

# Regional Strategic Framework for Elimination of Kala-azar from the South-East Asia Region (2005-2015)

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# 1. INTRODUCTION

## 1.1 Current Burden of Visceral Leishmaniasis (Kala-azar) in the SEA Region

Leishmaniasis occurs in two forms: (a) cutaneous and (b) visceral. Visceral Leishmaniasis (kala-azar) is often fatal if untreated. It is transmitted by the bite of the infected female phlebotomine sandfly. Leishmaniasis are endemic in 88 countries with an estimated yearly incidence of 1-1.5 million cases of cutaneous leishmaniasis (CL) and 500 000 cases of visceral leishmaniasis (VL). In WHO's South-East Asia Region, about 147 million people in three countries (Bangladesh, India and Nepal) of the Region are at risk of kala-azar. The border districts in Bhutan are also at risk due to movement of people from neighbouring countries. During 2000-2002, the reported cases in Bangladesh, India and Nepal were 24 287, 18 472 and 22 030 respectively. Estimates indicate about 100 000 cases per year in the Region. The disease occurs predominantly in the poor and marginalized communities. Nearly 2.4 million disability-adjusted life years (DALYs) are lost each year due to kala-azar globally. The SEA Region accounts for the loss of about 400 000 DALYs. The economic burden of the disease in the affected areas of the Region is large even though precise estimates are not available.

## 1.2 Factors Favourable for Elimination of Kala-azar

- Biological factors
  - In the SEA Region, man is known to be the only reservoir host for kala-azar and *Phlebotomus argentipes* is the only known vector. These unique features favour elimination of the disease.
- Technical factors
  - Availability of a new, reasonably safe and effective oral drug (miltefosine). Alternative effective medicines are available to provide back-up in referral hospitals.
  - Availability of reliable and easy-to-use rapid 'rk 39' diagnostic dipstick test kits.

- Positive experiences in the past in controlling the disease using indoor residual spraying (IRS) as a collateral benefit of malaria control.
- *Strong political commitment* in the three countries through intercountry collaboration favours feasibility of elimination of the disease, and
- The disease is limited to 96 districts in the three endemic countries; therefore, elimination efforts can be focused.

### 1.3 Constraints in Elimination

- Lack of knowledge of the incidence of the disease constrains the planning of elimination.
- Patients of kala-azar seek treatment from private doctors/quacks who provide incomplete or inappropriate treatment, which is expensive. Treatment is often delayed. Delay in treatment favours continued transmission of the disease. The drugs that are currently used show variable efficacy and are toxic. In India, resistance is reported in more than 50% cases treated with SAG in some districts in Bihar state.
- There is persistence of the reservoir in the form of cases of post-kala azar dermal lesions (PKDL). Cases of PKDL have been increasing steadily since the 1970s. These cases often remain undetected and untreated.
- Vectors are in abundance in peri-domestic areas. Outdoor sleeping habits of people during the summer months favours transmission of the disease.
- The vector thrives in cracks and crevices of mud-plastered houses, heaps of cow dung, in rat burrows, and in bushes and vegetations around houses where spraying may not be done.
- The disease is increasingly affecting the poorest in the community. They cannot afford the expensive treatment.

### 1.4 Relevance of Kala-azar Elimination to Millennium Development Goals

The first Millennium Development Goal is to eradicate extreme poverty and hunger. Elimination of kala-azar will help in the mitigation of poverty in the affected areas.

## **2. GOAL AND TARGET**

### **2.1 Goal**

To contribute to improving the health status of vulnerable groups and at-risk population living in kala-azar-endemic areas of Bangladesh, India and Nepal by the elimination of kala-azar so that it is no longer a public health problem.

### **2.2 Target**

To reduce the annual incidence of kala-azar to less than one per 10000 population at district or sub-district level (*upazila* in Bangladesh, sub-district in India and district in Nepal) by 2015.

## **3. OBJECTIVES**

### **3.1 Impact Objective**

To reduce the annual incidence of kala-azar and PKDL to less than one per 10 000 population at district (or sub-district) level by the end of 2012 by:

- reducing kala-azar, including in the vulnerable, poor and unreached populations in endemic areas;
- reducing case-fatality rates from kala-azar;
- reducing cases of PKDL to interrupt transmission of kala-azar, and
- preventing the emergence of kala-azar/HIV/TB coinfections in endemic areas.

### **3.2 Process Objectives**

- To improve the effectiveness of programme management with a focus on policy, planning and regulation;
- To enhance capacity-building at all levels in kala-azar-endemic districts;
- To establish effective disease and vector surveillance system for planning and response supported by reliable laboratory diagnosis;

- To ensure early diagnosis and complete case management of kala-azar;
- To undertake disease prevention and control by integrated vector management (IVM) through selective stratified indoor residual spray (IRS), insecticide treated nets (ITN) and environmental management with community participation and intersectoral collaboration, and
- To conduct operational research on important elements of elimination activities.

## 4. STRATEGIES

### 4.1 Early Diagnosis and Complete Case Management

Effective case management of kala-azar requires improved home care management (improved health care practices) and increased health care seeking from trained health care personnel (including doctors and nurses), reliable laboratory facilities and adequate supply of medicines. Early diagnosis and complete treatment strategy would help reduce case-fatality rates and increase the credibility of the health system, in order to increase the utilization of health services by people suspected to be suffering from the disease. It is proposed to use an agreed case definition of the disease as a starting point. The case definition for suspecting kala-azar agreed at the informal country consultation (2003) and endorsed by the Regional Technical Advisory Group (2004) is: *history of fever of more than two weeks in a patient with no response to antibiotics and antimalarials*. This case definition is likely to be sensitive but not specific. Additional signs that are useful include weight loss and enlarged liver and spleen. However, these are not likely to be recognized by health workers and health volunteers. Patients with the above-mentioned symptoms should be screened by 'rk 39' or DAT and, if positive, treated with an effective drug. Confirmation of kala-azar can be done by examination of bone marrow aspiration but this is difficult and invasive. Therefore it can be done only in some hospitals (district hospitals in Bangladesh and India and zonal hospitals in Nepal). The effective and safe oral drug recommended is miltefosine. This drug has been registered in India. It cannot be used in early pregnancy and in women of reproductive age who are not using contraceptives regularly. If possible, miltefosine should be administered as directly observed treatment in order to retain its efficacy and delay the appearance of drug resistance. Use of treatment cards is likely to contribute to better compliance. Paromomycin, an injectable drug, is promising and is

undergoing phase III trials. Amphotericin B and liposomes are rescue drugs in the treatment of kala-azar.

## 4.2 Integrated Vector Management and Vector Surveillance

The mainstay of vector control is indoor residual spraying. While DDT can be used for the control of kala-azar in India suitable alternatives have to be selected for Bangladesh and Nepal since DDT is not available or is not recommended as a national policy. Pyrethroids can be considered though these are very expensive and rapid development of resistance is a constraint. Adoption of a uniform insecticide strategy is advisable through intercountry cooperation. Through geographical information system (GIS) and remote sensing (RS), water bodies should be identified in the district selected and spraying operations carried out within a radius of one kilometer of these water bodies. Mapping of the district for water bodies would be useful in limiting spraying operations to those areas where maximum impact is likely to occur. This will help economise on insecticide consumption and help control environmental degradation. Selective IRS would be advisable only when surveillance is geared up and geographic mapping with validation is available; until then, IRS based on incidence reporting may be continued. Spraying operations should be undertaken at the most appropriate time of the year. IRS should achieve maximum coverage and be done thoroughly in order to have a lasting impact. Community mobilization is required to get maximum cooperation from households so that IRS helps in eliminating the vector effectively. IRS should be followed by entomological work to provide evidence on the efficacy of IRS. This strategy would help contain costs and also ensure good quality of IRS operation in order to produce the desired impact. Another strategy that will complement IRS is reducing human vector contact through ITNs. Strategies for ITNs should be developed and the distribution monitored for impact. Sanitation in the household, peridomestic environment and the community plays an important role in eliminating vector breeding and reducing longevity with consequent reduced risk of transmission. The success of ITNs and environmental sanitation would depend on effective behavioural change communication (BCC). Therefore a BCC strategy that includes ITNs and environmental management is to be considered as part of IVM. This should be sustainable.

Surveillance of *P. argentipes* vector is important to determine the distribution, population density, major habitats, and spatial and temporal risk

factors related to kala-azar transmission. It would be important to monitor the levels of insecticide resistance. The information on vector surveillance would be crucial for planning and programming IVM strategy, Integrated disease (including PKDL) and vector surveillance is recommend for kala-azar elimination.

### **4.3 Effective Disease Surveillance through Passive and Active Case Detection and Vector Surveillance**

Cases of kala-azar for surveillance should be classified into: (a) suspect; (b) clinical and (c) confirmed cases. Adoption of this approach will help in the use of uniform criteria. Surveillance includes reporting of cases of PKDL since these are responsible for continued transmission of the disease.

Currently, surveillance through passive case detection is done in government institutions. This does not give a true picture since (a) a majority of cases of kala-azar go to private doctors including quacks and there is no reporting from these health care providers; (b) treatment is often started without a definitive diagnosis of kala-azar, and (c) many cases do not seek health care at all because of poverty and socio-cultural constraints. Despite the above constraints, passive case detection and reporting is used to monitor the trends of the disease. The strategy will be to strengthen reporting through improved diagnosis and treatment and to establish partnership with private health care providers including private doctors and to ensure that community is empowered with knowledge of risks of seeking services of quacks for diagnosis and treatment, as an effort to make appropriate treatment available to the community through qualified professionals. For improved surveillance, kala-azar should be made a notifiable disease in the affected areas. Disease surveillance for kala-azar should comprise monthly reporting and feedback at district level, and evolving a system of regular reporting mechanism with state and national authorities. Reporting to WHO should be done on an annual basis (if possible twice a year) and endemic countries should send reports on an agreed reporting format.

As the programme improves and capacity is increased, passive case detection (PCD) should be supplemented with active case detection (ACD) that is supported by laboratory diagnosis. While active case detection is recommended at least once a year in the beginning (if possible two times per year), active case detection will become more important as the number of

cases reported by passive case detection declines. Active case detection should also be supplemented by laboratory confirmation of suspected cases.

#### **4.4 Social Mobilization and Building Partnerships**

Behavioural change interventions are important in the elimination of kala-azar and for the success of early diagnosis and treatment adherence. Effective BCC can also help in promoting early care seeking. Participation of community and families in indoor residual spraying and in reducing human vector contact is necessary. Social mobilization should be an integral part of the elimination programme right from inception. National programmes should plan adequate resources for effective BCC.

Partnerships will be necessary at all levels i.e. at district and state levels, at national level and with international stakeholders. Some of the elimination and eradication programmes (polio, leprosy, lymphatic filariasis) owe their success to multi-partner leadership.

Partnerships networking and collaboration will be required with other programmes like vector-borne disease programmes (malaria, dengue, filaria) and others, e.g. HIV/AIDS, TB, and leprosy. Anaemia control, improvement in nutritional status and poverty alleviation programmes should be made partners of kala-azar elimination programme.

#### **4.5 Clinical and Operational Research**

Diagnostic and therapeutic tools are available for elimination of kala-azar. More clinical research is required to enable the addition of new drugs and diagnostics. The available diagnostic tests should be validated under field conditions. Additional research is needed to identify and evaluate techniques for rapid assessment and mapping of the disease, to develop a mechanism for monitoring the effectiveness of intervention strategies. Operational research is recommended to establish monitoring of drug resistance, drug efficacy and quality of drugs used in the programme. Research is also needed to optimize the effectiveness of drugs including the use of combination drugs in the treatment of kala-azar. Research is also needed in searching for cases of PKDL and for satisfactory treatment of cases of PKDL. This is at present a serious constraint in the elimination of kala-azar. Implementation research is required

in pilot districts where the programme should be monitored closely to identify constraints and lessons learnt. Research on increasing access of interventions to the poorest people and for operationalizing IVM is recommended. An important operational research issue is to evaluate the public-private mix. Networking is an important strategy to optimize operational research and link it with programme implementation.

## **5. IMPLEMENTATION OF THE PROGRAMME**

The kala-azar elimination programme will consist of four consecutive phases.

### **5.1 Preparatory Phase (Duration: Two years, 2005-2006)**

The preparatory phase begins after the plan has been prepared and approved by the three countries and will include preparations for operations (including a pilot total coverage spraying operation and establishment of diagnosis and treatment facilities) in selected districts in endemic countries and monitoring (including passive and active case detection and vector monitoring). This will be useful in identifying constraints and operational difficulties. The lessons learnt during this phase can be useful in the attack phase of elimination.

The main activities proposed include the following;

- Development/review of national policy and strategic plans. National plans should include regulation, standards and norms (Member States). The policy should cover issues relating to intercountry cooperation. Regulations should cover uniform standards relating to diagnosis and treatment, insecticides to be used in IRS, tax exemptions, and making the disease notifiable in endemic areas (Member States).
- Development of operational plans to implement the national plan for elimination of kala-azar.
- Development of advocacy plans that include advocacy kits, donor profiles, and highlighting the close nexus of kala-azar with HIV/AIDS, TB and leprosy. Advocacy plans should showcase the importance of elimination of kala-azar as a strategy for poverty reduction and to enhance socioeconomic development in affected areas (Member States).

- Preparation of national plans that include budget and resource gaps (Member States).
- Consolidation of national plans into project document for mobilizing resources (WHO/SEARO).
- Constitution of a national coordination committee and task force/working group (Member States).
- Signing of memorandum of understanding for intercountry cooperation and cross-border collaboration (WHO, Member States).
- Formation of regional alliance/partners forum for resource mobilization, advocacy and assisting in periodic review for elimination of kala-azar (Member States, WHO and other partners).
- Mobilization of additional resources (Member States and WHO).
- Geographical information system, RS and information system for integrated vector management (WHO Support to Member States).
- Validation of disease burden/cases of kala-azar (WHO support to Member States).
- Development and adaptation of technical guidelines and reporting formats (WHO and Member States).
  - Technical guidelines (diagnosis and treatment of kala-azar and PKDL, IRS and ITNs);
  - Training package (doctors, nurses, health workers and spraying teams, supervisors);
  - Surveillance guidelines (disease surveillance, vector surveillance) ;
  - Reporting system, reporting formats ;
  - Supervisory system, quarterly monitoring and checklists;
  - Country programme and review guidelines.
- Development of materials for behavioural change communication including guidelines for home care (Member States).
- Training of personnel (doctors, health workers, staff for IRS, survey team, laboratory staff, data management staff, supervisors) with assistance from WHO.

- Identification of research priorities and initiation of research on estimation, GIS, RS for IRS, development of new products (research on diagnostics and drugs) with assistance from WHO.
- Establishing a system of procurement, logistics and supplies (drugs and equipment) with support from WHO.
- Intensive implementation in selected districts (Member States).
- Development of partnerships in the health sector (HIV/AIDS, TB, leprosy, malaria and other vector-borne diseases, nutrition, anaemia etc.) and outside the health sector (environment, poverty reduction).

## **5.2 Attack Phase (Duration: Five years, 2007-2011)**

The attack phase will begin in 2007 when the preparatory phase has ended, provided that all the tasks of the preparatory phase have been completed. This phase will include implementation and monitoring.

The main activities proposed during this phase include the following:

- Indoor residual spraying in all the affected areas for five consecutive years in collaboration with the vector-borne disease control programme (Member States). This should be according to the agreement reached among the three endemic countries.
- Integrated vector management including ITNs and environmental management. Monitoring expansion and coverage of ITNs (Member States).
- Access to early diagnosis and complete treatment (Member States).
- Passive case detection, active case detection and vector surveillance, case-based diagnosis and monthly feedback (Member States).
- Community mobilization for vector control and for seeking early treatment (Member States).
- Monitoring of treatment completion and analysis of treatment failure (Member States).
- Intercountry task force meeting to review progress and exchange information (Member States and WHO).

- Quarterly monitoring, annual review (input, process, output and outcome indicators) to be carried out by Member States. Annual reporting to WHO on an agreed reporting format.
- Household and health facility survey once every 2-3 years (Member States with support from WHO).
- External country evaluation (Member States with support from WHO).
- Increasing research capacity and networking among research institutions through a research coordination mechanism (WHO and partners with Member States).
- Active case search at least once a year in rural and urban areas (Member States).

### **5.3 Consolidation Phase (Duration: Three years, 2012-2014)**

The consolidation phase will begin when total coverage by spraying has concluded i.e. at the end of the attack phase. This phase will end after the period of three years of active surveillance has shown no increase in the incidence rate at district and subdistrict levels in endemic countries.

The main activities to be carried out during this phase include the following:

- Limited indoor residual spraying based on geographical location of cases, and in areas with high vector density (Member States).
- Intensified active case detection (Member States).
- Early diagnosis and complete treatment to be sustained with focus on co-infections (Member States).
- Treatment adherence (Member States).
- Continued activities of the attack phase such as monitoring, research, review meetings and periodic evaluation (Member States).

#### **5.4. Maintenance Phase (Duration: to be decided)**

During this phase, surveillance against re-introduction of kala-azar will be the responsibility of the disease control programme in the country until kala-azar is no longer a public health problem. During this phase, the case incidence at district/sub-district or upazila level should be less than 1 per 10 000 population. An international review commission should verify the achievements of the programme. Countries or affected districts in the countries where elimination targets have not been reached would require corrective measures. The maintenance phase will be followed by certification of the elimination status. The partners will decide the duration of this phase.

### **6. REGIONAL UPDATE ON KALA-AZAR ELIMINATION**

#### **6.1 Intercountry Consultative Meeting, Varanasi, India, November 2003**

The consultation endorsed the Regional Strategic Plan in principle and recommended that Member States pursue the goal of elimination of kala-azar and develop national action plans with targets at different levels of programme implementation. Member states should define specific time-lines to measure progress towards the elimination of kala-azar. It was also recommended that national policies and strategies be prepared for advocacy, consensus, resource mobilization and sustained political commitment.

#### **6.2 Memorandum of Understanding for Intercountry Cooperation**

During an informal meeting ministers of health from Bangladesh, India and Nepal, in Maldives on 5 September 2004, all three countries confirmed their strong political commitment for sustainable kala-azar elimination through intercountry collaboration and agreed on a common framework for intervention and monitoring. A memorandum of understanding between the three countries was signed in May 2005 in the presence of donors and partners to affirm this commitment.

#### **6.3 Regional Technical Advisory Group**

WHO/SEARO has established a Regional Technical Advisory Group (RTAG) to advise on key issues such as policy, strategy and activities that are crucial for accelerating the elimination of kala-azar and for operational research. The first

meeting of RTAG was held in Manesar, Gurgaon, India, in December 2004. It endorsed the Regional Strategic Plan and Regional Guidelines for preparing the national plans in principle. Meetings of RTAG will be held at least once a year.

#### **6.4 Advocacy Materials**

WHO/SEARO has prepared advocacy pamphlets and posters to promote the endorsement of elimination of kala-azar by decision-makers in the endemic countries and by the donors and stakeholders. The advocacy material developed has been shared during the signing of MOU in May 2005 and subsequently with the partners.

#### **6.5 Development of Draft Country Operational Plans**

The countries have prepared country-specific plans for elimination of kala-azar. These plans have been consolidated into a project document by WHO/SEARO. Resource gaps have been identified in these documents.

### **7. FUTURE PLANS**

#### **7.1 Development of Technical Guidelines**

Following the development of standards and standard operating procedures, WHO will develop and distribute necessary generic guidelines and tools to programme managers. They will include: comprehensive guidelines on elimination of kala-azar; guidelines on preparation, implementation and monitoring of the programme; guidelines for preparing country strategic plan for elimination of kala-azar; training guidelines on diagnosis and case management, guidelines for home care and environmental management with the focus on improving the home and peridomestic environment; indoor residual spraying for health staff and volunteers to be involved in the elimination of kala-azar, and surveillance guidelines on disease occurrence and vector.

#### **7.2 Drug Quality, Drug Supply and Logistics**

WHO will develop standards of quality for drugs and laboratory supplies, guidelines on monitoring the quality of drugs, efficacy of drugs and drug

resistance and diagnostic kits. These will be made available to national authorities.

### **7.3 Geographic Information System Mapping for IRS**

WHO will provide assistance to Member States through training of staff to do geographical mapping in affected districts. The health mapper is proposed to be used.

### **7.4 Technical Support at Local Levels**

WHO will provide technical support for programme management and implementation at local levels (district and sub-district) by NPO/State Coordinator/District Coordinator (Consultants) etc. depending on the needs of individual countries and the resources that are available.

### **7.5 Research Protocols and Capacity Development in Operational Research**

WHO/SEARO will work with TDR and WHO collaborative centres and research institutions to decide research priorities and support the development of research protocols. It will assist in the development of research capacity in countries. Networking of research through multicentric research and research coordination mechanism would be facilitated.

### **7.6 Coordination with Partners**

WHO will assist in intercountry Task Force Meeting, cross-border meetings and in coordination with partners (partners forum/regional alliance) to mobilize additional resources needed to support the elimination of kala-azar. WHO will also facilitate periodic country reviews/evaluation of the regional programme for kala-azar elimination.

## **8. MONITORING AND EVALUATION**

A framework for monitoring and evaluation of kala-azar is annexed.

**Framework for monitoring and evaluation for kala-azar**

Area	Key questions	Indicator suggested	Frequency of measurement	Responsible agency
Policy, strategy and guidelines	Are national policy, strategy and guidelines in place?	National policy and strategy documents	Before starting, and after 3-5 years	National Programme Manager
Advocacy plans	Have advocacy plans been prepared?	Written advocacy plans.	Once	National Programme Manager
National plans for kala-azar elimination	Have national plans for elimination of kala-azar been prepared?	National plans for elimination of kala-azar prepared consistent with Regional Strategic Plan	Once every two years	National Programme Manager
	Does the plan include the strategy of IVM?	Plans for vector control operations at district and subdistrict levels	Once every year (revised based on results)	National, state and district focal points
Funds	Have additional funds needed been mobilized? Have gaps in funding been identified?	Project document that identifies funding gaps. Funds mobilized during the year.	Once a year	National Programme Manager and donors
	What efforts were made to mobilize additional funds?	Advocacy meetings or negotiations held with partners to mobilize additional funds.	Quarterly	National Programme Manager, WHO
Coordination mechanism for elimination of kala-azar	Has a national coordination committee/task force or a	Functional coordination committee/task force/working group for elimination of	Once in four years. To be reconstituted	Health Secretary/DG as

Area	Key questions	Indicator suggested	Frequency of measurement	Responsible agency
	<p>working group been formed</p> <p>Does the committee meet regularly?</p> <p>Has an intercountry task force been constituted?</p>	<p>kala-azar</p> <p>Number of times the coordination committee has met during the past one year</p> <p>No. of meetings of intercountry task force organized</p>	<p>after that.</p> <p>Quarterly</p> <p>Yearly</p>	<p>chairperson</p> <p>National Programme Manager</p> <p>WHO, national programme managers and key partners</p>
<p>Standard guidelines for training of doctors and health workers</p> <p>Training of doctors, health workers and other service providers in treatment and prevention of kala-azar</p> <p>Supervision of service providers (health workers)</p> <p>Supply of diagnostics and</p>	<p>Have standard guidelines for training of doctors and health workers been developed?</p> <p>How many doctors, health workers, volunteers and other service providers been trained in the prevention, diagnosis and treatment of kala-azar?</p> <p>How many supervisory visits</p>	<p>Standard guidelines for prevention, diagnosis and treatment of kala-azar available.</p> <p>Proportion of doctors trained.</p> <p>Proportion of health workers and other service providers trained in treatment.</p> <p>Number of spray teams trained.</p> <p>Number of supervisors trained.</p> <p>Number of districts where</p>	<p>Once with periodic updating</p> <p>Quarterly update</p> <p>Once a year</p> <p>Quarterly review</p>	<p>Programme Manager/ institutions of expertise including medical colleges</p> <p>National trainers, state focal points and district trainers</p> <p>Entomology group</p> <p>District and state</p>

Area	Key questions	Indicator suggested	Frequency of measurement	Responsible agency
medicines.	were made?	supervision was done once in the past three months		focal points
	Were supervisory checklists used?	Proportion of supervisors who use checklists	Quarterly review	District focal point
	Have procurement mechanisms for supplies prepared?	Written statement of system of procurement	Once	National Programme Manager
	Has a system been worked out to ensure regular supply of diagnostics and drugs?	System of supplies/ training on supply chain management.	Once a year review	District/state focal point
Active case detection	What is being done to ensure quality of drugs and diagnostics?	Proportion of health facilities where quality check is done.	Quarterly review	National focal point in consultation with WHO
Supply of insecticides	Is active case detection part of national elimination programme?	Proportion of cases detected through active case detection	Once a year review	Programme Manager
	Are recommendations about use of insecticides for spraying available	National guidelines on IRS for kala-azar elimination.	Once at the beginning and then updated after 3/4 years	Vector control group at district and state levels
Procurement and distribution of ITNs	Were supplies of insecticides and equipment to targeted districts made in time?	Number of targeted districts	Once per year	District focal

Area	Key questions	Indicator suggested	Frequency of measurement	Responsible agency
Stock-outs of medicines, diagnostics and insecticides?	Is there a strategy for procurement and distribution of ITNs?	that have adequate supplies of insecticides and equipment	Quarterly	point
	Are ITNs distributed to the poorest among the poor population?	No. of ITNs distributed.	Quarterly	District focal point
	Are there any stock-outs of medicines, diagnostics and insecticides?	Proportion of poor households given ITNs.	Quarterly	District focal point
		Proportion of facilities with stock-out of medicines.	Quarterly	District focal point
Service delivery	What is the access of facilities for treatment of kala-azar?	Proportion of facilities with stock-out of diagnostics.	Quarterly	District focal point
		Proportion of facilities with stock-out of insecticides prior to spraying.	Once a year	District focal point
	Is there supervision of health facilities?	Population with access to kala-azar treatment	Once a year review	District focal point
		Number of supervisory visits to health facilities	Quarterly review	National focal point and working group
				District focal point

Area	Key questions	Indicator suggested	Frequency of measurement	Responsible agency
Knowledge and practices relating to prevention and treatment.	What is the knowledge of the target population about health facilities that provide diagnosis and treatment for kala- azar	Knowledge of the population about facilities that provide diagnosis and treatment for kala- azar	Periodic: once in 3-4 years at different locations	National Programme Manager in collaboration with district health authorities
Active case detection	Whether active case detection organized?	Number of kala-azar and PKDL cases detected through active case detection.	Once a year review	Programme Manager
Treatment coverage	Is there an increase in the number of cases treated?	Number of cases of kala-azar treated	Regular and ongoing. Review quarterly	National Programme Manager
Treatment adherence	Are people completing treatment according to advice?	Number of patients with kala-azar who completed treatment according to advice	Household survey	Programme Manager
Treatment outcome	Do people respond to treatment?	Proportion of patients cured	Sample Household survey; once in 2-4 years.	Programme Manager
Participation in prevention	Do people cooperate in IRS?	Proportion of households where there was full cooperation with residual spray  Proportion of	Household survey: once in 2/3-4 years.	Programme Manager

Area	Key questions	Indicator suggested	Frequency of measurement	Responsible agency
	Do people practice sanitation/self protection?	people aware of role of sanitation/with well ventilated dry shelters and clean peridomestic surroundings  Proportion of people using ITN	Household survey; once in 2/ 3-4 years.  Household survey; once in 2, 3-4 years.	Programme Manager  Programme Manager
New cases of kala-azar	Is there a decline in reported cases?	Number of cases who are diagnosed as kala-azar	Record review: ongoing.	Programme Manager
Deaths due to kala-azar	Is there a decline in kala-azar specific deaths?	Number of deaths due to kala-azar	Record review: ongoing.	District focal point
PKDL	Is there a decline in PKDL prevalence?	Number of PKDL detected and treated  Proportion of cases of PKDL diagnosed and treated.	Record review ongoing.  Household survey.	District focal point  Programme Manager