

Includes rattlesnakes, copperheads, and cottonmouths (water moccasins)

Assess Patient Mark leading edge of swelling and tenderness every 15-30 minutes Immobilize and elevate extremity Treat pain (IV opioids preferred) • Obtain initial lab studies (protime, Hgb, platelets, fibrinogen) Update tetanus vaccine Contact poison control center (1-800-222-1222) 9 Apparent Dry Bite/No Bite **Check for Signs of Envenomation** Do not administer CroFab® NONE Swelling, tenderness, redness, ecchymosis, or blebs at the bite site, or Observe patient ≥8 hours Elevated protime; decreased fibringen or platelets, or Repeat labs prior to discharge Systemic signs, such as hypotension, bleeding beyond the puncture If patient develops signs of site, refractory vomiting, diarrhea, angioedema, neurotoxicity envenomation, return to Box 2 **PRESENT Check for Progression of Clinical Effects 10** Apparent Minor Envenomation Swelling that is more than minimal and that is progressing, or Do not administer CroFab® Elevated protime; decreased fibrinogen or platelets, or Observe patient 12-24 hours Any systemic signs Repeat labs at 4-6 hours and prior to discharge **PRESENT** • If patient develops progression of any signs of envenomation, Administer CroFab® return to Box 3 Establish IV access and give IV fluids Pediatric CroFab® dose = adult dose Mix 4-6 vials of CroFab® in 250 mL NS and infuse IV over 1 hour – The starting dose may vary from a minimum of 4 vials to a maximum of 12 vials based on clinical judgment and severity of envenomation - For patients in shock or with serious active bleeding, increase initial **dose of antivenom to 8-12 vials** and call physician-expert (see Box 12) Proceed slowly over the first 10 minutes - A rate of 25-50 mL/hr Carefully observe for any allergic reactions - No allergic reaction: increase to 250 mL/hr until completion Initiate first dose of CroFab® in ED or ICU - For suspected adverse reaction: hold infusion, treat accordingly, and call physician-expert Re-examine patient for treatment response within 1 hour of completion of CroFab® infusion **11** Repeat CroFab® Until Initial **Determine if Initial Control of Envenomation Has Been Achieved Control is Achieved** Swelling and tenderness not progressing If initial control is not achieved Protime, fibrinogen, and platelets normal or clearly improving after 2 doses of CroFab®, call Clinically stable (not hypotensive, etc) physician-expert (see Box 12) Neurotoxicity resolved or clearly improving **Monitor Patient** Perform serial examinations Maintenance CroFab® therapy may be indicated - Read Box 13 (Maintenance CroFab® Therapy) Observe patient 18-24 hours after initial control for progression of any venom effect Follow-up labs 6-12 hours after initial control and prior to discharge • If patient develops new or worsening signs of envenomation, administer additional doses of CroFab® per Box 4 **Determine if Patient Meets Discharge Criteria** No progression of any venom effect during the specified observation period No unfavorable laboratory trends in protime, fibrinogen, or platelets

When to Call a Physician-Expert

Direct consultation with a physician-expert is recommended in certain high-risk clinical situations:

- Life-threatening envenomation
 - Shock
 - Serious 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 hemoglobin) on
- follow-up visits Allergic reactions to CroFab®
- If transfusion is considered
- Uncommon clinical situations
- Bites to the head and neck Suspected compartment syndrome
- Rhabdomyolysis
- Venom-induced hives and angioedema
- Complicated wound issues

If no local expert is available, a physician-expert can be reached through a certified poison center (<u>1-800-222-1222</u>) or the BTG Specialty Solutions Center™ (1-844-293-0007).

Maintenance CroFab® Therapy

- Maintenance therapy is additional CroFab® given after initial control to prevent recurrence of limb swelling
 - Maintenance therapy is 2 vials of CroFab® Q6H x 3 (given 6, 12, and 18 hours after initial control)
- Maintenance therapy may not be indicated in certain situations, such as
 - Minor envenomations
- Facilities where close observation by a physician-expert is available
- Follow local protocol or contact a regional poison center or physician-expert for advice

Post-Discharge Planning

- Instruct patient to return for:
- Worsening swelling that is not relieved by elevation
- Abnormal bleeding (gums, easy bruising, melena, etc)
- Instruct patient where to seek care if symptoms of serum sickness (fever, rash, muscle/joint
- Bleeding precautions (no contact sports, elective surgery, or dental work, etc) for 2 weeks in patients with:
- Rattlesnake envenomation
- Abnormal protime, fibrinogen, or platelet count at any time
- Follow-up visits
- CroFab® not given:
- PRN only
- CroFab® given:
- Copperhead victims: PRN only
- Other snakes: follow up with labs (protime, fibrinogen, platelets, hemoglobin) twice (2-3 days and 5-7 days), then PRN

15 Treatments Not Proven to Be Beneficial in the Management of Pit Viper Envenomation

- Cutting and/or suctioning of
- the wound
- Ice
- NSAIDs
- Prophylactic
- antibiotics Prophylactic

fasciotomy

- allergic phenomena) Tourniquets

Steroids (except for

Routine use of blood

products

Shock therapy

(electricity)

Notes

 This worksheet is adapted from general advice from a panel of US snakebite experts convened in May 2010. No algorithm can anticipate all clinical situations. Other valid approaches exist, and deviations from this worksheet based on individual patient needs, local resources, local treatment guidelines, and patient preferences are expected. This document is not intended to represent a **standard of care.** For more information, please see the accompanying manuscript, available at www.biomedcentral.com.



The SnakeBite911™ App provides access to useful information, from snake safety and basic pit viper bite first aid, to bite management and treatment in the ER.

Get the app:



Google Play





See Post-Discharge Planning (Box 14)

workshop. BMC Emerg Med. 2011;11:2. ED = emergency department; ICU = intensive care unit; IV = intravenous; NS = normal saline; NSAID = nonsteroidal anti-inflammatory drug; PRN = as needed; Q6H = every 6 hours.

Indication

CroFab® Crotalidae Polyvalent Immune Fab (Ovine) is a sheep-derived antivenin indicated for the management of adult and pediatric patients with North American crotalid envenomation. The term crotalid is used to describe the Crotalinae subfamily (formerly known as Crotalidae) of venomous snakes which includes rattlesnakes, copperheads and cottonmouths/water moccasins.

Adapted from: Lavonas EJ, Ruha A-M, Banner W, et al. Unified treatment algorithm for the management of crotaline snakebite in the United States: results of an evidence-informed consensus

Important Safety Information

CONTRAINDICATIONS

Do not administer CroFab® to patients with a known history of hypersensitivity to any of its components, or to papaya or papain unless the benefits outweigh the risks and appropriate management for anaphylactic reactions is readily available.

WARNINGS AND PRECAUTIONS

Coagulopathy: In clinical trials, recurrent coagulopathy (the return of a coagulation abnormality after it has been successfully treated with antivenin), characterized by decreased fibrinogen, decreased platelets, and elevated prothrombin time, occurred in approximately half of the patients studied; one patient required re-hospitalization and additional antivenin administration. Recurrent coagulopathy may persist for 1 to 2 weeks or more. Patients who experience coagulopathy due to snakebite should be monitored for recurrent coagulopathy for up to 1 week or longer. During this period, the physician should carefully assess the need for re-treatment with CroFab® and use of any type of anticoagulant or anti-platelet drug. Hypersensitivity Reactions: Severe hypersensitivity reactions may occur with CroFab®. In case of acute hypersensitivity reactions, including anaphylaxis and anaphylactoid reactions, discontinue infusion and institute appropriate emergency treatment. Patients allergic to papain, chymopapain, other papaya extracts, or the pineapple enzyme bromelain may also have an allergic reaction to CroFab®. Follow-up all patients for signs and symptoms of delayed allergic reactions or serum sickness (e.g., rash, fever, myalgia, arthralgia).

ADVERSE REACTIONS

The most common adverse reactions (incidence ≥ 5% of subjects) reported in the clinical studies were urticaria, rash, nausea, pruritus and back pain. Adverse reactions involving the skin and appendages (primarily rash, urticaria, and pruritus) were reported in 12 of the 42 patients. Two patients had a severe allergic reaction (severe hives and a severe rash and pruritus) following treatment and one patient discontinued CroFab® due to an allergic reaction. Recurrent coagulopathy due to envenomation and requiring additional treatment may occur.



© 2022 BTG International Inc. All rights reserved.

US-CRF-2200109 Dec 2022 BTG and the BTG roundel logo are registered trademarks of BTG International Ltd. BTG Specialty Solutions Center™ is a trademark of BTG International Ltd.

Google Play and the Google Play logo are trademarks of Google Inc.

CroFab® is a registered trademark of BTG International Inc. SnakeBite911 and the snakehead logo are trademarks of Protherics UK Ltd. Apple and the Apple logo are trademarks of Apple Inc., registered in the U.S. and other countries. App Store is a service mark of Apple Inc., registered in the U.S. and other countries



In the case of poisoning, please call Poison Help at 1-800-222-1222 immediately; while the American Association of Poison Control Centers and its members do not endorse any antivenom product over any other, the nation's poison experts stand ready to assist all in need of help.

24-Hour Medical Information: BTG Specialty Solutions Center™: • <u>1-877-377-3784</u>

1-844-293-0007

crotalidae polyvalent immune fab (ovine)