General Internal Medicine Review Course

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• DUE TO TIME CONSTRAINTS content of some slides will be only discussed briefly but is here so you can STUDY it on your OWN
• Each organ system has multi-year subspecialty training
• Expectations: establish a working diagnosis, initiate treatment, know when to refer to a specialist
• Limitations: diagnostic testing, availability of specialists
• Do the best you can (medical ethics)
  • If it’s key to the diagnosis, facilitate external testing
  • Give it your best guess and initiate treatment and assess for response
  • Refer to specialist when indicated
  • See them back to coordinate care
Infectious Diseases

Organism overview

Treatment overview

Antibiotic stewardship
• The following slides are selected from a presentation found online
Infectious Diseases

Assoc. Prof. Jan Laco, MD, PhD
Infectious diseases

1. Bacteria

2. Viruses

3. Mycetes

4. Parasites
Bacterial infections

- **toxemia** = toxins in blood circulation
- alimentary
  - botulotoxin (*Cl. botulinum*)
  - enterotoxin (*Staphylococci*)
- wound
  - tetanotoxin (*Cl. tetani*)
- other
  - diphtheratoxin (*C. diphtheriae*)
- regressive changes (liver, kidney, heart)
Bacterial infections

- **bacteremia** = bacteria in blood circulation
- time-limited
- elimination by immune system
- e.g.: digestion, tooth extraction, tonsillectomy, catheter, cystoscopy...

!!! heart valves defect $\rightarrow$ infective endocarditis $\rightarrow$ ATB cover !!!
Bacterial infections

- **sepsis** = bacteria > immune system
- fever + splenomegaly + lymphadenopathy
- *streptococci, staphylococci*

- **metastasizing sepsis** (septicemia)
  - nasopharynx → menings (*N. meningitidis*)
  - pulmonary abscess → brain abscess
  - furuncle → bones + kidney (*Staphylococci*)
Bacterial infections

- **pyemia** (septicopyemia) = thrombi + bacteria in blood circulation
- sequela: septic infarction → metastatic abscess
- 1. central – infective endocarditis
  → brain, kidney, skin, ...
- 2. peripheral – purulent thrombophlebitis (p.t.)
  → lungs
- 3. portal – p. t. of portal vein branch
  → liver
- 4. umbilical – p.t. of umbilical vein (newborn)
Staphylococci

- Gram+, common
- normally on skin + mucosa
- skin abscesses x sepsis
- nosocomial infections
- secondary infections (influenza)

*Staph. aureus + Staph. epidermidis*
Staphylococci

1. skin lesions (wounds)
   - furuncle → carbuncle (DM)
   - impetigo
   - panaritium
2. mastitis (breast feeding woman)
3. osteomyelitis + arthritis
4. enterocolitis + alimentary enterotoxicsis
5. acute infective endocarditis
6. toxic shock syndrome
Streptococci

- Gram+, common
- β-hemolytic (A-D, G)
  - *Str. pyogenes* (A)
  - *Str. agalactiae* (B) – mother’s vagina → newborn’s meningitis
- α-viridans (H)
  - subacute infective endocarditis
  - *Str. mutans* – caries, pulpitis
- anaerobic (*Peptostreptococci*) – oral cavity
Streptococci

- *Str. pyogenes (A)*
  1. local inf. – phlegmone, impetigo, wound inf.
  2. angina (tonsilitis) → otitis, sinusitis
  3. scarlet fever (erythrogenic toxin)
     - angina + oral enanthema (raspberry tongue) + skin exanthema (face, trunk)
  4. erysipelas
     - skin erythema (lower limbs, face) + toxemia
     - lymphatic + blood vein thrombosis → lymphostasis → edema → elephantiasis
Streptococci

- sequelae (*Streptococcus A*)
  - M protein
  - cross reaction (immune)
  - acute glomerulonephritis
  - rheumatic fever
Pneumococci

- *Str. pneumoniae*
- Gram+ diplococci
- children
  - rhinitis, nasopharyngitis, sinusitis, otitis
- adults
  - lobar pneumonia → meningitis
Neisseria

- Gram- diplococci
- *N. meningitidis*
- sporadic x endemic
- children, young adults, soldiers
- nasopharynx → menings
- !!! rapid course → death (hours) !!!
- meningeal syndrom + skin purpura + DIC
- Waterhouse-Fridrichsen syndrome
  - meningococcal sepsis + DIC + bleeding in adrenals (insufficiency)
Neisseria

- *N. gonorrhoeae*
- gonorrhoea – STD
- purulent inflammation + discharge
- M: urethritis → prostate, vesicles
- F: kolpitis, cervicitis → endometritis → salpingo-oophoritis → sterility
- distant complication: arthritis (knee)
Escherichia coli

- Gram- rod
- normal in colon x other location - pathogenic
- *enteropathogenic* – diarrhoea (newborn)
- *enteroinvasive* – diarrhoea (adults)
- *enterotoxigenic* – travellers’ diarrhoea
- *enterohemorrhagic* - verotoxin
  - hemorrhagic colitis
  - hemolytic-uremic syndrome (children)
Salmonella

- *S. typhi* – typhoid fever
- food → bowel → liver → gallbladder → bowel
- ileum
- 1. hyperplasia of RES in ileum – typhoid cells
- 2. mucosal necroses upon Peyer patches
- 3. ulcerations
- 4. reparation → scar
- complications
  - bowel perforation/hemorrhage
  - chronic carriage (gallbladder)
Salmonella

- *S. paratyphi* – paratyphoid fever

- *S. enteritidis, S. typhimurium*
  - gastroenteritis + enterocolitis
  - alimentary
  - vomiting + diarrhoea
Shigella

- S. dysenteriae, S. sonnei, S. flexneri
- bacillary dysentery
- „dirty hands“ + alimentary
- hemorrhagic colitis + ulcers + pseudomembranes
Campylobacter + Helicobacter

- *Campylobacter jejuni*
- infants
- diarrhoea
- *Helicobacter pylori*
- asymptomatic
- etiology of:
  - chronic gastritis
  - peptic ulcer of stomach and duodenum
  - gastric carcinoma
  - gastric MALT-lymphoma
**Vibrio**

- *V. cholerae* – cholera
- water, food, ill man
- massive watery diarrhoea (15 l) !!!!
- NO inflammation x enterotoxin
- dehydration → collapse

- cholera nostras - enterotoxins
Klebsiella

- *K. pneumoniae*
  - pneumonia
  - lung + liver abscesses

- *K. rhinoscleromatis*
  - ulcerations of upper airways
**Haemophilus**

- *H. influenzae*
  - superinfection of viral infections
  - children – *epiglottitis*, meningitis, pneumonia
  - adults - otitis, sinusitis, bronchitis

- *H. ducreyi*
  - ulcus molle (chancroid, soft chancre) - STD
Corynebacterium

- *C. diphtheriae* – diphtheria
- children
- pseudomembranous tonsilitis + laryngitis
- airway obstruction
- diphtheratoxin - myocarditis
Bordetella

- *B. pertussis* – whooping cough
- children
- acute inflammation of upper airways
- cough + vomiting + face edema
Pseudomonas

- *P. aeruginosa*
- colonization of respiratory and urinary tract
- immunocompromised patients
- plastic, catheters
- serious nosocomial infection
- pneumonia, enterocolitis, meningitis, sepsis
Listeria

- *L. monocytogenes*
- milk, cheese, meal
- necrotising granulomatous inflammation
- transplacental
  - abortion
  - *granulomatosis infantiseptica*
- newborn
  - meningitis
- adults
  - meningitis
Bacillus

- *B. anthracis* – anthrax
- animal products + dust
- hemorrhagic necrotising lesions
- skin – *pustula maligna*
- lungs, GIT, ...
Yersinia

- *Y. pestis* - plague
- rodents → rats → flea (*Xenopsylla cheopis*) → man
- *bubonic plague*
  - skin bite → LN (groin) → hemorrhagic necrosis (black color) + fistulas
- *pneumonic plague*
  - lung abscesses
- ↑ mortality
- WHO report
Yersinia

- *Y. pseudotuberculosis, Y. enterocolitica* – lymphadenitis *mesenterialis*
- children, ~ appendicitis
- alimentary
- bowel → mesenteric LN
- operation: normal app. + enlarged LN
- purulent granulomatous inflammation
Francisella

- *F. tularensis* - tularemia (hare disease)
- rodents → man
- regional LN – hemorrhagic necrosis + granulomatous inflammation
- ulceroglandular – most common, skin wound
- oculoglandular - conjunctiva
- typhoid – sepsis
- pneumatic
Legionella

- *L. pneumophila*
- water
- flu-like x pneumonia
- complications
  - pancarditis
  - skin + liver abscesses
Clostridium

- *Cl. tetani* – tetanus
- wound → toxins (blood, nerves) → spinal cord → spasms of striated muscles (necroses)
- risus sardonicus + opisthotonus
- 10-50% mortality
- *Cl. botulinum* - botulism
- meal from tins (toxin)
- visual disturbances, muscle paralysis → respiratory insufficiency + arrhythmias → death
Clostridium

- *Clostridium perfringens*
  - wound → emphysematous gangrene

- *Clostridium difficile*
  - pseudomembranous enterocolitis
  - after ATB treatment
**Leptospira**

- *L. icterohaemorrhagica* – Weil’s disease
- rodents’ urine + skin wound
- fever + jaundice + anuria
- liver - necroses + nephritis
- muscle necroses + myocarditis
Spirochetes

- Treponema pallidum – syphilis (lues)
**Borrelia**

- *B. recurrentis* – febris recurrens
  - ill man → louse → infection
  - mucosal hemorrhages + microabscesses
  - liver + spleen necroses

- *B. burgdorferi* – Lyme disease
  - rodents → tick (*Ixodes*) → man
  - 1. erythema migrans (skin)
  - 2. multiple EM + CNS + heart + joints
  - 3. acrodermatitis chronica atrophicans + CNS
Mycobacterium

- M. tuberculosis – TBC
- M. leprae – leprosy

- atypical mycobacteria
  - M. kansas, M. xenopi, M. intracellulare-avium

- TBC ~ pneumonia
- in AIDS patients
Actinomyces

- *A. izraelii* – actinomycosis
- Normal in oral cavity
- Firm infl. infiltrate → fibrosis (scar) → fistulas
- 1. cervicofacial – most common
- 2. thoracic – lung abscesses
- 3. abdominal – IUD → salphingo-oophoritis
- Mi: pus + act. colonies + Hoepli-Splendore phenomenon
Mycoplasma

- NO cellular wall
- children + young adults

- *M. pneumoniae*
  - pneumonia, otitis, sinusitis

- *M. hominis*
  - non-gonococcal urethritis

- *Ureaplasma urealyticum*
  - non-gonococcal urethritis
Rickettsia

- intracellular
- *R. prowazeki* – spotted fever (typhus exanthematicus)
- ill man → louse (*Pediculus h. corporis*) → skin wound
- endothelium (+ vasculitis) → blood circulation
- skin exanthema + petechiae
- encephalitis + myocarditis
- ↑ mortality (20-70%)
- recurrence (20 years) – Brill-Zinser disease (LN)
**Rickettsia**

- *R. rickettsii* – Rocky Mountain fever
  - tick (*Dermacentor*)

- *Coxiella burnetii* - Q fever
  - Australia
  - animal milk, dust inbreathing
  - atypical pneumonia
  - liver + bone granulomas
Bartonella

- *B. quintana* – trench fever
- eastern Europe

- *B. henselae*
- bacillary angiomatosis + peliosis hepatis
- cat scratch disease
  - regional LN – purulent granulomatous infl.
Chlamydia

- intracellular
- *Chl. psittaci* – ornithosis (psittacosis, parrot disease)
- poultry
- dust inhealing - interstitial pneumonia

- *Chl. trachomatis* (L1-3) – veneric lymphogranuloma
- STD (Africa, Asia)
- skin + mucosal painless ulcers (M: penis x F: cervix)
- LN: abscesses + necrosis + epithelioid cells
Chlamydia

- *Chl. trachomatis (A, B, C)* - trachoma
- contagious keratoconjunctivitis
- hypertrophic conjunctivitis → pannus over cornea → blindness

- *Chl. trachomatis (D-K)* - urethritis

- **Reiter syndrome:** urethritis + arthritis + conjunctivitis

- *Chl. pneumoniae (TWAR)* — atypical pneumonia
Infectious diseases

1. Bacteria
2. Viruses
3. Mycetes
4. Parasites
Viruses

- intracellular
- DNA or RNA
- cytopatogenic effect
- inclusions
  - intranuclear (IN)
  - intracytoplasmic (IC)
DNA viruses

1. Poxvirus
2. Herpesvirus
3. Adenovirus – pneumonia, ep. keratoconjunctivitis
4. Papovavirus
5. Parvovirus – erythema infectiosum
6. Hepadnavirus – HBV (Dane’s part.) - hepatitis B
Poxviridae

1. Variola (smallpox)

- E. Jenner - vaccination
- world-wide eradication
- ill man → air droplets
- skin: macula → papula → pustula → scar (face)
- IC - Guarnieri bodies
- generalization → necroses (liver, spleen, kidney..)
- ↑ mortality
Poxviridae

2. **Vaccinia** (cows)

3. **Molluscum contagiosum**
   - common
   - children
   - skin firm papules + central pit
   - IC mollusca bodies
Herpesviridae

1. Herpes simplex virus - HSV1, HSV2
2. Varicella-zoster virus - VZV
3. Epstein-Barr virus - EBV
4. Cytomegalovirus - CMV
5. HHV8 (KSV) – Kaposi sarcoma
**Herpes simplex virus**

- epidermotropism + neurotropism
- intraepithelial blister + IN eos. inclusions (Lipschutz)
- **HSV1** – oral (kissing)
  - primary – h. gingivostomatitis (lips, vestibulum)
  - reactivation – h. labialis
- **HSV2** – genital, perianal (STD)
  - M: balanoposthitis, proctitis
  - F: vulvitis, cervicitis, proctitis
    - newborn infection (delivery)
- complications: esophagitis, hepatitis, encephalitis
Varicella-zoster virus

1. Varicella (chickenpox)
- contagious febrile disease
- children
- skin + mucosa: small blisters → ulcers
- complication
  - interstitial pneumonia
  - encephalitis
2. Herpes zoster (shingles)
- adults
- reactivation from sensitive nerve ganglia
- unilateral !!!
- painful blisters in dermatoma of one nerve
  - trunk - intercostal nn.
  - face – n. V – h.z. ophthalmicus – keratitis
- complication: paresthesias
Epstein-Barr virus

1. Infectious mononucleosis
   - kissing disease, children
   - acute fever + RES
   - tonsils (pseudomembranous a.) + LN + splenomegaly (rupture!) + liver (hepatitis)
   - blood: lymphocytosis + atypical lymphocytes

2. Burkitt lymphoma (Africa – jaws)

3. Extranodal NK/T-cell lymphoma, nasal type

4. Hodgkin’s lymphoma (probably)

5. Lymphoepithelial carcinoma (nasopharynx)
Cytomegalovirus

- infectious saliva, blood, urine, milk, STD
- IN bas. inclusions („owl eye“)
- asymptomatic
- fetus
  - brain (microcephaly, hydrocephalus, calcifications)
  - ear, eye, liver, blood marrow, kidney, salivary glands
- adults – AIDS, immunosupresion
Papovaviridae – Human Papilloma Viruses (HPV)

- affinity to squamous epithelium
- oncogenic effect
- koilocytes (perinuclear halo)
- low risk – 6, 11
  - warts, condyloma acuminatum (STD)
  - oral + laryngeal papillomas
- high risk – 16, 18, 31
  - **cervical**, vaginal, vulvar, perianal carcinomas !!! – STD
  - squamous cell carcinoma of oropharynx
RNA viruses

1. Orthomyxovirus
2. Paramyxovirus
3. Rhabdovirus
4. Retrovirus – HIV - AIDS
5. Arenavirus
6. Coronavirus
7. Bunyavirus
8. Reovirus
9. Togavirus
10. Picornavirus
Orthomyxoviridae

- influenza (flu)
- ↑ infectious febrile d.
- epidemic
- acute onset, fever, general symptoms
- pharyngitis + hemorrhagic tracheitis
- complications
  - atypical pneumonia
  - bacterial superinfections (*H. influenzae*)
Paramyxoviridae

- *respiratory syncytial virus*
- infants
  - atypical pneumonia (Adams p.)
  - bronchiolitis obliterans
- adults
  - upper airways infection
Paramyxoviridae

- morbilli (measles)
- ↑ infectious exanthematous d., children
- 1st stage – flu-like, Koplik’s spots (cheek)
- 2nd stage – skin exanthema
- + RES (LN, tonsils, spleen, appendix)
- Warthin-Finkelday giant multinucleated cells
- complications
  - atypical pneumonia
  - encephalitis
    - acute postinfective
    - subacute sclerosing panencephalitis (late)
Paramyxoviridae

- **parotitis epidemica (mumps)**
- acute flu-like d. + SG swelling, children
- unilateral x bilateral, painful
- ↑ parotis + ..
- complications
  - orchitis + oophoritis (sterility)
  - pancreatitis
  - meningoencephalitis
Togaviridae

- rubeola (German measles, rubella)
- ~ measles
- skin exanthema + nuchal LN

- transplacental → fetus malformations
  - Gregg’s syndrome (eye, ear, brain, heart)
Rhabdoviridae

- **lyssa (rabies)**
- animal (dog, fox) saliva $\rightarrow$ bite $\rightarrow$ along nerves $\rightarrow$ CNS
- neurons (cornu Amonis) – IC Negri bodies
- hydrophobia, muscle spasms, furiousity, psychic alterations
- ***always lethal***
Arboviridae

- **AR**thropode **BO**rn
- **1. encephalitis**
  - transmission by insects (mosquito, tick (Ixodes ricinus))
  - geographic distribution
  - blood → CNS (basal ganglia, cerebellum)
  - perivascular lymphocytic infl.
  - flu-like → CNS disorders
- **2. febris flava (yellow fever)** – America, Africa
  - liver necroses
Picornaviridae

1. Enteroviruses
   - Polioviruses
   - Coxsackie-viruses
   - Echoviruses – flu-like d.

2. Rhinoviruses
   - coryza (common cold) – purulent rhinitis
   - stomatitis epizootica (foot and mouth disease)
     - stomatitis + small blisters and ulcers
Polioviruses

- **poliomyelitis anterior acuta**
- acute febrile d., children
- direct contact, water
- CNS - necrosis of motoneurons of anterior horns of spinal cord
- muscle paresis, paralyses (lower limbs)
- neurogenic atrophy
Coxsackie - viruses

- epidemic d., children
- herpangina – pharyngitis
- myocarditis
- meningitis
- polymyositis
# Viral hepatitis

<table>
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<th>Hepatitis</th>
<th>Virus</th>
<th>Transmission</th>
<th>Chronicity</th>
<th>Carriage</th>
<th>Fulminant</th>
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<td>A</td>
<td>RNA</td>
<td>fecal-oral</td>
<td>NO</td>
<td>NO</td>
<td>0.4%</td>
</tr>
<tr>
<td>B</td>
<td>DNA</td>
<td>parenteral</td>
<td>5-10%</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>C</td>
<td>RNA</td>
<td>parenteral</td>
<td>80%</td>
<td>1%</td>
<td>rare</td>
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<tr>
<td>D</td>
<td>RNA</td>
<td>parenteral</td>
<td>5% co 80% super</td>
<td>10%</td>
<td>4% co-i.</td>
</tr>
<tr>
<td>E</td>
<td>RNA</td>
<td>fecal-oral</td>
<td>NO</td>
<td>NO</td>
<td>20% pregnant</td>
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</tbody>
</table>
Infectious diseases

1. Bacteria
2. Viruses
3. Mycetes
4. Parasites
Mycetes

1. Mycoses
   - true infectious diseases

2. Mycotoxicoses
   - poisoning by fungal toxins – liver necroses

3. Mycoallergoses
   - allergic reaction to fungal products

4. Mycetism
   - local inflammation by fungi
Mycoses

- normal saprophytes in man
- immunosuppression – opportunistic infection
- endogenous
- purulent, granulomatous infl.
- superficial m.
  - skin + mucosa
- deep m.
  - organ involvement + systemic infection
Superficial mycoses

- = dermatophytoses
- *Trichophyton, Microsporum, Epidermophyton*
- limited to epidermis (scales) + skin adnexa
- *Tinea capitis, T. barbae, T. corporis, T. pedis et manus, T. unguium* (nails)

- *Pityriasis versicolor* (*Malassezia furfur*)
Deep mycoses

- candidosis
- aspergillosis
- cryptococcosis
- pneumocystosis
- mucormycosis – pneumonias, rhinocerebral inf.
- histoplasmosis – *H. capsulatum* - ~ TBC
- blastomycosis, coccidioidomycosis
Candidosis

- *C. albicans* – normal in oral cavity
- hyphae (non-branching) + blastospores
- soor (moniliasis, trush)
- pseudomembranous inflammation
- stomatitis, esophagitis, vulvitis, colpitis
- hematogenous dissemination
Aspergillosis

- *A. niger, A. flavus, A. fumigatus*
- branching hyphae ("Y")
- aflatoxins (hepatotoxic, carcinogenic)
- angiotropism
- necrotising pneumonia
- aspergilloma - in bronchiectasias, TBC cavernae
- paranasal sinuses → brain
Cryptococcosis

- *C. neoformans*
- gelatinous capsule
- birds (pigeons) → dust → inhale
- granulomatous pneumonia
- granulomatous meningoencephalitis
Pneumocystosis

- *P. carinii/jiroveci*
- infants + AIDS patients
- interstitial pneumonia + alveoli fulfilled by grayish foamy mass
Infectious diseases

1. Bacteria
2. Viruses
3. Mycetes
4. Parasites
Parasites

1. Protozoa

2. Helminths

3. Arthropodes
Trichomoniasis

- T. vaginalis
- STD
- urogenital tract
- F: colpitis - purulent discharge
- M: asymptomatic
Toxoplasmosis

- *T. gondii*
- contact with infected animal (cat) + a. products
- transplacentally
- 1. congenital form
  - abortus
  - hydrocephalus, microophthalmia, chorioretinitis, brain cysts, calcifications (Sabin triad)
- 2. acquired form
  - lymphadenitis (Piringer-Kuchynka)
    - B- and T- zone hyperplasia + tiny epithelioid granulomas
Trypanosomiasis

- *T. brucei gambiensae, T. b. rhodesiense* – sleeping sickness
- Africa
- transmission - fly *Tse-tse (Glossina)*
- chronic meningoencephalitis – coma – death
- *T. cruzi* – Chagas disease
- America
- transmission – flatworm (*Triatoma*)
- myocarditis
Leishmaniasis

- transmission by sandfly

- *L. tropica* - skin f.
- „tropical sore“ – spontaneous regress
- *L. donovani* - visceral f.
- „kala-azar“ (black fever)
- RES – LN + hepatosplenomegaly
Amoebiasis

- *Entamoeba histolytica*
- food + water
- amoebic dysentery
- blood stools + diarrhoea + fever
- ulcers (~ bottle) in colon (caecum)
- complication
  - portal v. → liver - abscesses
Lambliasis

- *L. (Giardia) intestinalis*
- food + water
- chronic enteritis (small bowel) – diarrhoea
- anemia
Malaria

- !!! most important and serious tropics d.!!!
- *Plasmodium*
- M. tertiana (*P. vivax, P. ovale*)
- M. quartana (*P. malariae*)
- M. tropica (jungle fever) (*P. falciparum*)
- 1 mil death annually
- transmission – *Anopheles*
Malaria

- hepatocytes → erythrocytes → breakdown
- fever attack + shivering
- hemolytic anemia
- RES: hepatosplenomegaly + brownblack malaric pigmentum
Parasites

1. Protozoa

2. Helminths

3. Arthropodes
Enterobiasis

- *E. vermicularis* (pinworm, seatworm)
- most common, children
- small bowel → large bowel → anus (eggs)
- pruritus
- *appendicopathy oxyurica*
- complication
  - infection of genitals in girls (scribbling)
Trichinosis (Trichinelliasis)

- *T. spiralis*
- pork → bowel wall → blood → striated muscles → bot encapsulation
- eye-moving, masticatory, tongue, diaphragm, heart, …
- surrounding inflammation
Ascariasis

- *A. lumbricoides*
- common, children
- food → bowel wall → blood → lungs → cough → pharynx → bowel
- complication
  - ileus, pneumonia
Taeniasis + Echinococcosis

- tapeworms
- *T. saginata, T. solium* (cysticercosis)
- food → bowel → muscles, CNS (rare)

- *E. granulosus*
- dogs
- bowel wall → liver → cysts – calcification + rupture
Schistosomiasis (Bilharziasis)

- flukes (trematodes)
- *Sch. mansoni*
- water (bathing)
- liver granulomas, liver fibrosis → cirrhosis

- *Sch. haematobium*
- urinary bladder → chronic cystitis → carcinoma ?
- haematuria
Parasites

1. Protozoa
2. Helminths
3. Arthropodes
Scabies

- *Sarcoptes scabiei* (mite)
- wars
- clothes, STD
- skin corridors → eggs
- interdigital spaces, genitals
- pruritus → scribbling → secondary infection
Sexually transmitted diseases (STD)

1. Bacteria
   - *Neisseria gonorrhoeae* - gonorrhoea
   - *Treponema pallidum* - syphilis
   - *Haemophilus ducreyi* – chancroid
   - *Chlamydia trachomatis* – lymphogranuloma venereum
   - *Calymmatobacterium granulomatis* – granuloma inguinale

2. Viruses
   - *HSV* - herpes
   - *HBV* – hepatitis B
   - *HPV* – condyloma acuminatum + cervical cancer
   - *HIV* - AIDS

3. Parasites
   - *Trichomonas vaginalis* – kolpitis (vaginitis)
   - *Sarcoptes scabiei* - scabies
• The above slides were selected from a presentation found online
Infectious Diseases

- Organism overview
- Treatment overview
- Antibiotic stewardship
Treatment Overview and Pearls

• “Bug – drug”
  • Antibiotic must match organisms sensitivity to work
    • What if the antibiotic is fake?
    • What if the organism is resistant?
  • If you guess wrong, patient may not improve or may improve any way
    • Viruses
    • Sinusitis, acute otitis media

• Source control
  • Blood flow (carrying the IV antibiotic) does not enter pockets of fluid/pus or foreign objects
  • Some antibiotics don’t cross the blood-brain barrier

• USE AN ESTABLISHED GUIDE to help you select empiric treatment
• RE-EVALUATE every 24 hours AND if clinical situation changes
• Empiric escalation in obtunded, immunocompromised patients
The “itis”

- Before prescribing an antibiotic, give a name to the infection

Meningitis, encephalitis, orbital cellulitis, uveitis, vasculitis, sinusitis, pharyngitis, bronchitis, pneumonia, myocarditis, endocarditis, empyema, pericarditis, esophagitis, cellulitis, teflitis, enterocolitis, gastroenteritis, appendicitis, UTI/urosepsis, pelvic inflammatory disease, urythritis, epididymitis, osteomyelitis

Make a local antibiotic guide based on your availability

No source: sepsis of unknown source

BROAD, EARLY cover in immunocompromised patients
Treatment overview

• Use a guide if you can (local antibiogram, Sanford guide)
• Know local resistance patterns
• Create an early sepsis template
• Curious about your antibiotic? Put a drop of the antibiotic onto the culture plate and see if it inhibits growth in vitro
• Always follow urine output, renal function, vital signs during treatment
• Use established risk models to guide inpatient vs outpatient treatment
• Use IV fluids liberally in unstable patients to help maintain organ perfusion while you figure it out
• DO NOT leave the bedside of an unstable patient
• DO NOT mistake obtundation for improvement
THE SANFORD GUIDE
To Antimicrobial Therapy
2020

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50th Edition
Antibiotic stewardship

• Organisms are developing resistance at an alarming rate
• Balance of normal gut flora is more important than we realized
• Goal: narrowest spectrum antibiotic for shortest needed duration
  • De-escalate therapy when you can
  • Look up recommended treatment duration – MANY have shortened!!!
• REQUIRES education
  • Health care providers
  • Patients / the general public
  • Pharmacies