General characteristics

Staphylococci

- Some are common inhabitant of the skin and mucous membrans.
- Spherical cells arranged in irregular clusters (grape-like clusters).
- Produces many virulence Factors.
- They are catalase positive.
- Catalase & Coagulase Positive.

Streptococci

- Gram-positive cocci arranged in chain.
- Catalase & Coagulase Negative.

Gram-positive Cocci

Staphylococcus

Staphylococcus aureus
- Coagulase positive
- Catalase positive

→ Diseases:
- food poisoning
- Localized infections
- Spreading infections
- Necrotizing infection
- Systemic infection

→ Complete hemolysis.

Staphylococcus epidermidie
- Coagulase Negative
- Catalase positive

→ Live in the skin and mucous membran

→ Diseases:
- endocarditis
- bacteremia
- UTI

Staphylo coccus Saprophyticus
- Coagulase Negative
- Catalase positive.

→ infrequantly Live on skin, intestine Vagina ; UTI.

Streptococcus

Streptococcus α-hemolytic
- Catalase and Coagulase Negative
- Partial hemolysis of RBCs.

Streptococcus β-hemolytic
- Catalase and Coagulase Negative.
- Complete hemolysis of RBCs

Pyogenes (Grap A)
- most serious streptococcal Pathogen.
- Inhabits throat, nasopharynx occasionally skin.

→ Diseases:
- pharyngitis
- skin infections
- Necrotizing infections
- systemic infections.

agalactiae (group B).
- Normal Flora of Female genital system may Cause neoncatal pneumonia if inhaled during Labour.

streptococcus γ-hemolytic
- Catalase and Coagulase Negativ.
- No-hemolysis of RBCs.

Streptococcus pneumoniae (diplococci).
- pneumoniae inFlammatory
- inhabits nasopharynx of healthy people
- may also infect Brain: (pneumoniae meningitis) and Blood stream (pneumoniae septicemia).

Gram-positive Bacilli

Bacillus

Bacillus anthracis
- Large, block-shaped Rods.
- Central spores
- Virulence-Factors - polypeptide Capsule / exotoxins

3 types of anthrax:
- Cutaneous - spores enter through skin, black sore; Least dangerous.
- pulmonary - inhalation of spore
- gastrointestinal - ingested spores.

Bacillus Cereus.
- grows in foods, spores survive Cooking / Reheating (rice dishes)
- ingestion of toxin-containing food Causes nausea, vomiting, abdominal Cramps, diarrhea, 24-hour duration
- No-treatment.
- Increasingly reported in immunosuppessed.

Clostridium

Clostridium Botulinum
- intoxication associated with inadequate food preservation.
- Toxin carried to neuromuscular Junction: blocks the release of acetylcholine necessary for muscle contraction to occur. clinically
  - Double or blurred vision
  - Difficulty swallowing.
  - Neuro muscular symptoms. Flaccid paralysis.

Clostridium Perfringens (gas gangrene).
- Soft tissue: wound infections: myonecrosis
- predisposing factors: infection of all type of wounds.
- virulence factors (Lytic enzymes).

Clostridium difficile
- Normal flora Colon, in Low number
- Causes antibiotic-associated colitis.
- Due to treatment with broad-spectrum antibiotics that kill other bacteria: C. difficile overgrowth.
  - Enterotoxins that damage intestines.
  - major cause of diarrhea in hospitals.

Clostridium tetani
- Common resident of soil and GI tracts of animals.
- Causes tetanus or lockjaw a neuromuscular disease.
- most commonly among IV drug abusers and neonates in developing countries.

Gram positive Non-spore Formers

Listeria monocytogenes

- found in soil, water lunchean, meats, hot dogs cheese
- Resistant to Long storage and refrigeration, heat, salt PH extremes and bile.
- Neonatal listeriosis may Cause meningits
- Adult listeriosis may Cause gastroenteritis or meningits

** muller Hinton agar

Coryn bacterium diptheriae:

- Virulence Factor: diphtherotoxin
- Vaccine (DPT)
- Causes a pseudomembrane which Can cause asphyxiation
- Acquired via respiratory droplets from carriers or actively infected individulas.

myco bacterium

- Gram-positive irregular bacili
- Acid-fast staining mycolic acids.
- Strict aerobes
- Grow slowly
- Virulence factors Contain complex waxes that prevent destruction by lysosmes or macrphag.