

Improving visceral leishmaniasis service delivery in Somalia: A mixed method study using Consolidated Framework for Implementation Research (CFIR)

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Visceral Leishmaniasis

- A severe parasitic disease caused by *Leishmania* parasites, transmitted by sandfly bites. Symptoms include irregular fever, enlarged spleen/liver, anemia, and weight loss.
- Affects vulnerable groups, particularly children and immunocompromised individuals. Endemic in Southeast Asia, East Africa, and notably Somalia.
- VL is a major public health issue across 4 eco-epidemiological regions (Americas, East Africa, North Africa, and South-East Asia), with 50,000-90,000 deaths annually.
- Frequent outbreaks in Sudan, South Sudan, Ethiopia, Kenya, Uganda, and Somalia, with pastoralist communities at high risk.
- In Somalia, there's a report of VL cases between 400-1000 annually.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5344316/>

[https://www.thelancet.com/journals/laninf/article/PIIS1473-3099\(22\)00168-2/fulltext](https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(22)00168-2/fulltext)



Challenges in combating visceral leishmaniasis in Somalia

- Conflict and instability have fragmented healthcare services.
- VL is common in semi-arid regions (Lower Jubba, Bay, Bakool, Gedo).
- Barriers to care: long travel distances, insecurity, and financial constraints.

Service Delivery Challenges

- VL services are scarce, particularly in rural and conflict-affected areas where disease endemicity is highest.

Geographical Disparities

- Most VL services are concentrated in urban centers like Mogadishu, where hospitals are equipped and staffed with trained personnel, while rural areas lack basic healthcare and specialized VL services, severely limiting access to diagnosis and treatment.

Diagnostic Limitations

- Few labs can confirm VL cases, with urban areas offering limited serological testing and lacking parasitological confirmation, while rural areas face significant underdiagnosis due to the absence of diagnostic services.

Treatment Gaps

- Inconsistent availability of essential drugs (e.g., sodium stibogluconate, paromomycin, liposomal amphotericin B).
- Stockouts and supply chain disruptions common in conflict regions.

Surveillance Issues

- Weak health information systems and lack of coordinated national strategy.
- Incomplete, outdated data on VL incidence and prevalence.

Research question

- What is the current status of the availability, accessibility, and quality of visceral leishmaniasis (VL) diagnosis and treatment services in Somalia?
- What are the key barriers and enablers affecting the delivery of visceral leishmaniasis (VL) services in Somalia?
- What implementation strategies can be developed to address the identified barriers and enhance the effectiveness of visceral leishmaniasis (VL) service delivery in Somalia?

Research Objectives

Assess the service Availability, Accessibility, and Quality of VL Diagnosis and Treatment

Identify the barriers and enablers to improving visceral leishmaniasis service delivery

Develop Effective Implementation Strategies to establish evidence-based recommendations to improve VL service delivery

STUDY DESIGN AND SETTING

Mixed methods design

- 57 In-depth interviews
- **Focus Groups:** CFIR based semi-structured FGD protocol involved with 2 groups and 16 participants
- Field observations using **checklist (SARA)**
- **VL registry data** from FMOH

Purposive sampling and snowball technique was employed for recruiting the participants

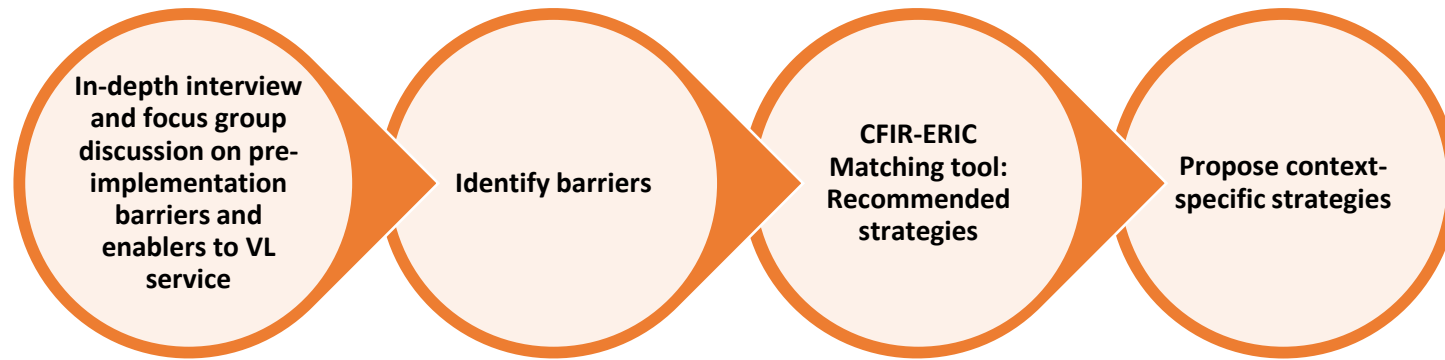


Study sites

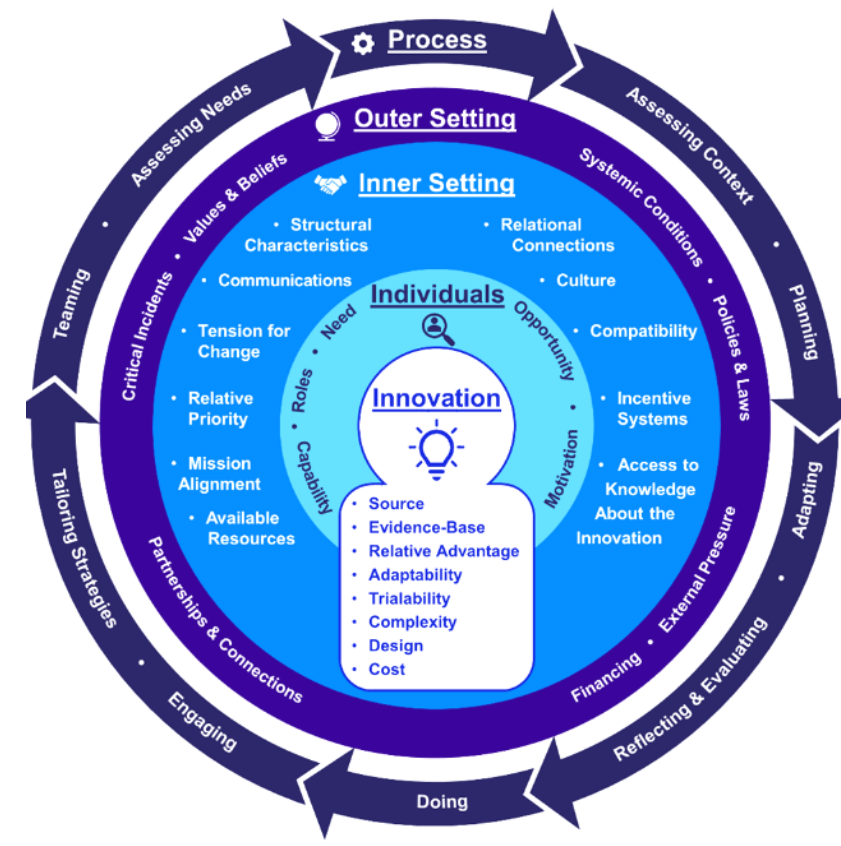
- Kala-azar center in Baidoa
- Bay Regional Hospital
- De Martino Hospital
- SOS Hospital
- Benaadir Hospital



Theories, models and frameworks



- Damschroder et al. (2009) Imp Sci
- Damschroder et al. (2022) Imp Sci



Key stakeholders

- **FMOH-Directorate for Neglected Tropical Diseases**
- **Interested International NGOs**
- **Healthcare providers**
- **VL patients**
- **Bay Regional Hospital**
- **Benaadir Hospital**
- **MOHSWS and Benaadir Regional Health Authorities**
- **Kala-azar Center in baidoa**
- **Community Health Workers**

Results: Status of visceral leishmaniasis centers

	Visceral leishmaniasis centers				
	SOS Mogadishu	De Martino Hospital	Benaadir Hospital	SOS Baidoa	Bay Regional Hospital
Staffing	+++	+++	+++	+++	+++
Inpatient and observation beds	+++	++	+++	+++	+++
Infrastructure	++	++	++	+++	++
Basic amenities	+++	+++	+++	+++	+++
Medicines and commodities	+++	+	+++	+++	++
Diagnostics	+++	+	++	+++	+
Information system	+++	+	++	+++	+

The + signs in the table indicate the level of service availability, with "+" representing a lower grade of availability and "+++" representing the highest grade.

From the observation field notes, the current access and quality of care for visceral leishmaniasis (VL) in Somalia were assessed across five key sites using the WHO Service Availability and Readiness Assessment (SARA) tool.

Results: In-depth interviews and Focus Groups using CFIR

Barriers	Enablers
Intervention characteristics • Adaptability of available VL services • Complexity of VL services • Cost of Implementing services Outer setting • Emergencies and outbreaks • Socio-cultural values and beliefs • Local conditions • Regulations, guidelines and health system factors • Financing Inner setting • Structural characteristics • Human Equity centeredness • Compatibility and relative priority • Available resources • Access to knowledge and information	Individual characteristics • Role of high-level leaders • Implementation leads Implementation process • Planning • Engaging stakeholders

CFIR: Intervention characteristics and outer setting

Barriers/Enablers	Description	Example Quote	CFIR Construct
Adaptability of VL Services (Barrier)	VL protocols not tailored to local realities, making implementation difficult.	"The treatment protocols... don't always take into account the realities here in Somalia." – Program Manager	
Complexity of VL Services (Barrier)	Detailed protocols requiring specialized tools and training pose challenges in resource-limited settings.	"The protocols are very demanding, and the equipment isn't always available." – Program Manager	
Cost of Implementing VL Services (Barrier)	High costs of running programs and dependency on external funding.	"We rely heavily on international partners... without their help, we wouldn't provide these services." – Executive Manager	
Emergencies and Outbreaks (Barrier)	Critical incidents divert resources and attention, disrupting VL services.	"When COVID hit, all resources were redirected... VL services were suspended." – Health Manager	
Sociocultural Beliefs (Barrier)	Misconceptions about VL lead to delays in care-seeking and treatment adherence.	"Some believe VL is caused by a curse... making it hard to get patients in for treatment." – Health Manager	
Local Partnerships (Enabler)	Referral networks and international/local partnerships enhance service provision.	"Our referral networks with clinics and health workers help reach patients sooner." – Hospital Director	
Economic and Environmental Factors (Barrier)	Poverty and poor infrastructure limit access to VL services.	"During the rainy season, roads are impassable, and patients can't reach us." – Doctor	
Health System Structure (Barrier)	Fragmented health system and inconsistent implementation of guidelines hamper service delivery.	"There's no clear chain of command... makes it hard to implement guidelines." – Doctor	
Financing (Barrier)	Reliance on external funding raises concerns about sustainability of VL services.	"What happens if the funding stops? There is no local funding to replace it." – Health Facility Manager	

CFIR: Inner setting, individual characteristics and implementation process

Barriers/Enablers	Description	Example Quote	CFIR Construct
Physical Infrastructure (Barrier)	Poor facility conditions and equipment affect VL service delivery.	"Our facilities are in poor condition... making it hard to provide quality VL services."	
Human Equity-Centeredness (Barrier)	Emphasizing equitable access to VL services, especially for underserved populations.	"VL affects the poorest... It's vital our services are accessible to everyone, regardless of income."	
Compatibility and relative priority (Barrier)	VL services struggle to integrate with other health priorities.	"VL is important but often overshadowed by other diseases, making integration difficult."	
Available Resources (Barrier)	Limited availability of diagnostic tools, medications, and staff.	"We frequently run out of supplies like rapid tests and medications, which limits our effectiveness."	
Access to Knowledge and information (Barrier)	Insufficient training and updates on VL diagnosis and treatment.	"There's a gap in knowledge... continuous education is essential, but not always available."	
Role of High-Level Leaders (Enabler)	Leadership commitment drives successful implementation of VL services.	"Strong backing from our leadership ensures that VL services are prioritized."	
Implementation Leads (Enabler)	Lack of clear leadership at the implementation level hinders progress.	"We need strong leadership from the ground up to guide implementation... there's a gap in leadership at this level."	
Planning	Inadequate planning leads to delays and inefficiencies in implementing VL services.	"We often rush into implementation without enough planning, leading to confusion and delays."	
Engaging Stakeholders	Active engagement of stakeholders ensures smooth implementation and sustainability of VL services.	"Engaging the Ministry of Health and local communities early is key to the program's success."	

Results: ERIC Strategies and proposed strategies

ERIC Strategies	Proposed context specific strategies
Promote adaptability	Develop flexible VL service delivery models that adapt to changing local conditions and patient needs, such as mobile clinics and outreach teams.
Develop a formal implementation blueprint Conduct ongoing training	Create detailed guidelines for VL service delivery and provide continuous training to health workers, ensuring they can adapt to complex cases.
Access new funding Alter incentive/allowance structures	Seek funding from, domestic, NGOs and international donors to reduce the cost burden. Adjust healthcare provider incentives to improve service delivery.
Assess for readiness and identify barriers and facilitators Change physical structure and equipment	Upgrade clinic infrastructure to accommodate VL services and ensure access to essential medical equipment and technology for effective diagnosis and treatment
Identify and prepare champions	Empower local opinion leaders and health champions to promote VL treatment, increasing community awareness and service uptake.
Involve patients/consumers and family members Prepare patients/consumers to be active participants	Actively engage patients, families, and community members in VL care through awareness campaigns and patient-centered education to ensure adherence to treatment.

Discussion

Moving from control to elimination of Visceral Leishmaniasis in East Africa

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Qualitative research
Research

Exploring global and country-level barriers to an effective supply of leishmaniasis medicines and diagnostics in eastern Africa: a qualitative study 

 Temmy Sunyoto¹, Julien Potet², Margriet den Boer³, Koert Ritmeijer³, Jose A R Postigo⁴, Raffaella Ravinetto¹, Fabiana Alves⁵, Albert Picado^{6, 7}, Marleen Boelaert¹

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Barriers to treatment for visceral leishmaniasis in hyperendemic areas: India, Bangladesh, Nepal, Brazil and Sudan

Sheila J. Thornton, Kishor M. Wasan , Anna Piecuch, Larry L D. Lynd & Ellen K. Wasan
Pages 1312-1319 | Received 22 Mar 2010, Accepted 22 Mar 2010, Published online: 14 Jun 2010
 Cite this article  https://login.research4life.org/tacsgr1doi_org/10.3109/03639041003796648

Leishmaniasis, conflict, and political terror: A spatio-temporal analysis

Isha Berry  , Lea Berrang-Ford 

Our study	Other studies
VL services are often too complex and not adaptable to local contexts. There are challenges with outdated surveillance systems and inadequacies in infrastructure and supply chains.	Similar adaptation and complexity challenges are observed in other East African countries. The study found that adapting VL services to local contexts and addressing supply chain issues were also significant barriers.
High costs for VL service implementation, including direct costs (drugs, diagnostics) and indirect costs (training, infrastructure), with a reliance on uncertain international funding.	Similar cost-related barriers were reported, with a focus on both direct and indirect costs impacting service delivery.
Inadequate physical infrastructure and communication gaps between health system levels lead to inefficiencies. Limited coordination and prioritization for VL services also exist.	Similarly, inadequate infrastructure and fragmented health systems hinder effective VL service delivery. Communication challenges were highlighted, leading to delays in care.
Sociocultural misconceptions about VL delay treatment-seeking. Critical incidents like conflict divert resources away from VL services.	Conflicts and sociocultural beliefs also hinder VL service delivery, with population displacement increasing cases and worsening healthcare access.

Key take away messages

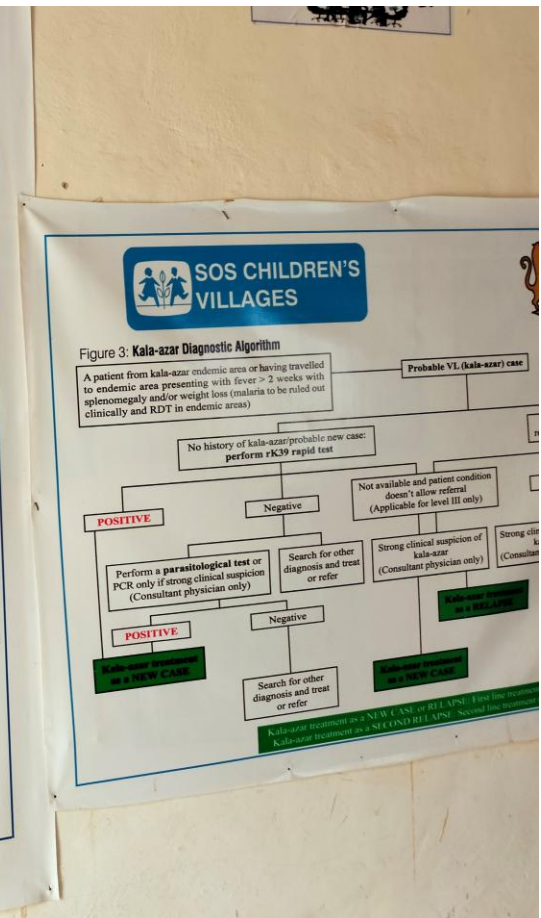
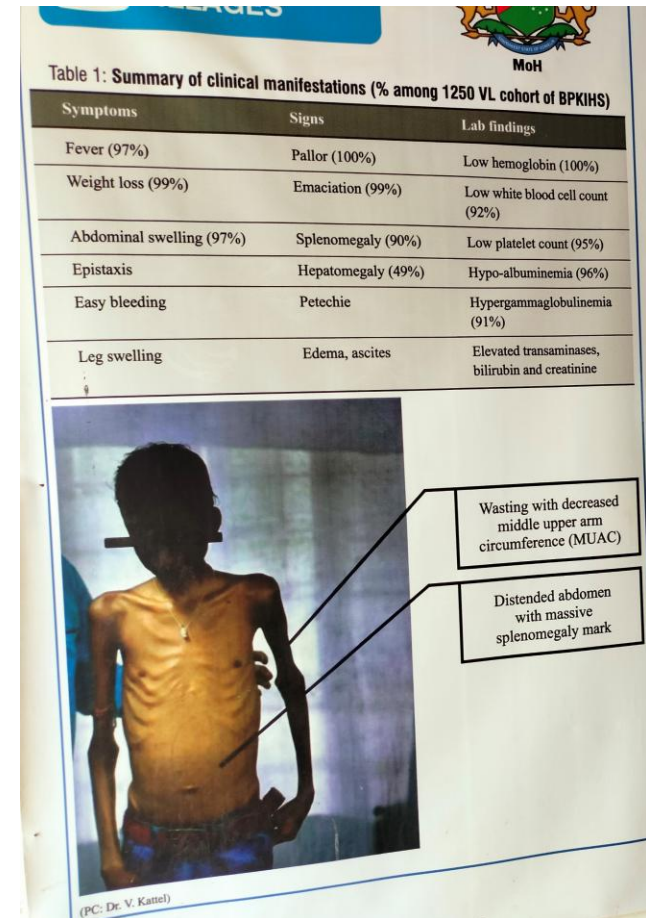
Critical Gaps Identified: VL service delivery faces major challenges in availability, accessibility, and effectiveness due to outdated systems, resource limitations, and sociocultural barriers.

Need for Tailored Interventions: Adapting services to local contexts and addressing infrastructure challenges is key to enhancing the accessibility and effectiveness of VL services.

Sustainability Concerns: Reliance on external funding poses risks; there is a need for building sustainable, locally-driven solutions.

Strategic Implementation: A multi-faceted approach involving leadership, tailored interventions, continuous training, and stakeholder collaboration is essential for achieving VL elimination as a public health problem in Somalia.

Pictures from the field



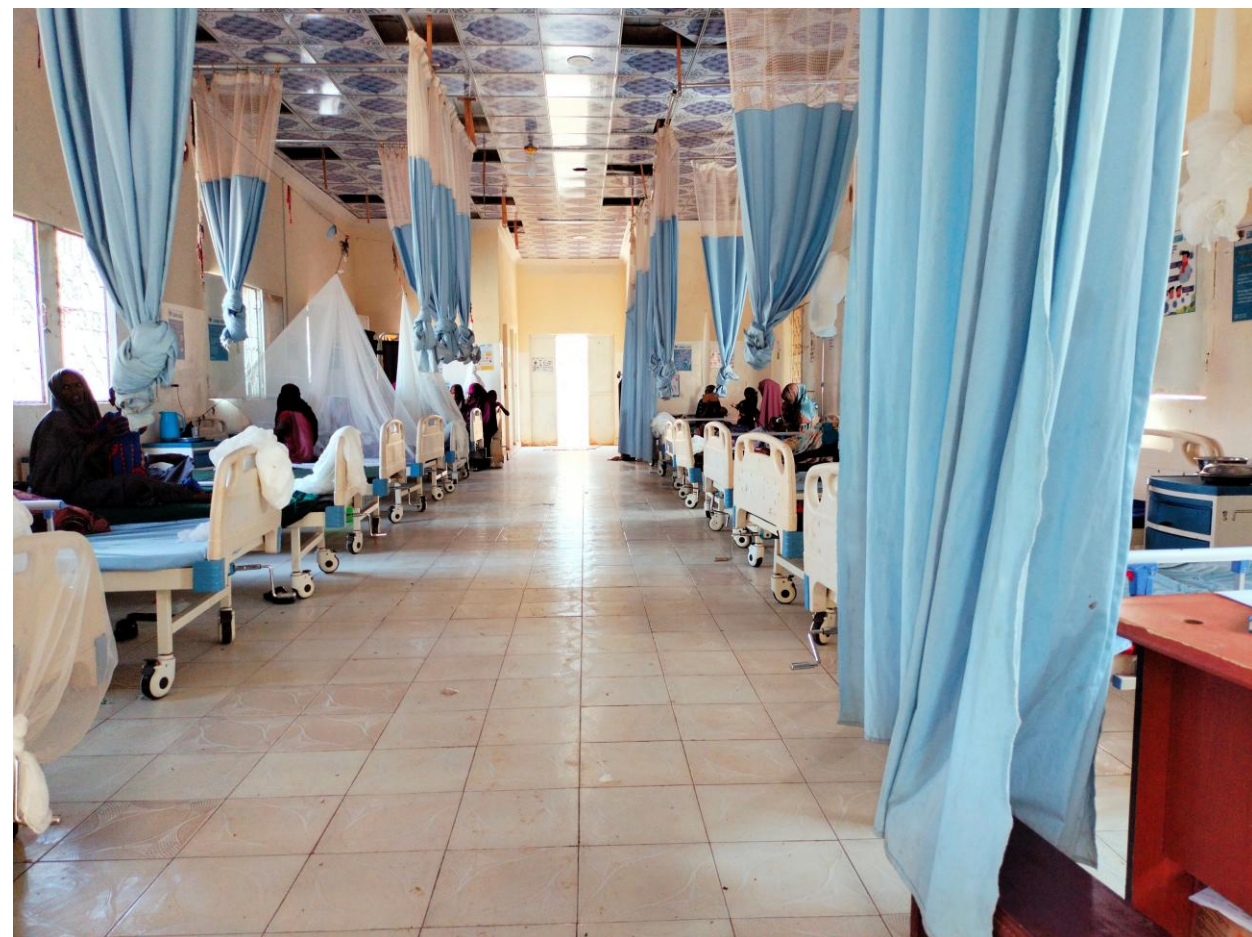
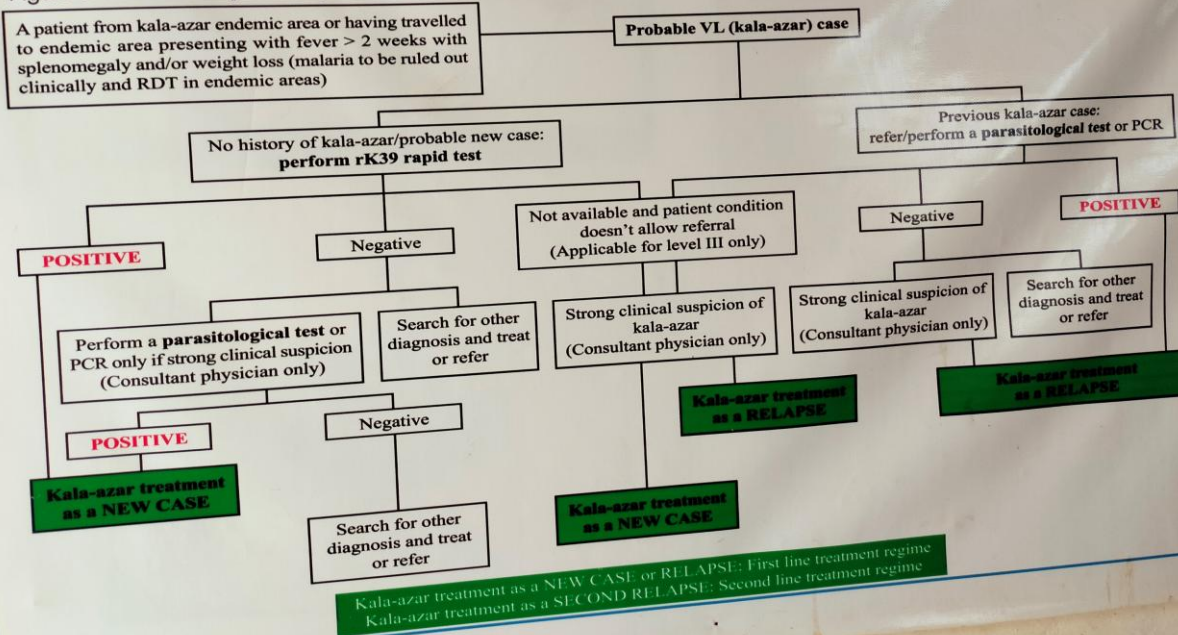


**SOS CHILDREN'S
VILLAGES**



Figure 3: Kala-azar Diagnostic Algorithm

A patient from kala-azar endemic area or having travelled to endemic area presenting with fever > 2 weeks with splenomegaly and/or weight loss (malaria to be ruled out clinically and RDT in endemic areas)





SOS CHILDREN'S
VILLAGES

MINISTRY OF HEALTH KALA AZAR REGISTER

NAME OF FACILITY:	[REDACTED] BDH (SOS)		FACILITY MFL CODE:	
TYPE OF FACILITY:				
DISTRICT:	Baidoo			
REGION:	BAY			
START DATE:	-	1st Jan 200	END DATE:	
VERSION:	JANUARY 2017			





Research Team

Our interdisciplinary research team comprises experts with experience in implementation research and tropical disease research. The team includes members from two institutions, two in Somalia and one in India, to provide diverse perspectives and expertise in addressing VL service delivery challenges.

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Thank you for the attention