INESSS
LE SAVOIR PREND FORME

Clinical support -Tool - January 2024

WOUND CARE

TRAUMATIC WOUNDS (LACERATIONS, ABRASIONS, BITES)

For more details, click on the underlined words

This decision support tool is intended primarily for front-line clinicians. It is provided for guidance only and does not replace the judgment of the clinician exercising the activities reserved to him or her by law or regulation. This document has been designed on the basis of clinical recommendations developed by the INESSS using a systematic approach and supported by the scientific literature as well as by the knowledge and experience of clinicians from various specialties and areas of expertise. The content of this tool excludes newborns. Tools to guide wound assessment and the determination of healing potential, as well as decision support on an optimal treatment plan based on wound etiology, vascular supply, and infectious risk, tissue type and exudate quality, are also provided, along with a dressing specifics reminder. For further details, visit inesss.qc.ca.

PATHOPHYSIOLOGY

- Injuries caused by sharp objects, blows, shearing, or frictional forces, or falls - e.g., lacerations, abrasions, puncture wounds caused by animal or human bites.
- These wounds may have jagged, irregular edges, and contain foreign matter such as soil, gravel, or glass.
- Depending on their depth, they may also be accompanied by profuse bleeding, or damage to an underlying vital organ.

ASSESSMENT: POINTS TO REMEMBER

- For a traumatic wound, the first step is to assess and investigate the presence of the following:
  - severe trauma-related injury – if necessary, refer to the Advanced Trauma Life Support - ATLS Program
  - heavy bleeding
  - vascular, nerve, motor, or sensory injury

WOUND MANAGEMENT PRINCIPLES

! The wound must be **rapidly** cleansed to reduce the risk of infection.

TRAUMATIC WOUND: laceration, abrasion, human, or animal bite, or other puncture wound

Primary Interventions
- Severe trauma-related injuries
- Stopping bleeding
- Pain assessment and management
- Cleansing

Evaluation of the individual
- **Vascular supply** – Limb wound: assessment of vascular supply
- Healing potential
- Tetanus and rabies vaccination status (if required)
- **Dog bite** – Report to the municipality concerned

Wound Preparation
- Clearing (if required)
- Thorough cleansing
- Debridement (if required)

Wound Assessment
- Imaging (if required)
- Culture (if necessary)

Infection Risk Assessment
- Type of injury
- Location
- Comorbidities
- Foreign matter
- Length of time since injury

Bites
- Bacterial superinfection
- Other pathogens

Animal bite – Request for rabies risk assessment (if required)

Treatment Plan
- Pain management
- Wound closure (if indicated)
- Post-exposure prophylaxis (PEP) (if required)
- Dressings (if required)

Expected Reults

Depending on the severity of the wound, the risk of infection and whether there are any complications:

Healing within **4 weeks**

SUMMARY

Québec

PRIMARY INTERVENTIONS

1 Look for severe trauma-related injuries

- Actively search for severe trauma-related injuries or perforation of body cavities in penetrating wounds.

(!) *For assessment and priority management of polytrauma patients, refer to the Advanced Trauma Life Support (ATLS) Program.*

2 Controlling active bleeding

- If necessary, apply sustained pressure **directly to the bleeding point** with a compress for at least **5 to 10 minutes**.
- Several techniques may help reduce bleeding, including:
  - elevation of the limbs (when possible),
  - tourniquet application,
  - use of topical anesthetics containing adrenaline - according to standard practice and if not contraindicated.

3 Managing pain

- Assess and manage pain.
- If necessary, and depending on the clinical situation, use local analgesia (e.g., LET gel) and/or systemic analgesia (e.g., acetaminophen, ibuprofen, opiate) **BEFORE** the procedure to allow exploration and adequate cleaning - following the usual recommendations for use.
- Non-pharmacological measures (e.g., distraction) may also be used in conjunction with the procedure to reduce procedural anxiety, especially in children.

(!) *Consider the potential toxicity of local anesthetics and follow the maximum recommended dose, especially in children.*

LET gel: lidocaine, epinephrine and tetracaine-based gel

4 Thorough cleaning

- The wound must be **rapidly** cleaned/irrigated with aqueduct water or physiological solution (NaCl 0.9%) to reduce the microbial load and the risk of infection.

HOLISTIC EVALUATION OF THE INDIVIDUAL

Evaluate and, if necessary, control pain.

WOUND LOCATION

On a limb	On face or hands	Close to a joint surface
• Assess vascular supply, ideally before administering local anesthetic. • If there is arterial insufficiency, or if vascular supply is inadequate or uncertain: - Close the wound (condition permitting), and redirect the individual to a suitably qualified professional, vascular laboratory, or vascular surgeon for appropriate follow-up.	• Can be managed as a front-line treatment, depending on the extent of the wound and its penetrating nature.	• Approach with "care" • Increased tension site • At risk of severe infection (e.g., septic arthritis) • Increased risk of dehiscence
If necessary, seek the advice of a surgeon or consult an experienced colleague.		

INCIDENT HISTORY

→ Determine - if possible – trauma time, circumstances of the incident, and the causal agent.

→ In the case of a bite - if possible - identify the type of biter involved and its health status.

→ Check whether the injury was accidental or intentional (e.g., signs of abuse, violence, or self-mutilation) and take appropriate action, if necessary (e.g., contact the appropriate authorities).

In the event of an animal bite:
To request a rabies risk assessment for a domestic animal that bites, fill out the following form and send it to MAPAQ. For more information, click here.

Any dog bite injury involving humans, whether there is a risk of rabies or not, must be reported to the municipality concerned. For more information, click here.

OTHER MATTERS TO KEEP IN MIND

→ With traumatic wounds, the following should also be investigated:

	Features to look for
Other injury	• Look for vascular, nerve, motor, or sensitivity injury
Vaccination status	• Check tetanus[1] and rabies[2] vaccination status (depending on wound type)
Risk factors and uncontrolled co-morbidities	• Identify uncontrolled medical conditions/comorbidities (e.g., diabetes, immunosuppression, malnutrition, dehydration, asplenia) that may delay or complicate the healing process • Review current and past medications (prescription and non-prescription) *Taking anticoagulants, antiplatelets, antithrombotics, or acetylsalicylic acid may increase the risk of bleeding*

1. Wounds at risk of tetanus include penetrating wounds (e.g., rusty nails, bites), and wounds contaminated by human or animal saliva, feces, dust or soil. For more details, consult the MSSS's Help with Decisions on Tetanus Prophylaxis.
2. Wounds at risk of exposure to the rabies virus are animal bites.

WOUND HEALABILITY

→ If there are no causes or health conditions interfering with healing, traumatic wounds (lacerations, abrasions, bites) are generally considered healable.

→ For more information, consult the wound assessment and determination of wound healability clinical support tool.

WOUND PREPARATION PRIOR TO ASSESSMENT

Evaluate and, if necessary, control pain.

CLEARING THE WOUND

If the wound is located in a hairy area of the body (e.g., scalp), facilitate assessment and clearing by:

- spreading the hair with a lubricant (e.g. Vaseline) or sterile lubricating jelly, especially for children OR
- clearing the wound with scissors/trimmer/razor - if deemed necessary - if possible after discussion with the affected individual (avoid shaving eyebrows, as they don't grow back like hair or other hairs).

Whatever the cutting technique used, it's important to clean the wound thoroughly with water or a physiological solution to ensure that no hair gets in (which can increase the risk of infection).

THOROUGH CLEANSING

Cleanse inside and around the wound with plenty of water or physiological solution (NaCl 0.9%).

DEBRIDEMENT

Remove necrotic tissues, debris, foreign matter, or blood clots that prevent wound assessment (e.g., using forceps or irrigation).

For more information on the various cleaning and debridement techniques, please consult the Optimal Treatment Clinical Support Tool.

WOUND ASSESSMENT

WOUND APPEARANCE

→ Wound assessment must take the following into account:

Presence of debris or foreign matter	Identification of tissue type and exudate type	Appearance of the wound and surrounding skin
• Check for debris or foreign matter (e.g., glass shards, organic material or teeth - in the case of bites) inside the wound, which may persist despite cleaning and debridement.	• The type of exudate describes the condition of the wound and may vary according to certain situations (e.g., infection or presence of underlying disease).	• The length, depth, and extent of the wound, the degree of tension, and the presence of edema or hematoma should all be documented during the assessment. *For puncture wounds (e.g. cat bites), the depth of the wound should be checked, even if it appears insignificant on initial assessment.*

Identify symptoms and signs of an infected wound or biofilm	Injury to underlying structures (e.g., nerves, tendons, bones)
• Clinical observations are generally sufficient. • However, a wound culture may be indicated in the following situations: - when symptoms and clinical signs of infection are present (even if not purulent); - when systemic antibiotic therapy is being considered - especially if treatment has to be prolonged because of a complication, or if it fails despite prophylaxis or empirical treatment. • For more information, consult the clinical support tool on wound culture: relevance and indications.	• If the condition of the wound permits, it should be closed **quickly** to avoid further complications. When in doubt, keep the exposed area moist and consult a specialist or experienced colleague to check, among other things, whether oral antibiotic prophylaxis should be started.

INFECTIOUS RISK ASSESSMENT

→ There are several factors to consider when assessing the risk of infection, including:

Type of injury	• Superficial abrasions and lacerations are less likely to cause infection than penetrating wounds (e.g., bites). • Visible contamination or extraneous matter.
Location	• Certain wounds on the hands, feet, and genitals are at greater risk of infection.
Health status and co-morbidities	• Certain medical conditions (e.g., asplenia, advanced liver disease, immunosuppression, uncontrolled diabetes) may increase the risk of systemic complications following bacterial infection. • In the case of a bite, clinical assessment must consider that the bitten person (or biter, as the case may be) may have been exposed to tetanus, rabies, HIV, HBV and/or HCV.

(!) *The risk of infection may also increase depending on the delay between the first wound assessment and the length of time since injury (days or hours).*

POSSIBLE RISK OF INFECTION IF BITTEN (HUMAN OR ANIMAL)

→ Treatment should be adapted on a case-by-case basis according to incident circumstances, the aggressor's infectious risk (if known), the accident victim's health status and clinical judgment.

Bacterial superinfection

For a list of the most important pathogenic bacteria in animal and human bites, click here.

→ The most frequent complication of bites:

- Cat bites are more likely to become infected, and *pasteurella* bacteria can be highly virulent.
- Bites inflicted by children are less likely to become infected;
- Infection risk increases in adults or when the skin is pierced, and the bite is deep.

(!) *Any rapid clinical deterioration within **24-48 hours** should be reassessed, especially in the case of cat bites. If necessary, seek specialist advice or consult an experienced colleague.*

Other types of pathogenic agents

→ In Québec, tetanus and rabies are notifiable diseases - MADO-Maladies à déclaration obligatoire

Pathogens	Type of bite	Transmission risk (excerpt from MSSS documents)
VHB VHC VIH	Human	• Relatively low in the general population - may increase in certain groups (e.g., sex workers, incarcerated people, IDUs, MSM). - risk becomes significant if the biter or bitten person is infected with the virus. - risk is generally higher for the biter than for those bitten. *Transmission between 2 children with no risk factors is unlikely and considered to be virtually non-existent.*
C. Tetani	Human Animal	• Low • Tetanus vaccination in Quebec is part of the recommended vaccination schedule.
Rabies[1]	Animal	• Low (!) *Depending on the clinical situation, a rabies risk assessment for domestic animals that bite can be requested from MAPAQ. For more information, click here.*

1. If you have any doubt as to whether or not your exposure poses a risk of transmission, consult the relevant regional public health department.

Acronyms: *C. Tetani*: *Clostridium tetani*; MSM: men who have sex with men; IDU: injection drug users; HBV: hepatitis B virus; HCV: hepatitis C virus; HIV: human immunodeficiency virus.

ADDITIONAL PARACLINICAL EXAMINATIONS

→ Depending on the information gathered during the assessment, further investigation may be required (e.g. X-ray, ultrasound, CT scan) in the following situations:

X-ray	• Injury involving radiopaque foreign bodies (e.g. metal, stones); • When there is a risk of open or closed fracture; • When the depth of the wound cannot be determined. (!) *Foreign glass objects are more difficult to detect due to their lower X-ray intensity.*
Ultrasound, CT, or MRI	• Suspicion of a **non-radiopaque** foreign matter (e.g., wood, plastic, or plant material). • Suspicion of infection affecting a joint/tendon/osseous surface.
(!) *Small fragments (especially fragmented glass) are more difficult to detect and may cause a granulomatous reaction (with or without infection). It's important to notify the individual and record the information in the file.*	

MRI: magnetic resonance imaging; CT: CT scan

TREATMENT PLAN

(!) **Control pain as needed**

CLEANSING AND DEBRIDEMENT OPTIONS

→ Effective cleansing/debridement can help reduce the risk of infection.

→ The choice of methods should consider the condition of the wound, the risk of infection, and the presence of foreign matter.

→ For more details, please consult the Optimal Treatment Plan Clinical Support Tool.

 **Cleansing**	• With aqueduct water or physiological NaCl solution (0.9%). • Cleanse **inside and around** the wound to remove all small debris. • Depending on the type of wound, abundant irrigation may be necessary. (!) *Pay particular attention to wounds involving organic foreign matter such as grass clippings.*
 **Debridement**	• Eliminate foreign matter, blood clots, or devitalized tissue that persist despite thorough cleaning and irrigation. ✅ **Mechanical** (e.g., use of moist compresses soaked in 0.9% NaCl). ✅ **Conservative surgery** (e.g., using forceps or a surgical brush). • Tissues of uncertain viability should be retained and re-examined after **24-48 hrs**. (!) *May be painful: use a topical and/or systemic anesthetic **BEFORE** the procedure to allow for a delay in action, in accordance with recommended use.*

APPLYING AN ANTISEPTIC/ANTIMICROBIAL SOLUTION

→ Solution examples: iodine solution, alcohol-free 2% chlorhexidine solution, Dakin solution

→ For further information, please consult Optimal Treatment Plan Clinical Support Tool or product monographs.

Prophylactic use	✅ Apply in the following situations: - soiled wounds; - a bite (human or animal); - before wound closure (regardless of the closure technique used). • If necessary, consult other reasons for prophylactic use.
Therapeutic use	✅ If a wound is clinically infected (presence of symptoms and signs of infection), or if local infection is confirmed.
(!) *Antiseptic/antimicrobial solutions have an antimicrobial spectrum, action mechanism, biofilm action, and cytotoxicity that can vary according to their concentration.*	

WOUND CLOSURE

→ A wound can be closed initially if there is little or no tissue loss, if the edges can be drawn together, and if it is clean and free of symptoms and signs of infection.

! *Clinically infected-looking wounds, after assessment (presence of symptoms and signs of infection), or those for which adequate cleaning is not possible at the time of initial assessment, may be left open for a short period to control infection and optimize cleaning before being closed.*

Length of time since injury

- Studies have been unable to define a "golden period" for which a wound can safely be repaired without increasing risk of infection.
- After **24 hours** from the injury, check whether the wound may undergo primary closure, and whether oral antibiotic prophylaxis should be started. If necessary, consult an experienced colleague.

Facial wound	Wound located in another area
• For areas with a high cosmetic impact (e.g., face), it may be reasonable to close even 24 or more hours after injury.	• The decision to close a wound should be based on a careful analysis of the aesthetic benefits and infectious risk, taking into account the individual's risk factors, the availability of technical facilities, and clinical judgment.

→ There are several closure methods.

→ Closure choice should be made according to wound type, depth, location, aesthetic importance, and risk of infection.

Closure type

Non-surgical methods: tissue/surgical glue or skin closure strips	Surgical methods: staples or sutures
• To be considered for superficial, straight, small wounds with little or no tension, and located outside the mobile area. If there are no contraindications, the use of surgical glue is recommended for children, especially in the case of facial or scalp lacerations. • If necessary, apply a topical anesthetic (e.g. LET gel) **BEFORE** performing the procedure to allow a delay in action and distract the patient to reduce distress associated with the procedure, particularly in children.	• To be considered for wounds that are deep, irregular, under tension, or located in mobile areas. • Several sizes and types of thread are available (absorbable vs. non-absorbable). • If there are no contraindications, absorbable sutures are recommended to avoid discomfort and trauma on removal, particularly in children If necessary, or to determine which suture choice is the most appropriate, consult an experienced colleague, or refer the patient to a qualified surgeon or professional.

! *Regardless of the closure technique used, cleaning the wound **BEFORE** closure is essential to reduce the risk of infection.*

✕ *A topical antibiotic should not be applied to a closed wound that is not infected.*

LET gel: lidocaine, epinephrine, and tetracaine-based gel

DRESSING CHOICE

 **Dressings**	**Closed wound** • Depending on the type of closure, the wound may be left open or covered with a semi-occlusive dressing for the first few days following the procedure, to prevent exudate from drying out on the edges, which could increase the difficulty of removing staples or non-absorbable sutures and to avoid contact with clothing or removal, especially in young children. • If necessary, use a semi-occlusive dressing[1] with low absorption capacity or a non-adherent dressing to control pain/seepage.
	Dehiscent wound • Fill dead space with a non-adherent primary dressing (e.g., alginate[2] or hydrofibre[2]) in wounds with moderate to heavy exudate. • Cover with a secondary dressing, depending on exudate level. • If necessary, negative pressure therapy (NPT) may be considered (e.g., cavity wounds).
	Infected wounds or wounds at high risk of infection • Antimicrobial dressings
• For more information, please refer to the dressing specifics reminder, or monographs.	

1. The use of a semi-occlusive dressing can help resorb sutures by maintaining the right level of moisture in the wound, and is recommended over topical antibiotics, which can macerate the incision line and increase the risk of dehiscence.
2. If the wound is exudative, this could create an environment conducive to biofilm formation or infection. If necessary, the combined use of an antimicrobial agent could be considered.

POST-EXPOSURE PROPHYLAXIS (PEP)

→ If necessary, follow the indications for active immunization (vaccine) and/or passive immunization (immunoglobulins), depending on the circumstances of the incident, the causal agent, the infectious risk, and the individual's health status.

Possible Infection	Procedure
Tetanus	• Administer anti-tetanus PEP if the individual has not been properly vaccinated, or if in doubt
Rabies	• Provide rabies PEP based on the risk of exposure to a potentially rabid animal
HBV, HIV	• Consider PEP against hepatitis B and HIV if the risk of transmission is deemed significant
HCV	• If possible, obtain serology from the source and follow up serology in the injured individual. • There is no PEP for HCV

ORAL ANTIBIOTICS

TREATMENT PRINCIPLES

→ Some traumatic wounds (including bites with broken skin) may require special management, which may include antibiotic prophylaxis or antibiotic therapy, depending on the circumstances.

→ Antibiotic choice should consider, when available, local resistance (consult regional data), wound culture results (if applicable) and severity of infection.

Responsible antibiotic prescribing helps prevent the emergence and spread of antimicrobial resistance, limits adverse reactions and microbiome damage.

ANTIBIOTIC PROPHYLAXIS

→ The decision to start antibiotic prophylaxis should be based on the type of wound, its location, the health status of the injured and clinical judgment.

→ Certain situations with a high risk of infection may require the use of antibiotic prophylaxis.

! *If there is any doubt as to whether or not antibiotic prophylaxis should be started, clinical follow-up can be done for **24-72 hours** to monitor progress.*

High-risk infection situation		
Wound type	**Location**	**Individual's Health Status**
• Late treatment beyond **12-24 h** • Human or animal bite - especially cat bites or those with edema[1] at the wound site • Wound containing biological foreign matter (e.g., soil, wood, etc.)	• Deep or punctiform injury to hands, feet, or genitals • Injury involving tendons, ligaments, bones, or joints	• Individual whose immunity is compromised by a health condition or its treatment • Individual with asplenia or advanced liver disease
! *Pay particular attention to highly contaminated wounds (e.g., animal excrement, stagnant water or mud). If necessary, irrigate the wound to remove all contaminants and reduce the risk of infection.*		

1. In the case of infectious cellulitis, consult the optimal use guide for adults or children.

Human or animal bite (with broken skin)

→ If necessary, consult the instructions for use of oral antibiotic prophylaxis in the event of a bite.

Type of bite	Antibioprophylaxis
Cat	✅ Recommended
Dog and other domestic pets[1]	✅ Recommended - if deep tissue damage. ⚠ Could be considered in situations with **high risk of infection**.
Human	⚠ Could be considered in situations with **high risk of infection**.
💬 *For bites caused by unconventional animals[2], consult an experienced colleague or seek the advice of a microbiology-infectiology specialist.*	

1. Other domestic animal (e.g. rabbit, hamster)
2. Non-conventional animal: non-traditional domestic animals (e.g., snake, lizard, monkey), farm animals, wild animals (e.g., bats) or exotic animals, including birds or any other unfamiliar animal.

OTHER WOUND TYPES (other than bite wounds)

Wound type	Antibioprophylaxis
Soiled	⚠ Could be considered (depending on situation and clinical judgment).
At high risk of infection or highly contaminated	
For a late start	
• If there are no contraindications, a 1st-generation cephalosporin may be considered, depending on the suspected causative agent. • Follow the usual recommendations for use specific to the individual (child vs. adult). 💬 If necessary, consult an experienced colleague or a microbiology-infectiology specialist.	

ANTIBIOTIC THERAPY

→ The severity of the infection is assessed on the basis of clinical judgment and guides the choice of antibiotic treatment. If necessary, refer to the instructions on the use of oral antibiotics in bites.

✅ Recommended when symptoms and clinical signs of infection are present.

	Oral treatment	Intravenous (IV) treatment
Antibiotic to be considered	• The antibiotics administered are generally the same as those used for antibiotic prophylaxis. • Treatment duration generally lasts from **5 to 7 days**; it may be longer, depending on the initial clinical picture, the severity of the infection, or if the strain is not sensitive to initial empirical treatment. • If necessary, adjust antibiotic therapy after obtaining wound culture results.	• Certain infected wounds (e.g., deep, severe infection following a cat bite) may require IV antibiotic therapy. • After clinical improvement, it may be possible to switch to an oral treatment with similar microbial activity. 💬 If necessary, consult an experienced colleague or seek the advice of a specialist in microbiology-infectiology.

⚠ *When antibiotic therapy is indicated, the concomitant local application of an antibiotic ointment is at the prescriber's discretion but is rarely necessary.*

INFORMATION TO BE GIVEN TO THE PATIENT AND FAMILY

→ Care to be given at home (e.g., hygiene, dressing changes or removal of absorbable sutures as required).

→ Unless otherwise indicated, the wound should remain dry for the **first 48 hours** after closure. However, some dressings allow you to take a shower.

→ Provide information on the benefits, risks, and possible side effects of PEPs or antibiotics, if applicable.

→ It is recommended to advise the individual to re-consult in the following situations:

- if symptoms or signs of infection develop or worsen rapidly or significantly at any time;
- if, **48 hours** after starting an oral antibiotic treatment, there is no significant improvement in symptoms and signs of infection, especially in the case of a bite;
- if pain persists in wounds involving debris or glass fragments;
- if there is a problem with motor skills or sensitivity in the fingers in cases of hand laceration.

MONITORING AND FOLLOW-UP

→ Sutured wounds require simple, daily washing with water and, if necessary, protection with a dressing.

→ As a general rule, wounds closed with surgical glue or skin closure strips do not require any special follow-up.

→ If absorbable sutures are present, a consultation may be necessary to have them removed if they have not dissolved after **10 to 14 days**, and the patient is unable to remove them himself.

→ Monitor wounds for symptoms and signs of infection, especially in the case of bites or closed wounds. If necessary, use a pen to mark out areas suspected of infection, to monitor progress.

→ Clinical follow-up should be done within **24 to 72 hours** of starting antibiotics, especially for cat bites or infected wounds.

→ Depending on the type of wound, cleansing or debridement may be necessary to remove late necrotizing tissue.

→ Monitor motricity and mobility of affected limbs.

DRESSING CHANGE/FREQUENCY

→ Ideally, change any dressing that has become detached or more than **50%** soiled[1]

Non-infected wound	• Wear the dressing for the maximum duration recommended by the manufacturer[2] or according to clinical judgment.
Infected wound	• Regular changes according to the wound's features, the individual's condition, and above all, the action mechanism of the dressing/antimicrobial product.

1. If necessary, the change frequency should be increased.
2. Use beyond the recommended wearing time may reduce the effectiveness of the dressing and increase the risk of infection.

RELATED CARE

→ Pain management.

→ Immobilization of limbs (e.g., with a splint) when:

- the wound is large and located in a mobile area (e.g., near a joint);
- there is a significant risk of dehiscence;
- tendon damage requiring temporary closure (prior to final repair).

→ Identification (if necessary and depending on the clinical situation) of psychosocial problems such as anxiety and post-traumatic stress disorder, which can sometimes arise in response to traumatic wounds.

CONSULTATION WITH SPECIALIST

→ The following situations may require special monitoring or consultation with a specialist or experienced colleague:

- an individual receiving anticoagulant therapy with a wound on a lower limb;
- wound located in an area where vascular supply is inadequate or uncertain;
- individuals with a higher risk of infection due to a pre-existing medical condition;
- those requiring antibiotic prophylaxis or intravenous treatment;
- wounds involving the nerves or hand muscles;
- when motor skills are impaired;
- wounds on certain parts of the face, notably the eyes, ears, or eyelids;
- complex facial laceration with associated fracture or sinus involvement;
- infected wounds that do not respond to oral antibiotics;
- closed wound showing symptoms and signs of infection (e.g., abscess) and requiring reopening;
- wounds requiring sedation for repair or management beyond the professional's knowledge or skills.

A microbiology-infectiology consultation (when available) may be required in the following situations:

- Human bites (with broken skin) to assess the need to administer PEP and ensure follow-up against HIV, HBV or HCV;
- Bites (with broken skin) in individuals with asplenia, advanced liver disease, or compromised immunity due to a medical condition or its treatment.
- If the bite was caused by one of the following animals: non-traditional domestic animal (e.g.. snake, lizard, monkey), farm animal, wild animal (e.g., bat) or exotic animal (including birds).
- A highly contaminated wound.

MAIN REFERENCES

→ References are presented in the INESSS report that accompanies this tool.

APPENDIX I

USE OF ORAL ANTIBIOTIC PROPHYLAXIS/ANTIBIOTICS FOR BITES

The use of one or more antibiotics active against aerobic AND anaerobic bacteria is recommended.
Several antibiotic choices are possible, depending on the clinical situation.

WARNINGS

- 1st generation cephalosporins, macrolides, or clindamycin are not effective against *Pasteurella* bacteria (mainly found in cat and dog saliva).
- Trimethoprim (TMP) has variable activity against *Eikennela corredens* (present in human oral flora).
- These antibiotics could, however, be considered in combination with another antibiotic in certain clinical situations and depending on the suspected causative agent.

ADULT

Antibiotics[1]	Posology	Duration[2]
FIRST CHOICE		
Amoxicillin/Clavulanate[3]	875/125 mg PO BID	Prophylaxis: 3 to 5 days Therapy: 5 to 7 days
ALTERNATIVES[4]		
Trimethoprim-Sulfamethoxazole (TMP-SMX) **OR** Doxycycline[5] **AND in combination with ONE of the following antibiotics[6]** Clindamycin **OR** Metronidazole **OR** Moxifloxacin[7]	160/800 mg PO BID **OR** 100 mg PO BID 300 mg PO QID or 450 mg PO TID **OR** 500 mg PO TID **OR** 400 mg PO DIE	Prophylaxis: 3 to 5 days Therapy: 5 to 7 days

CHILD

Antibiotics[1]	Posology	Maximum dosage	Duration[2]
FIRST CHOICE			
Amoxicillin/Clavulanate[3]	45-60 mg/kg/day PO ÷ in 3 doses	1 500 mg/day[8]	Prophylaxis: 3 to 5 days Therapy: 5 to 7 days
ALTERNATIVES[4]			
Trimethoprim-Sulfamethoxazole **OR** Doxycycline[5] **And in combination with the following antibiotic[6]** Clindamycine	8-12 mg/kg/day PO (in TMP equivalent) ÷ in 2 doses **OR** 4 mg/kg/day ÷ in 2 doses 30-40 mg/kg/day PO ÷ in 3 doses	320 mg/day **OR** 200 mg/day 1 800 mg/day	Prophylaxis: 3 to 5 days Therapy: 5 to 7 days

1. Dosage adjustment may be required depending on kidney function. For more information, consult a pharmacist or other experienced colleague.
2. Recommended duration. Possible window according to clinical judgment.
3. Ineffective against *Meticilline-resistant Staphylococcus aureus* (MRSA).
4. If contraindicated, according to local resistance patterns, or if history of severe allergic reaction to a penicillin.
5. Doxycycline may be an alternative to TMP-SMX if the latter cannot be used (e.g., due to resistance) or in the case of human bites. For children under 8: prescribe only after informed discussion with the parent (or legal guardian).
6. For anaerobic coverage if necessary.
7. The use of antibiotics, especially fluoroquinolones, may increase the risk of developing diarrhea or colitis associated with *C. difficile*.
8. Maximum *per os* dose recommended for external use. May be higher if infection is severe/profound and according to clinical judgment.

Depending on the clinical situation, other oral or intravenous antibiotic options may be available. If necessary, an experienced colleague or specialist in microbiology-infectiology may be consulted.

APPENDIX II

NON-SURGICAL WOUND CLOSURE METHOD

Tissue/Surgical glue	
Composition	• Cyanoacrylate-based synthetic glues
Action Mechanism	• Polymerizes on contact with the skin in less than a minute • Forms an impermeable film over the wound, protecting it from contamination
Characteristics	• Non-toxic and water-resistant

Features	
Indications	• Single wound or laceration meeting the following criteria: - superficial and small (≤ 3 - 5 cm) - straight, free of tension and with edges that can easily be drawn together manually - clean (not infected, not soiled, not moist, not bleeding) and debrided (!) *If there are no contraindications, the use of glue is recommended in children, especially for facial or scalp lacerations.*
Contraindications	• Wound meeting the following criteria: - soiled, infected, or at high risk of infection - deep, under tension, with significant loss of substance, or where the wound edges cannot be drawn together easily - located on mucous membranes or in areas of high mobility (e.g., joints) - with bleeding (may cause polymerization to overheat) - bite • Allergy to cyanoacrylate or formaldehyde
Advantages	• Quick, painless application
Disadvantages	• May cause dehiscence if glue is applied inside the wound. • May cause burning sensation if excessive amounts of glue are applied. • Glue may adhere to skin, gloves, and surgical instruments.

DIRECTIONS FOR USE Recommendations may vary according to the product used	
Wound Preparation	• The wound must be dry and free of bleeding before the glue is applied. • If necessary, apply a topical anesthetic **BEFORE** performing the procedure.
Application	• Position the user so that the wound is on a horizontal plane. • Hold wound edges together for 30 to 60 seconds to allow glue to dry. • Leave to air dry or cover with a dry dressing; do not apply adhesive dressings. (!) *The concomitant use of skin closure strips reduces tension between wound edges and can be used as a dressing.*
Warnings	• If applied to the face: protect eyes (e.g., with a compress). • Do not wet the wound for the first **48 hours** after application. • Do not apply glue inside the wound. • Do not apply topical agents (e.g., petroleum jelly, ointments, creams) to the glue, as this may accelerate its degradation. • Do not expose glue to sunlight or tanning lamps.
Removal	• The glue comes off spontaneously after about a week. (!) *In the event of undesired bonding between two intact skin surfaces, apply acetone OR paraffin/ mineral oil to facilitate separation.*
Monitoring and Follow-Up	• No follow-up required.

Examples of commercial products available in Canada	
Partial list *The INESSS does not endorse any of the commercial products listed opposite.*	Dermabond, Glubran, GluStitch, Histoacryl, Indermil, MSI-EpiDermGlu, Skin Affix, SwiftSet

APPENDIX II (continued)

NON-SURGICAL WOUND CLOSURE METHOD

Strip adhesive skin closures	
Composition	• Bandage strips made from non-woven polyester fibers coated with a hypoallergenic adhesive.
Action Mechanism	• Closes superficial wounds
Characteristics	• Flexible and resistant • Air-permeable

Features	
Indications	• Wound corresponding to the following criteria: - small, straight, superficial wound with clean edges; - little or no exudate; - located in low-tension areas.
Contraindications	• Wound meeting the following criteria: - infected; - deep, with underlying space, large, and exudative; - subject to high tension or where edges cannot be easily brought together; - located where adhesion is limited (e.g., moist area or hairy part of the body). • Allergy or sensitivity to one of the adhesive skin suture components. • Skin tear.
Advantages	• Quick, easy and painless to use. • Can be used in conjunction with stitches or staples. • Reduces the risk of infection compared with stitches and staples.
Disadvantages	• The risk of disunity (e.g., on the face) may increase the risk of aesthetic damage.

Directions for use *Recommendations may vary according to the product used*	
Wound Preparation	• Wound and skin must be clean and dry before application.
Application	• Three possible application techniques (perpendicular, graduated, or combined). • Do not create tension: avoid tensioning or stretching the strips. • A benzoin-based dye can be used to increase strip adhesion. **Perpendicular technique (most commonly used and recommended)** • Apply each strip perpendicular to the wound. • Space strips apart (~ 3 mm) to facilitate drainage of exudate and avoid infection. • If necessary, cover with a dry dressing. (!) *Applying strips parallel to the wound reduces the tension applied to the ends of perpendicular strips.*
Removal	• Remove gently downwards, in the direction of the wound. • Can be removed by the individual or eventually fall off on their own.
Monitoring and Follow-Up	• Can usually be removed after **7 days** (sometimes longer).
Warning	• To be avoided if the person is not very "observant" (e.g., agitated, elderly, demented) and in young children.

Examples of commercial products available in canada	
Partial list *The INESSS does not endorse any of the commercial products listed opposite.*	Cura Medi-Strip, Leukosan, Leukostrip, Omnistrip, Steri-Strips, Urgostrip

APPENDIX III

IMPORTANT PATHOGENIC BACTERIA IN BITE WOUNDS

Type of bite	Type of bacteria Partial list	
	Aerobes	**Anaerobes**
Dog	• *Pasteurella spp.* • *Streptococcus spp.* • *Staphylococcus spp.* • *Capnocytophaga canimorsus*	• *Fusobacterium spp.* • *Bacteroides spp.* • *Prevotella spp.* • *Porphyromonas spp.* • *Propionobacterium spp.* • *Peptostreptococcus spp.*
Cat	• *Pasteurella spp.* • *Streptococcus spp.* • *Staphylococcus spp.* • *Moraxella spp.*	• *Fusobacterium spp.* • *Bacteroides spp.* • *Porphyromonas spp.* • *Prevotella spp.* • *Propionobacterium spp.*
Human	• *Streptococcus spp.* • *Staphylococcus spp.* • *Eikenella corrodens* • *Haemophilus spp.*	• *Fusobacterium spp.* • *Prevotella spp.* • *Peptostreptococcus spp* • *Veillonella spp.*

ANNEXE IV

REPORTING A DOG BITE

	• Under the *Regulation respecting the application of the Act to promote the protection of persons by establishing a framework with regard to dogs* (chapter P38.002, a. 3.), physicians must report to the municipality concerned[1] all cases of dog bite injury involving humans, whether or not there is a risk of rabies.

When to report	• When a person seeks medical attention for a dog bite injury.
Why	• To ensure public safety by better documenting the incidence of bites and enabling the municipality to identify potentially dangerous dogs.
How	• Some municipalities require that reporting be done online or using their own form. • If the municipality does not require a specific form, you can use the following form.
Where to send the form	• To the municipality concerned[1]
! *Consult the Municipality Directory of the ministère des Affaires municipales et de l'Habitation (MAMH) to obtain contact information for Quebec municipalities.*	

1. The municipality concerned is determined by the dog owner's principal place of residence. If the place of residence is not known, the municipality will be determined by the place where the bite occurred.

RABIES RISK ASSESSMENT FOR ANIMALS THAT BITE

→ The last recorded case of human rabies in Quebec dates back to October 2000 (bat bite).

→ There are very few indications for rabies treatment in the event of a dog bite in Quebec.

→ For more information on the symptoms and clinical management of rabies, visit the MSSS web site.

When to do an assessment	• In the presence of significant contact: bite, scratch or contact with saliva on a mucous membrane[2] by a domestic animal[3]. **AND** • When it is possible to gather evidence about the circumstances of the incident (e.g. the animal's state of health, behavior and location), whether alive or dead.
Why	• To determine whether or not an animal is a rabies carrier. • To support the decision to initiate, continue or discontinue rabies postexposure prophylaxis.
How	• By completing the rabies risk assessment form for domestic animals that bite: Demande d'évaluation du risque de rage d'un animal domestique mordeur.
Where to send the form	• By fax to MAPAQ[4]: 418 380-2201 • If you have any questions: 1 800 463-5023, option 5 ! *The results of the assessment will be sent as soon as they are known, but no later than the working day following the end of the 10-day observation period after the incident.*
In the event of a dog bite, this must also be reported to the municipality concerned using the appropriate form as described above	

2. The risk of rabies transmission by mucous membrane (without injury) is possible, but much less frequent than transmission by bite or scratch. Mucous membranes can include the eyes, nose and mouth.
3. Exhibitions involving wild, indigenous or exotic animals, whether in the wild or kept in captivity, must be reported to the public health department of the territory concerned.
4. The Ministère de l'Agriculture, des Pêcheries et de l'Alimentation du Québec (MAPAQ) now handles the initial investigation and observation of domestic animals that bite to support rabies risk assessment. The Canadian Food Inspection Agency (CFIA) has not been involved in rabies management since 2014.