



Perspective

Is elimination of kala-azar feasible by 2017?

Kala-azar (visceral leishmaniasis, VL) is a major public health problem in four States of India including Bihar, affecting the poor sections of the society. The disease has been targeted for elimination by 2017. In fact, the National Health Policy, 2002 had set the goal of kala-azar elimination by the year 2010¹ which was revised to 2015². The target date has been further revised to 2017³. Elimination is defined as reducing the annual incidence of kala-azar to less than 1 case per 10,000 population at the sub-district level. At present, all programmatic activities are being implemented through the National Vector Borne Disease Control Programme⁴. With a year to go for the target date, it is opportune time to review the situation and assess the current challenges and prospects of kala-azar elimination by the due date.

As one of the neglected tropical diseases, kala-azar is reported mainly from six countries namely Bangladesh, Brazil, Ethiopia, India, South Sudan and Sudan⁵. In 2005, the Government of India, Nepal and Bangladesh signed a tripartite memorandum of understanding for the elimination of kala-azar; later on Thailand and Bhutan also joined the group. Nepal is likely to achieve kala-azar elimination soon⁵.

Historically, dichlorodiphenyltrichloroethane (DDT) was used as an insecticide during the malaria eradication programme in India launched in 1953⁶. As a result, kala-azar was brought down to near eradication during the early 1960s. However, due to emergence of insecticide resistance in malaria vector, the DDT spray was discontinued in 1964. Thereafter, kala-azar resurged with return of sandflies⁷, leading to a big epidemic during the late 1970s, with 100,000 cases⁸. The National Kala-azar Control Programme was initiated by the Government of India in 1990-1991⁹ with sodium antimony gluconate (SAG) as the main drug used for the treatment of cases and DDT for vector control. The strategy for the national programme for the elimination of kala-azar included

early diagnosis and complete case management; integrated vector management and vector surveillance; supervision, monitoring, surveillance and evaluation; strengthening capacity of human resource in health; advocacy, communication and social mobilization for behavioural impact and inter-sectoral convergence; and finally programme management⁴. The doses and duration of treatment with SAG were standardized in a study conducted in Bihar¹⁰. During 1991-1992, there was an epidemic of VL in Bihar, India, with 250,000 cases¹¹. In our clinic in Bihar, we started using amphotericin-B in 1991 for the treatment of SAG-resistant cases and also for fresh cases¹².

Over time, kala-azar cases in India have shown a decline from 24,212 with 93 deaths in 2009 to 8223 cases with nine deaths in 2015. Kala-azar cases in Bihar were 20,519 with 80 deaths in 2009 which decreased to 6280 with five deaths in 2015. In Muzaffarpur which was a heavily affected district of Bihar, 2308 cases of kala-azar were reported with 11 deaths in 2009, which dropped to 711 with no death in 2015, in Jharkhand there were 20,875 cases of kala-azar with 12 deaths in 2009 which decreased to 1262 cases with no death in 2015. In West Bengal, 750 cases were reported with no death in 2009 which decreased to 556 cases with no death in 2015 (nvbdcp.gov.in/Doc/Annual-report-NVBDCP-2014-15.pdf; <http://nvbdcp.gov.in/ka-cd.html>). The trend analysis confirmed the declining trend in India as well as in Bihar (Figs 1 and 2).

Considerable research has already been done in the country which provides insights on evolving situation of kala-azar in the country as well as on the treatment and prevention aspects. For example, there is evidence that DDT, used initially for malaria elimination and is manufactured in India has become less effective or ineffective¹³⁻¹⁶. Therefore, the practice of using DDT needs to be discontinued. Instead, newer insecticides such as pyrethroids or malathion should be used.

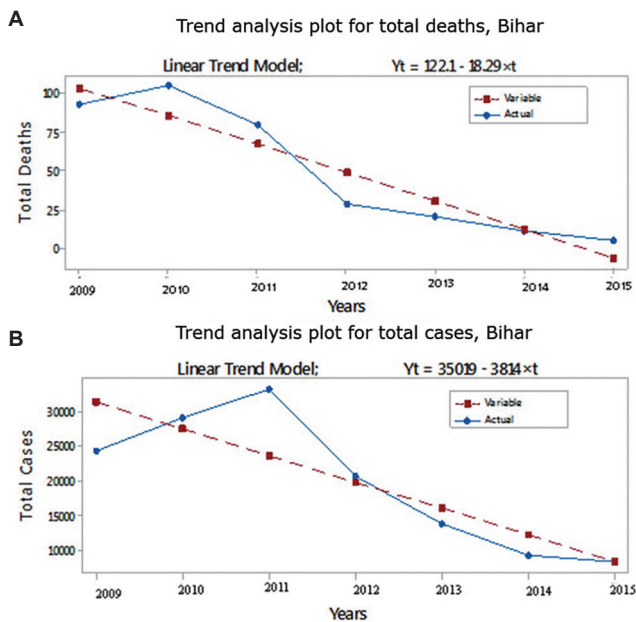


Fig. 1. (A & B) Trend analysis of total deaths and cases in kala-azar in India from 2009 to 2015.

Source: <http://nvbdcp.gov.in/ka-cd.html>; nvbdcp.gov.in/Doc/Annual-report-NVBDCP-2014-15.pdf

A new oral drug miltefosine¹⁷ which came in the market with a bang became less effective in a short span of time. Not only were there high number of relapse cases, but the cases of post kala-azar dermal leishmaniasis (PKDL) also increased after cure with miltefosine. In view of this, the drugs which need to be used in this last phase of epidemic are amBisome and amphotericin-B. Ambisome is given 10 mg/kg bodyweight on the first day, a gap of one day and another 10 mg/kg body weight of the drug on the third day. Administration of ambisome 15 mg/kg bodyweight in a single dose can be fatal, whereas divided doses have not caused any toxic effect^{18,19}. Amphotericin-B can be given at a dose of 1 mg/kg bodyweight for 20 days with precautions taken²⁰. The drug should not be given if the haemoglobin is <5 g/dl. Serum levels of sodium, potassium and urea should be closely watched if toxicity appears; the drug has to be discontinued for some days and then started again.

PKDL cases require a longer time period for treatment and cure even with amBisome, two to three courses are required over 15-20 days²¹. Disappearance of all lesions should be the criteria of cure. Some cases of kala-azar complicated with HIV posed a difficult therapeutic problem; both the diseases have

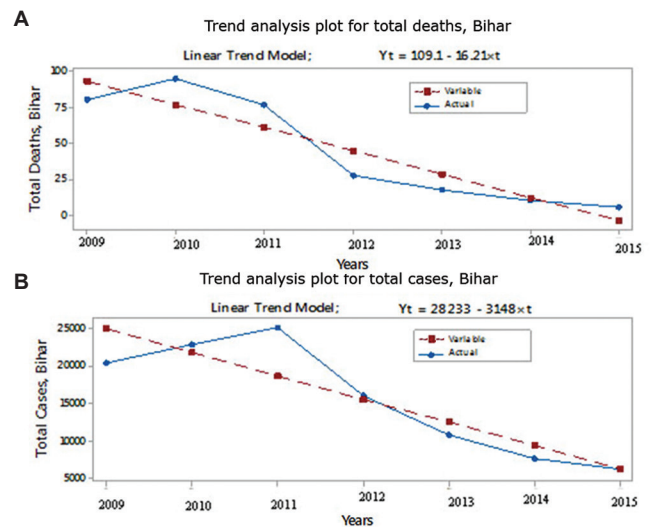


Fig. 2. (A & B) Trend analysis plots for total deaths and total cases in kala-azar in Bihar (India) from 2009 to 2015.

Source: <http://nvbdcp.gov.in/ka-cd.html>, nvbdcp.gov.in/Doc/Annual-report-NVBDCP-2014-15.pdf.

to be treated simultaneously²². Kala-azar cases with HIV infection require repeated treatment with both amBisome and antiretroviral drugs²².

In view of the changing scenario of kala-azar in the country, the Ministry of Health and Family Welfare, Government of India and the State Governments need to work not only for case finding but also for curing these patients with effective drugs. The omission of kala-azar in the priority list of diseases to be dealt by the government has raised a cause of concern²³.

To achieve elimination in 2017, the Government should be ready to have a fortnightly review of kala-azar situation and the experts need to visit the affected districts in highly affected States such as Bihar, Jharkhand and West Bengal, besides keeping a close watch on all the affected States. The search of cases should be both active and passive. Supervisory support should be provided to local doctors and private practitioners alike. Any case of fever of more than two weeks duration should be tested for kala-azar.

In the severely affected areas, active search for the kala-azar cases could also be done. After due publicity patients with fever of more than two weeks duration should be asked to assemble at a common place. They should be examined for enlargement of spleen and liver, and tested for rk39 antibodies. Those found positive for anti-rk39 antibodies should be transferred

to district hospitals or other secondary or tertiary care hospitals for further investigations for the confirmation of diagnosis. The idea behind this system is that patients being the only source of infection are transferred away from the area as they can be the source of infection to others through sandflies. This method was found to be effective for elimination of kala-azar in certain villages²³. The local ecology, environmental factors and climatic conditions such as temperature and rainfall can also play an important role in disease transmission and persistence.

In conclusion, kala-azar may be eliminated by 2017 if we take up elimination programme with renewed vigour, effective drugs, better insecticides and strict supervision. Given the focal nature of the disease, availability of effective interventions including newer drugs and diagnostics, absence of animal reservoir in the Indian subcontinent, it should be possible to eliminate kala-azar from India within the time frame. This would, however, require close monitoring and evaluation of Programme activities, by reaching out to interested experts/individuals and institutions for technical support.

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