 1. Campylobacter 2. Salamonella 3. Shigella		

Vaccine				
None				
None				
Capsule				

	Pathogens need CO2 and Martin Lewis or NYC Medium and don't grow at Room Temp or make			
A,C capsule grps				
Condoms	G-stain 100% diag in male not fem Female need culture			
dec incid. (3mo-5yr) capsule component w immunogenic carrier incid. Same for >5 y/o				
Cellular - killed -boosters req -major neuro sig Accelular - inact toxin + struc comp -less risk for side eff	Catarhal/Paroxysmal/Convalescent stages 2/2-4-2-4wks more + cultur earlier in dx			



Inf Control Hand Wash				
vacine when travel to endemic area				
cooking Pasteurization				
cooking				





for livestock				
pasteur milk destroy inf anim				



