

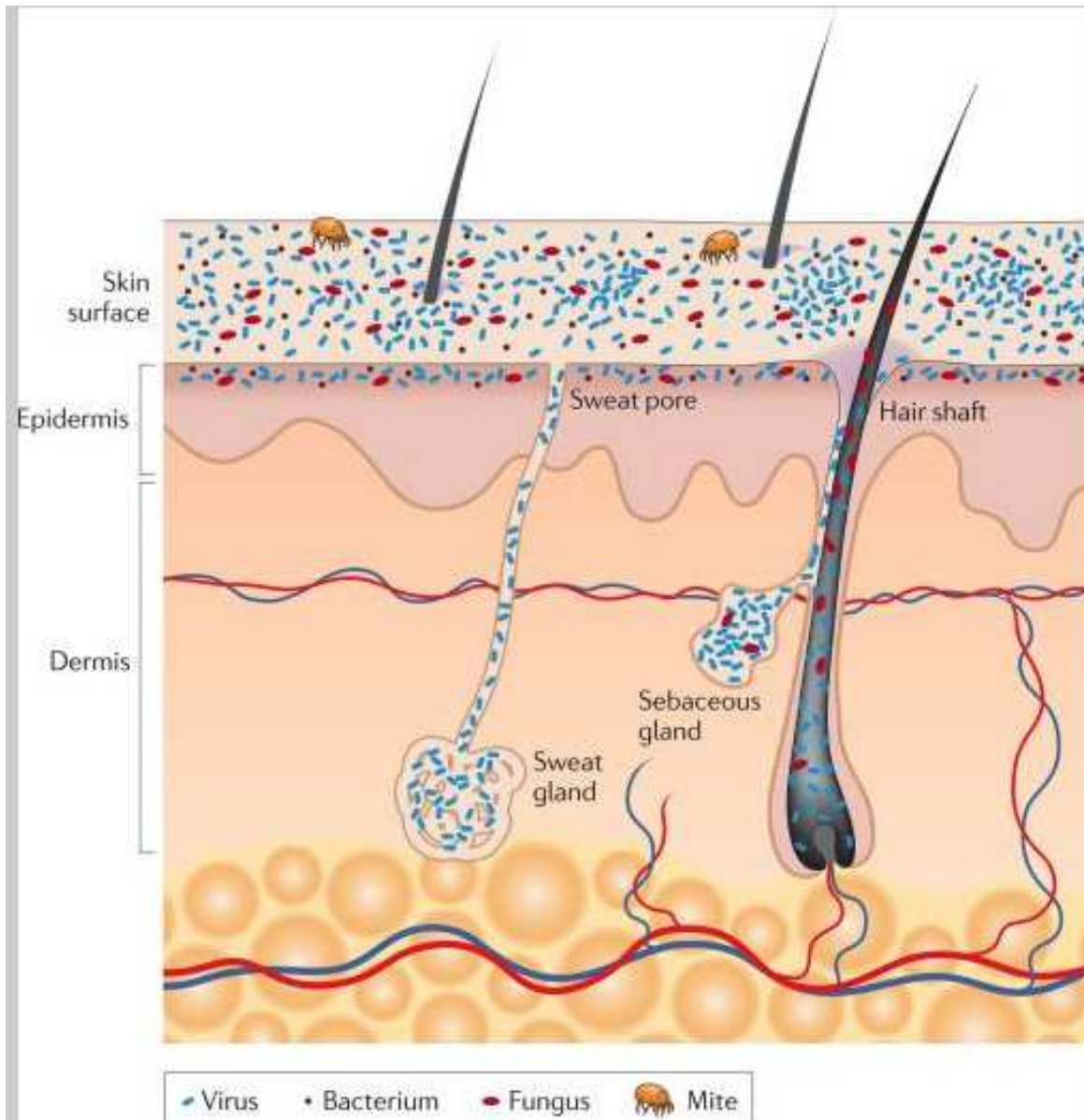
# Skin and Soft Tissue Infections in Dialysis Patients

SKC In-Service Dec 2016

# Topics

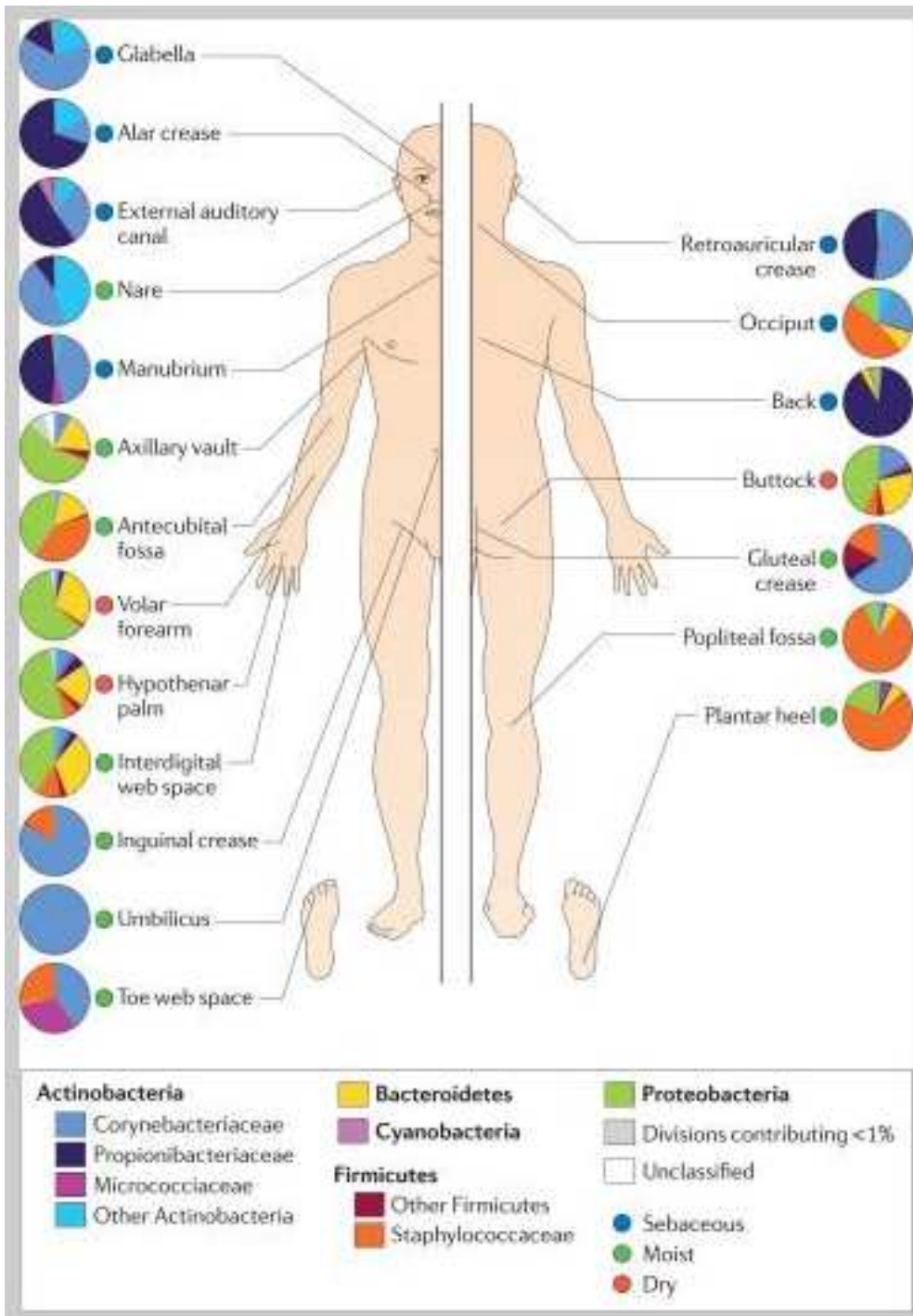
- Skin and soft tissue infections
- Future ID topics?
  - Bloodstream infections
  - Catheter related infections
  - Pulmonary infections
  - Diabetic foot infections
  - Hepatitis

# Skin is covered with microorganisms



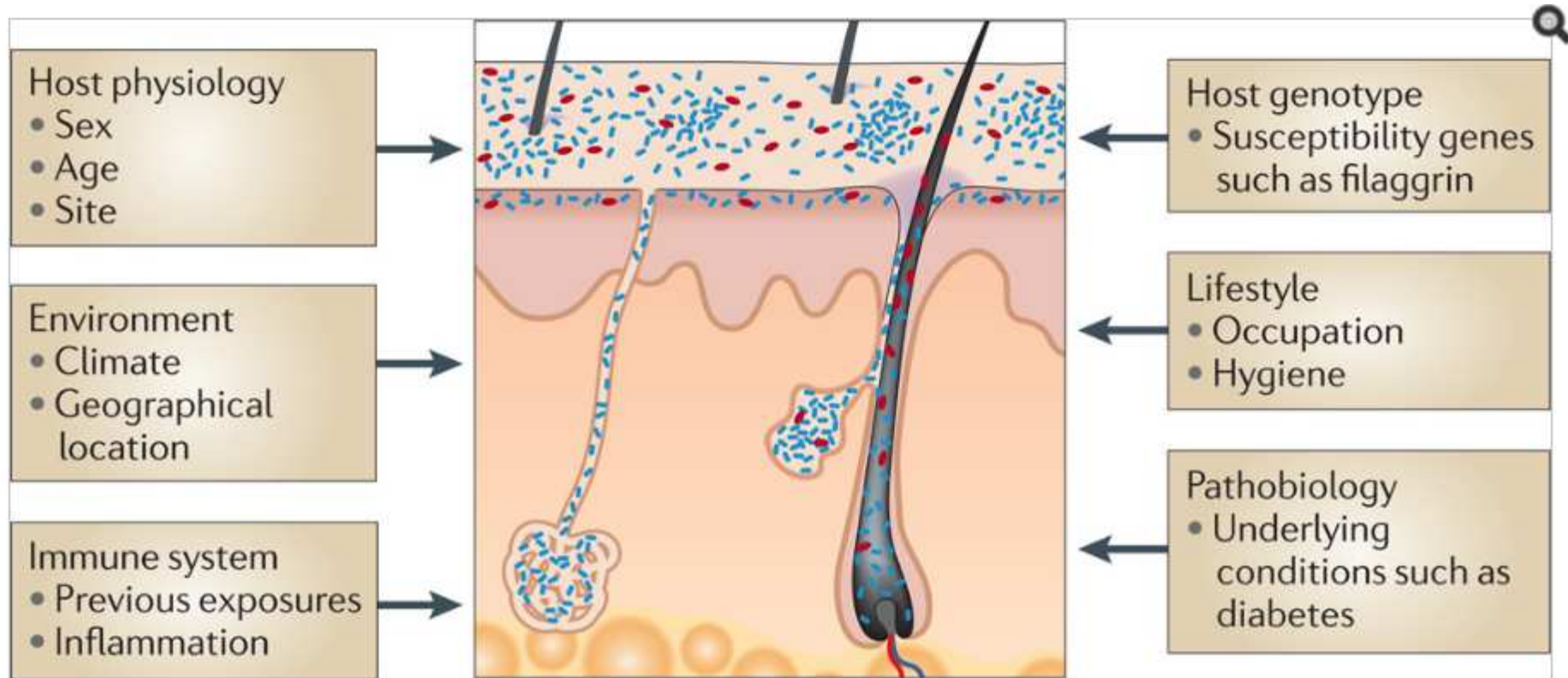
# Common Skin Bacteria

- Staph epidermadis
  - “Staph Epi”
  - Coagulase negative staph
- Staph aureus
  - MSSA – methacillin sensitive staph aureus
  - MRSA – methacillin resistant staph aureus
- Streptococcus
- Propionibacterium



Staph lives near dialysis access!

# Skin Microbiome

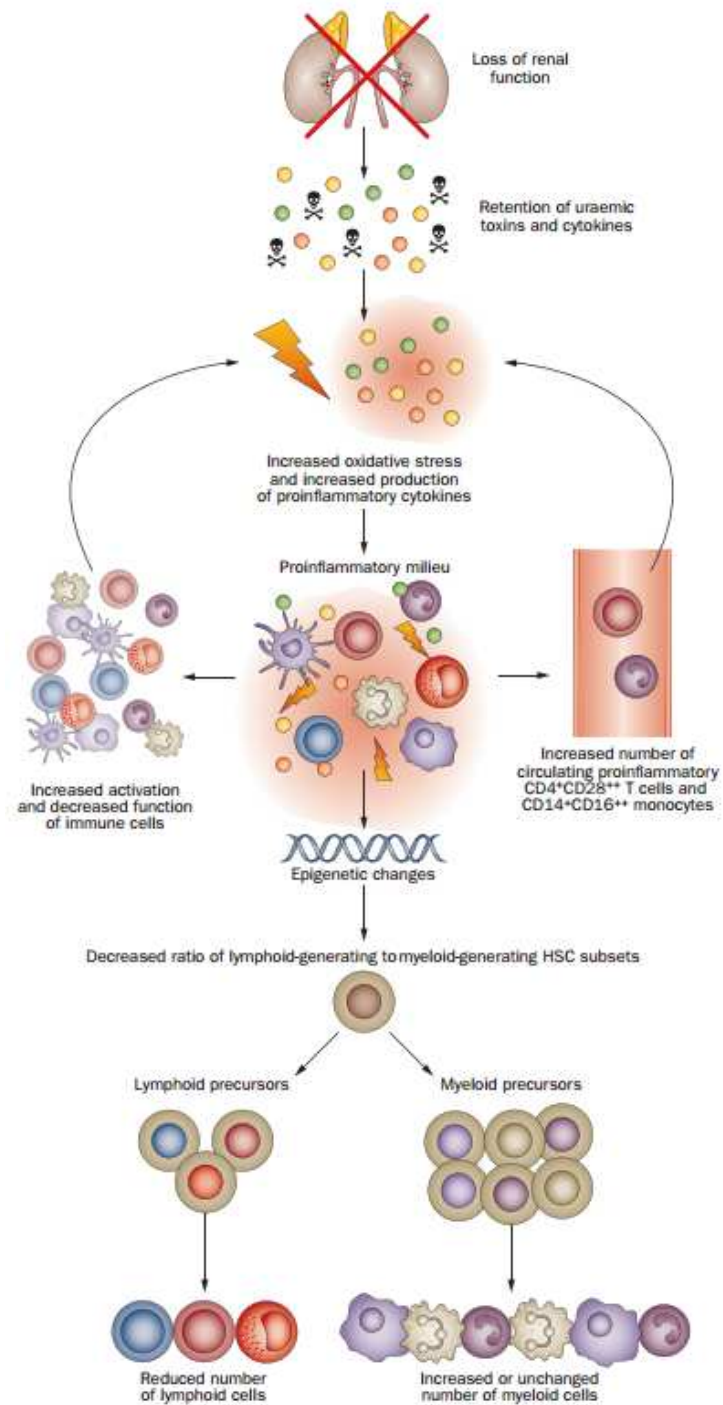


## Factors contributing to variation in the skin microbiome

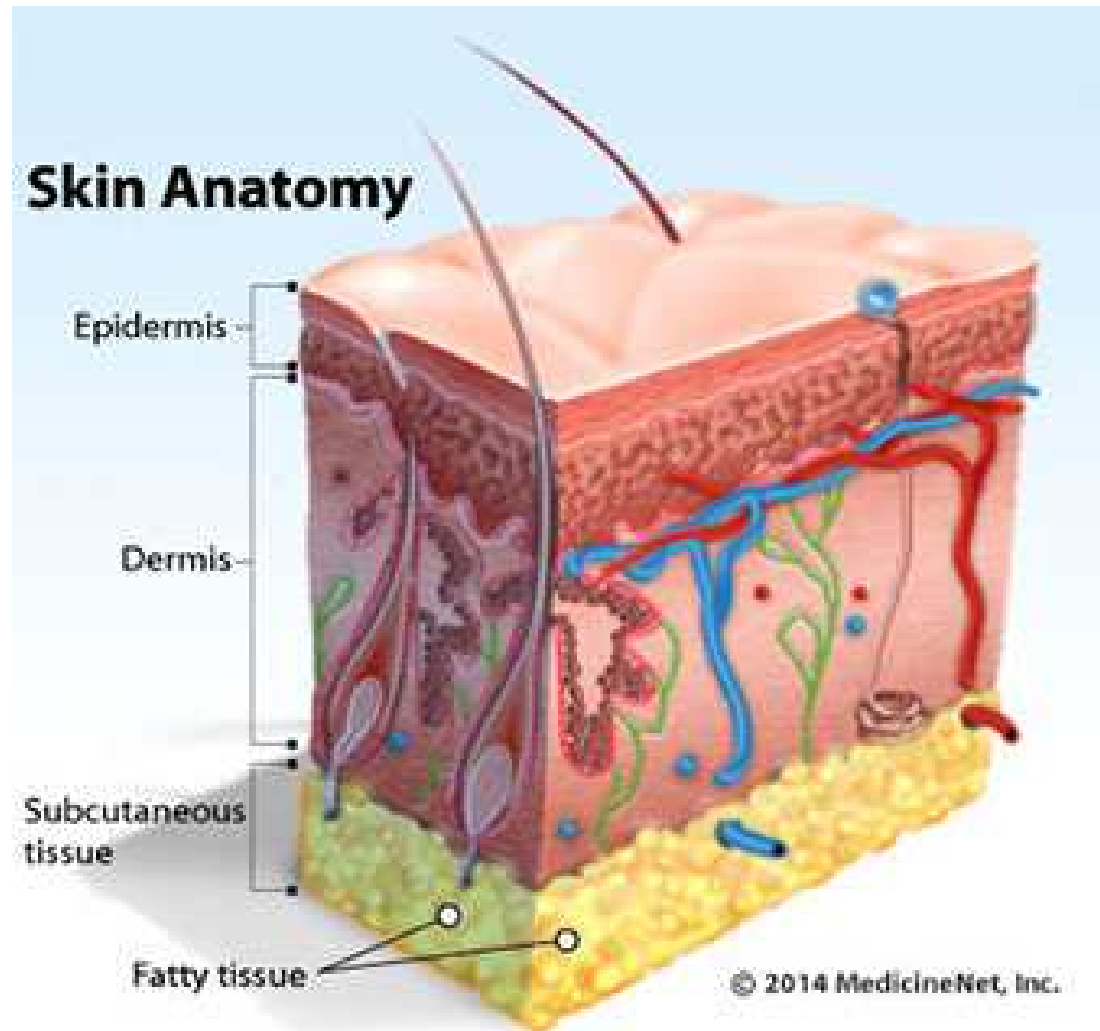
Exogenous and endogenous factors discussed in this Review that contribute to variation between individuals and over the lifetime of an individual.



# Immune system and ESRD



# Cellulitis



Cellulitis = Infection of the dermis or subcutaneous tissue



# Cellulitis



# Cellulitis Management / Treatment (ESRD)

- Evaluation for abscesses / drainable lesions
- Blood cultures
- Mild cases may be treated with oral antibiotics
- IV antibiotics are preferred in severe cases and often in ESRD due to ease of administration
- Uncomplicated / no concern for MRSA or culture + MSSA or Strep
  - B lactam antibiotic preferred over vancomycin (in center Rx used: Cefazolin – Ancef, oral antibiotic cefalexin - keflex)
- Concern for MRSA
  - Vancomycin (oral antibiotics used for MRSA include sulfamethoxazole-trimethoprim, clindamycin, doxycycline)
- Duration of treatment is usually 7-14 days

# Local irritation / contact dermatitis

- Allergic reactions to skin prep solutions, gauze or adhesives in tape and bandaids can cause contact dermatitis
- Contact dermatitis can look just like cellulitis (inflammation in the dermis)
- History, timing of lesion, lack of systemic symptoms often help to distinguish the two
- Contact dermatitis should follow a “pattern” on the skin
- Contact dermatitis can evolve into a cellulitis due to loss of skin integrity

# Contact Dermatitis

(over AVF, due to chlorhexidine)



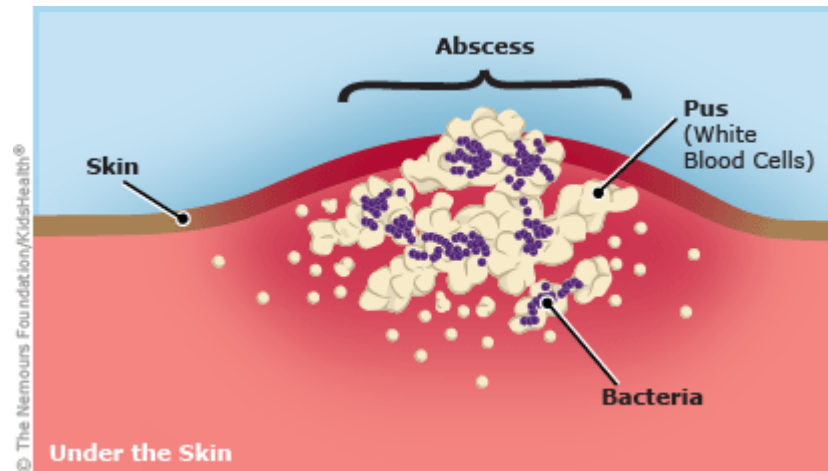
Active



Healing



# Cutaneous Abscess

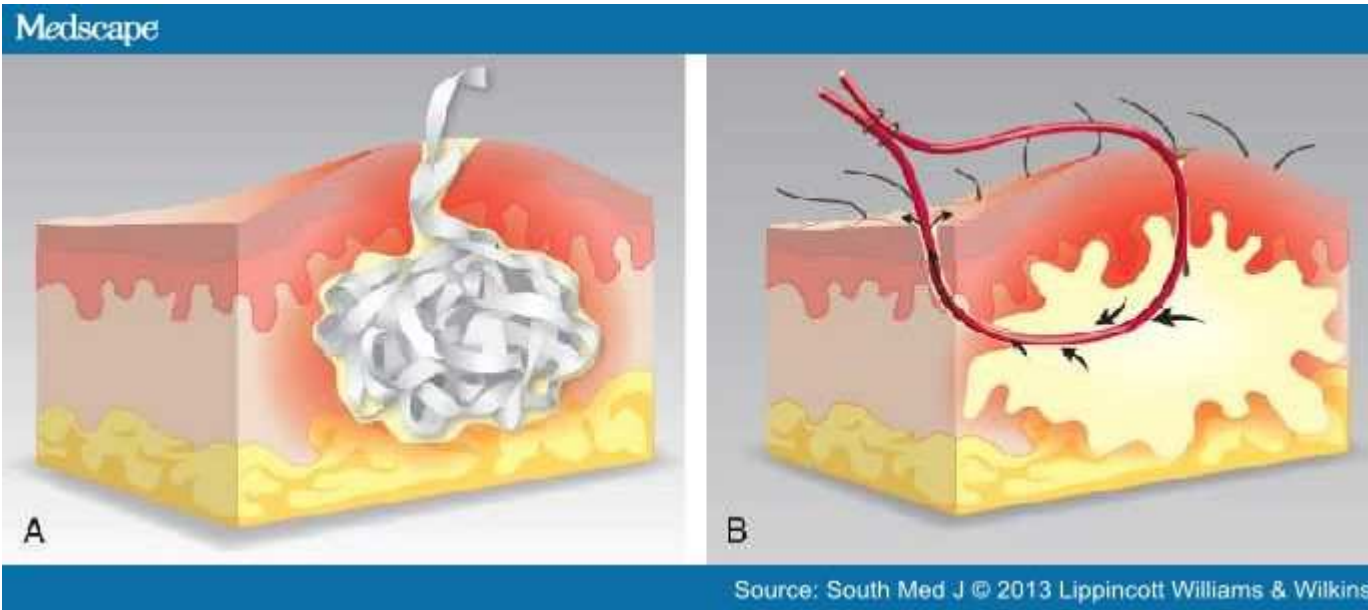
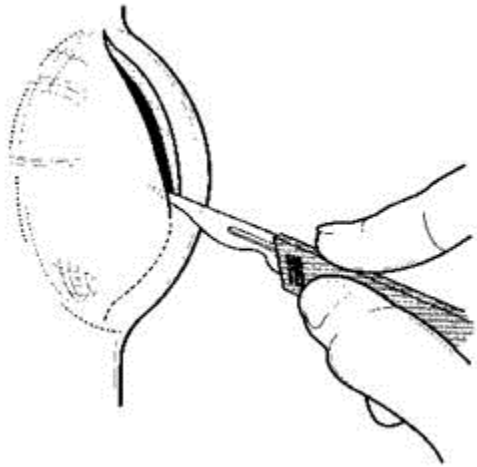


# Cutaneous abscess

- Tender raised lesion
- Often has erythema overlying but not always
- Skin feels fluctuant
- Can have a small pustule
- Patients often think they got a “spider bite”
- Usually is due to staph aureus (MSSA or MRSA)



# Incision and drainage



# Cutaneous Abscess Management / Treatment

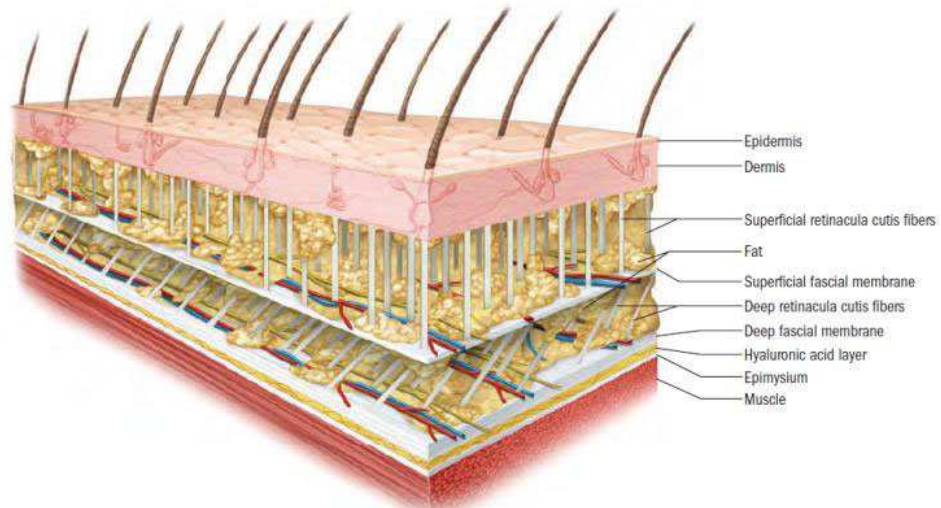
- Culture of pus can be obtained during I & D
- Often treated with incision and drainage alone + local wound care / packing until abscess cavity heals from the inside out
- If there is significant local cellulitis or multiple lesions antibiotics can be added
- Antibiotic should cover staph (Cefazolin or Vanco if concern for MRSA)

# Abscess / fluid collection near dialysis access

- Abscesses or fluid collections near dialysis graft or fistula are a surgical emergency
- Bacteria invading the wall of a fistula or graft can lead to access rupture and exsanguination
- If infection involves graft material the graft (or the involved portion) has to be removed; no way for body to heal / fight infection that has seeded prosthetic material
- Fistulas that are involved with infection often have to be ligated

# Necrotizing Fasciitis

(Flesh eating bacteria)



# Necrotizing Fasciitis

- Affects the deep fascial layers
- Usually happens after a minor cut, abrasion, etc.
- Higher risk in persons with systemic disease, DM, alcoholics, obese
- Most commonly caused by Group A strep
- Often present with pain out of proportion to what would be expected for the injury
- Can have swelling, purplish rash moving on to large bullae (blister) formation and eventually overt skin necrosis
- Often progresses to severe systemic symptoms of sepsis / shock

# Necrotizing Fasciitis



Source: K.J. Knoop, L.B. Stack, A.B. Storrow, R.J. Thurman:  
The Atlas of Emergency Medicine, 4th Edition,  
[www.accessemergencymedicine.com](http://www.accessemergencymedicine.com)  
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# Necrotizing Fasciitis Management

- Can spread very quickly and lead to death or extensive skin loss in a matter of hours
- Patients require emergent surgical evaluation and admission to hospital if suspected, preferably one with expertise in this area (burn center)

# Take home points

- For many reasons, dialysis patients are prone to skin and soft tissue infections
- Proper cannulation technique and strict adherence to infection control precautions are necessary to prevent infections
- Infections that are recognized and treated early tend to have better outcomes
- If you see something that looks like a skin infection, take it seriously, notify healthcare providers and help get the patient treatment
- Infections near the dialysis access often require emergent treatment