

PUNCTURE WOUNDS

Definition

A puncture wound is a deep hole in the skin produced by a sharp penetrating object such as a nail, glass, wood, thumb tacks, pencils, knives, or teeth. These wounds are typically deeper than a cut or an abrasion. A puncture wound can occur anywhere on the body but are most commonly seen in the hands and feet. The object may leave a hole or remain partially or completely embedded in the wound.

Risk factors associated with infection after a puncture wound include characteristics of the puncture (depth, location), material causing puncture, and host comorbidity. Superficial wounds generally heal without complications, but deeper penetrating wounds are at risk for serious infections.

Initial Management

WISHeS Illness and Injury Protocols: [Puncture Wounds](#)

1. Obtain subjective data:
 - a. Mechanism of injury
 - b. When injury occurred
 - c. Amount of bleeding immediately after injury
 - d. Pain
2. Obtain objective data: Inspect site of puncture wound and surrounding tissue for the following:
 - a. Presence of foreign object.
 - b. Location (near blood vessel or joint) and depth.
 - c. Amount of bleeding (suspect hemorrhage if hard lump or swelling appears under skin soon after injury).
3. Provide or supervise treatment/care (always wear disposable gloves if in contact with blood or body fluids):
 - a. Serious wound (hemorrhaging present and/or impaled object near or suspected to be near major vessel).
 - i. Contact 911 and refer to student's emergency health information tab in Infinite Campus for hospital preference and notify principal of EMS/911 call.
 - ii. Control hemorrhaging with application of direct pressure and elevation.
 - iii. If an extremity is hemorrhaging and cannot be controlled with pressure and elevation, apply tourniquet to extremities and tighten to the point that no pulse can be palpated at either the radial artery for upper extremities or the pedal (top of foot) or posterior tibial (ankle) for lower extremities.
 - iv. Do not remove impaled object.

- v. Stabilize object to prevent further damage.
 - b. Deep puncture wound (nail or other sharp object).
 - i. Wash with soap.
 - ii. Soak in warm water 20-30 minutes to facilitate drainage and cleansing.
 - iii. Dry thoroughly.
 - iv. Apply loose fitting bandage so that air can enter.
 - v. Refer to physician if puncture wound is $\frac{1}{4}$ " to $\frac{1}{2}$ " deep as the incidence of secondary infection is high and antibiotics may be warranted.
 - vi. Refer to physician if puncture wound is due to human or animal bite as the incidence of secondary infection is high and antibiotics may be warranted
 - c. Minor puncture wound (small clean objects such as paper clips and pins).
 - i. Wash with soap.
 - ii. Bandage wound.
 - iii. If wound was the result of a pencil injury, reassure student that pencil lead is pressed graphite which is not toxic, but can color skin like a "tattoo".
- 4. Check for date of last Tetanus vaccination. Refer student to health care provider if more than five (5) years has elapsed since last tetanus immunization, or if wound is dirty or wound debridement is indicated.
- 5. Notify parents if serious or deep puncture wound.
- 6. Consult with school nurse as needed..
- 7. Document in electronic student health record.
 - a. Subjective
 - i. Symptoms
 - ii. Mechanism of injury
 - iii. Last tetanus vaccination
 - b. Objective
 - i. Size, depth of wound
 - ii. Location of wound
 - iii. Appearance of structures surrounding wound
 - c. Intervention
 - i. First aide performed
 - ii. Disposition/referral for further care
 - 1. Vaccination status

Follow-up

1. Provide health education to parent and student about accident prevention, first aid, signs of infection, and potential complications:

- a. Puncture wounds may be difficult to clean, leading to an increased risk of infection.
- b. [Tetanus](#) bacteria grow well in a deep wound with little oxygen. A tetanus booster may be warranted. Review vaccine history. Tetanus is rare in fully immunized children.
- c. Puncture wounds from stepping on a nail have increased risk of pseudomonas infection.
- d. Puncture wounds from an [animal](#) or [human](#) bite are also at increased risk of becoming infected.

References

CDC: About Tetanus (August 29, 2022). Retrieved August 11, 2023, from <http://www.cdc.gov/tetanus/about/index.html>

Cuts and puncture wounds: MedlinePlus Medical Encyclopedia. (n.d.). Retrieved August 11, 2023, from <http://www.nlm.nih.gov/medlineplus/ency/article/000043.htm>