# SKIN, SOFT TISSUE, AND WOUND CULTURE BEST PRACTICE GUIDELINES

*Superficial and Deep Wounds*

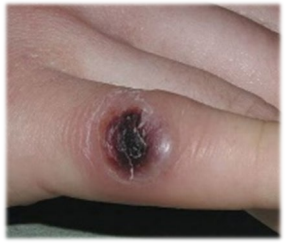
*A collaboration with Geisinger Medical Laboratories and Geisinger Wound Care*

*November 1, 2023*

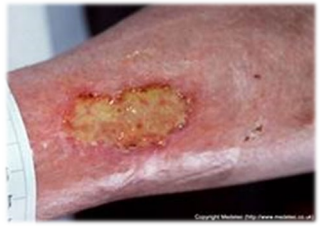
# General Considerations and Reminders for Optimal Wound Culture Collection

**Do NOT culture.**

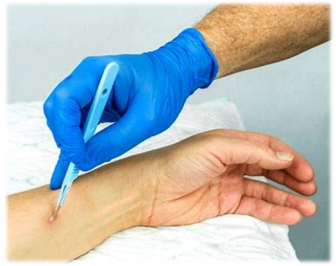
Crust or necrotic tissue,



Slough,



Pus from I&D



- Collect specimens before starting therapy if possible. Follow Geisinger's patient preparation guidelines.
  - Policy Mgr. 10.0 Provisions of Care, Treat/Service - Preparation of Skin for Surgery
- Use appropriate personal protective equipment (PPE); follow biosafety practices and blood and body fluid precautions. Discard towels and PPE according to policy.
- ONLY collect specimens from wounds that have clear signs of clinical infection, appear to be deteriorating, or fail to heal after 3-4 weeks of monitored treatment (i.e., failure to decrease size by 50% over 4 weeks). Indiscriminate submission of a wound specimen(s), especially from a superficial site, may provide useless information that leads to unnecessary antibiotic treatment.
- For outpatient and Convenient Care collection, surgical consults are required before collection of samples.
- Do NOT culture crusts, pus, wounds that have not been adequately debrided and cleansed.
- Do NOT culture fresh bite wounds, burns, or trauma within 24 hours of the occurrence. Cultures cannot predict whether microbes identified from fresh bites, burns, or trauma will cause infection. Samples collected 24-48 hrs. after the original tissue damage are optimal. Collect samples AFTER the wound or burn has been debrided.
- Do NOT culture wounds post-incision and drainage, as evidence shows little or no benefit to therapeutic management.
- For animal bites or puncture wounds, deliver a tetanus vaccine immediately to any patient who has not received a tetanus booster in the past 5 years.
- Wound Infections that do NOT respond to standard treatment are best diagnosed by a skin biopsy culture accompanied by local anesthesia* and histopathological examination. Submit viable tissue rather than superficial debris. A biopsy or a needle aspiration of the wound's advancing (leading) edge is optimal. **Refer to local anesthesia guidelines and do NOT use lidocaine with epinephrine on fingers, toes, nose, or male genitalia.*
- Tissues and aspirates are the ONLY acceptable samples for anaerobic, fungal, and mycobacterial cultures.
- Swabs are not optimal, but, if necessary, Geisinger endorses the #Levine method: rolling swab between fingers while vigorously swabbing at least 1 $cm^2$ of the leading wound margin.
- For optimal laboratory culture, information regarding the type of wound (surgical, traumatic pressure ulcer, etc.), the wound location, and the acquisition method is essential to the Epic order. Optimal wound care notes require standardized measurement practices, a description of the wound bed, patient pain level, treatments and interventions, nutritional needs, and strategies for physician/family notification.

## Cellulitis, or skin and soft tissue infections without a skin break Specimen collection

1. For cellulitis, or skin and soft tissue infections without a skin break, superficial wound swab cultures and antimicrobial susceptibility testing (AST) are rarely indicated.
2. Such infections are generally caused by ***Staphylococcus aureus*** and ***Streptococcus pyogenes***.
3. Treatment choices are usually predicted by the suggested Geisinger empirical antimicrobial choice(s).

# Open Wound or Ulcer Culture Collection Specimen collection

1. Remove any debris, surface exudate, or necrotic tissue with a sterile scalpel, swabs, or sponges (Necrotic tissue, dry-crusted areas, and pus do NOT support active multiplication of pathogens and may yield false negative results or skin contaminants).
2. Do NOT culture slough or superficial purulent drainage.
3. Cleanse the wound margins and superficial areas thoroughly with sterile, non-bacteriostatic saline. Change sterile sponges with each application. Do NOT use any antimicrobial solution (Betadine, Hibiclens, ChloraPrep, etc.) to cleanse the area before obtaining a culture.
4. Irrigate the wound with sterile saline to rinse thoroughly.
5. Collect a tissue biopsy, curettage sample,* or needle biopsy from the base or advancing margin of the lesion. Collect sufficient tissue (3-4 mm biopsy samples), avoiding necrotic areas.

*Curettage: gentle scraping of the wound surface, including the inner wound edges, with a sterile surgical curette (sharp, round, stainless steel loop at the end of a handle) or a disposable dermal curette will improve culture results

5a. For aerobic or anaerobic culture of small tissue biopsies, place the tissue in a sterile tube with e-swab fluid to keep the specimen from drying out.

5b. For larger tissues, place tissue in a sterile container or cup with sterile, non-bacteriostatic saline or e-swab fluid to keep the specimen from drying out.

6. If a biopsy is not possible and the wound or infection is not resolving as expected (with or without adequate empiric antimicrobial therapy), two or more e-swabs (Liquid Amies Media) may be submitted (one for EACH type of culture requested); however, culture performance may suffer. Burn wounds may also be appropriate for swab specimens, but tissue samples collected post-debridement are optimal.

6a. Swabs may be collected, as long as proper wound irrigation and collection# from the wound's leading edges (margins) are deployed.

6b. Open the e-swab packet, loosen the cap, then remove the cap and swab from the transport tube. Collect the sample with the e-swab, passing the swab deep into the lesion and firmly sampling the lesion, vigorously rubbing a representative part of the lesion on the advancing edge of the wound where active infection is most likely. Replace the e-swab in the transport tube, and ensure the cap is secure.

# Abscess or closed, non-surgical wounds – Excision/Incision and drainage (I and D) Specimen Collection

Perform incision/excision and drainage for closed and infected bite wounds.

1. Remove staples or sutures if required.
2. Remove pus from the top of the wound during incision and drainage.
3. Collect a biopsy sample of the advancing margin or base of the infected lesion as indicated in the “Open wound or ulcer collection process.”
4. NOTE: Evidence shows that routine cultures do not change management or outcomes for patients presenting with abscesses once the I&D procedure is performed. Antibiotics do not penetrate the abscess capsule, and there is no support in the literature recommending oral antibiotics after surgical drainage.

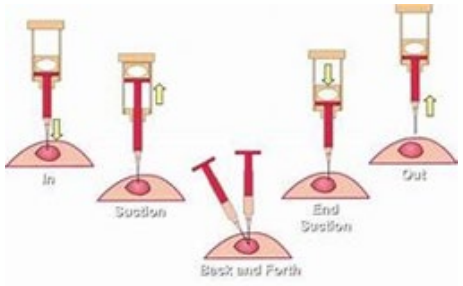
# Closed Surgical Wounds Specimen Collection

For a Closed Surgical Wound – Consult Surgery Department before collection an Out-patient surgical wound

1. Partially open the wound by removing 1-2 staples or sutures and irrigate the wound until the discharge and effluent are clear.
2. Collect a biopsy sample or 2 swabs as indicated in the open “Open wound or ulcer collection process”.

# Needle Aspiration (18- or 20-gauge needle) Specimen Collection

1. Disinfect the skin as you would for a blood culture collection. Insert the exudate using a needle placed into the lesion, using various angles (fanning), if possible. Aspirate the exudate from the deepest portion of the lesion with a syringe and needle.




a. If the volume of aspirate is large (> 3 ml), place the contents into a sterile tube for submission to the laboratory.

b. If the volume of aspirate is small (≤ 1-3 ml), draw up a small amount of sterile non-bacteriostatic saline and flush the wound, then re-aspirate the saline flush, and gently eject the specimen from the syringe into an anaerobic transport media tube, which will recover both aerobic organisms and anaerobes if requested.

c. Note: Needle aspirates may result in underestimation of bacterial isolates compared to more accurate deep biopsy specimens.

# References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