Gram (+) Organisms

Cocci	**Aerobic** (Cluster)	↣ Staph. aureus ↣ Staph. epidermidis ↣ Staph. saprophyticus
	Aerobic (Pair/Chain)	↣ Strep. pneumoniae ↣ Strep. pyogenes (Grp A) ↣ Strep. agalactiae (Grp B) ↣ Viridans streptococci ↣ Enterococcus faecium ↣ Enterococcus faecalis
	Anaerobic	↣ Peptococcus ↣ Peptostreptococcus
Bacilli	**Aerobic**	↣ Corynebacterium ↣ Listeria (facultative aerobic & anaerobic) ↣ Lactobacillus ↣ Gardnerella ↣ Bacillus
	Anaerobic	↣ Clostridium ↣ Lactobacillus ↣ Actinomyces ↣ Propionibacterium

Gram-positive bacteria, identifiable by their thick cell walls staining purple, are targeted by antibiotics like penicillin, glycopeptides (e.g., vancomycin), and lipopeptides (e.g., daptomycin) that disrupt cell wall synthesis or membrane integrity, depending on the bacterium's resistance and infection site.

Pneumonia (PNA): Pathogens

Community-acquired PNA (CAP)	(+) Strep. pneumoniae (–) Haemophilus influenzae (–) Moraxella catarrhalis (A) Mycoplasma pneumoniae (A) Legionella species (A) Chlamydia pneumoniae

Pneumonia (PNA): Pathogens (cont)

Hospital-acquired PNA (HAP) **Ventilator-acquired PNA (VAP)**	(+) MRSA (–) Pseudomonas aeruginosa (–) Acinetobacter species (–) Enterobacteriaceae family
Aspiration	(–) Enterobacteriaceae family (+/–) Anaerobic organisms

Pneumonia (PNA) is the infectious disease of the Lower Respiratory Tract. The 3 main routes of inoculation are inhaled, bloodstream, and aspiration.

Skin & Soft Tissue Infections (SSTI)

Cellulitis	**Folliculitis**	
	Furuncles, Carbuncles, Abscesses	S. aureus is the most common cause
	Diffuse cellulitis (Erysipelas)	Group A Strep (GAS; S. pyogenes) is the most common cause
	Impetigo	Strep pyogenes -or- S. aureus are the most common cause
	Necrotizing SSTIs	Streptococcus pyogenes (GAS) Mixed infection (Gram +/- and anaerobes Clostridium species
Diabetic Foot Infections	Begin as skin ulceration, can spread into deeper tissue and bone	S. aureus Strep species Enterobacteriaceae Anaerobes
Surgical Site Infections	(Develop >48 hrs post-op)	Staph. aureus Strep species
Immuno-compromised	HIV, hematology/oncology	Common or unusual bacteria

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Gram (-) Organisms

Bacilli	**Anaerobic**	↣ Bacteroides ↣ Prevotella ↣ Fusobacterium
	Aerobic (Fermenters)	**Enterobacteriaceae:** ↣ Proteus ↣ E. coli ↣ Klebsiella ↣ Enterobacter ↣ Serratia ↣ Salmonella ↣ Shigella ↣ Citrobacter Other (Vibrio/Aeromonas)
	Aerobic (Non-fermenters)	↣ Pseudomonas ↣ Acinetobacter ↣ Stenotrophomonas ↣ Burkholderia
	Aerobic (Fastidium)	↣ Haemophilus influenzae ↣ Helicobacter pylori ↣ Campylobacter ↣ Bartonella ↣ HACEK group
Cocci		↣ Neisseria ↣ Moraxella

Gram-negative bacteria have thin cell walls with an outer membrane, staining red in the Gram stain process. They are treated with antibiotics such as aminoglycosides, cephalosporins, and fluoroquinolones, which target protein synthesis, cell wall synthesis, and DNA replication, respectively, adapting to their unique outer membrane and resistance mechanisms.

Urinary Tract Infections: Pathogens

Uncomplicated UTIs	(–) **PEK** (E. coli, Klebsiella pneumoniae, Proteus) (+) Enterococci (+) Staph. saprophyticus
Complicated UTIs	The above pathogens + MDR pathogens in those with frequent UTIs and nosocomial UTIs (S. aureus, Pseudomona)

Urinary Tract Infections can be acquired via **Ascending** (urethral colonization with fecal flora) or **Descending** (bloodstream → kidneys).
Uncomplicated is defined as UTI in young, otherwise healthy females.
Complicated is defined as everyone else (e.g. Pyelonephritis, Prostatitis, Catheter/Nosocomial related UTIs, and Renal stones)

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