

# STATE TOXINOLOGY SERVICES

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

## SNAKEBITE MANAGEMENT OVERVIEW DOCUMENT

www.toxinology.com record number SN0170

Family Elapidae  
Scientific name combined *Dendroaspis polylepis*  
Common name Black Mamba , Black-mouthed Mamba

Global region in which snake is found

### CLINICAL OVERVIEW

Mambas are amongst the most dangerous of all African snakes, but rates and severity of envenoming vary with species. In general, mamba bites cause local pain, mild to moderate, occasionally severe swelling, rarely necrosis, but it is systemic effects that cause most concern, especially progressive flaccid paralysis, respiratory paralysis, muscle tremor and profuse salivation. They do not cause myolysis or coagulopathy and renal failure is unlikely. Antivenom and respiratory support are the mainstays of treatment. *Dendroaspis polylepis* is the most dangerous mamba species, with a high rate of major envenoming and a high potential to cause fatalities.



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## SNAKEBITE MANAGEMENT OVERVIEW DOCUMENT

### SNAKEBITE MANAGEMENT OVERVIEW DOCUMENT (continued)

#### *Dendroaspis polylepis*

#### **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.

## **SNAKEBITE MANAGEMENT OVERVIEW DOCUMENT**

### **SNAKEBITE MANAGEMENT OVERVIEW DOCUMENT (continued)**

*Dendroaspis polylepis*

#### **Clinical summary**

Bites by *Dendroaspis polylepis* are potentially very severe and untreated may carry a high lethality rate. Dry bites do occur, but most bites will cause major envenoming. The large size of this snake and its arboreal habits result in a significant number of bites high on the body, including the head/neck, where more rapid envenoming might result.

Bites typically cause local pain, swelling, that may be extensive, but more usually is only mild and local necrosis does not occur. General systemic effects include nausea, vomiting, diarrhoea, abdominal pain, conjunctival congestion, "strange taste in the mouth". Specific neurotoxic effects include rapid onset progressive flaccid paralysis, starting as soon as 15 minutes post bite, with ptosis, diplopia, dysphagia, dysarthria, then respiratory paralysis & failure. In some cases onset of paralytic features may be delayed more than 7 hours. Other neurotoxic effects, non-paralytic (neuro-excitatory) include muscle fasciculations, parasthesiae, increased sweating & salivation and "gooseflesh".

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### **SNAKEBITE MANAGEMENT OVERVIEW DOCUMENT (continued)**

*Dendroaspis polylepis*

#### **Treatment summary**

Mamba bites in general can result in severe, life threatening envenoming rapidly, particularly causing respiratory paralysis and failure. Very urgent assessment and management is required. All cases must be admitted, as envenoming can be delayed >7hrs and can recur over several days, despite treatment, so early discharge is inappropriate.

Insert an IV line and give an initial IV fluid load. Support respiration if required, including intubation & ventilation. Major swelling of the bitten limb can occur. It is unclear if this can result in hypovolaemic shock secondary to fluid shifts. Except for bites by *Dendroaspis polylepis*, there is a risk of local necrosis, so good wound care is required. There are no reports of compartment syndrome occurring.

The most important treatments are support of failing respiratory function and IV antivenom therapy using the South African polyvalent product. Should this become unavailable, there is no other antivenom currently considered to be useful for mamba bites. The initial dose will depend on severity of envenoming, but is in the range 5-10 vials. Further doses may be needed. The criteria for further dosing are not well established, but if there is inadequate response by 1 hr after the initial dose, consider giving a repeat dose (also 5-10 vials). Always have adrenaline & resuscitation equipment ready in case of adverse reactions. It is unclear if anticholinesterase will be effective, with one report of useful response (*Dendroaspis viridis* bite), but since a prime venom component is an effective anticholinesterase (fasciculins), the value of this therapy is most uncertain theoretically.

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### **SNAKEBITE MANAGEMENT OVERVIEW DOCUMENT (continued)**

*Dendroaspis polylepsis*

#### **Available antivenoms**

SAIMR Polyvalent Antivenom  
South African Vaccine Producers (Pty) Ltd  
Postal -  
P.O. Box 28999  
Sandringham 2131  
Gauteng Province

Physical -  
1 Modderfontein Road, Sandringham  
Johannesburg  
South Africa  
Phone: ++27-11-882-9940  
Fax: ++27-11-882-0812  
Email: [savpunit@global.co.za](mailto:savpunit@global.co.za) / [savpqual@global.co.za](mailto:savpqual@global.co.za)  
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*Dendroaspis polylepis*

#### Management Flowchart

