SNake-BITE MITIGATION INITIATIVE
GUJARAT CHAPTER

Snake-bites
Early in 2009, snake-bite was finally included in the WHO’s list of neglected tropical diseases confirming the experience in many parts of South East Asia region that snake-bite is a common occupational hazard of farmers, plantation workers and others, resulting in tens of thousands of deaths each year and many cases of chronic physical handicap (WHO, 2007; Williams, 2010).

Snake-bites in India
India’s first exhaustive study on annual snake-bite deaths, the Million Death Study\(^1\) (April 2011), has revealed the annual death figures to be as high as 46,000 while the total number of annual snake-bites are estimated to be around 14 lacs (bite to death ratio is 64:1). This means 126 people die every day due to snake-bites in India. The estimated total of 46,000 national snake-bite deaths constitutes about 5% of all injury deaths and nearly 0.5% of all deaths in India. Snakebite remains an underestimated cause of accidental death in modern India, causing about one death for every two HIV-related deaths. It is more than 30-fold higher than the number declared from earlier official hospital returns. The underreporting of snake bite deaths has a number of possible causes. Most importantly, it is well known that many patients are treated and die outside health facilities, especially in rural areas.

There is a very specific trend in India. Victims are mainly farmers and farm labourers working or living in agricultural environments. There appear to be more victims who are under educated as compared to primary level education or above. Majority of deaths occur outside of a health facility. The victims either do not go to health centres/hospitals or there is a huge lack of understanding to seek medical help. Snake-bites are typically very high during the monsoon season. The sheer high number of bites occur in high prevalence states that also happen to be agricultural states namely;

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Gujarat | The need

Gujarat has a death rate of 3.5 per 100,000 and is one of the high prevalence states. This translates to around 2,100 annual deaths in Gujarat state from around 134,000 bites.

Economic burden to the victims goes equally underestimated. Death clearly causes emotional and in case of an earning member, economical burden. Victims who are not dead but have major permanent physical impairment become bigger burdens on their families’ especially poor rural farmers as they are unable to work physically as before. The treatment cost is also very high. One vial of Anti-Snake Venom Serum costs up to Rs.950/-2 and in serious cases, over 100 vials3 are administered! This cost plus the supportive treatment costs and hospital charges can be very expensive.

Treatments can get more complicated. Bites from viper snakes can cause severe bleeding disorders including cerebral haemorrhage and necrosis at the bite site, and these can result in blood or plasma transfusion and/or skin grafts and major surgery. Elapid (cobras and kraits) bites frequently cause severe respiratory distress/failure resulting in a requirement for ventilator use and multi-speciality hospitals. These complications from specific snakes have further increased the treatment costs for the victims. Poor rural victims cannot afford this.

People have been killing several thousands of snakes every year but there’s still 46,000 annual deaths which clearly indicates that killing snakes is not working. Why is killing not working? The four responsible species (spectacled cobra, common krait, Russell’s viper and saw-scaled viper) are farmland species that are highly adaptive and are found in higher densities in agricultural landscape due to high availability of food – rats and mice. They in fact play a very important role in controlling the rodent populations and hence their existence is important to us.

As we know the only reason a snake bites is because it is accidentally threatens and biting is its only self-defence. Majority of the victims are rural farmers who live around agricultural lands. Most of the times they either put their hands on or close to snakes while harvesting, or step on them unknowingly. Snakes live in certain preferred conditions and have a typical way of living. If the rural communities are aware of this, they can prevent getting bitten if they follow simple precautions. This is similar to how we prevent many road accidents by following safety protocols.

More complications

Recent studies have shown difference in venom composition of same species in different regions. This means a cobra from Tamil Nadu has slightly different venom than a cobra from Gujarat. Most of venom for anti-venom production is procured from Tamil Nadu. An average cobra bite in Chennai needs 2-3 vials, while an average bite in Ahmedabad needs 20-30 vials as the anti-venom cannot neutralize everything because the venom is different. The government hospitals give the first dosage of anti-venom serum (up to 10 max, more than which you have to pay for) for free if the hospitals have them in stock. If not, the cost on an average would be 950 x 25 = 23,750/- plus all the supportive treatment and hospital costs which can go up to a total of Rs.50,000/- or more. How can poor rural farmers afford this? They cannot and hence often choose “destiny” over treatment.

Because the available Anti-Snake Venom Serum does not efficiently neutralize the venom in victim’s body, the damage caused by the venom is far more and often extensive supportive treatment is required.

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2 Current cost of Anti-Snake Venom Serum is between Rs.950/- to 1,100/- per vial.
3 Extreme envenomation in common krait bites in Gujarat need over 100 vials.
Mitigation measures

Below are the aspects that need to be worked on:

- Train communities in snake-bite prevention
- Train select members in safe snake removal techniques
- Train communities in proper first aid protocol
- Train clinicians and paramedics in clinical post bite management
- Carry out epidemiology surveys to measure impact

Majority of these bites can be avoided with some basic precaution and proactive thinking. Awareness about right first aid and treatment options can bring down deaths due to home remedies and village black magic man. All stakeholders need to work collectively on getting communities trained in prevention measures.

As part of this initiative the Ministry of Health, Gujarat was approached. In March 2014, a *State Level Task Force for Snake-bite Management* has been constituted by the Government of Gujarat to frame clinical treatment guidelines, improve quality of treatment in case of snake-bite, upgrade treatment protocols to incorporate in Standard Treatment Guidelines and prepare literature focusing on prevention measures through community education.

However, we appeal all stakeholders to actively participate in this initiative and offer mitigation measures on their part to collectively bring down the number of bites and related deaths in Gujarat. In the larger scope, the successful mitigation model of Gujarat can be replicated in all 13 high snake-bite prevalence states in India.

Some of the suggestions that can immediately help the situation are mentioned below:

1. Inclusion of snake-bites in Mukhyamantri Amrutam Yojana for free treatment to BPL card holders so that they can be encouraged to seek medical help.
2. Encouraging use of 108 Emergency Response Service for snake-bites in rural areas. A fully equipped ambulance with trained paramedics can reach the victim in an average of 23 minutes; all at no cost.
3. Community education by various tools like focussed documentary, animations, community talks, advertisements, posters at Primary Health Centres, etc.
4. Dedicated helpline with pre-recorded voice instructions in Gujarati in case of a snake-bite to ensure the victims do as recommended to seek medical help and don’t try other remedies. This can be their first hand consultation in plain local language.
5. Inclusion of snake-bite prevention measures in school curriculum of Gujarat State Board. Reinforcement of precaution and proactive thinking can make a huge difference.
6. Training communities in safe snake removal techniques in collaboration with the Forest Department.

We look forward to working with everyone to effectively minimize snake-bite deaths in Gujarat and hopefully rest of India will follow our example.

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*The State Level Task Force for Snake-bite Management is currently working on developing post bite clinical treatment guidelines, first aid protocol and prevention measures. Final draft of the same has been submitted to the Commissioner of Health, for his approval.*
References

Snakebite Mortality in India: A Nationally Representative Mortality Survey (2011). World Health Organization


