

the release of large amounts of IL-1, IL-2, and TNF, antibodies against TSST are found.

- b. **Exfoliatin**, cause separation of the skin at stratum granulosum, causing **scalded skin syndrome** and **impetigo**.
- c. **Leukocidins toxins**, are two:
 - i. **Alpha toxin**, forms a hole in the cells causing necrosis of skin and hemolysis, by forming pores on the cell membrane.
 - ii. **P-V leukocidin**, it's gene is located in a lysogenic phage, this toxin form a hole in cell membrane causing death of cells especially WBCs, causes of necrotizing pneumonia.

● **Enzymes :**

- a. **Beta lactamase**, the cause of penicillin resistance.
- b. **Catalase**, causes the break of H_2O_2 .
- c. **Hyaluronidase**, spreading factor, causes breaking of hyaluronic acid thus make penetration easy to subcutaneous tissue.
- d. **Coagulase**, either
 - i. **bound** "clumping factor," facilitate binding to surfaces and cause clumping in plasma.
 - ii. **releasable** induce formation of plasma clot that forms a protective wall around the bacterium inhibiting leukocytes migration, by activating prothrombin to thrombin, which activate fibrinogen to fibrin.
- e. **Fibrinolysin**, AKA **staphylokinase**, breaks blood clots.

● **Diseases :**

i. **Pyogenic diseases :**

- **Conjunctivitis** typically presents with unilateral burning eye pain, hyperemia of the conjunctiva, and a purulent discharge."most common cause".
- **Sepsis**, with clinical features that of gram -ve rods.
- **Acute Endocarditis** may occur on normal or prosthetic heart valves, especially right-sided endocarditis (tricuspid valve) in **intravenous drug users**.
- **Osteomyelitis and septic arthritis** (old individuals and children) may arise either by hematogenous spread from a distant infected focus or be introduced locally at a wound site, **the most common cause of septic arthritis in adults is S. Aureus**.