

SURGERY TEAM: SURGICAL INFECTIONS



SUMMARY NOTES

including the lecture contents + *mentioned* references in the slides

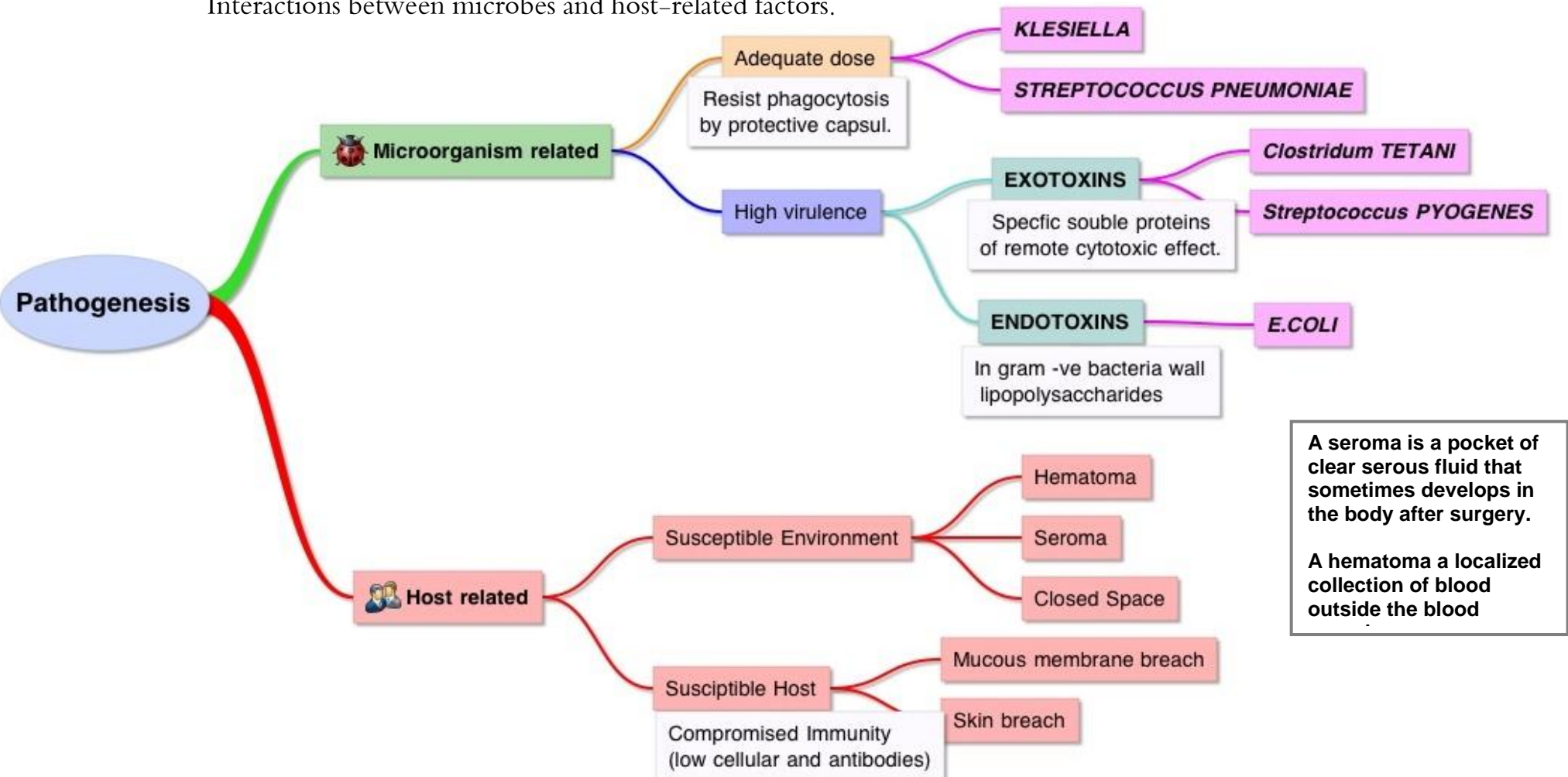
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SURGICAL INFECTIONS

An **INFECTION** is an invasion of the body by pathogenic microorganisms and reaction of the host to organisms and their toxins. While a **SURGICAL INFECTION**, is an infection that requires surgical intervention as a treatment or develop as a result of surgical procedure.

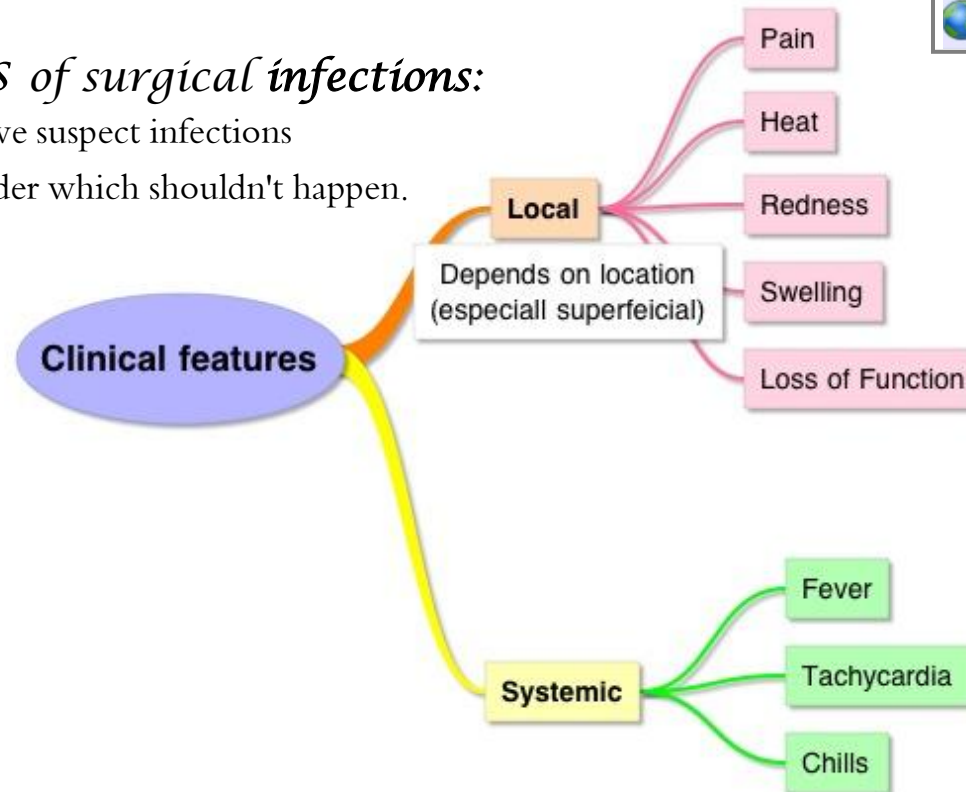
1. Pathogenesis of Infections:

Interactions between microbes and host-related factors.

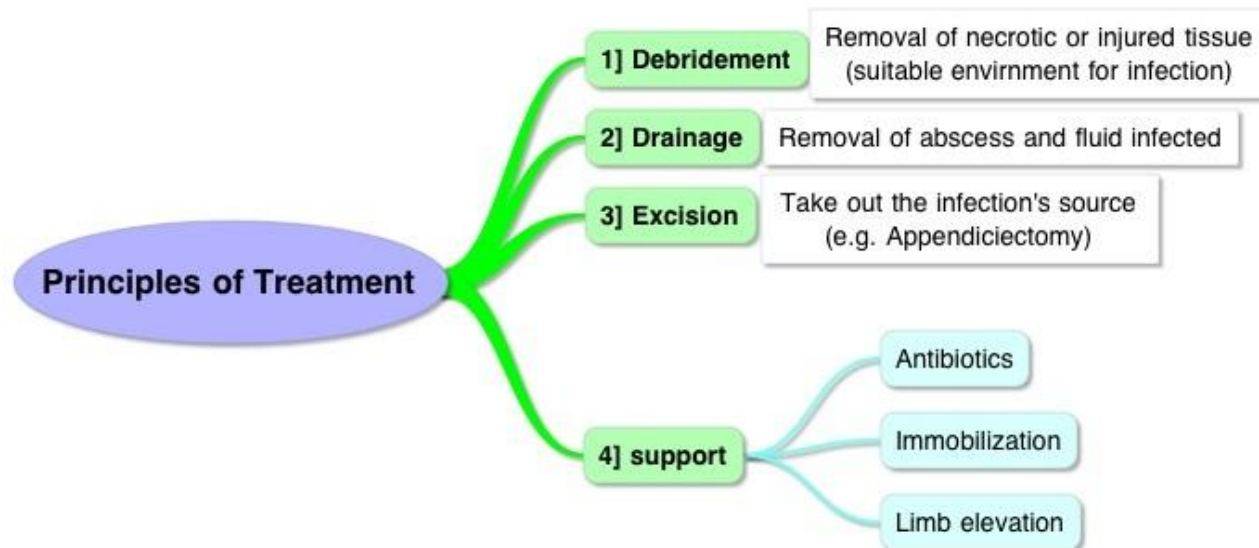


2. *Clinical features of surgical infections:*

Once we see these manifestations, we suspect infections and open the cut to see it being tender which shouldn't happen.

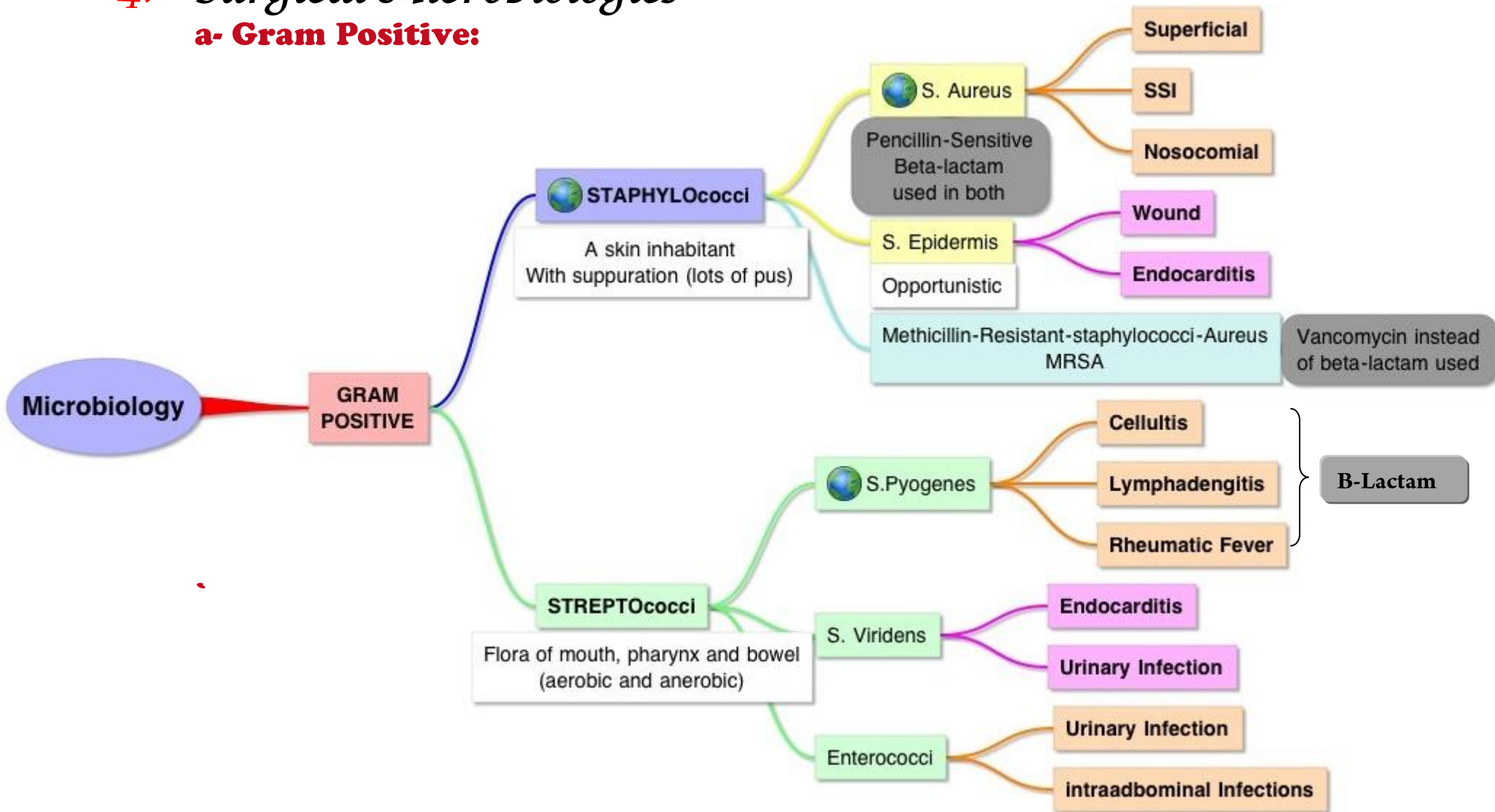


3. *Principles of Surgical Treatment*

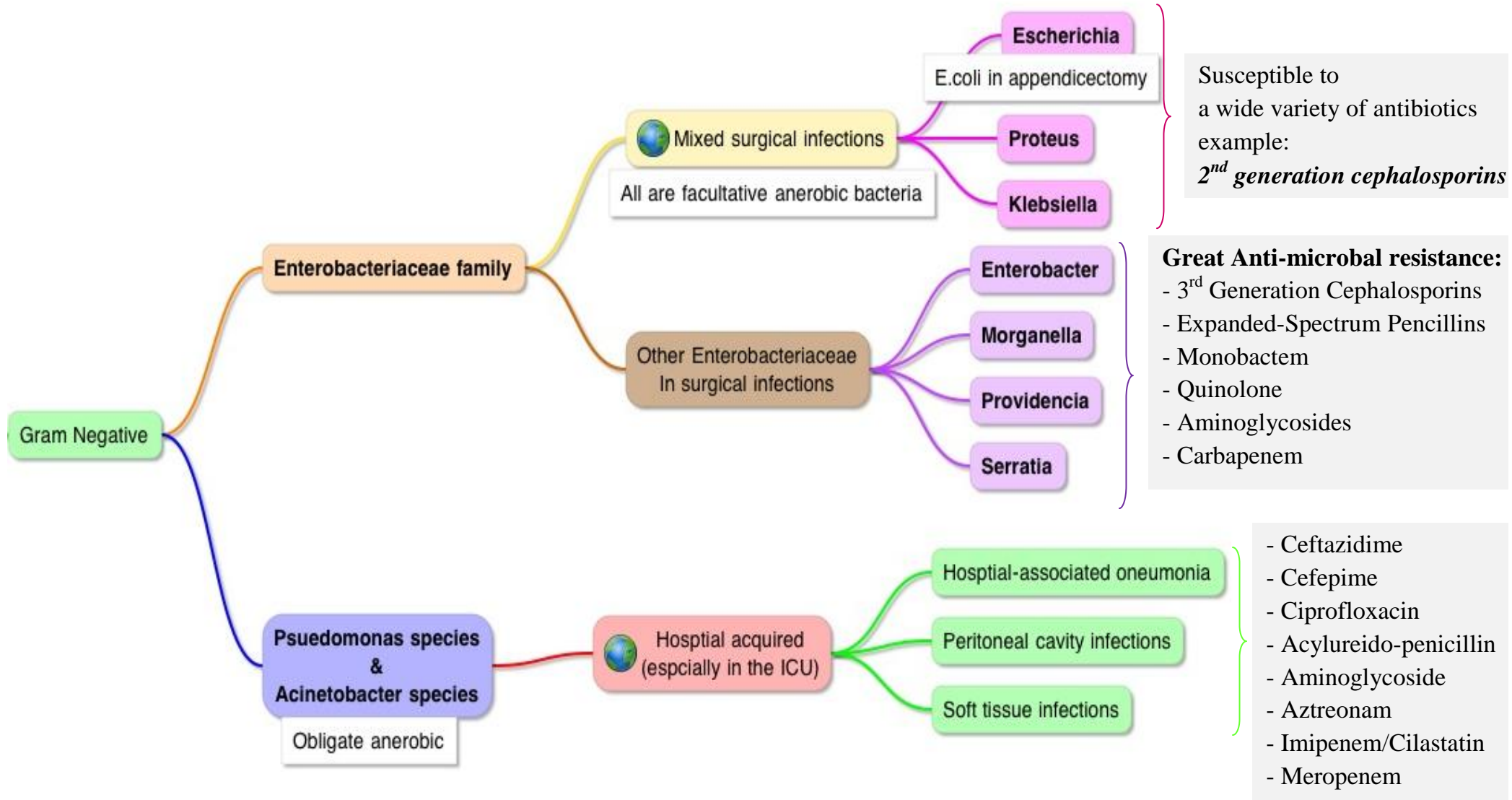


4. Surgical Microbiology

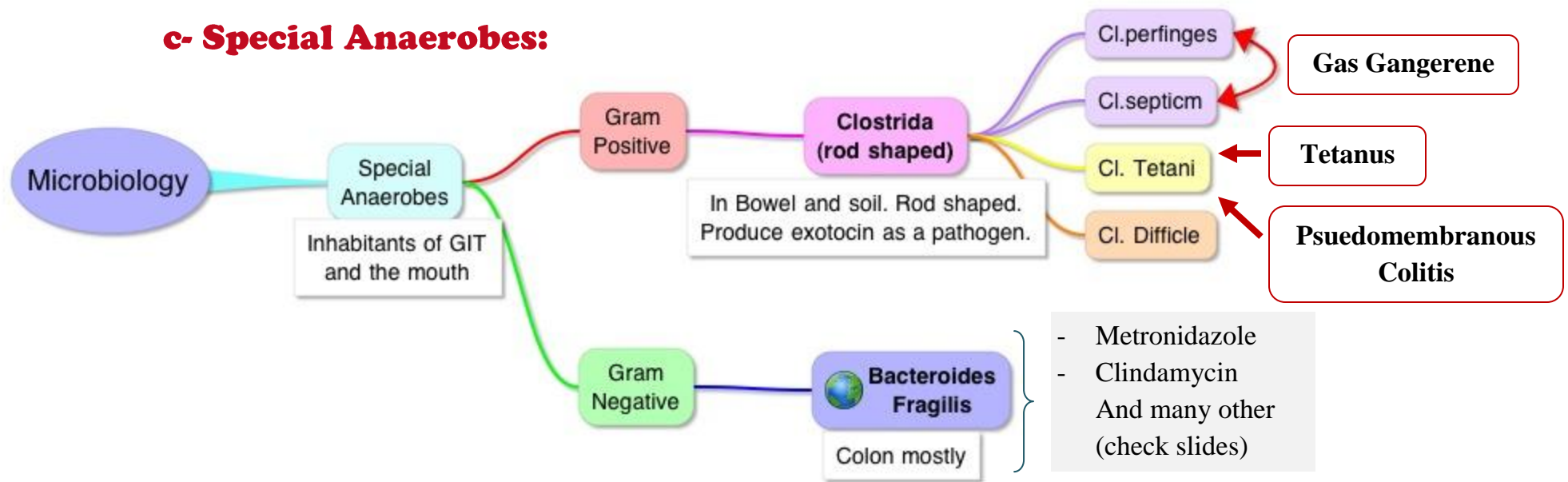
a- Gram Positive:



b- Gram Negative Rods:



c- Special Anaerobes:



5. Special Surgical Infections

a- Surgical Site Infections (SSI): 38% of surgical infections that occur within 30 days of operation in normal states or within 1 year of operation in prosthetic valve usage.
(any other time is not an SSI). **Most Common Organism: Staphylococci Auereus**

SURGICAL SITE INFECTIONS - SSI

Type	Plane	Organism	Risk Factor	Diagnosis	Treatment
Superficial (47%)	Skin & Subcutaneous		1- Age 2- Malnutrition 3- Obesity 4- Immunocompromised 5- Poor Surgical Tech. 6- Prolonged Surgery 7- Pre-operational shaving (use other methods)	Superficial SSI: Erythema Edema Discharge Pain	Surgical Intervention + Radiological Intervention
Deep (23%)	Subfascial & Muscle	E.coli, Enterococcus & other Enterobacteriaceae	8- Type of Surgery (if we operate on appendix, bowel, colon – depending on site worked on)	Deep SSI: No local signs Fever Pain Hypotension (need investigation)	*Check prevention in slides
Organ/ space (30%)	Intra-abdominal & other spaces	B.Fragilis (intrabdominal abscess)			

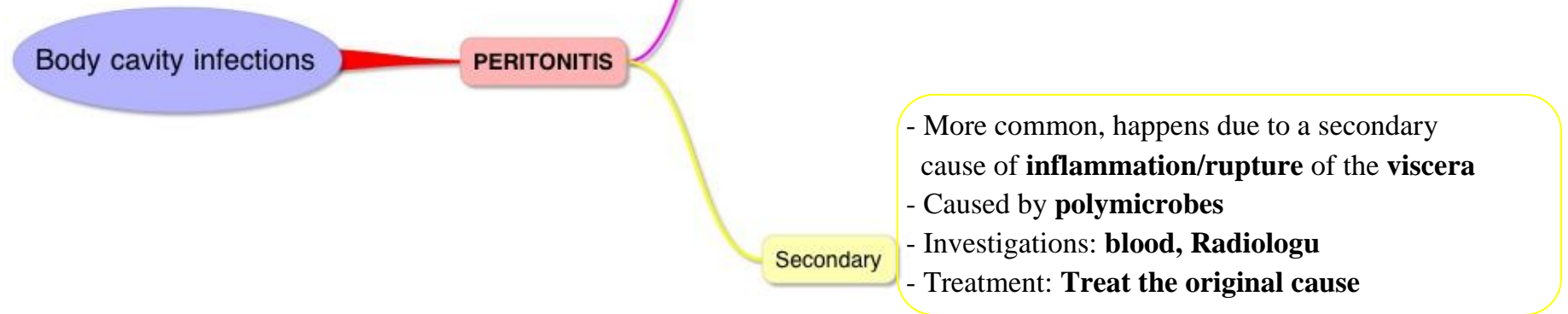
b-Soft Tissue Infections:
- General Types:

	1- ERYSIPELAS	2- CELLULITIS	3- ABSCESS	4- OTHER
Definition	Superficial Spreading cellulitis and Lymphangitis	Inflammation of skin and subcutaneous tissue	Localized pus collection. May be mistaken with cellulitis when located deep.	<u>FURNUCLE:</u> Infection of hair follicle or sweat glands
Site	Area of redness with sharply defined irregular border – <i>following minor skin injuries</i>	Red, hot, indurated area of non-suppurative. Commonly in limbs	May be: <ul style="list-style-type: none"> - Superficial (trunk, head and neck) - In axilla - In Perineum 	<u>CARBUNCLE:</u> Extension of furuncle into subcutaneous tissue. <u>Common in</u> <i>diabetics</i> .
Pathogen	Streptococcus pyogenes (e.g. meningitis)	Streptococcus pyogenes	- Superficial: S. Aureus. - Axilla: gram –ve bacteria. - Perineum: Mixed aerobic & anaerobic gram –ve flora.	<u>Common site:</u> <ul style="list-style-type: none"> - Back - Back of neck
Treatment	Antibiotics: <ul style="list-style-type: none"> - Pencillin - Erythromycin 	1)Rest 2)Elevation of affected limb 3)Antibiotics: <ul style="list-style-type: none"> - pencillin - erythromycin - fluocloxacilin (when we suspect staphylococci)	1)Drainage 2)Antibiotics	1)Drainage 2)Antibiotics 3)Control Diabetes

- More Specific Examples:

	1- NECROTIZING FASCITIS	2- CLOSTRIDAL MYONECROSIS (GAS GANGRENE)	3- TETANUS	4- PSUEDOMEMBRANOUS COLITIS
Definiton	Necrosis of superficial fascia and overlying skin. Risk Group: elderly, diabetics and immunocompromised	Wound of muscle that is contaminate (by soil, foreign body or in drug users) that result in Myonecrosis , crepitus, seropurulent discharge, foul smell and swollen.	A penetrating wound (rusty nail, thorn) with: 1- Trismus (<i>stiffness in neck and back</i>) as first symptom.	The pathogen overtakes normal flora in patients on antibiotics
Process	Starts as <i>Cellulitis</i> , edema, systemic toxicity, shock that appeare more extensive than actual <i>necrosis</i> .		2- Respiration and swallowing becomes progressively difficult.	Water diarrhea Abdominal pain fever
Site	1) Limbs 2) Perineum 3) Abdominal wall 4) Trunk	Muscles and under skin	3- Death by exhaustion, aspiration or asphyxiation.	Colon
Pathogen	Polymicrobial: Streptococci, Staphylococci, Gram – ve Bacilli and the Anaerobes	Cl. Perfringens Cl. Septicum Cl. Novyi (exotoxins)	Cl. Tetani (neurotoxin)	Cl. Difficile
Management	Investigation: Aspiration, Gram's Stain, CT, MRI Treatment: - IV fluid. - IV antibiotics. (broad spectrum: ampicillin, cephalosporins, clindamycin, metronidazole and aminoglycosides). - Repeated Debridement. - Dressings. - Skin Grafting.	Investigation: Toxemia, tachycardia, ill-looking. X-ray shows gas in muscle and underskin Treatment: - Antibiotics (pencillin, clindamycin, metronidazole) - Debridement - Drainage - Amputation - Hyperbaric oxygen	Prophylaxis - Wound debridement - Pencillin - T toxoid - Previously immunized (booster> 10 years)	Investigation: - Sigmoidoscopy: membranes of exudates (psuedomembranes)/ - Stool culture - Toxin Essay Treatment: Stop offending Antibiotic with Oral Vancomycin/Metronidazole , rehydration and isolate patient.

c- Body Cavity Infections:



d- Prosthetic Device-Related Infections:

Causes:

- Artificial valves and joints
- Peritoneal and Hemodialysis catheters
- Vascular grafts

Pathogen: **Staphyococcus Aurues**

Treatment:

- Antibiotics.
- Washing or Removal of the prosthesis.

e- Hospital Acquired Infections:

Occurring in 10% of patients admitted to hospitals especially ICU in time within:

- 24hrs of **hospital admission**
- Three days of **discharge**
- 30 days **following an operation**

Organisms:

- Enterpcpccis
- Pseudomonas
- E.coli
- Staphyl. Aureus

Sites: urinary, surgeries wounds, respiratory, skin, blood and GIT

*Check *Antibiotics* in lecture slides