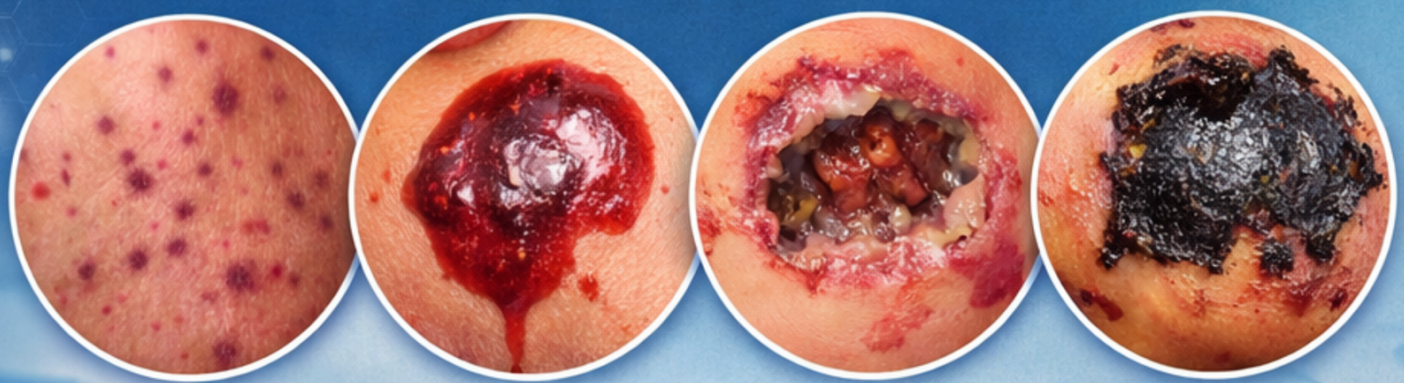
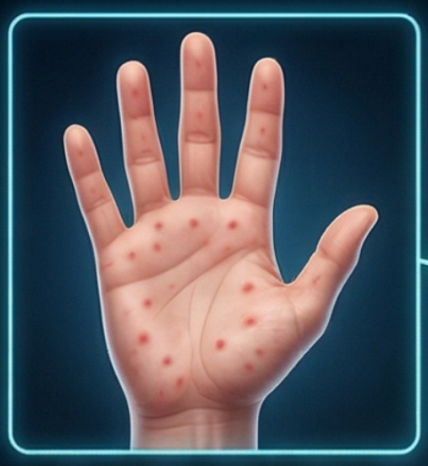
Cutaneous infections that manifest in petechial, hemorrhagic, ulcerative, and *necrotic lesions*

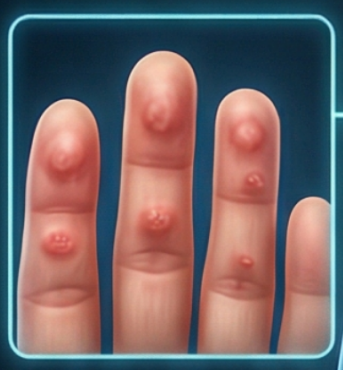


عبدالله میثاق

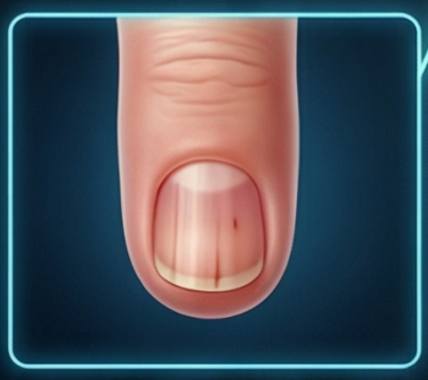
INFECTIVE ENDOCARDITIS (IE)



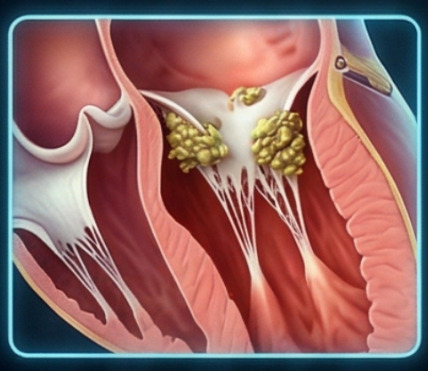
JANEWAY LESIONS
Small, painless, red flat spots (macules) or plaques usually found on the palms of the hands and soles of the feet.



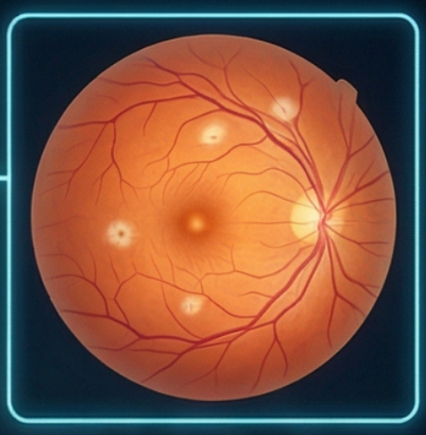
OSLER NODES
Tender, painful red nodules on the pads of the fingers and toes, caused by an immune complex reaction.



SPLINTER HEMORRHAGES
Linear red-to-brown streaks appearing under the fingernails and toenails.

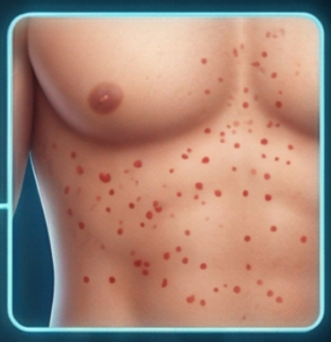


ROTH SPOTS
Retinal eye lesions with white centers.



ROTH SPOTS
Retinal eye lesions with white centers.

SEPTIC EMBOLI



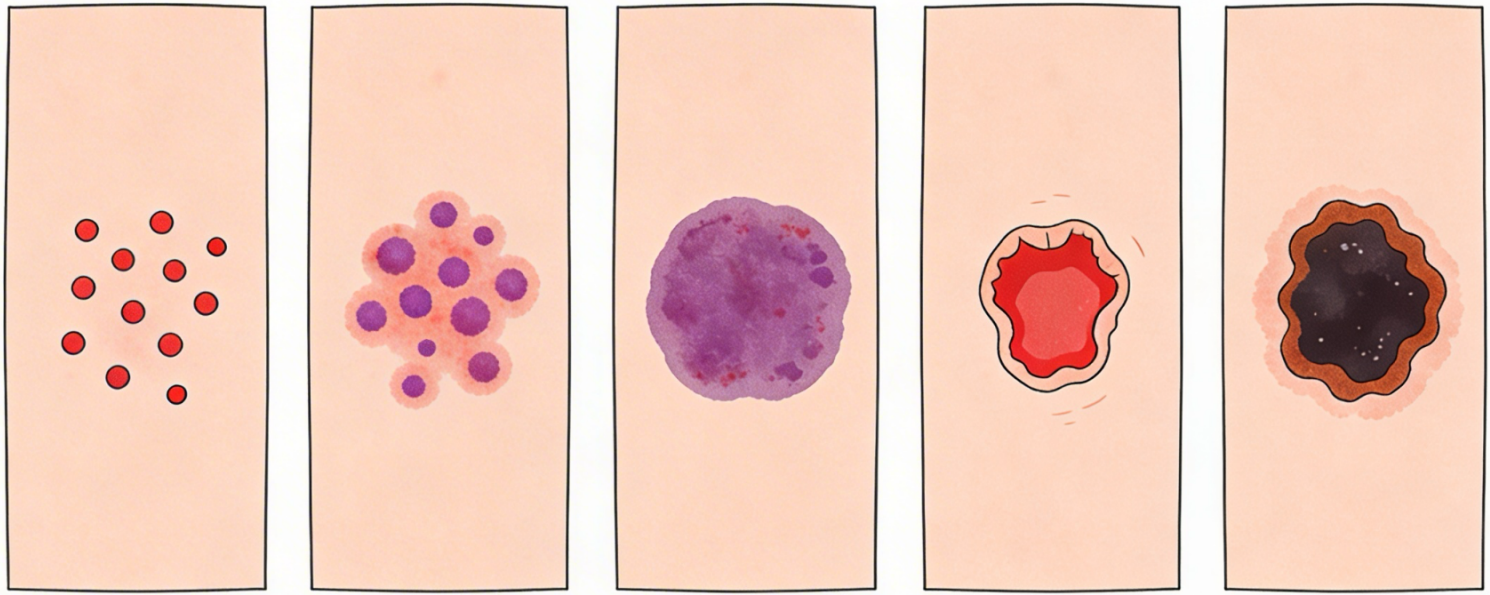
PETECHIAE

INFECTION OF HEART VALVES:
Vegetations form on valve surface, composed of bacteria, white blood cells, platelets, and fibrin.

KEY SIGNS include a new or changing heart murmur, low-grade fever, fatigue.

COMMON BACTERIAL CAUSES:
Viridans Streptococci, *Staphylococcus aureus*, Gram-negative bacilli (like *Pseudomonas aeruginosa* - common in drug users).

TREATMENT & PREVENTION:
Systemic antibiotics. Preventative antibiotics antibiotics (prophylaxis) before invasive dental or surgical procedures (Prior Heart Damage).



(1) petchias (2) purpura (3) echymosis (4) ulcer (5) necrotic

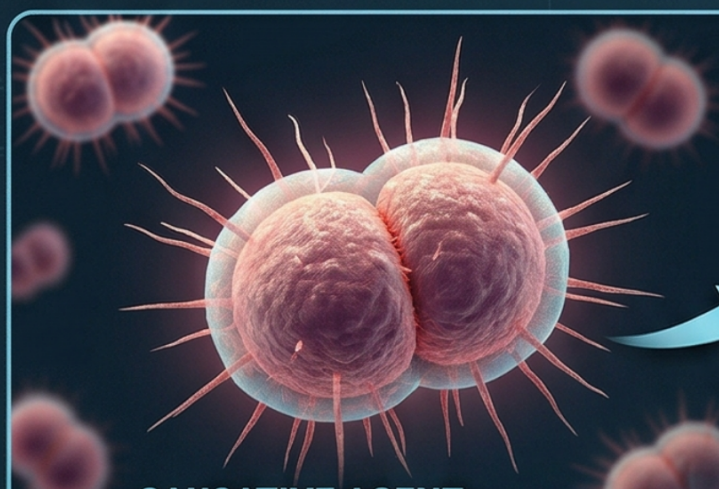
Basic Definitions of Skin Lesions

- **Petechiae**: Flat lesions caused by bleeding under the skin or mucous membranes.
- **Purpura**: Bleeding spots that are similar to petechiae but slightly larger.
- **Ecchymosis**: Larger areas of bleeding under the skin, measuring more than 1 cm.
- **Ulcers**: Localized excavations on the skin surface caused by the shedding (sloughing) of dead, inflammatory tissue.
- **Necrotic lesions**: Areas where skin cells have died and are destroyed by degradative enzymes.

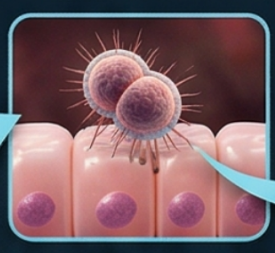
Infective Endocarditis (IE)

- This is an infection of the heart valves characterized by "vegetations" forming on the valve surface.
- These vegetations are made up of bacteria, white blood cells, platelets, and fibrin.
- Skin lesions happen when pieces of these vegetations break off into the bloodstream (septic emboli) and block small blood vessels.
- **Janeway lesions**: Small, painless, red flat spots (macules) or plaques usually found on the palms of the hands and soles of the feet.
- **Osler nodes**: Tender, painful red nodules on the pads of the fingers and toes, caused by an immune complex reaction.
- **Splinter hemorrhages**: Linear red-to-brown streaks appearing under the fingernails and toenails.
- Other key signs include a new or changing heart murmur, low-grade fever, fatigue, petechiae, and Roth spots (retinal eye lesions with white centers).
- Common bacterial causes include *Viridans Streptococci*, *Staphylococcus aureus*, and Gram-negative bacilli like *Pseudomonas aeruginosa* (the most common cause in drug users).
- Treatment requires systemic antibiotics, and preventative antibiotics (prophylaxis) are given to patients with prior heart damage before invasive dental or surgical procedures.

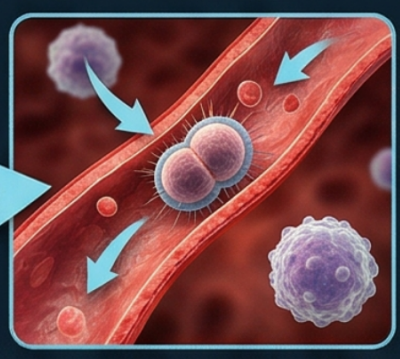
MENINGOCOCCEMIA



CAUSATIVE AGENT: *Neisseria meningitidis*
(Gram-Negative Diplococcus,
Capsular Serogroups A, B, C, Y, W-135)



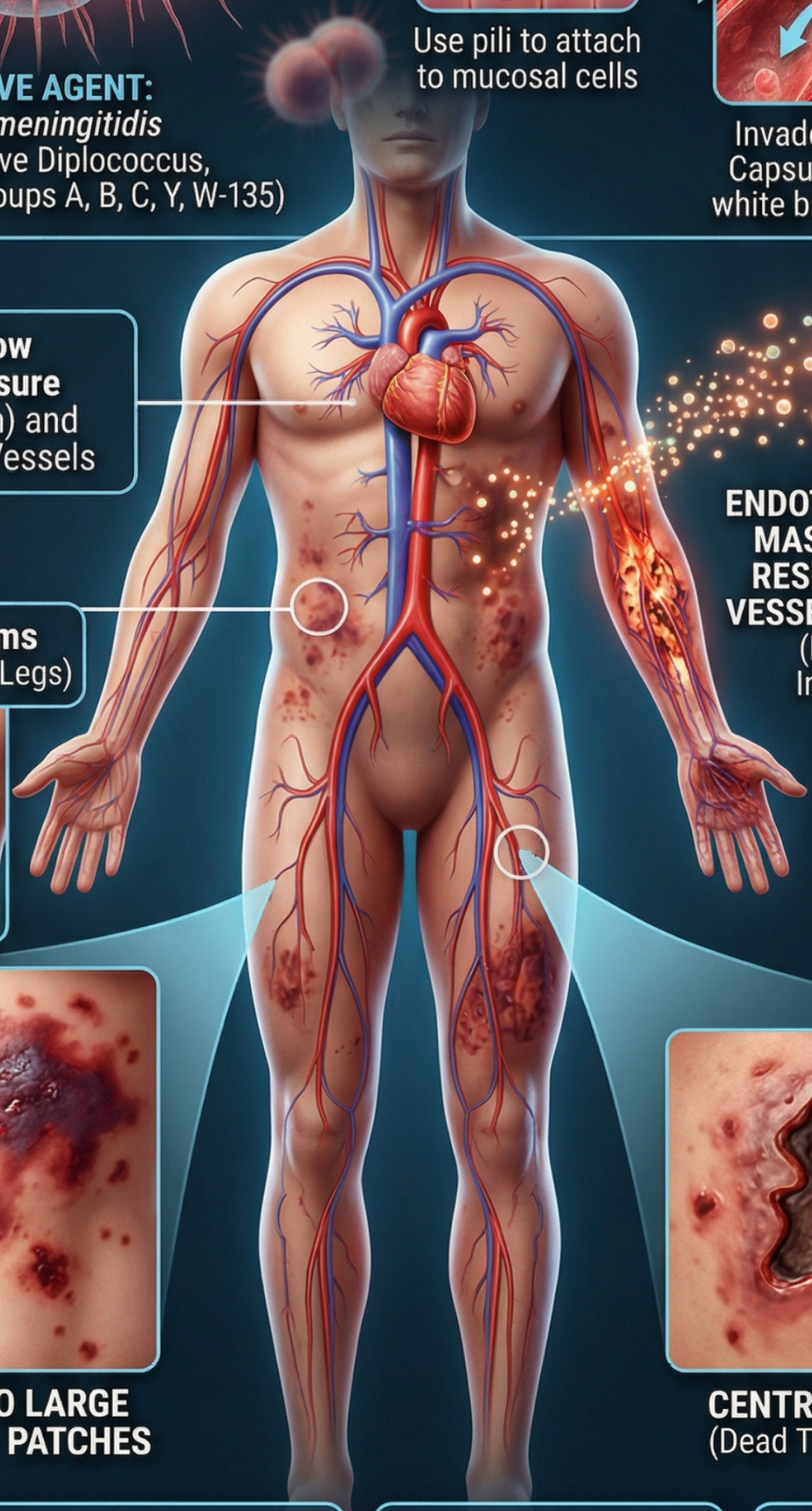
Use pili to attach to mucosal cells



Invade blood vessels; Capsule protects from white blood cells (WBCs)

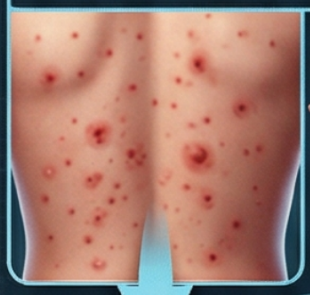
CAUSATIVE AGENT:
Neisseria meningitidis
(Gram-Negative Diplococcus,
Capsular Serogroups A, B, C, Y, W-135)

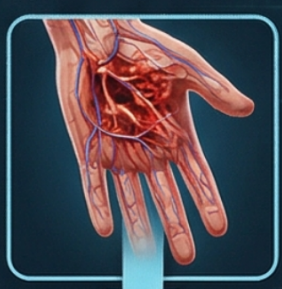
Severe Low Blood Pressure (Hypotension) and Leaky Blood Vessels

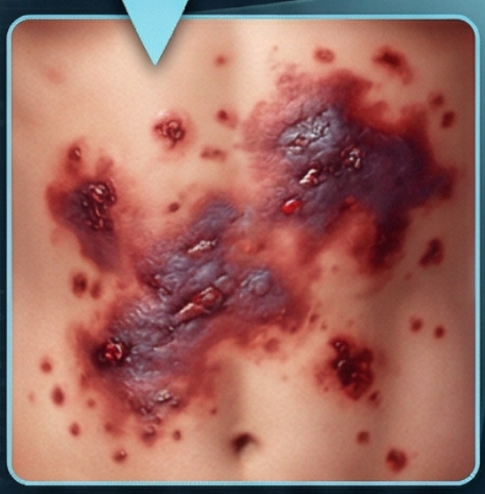


ENDOTOXIN RELEASE, MASSIVE IMMUNE RESPONSE, LEAKY VESSELS, VASCULITIS (Blood Vessel Inflammation)

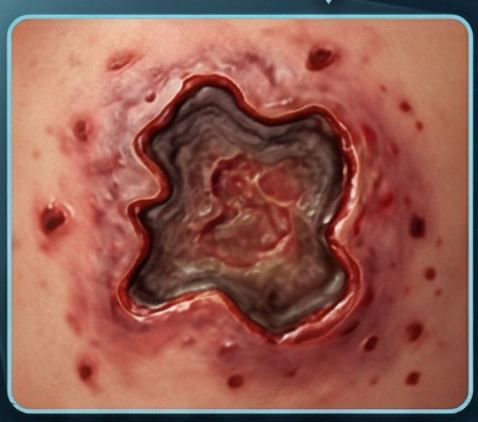
Skin Symptoms (Start on Trunk & Legs)





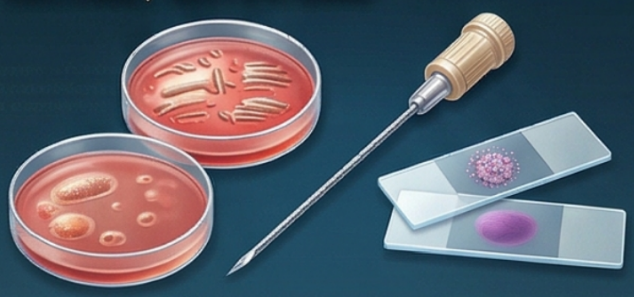


MERGING INTO LARGE HEMORRHAGIC PATCHES



CENTRAL NECROSIS (Dead Tissue in Center)

DIAGNOSIS:
Blood or Cerebrospinal Fluid (CSF) Cultures, Gram Stains



TREATMENT:
Antibiotics (e.g., Penicillin G)

PREVENTION:
Tetravalent Conjugate Vaccine

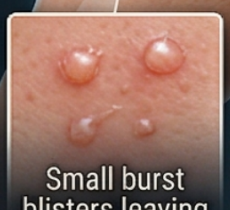
Meningococcemia

- A life-threatening bloodstream infection that causes severe inflammation of the blood vessels (vasculitis), leading to skin hemorrhage.
- It is caused by the Gram-negative diplococcus *Neisseria meningitidis* (primarily capsular serogroups A, B, C, Y, W-135).
- The bacteria use pili to attach to mucosal cells, then invade the blood vessels where their capsule protects them from being destroyed by white blood cells.
- The release of endotoxins causes a massive immune response leading to severe low blood pressure (hypotension) and leaky blood vessels.
- Skin symptoms usually start on the trunk and legs as red spots, eventually merging into large hemorrhagic patches with dead tissue in the center (central necrosis).
- Diagnosis requires blood or cerebrospinal fluid cultures and Gram stains.
- Treatment involves antibiotics like penicillin G, and prevention is achieved through a tetravalent conjugate vaccine.

IMPETIGO, ECTHYMA, AND STAPHYLOCOCCAL SCALDED SKIN SYNDROME (SSSS)

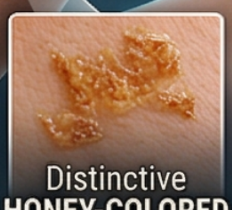
Non-bullous Impetigo

EPIDERMIS ONLY (superficial)



Small burst blisters leaving superficial erosions

EPIDERMIS ONLY (superficial)



Distinctive **HONEY-COLORED CRUST**

PAINLESS LESIONS

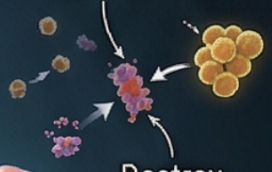
SWOLLEN LYMPH NODES

S. pyogenes

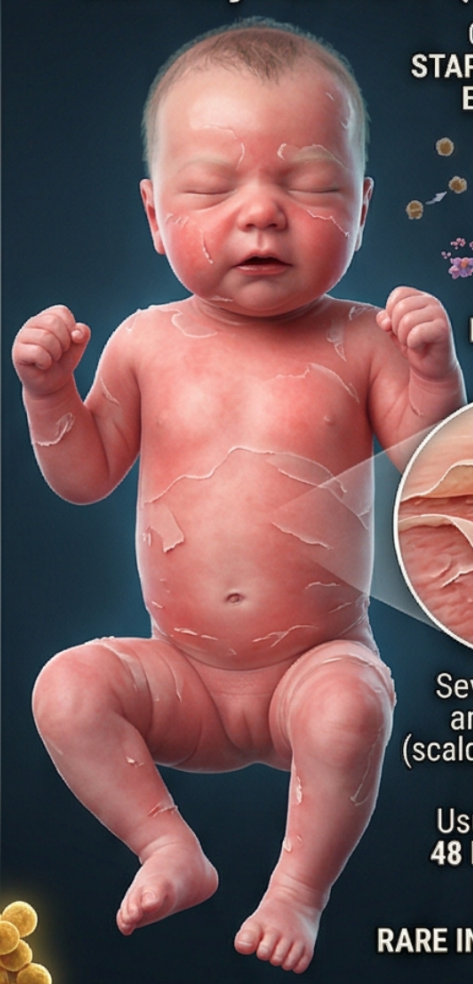
FACE or **LIMBS**

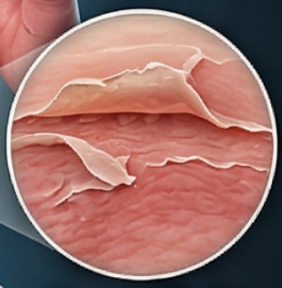
Staphylococcal Scalded Skin Syndrome (SSSS)

Caused by **STAPHYLOCOCCUS EXOTOXINS**



Destroy **DESMOGLEIN 1 COMPLEX**



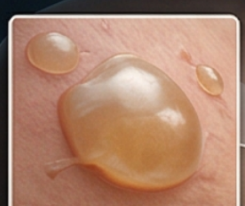


Severe **PEELING** and blistering (scalded appearance)

Usually appears **48 HOURS AFTER BIRTH**

RARE IN CHILDREN > 6

Bullous Impetigo



Large bullae filled with fluid

TRUNK and **LIMBS**

Caused by toxin-producing strain of *S. aureus*

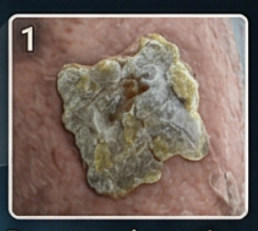
- **FEVER, DIARRHEA, WEAKNESS**
- **SWOLLEN LYMPH NODES ARE RARE**

S. pyogenes

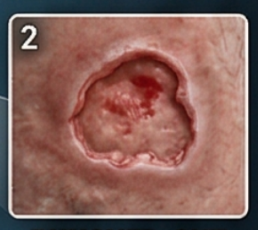
S. aureus

S. pyogenes

Ecthyma



Deeper, ulcerative, and **PAINFUL** form

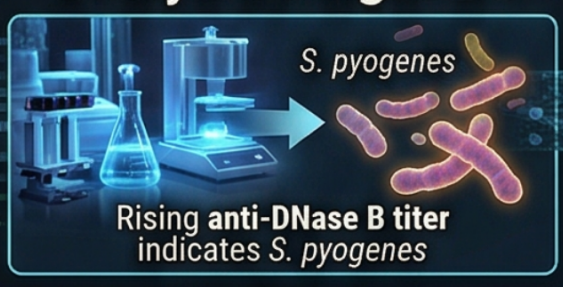


PUNCHED-OUT ULCER with raised margins

Affects **LOWER LEGS** of diabetic or neglected elderly

Heals slowly, **LEAVES SCARS**

Ecthyma Diagnosis



S. pyogenes

Rising **anti-DNase B titer** indicates *S. pyogenes*

COMPLICATION: Risk of **KIDNEY INFLAMMATION** (acute glomerulonephritis)

Treatment

TOPICAL MUPIROCIN

For **SMALL** infections

SYSTEMIC ANTIBIOTICS

Oral prillots: (cephalexin)

Dicloxacillin, (dicloxacillin)

For **WIDESPREAD** infections

Impetigo, Ecthyma, and Scalded Skin Syndrome

- **Non-bullous Impetigo**: Begins as small blisters that quickly burst, leaving shallow superficial skin erosions covered with a distinctive honey-colored crust.

- Non-bullous lesions are usually painless, limited to the epidermis, found on the face or limbs, and are often accompanied by swollen lymph nodes.

- **Bullous Impetigo**: Caused by a specific toxin-producing strain of *S. aureus*, resulting in large, fragile fluid-filled blisters (bullae) on the trunk and limbs.

- Unlike the non-bullous form, patients with bullous impetigo often experience fever, diarrhea, and weakness, but swollen lymph nodes are rare.

- **Ecthyma**: A deeper, ulcerative, and painful form of impetigo with a hard, gray-yellow crust.

- When the ecthyma crust is removed, it reveals a punched-out ulcer with raised margins.

- Ecthyma often occurs on the lower legs of diabetic or neglected elderly patients, heals slowly, and leaves scars.

- For diagnosis, a rising anti-DNase B titer indicates *S. pyogenes* is the cause, which raises the risk of kidney inflammation (acute glomerulonephritis).

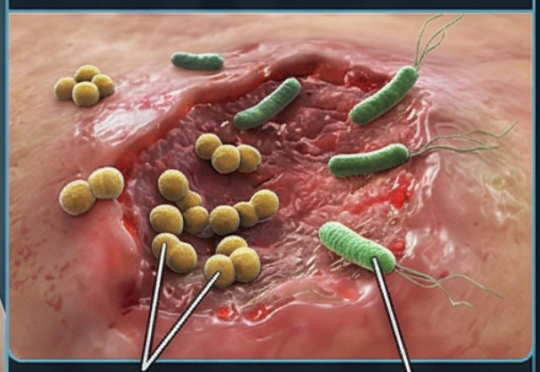
- Topical mupirocin is used for small infections, while widespread infections require systemic antibiotics like cephalexin or dicloxacillin.

- **Staphylococcal Scalded Skin Syndrome (SSSS)**: Caused by *Staphylococcus* exotoxins that destroy the "desmoglein 1 complex" in the skin, causing severe peeling and blistering.

- SSSS usually appears 48 hours after birth and is rare in children older than six.

BURN/WOUND INFECTIONS & ECTHYMA GANGRENOSUM

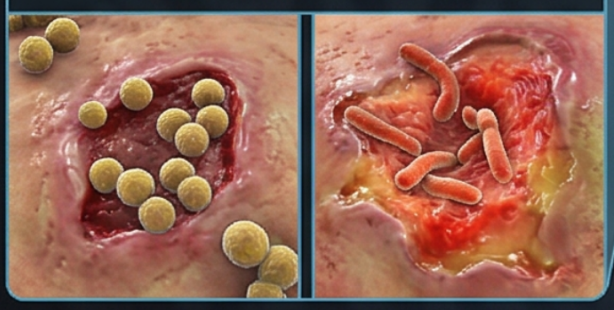
DAMAGED SKIN: A NUTRITIOUS ENVIRONMENT FOR BACTERIA



S. aureus & *S. pyogenes* (NORMAL FLORA)

P. aeruginosa (FROM WATER)

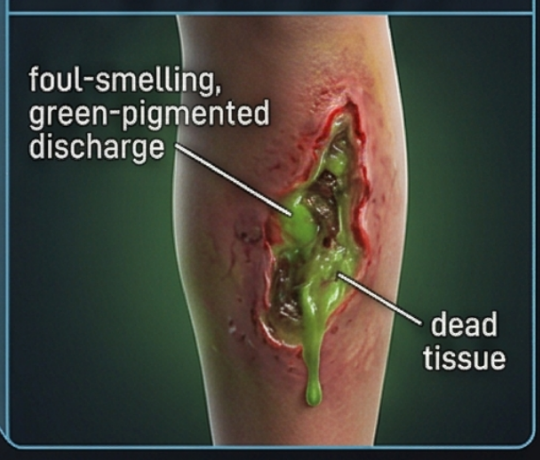
S. aureus vs. *S. pyogenes* TISSUE DESTRUCTION



***S. aureus*:** slow, insidious tissue degradation

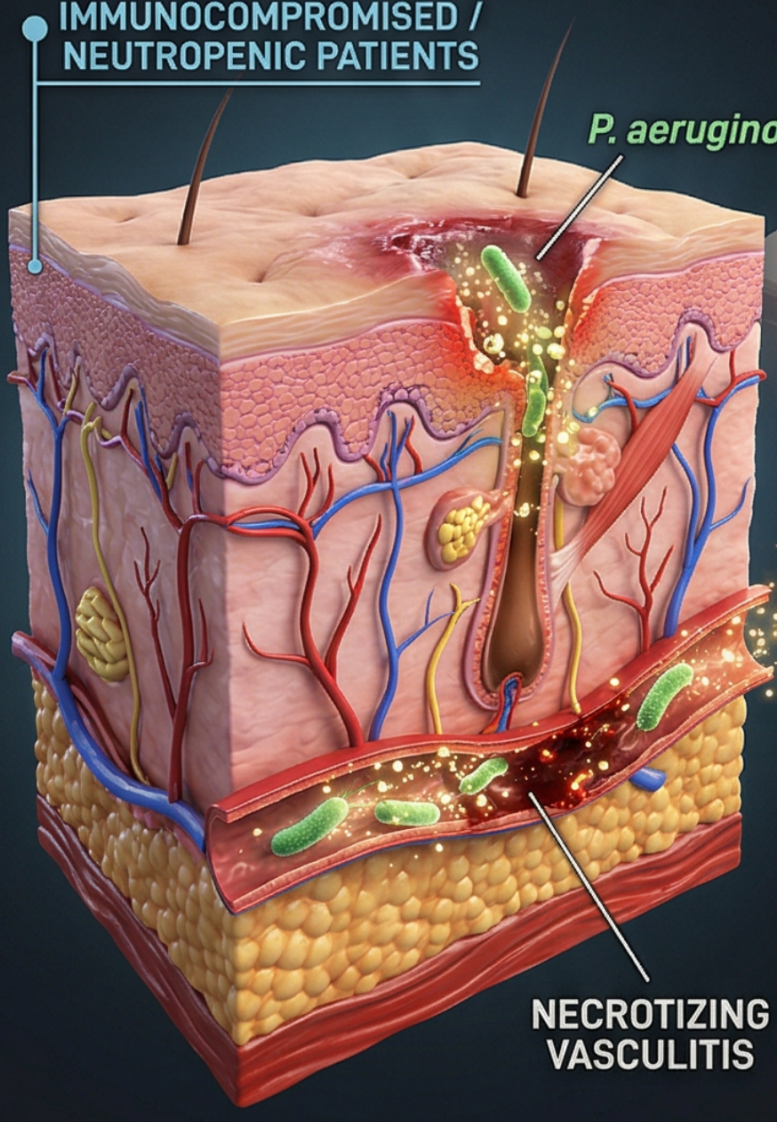
***S. pyogenes*:** rapid tissue destruction with severe toxicity

P. aeruginosa WOUND INFECTION

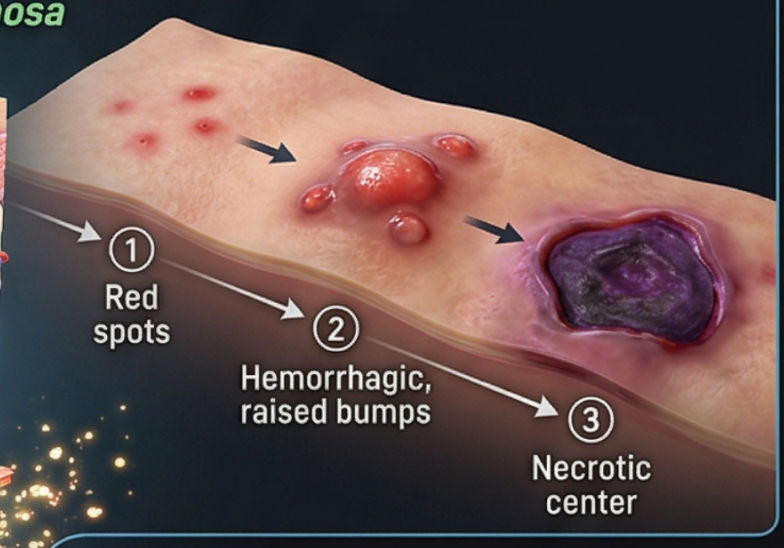


ECTHYMA GANGRENOSUM

IMMUNOCOMPROMISED / NEUTROPENIC PATIENTS



LESION PROGRESSION



TREATMENT

IV FLUIDS FOR BURN PATIENTS

POWERFUL ANTI-PSEUDOMONAL ANTIBIOTICS

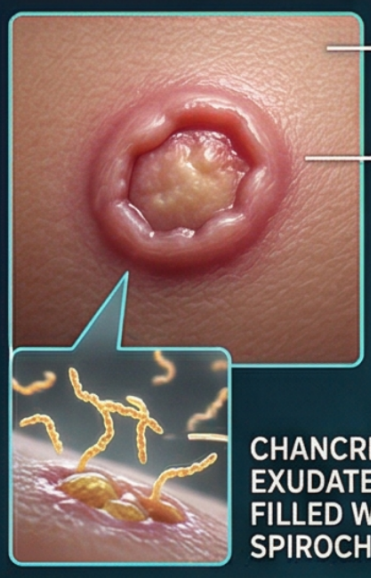
Burn/Wound Infections and Ecthyma Gangrenosum

- Damaged skin provides a nutritious environment for bacteria like *S. aureus*, *S. pyogenes* (normal flora), and *P. aeruginosa* (from water) to cause destructive infections.
- *P. aeruginosa* wound infections often present with dead tissue and a foul-smelling, green-pigmented discharge.
- *S. aureus* causes slow, insidious tissue degradation, whereas *S. pyogenes* causes rapid tissue destruction with severe toxicity.
- **Ecthyma Gangrenosum**: A specific, severe skin lesion that usually occurs after *P. aeruginosa* invades the bloodstream of immunocompromised or neutropenic patients.
- It is caused by the bacteria invading blood vessels, creating necrotizing vasculitis.
- The lesions start as red spots that grow into hemorrhagic, raised bumps with a dark purple-to-black necrotic center.
- Treatment requires powerful anti-pseudomonal antibiotics (like Imipenem, or piperacillin combined with gentamicin) alongside IV fluids for burn patients.

PRIMARY SYPHILIS

(Stage 1)

SINGLE, PAINLESS ULCER (CHANCRE)



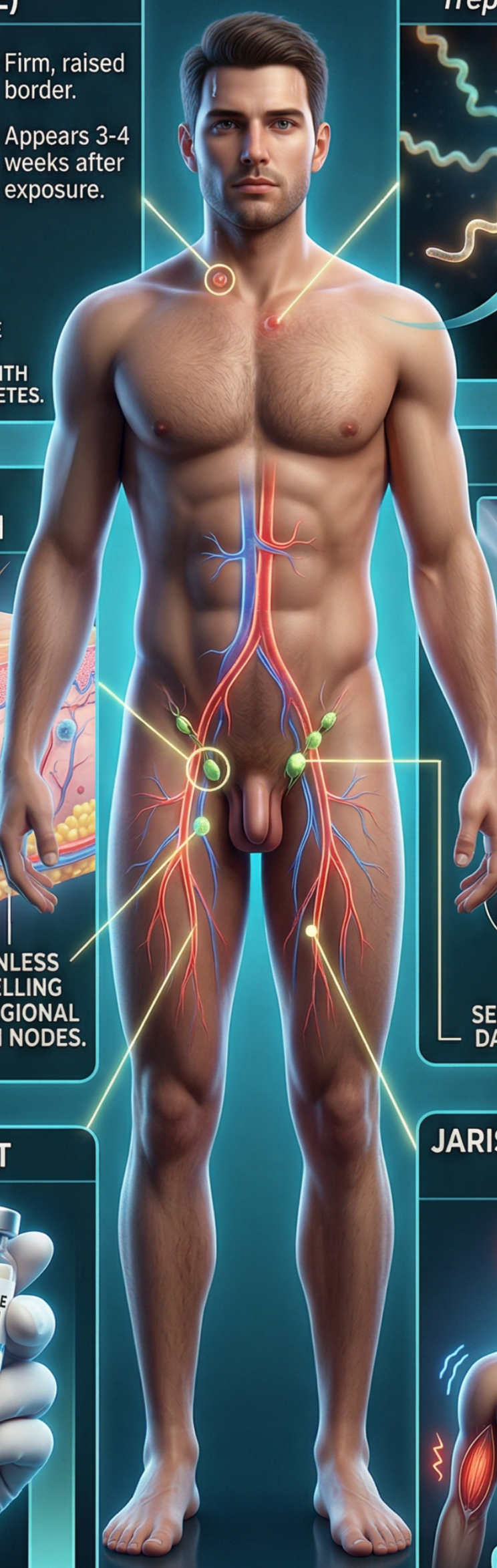
Firm, raised border.

Appears 3-4 weeks after exposure.

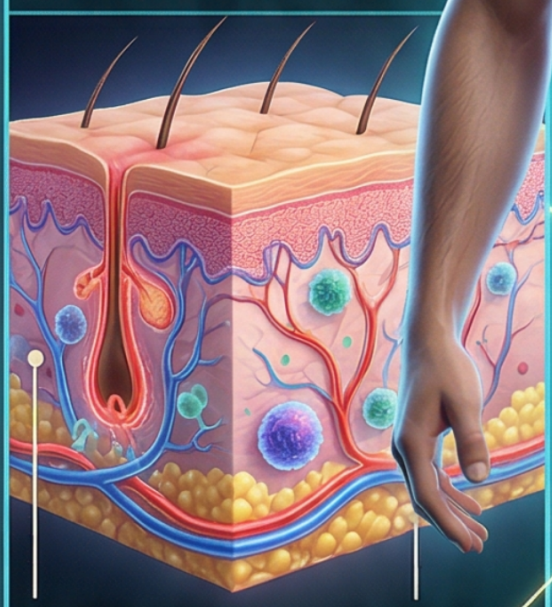
CHANCRE EXUDATE FILLED WITH SPIROCHETES.

CAUSATIVE AGENT: *Treponema pallidum*

Enters through mucous membranes or skin.



PATHOLOGY & INFLAMMATION



ENDARTERITIS OBLITERANS: Swelling and proliferation of small blood vessels.

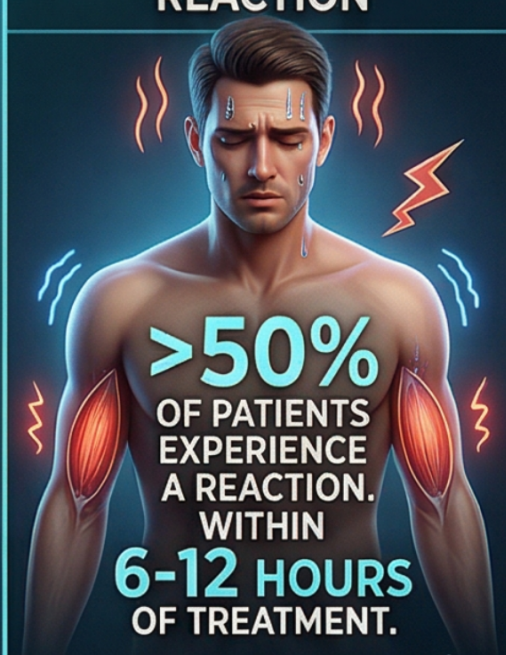
PAINLESS SWELLING OF REGIONAL LYMPH NODES.

DIAGNOSIS

PHYSICAL EXAM, SEROLOGIC BLOOD TESTS, DARKFIELD MICROSCOPY.

TREATMENT

JARISCH-HERXHEIMER REACTION



>50% OF PATIENTS EXPERIENCE A REACTION. WITHIN **6-12 HOURS** OF TREATMENT.

Symptoms: Fever, chills, muscle aches, headache.

Primary Syphilis

- The first stage of this sexually transmitted infection is characterized by the appearance of a single, painless ulcer known as a chancre, which has a firm, raised border.
- It is caused by *Treponema pallidum*, which enters through mucous membranes or skin; the chancre appears 3-4 weeks later and exudes fluid filled with spirochetes.
- The infection causes swelling and proliferation of small blood vessels (endarteritis obliterans) and painless swelling of regional lymph nodes.
- Diagnosis relies on physical exams, serologic blood tests, and darkfield microscopy.
- Benzathine penicillin is the primary treatment.
- Over 50% of patients experience a Jarisch-Herxheimer reaction (fever, chills, muscle aches, headache) within 6-12 hours of receiving treatment.