Management of North American Pit Viper Envenomation
Includes rattlesnakes, copperheads, and cottonmouths (water moccasins)

1. Assess Patient
- Mark leading edge of swelling and tenderness every 15-30 minutes
- Immobility and elevating extremity
- Treat pain (IV opioid preferred)
- Obtain initial lab studies (protime, Hgb, platelets, fibrinogen)
- Update tetanus vaccine
- Contact poison control center (1-800-222-1222)

2. Check for Signs of Envenomation
- Swelling, tenderness, redness, ecchymosis, or blebs at the bite site, or
- Elevated proteome, decreased fibrinogen or platelets, or
- Systemic signs, such as hypotension, bleeding beyond the puncture site, refractory vomiting, diarrhea, angioneurotic

3. Check for Progression of Clinical Effects
- Swelling that is more than minimal and that is progressing, or
- Elevated proteome, decreased fibrinogen or platelets, or
- Any systemic signs

4. Administer CroFab®
- Establish IV access and give IV fluids
- Mix 4-6 vials of CroFab® in 250 ml NS and infuse IV over 1 hour
- Establish IV access and give IV fluids
- For patients in shock or with serious active bleeding call physician-expert
- Check for Signs of Envenomation
- Obtain initial lab studies (protime, Hgb, platelets, fibrinogen)
- Treat pain (IV opioids preferred)

5. When to Call a Physician-Expert
- Direct consultation with a physician-expert is recommended in certain high-risk clinical situations:
  - Life-threatening envenomation
    - Shock
      - Severe active bleeding
    - Facial or airway swelling
  - Hard-to-control envenomation
    - Envenomation that requires more than 2 doses of CroFab®
      - For initial control
    - Recurrence or delayed onset of venom effects
      - Worsening swelling or abnormal labs (protime, fibrinogen, platelets, or hemorrhagic) on follow-up visits
    - Allergic reactions to CroFab®
      - If swelling is considered

6. Post-Discharge Planning
- Instruct patient to return for:
  - Worsening swelling that is not relieved by elevation
    - Severe active bleeding (sepsis, easy bruising, melena, etc.)
  - Instruct patient to seek care if vomiting, signs of neurologic involvement (severe cramping, muscle/joint pains) develop
  - Bleeding precautions (no contact sports, elective surgery, dental work, etc.)
  - Follow-up visits
    - CroFab® not given:
      - No visit needed
    - CroFab® given:
      - Copperhead victims: PRN only
      - Other snakes: Follow up with labs (protime, fibrinogen, platelets, hemorrhagic) twice (1-3 days and 5-7 days), then PRN

7. Treatments Not Proven to Be Beneficial in the Management of Pit Viper Envenomation
- Corticosteroids
- NSAIDs
- Prophylactic antibiotics
- Prophylactic fasciotomy
- Routine use of blood products
- Shock therapy (electricity)
- Steroids (except for allergic phenomena)
- Tourniquets

8. Notes
- This worksheet is adapted from generic materials used by the American Society for the Management of Crotaline Snakebite in the United States: results of an evidence-based consensus workshop in 2011
- In 2010, no algorithm can anticipate all clinical situations: Other algorithms have been used, and local protocol is based on individual patient needs, local resources, local treatment guidelines, and patient preferences or risk assessment in certain situations
- Maintenance therapy may not be indicated in certain situations
- For patients in shock or with serious active bleeding call physician-expert
- Follow-up visits
  - Phases to consider for patients in need of physician-expert evaluation
  - Complete wound care
  - Facilitates where close observation by a physician-expert is available

9. Indicates
- CroFab® (Crotalidae Polyvalent Immune Fab/Drox) is indicated for the management of patients with North American crotalid envenomation. The monoclonal antibody described in the CroFab® therapy is identical to the polyvalent antibody in the Crotalidae Immune Fab/Drox for rattlesnake, copperhead, and cottonmouths (water moccasins). First described in 1977 and now considered to be the standard of care. For more information, please see the accompanying manuscript, available at www.biomedcentral.com.

10. Important Safety Information
- The most common adverse events reported in clinical studies were mild or moderate reactions involving the head and neck (primarily pruritus, rash, alopecia, and swelling), which occurred in 14 out of 42 patients. Three patients experienced a serious adverse event. One patient had a severe allergic reaction (severe swelling and a severe respiratory reaction) to treatment. One patient had a recurrent coagulopathy due to envenomation, which required hospitalization and additional anticoagulant management. In one patient, recurrent coagulopathy (the use of a coagulopathy abnormality after it has been successfully treated with antivenom) characterized by decreased fibrinogen, decreased platelets, and elevated prothrombin time, occurred in one patient treated with a high dose of CroFab®. Three patients experienced a serious adverse event. One patient had a severe allergic reaction (severe swelling and severe respiratory reaction) to CroFab®. One patient had a recurrent coagulopathy due to envenomation, which required hospitalization and additional anticoagulant management. In one patient, recurrent coagulopathy (the use of a coagulopathy abnormality after it has been successfully treated with antivenom) characterized by decreased fibrinogen, decreased platelets, and elevated prothrombin time, occurred in one patient treated with a high dose of CroFab®.

www.crofab.com Contact your poison control center at 1-800-222-1222. Please see attached full prescribing information, including events, precautions, or warnings.