CLINICAL PATHWAY:

Animal and Human Bite Skin and Soft Tissue Infection

THIS PATHWAY SERVES AS A GUIDE AND DOES NOT REPLACE CLINICAL JUDGMENT.

Inclusion Criteria: ≥2 months of age presenting with an animal bite Skin and Soft Tissue Infection (SSTI) from humans, other mammals and reptiles
Exclusion Criteria: <2 mo old; non-animal bite SSTI (see Skin and Soft Tissue Infection Pathway) (consider Infectious Diseases consult if exclusions present)

Initial Management:

- Apply direct pressure to any wounds that are actively bleeding
- Clean non-puncture wound with saline via high pressure syringe irrigation
- Consult Infectious Diseases if there is an animal bite that is not from a dog, cat, or human

Considerations:

- Consider Tetanus prophylaxis (see Appendix A – Tetanus Prophylaxis)
- *For non-human mammals*: Consider Rabies prophylaxis (see Appendix B – Rabies Prophylaxis)
- *For cat bites*: start antibiotic treatment regardless of severity (bites are more likely to be deep punctures and develop infection)
- *For human bites*: If unvaccinated for Hepatitis B, consider Hepatitis B IgG and vaccination (see Appendix C – Hepatitis B Prophylaxis) AND assess risk for HIV infection and see HIV Post Exposure Prophylaxis Pathway

Is this a significant wound (e.g multiple bites, edema, or significant crush injury) **OR** does the wound look infected, **OR** does it involve one of the following areas (face, scalp, hand, foot, genitalia), **OR** has it penetrated the periosteum or joint capsule, **OR** is the patient immunocompromised (including asplenia), **OR** is this a cat bite?

- No → No antibiotics needed. Ensure follow-up in 24-48 hours to reassess and evaluate for signs/ symptoms of infection
- Yes →

Is there devitalized tissue, heavy contamination, associated injury (visceral, neurovascular, bone, tendon) or perineal wound?

- Yes →

Major or complex wound requiring washout and/or closure in OR

- Admit as "inpatient"
- Consult Pediatric Surgery/Trauma service and Infectious Diseases
- *If wound looks infected:* obtain anaerobic and aerobic *wound* cultures
- *If overt signs/symptoms of infection:* also obtain aerobic and anaerobic *blood* cultures

IV antibiotic options:

- **Ampicillin-Sulbactam IV** 200 mg/kg/day of Ampicillin component divided q6hr (max 3000 mg/dose)

***OR** if Penicillin allergic (and tolerates cephalosporins):*

- Ceftriaxone 50 mg/kg daily (max 2 gram/dose)
- AND Clindamycin IV 30-40 mg/kg/day in 3 divided doses (max 600 mg/dose)

***OR** if allergic to BOTH Penicillin and Cephalosporins:*

- Clindamycin IV 30 mg/kg/day div q8hr (max 600 mg/dose)
- AND TMP-SMX IV 8-10 mg/kg/day div q12hr (max 160 mg TMP/dose)

- Recommendations for final antibiotic selection, dose, duration, and follow up per ID and surgery
- Typical duration of antibiotics: 7 days
- If penicillin allergy, consider following the Penicillin Allergy Delabeling Clinical Pathway

- No →

Contaminated wound WITHOUT associated injuries requiring surgical treatment

- *If wound looks infected:* obtain anaerobic and aerobic wound cultures

Are there overt signs/symptoms of systemic infection? (e.g. failed outpatient therapy, wound rapidly progressing within hours)

- Yes →
  - Admit/place under "observation"
  - Consult Infectious Diseases
  - Obtain anaerobic and aerobic blood cultures
  - Begin IV antibiotics
- No →

Oral antibiotic options:

Amoxicillin/Clavulanate :

- <30 kg or unable to take tablets: Augmentin 250 mg/5 mL: 40 mg/kg/day div TID (max 500 mg/dose); or 600 mg/5 mL (ES): 90 mg/kg/day div BID (max 1000 mg/dose)
- ≥30 kg and able to take tablets: Augmentin 875 mg BID

***OR** if Penicillin Allergic:*

- Consider following the Penicillin Allergy Delabeling Clinical Pathway
- Clindamycin PO 30-40 mg/kg/day in 3 divided doses (max 600 mg/dose)
- AND TMP-SMX PO 8-10 mg/kg/day in 2 divided doses (max 160 mg TMP/dose)

Treat with PO antibiotics for a total of 3-5 days

Discharge Criteria: Clinically improved, afebrile for 24 hours (if presented with fever), tolerating PO medications, adequate follow-up in place
Discharge Instructions: Complete antibiotic course as above; follow surgeon's discharge instructions as applicable; **if started on rabies vaccination**: place urgent referral to Infectious Diseases via Epic for subsequent vaccine doses; ensure plan in place for suture removal; ensure adequate follow-up in 24-48 hours to assess for continued resolution of infection

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CLINICAL PATHWAY:
Animal and Human Bite Skin and Soft Tissue Infection
Appendix A: Tetanus Prophylaxis

THIS PATHWAY SERVES AS A GUIDE AND DOES NOT REPLACE CLINICAL JUDGMENT.

American Academy of Pediatrics
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From: **Tetanus (Lockjaw)**

Red Book: 2024–2027 Report of the Committee on Infectious Diseases, 2024

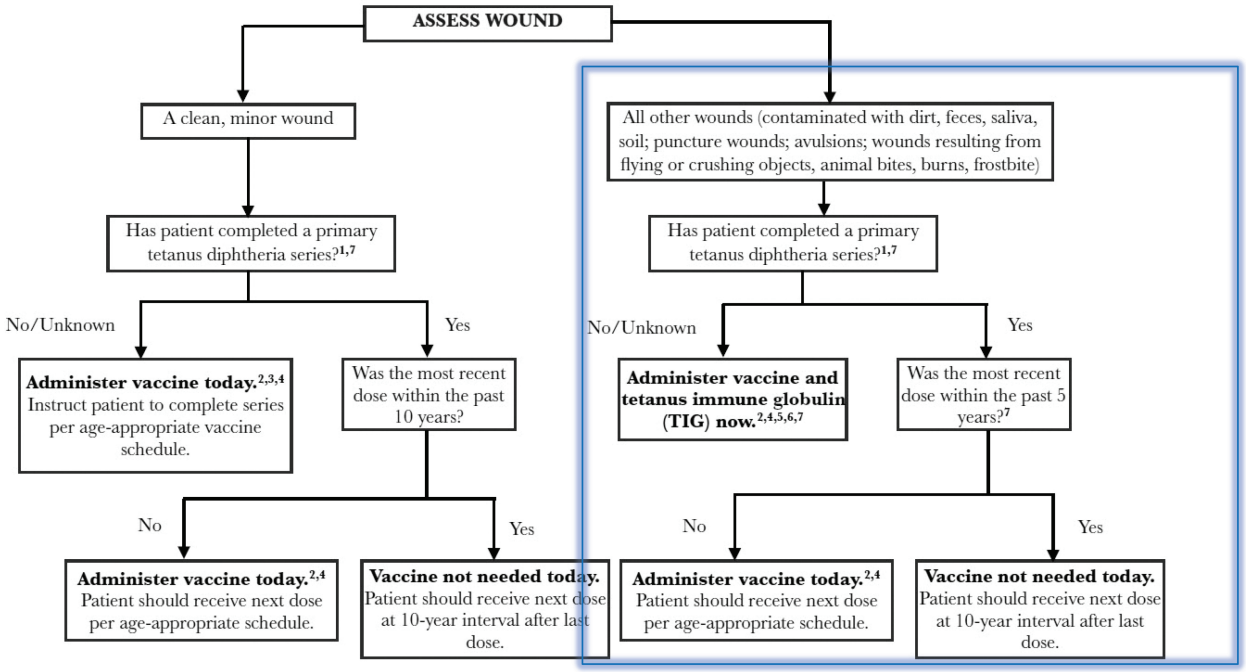

Figure Legend:

[1]A primary series consists of a minimum of 3 doses of tetanus- and diphtheria-containing vaccine (DTaP/DTP/Tdap/DT/Td).
[2]Age-appropriate vaccine:DTaP for infants and children 6 weeks up to 7 years of age.
Tetanus-diphtheria (Td) toxoid for persons 7 through 9 years of age and 65 years of age and older.
Tdap for persons 11 through 64 years of age if using Adacel* or 10 years of age and older if using Boostrix*, unless the person has received a prior dose of Tdap.*
[3]No vaccine or TIG is recommended for infants younger than 6 weeks of age with clean, minor wounds. (And no vaccine is licensed for infants younger than 6 weeks of age.)
[4]Tdap* is preferred for persons 11 through 64 years of age if using Adacel* or 10 years of age and older if using Boostrix* who have never received Tdap. Td is preferred to tetanus toxoid (TT) for persons 7 through 9 years, 65 years and older, or who have received a Tdap previously. If TT is administered, and adsorbed TT product is preferred to fluid TT. (All DTaP/DTP/Tdap/Td products contain adsorbed tetanus toxoid.)
[5]Give TIG 250 U IM for all ages. It can and should be given simultaneously with the tetanus-containing vaccine.
[6]For infants younger than 6 weeks of age, TIG (without vaccine) is recommended for "dirty" wounds (wounds other than clean, minor).
[7]Persons who are HIV positive should receive TIG regardless of tetanus immunization history.
*Brand names are used for the purpose of clarifying product characteristics and are not an endorsement of either product.
Tdap vaccines:Boostrix (GSK) is licensed for persons 10 years of age and older.
Adacel (sanofi) is licensed for persons 11 through 64 years of age.

Courtesy of the Minnesota Department of Health (www.health.state.mn.us/diseases/tetanus/hcp/tetwdmgmt.html), with modifications.

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Connecticut Children's

RABIES POST-EXPOSURE PROPHYLAXIS

Animal Type	Evaluation and Disposition of Animal	Postexposure Prophylaxis Recommendations
Dogs, cats, and ferrets	Healthy and available for 10 days of observation	Prophylaxis only if animal develops signs of rabies[a]
	Rabid or suspected of being rabid[a]	Immediate immunization and RIG[c]
	Unknown (escaped)	Consult Infectious Diseases; consider starting PEP promptly
Bats, skunks, raccoons, foxes, mongooses[c], and most other carnivores; groundhogs	Regarded as rabid until animal proven negative by laboratory tests[a]	Immediate immunization and RIG[3]
Livestock, rodents, and lagomorphs (rabbits, hares, and pikas)	Consider individually	Consult Infectious Diseases; bites of squirrels, hamsters, guinea pigs, gerbils, chipmunks, rats, mice and other rodents, rabbits, hares, and pikas almost never require rabies postexposure prophylaxis

RIG indicates Rabies Immune Globulin.

[a]The animal should be euthanized and tested as soon as possible. Holding for observation is not recommended. Immunization is discontinued if immunofluorescent test result for the animal is negative.
[b]During the 10-day observation period, at the first sign of rabies in the biting dog, cat, or ferret, prophylaxis of the exposed person with RIG (human) and vaccine should be initiated. The animal should be euthanized immediately and tested.
[3]See below and text in reference.

American Academy of Pediatrics. Rabies. In: Kimberlin DW, Banerjee R, Barnett ED, Lynfield R, Sawyer MH, eds. *Red Book: 2024 Report of the Committee on Infectious Diseases.* American Academy of Pediatrics; 2024.

The above chart has been adapted to Connecticut Children's local recommendations.

RABIES VACCINE ADMINISTRATION

- Two vaccines are available on the market: RabAvert (preferred) and Imovax (reserved for those with severe egg allergy).
- Administration site: typically deltoid, or for young patient may use outer aspect of thigh.
  - Do NOT administer in the gluteal muscle. Do NOT administer in the same muscle as RIG if given.
- Dose: 1 ml/dose
- Administration Schedule:
  - Immunocompetent patients: give on days 0, 3, 7, and 14.
  - Immunocompromised patients: Discuss with ID. Consider the following: give on days 0, 3, 7, 14. After 4th dose, obtain antibody titer to ensure minimum cut off of 0.5 IU/mL has been reached or give 5th dose on day 28.
  - Patients who have had rabies vaccine in the past: give on days 0 and 3.

RABIES IMMUNE GLOBULIN (RIG) ADMINISTRATION

- Dose: 20 IU/kg given in a single dose
- Administration:
  - Give as soon as possible after exposure (day 0)
  - If possible, give the full dose around/into the wound(s).
  - Any remaining volume (or if unable to give the dose around the wound) should be administered IM at a site distant from the *vaccine* administration site.
  - If person has been previously vaccinated with rabies, RIG is not recommended. They should instead receive 2 booster doses of rabies vaccine as above on day 0 and 3. If immunocompromised, discuss with ID.

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Table 3.23. Guidelines for Postexposure Prophylaxis[a] of People With Nonoccupational Exposures[b] to Blood or Body Fluids That Contain Blood, by Exposure Type and Vaccination Status

Exposure	Treatment	
	Unvaccinated Person[c]	Previously Vaccinated Person[d]
HBsAg-positive source		
Household member	Consider testing if significant exposure; if negative administer hepatitis B vaccine series	Ensure completion of vaccine series
Percutaneous (eg, bite or needlestick) or mucosal exposure to HBsAg-positive blood or body fluids	Administer hepatitis B vaccine series and hepatitis B immune globulin (HBIG)	Administer hepatitis B vaccine booster dose
Sexual or needle-sharing contact of an HBsAg-positive person	Administer hepatitis B vaccine series and HBIG	Administer hepatitis B vaccine booster dose
Person who has been sexually assaulted or abused by a perpetrator who is HBsAg positive	Administer hepatitis B vaccine series and HBIG	Administer hepatitis B vaccine booster dose
Source with unknown HBsAg status		
Person who has been sexually assaulted or abused by a perpetrator with unknown HBsAg status	Administer hepatitis B vaccine series	No treatment
Percutaneous (eg, bite or needlestick) or mucosal exposure to potentially infectious blood or body fluids from a source with unknown HBsAg status	Administer hepatitis B vaccine series	No treatment
Sexual or needle-sharing contact of person with unknown HBsAg status	Administer hepatitis B vaccine series	No treatment

HBsAg indicates hepatitis B surface antigen.

[a]When indicated, immunoprophylaxis should be initiated as soon as possible, preferably within 24 hours. Studies are limited on the maximum interval after exposure during which postexposure prophylaxis is effective, but the interval is unlikely to exceed 7 days for percutaneous exposures or 14 days for sexual exposures. The hepatitis B vaccine series should be completed.

[b]These guidelines apply to nonoccupational exposures. Guidelines for occupational exposures can be found in Schillie S, Murphy TV, Sawyer M, et al. CDC guidance for evaluating health-care personnel for hepatitis B virus protection and for administering post exposure management. *MMWR Recomm Rep*. 2013;62(RR-10):1–19.

[c]A person who is in the process of being vaccinated but who has not completed the vaccine series should complete the series and receive treatment as indicated.

[d]A person who has written documentation of a complete hepatitis B vaccine series and who did not receive postvaccination testing.

Source: Schillie S, Vellozzi C, Reingold A, et al. Prevention of hepatitis B virus infection in the United States: recommendations of the Advisory Committee on Immunization Practices. *MMWR Recomm Rep*. 2018;67(1):1–31.

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