

A photograph of four surgeons in an operating room, illuminated by large overhead surgical lights. They are wearing blue scrubs, masks, and caps, and are focused on a patient lying on the table. The scene is dimly lit, with the primary light source being the surgical lamps.

Surgical Site Infection

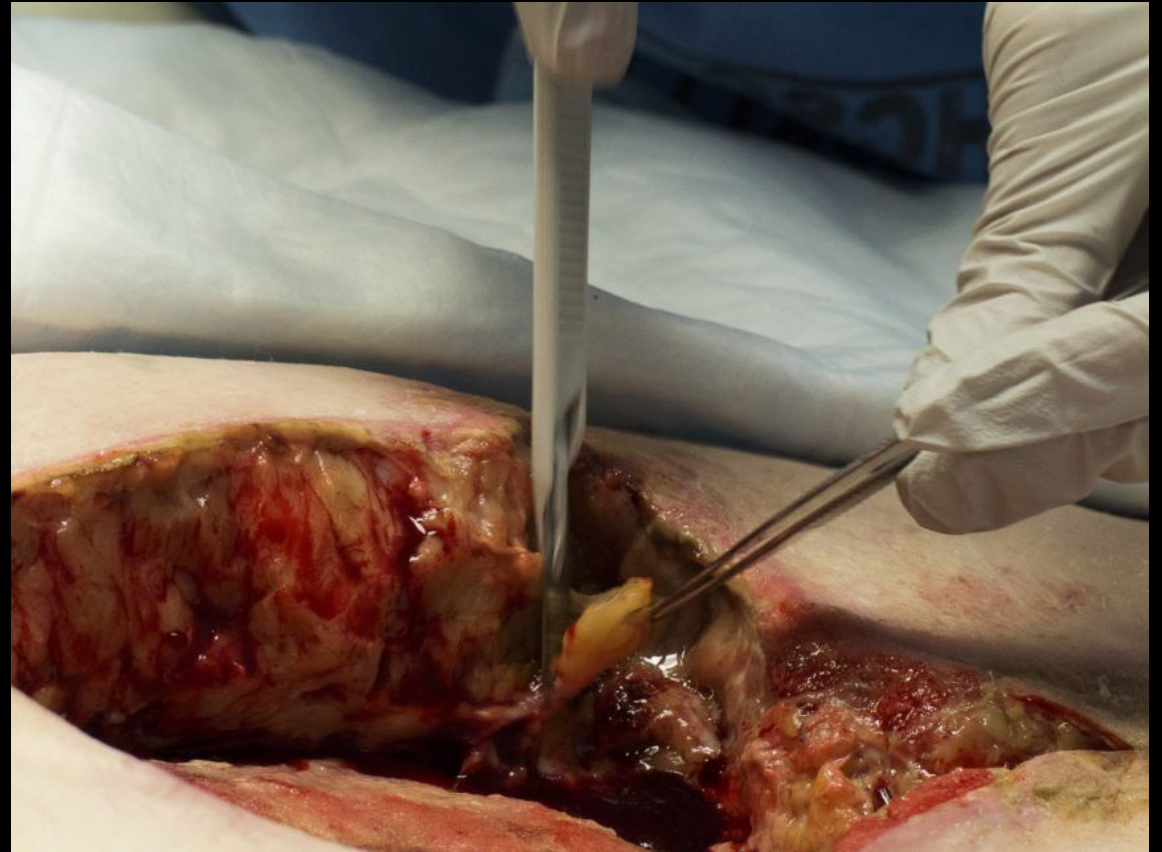
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Definition :surgical site infection

SSI defined by the US Centre for Disease Control and Prevention (CDC) as an infection that occurs after surgery in the part of the body where the surgery took place.



- Incidence is about 1% to 3%.
- SSI typically occurs within 30 days after surgery



Nomenclature:

The process of pus formation, called suppuration



- Pus is a viscous liquid that consists mostly of dead and dying neutrophils and bacteria, cellular debris, and fluid leaked from blood vessels.



collection of pus, called an abscess

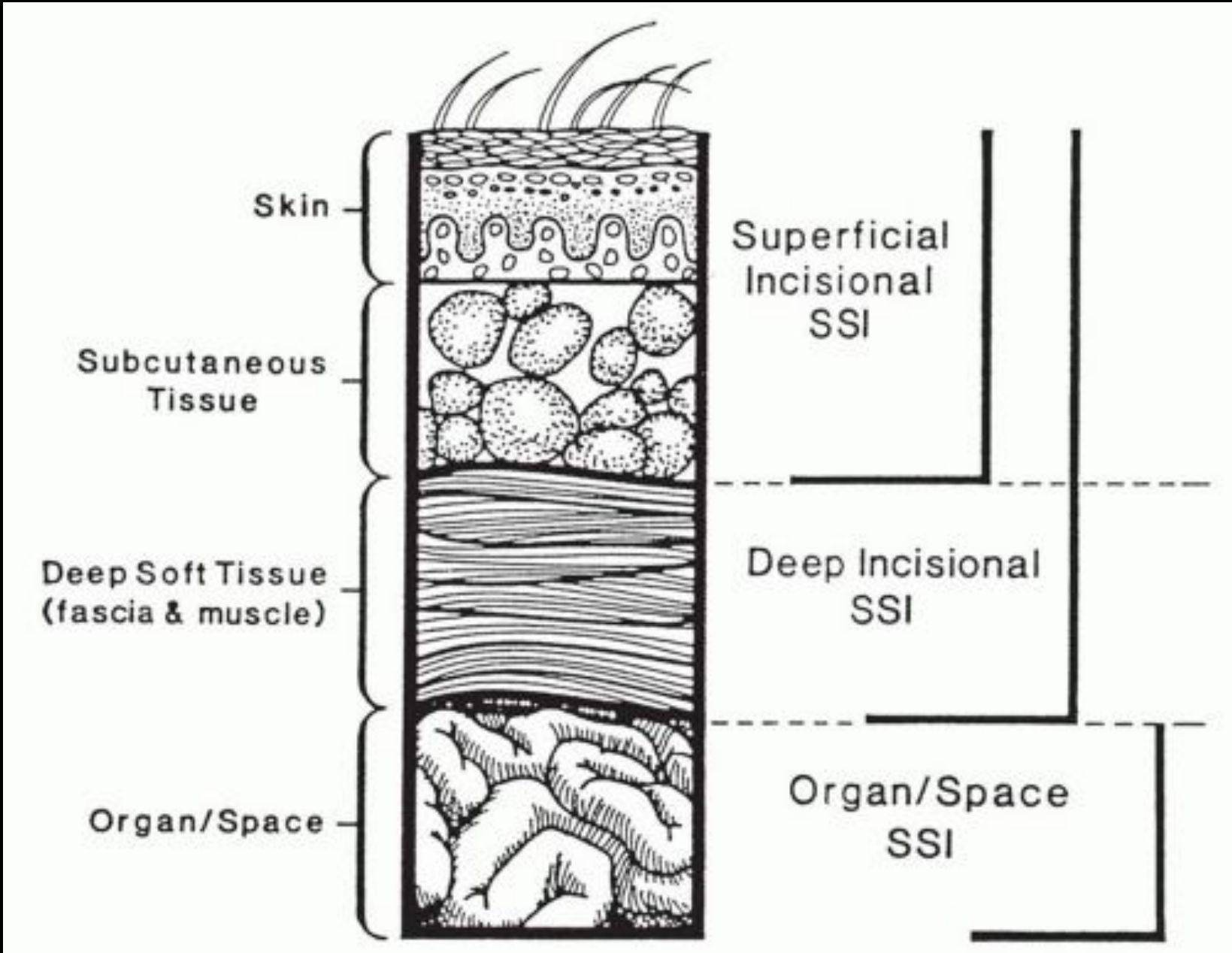


Decisive Period

- The critical 4-hour window post-tissue breach, whether from trauma or surgery, before bacterial growth becomes established enough to cause infection.



Types of SSI



Signs and symptoms Non specific

- redness
- delayed healing
- fever
- pain
- tenderness
- warmth
- swelling



Signs and symptoms Specific

- A superficial incisional SSI may produce pus from the wound site cellulitis, lymphangitis.
- A deep incisional SSI may also produce pus. The wound site may reopen on its own, or a surgeon may reopen the wound and find pus inside the wound.
- An organ or space SSI may show a discharge of pus coming from a drain placed through the skin into a body space or organ.

superficial incisional SSI cellulitis



Lymphangitis



deep incisional

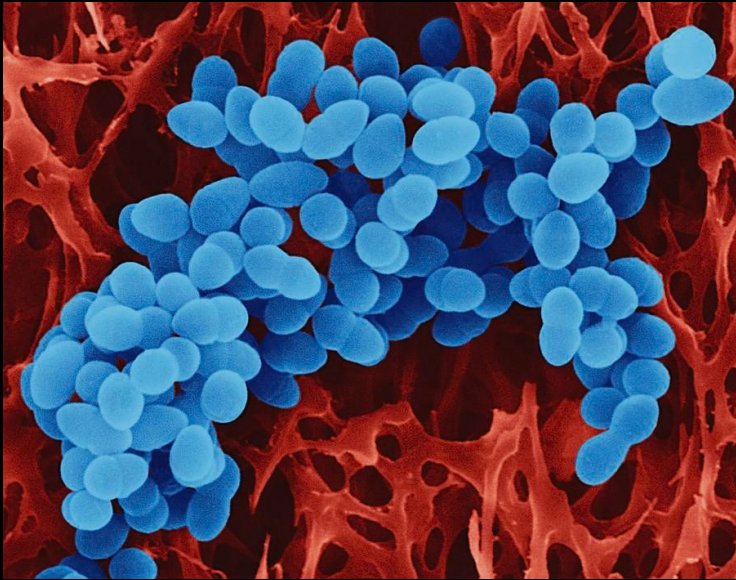


organ or space SSI

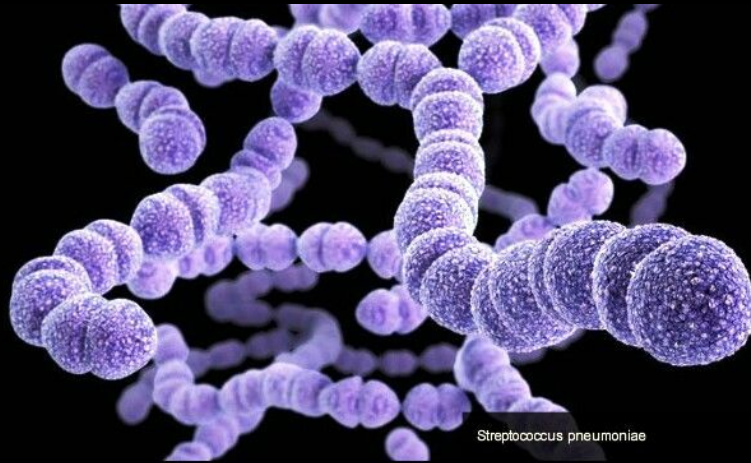


The most common bacteria pathogen:

Staphylococcus



Streptococcus



Pseudomonas

Bacteroid

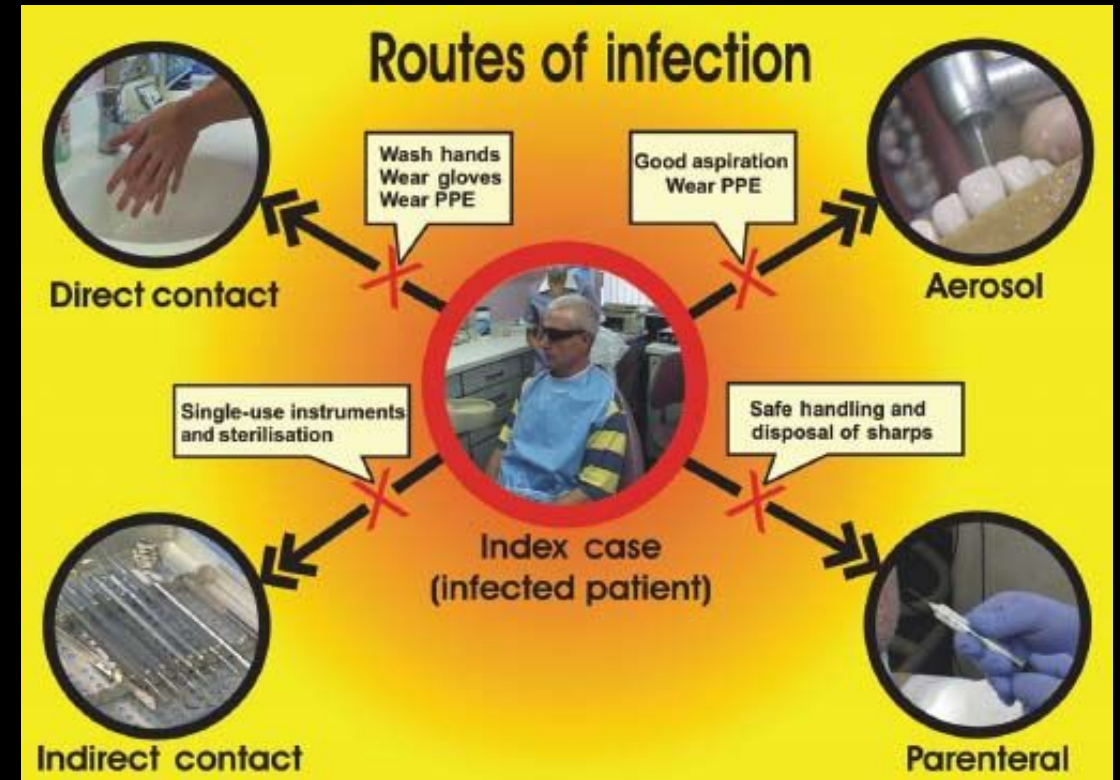
clostridia



Sources of Infection

Exogenous: touch of a contaminated caregiver or surgical instrument, through germs in the air.

Endogenous: Present in or on the host, e.g., SSSI following contamination from a perforated appendix.



Surgical wound classification

- Clean:



Clean-contaminated: an incision through which the respiratory, alimentary, or genitourinary tract is entered under controlled conditions



Contaminated



Dirty or infected

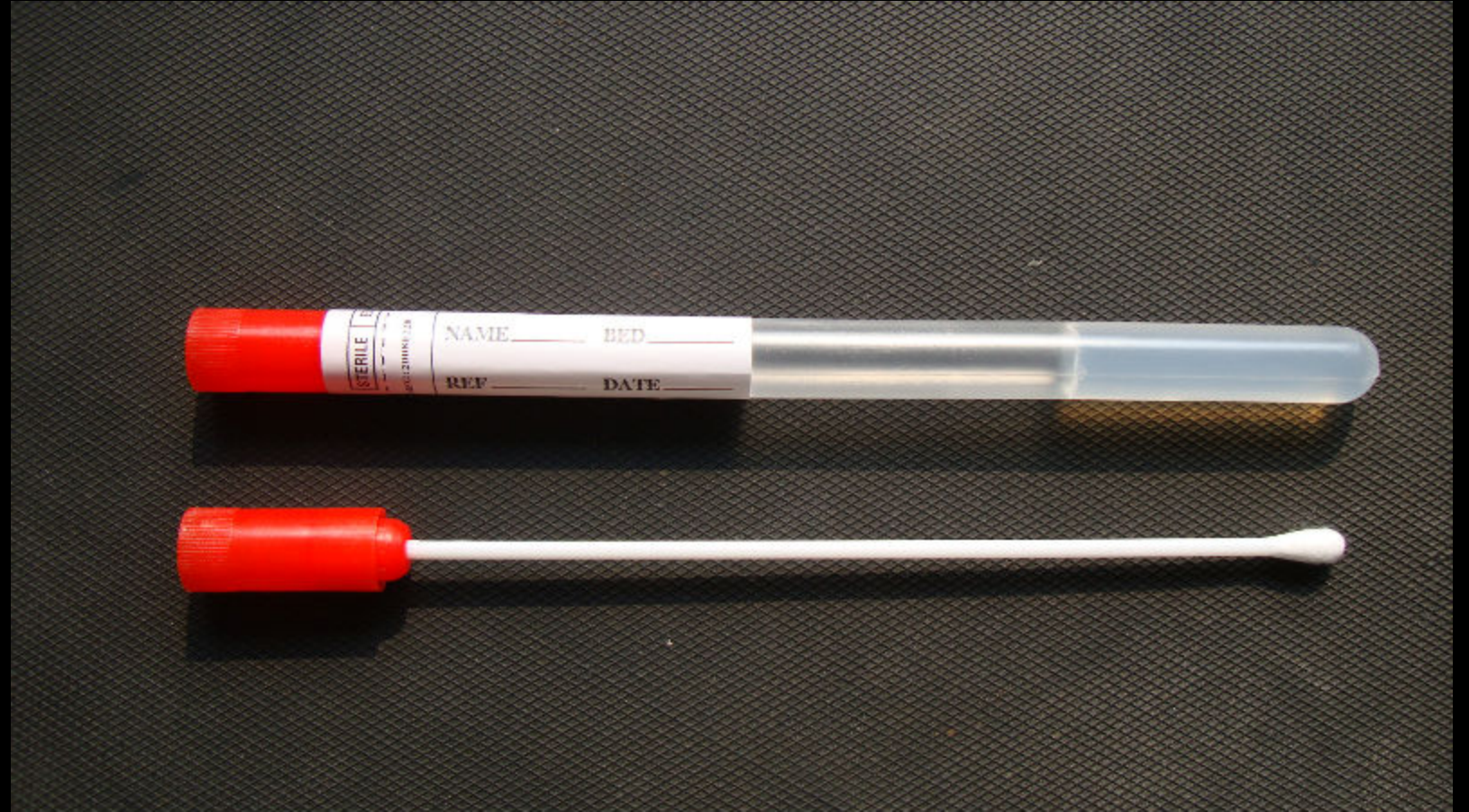


RISK FACTORS FOR SSI

- surgery that lasts more than 2 hours
- Prosthetic implant surgery e.g. silicon ,mesh, titanium...
- emergency surgery
- abdominal surgery
- medical problems for e.g. diabetes, cancer or immune compromised.
- an elderly adult
- overweight
- Smoking

TREATMENT

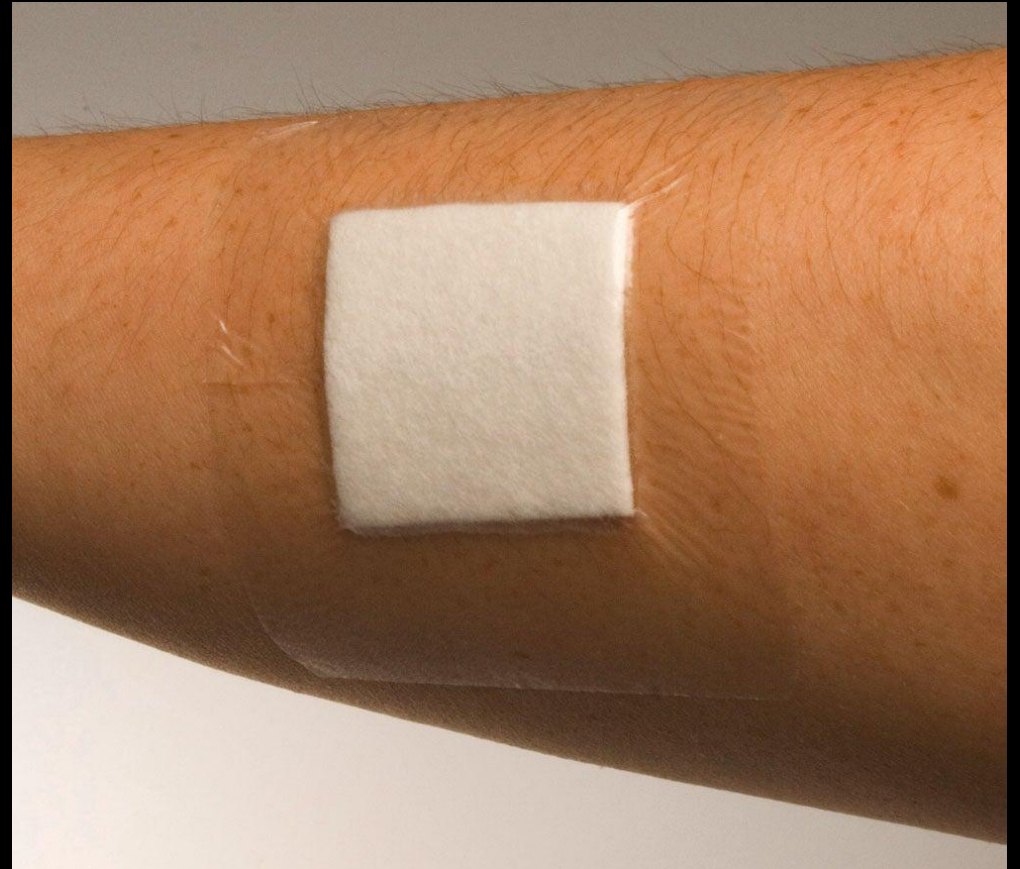
- Isolation of causative microorganism with culture derived antibiotic treatment.



- Drainage of abscess and debridement of devitalized tissue



- Proper wound dressing and local care.

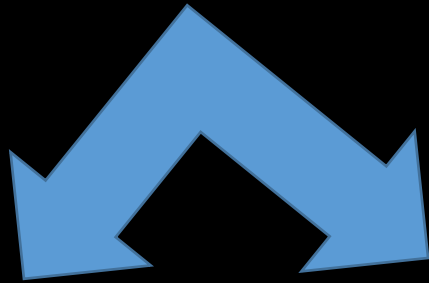


- Improving patient general conditions and nutritional support



Skin and Soft-Tissue Infections

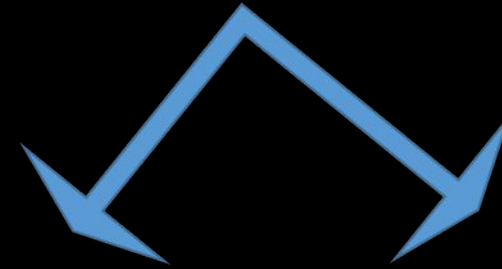
necrotising



localised

spreading

non-necrotizing



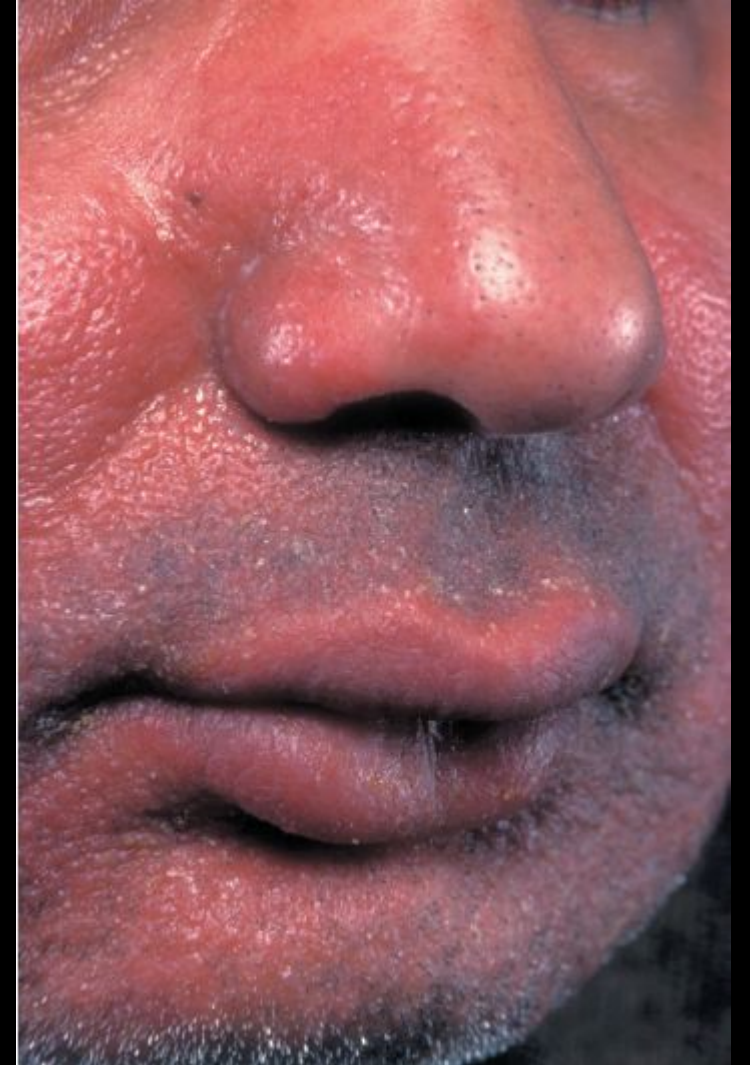
localised

spreading

Impetigo



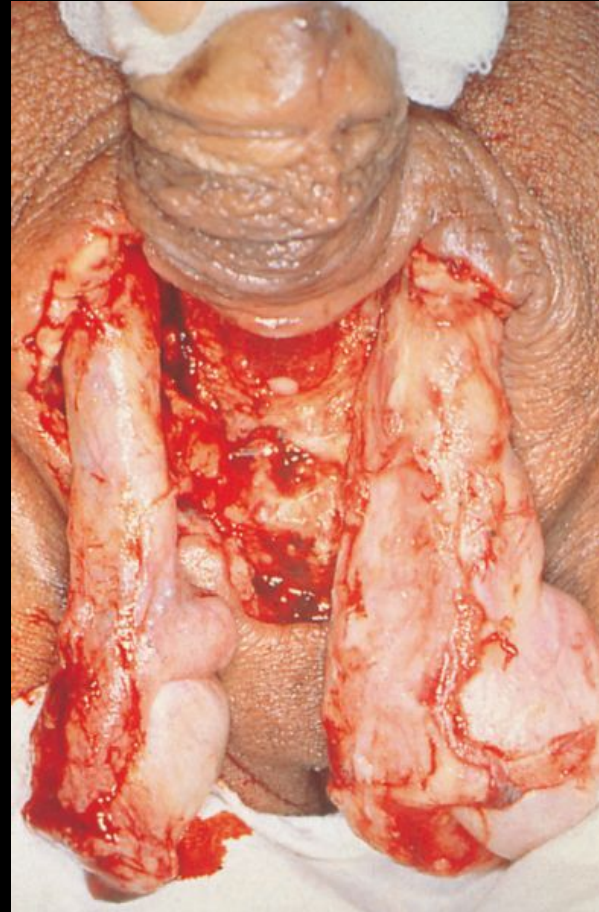
Erysipelas



Cellulitis



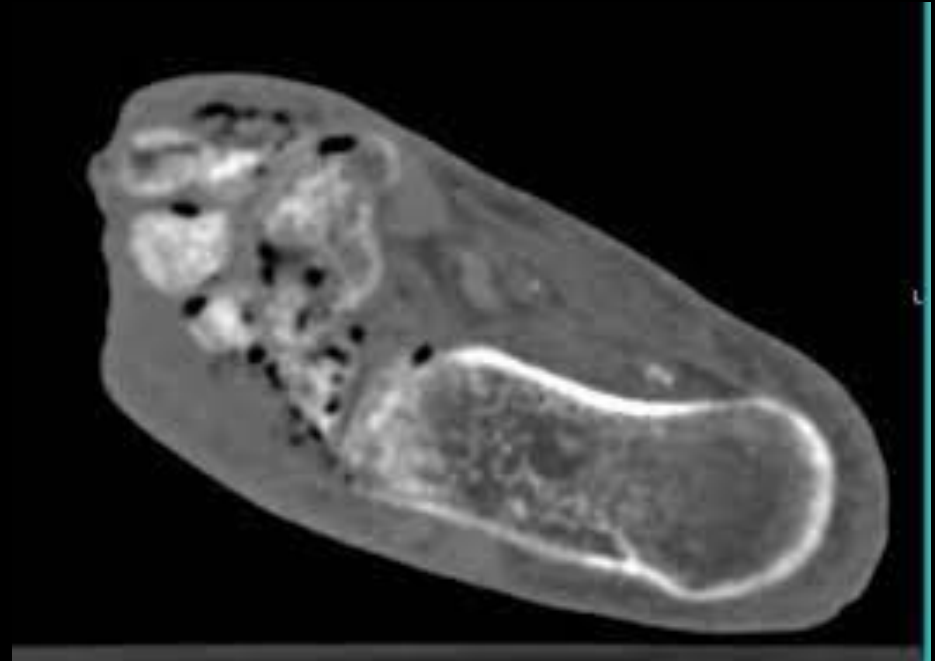
Necrotizing Fasciitis(Synergistic Spreading Gangrene):



Purpura Fulminans:



Gas Gangrene:



Systemic Inflammatory Response Syndrome (SIRS)

- - A systemic manifestation of sepsis.

Definitions of SIRS and Sepsis: Presence of two out of three criteria.

- Hyperthermia ($>38^{\circ}\text{C}$) or hypothermia ($<36^{\circ}\text{C}$)
- Tachycardia ($>90/\text{min}$, no β -blockers) tachypnoea ($>20/\text{min}$)
- White cell count $>12 \times 10^9/\text{litre}$ or $<4 \times 10^9/\text{litre}$.

Sepsis: SIRS with a documented source of infection.

Sepsis Bundle - Sepsis Six

A bundle of medical therapies designed to reduce mortality in sepsis patients to be completed within 6 hours for patients with severe sepsis, septic shock, and/or lactate >4 mmol/L.

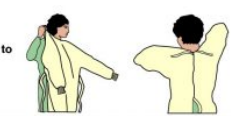








1. Intravenous fluid challenge.
2. Intravenous antibiotics.
3. Oxygen and monitor urine output.
4. Blood cultures.
5. Full blood count.
6. Lactate measurement.

Universal Precautions

- For surgeons treating infected or 'at-risk' patients to have hepatitis, HIV infection
 Particularly important with splashing/aerosol formation and power tools.

CDC's Universal Precautions:

- Full-face mask or protective spectacles.
- Waterproof, disposable gowns and drapes.
- Boots (no clogs) for injury prevention.
- Double gloving.
- Limited personnel in theatre.
- Minimal movement in theatre.
- Respect for sharps.
- Meticulous operative technique.

CORRECT SEQUENCE FOR DONNING PERSONAL PROTECTIVE EQUIPMENT (PPE)	CORRECT SEQUENCE FOR REMOVING PERSONAL PROTECTIVE EQUIPMENT (PPE)
<p>The type of PPE used will vary based on the level of precautions required; e.g., Standard and Contact, Droplet or Airborne Infection Isolation.</p>	
<p style="text-align: center;">Remove hand jewellery and tie back hair.</p> <p style="text-align: center;">Clean and dry hands thoroughly.</p>	
<p>1. GOWN / APRON</p> <p>Fully cover torso from neck to knees, arms to end of wrists, and wrap around the back</p> <p>Fasten in back of neck and waist</p> 	<p>1. GLOVES</p> <p>Outside of gloves are contaminated—DO NOT TOUCH!</p> <p>Grasp outside of glove with opposite gloved hand; peel off</p> <p>Hold removed glove in gloved hand</p> <p>Slide fingers of ungloved hand under remaining glove at wrist</p> <p>Peel glove off over first glove</p> <p>Discard gloves in waste container</p> <p>Clean and dry your hands thoroughly</p> 
<p>2. MASK OR RESPIRATOR</p> <p>Secure ties or elastic bands at middle of head and neck</p> <p>Fit flexible band to nose bridge</p> <p>Fit snug to face and below chin</p> <p>Fit-check respirator</p> 	<p>2. GOGGLES OR FACE SHIELD</p> <p>Outside of goggles or face shield are contaminated—DO NOT TOUCH!</p> <p>To remove, handle by head band or ear pieces</p> <p>Place in designated receptacle for reprocessing or in waste container</p> <p>Clean and dry your hands thoroughly</p> 
<p>3. GOGGLES OR FACE SHIELD</p> <p>If you wear glasses put them on.</p> <p>Place goggles or face shield over face and eyes and adjust to fit</p> 	<p>3. GOWN / APRON</p> <p>Gown front and sleeves are contaminated—DO NOT TOUCH!</p> <p>Unfasten ties</p> <p>Pull away from neck and shoulders, touching inside of gown only</p> <p>Turn gown inside out</p> <p>Fold or roll into a bundle and discard</p> <p>Clean and dry your hands thoroughly</p> 
<p>4. GLOVES</p> <p>Extend to cover wrist</p> 	<p>4. MASK OR RESPIRATOR</p> <p>Front of mask/respirator is contaminated—DO NOT TOUCH!</p> <p>Grasp bottom, then top ties or elastics and remove</p> <p>Discard in waste container</p> <p>Clean and dry your hands thoroughly</p> 
<p> Capital & Coast District Health Board EPOKO KI TE URU HAORA. Infection control January 2005. Developed using CDC Guidelines 2005</p>	



THANK
YOU!