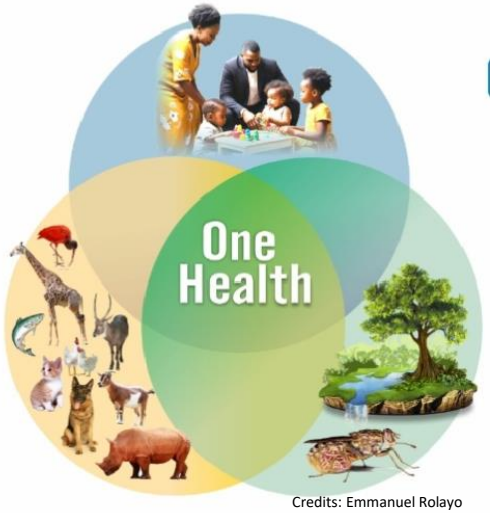
Domestic Animal Reservoirs of *T. brucei gambiense* in Oyo State, Nigeria: One Health Implications



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Background

>17% Infectious diseases are vector-borne (WHO, 2020)

>60% Human infectious diseases have zoonotic origin (WHO, 2023).

≈55 People are at risk of human African trypanosomiasis (WHO, 2023).

36 Sub-Saharan African countries.

≈10km² Tsetse fly distribution belt (Ilemobade 2009; de Gier et al., 2020).

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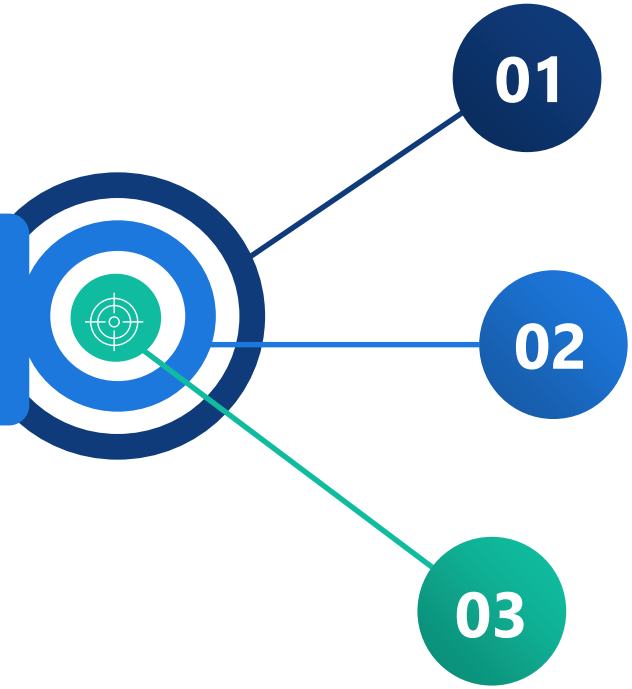
Why One Health for HAT?

1. **Animal reservoirs**
   Livestock and wildlife sustain infection, complicating elimination.
2. **Exposure from daily activities**
   Farming, fishing, hunting, and water collection.
3. **Silent human carriers**
   Undiagnosed and asymptomatic cases sustain hidden transmission.
4. **Climate & land-use drivers**
   Changing weather, deforestation, and habitat loss alter tsetse distribution.
5. **Equity & early warning**
   Strengthen underserved rural settings and protect vulnerable communities.

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Aim and objectives

To illuminate the status of HAT in Oyo State, Nigeria.



Objective 1

Determine tsetse density and diversity.

Objective 2

Determine the prevalence of *T. b. gambiense infection* among human, livestock and tsetse populations.

Objective 3

Identify drivers of transmission.

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Study areas

- Agrarian, riverine hamlets - Alaho, Oloya, Gaa Sule, Aiyetorokowosi, Oyo State, Nigeria.
- Dry season - November to March, humidity range of 56-59%.
- Wet season - April to October, humidity range of 51-82%.
- Annual rainfall - av. 1250 mm

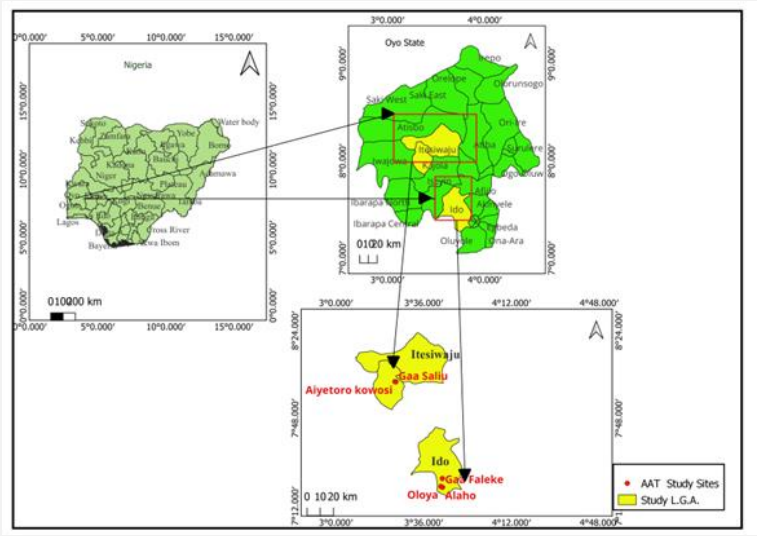


Figure 1: Map showing the study areas in Oyo State, Nigeria

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Methods

Host sampling

FTA blood blots (72 consenting humans, 145/243 animals) (Cochran, 1977; Ahmad and Halim, 2017).

Tsetse capturing

Odour-baited biconical traps. (Ngomtcho *et al.*, 2017; Leak *et al.*, 2009, 2008).

DNA extraction

5% w/v Chelex® 100 resins (Signaboubo *et al.*, 2021).

cLAMP

T. b. gambiense (TgsGP-cLAMP) (Njiru *et al.*, 2011). Bloodmeal (Cyt b cLAMP) (Hird and Brown, 2017).

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Findings – Tsetse flies

- Captured tsetse flies were ***Glossina palpalis palpalis,*** 16.90% TgsGP cLAMP positive.

- Apparent density - Alaho (10.33 F/T/D), Oloya (1.31 F/T/D), Arabata (0 F/T/D) (p=0.0043).

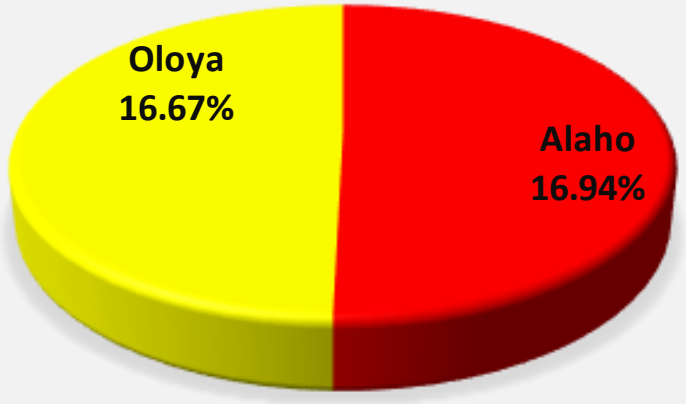


Figure 2: Infection rates among tsetse flies in the study areas

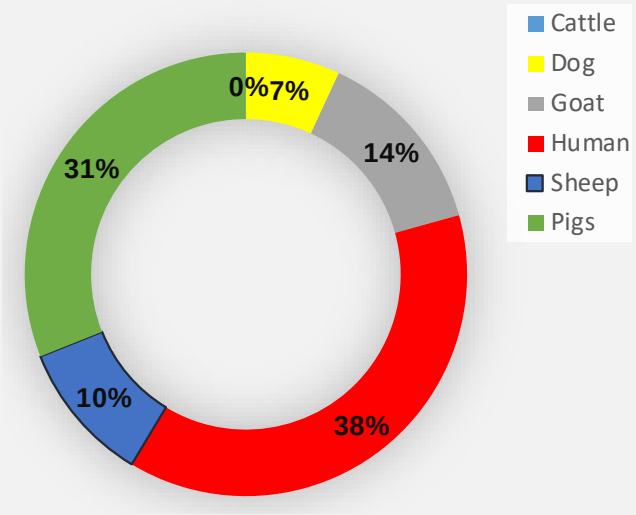


Figure 3: Sources of tsetse fly bloodmeal

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Findings - AAT

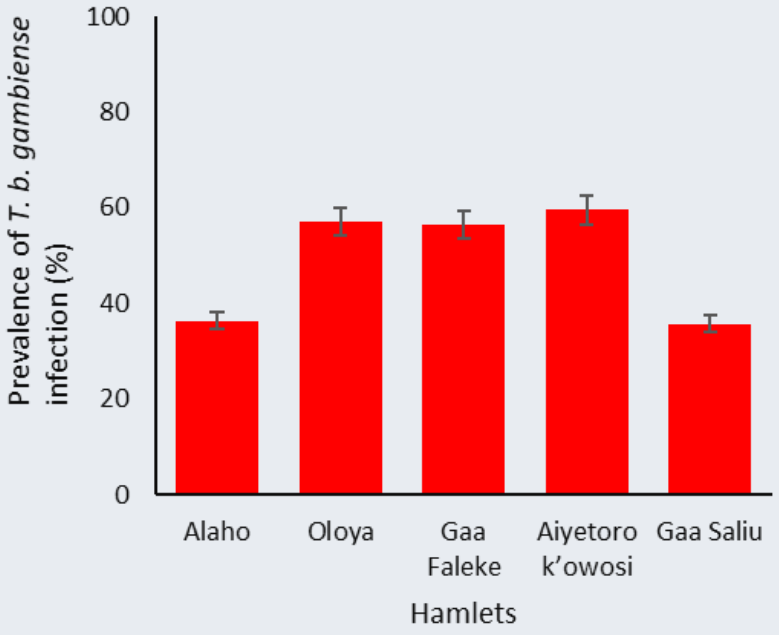


Figure 4: Distribution of *T. b. gambiense* infection by hamlet among animal population

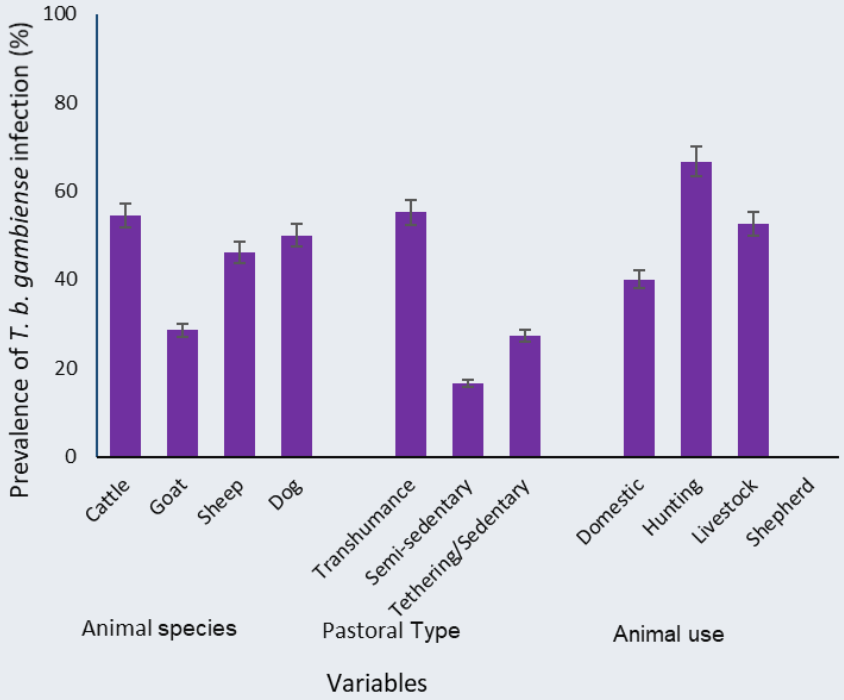


Figure 5: Distribution of *T. b. gambiense* infection by animal species, pastoral type and animal use

Findings - HAT

- Asymptomatic carriers, absence of cardinal signs of HAT.
- Occupational and behavioral drivers of transmission.

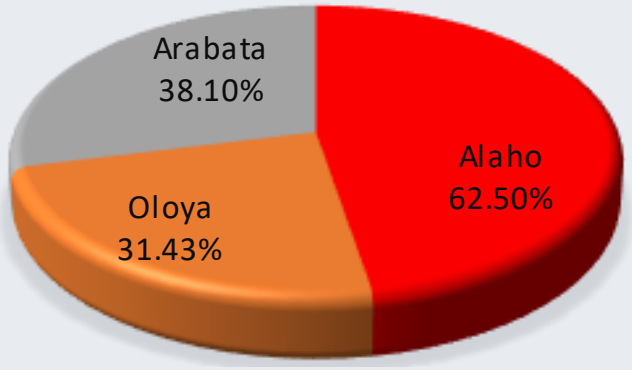


Figure 6: Distribution of *T. b. gambiense* infection by hamlet among human population

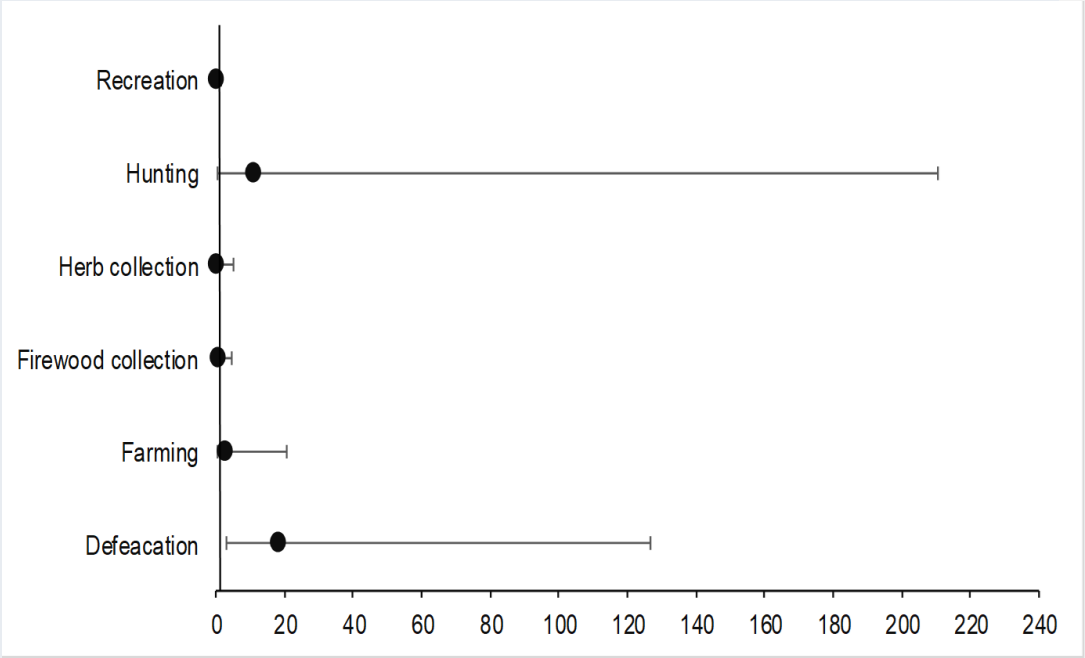


Figure 7: Transmission risk factors of human *T. b. gambiense* infection

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Discussion – Tsetse flies

G. p. palpalis are **forest species** (Are and Hargrove, 2020).

Vector competence for *T. b. gambiense* transmission (Hoare, 1972, Tirados *et al.*, 2011).
High density facilitates transmission.

Anthropophagic (Tirados *et al.*, 2011) and **zoophagic** (Solano *et al.*, 2015; Bouyer, 2020) behaviour.

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Discussion - HAT

Acquired **outside the study area**, before **tsetse fly suppression**, by **venereal or congenital transmission** (Luintel *et al.*, 2017).

Asymptomatic HAT (Camara *et al.*, 2023). **Self-cure (**Buscher *et al.*, 2018) or **trypanotolerance** (Jamonneau *et al.*, 2012; 2019).

Avirulence hypothesis (Smith, 1904), **Transmission-virulence trade-off hypothesis** (Anderson and May, 1982).

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Discussion - AAT

Higher prevalence among cattle/transhumant animals (OR = 5.7) confirms the protective effect of **zero-grazing** system (Mose, 2017).

Frequent exposure at grazing and watering points, larger **odour plumes**, and bigger **size** (Farikou *et al.*, 2023; Majekodunmi *et al.*, 2013).

Hunting dogs interface with wildlife and peri-domestic environments, **facilitating spillover**.

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Implications for HAT?

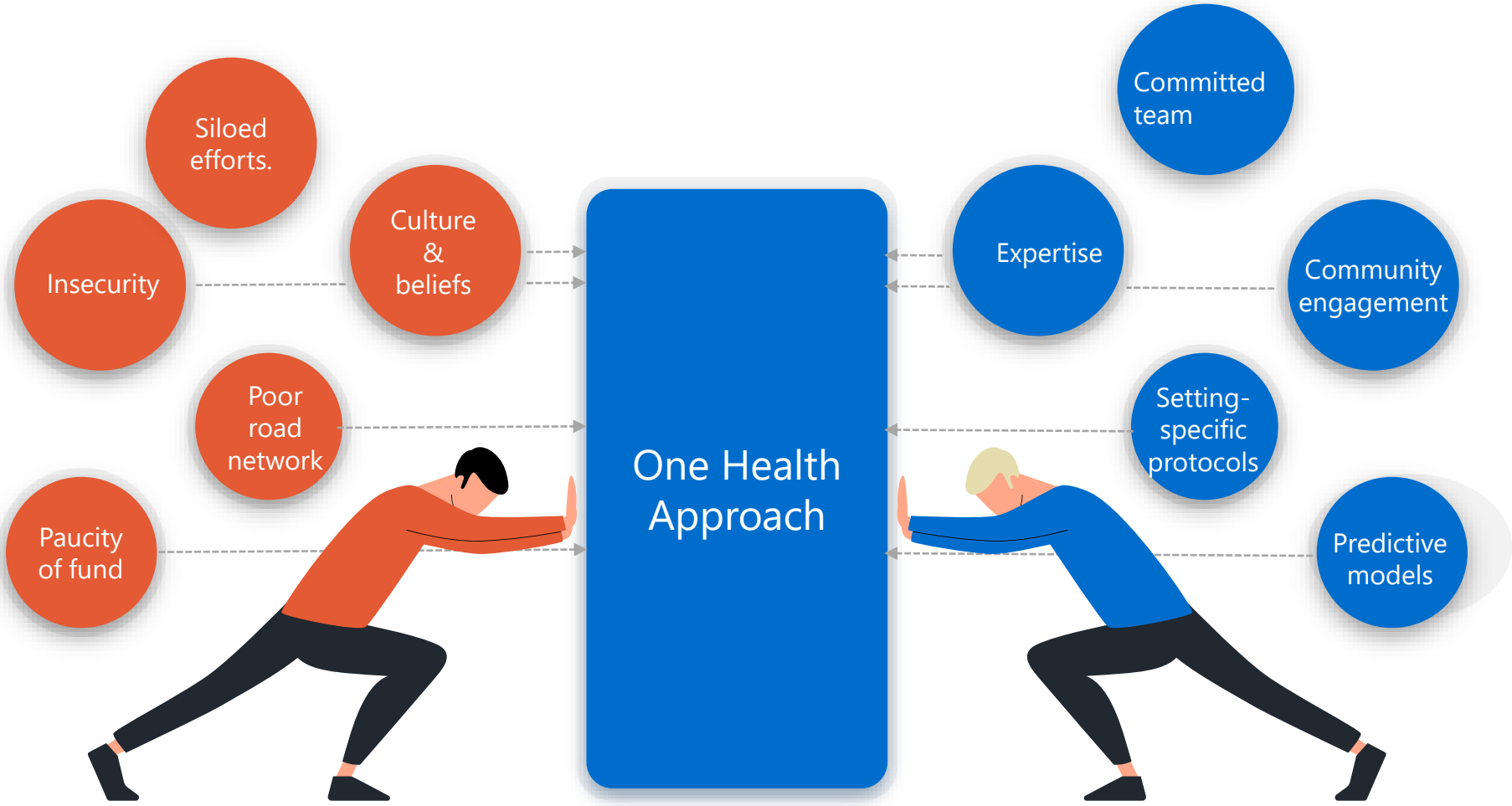


Call to action

Zoonotic reservoirs sustain parasite persistence.	Active transmission risk and threat of HAT resurgence	Rural community vulnerability due to their livelihoods.	Missed and misdiagnosis
Mandate HAT strategy to a One Health approach.	**Intensify** integrated tsetse surveillance and control programs.	**Strengthen** rural One Health education and preventive practices.	**Capacitate** health personnel for early detection. **Simplify HAT** Dx for low-resource settings.

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Limitations



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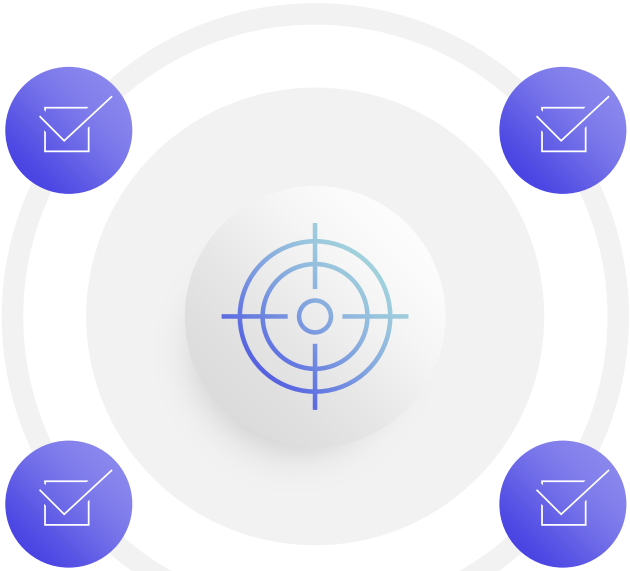
Strategic Framework 2026-2029

Intensified surveillance

≥10 States
≥80% high-risk areas

Capacity building

≥500 personnel trained in T&T surveillance/control.



Mapped 52 potential partners.

Multisectoral partnership

≥75% community participation.

Community engagement

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My resilient field team members.

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.....to eliminate HAT, we must control AAT.

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