* Infections in immunocompromised host
* Objectives
* Briefly outline various immunodeficient states and enumerate common infections in particular immunodeficiency states
* Discuss pathogenesis and transmission of infections in immunocompromised host
* Describe briefly lab tests in diagnosing infections in immunocompromised.
* Compromised host
* Compromised hosts are people with one or more defects in their defences against microbial invaders
* Suffer severe or life threatening infections
* Factors that make a host compromised
* Defects in innate immunity
* Primary defects are inherited or occur by exposure in utero
* Secondary defects is due to an under lying disease state or treatment of a disease
* Defects in adaptive immunity
* Primary defects are inherited or occur by exposure in utero
* Secondary defects is due to an under lying disease state or treatment of a disease
* Primary defects in innate immunity
* Congenital defects in phagocytic cells
* Repeated pyogenic infections e.g *Staph aureus*
* Examples
* Chronic granulomatous disease
* No oxidative burst by phagocytes
* Jobs syndrome
* Chediak hegashi syndrome
* Inherited complement deficiencies
* Repeated pyogenic infections
* Neisseria infections
* Secondary defects in innate immunity
* Disruption of body mechanical barriers
* Skin damage by burns, trauma, surgery etc
* *Pseudomonas aeruginosa* infection in burns
* *Staph aureus* , gam negative infections in wound
* Mucosal damage by instrumentation
* Devices such as catheters, prostheses, shunts, allow organisms to bypass defenses and enter sterile sites
* *Staph epidermidis* infection
* Defective phagocytic functions
* Diabetes mellitus
* Primary defects in adaptive immunity
* Congenital B cell deficiencies
* Brutons disease
* Pyogenic infections
* IgA deficiency(failure of immunoglobulin switching)
* Sinus and lung infections
* Congenital T cell deficiency
* Thymic aplasia(Di george syndrome)
* Viral, fungal and protozoal infections
* Failure of formation of pharyngeal pouch
* Chronic mucocutaneous candidiasis(failure of T cells to respond to candida)
* Widespread candidal infection
* Primary defects in adaptive immunity
* Congenital B & T cells deficiency
* Severe combined Immunodeficiency(SCID)
* Inherited defect of Gene encoding interleukin-2 receptors .  Without the receptors the T-cells and B-cells are unable to communicate with each other
* Repeated bacterial(pyogenic) , fungal, viral and protozoal infections
* Secondary defects in adaptive immunity
* Malnutrition(protein deficiency)
* Infections( e.g. HIV infection🡪loss of helper T cells)
* Neoplasia(nutritional competition btw normal and cancerous cells)
* Medical treatment
* Organ transplant
* Immunosuppressant therapy
* Radiotherapy affects proliferation of T cells
* Splenectomy(impaired humoral responses)
* Severe infections with capsulated bacteria
* Oppertunistic infections
* Important opportunistic pathogens
* Bacteria
* Gram positive
* Staph aureus
* Pyogenic infections
* Staph epidermidis and other coagulase negative staph
* Device related infections
* bacteremia
* Nocardia spp.
* Pneumonia
* Abcesses in various organs
* Gram negative
* Enterobactericiae
* Pyogenic infections and septicemia
* Pseudomonas aeruginosa
* Burn wound infections
* Others
* Mycobacterium tuberculosis
* Tuberculosis
* Mycobacterium avium intercellulare
* Severe diarrhea and pneumonia in AIDS pts
* Fungi
* Candia sp
* Oral thrush
* Skin infections
* Candidemia and abcesess
* Cryptococcus neoformans
* Meningitis
* Pneumonia
* One of the AIDS defining illness
* Pneumocystis jerovecii
* Severe Pneumonia (imp in AIDS pts)
* Aspergillus sp
* Invasive lung infection
* Mucor sp
* Invasive lung, sinuses and brain infection
* Parasites
* Toxoplasma gondii
* Retinitis
* Encephalitis
* Pneumonia
* Important in AIDS pts
* Cryptosporidium parvum
* Diarrhea in AIDS pts
* Isospora belli
* Diarrhea in AIDS pts
* Viruses
* Cytomegalovirus
* eosophagitis,pneumonia, retinitis,diarrhea
* Herpes Simplex Virus
* oral & genital herpes
* Human Papilloma Virus
* HPV, genital warts, anal/cervical cancer
* Ebstein barr virus
* Hairy leukoplakia
* Herpes zoster virus
* shingles
* Transmission of infection in immunocompromised host
* Endogenous infection
* Patients own microbial flora
* Exogenous infection
* Infection enters the body through any of the exogenous routes
* Respiratory
* Feco-oral
* Sexual
* contact
* Laboratory diagnosis of infections in immunocompromised patients
* Bacterial infection
* Microscopy
* Gram stain
* Cultural & sensitivity
* Serology (antigen/antibody detection )
* PCR
* Viral infections
* Serology
* PCR, RT-PCR
* Viral cultures
* Fungi
* Fungal cultures on saboraud agar
* Microscopy
* Lactophenol blue stain
* India ink (cryptococcus)
* Parasites
* Serology(toxoplasma)
* Modified acid fast stain( cryptococcus parvum)