

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

PEDIATRIC 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.

Nurses with Remote Practice Certified Practice designation (RN(C)s¹) are able to treat bites in children who are **1 year of age and older**, dependent on the bite severity. If younger than one year or the severity of the bite dictates, the child must be referred to a physician or nurse practitioner.

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)
- Time of injury (after 3 hours, the bacterial count in a wound increase dramatically)
- 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)

¹ RN(C) is an [authorized title](#) recommended by CRNBC that refers to CRNBC-certified RNs, and is used throughout this Decision Support Tool (DST).

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.

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- Immunization status:
 - Tetanus
 - Rabies
- Known methicillin resistant staphylococcus aureus (MRSA) positive status of client or household contacts

PHYSICAL ASSESSMENT

Weigh until 12 years of age for medication calculations. Do not give more than an adult dose

Vital Signs

- Temperature
- 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 INTERVENTIONS FOR HUMAN BITES

All drugs must be calculated by weight until age 12 years. Do not use more than an adult dose.

- Antibiotics are routinely given prophylactically for all human bites regardless of the appearance of the wound:
 - Amoxicillin/clavulanate 40 mg/kg/day po divided tid for 3 days (dosing is based on amoxicillin component).
- If infection has already occurred (especially for a bite on the hand) consult with physician or nurse practitioner to consider intravenous (IV) antibiotics

Pregnant and Breastfeeding Youth

Amoxicillin/clavulanate may be used as listed above

PHARMACOLOGICAL INTERVENTION FOR CAT BITES / SCRATCHES

All drugs must be calculated by weight until age 12 years. Do not use more than an adult dose.

- Antibiotics are routinely given prophylactically for cat bites as they have a greater prevalence of anaerobes and infection.
- Prophylaxis for cat bites:
 - Amoxicillin/clavulanate 40 mg/kg/day po divided tid for 3 days

- Dosing is based on amoxicillin component
- Treatment for infected cat bites or scratches:
 - Amoxicillin/clavulanate 40 mg/kg/day po divided tid for 10 days
 - Dosing is based on amoxicillin component

Pregnant and Breastfeeding Youth

Amoxicillin/clavulanate may be used as listed above

PHARMACOLOGIC INTERVENTION FOR DOG BITES

All drugs must be calculated by weight until age 12 years. Do not use more than an adult dose.

- Only 3-18% of dog bites become infected and routine prophylaxis is not recommended
- Prophylaxis is required when:
 - The wound has been closed 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 asplenia.
- Consider the need for initiating BCCDC rabies prophylaxis.
- Prophylaxis:
 - Amoxicillin/clavulanate 40 mg/kg/day po divided tid for 3 days
 - Dosing is based on Amoxicillin component
- Treatment if infected:
 - Amoxicillin/clavulanate 40 mg/kg/day po divided tid for 10 days
 - dosing is based on amoxicillin component

Pregnant and Breastfeeding Youth

Amoxicillin/clavulanate may be used as listed above

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/Caregiver 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 prevent animal bites:
 - Do not leave infants or young children alone with a dog
 - Teach children not to approach an unfamiliar dog.
 - Teach children not to disturb dogs caring for pups
 - Do not try to break up dog fights
 - Avoid owning an aggressive breed of dog when living with a child
 - Neuter male dogs if living with a child

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 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 medical health officer
- Encourage client / parent or caregiver 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.

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