

**Criteria for fasciotomy in snake-bitten limbs
All three must be present**

- haemostatic abnormalities have been corrected
(antivenom with or without clotting factors)
- clinical evidence of an intracompartmental syndrome
- intracompartmental pressure >40 mmHg (in adults)

5.9 Rehabilitation

Restoration of normal function in the bitten part after the patient has been discharged from hospital is not usually supervised. Conventional physiotherapy may well accelerate this process. In patients with severe local envenoming, the limb should be maintained in a functional position. For example, in the leg, equinus deformity of the ankle should be prevented by application of a back slab.

6. Management of cobra spit ophthalmia

First aid consists of irrigating the affected eyes and other mucous membranes with liberal quantities of water or any other available bland liquid. Instillation of 0.5% adrenaline drops relieves pain and inflammation. In view of the risk of corneal abrasion, fluorescein staining or slit lamp examination is essential. Otherwise, topical antimicrobials (tetracycline or chloramphenicol) should be applied to prevent endophthalmitis or blinding corneal opacities. Some ophthalmologists recommend the use of a dressing pad to close the eye.

The instillation of diluted antivenom may cause local irritation and is of uncertain benefit. It is not recommended.

7. Conclusions and main recommendations

1. It is clear that in many parts of the Southeast Asian region, snake bite is an important medical emergency and cause of hospital admission. It results in the death or chronic disability of many active younger people, especially those involved in farming and plantation work. However, the true scale of mortality and acute and chronic morbidity from snake bite remains uncertain because of inadequate reporting in almost every part of the region.

To remedy this deficiency, it is strongly recommended that snake bite should be made a specific notifiable disease in all countries in the Southeast Asian region.

2. Snake bite is an occupational disease of farmers, plantation workers, herdsmen, fishermen and other food producers. It is therefore a medical problem that has important implications for the nutrition and economy of the countries where it occurs commonly.

It is recommended that snake bite should be recognised formally as an important occupational disease in the Southeast Asian region.

3. Despite its importance, there have been fewer proper clinical studies of snake bite than of almost any other tropical disease. Snake bites probably cause more deaths in the region than do *Entamoeba histolytica* infections but only a small fraction of the research investment in amoebiasis has been devoted to the study of snake bite.

It is recommended that governments, academic institutions, pharmaceutical, agricultural and other industries and other funding bodies, should actively encourage and sponsor properly designed clinical studies of all aspects of snake bite.

4. Some ministries of health in the region have begun to organise training of doctors and other medical workers in the clinical management of snake bite patients. However, medical personnel throughout the region would benefit from more formal instruction on all aspects of the subject. This should include the identification of medically-important species of snake, clinical diagnosis and the appropriate use of antivenoms and ancillary treatments.

It is recommended that education and training on snake bite should be included in the curriculum of medical schools and should be addressed specifically through the organisation of special training courses and other educational events.

5. Community education on snake bite is outside the terms of reference of this publication. However, it is clear that this is an essential component of any community programme for prevention of snake bite.

Community education about venomous snakes and snake bite is strongly recommended as the method most likely to succeed in preventing bites.

6. Most of the familiar methods for first-aid treatment of snake bite, both western and “traditional/herbal”, have been found to result in more harm (risk) than good (benefit). Their use should be discouraged and they should never be allowed to delay the movement of the patient to medical care at the hospital or dispensary.

Recommended first-aid methods emphasise reassurance, immobilisation of the bitten limb and movement of the patient to a place where they can receive medical care as soon as possible.

7. Diagnosis of the species of snake responsible for the bite is important for optimal clinical management. This may be achieved by identifying the dead snake or by inference from the “clinical syndrome” of envenoming.

A syndromic approach should be developed for diagnosing the species responsible for snake bites in different parts of the region.

8. Antivenom is the only effective antidote for snake venom. However, it is usually expensive and in short supply and its use carries the risk of potentially dangerous reactions.

- 1. It is recommended that antivenom should be used only in patients in whom the benefits of treatment are considered to exceed the risks. Indications for antivenom include signs of systemic and/or severe local envenoming.**
- 2. Skin/conjunctival hypersensitivity testing does not reliably predict early or late antivenom reactions and is not recommended.**
- 3. It is recommended that whenever possible antivenom should be given by slow intravenous injection or infusion.**
- 4. Epinephrine (adrenaline) should always be drawn up in readiness in case of an early anaphylactic antivenom reaction.**
- 5. Subcutaneous epinephrine (adrenaline) may reduce the incidence of early antivenom reactions if given immediately before the start of antivenom treatment.**

9.

When no antivenom is available, judicious conservative treatment can in many cases save the life of the patient.

10.

In the case of neurotoxic envenoming with bulbar and respiratory paralysis, antivenom alone cannot be relied upon to prevent early death from asphyxiation. Artificial ventilation is essential in such cases. In countries where neurotoxic envenoming is common, more doctors should be trained to carry out endotracheal intubation and mechanical ventilators should be available in major hospitals.

11.

Conservative management and, in some cases, dialysis, is an effective supportive treatment for acute renal failure in victims of Russell's viper, saw-scaled viper and sea snake bites.

12.

Fasciotomy should not be carried out in snake bite patients unless or until haemostatic abnormalities have been corrected, clinical features of an intracompartmental syndrome are present and a high intracompartmental pressure has been confirmed by direct measurement.