

This decision support tool is effective as of October 2014. For more information or to provide feedback on this or any other decision support tool, e-mail certifiedpractice@crnbc.ca

ADULT BITES

DEFINITION

An injury or mark caused by an animal or a human being. The primary puncture wounds are caused by sharp teeth that may also tear tissue and, in some cases, remove tissue in pieces. Wounds frequently become infected.

Potential Causes

- 80-90% of bites are caused by dogs
- Cat bites are the second most common cause, but twice as likely to infect as dog bites
- Cat scratches can infect as readily as cat bites, so treat accordingly
- Normal oral flora of the biting animal, usually *Staphylococcus aureus* and *Staphylococcus pyogenes*
- For human bites, usually *Staphylococcus*, *Streptococcus* and *Eikenella*. The average wound yields five types of bacterial isolates with approximately 60% being mixed aerobic and anaerobic

Typical Findings of a Bite Wound

History

- Cause of injury (human, animal)
- Determine if bite was caused by a provoked or unprovoked animal
- Determine vaccination status of the animal (if possible)
- Contaminants:
 - wound contact with manure, rust, dirt, etc., will increase risk of infection and tetanus
 - wounds sustained in barnyards or stables should be considered contaminated (*Clostridium tetani* is indigenous in manure)
- Amount of blood lost
- Loss of function in nearby tendons, ligaments, nerves (sensation)
- Immunization status:
 - Tetanus
 - Rabies
- Known methicillin resistant staphylococcus aureus (MRSA) positive status of client or household contacts

PHYSICAL ASSESSMENT

Vital Signs

- Temperature

CRNBC monitors and revises the CRNBC certified practice decision support tools (DSTs) every two years and as necessary based on best practices. The information provided in the DSTs is considered current as of the date of publication. CRNBC-certified nurses (RN(C)s) are responsible for ensuring they refer to the most current DSTs.

The DSTs are not intended to replace the RN(C)'s professional responsibility to exercise independent clinical judgment and use evidence to support competent, ethical care. The RN(C) must consult with or refer to a physician or nurse practitioner as appropriate, or whenever a course of action deviates from the DST.

THIS DST IS FOR USE BY REGISTERED NURSES CERTIFIED BY CRNBC

- Pulse
- Respiration
- SpO₂
- Blood pressure (BP)
- Findings may be tachycardia, hypotension if significant blood loss

General

- Assess wound for:
 - Dimensions and depth
 - Lacerations versus punctures
 - Tissue loss
 - Infection (erythema, warmth, tenderness, discharge, local lymphadenopathy)
- Assess integrity of underlying structures (nerves, ligaments, tendons, blood vessels):
 - Vascular injury – capillary refill should be checked distally
 - Neurologic injury – check distal muscle strength, movement distal to wound and sensation
 - Always check sensation before administering anaesthesia
 - For hand and finger lacerations check two-point discrimination, this should be less than 1 cm at the fingertips
 - Tendons – can be evaluated by inspection, but individual muscles and tendons must also be tested for full range of motion and full strength
 - Assess range of motion of all body parts surrounding the wound site
 - Bones – check for open fracture or associated fractures, based on mechanism of injury
 - Foreign bodies – inspect the area

Diagnostic Tests

- Swab discharge for Culture and Sensitivity (C&S) if infected
- If rabies status of animal is unknown consider following the British Columbia Centre for Disease Control (BCCDC) Rabies Protocol (see references)
- If a human bite and there was blood in the biter's mouth, test the biter for Human Immunodeficiency Virus (HIV), syphilis, Hepatitis B and C. Screen the bitten person if unable to test the biter

MANAGEMENT AND INTERVENTION

Note: Remove all jewellery from affected area

Goals of Treatment

- Prevent/control infection
- Preserve function
- Determine tetanus status
- Determine need for rabies prophylaxis

Non-pharmacological Interventions

- Thoroughly cleanse and irrigate with normal saline
- Remove any debris and devitalized tissue

- Consider suture repair of low-risk bite wound lacerations. These are non-infected wounds, have no evidence of damage to underlying structures and present within 8-12 hours of injury.
- Do not suture or close:
 - infected wounds
 - deep puncture wounds
 - bite wounds more than 8-12 hours old
 - crush injuries
 - bites in immunocompromised host
 - cat or human bites
 - bites to the hand or foot

PHARMACOLOGICAL INTERVENTION FOR HUMAN BITES

- Antibiotics are routinely given prophylactically for all human bites regardless of the appearance of the wound:
 - Amoxicillin 500 mg/Clavulanate 125mg po tid for 3 days*Or*
 - Amoxicillin 875 mg/Clavulanate 125 mg po bid for 3 days
- If allergic to penicillin:
 - Doxycycline 100 mg po bid for 3 days
- If infection has already occurred (especially for a bite on the hand) consult with a physician or nurse practitioner to consider intravenous (IV) antibiotics.

Pregnant and Breastfeeding Women:

- Amoxicillin/clavulanate as outlined above may be used
- DO NOT USE doxycycline

PHARMACOLOGICAL INTERVENTION FOR CAT BITES/SCRATCHES

- Antibiotics are routinely given prophylactically for cat bites as they have a greater prevalence of anaerobes and infection.
- Prophylaxis for cat bites:
 - Amoxicillin 500 mg/clavulanate 125mg po tid for 3 days,*Or*
 - Amoxicillin 875 mg/clavulanate 125 mg po bid for 3 days
- If allergic to penicillin:
 - Doxycycline 100 mg po bid for 3 days
- Treatment for infected cat bites or scratches:
 - Amoxicillin 500 mg/clavulanate 125mg po tid for 10 days,*Or*
 - Amoxicillin 875 mg/clavulanate 125 mg po bid for 10 days
- If allergic to penicillin:
 - Doxycycline 100 mg po bid for 10 days

Pregnant and Breastfeeding Women:

- Amoxicillin/clavulanate as outlined above may be used
- DO NOT USE doxycycline

PHARMACOLOGIC INTERVENTION FOR DOG BITES

- Only 3-18% of dog bites become infected and routine prophylaxis is not recommended
- Prophylaxis is required when:
 - The wound has been sutured or stapled or there is evidence of infection
 - It is moderate to severe
 - Puncture wounds, particularly if penetrating bone, tendon or joint
 - Crush injury / edema
 - Bites to the face, hands, feet or genitals
 - Client > 50 years of age, or
 - Client has comorbidities such as immunosuppression, DM, artificial cardiac valve or asplenism.
- Consider the need for initiating BCCDC rabies prophylaxis
- Prophylaxis:
 - Amoxicillin 500 mg/clavulanate 125mg po tid for 3 days,
Or
 - Amoxicillin 875 mg/clavulanate 125 mg po bid for 3 days
- If allergic to penicillin:
 - Doxycycline 100 mg po bid for 3 days
- Treatment if infected:
 - Amoxicillin 500 mg/clavulanate 125mg po tid for 10 days
Or
 - Amoxicillin 875 mg/clavulanate 125 mg po bid for 10 days
- If allergic to penicillin:
 - Doxycycline 100 mg po bid for 10 days

Pregnant and Breastfeeding Women:

- Amoxicillin/clavulanate may be used as listed above
- DO NOT USE doxycycline

Potential Complications (All Bites)

- Septic arthritis
- Osteomyelitis
- Abscess formation
- Tendonitis
- Nerve damage
- Compartment syndrome
- Fracture
- Sepsis
- HIV and Hepatitis B and C as a result of exposure to body fluids – human bites only

Client Education and Discharge Information

- Advise on condition, timeline of treatment and expected course of disease process

- Instruct to keep wound clean and dry
- Keep injured area elevated
- If redness, swelling or pain increases, return to clinic for assessment
- If appropriate, review measures to avoid animal bites

Monitoring and Follow Up

- Return to clinic in 24 hours for re-assessment

Consultation and/or Referral

- Refer all human bite wounds over the knuckle or having the potential to injure underlying structures to a physician or nurse practitioner
- Refer to a physician or nurse practitioner if infection has already occurred with a human bite
- A common location for the human bite is over the knuckles
 - This injury is usually sustained when a closed fist strikes the teeth of an opponent
 - There is frequently penetration of the tendon sheath and/or the joint space
 - The hand must be examined with the fingers in a flexed position so that the deeper structures are in the identical position that they were when the injury was sustained
 - Only in that position can injury to the underlying structures be visualized through the open skin wound
 - Sometimes a foreign body such as a broken tooth is found in the wound
- Refer all facial bites to a physician or nurse practitioner
- Refer any concerns regarding rabies or unprovoked attacks to public health or a local medical health officer
- Encourage client to report a dog attack / bite to RCMP, animal control officer or appropriate official

DOCUMENTATION

As per agency policy.

Additional public health reporting may be required in relation to rabies prophylaxis.

REFERENCES

For help obtaining any of the items on this list, please contact CRNBC Helen Randal Library at circdesk@crnbc.ca

More recent editions of any of the items in the Reference List may have been published since this DST was published. If you have a newer version, please use it.

Anti-Infective Review Panel. (2012). *Anti-infective guidelines for community-acquired infections*. Toronto, ON: MUMS Guideline Clearinghouse.

Blondel-Hill, E., & Fryters, S. (2012). *Bugs and drugs: An antimicrobial infectious diseases reference*. Edmonton, AB: Alberta Health Services.

- British Columbia Centre for Disease Control. (2010). *Communicable disease control: Blood and body fluid exposure management: Tetanus prophylaxis*. Retrieved from http://www.bccdc.ca/NR/rdonlyres/E6AF842F-A899-477F-BC90-5BFF6A4280F6/0/EPI_Guideline_BBF_20100723.pdf.
- British Columbia Centre for Disease Control. (2014). *Guidelines for the management of community-associated methicillin-resistant Staphylococcus aureus (CA-MRSA)-related skin and soft tissue infections in primary care*. Vancouver, BC: Author. Retrieved from <http://www.bccdc.ca/NR/rdonlyres/C85DFF3A-DB43-49D6-AEC7-2C1AFD10CD69/0/MRSAguidelineFINALJuly7.pdf>
- British Columbia Centre for Disease Control. (2014). *Management of specific diseases: Rabies*. Vancouver, BC: Author. Retrieved from <http://www.bccdc.ca/NR/rdonlyres/961F7CD9-072E-436E-A546-813C915CA4AF/0/rabiesguidelinesApril2011.pdf>
- Canadian Immunization Guide*. (2014). Retrieved from Public Health Agency of Canada website: <http://www.phac-aspc.gc.ca/publicat/cig-gci/index-eng.php>
- Canadian Pharmacists Association. (2011). *Therapeutic choices* (6th ed.). Ottawa, ON: Author.
- Chen, Y. A., & Tran, C. (Eds.). (2011). *The Toronto notes 2011: Comprehensive medical reference and review for the Medical Council of Canada Qualifying Exam Part 1 and the United States Medical Licensing Exam Step 2* (27th ed.). Toronto, ON: Toronto Notes for Medical Students.
- DynaMed. (2014, April 1). *Mammalian bite*. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&AuthType=cpid&custid=s5624058&db=dme&AN=116837>
- Kravetz, J. D., & Federman, D. G. (2013). Mammalian bites. In *ACP Smart Medicine & AHFS DI Essentials*. Retrieved from STAT!Ref database on NurseONE website: <http://www.nurseone.ca> [free login for all BC RNs after self-registration on site]
- National Guideline Clearinghouse. (2013). *Guideline summary: Management of cat and dog bites*. Retrieved from <http://www.guideline.gov/content.aspx?id=46428&search=bite>
- Paschos, N. K., Makris, E. A., Gantsos, A., & Georgoulis, A. D. (2014). Primary closure versus non-closure of dog bite wounds: A randomised controlled trial. *Injury*, 45(1), 237-240.
- Quinn, J. V., McDermott, D., Rossi, J., Stein, J., & Kramer, N. (2011). Randomized controlled trial of prophylactic antibiotics for dog bites with refined cost models. *Western Journal of Emergency Medicine*, 11(5), 435-441. Retrieved from <http://escholarship.org/uc/item/5br825ff#page-1>

- Sabhaney, V., & Goldman, R. (2012). Management of dog bites in children. *Canadian Family Physician*, 58(10), 1094-1096. Retrieved from <http://www.cfp.ca/content/58/10/1094.full.pdf+html>
- Stevens, D., Bisno, A. L., Chambers, H. F., Dellinger, E. P., Goldstein, E. J. C., Gorbach, S. L.,...Wade, J. C. (2014). Practice guidelines for the diagnosis and management of skin and soft tissue infections: 2014 update by the Infectious Diseases Society of America. *Clinical Infectious Diseases*, 59(2), e10-e52. Retrieved from <http://cid.oxfordjournals.org/content/59/2/e10.full.pdf+html>
- Thomas, N., & Brook, I. (2011). Animal bite-associated infections. *Expert Review of Anti-Infective Therapy*, 9(2), 215-226.
- Wolff, K., & Johnson, R. A. (2009). *Fitzpatrick's color atlas and synopsis of clinical dermatology* (6th ed.). New York: McGraw-Hill Medical.