Bites and Stings Presentation
CCFP (EM) Rounds
Dr. Kyle McLaughlin, CCFP (EM)

Resources

- Ch. 146, 147, 151, 194-195 Tintinelli
- http://www.cdc.gov/RABIES/exposure/postexposure.html
- www.santepub-mtl.qc.ca/Publication/pdfppm/ppmjune02.pdf
Hymenoptera

- **Apidae** (bees)- usually docile. Males have no stinger. Female is capable of stinging only once- barbs on stinger causes it to detach from its body leading to evisceration and death of bee.

- **Africanized bees**- are hybrids of African bees whose venom is no more toxic than American bees but are more aggressive-leading to massive stinging, multisystem injury and death from severe venom toxicity.

- Most allergic reactions are from **Vespidae** species (wasp, hornet and yellow jackets). Only the female stings- but they have the ability to withdraw their stinger, enabling multiple stings.

- **Venom**: contains multiple compounds including histamine and mellitin (causes degranulation of basophils and mast cells)

Clinical Features

- **Local reaction**: Most common response is pain, mild erythema, edema and pruritis at site. May resemble cellulitis-however cellulitis occurs in minority of cases.

- ** Toxic reactions**: nonantigenic response to multiple stings-present similar to allergic reactions with more GI disturbance but without bronchospasm and urticaria. Renal and hepatic failure, DIC have been described.

- **Anaphylactic reactions**: majority occur within 15 min and nearly all occur within 6 hours. The shorter the onset the more severe the reaction. No correlation between systemic reaction and number of stings.

- **Delayed reaction**: Serum sickness-like signs and symptoms appearing 5-14 days after the sting. Believed to be immune complex mediated.

Management

- Remove stinger- no special technique required.
- Clean wound with soap and water
- Ice packs- delays absorption
- Oral antihistamine and analgesic/NSAID for minor reactions
- Treat anaphylaxis as you normally wound
- Severe anaphylaxis not responding to normal treatment may require admission
- Allergy testing and Epi pen for severe allergic/anaphylactic cases.
Arachnids

- >34000 species of spiders worldwide.
- 14,000 in Canada, including 2 species of Black Widow and 2 species of Tarantula.
- 13,000 species in Alberta.

Black Widow (Latroductus)

- “There has never been a recorded death from a Black Widow bite in Alberta”
- “The Black Widow Spider is the only spider in Alberta that is potentially harmful to people.”
  (Weaselhead Society News website- http://talkaboutwildlife.ca/profile/?s=1503)
- Classic orange-red hour glass-shaped marking is noted only on L. mactans.
- Alberta native is Western Black Widow (L. Hesperus)
- Venom: highly potent. Most active component is alpha-Latroxin which causes the release of acetylchoine and norepinephrine from nerve terminals.

Clinical Features

- Immediate pinprick sensation followed by increasing local pain.
- Within 1 hour, erythematous lesion(often target shaped), swelling, diffuse muscle cramping- abdominal cramping may mimic peritonitis.
- Severe pain may wax and wane for 3 days, muscle weakness persists for weeks to months.
- Systemic complications include hypertension, respiratory failure, shock and coma.
- No confirmatory testing available

Management

- Local wound treatment
- Analgesics and Benzos for pain/cramping
- No evidence to support Calcium gluconate
- Latroductus antivenom for severe systemic cases- test dose given and if tolerated the usual dose is 1-2 diluted vials delivered over 30 min.

Brown Recluse (Loxosceles Reclusa)

• “There are no (native) brown recluse spiders in BC or in Canada.”
• ID spider by violin shaped mark on dorsal cephalothorax
• Venom: multiple enzymes responsible for necrosis through neutrophil activation, platelet aggregation and intravascular thrombosis.

Clinical Features
• Bite often unwitnessed and painless
• Mild erythema, often become necrotic over 3-4 days and form eschar from 1-30 cm in diameter

• Occasionally a severe local reaction with immediate pain, blister formation and bluish discoloration
• Loxoscelism: systemic reaction (very rare) occurring 1-2 days post envenomation. Fever, chills, vomit, arthralgias, myalgias, petechiae and hemolysis. Severe cases can cause seizure, renal failure, DIC
• No assay to confirm envenomation

Management
• Conservative management- cleanse, analgesics, Tetanus
• No antivenom available
• Antibiotics if appears infected.
• Surgery for lesions greater then 2 cm - often deferred for 2-3 weeks.
• No evidence for Dapsone, Hyperbaric O2, cyproheptadine, steroids adn nitroglycerin
• Hospitalize systemic reactions

Figure 3.—Map of the distribution of the six Loxosceles species with widespread distribution in North America. Populations of L. reclusa in the middle of its range are commonly encountered, abundant in number, and reliable in their existence. As one reaches the margins of the distribution, Loxosceles spiders become less...
Hobo Spider

• “...no verified case of hobo spider envenomation exists. In Canada, hobo spiders are found only in southern British Columbia”


Clinical Features
• Painless bite with local reaction presenting clinically like Brown Recluse.
• No systemic reaction

Management
• Local wound care and analgesia
• Surgery for severe necrotic lesions

Tarantula

Clinical Features
• When threatened, tarantulas may flick barbed hairs with their two back legs- causing local or generalized ocular inflammation if in contact with conjunctiva or cornea.
• Painful bite but no systemic toxins.

Management
• Local wound care and analgesia
• Slit lamp exam for ocular symptoms

Scorpions

• Nocturnal hunters
• In North America (mainly Southwestern U.S.) only Centroides exilicauda (Black Scorpion) is capable of producing systemic toxicity
• Venom: Opens neuronal sodium channels and causes prolonged and excessive depolarization.

Clinical Features
• Causes immediate burning and stinging although no local injury is visible
• Systemic symptoms are rare-often only in extremes of age. Tachycardia, excessive secretions, blurred vision, drooling, excessive motor activity- opisthotonus and fasciculations.
• Roving eye movements are pathognomonic. Pain out of keeping with physical appearance of wound is suggestive

Management
• Local wound care
• Ice and opioids for analgesia
• Benzos for cramping and fasciculations
• Centroides-specific antivenom- Production has been stopped.
Snakes

- Worldwide: 3 million bites and 150,000 deaths
- U.S.: 45,000 total bites/year (8000 venomous snake bites/year) with only 10 deaths/year.
- Alberta 2008/09 fiscal year: 241 reported snake bites to PADIS.
- Only native venomous North American snakes are from family Crotalidae (Pit vipers: rattlesnakes, copperhead, water moccasin) or Elapidae (Coral snakes)

Coral Snakes (Elapidae)
- Account for 20-25 bites/year in U.S.

Clinical Features

- “red on yellow, kill a fellow. Red on black, venom lack”- distinguishes eastern coral snakes (Micrurus fulvius fulvius) from non venomous snakes (Milk and Scarlet King snake)
- No local reaction
- Venom: Potent neurotoxin- causes tremor, salivation, respiratory paralysis, seizures and bulbar palsies (dysarthria, diplopia, dysphagia)
- Symptoms may be delayed up to 12 hours.

Management

- Local wound care and tetanus
- All potential bites require observation for 24-48 hours and should receive 3 vials of Antivenin-
- Systemic symptoms be preventable but hard to reverse symptoms.
- Additional doses based on resolution of symptoms
- All envenomations require ICU.
Pit vipers (Crotalidae)

Epidemiology
- 25-30% of all bites are “dry strikes” with no effect from the venom.
- Western Rattlesnake is native to Alberta
- Pit vipers are identified by 2 retractable fangs and heat sensitive depressions located bilaterally between each eye and nostril.
- Venom: complex enzyme mixture which alters vessel permeability, leading to loss of plasma and blood into surrounding tissue; activates and consumes fibrinogen and platelets; some species block neuromuscular transmission leading to cranial nerve weakness, respiratory failure and altered sensorium.

Clinical Features
- Hallmark is fang marks with local pain and progressive swelling.
- All envenomated patients will have swelling in 30 mins. The absence of symptoms after 12 hours rules out an envenomation.
- Mild envenomation: local swelling, no systemic symptoms, no lab abnormalities
- Moderate envenomation: spread of swelling from site, + systemic symptoms (nausea, paresthesias, hypotension, tachycardia), may have abnormal coags but no significant bleeding.
- Severe Envenomation: extensive swelling, significant systemic symptoms (hypotension, altered LOC, resp distress), markedly abnormal labs with bleeding.

Management
- All need transport to medical facility. Keep patient calm (ha!), immobilize bitten area below heart
- Local wound care and tetanus
- Tourniquet (obstruct arterial flow and cause ischemia), suction devices, electric shocking, prophylactic antibiotics, steroids all have no proven benefit.
- Measure limb circumference q30 min
- Minor cases require observation for 8-12 hours. Discharge if no symptoms after 12 hours.
- Antivenom if: progressive local swelling, systemic symptoms, Lab abnormalities/ coagulopathy
  - CroFab (polyvalent Crotalidae immun Fab): initial dose of 4-6 vials IV in 250 CC NS over 60 min. Watch for allergic reaction (sheep derived is superior to Horse derived but still occurs in 14%)
  - after initial dose, reassess to determine if local swelling has arrested, coag labs have normalized and systemic symptoms resolved. If not, re-administer 4-6 vials.
  - Repeat labs q4h or after each course of antivenin
  - Endpoint is the arrest of progressive symptoms and coagulopathy
  - Once stabilized- continue CroFab 2 vial doses q6h for 18 hours.
  - Serum sickness occurs in 16% of patients receiving CroFab within 1-2 weeks.
  - Compartment syndrome may occur- treatment is antivenom initially and if not improving needs fasciotomy
  - Severe active bleeding requires antivenom and blood products if not reversing.
Tick Borne Illness

Lyme Disease

Epidemiology
- The leading vector-borne illness in US
- From 1987-1996, 278 cases of Lyme reported in Canada
- “No human cases of native Lyme disease in Alberta” Alberta Health and Wellness website.
- Ixodes ticks positive for Borrelia burgdorferi in Alberta in 2008.
- BC and Ontario more common.

Pathophysiology
- Borrelia burgdorferi: spirochete transmitted to humans by Ixodes species ticks, with rabbits, rodents and deer serving as host reservoir animal
- Risk of contracting Lyme from a Deer Tick bite is very low- only up to 3% in Endemic areas (American Northeast).
- Almost no risk if duration of attachment is <72 hrs and ~25% if attached >72 hrs

Clinical Features

Stage 1:
- Erythema chronicum migrans (ECM) solitary skin lesion. 60-80% of cases.
- Annular, erythematous skin plaque with central clearing caused by vasculitis- “Target lesion”.
- Forms 2-20 days after tick bite. May be associated with Flu-like illness.

Stage 2:
- Dissemination of the spirochete- multiple secondary annular lesions (ECM), fever, adenopathy, splenomegaly and flu like illness.
- 15% develop neurologic disease- cranial neuritis (commonly facial nerve palsy), peripheral neuropathy, headaches, neck stiffness, cerebellar ataxia, encephalitis, myelitis, radiculoneuritis.
- Asymmetrical oligoarthritis (large joints- knees in particular)
- Cardiac abnormalities in 8%- AV blocks, myocarditis.

Stage 3:
- Chronic persistent infection- occurs years after stage 1.
- Chronic intermittent migratory arthritis, myocarditis, encephalopathy, axonal polyneuropathy
- May persist for >10 years.
Lyme Disease (cont’d)

**Diagnosis**
- Serology: Enzyme immunoassay and Western Blot.
- Culture not widely used.

**Management**
- Doxycycline 100 mg BID x 14-21 days.
- Admit if CNS disease, cardiac manifestations, severe arthritis- treat with Ceftriaxone.
- No role for prophylactic treatment of tick bites.
- Vaccine is available

Colorado Tick Fever

**Pathophysiology**
- Acute viral illness caused by an RNA virus of the genus Coltivirus
- Vector is Dermacentor tick (Wood tick)
- Animal reservoir host is deer, marmot, porcupine
- Cases reported in mountainous western regions of US and southwestern Canada (including Alberta) Noted to be isolated above 5000 ft of elevation

**Clinical Features**
- Flu like illness 3-6 days post tick bite
- Symptoms persist for 5-8 days then remit. 50% will have a 2nd phase 3 days later with a transient generalized maculopapular or petechial rash for 2-4 days.

**Diagnosis**
- Mostly clinical-prolonged time to isolate virus from blood and CSF.

**Management**
- Supportive
Rocky Mountain Spotted Fever

**Epidemiology**
- **Rickettsia rickettsii** - intracellular coccobacillus carried by Dermacentor species ticks.
- Deer, rodent, horse, cattle, cats and dogs are the animal reservoir hosts.
- Primarily in Mid-Atlantic states in U.S.
- Although reported in Canada - incidence is unknown because not nationally notifiable disease

**Clinical Features**
- "Classic" triad of fever, rash and tick exposure. But only 50% recall a tick exposure and rash absent in up to 20%.
- Incubation period is 4-10 days
- Initial constitutional symptoms: flu like illness. May progress to hepatosplenomegaly, conjunctivitis, altered LOC, meningismus, renal or respiratory failure, myocarditis.
- Rash: Hallmark feature. maculopapular, extremities first spreading centripetally, sparing the face but involving the palms and soles. May become petechial and/or purpuric
- GI features are often prominent.
- RMSF pneumonitis is a common and potentially fatal complication - cough, dyspnea, pulmonary edema, hypoxia.
- Serious neurologic complications occur in ~25% - confusion, ataxia, seizures and coma.
- Untreated patients have 25% mortality!

**Diagnosis**
- **Labs**: neutropenia, thrombocytopenia, hyponatremia, elevated LFTs
- Serology not reliably positive until 6-10 days after onset of symptoms.

**Differential Diagnosis**
- viral illness, gastroenteritis, disseminated gonorrhea, meningitis, secondary syphilis, leptospirosis, typhoid fever, pneumonia.

**Management**
- Doxycycline 100mg BID for 5-7 days or until the patient is afebrile and clinically improving for 48 hours.
- Admit: significant systemic symptoms, respiratory or neuro complications.
Tularemia

Epidemiology
- Infection caused by *Francisella tularensis* - gram neg coccobacillus carried by Dermacentor and Amblyomma species of ticks as well as Deerfly

- Animal host reservoir is rabbit, deer, muskrat, beavers and dogs.
- Between 1940 and 1981, there were 289 reported cases of tularemia in Canada and 12 deaths.

Pathophysiology
- Transmission via arthropod bite, animal bite, inoculation of skin/conjunctiva/oral mucosa from blood or tissue

Diagnosis
- Serology- ELISA
- Cultures blood, ulcers, sputum.

Clinical Features
- incubation period- 3-5 days: Flu like illness
- Most common presentation is "ulceroglandular fever"- papule develops at the bite site and it evolves into a tender necrotic ulcer with painful regional adenopathy
- Ocular and respiratory complications are common

Differential Diagnosis
- pyogenic bacterial infection, syphilis, anthrax, plague, Q fever, typhoid, brucellosis, rickettsial infection.

Management
- Gentamicin, Doxy, Cipro or Azithromycin for 10-14 days.

Five states (Arkansas, Kansas, Massachusetts, Missouri, and Nebraska) accounted for 50% of all cases of tularemia reported to CDC in 2006. To define the geographic distribution of *Francisella tularensis* subspecies better, CDC requests that isolates be forwarded to the CDC laboratory in
Tetanus

Epidemiology
• World wide incidence approaches 1 million with mortality of 20-50%

• Annual incidence in US is 0.02 per 100000 or 50 cases/year with mortality of 11%

• Highest risk in IVDU in southern states

Pathophysiology
• Acute, often fatal disease caused by wound contamination with Clostridium tetani- anaerobic gram positive rod-

• Exists often in spore formation (very resistant to destruction)

• Clostridium favors crushed, devitalized tissue, foreign bodies, abscess- allows spore to germinate in reduced oxygen tension.

• C. tetani produces 2 toxins once converted into the vegetative form:
  • tetanolysin- clinically insignificant
  • tetanospasmin- potent neurotoxin responsible for clinical manifestations. Acts on motor endplates of skeletal muscle, in spinal cord, in the brain and sympathetic nervous system by preventing the release of inhibitory neurotransmitters glycine and (GABA)- resulting in loss of normal inhibitory control.

Clinical Features
• Generalized muscular rigidity, violent muscular contractions and instability/inhibitory loss of autonomic nervous system (hypersympathetic state)
• Incubation period is varied from 1-30 days
• Local tetanus is less common- persistent rigidity of muscles in close proximity to wound- resolves within weeks to months
• Generalized tetanus:
  • (most common) preferentially affects nerves with shorter axons- jaw (masseter often first- lockjaw) and facial muscle (risus sardonicus), neck, trunk (opisthotonos) and then extremities.
  • Autonomic disturbance is late.

• Conscious and alert until laryngospasm or contraction of respiratory muscles results in respiratory compromise.

Diagnosis
• No confirmatory tests- purely clinical
• Wound culture is of no use- C. tetani may be cultured in the absence of clinical disease.

Differential Diagnosis
• Strychnine poisoning, dystonic reaction, hypocalcemic tetany, rabies, TMJ disease
Tetanus Prophylaxis

**Table 1: Summary Guide to Tetanus Prophylaxis in Wound Management**

<table>
<thead>
<tr>
<th>History of tetanus immunization (doses)</th>
<th>Clean, minor wounds</th>
<th>All other wounds*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Td†</td>
<td>TIG</td>
<td>Td</td>
</tr>
<tr>
<td>Uncertain or &lt;3</td>
<td>Yes‡</td>
<td>No</td>
</tr>
<tr>
<td>3 or more</td>
<td>No†</td>
<td>No</td>
</tr>
</tbody>
</table>

* All other wounds include: major wounds, those contaminated with dirt, animal excreta, other foreign bodies, or saliva; puncture wounds; or wounds with devitalized tissue.

† For children, a formulation of tetanus and diphtheria-containing vaccine should be used depending on past immunization history and age according to the Alberta Childhood Immunization Schedule. For adults, the tetanus booster should include diphtheria toxoid unless it is specifically contraindicated.

‡ Passive immunization. When tetanus-containing vaccine and TIG are given concurrently, separate syringes and separate sites must be used.

‡‡ The primary immunization series with tetanus and diphtheria-containing vaccines should be completed.

‡‡‡ Yes, if more than 10 years have elapsed since the last dose. Children should have their immunization brought up to date according to the appropriate childhood schedule.

‡‡‡‡ Yes, if more than five years have elapsed since the last dose. Children should have their immunization brought up to date according to the appropriate childhood schedule.

Management of Tetanus infection

- ICU and minimize stimuli to reduce reflex convulsive spasms
- Tetanus immunoglobulin (TIG) 3000 to 6000 Units IM in single injection opposite the site of Tetanus toxoid injection-
  - neutralizes circulating tetanosasmin and toxin in wound but not toxin that is already fixed in CNS.- does not change clinical manifestation but reduces mortality
- debridement of wound to minimize further toxin production
- Antibiotics are questionable- Metronidazole 500 mg IV QID. Penicillin (central acting GABA antagonist) may potentiate the effects of tetanosasmin
- Benzo for sedation and reduction of spasm
- Neuromuscular blockade (Succinycholine) to control ventilation and spasm and to prevent fractures and Rhabdo.
- Treat autonomic instability with Labetalol, Magnesium (inhibits release of Epinephrine and Norepinephrine), Morphine (reduces sympathetic tone) or Clonidine.
- Immunize after recovered- day 0, 6 weeks and 6 months.
Rabies

Epidemiology

- Worldwide ranks #10 mortality causing 50-60,000 deaths/year
- Canada has reported 24 cases of rabies from 1924-2003. All were fatal.
- Alberta had 1 bat bite from Northern Alberta in 1985.
- In U.S.- 94% of cases are in wild animals: raccoons (37%), skunks (30%), bats (17%)
- Domestic animals: cats (3%), dogs (2%) and cattle (1%)
- Infections in humans associated with bats in >90% of cases despite bats only accounting for 17% of infected animals
- Documented transmission from bats has occurred without physical evidence of a bite.

Pathophysiology

- Virus of genus **Lyssavirus**
- Transmission largely saliva to host through bite. Other routes include- mucous membrane contamination, aerosol during spelunking, corneal transplants.
- Initial infection and multiplication occurs within local monocytes for the first 2-4 days.
- Subsequently, virus spreads across motor end plates, ascends and replicates along peripheral nervous axons to the dorsal root ganglia, the spinal cord and CNS.
- Following CNS replication in the gray matter, the virus spreads outward by peripheral nerves to virtually all tissues and organ systems
- Incubation is variable- 4 days to 19 years.
- No specific therapy to treat

Clinical Features

- **Initial phase(1-4 days- Flu-like Symptoms):** fever, malaise, headache, malaise, anorexia, nausea, sore throat, cough and pain/paresthesia at bite site (80%)

- **CNS phase (encephalitis):** restlessness, agitation, altered LOC, painful bulbar and peripheral muscular spasms, opisthotonus and bulbar or focal paralysis.

2 forms of CNS phase-
- **Furious:** 80% of cases. hyperactivity, disorientation, hallucination, autonomic dysfunction. Hydrophobia- in 50% fluids cause spasms of pharynx, larynx and diaphragm.
- **Paralytic:** varying degree of paralysis.
- Coma occurs within 10 days.

Diagnosis

- Clinical diagnosis in ED. Although elevated CSF protein and mononuclear pleocytosis are also seen.
- Final diagnosis by postmortem analysis of brain tissue
Post Exposure Prophylaxis - call MOH for all potential exposures

**INDICATIONS FOR RABIES**

**Bite or contact of an ANIMAL's saliva, CSF, or neural tissue with a wound or mucous membrane**

**POST-EXPOSURE PROPHYLAXIS (PEP)**

- **Domestic animals, pets, and livestock**
  - dog, cat, ferret, horse, cattle...
  - Available
  - Observation of the animal for 10 days after exposure, under supervision of the CFIA
  - PEPE for non immunized
    - Human rabies immunoglobulin (HRIG) 20 iu/kg with half the dose infiltrated locally at exposure site and remainder IM
    - Active immunization with Human diploid cell vaccine (HDCV): five 1 ml doses IM at days 0, 3, 7, 14, 28.

- **Wild animals**
  - raccoon, skunk, fox, groundhog, lynx, coyote...
  - Available
  - Initiate PEP immediately except if test result of animal's brain can be obtained < 48 h after contact and no rabies in this sector
  - Rabid animal: PEPE for previously immunized
    - No HRIG
    - Active immunization with Human diploid cell vaccine (HDCV): 2 1 ml doses IM at days 0, 3, 5.

- **Small rodents**
  - squirrel, chipmunk, mouse, rat, gerbil, hamster, field mouse, rabbit...
  - Available or not available
  - Details on the PEP
  - Consult Public Health Department in all cases (514) 528-2400

- **Bat**
  - No PEP

**CDC Recommendations**

- Rabies post exposure prophylaxis (PEP) for all who sustain bite, scratch, mucous membrane exposure to a bat unless the bat is available for testing and is negative for evidence of rabies
- Healthy dog, cat or ferret that bites a person should be confined and observed for 10 days- if no symptoms, the animal is considered non rabid.

---

1- Should be confirmed by a Canadian Food Inspection Agency (CFIA) veterinarian: (450) 476-1223.
2- Specific circumstances: e.g., furious and aggressive animal attacks without provocation, poor health with symptoms compatible with rabies.
3- Obvious provocation: bite inflicted during play, animal was being fed, punished or even petted against its will, or separated from another animal with whom it was mating or fighting.

Edition: Montréal Public Health Department - May 2002 (adapted from the MSSS 1996 document)
Domestic Animal Bites

Dog
- 80-90% of all bites. 3-18% get infected.
- Polymicrobial, gram positive, negative and anaerobic bacteria.
- Information obtained should include circumstances surrounding incident (provoked, animal behaviour), status of animal (domestic, known, vaccinations, history, current location), vaccination status of victim.
- Public health (MOH) should be notified of animal attacks

Cat
- 5-15% of all bites. Polymicrobial including Pasteurella multocida. If infection < 24 h likely Pasteurella
- Higher rate of infection (up to 80%) because of sharp, tin teeth that cause puncture wounds.

Investigations
- Wound culture generally not helpful
- Radiograph of affected area to rule out fracture, foreign body, osteomyelitis

Wound Management
1. High flow irrigation with sterile water, normal saline, 1% povidone iodine solution using angiocatheter or equivalent
2. Debridement if needed
3. No primary closure for puncture wounds and wounds to hand
4. Delayed primary closure for extensive crush injuries and those requiring extensive debridement
5. Controversial for primary closure of all other wounds
6. Tetanus

Rabies PEP
1. If animal healthy and able to observe for 10 days- hold prophylaxis until animal developments symptoms of rabies
2. Rabid or suspected of being rabid- Rabies vaccination and Human Rabies Immunoglobulin
3. Unknown animal- call public health

Antibiotics (duration: 3-5 days for prophylaxis, 7-10 days for treatment)
Prophylactic Indications:
1. Hand wounds
2. Deep puncture wounds (most cat wounds)
3. Wounds requiring surgical debridement
4. Older patients
5. Immunocompromised patients
6. Bite wound near prosthetic joint
7. Bite to limb with underlying venous and/or lymphatic compromise (e.g. following mastectomy)

Choices
1. Parenteral: Ampicillin-sulbactam 3 gm IV or Cefoxitin 2 gm IV
2. Clavulin 875/125 mg BID
**Human Bites**

- Infection rates estimated at 10-17.7%.
- Polymicrobial with gram positives, negatives and anaerobes. Commonly infected with Eikenella corrodens.
- Systemic disease reportedly transmitted through human bite wound include: Syphilis, herpes simplex, hepatitis C and B, tuberculosis. HIV transmission is very low.
- Important to observe extensor tendon in full flexion and extension to rule out tendon injury in “fight bite” wounds.

**Investigations**
1. Wound culture
2. Individual consideration for Hepatitis B, C, HIV and syphilis screen
3. Radiograph of affected area to rule out fracture, foreign body, osteomyelitis
4. Consider skyline view of metacarpal head in fight bites

**Wound Management**
1. High flow irrigation with sterile water, normal saline, 1% povidone iodine solution using angiocatheter or equivalent
2. Debridement if needed
3. No primary closure
4. Splint and pad extremity with gauze dressing.
5. Tetanus

**Antibiotics** (duration: 3-5 days for prophylaxis, 7-10 days for treatment)

**Prophylaxis indications:**
- Deep puncture wounds
- Wounds requiring surgical debridement
- Older patients
- Immunocompromised patients
- Bite near or in a prosthetic joint
- Wound in extremity with underlying venous and/or lymphatic compromise
- Hand, feet, skin overlying joints or cartilaginous structures.

**Recommendations:**
1. Parenteral: Ampicillin-sulbactam 3 gm IV or Cefoxitin 2 gm IV
2. Clavulin 875/125 mg PO BID

**Disposition**
- Follow up In 24-48 hours
- Plastic surgery: for hand or face involvement
- Surgery: for complex or extensive debridement