# STATE TOXINOLOGY SERVICES

Toxinology Dept., Women's & Children's Hospital, North Adelaide SA 5006 AUSTRALIA

# SNAKEBITE MANAGEMENT OVERVIEW DOCUMENT

**www.toxinology.com record number** SN0181

**Family**
Elapidae

**Scientific name combined**
*Naja haje haje*

**Common name**
Egyptian Cobra , Brown Cobra

**Global region in which snake is found**
North Africa + Sub-Saharan Africa

## CLINICAL OVERVIEW

Egyptian cobras are rarely reported as causing bites, so clinical data is limited. It appears they cause moderate, occasionally marked local pain and swelling, sometimes blistering, but not necrosis. The more important effect is neurotoxic paralysis, which can be severe, with respiratory paralysis. It may develop early or be delayed nearly 24hrs post bite. Antivenom and respiratory support are the essentials in treatment.

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### First aid

1. After ensuring the patient and onlookers have moved out of range of further strikes by the snake, the bitten person should be reassured and persuaded to lie down and remain still. Many will be terrified, fearing sudden death and, in this mood, they may behave irrationally or even hysterically. The basis for reassurance is the fact that many venomous bites do not result in envenoming, the relatively slow progression to severe envenoming (hours following elapid bites, days following viper bites) and the effectiveness of modern medical treatment.
2. The bite wound should not be tampered with in any way. Wiping it once with a damp cloth to remove surface venom is unlikely to do much harm (or good) but the wound must not be massaged. For Australian snakes only, do not wash or clean the wound in any way, as this may interfere with later venom detection once in a hospital.
3. All rings or other jewellery on the bitten limb, especially on fingers, should be removed, as they may act as tourniquets if oedema develops.
4. If the bite is on a limb, a broad bandage (even torn strips of clothing or pantyhose) should be applied over the bitten area at moderate pressure (as for a sprain; not so tight circulation is impaired), then extended to cover as much of the bitten limb as possible, including fingers or toes, going over the top of clothing rather than risking excessive limb movement by removing clothing. The bitten limb should then be immobilised as effectively as possible using an extemporised splint or sling.
5. If there is any impairment of vital functions, such as problems with respiration, airway, circulation, heart function, these must be supported as a priority. In particular, for bites causing flaccid paralysis, including respiratory paralysis, both airway and respiration may be impaired, requiring urgent and prolonged treatment, which may include the mouth to mask (mouth to mouth) technique of expired air transfer. Seek urgent medical attention.
6. Do not use Tourniquets, cut, suck or scarify the wound or apply chemicals or electric shock.
7. Avoid peroral intake, absolutely no alcohol. No sedatives outside hospital. If there will be considerable delay before reaching medical aid, measured in several hours to days, then give clear fluids by mouth to prevent dehydration.
8. If the offending snake has been killed it should be brought with the patient for identification (only relevant in areas where there are more than one naturally occurring venomous snake species), but be careful to avoid touching the head, as even a dead snake can envenom. No attempt should be made to pursue the snake into the undergrowth as this will risk further bites.
9. The snakebite victim should be transported as quickly and as passively as possible to the nearest place where they can be seen by a medically-trained person (health station, dispensary, clinic or hospital). The bitten limb must not be exercised as muscular contraction will promote systemic absorption of venom. If no motor vehicle or boat is available, the patient can be carried on a stretcher or hurdle, on the pillion or crossbar of a bicycle or on someone's back.
10. Most traditional, and many of the more recently fashionable, first aid measures are useless and potentially dangerous. These include local cauterization, incision, excision, amputation, suction by mouth, vacuum pump or syringe, combined incision and suction ("venom-ex" apparatus), injection or instillation of compounds such as potassium permanganate, phenol (carbolic soap) and trypsin, application of electric shocks or ice (cryotherapy), use of traditional herbal, folk and other remedies including the ingestion of emetic plant products and parts of the snake, multiple incisions, tattooing and so on.

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### Clinical summary

As a group, cobras present two major clinical profiles; minimal local reaction, but with progressive flaccid paralysis OR significant local reaction (pain, swelling, discolouration, blistering, even necrosis) with, or more usually without even mild flaccid paralysis. Most older textbooks listing snakebite will only mention the first (neurotoxic) profile, but both in Africa and Asia, it is the second profile which dominates. The majority of medically important cobras (ie those causing most bites) cause local tissue injury, ± paralysis. However, there are a few species that seem never to cause significant tissue injury, but only paralysis. Some species can cause either profile, making diagnosis difficult, because purely paralytic snakebite in some areas, such as India & Sri Lanka, is typical of krait bite, with which this type of cobra bite can easily be confused.

Some species of cobra (a subgroup of those causing local tissue injury) can also spit their venom, causing venom spit ophthalmia. *Naja haje* does not appear to spit its venom.

*Naja haje* is common and widely distributed, though bites appear uncommon, but deaths from bites are not uncommon.

Cobras causing both extensive local effects, ± flaccid paralysis, such as *Naja haje*, generally cause a painful bite, with progressive swelling and if necrosis develops, then there is often discolouration of the skin and/or blistering first. However, for *Naja haje*, even though extensive swelling and blistering occur, it does not progress to necrosis of skin. In addition to these unpleasant local effects, there may be systemic symptoms, such as headache, nausea, vomiting, abdominal pain and commonly, evidence of mild, sometimes moderate to severe flaccid paralysis. This may develop within a few hours or be delayed >12 hrs. Ptosis is usually the first sign, followed by ophthalmoplegia, then if it progresses, dysarthria, dysphagia, poor tongue extrusion, drooling, limb weakness, lastly respiratory paralysis.

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### Treatment summary

Cobra bites vary from species to species. Many in both Africa and Asia cause major local effects, including swelling, pain, blistering and necrosis. Some of these also cause flaccid paralysis in a minority of cases. Other species cause flaccid paralysis without major local effects.

For all cases, admission to an ICU, urgent triage and assessment are required. If there is evidence of respiratory distress or paralysis, intubation and ventilation takes precedence. Establish an IV line, give an initial IV fluid load, take blood for routine tests, monitor fluid input/output. The local wound, if significant, should be managed as for bites by other snakes causing local tissue injury. Blisters should be drained with a syringe. If necrosis develops, surgical debridement is appropriate. Compartment syndrome is unlikely to develop, but if it is suspected, ensure it is confirmed by direct manometry or Doppler US before considering fasciotomy. The extensive wounds possible following snakebite necrosis are subject to secondary infection and if chronic, later development of squamous cell carcinoma. Both for functional reasons and to avoid the latter complication, surgical repair is required, even just skin grafting being useful. If there is evidence of infection, ensure a swab is performed for culture & sensitivity prior to commencing any antimicrobial therapy.

The role of antivenom in cobra envenoming is not entirely clear. For cases developing significant paralysis, it is the treatment of choice, though the correct antivenom must be used, where available, as there are considerable differences between species. For paralysis, in addition to antivenom, it is appropriate to try the tensilon test and if positive, to use neostigmine + atropine as an adjunct to antivenom. The initial and (if required) subsequent doses of antivenom will vary from antivenom to antivenom, but in all cases it must be given IV.

For local tissue injury, the role of antivenom is less certain, but it is generally accepted it may be useful, especially if used early. Again, it must be used IV, not IM and definitely not injected locally.

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### Available antivenoms

Polyvalent Snake Antivenom
National Antivenom and Vaccine Production Centre
P.O. Box 22490
11426 Riyadh
Saudi Arabia
Phone: ++966-1-252-0088
Fax: ++966-1-252-0188
Email: navpc@hotmail.com; info@antivenom-center.com
Website: www.antivenom-center.com

Bivalent Naja / Walterinnesia Snake Antivenom
National Antivenom and Vaccine Production Centre
P.O. Box 22490
11426 Riyadh
Saudi Arabia
Phone: ++966-1-252-0088
Fax: ++966-1-252-0188
Email: navpc@hotmail.com; info@antivenom-center.com
Website: www.antivenom-center.com

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### Management Flowchart