Report of the WHO stakeholders update webinar on human African trypanosomiasis

Geneva, Switzerland, 5 June 2025

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Suggested citation. Report of the WHO stakeholders update webinar on human African trypanosomiasis, Geneva, Switzerland, 5 June 2025. Geneva: World Health Organization; 2025. https://doi.org/10.2471/B09628. Licence: CC BY-NC-SA 3.0 IGO.

Cataloguing-in-Publication (CIP) data. CIP data are available at https://iris.who.int/.

Cover page: Illustration from the original "*Positive in blood test*" by Néstor Favre-Mossier, 2013, oil on canvas.
Layout by Interligar - Branding & Design

Contents

Abbreviations and acronyms

CATT	card agglutination test for trypanosomiasis
CIRAD	Centre de coopération internationale en recherche agronomique pour le développement (Agricultural Research Centre for International Development)
CIRDES	Centre International de Recherche-Développement sur l'Elevage en zone Subhumide (International Centre for Research and Development of Livestock in the subhumid zone)
CRID	Centre for Research in Infectious Diseases, Cameroon
CSF	cerebrospinal fluid
DNDi	Drugs for Neglected Diseases initiative
DTAG	WHO Diagnostic Technical Advisory Group
EDCTP	European and Developing Countries Clinical Trials Partnership
EMA	European Medicines Agency
FAO	Food and Agriculture Organization of the United Nations
FEX	fexinidazole
FIND	Foundation for Innovative New Diagnostics
HAT	human African trypanosomiasis
g-HAT	human African trypanosomiasis due to T. b. gambiense
r-HA	human African trypanosomiasis due to T. b. rhodesiense
HAT-e-TAG	Technical Advisory Group for HAT elimination
IAEA	International Atomic Energy Agency
INRB	Institut National de Recherche Biomédicale (National Institute for Biomedical Research), Kinshasa
IPR	Institut Pierre Richet, Bouake, Côte d'Ivoire
IRD	Institut de Recherche pour le Développement (National Research Institute for Development)
ITM	Institute of Tropical Medicine, Antwerp, Belgium
KPS	kit de prélèvement de sang (blood collection kit)
LSTM	Liverpool School of Tropical Medicine
MSF	Médecins Sans Frontières (Doctors Without Borders)
NECT	nifurtimox–eflornithine combination therapy
NSSCP	national sleeping sickness control programme (PNLTHA in French)
NTD	neglected tropical disease
PHP	public health problem
PNLTHA	Programme National de lutte contre la trypanosomiase humaine africaine (NSSCP in English)
PV	pharmacovigilance
RDT	rapid diagnostic test
SHERLOCK	high sensitivity enzymatic reporter unlocking technique
T+	trypanosomes directly observed (confirmed case)
T-	trypanosomes not directly observed (probable case)
TPP	target product profile
VSG	variant surface glycoprotein
WBC	white blood cell
WHO	World Health Organization

1. Introduction

Significant progress in controlling human African trypanosomiasis (HAT) has been achieved since 2000 through concerted efforts led by national programmes and supported by public–private partnerships, nongovernmental organizations, donors and academia under the auspices and coordination of the World Health Organization (WHO).

The target for the elimination of HAT as a public health problem (PHP) by 2020 has been reached globally, although in some countries HAT remains a PHP. The road map for neglected tropical diseases 2021−2030 ("the road map") sets the target of interruption of transmission of gambiense HAT (g-HAT) and elimination as a PHP of rhodesiense HAT (r-HAT). Pursuing this goal requires strengthened and sustained efforts of all stakeholders, national authorities and partners.

National sleeping sickness control programmes (NSSCPs) are key to controlling the disease and adapting strategies to different epidemiological situations. The involvement of various partners, as well as the support and trust of long-term donors, has been crucial to these achievements. During the past 24 years, formal collaboration among WHO, Sanofi and Bayer has enabled WHO to provide sustained financial, technical and material support for the implementation of control activities in endemic countries. For an even longer time, support from the Government of Belgium in the Democratic Republic of the Congo has also been essential.

On 5 June 2025, WHO convened a webinar in lieu of the sixth stakeholders meeting on the elimination of g-HAT and r-HAT to update stakeholders on progress. Previous meetings on g-HAT were held in 2014 (*1*, *2*), 2016 (*3*) and 2018 (*4*, *5*), and on r-HAT in 2015 (*6*, *7*), 2017 (*8*) and 2019 (*9*). Joint meetings on g-HAT and r-HAT were held in 2021 (*10*) and 2023 (*11*). These meetings reinforced the partnership and commitment to HAT elimination, and established collaboration mechanisms. This network comprises NSSCPs, groups developing new tools, and international and nongovernmental organizations involved in disease control, as well as donors.

Since 2018, among sustained case-finding efforts, fewer than 1000 HAT cases have been reported annually, which is a historic low level. The area at risk of HAT has also shrunk considerably. HAT has been eliminated as a PHP at the global level. Congratulations to all stakeholders on this achievement. However, there is no time to lose. The road map targets the interruption of transmission of g-HAT, which requires strengthened and sustained efforts from all stakeholders, national authorities and partners. It will take disproportionately large efforts and innovative strategies to identify the remaining cases of HAT. Given the limited resources and other competing public health priorities, achieving this goal will require our joint commitment.

2. Meeting objectives

The objectives of the meeting were:

- To sustain and strengthen the network for collaboration and coordination among stakeholders;
- To review progress towards the elimination of HAT and identify the challenges for reaching the goal of interruption of transmission of g-HAT and to share achievements, challenges and perspectives among countries and implementing partners;
- To review the status of critical technical aspects in research, development and implementation of therapeutic and diagnostic tools, epidemiology and vector control;
- To discuss strategies to reinforce control and surveillance of HAT; and
- To maintain the commitment of national authorities and technical and financial partners to the elimination objectives for HAT.

3. Opening remarks

Dr Gerardo Priotto, Medical Officer, HAT control and surveillance programme, WHO Global Neglected Tropical Diseases Programme (WHO/NTD), opened the meeting and welcomed the participants. He informed them that about 140 stakeholder representatives were invited to the meeting and emphasized the variety of stakeholder roles at whose centre are the national programmes of endemic countries. Organizational notes including information on access to live interpretation in English and French were provided.

Dr Ibrahima Socé Fall, Director WHO/NTD, expressed his great pleasure in welcoming participants to this webinar update on HAT and extended his gratitude to all stakeholders dedicated to eliminating the disease. An in-person meeting had been planned as an opportunity for in-depth discussion and strategic planning, but budget constraints this year required that it be postponed. Nevertheless, WHO is pleased to facilitate this virtual meeting to continue collaboration and reflect on the latest data on progress towards HAT elimination. This achievement results from sustained collaboration since 2000, led by national HAT programmes and supported by public–private partnerships, nongovernmental organizations, donors, academia and the direct involvement of the WHO. All can be proud that the global target of eliminating HAT as a public health problem by 2020 was achieved.

Many countries have now been individually validated as having reached this milestone. However, we must recognize that HAT remains a public health concern in some countries and that continued efforts are needed. Following the road map, which sets ambitious yet achievable targets for interrupting the transmission of g-HAT and continuing the elimination of r-HAT as a public health problem, we must renew our commitment and strengthen coordination among all stakeholders, including national authorities, technical partners and donors. Since its launch in 2014, the WHO Network for HAT Elimination has played a vital role in keeping us aligned and informed. This network brings together national HAT programmes, tool developers, implementing partners and supporters of all kinds. Everyone can be thanked for their contribution.

Due to time constraints during the webinar, all stakeholders were invited to submit written contributions that will be shared to ensure everyone's voice is heard. He concluded with a call for all of us to sustain and strengthen our collaboration in order to overcome the remaining challenges in the research, development and rollout of diagnostic and therapeutic tools, vector control and surveillance strategies. Working together, we can stay on track and move closer to achieving the goal of eliminating HAT by 2030.

Among the in-person panelists were Dr Daniel Argaw Dagne, Head, WHO/NTD Prevention, Treatment and Care unit; Dr Dieudonné Sankara, Team lead, WHO/NTD Eradication and Elimination team and WHO/NTD Dracunculiasis Eradication Programme; and Dr José Antonio Ruiz Postigo, part-time member of the WHO/HAT team. The in-person panellists were joined by Dr Agnès Magnen and Dr Philippe Neau from Sanofi, a long-term donor of HAT medicines and further resources, as well as by Dr Veerle Lejon and Professor Inaki Tirados, the speakers on diagnostics and vector control. Rosa Maria Perea Ibáñez (WHO/NTD) and Ramabhadran Sreeram (WHO/NTD) were primarily responsible for organizing the meeting. The other panellists joined online. The meeting report was prepared by Dr Andreas Lindner, University of Berlin.

The meeting agenda is attached as Annex 1 and the list of participants as Annex 2.

4. Update of the global epidemiological situation

The goal set by WHO in 2012 to **eliminate** HAT (g-HAT and r-HAT) **as a PHP by 2020 has been achieved**.

The **primary indicators** were:

- the number of cases reported per year (target: < 2000 cases/year at continental level); and
- the area at risk reporting ≥ 1 case/10 000 people per year (target: 90% reduction of the total area at risk from the 2004 baseline level).

In 2020, WHO established a **new road map (2021-2030)**, with the following goals, different for g-HAT and r-HAT:

- for gambiense HAT: "**to eliminate transmission of g-HAT (zero cases) by 2030**"; and
- for rhodesiense HAT: "**to keep r-HAT eliminated as a public health problem by 2030**".

The indicators in the new road map are different. The indicators and global targets set for 2030 are specified in Table 4.1. The presence of animal reservoirs of r-HAT makes control more difficult, and the targets for r-HAT are therefore less far-reaching.

Table 4.1
WHO road map indicators and 2030 global targets for HAT

Indicators and 2030 global targets for g-HAT	2023	2025	2030
Number of countries verified for interruption of transmission	0 (0%)	5 (21%)	15 (62%)
Number of gHAT cases reported	500	200	0 (100%)

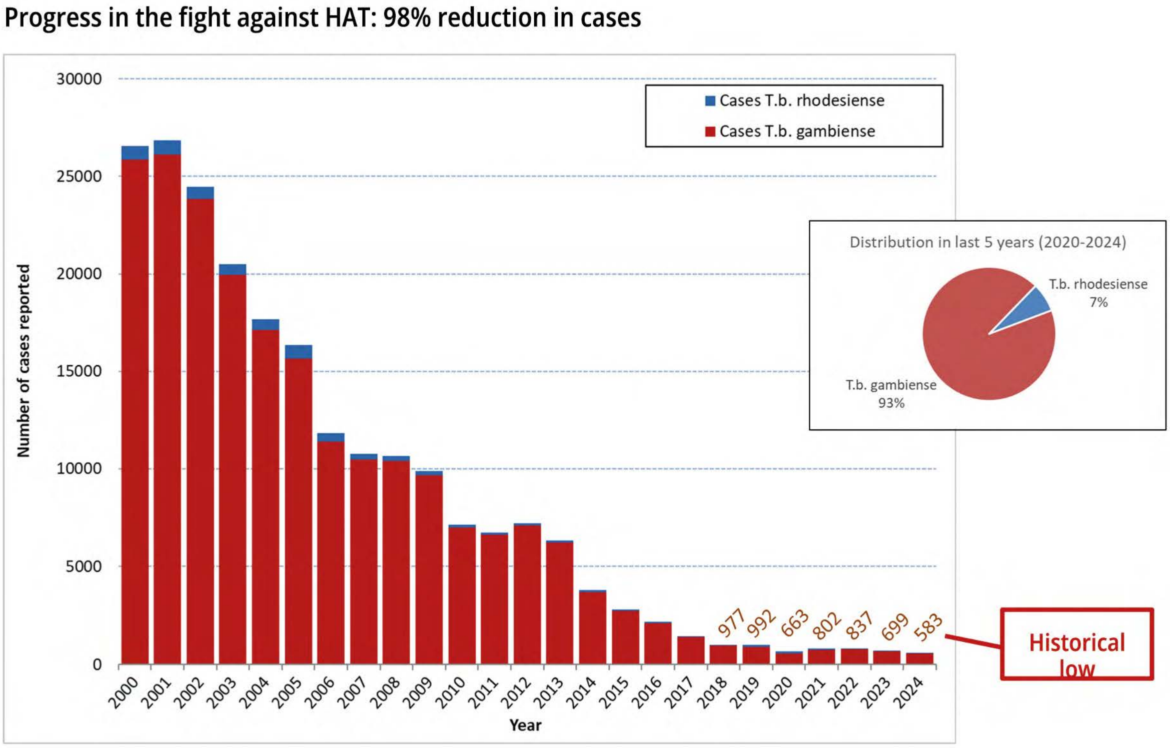
Indicators and 2030 global targets for r-HAT	2023	2025	2030
Number of countries validated for elimination as a public health problem (defined as < 1 case/10 000 people per year, in each health district of the country averaged over the previous 5-year period)	2 (15%)	4 (31%)	8 (61%)

The milestones for 2023 and 2025 have not yet been fully met. Regarding the r-HAT milestones for 2023, Rwanda has already been validated as the first country. The official validation of Kenya as a second country is under way. Other countries are working towards this goal.

4.1 Reported cases

The **number of reported HAT cases** per year decreased by 98%, from 26 574 in 2000 to a historic low of 583 in 2024 (Figure 4.1.1). However, the rate of decrease has slowed. The proportion of r-HAT cases increased to 7% during 2020–2024 (3% in the previous 5-year period). Due to a close follow-up of the endemic countries, WHO is confident that the reported case numbers are reliable.

Figure 4.1.1
g-HAT cases (red) and r-HAT cases (blue) reported globally, 2000–2024



The WHO HAT Elimination Technical Advisory Group (HAT-e-TAG) discussed the case definitions and recognized **two main categories: confirmed cases (T+)**, where trypanosomes are directly observed; and **probable cases (T-)**, where trypanosomes were not directly observed. Probable cases have a positive trypanolysis test, a CATT (card agglutination test for trypanosomiasis) titer ≥ 1/16, a positive ELISA (enzyme-linked immunosorbent assay) result or a positive DNA/RNA molecular test result. The total figures reported since the year 2000 are a mix of confirmed and probable cases. Systematic recording of probable cases started in 2018. From 2018 to 2024, the proportion of probable cases increased from 3.9% to 17.2% of the total. Looking only at confirmed cases reveals a faster decline in case numbers, with a 51% reduction from 2018 to 2024 (Figure 4.1.2). As we advance towards the elimination of transmission of *T. b. gambiense* parasites, confirmed cases will become rare but seropositive individuals will continue to be identified, due to their contact with other non-human pathogenic trypanosomes; and as elimination of g-HAT progresses, a probable case will be less likely to be a true case.

Roughly 60% of cases were found via **active screening**, thanks to a stricter dynamic approach of mapping cases and re-targeting villages with cases reported within the previous 3–5 years. New screening methods have also been implemented, such as **mini mobile units** with motorbikes deployed to screen previously unreachable areas, and **door-to-door screening**, both of which increase coverage. By reaching out to new areas, elimination is progressing, even if the number of cases seems to be decreasing at a slower pace.

Importantly, the decrease in the number of reported cases is not a consequence of decreasing surveillance activities: rather, the numbers of people screened have stayed at high levels, with an average of around 2 million people per year (Figure 4.1.3). This provides reassurance that not many cases are missed. Since the year 2000, 56.2 million people have been screened.

Figure 4.1.2

g-HAT case numbers comprising confirmed cases (T+, trypanosomes directly observed) and probable cases (T-, trypanosomes not observed but suspected based on serology or molecular tests). Looking only at confirmed cases the decline was faster.

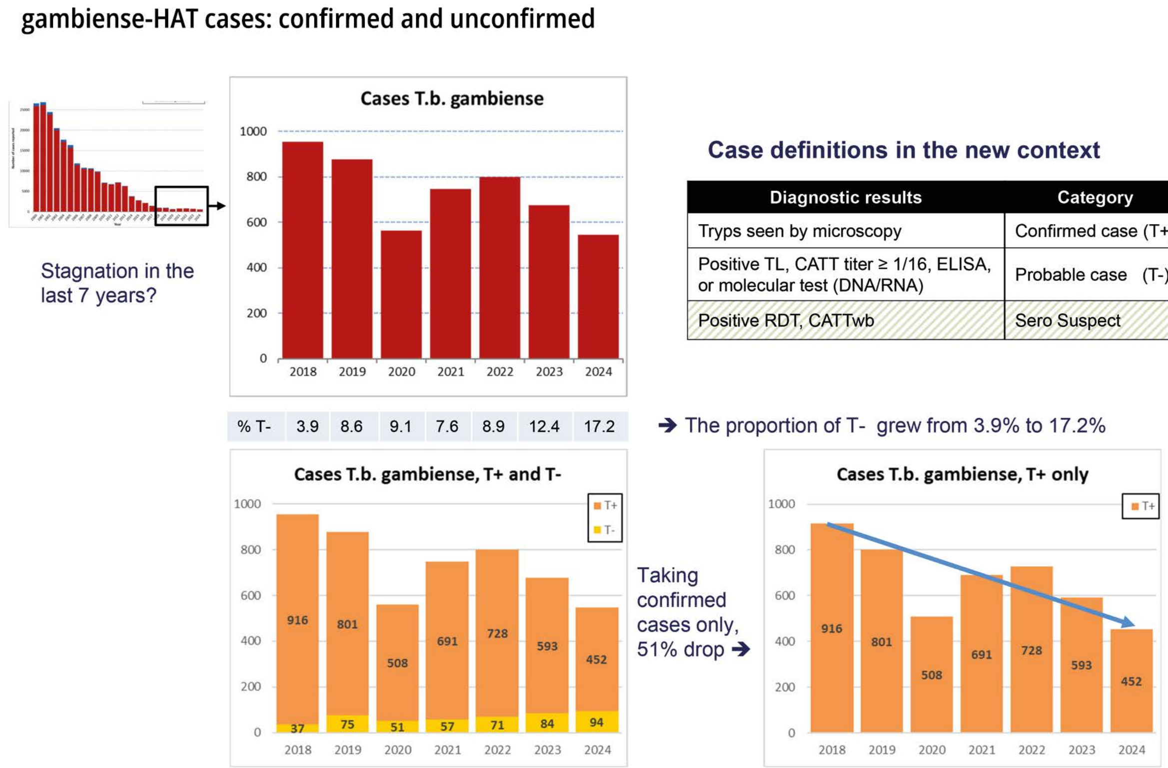
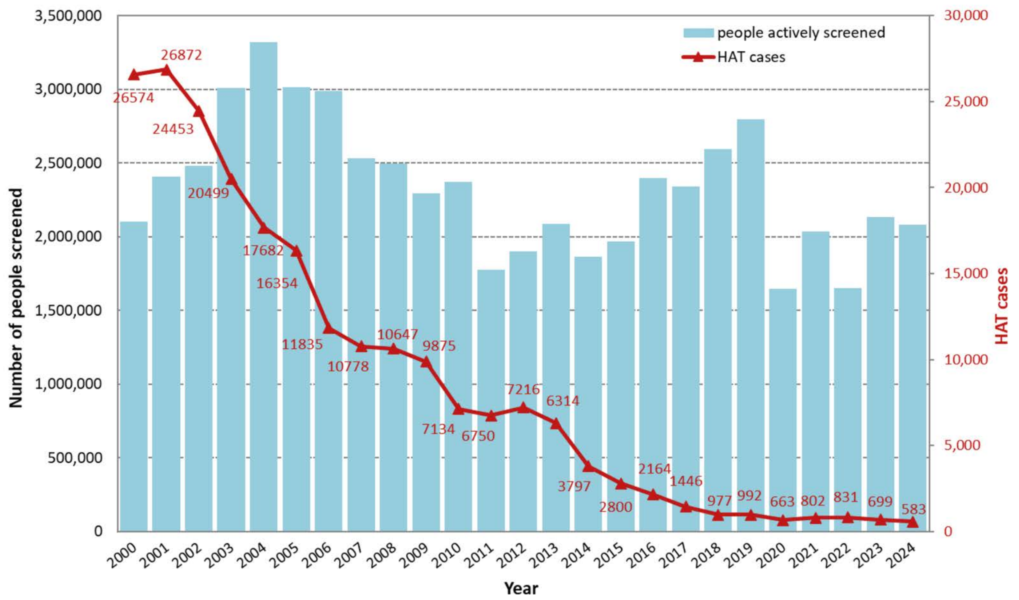


Figure 4.1.3

Number of people actively screened and number of reported cases globally, 2000–2024.

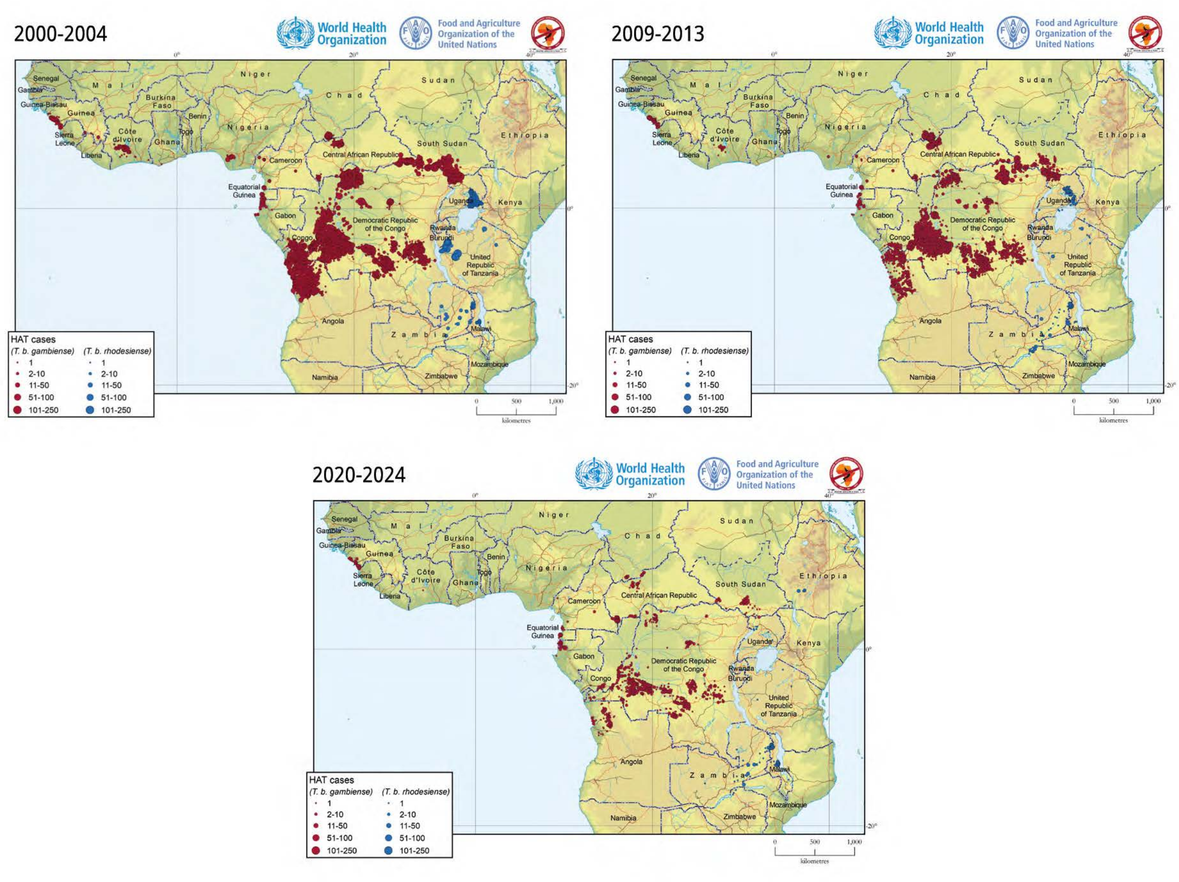


4.2 Geographical distribution of HAT

Cases of HAT have been mapped at the village level in the HAT Atlas database since 2000. A comparison of the distribution of cases in the period 2000–2004 with the periods 2009–2013 and 2020–2024 illustrates a significant reduction in the areas of transmission (Figure 4.2.1).

Figure 4.2.1

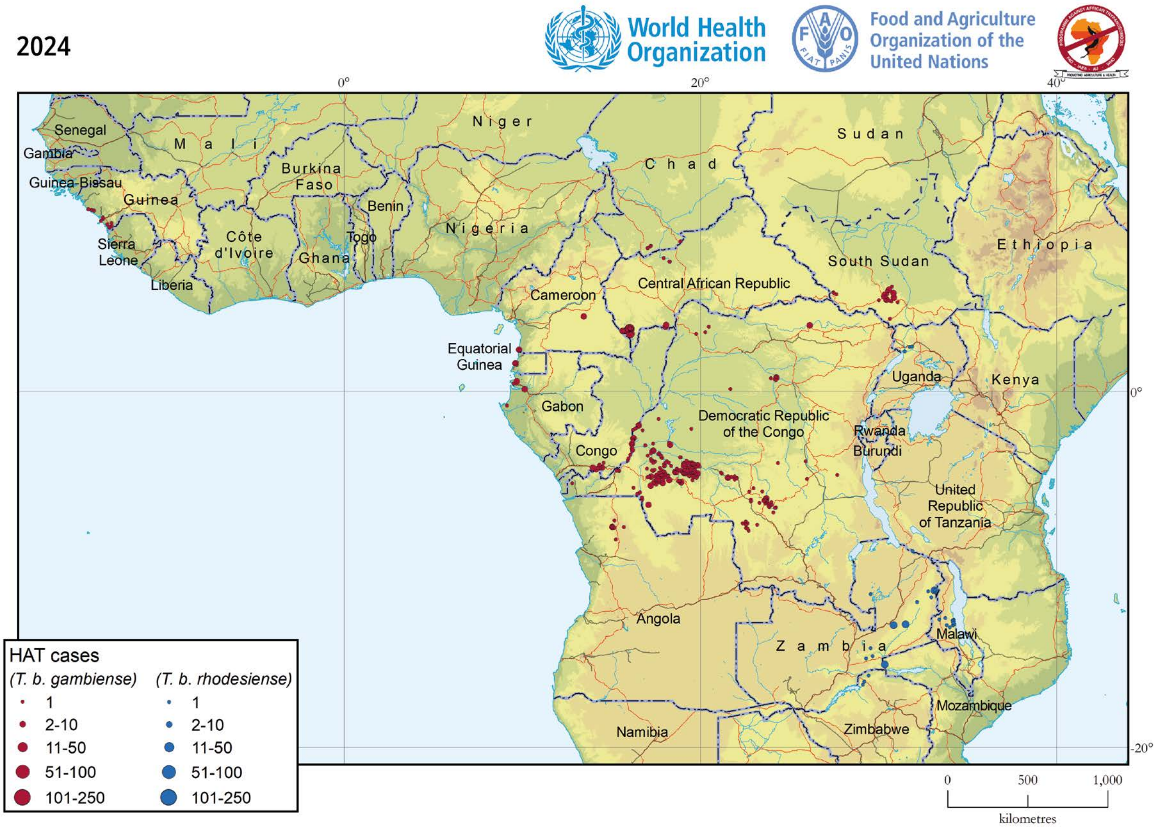
Geographical distribution of HAT cases (g-HAT in red, r-HAT in blue), cumulated in the 5-year periods 2020–2024 (top), 2009–2013 (middle) and 2020–2024 (bottom)



The latest distribution of cases, in 2024 only, is shown in Figure 4.2.2.

Figure 4.2.2

Geographical distribution of HAT cases (g-HAT in red, r-HAT in blue) in 2024

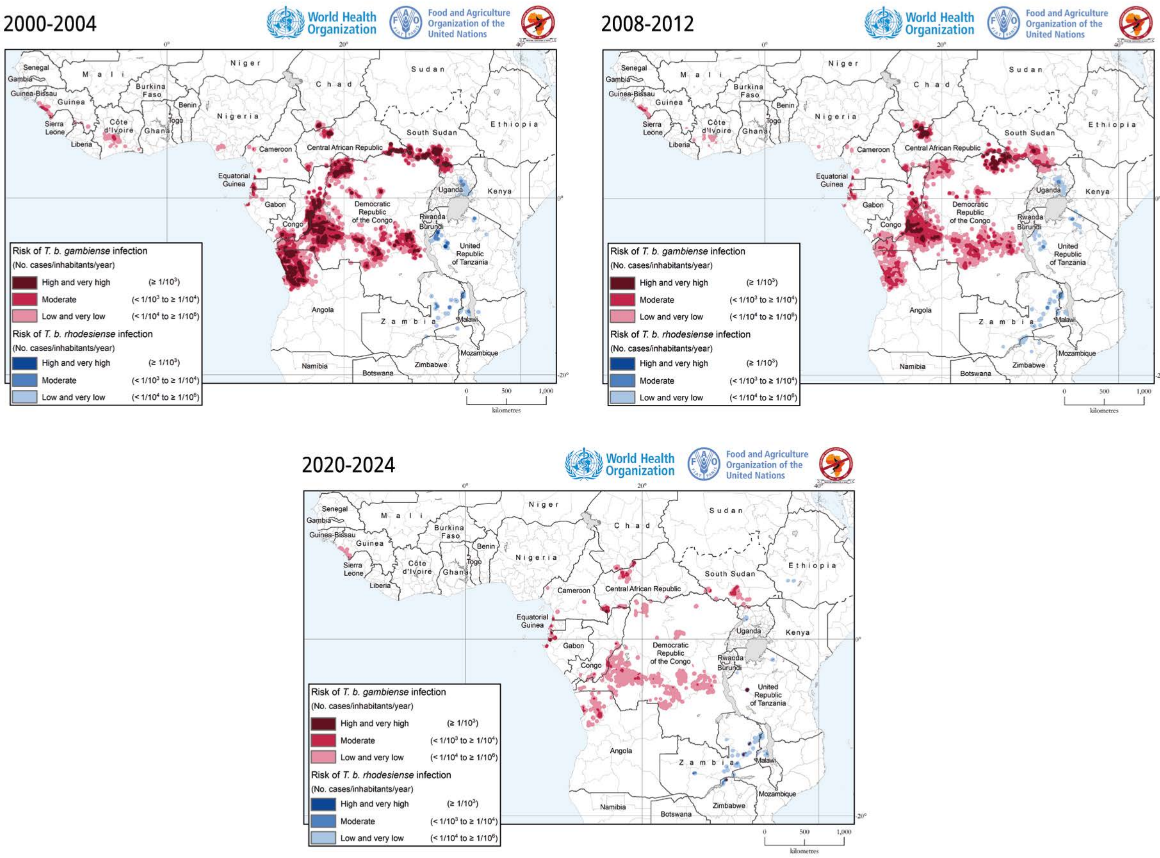


4.3 Areas at risk

The areas at risk for HAT are determined by dividing the annual number of cases over the inhabitants per space unit, hence providing a spatial distribution of the HAT incidence rate. The risk area for g-HAT and r-HAT has evolved strongly since the year 2000. As shown in Figure 4.3.1, taking three 5-year periods (2000–2004, 2008–2012 and 2020–2024), there was a marked reduction in the area at risk, and a transition from higher to lower risk categories, leaving predominantly low and very low levels of infection risk.

Figure 4.3.1

Risk of g-HAT (red) and r-HAT (blue) in 2000–2004 (top), 2008–2012 (middle) and 2020–2024 (bottom), by risk category



4.4 Cases per country

In 2023 and 2024, 1282 cases were reported from 16 endemic countries (Figure 4.4.1). In these 2 years, 95% of the cases were g-HAT, of which 56% occurred in the Democratic Republic of the Congo, which, together with the Central African Republic contribute 73% of all cases.

Figure 4.4.1

Average annual number of HAT cases per country, 2023–2024, categorized as > 100 cases, 10–100 cases, < 10 cases, no cases, non-endemic

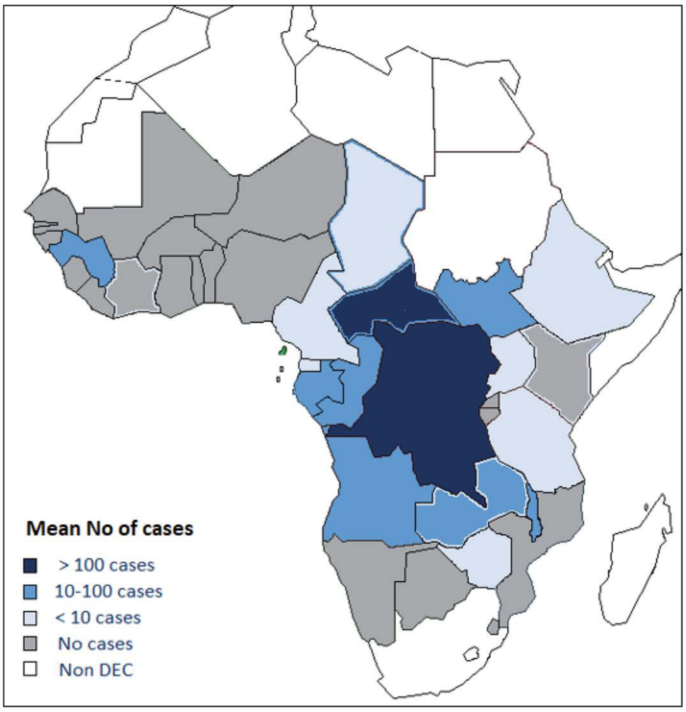


Figure 4.4.2 illustrates the changing caseload of g-HAT by country. In the 2017–2022 period, with 12 reporting countries, 69% of all cases originated from the Democratic Republic of the Congo. In the past 2 years, the proportion of cases in the Democratic Republic of the Congo was smaller (59%), while proportionally the share grew in the Central African Republic. In 2024, a total of 546 g-HAT cases were reported from 10 countries, 330 cases of which originated from the Democratic Republic of the Congo and 111 cases from the Central African Republic. The other countries reported significantly lower numbers.

The distribution of r-HAT cases is much more variable than that of g-HAT and shows epidemic peaks (Figure 4.4.3). After an outbreak in Uganda in 2014, r-HAT case numbers declined until a new outbreak occurred in Malawi in 2019–2020. The figure shows the cumulative yearly data. However, cases within outbreaks tend to concentrate within a few weeks or months, as was the case with the outbreak in Malawi at the end of 2019 and beginning of 2020. Those outbreaks are linked to climatic conditions that affect the behaviour of tsetse flies, animals or humans getting closer to the animal reservoir. In 2024, the number of cases began to rise again, particularly in Zambia, which replaced Malawi as the country with the highest number of r-HAT cases. The reduction in cases in northern Malawi appears to be related to a vector control programme that was implemented over the previous 2 years. However, this has yet to be confirmed, as other factors could also have had an influence.

Figure 4.4.2

g-HAT distribution 2017–2022 (top left) compared with 2023–2024 (top right), as well as the countries with case numbers reported in 2024 (bottom)

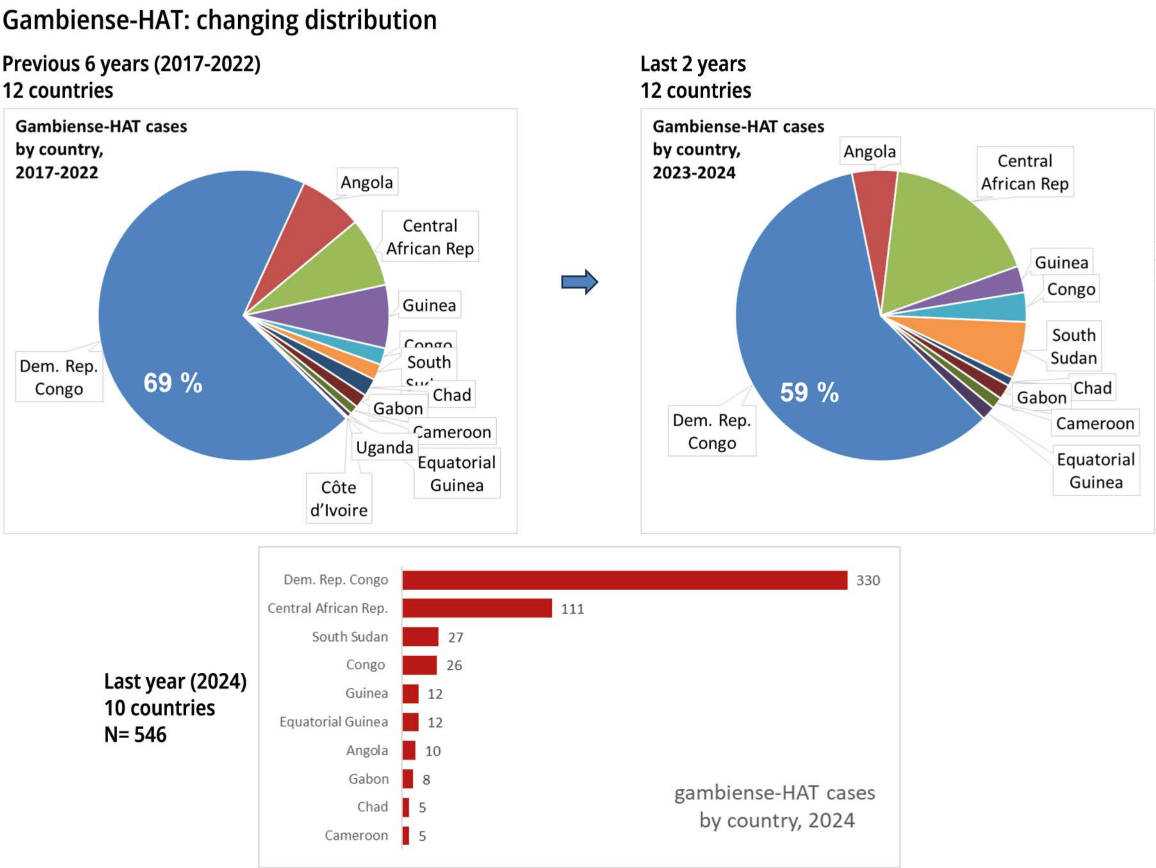
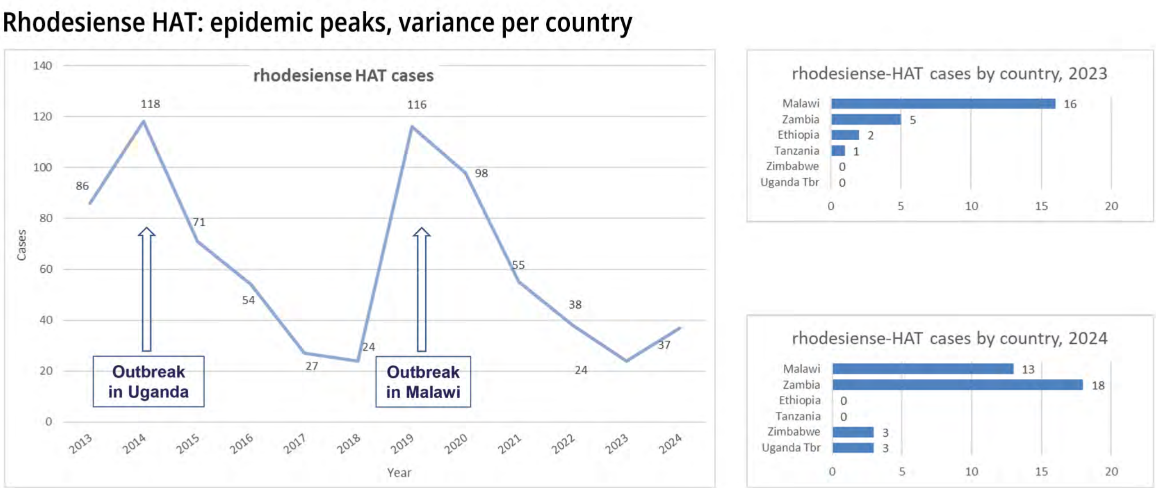


Figure 4.4.3

r-HAT cases 2013-2024, showing epidemic peaks in Uganda and Malawi (left), as well as r-HAT cases per country in 2023 and 2024 (right)



Tanzania: United Republic of Tanzania; Tbr: *Trypanosoma brucei rhodesiense*.

4.5 Strategies for elimination

Case-finding. The signs and symptoms of HAT are not specific and health workers tend to think of malaria and other febrile illnesses. As a result, HAT diagnosis can easily be missed. Special training for clinicians to raise suspicion of the disease is therefore necessary, as are specific diagnostic tools. Since 2000, 9.1 million people have been passively screened and 56.2 million actively screened. The proportion of passive screening is increasing as more health facilities are installing passive screening capacity. For surveillance, it is more difficult to obtain the data for passive screening.

Mapping and planning. As HAT is spatially clustered, mobile screening units need to know exactly where to screen. Precise mapping of cases at the village level is essential for locating foci of HAT transmission. The **HAT Atlas is instrumental to plan active screening** by producing a first-priority list of villages having had cases in the past 3 years and a second-priority list of villages having had cases in the past 5 years but not in the past 3 years. A list of recently screened villages can also be produced and used to de-prioritize villages accordingly. Planning takes into consideration other factors such as distance, road conditions, season and capacity.

Figure 4.5.1 illustrates the places where active screening was carried out in 2020–2024. The figure also shows that only a small number of areas with cases are not covered by active screening. These areas may already be targeted for 2025.

Figure 4.5.1

Geographical distribution of HAT cases (g-HAT in red, r-HAT in blue) and active screening sites (white dots), cumulated 2020–2024

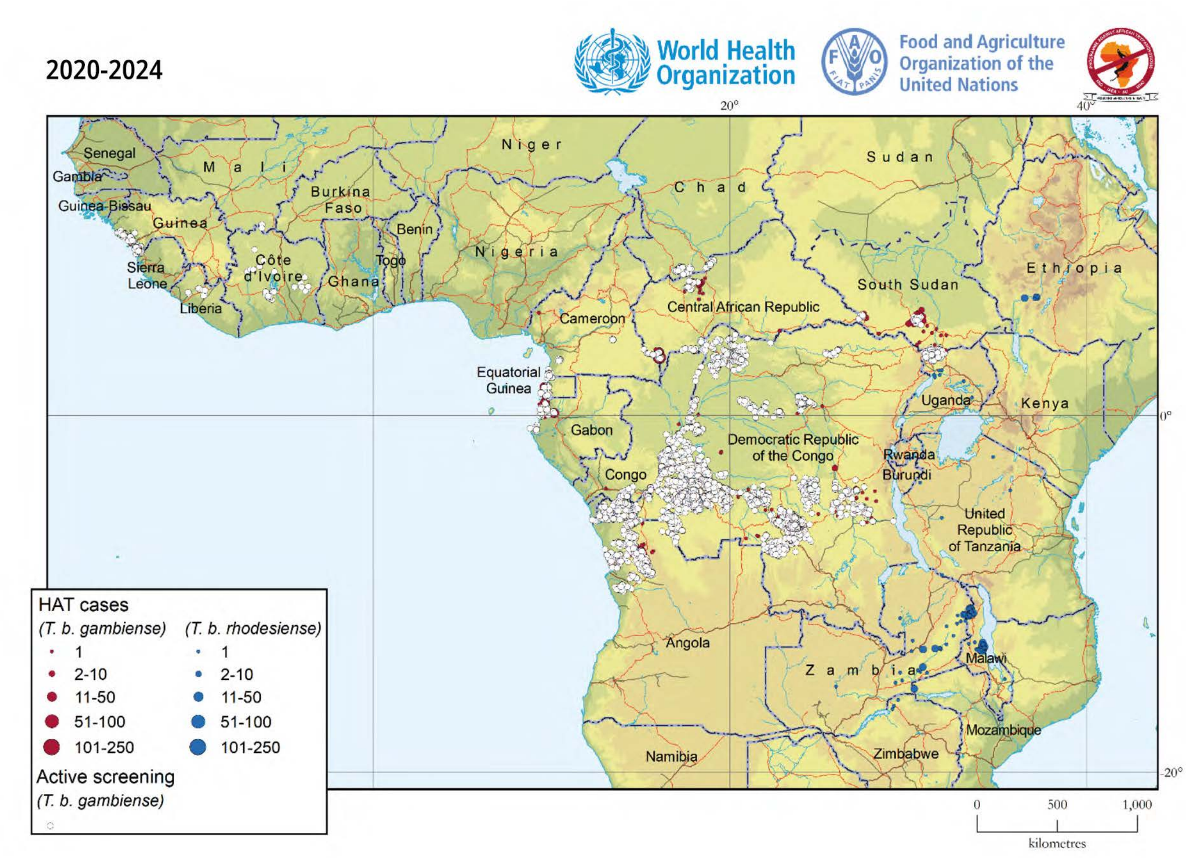
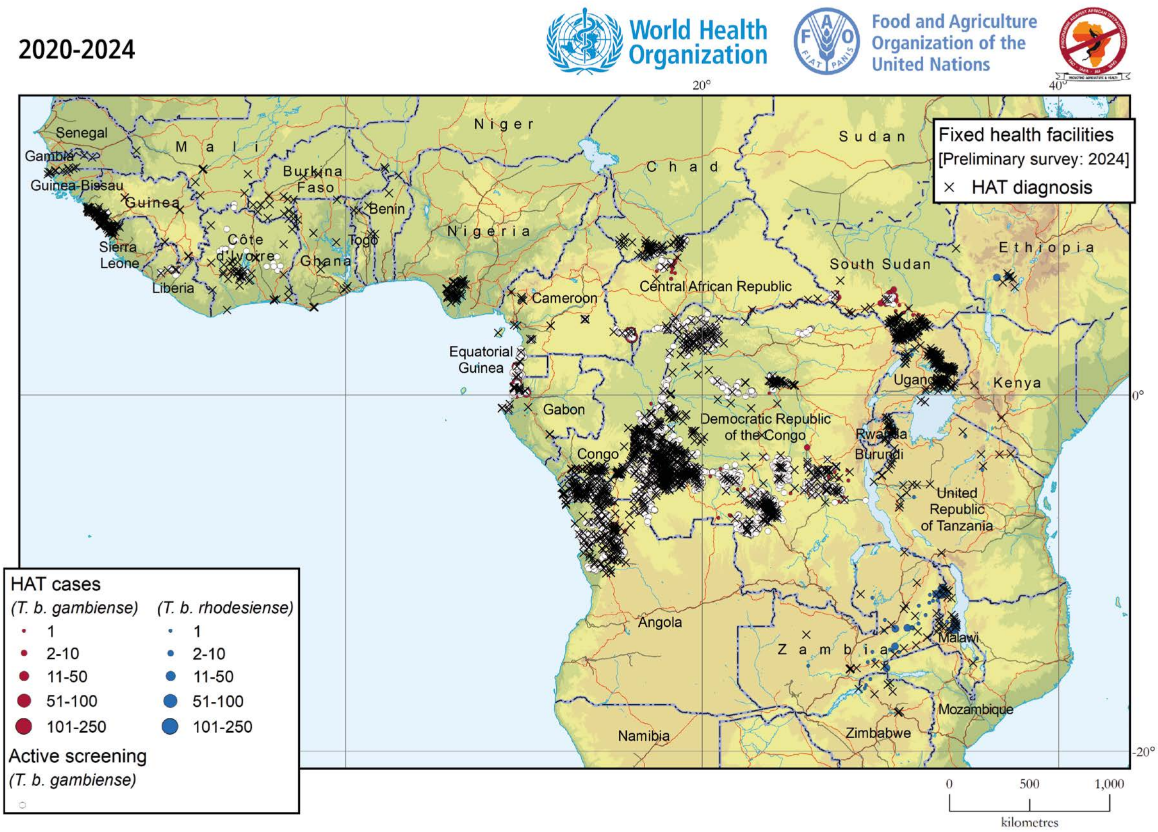


Figure 4.5.2 illustrates the spatial distribution of health facilities that offer continuous HAT diagnostic services throughout the year.

Figure 4.5.2

Geographical distribution of fixed health facilities (x) providing passive screening and diagnosis of HAT, 2024



The number of health facilities with **capacity to screen for, diagnose and treat HAT** has increased annually, thereby improving access to diagnosis and treatment (Figure 4.5.3). In 2013, 732 fixed health facilities provided diagnosis of HAT and 530 provided any treatment for HAT. In 2022, the numbers were respectively 1893 and 1011. With the availability of fexinidazole (FEX) for the treatment of HAT the situation has recently changed, as it may be easier to send the medicine to a peripheral health facility than to refer patients if they meet the criteria for this novel oral therapy. In 2023–2024, HAT sites were set up in Burundi, Gambia and Sierra Leone as new countries. Through the increased diagnostic capacity, the global epidemiological knowledge is better than ever before.

Case management is another strategy for elimination. HAT treatment is curative and lifesaving. But also, every patient who is treated is no longer functioning as a parasite reservoir, which will stop further transmission. All HAT medicines are donated to WHO by Bayer and Sanofi. WHO developed treatment guidelines and provided trainings. WHO also provides support for the implementation of new therapies in countries, which is a complex and bureaucratic process. The fact that affected countries may prioritize diseases other than HAT also reflects the status of HAT as a neglected tropical disease (NTD), leading to a longer implementation process. Following its introduction for treatment of g-HAT in previous years, FEX has now also been adopted for treatment of r-HAT in Ethiopia, Malawi and Zimbabwe. The process of adoption is ongoing in Kenya, Uganda, the United Republic of Tanzania and Zambia. After 76 years, FEX represents the first substantial therapeutic innovation for r-HAT.

Access to treatment must be maintained because it is life-saving, but also as part of the elimination strategy. WHO maintains a central stock at MSF Logistics in Bordeaux (France), from where these medicines are shipped to countries endemic for g-HAT. A smaller stock of about 8% is maintained in Geneva (Switzerland), primarily for r-HAT. Strategic mini-stocks are also kept in 10 non-endemic countries to enable timely treatment of imported cases, which is particularly critical for r-HAT given its rapid disease progression (Figure 4.5.4).

Figure 4.5.3

Health facilities providing g-HAT (dots) and r-HAT (triangles) diagnosis and treatment in 2022; red indicates only diagnostic capacity, blue diagnostic and treatment capacity, yellow only treatment capacity

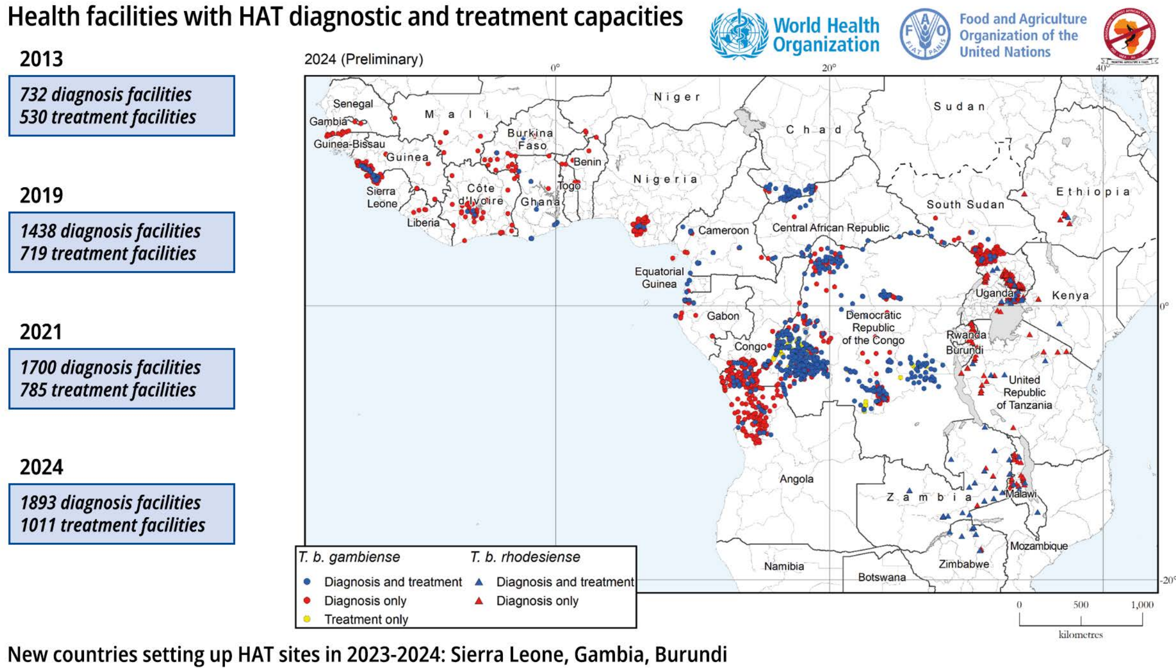
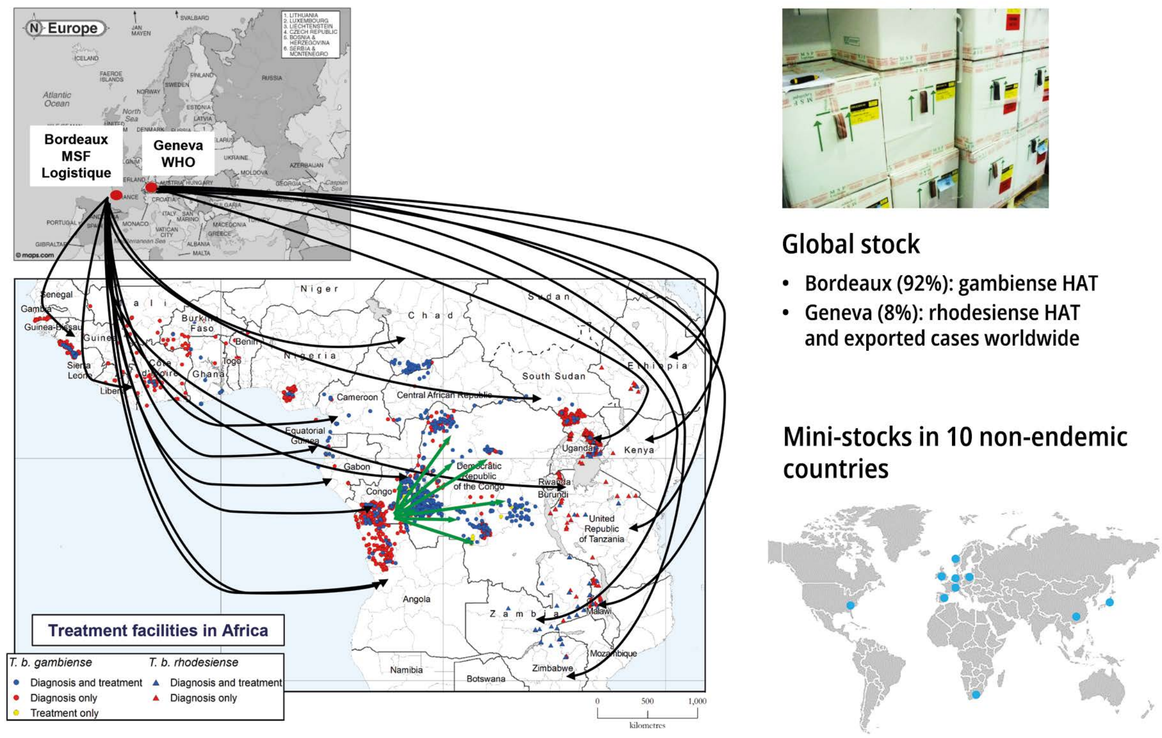


Figure 4.5.4

Distribution pathway of HAT medicines allowing access to treatment as part of the elimination strategy



Training of personnel involved in HAT is essential for building and maintaining capacity, particularly since HAT is usually not included in the curriculum of medical school in endemic countries. Training is also required for the implementation of new tools and strategies. Training is provided by WHO and other partners. Examples of training provided in 2024 include:

- Côte d'Ivoire: International Course on Trypanosomiasis in Africa (ICAT) – a 3-week comprehensive training course for HAT programme managers from 15 countries;
- Burundi: training to set up HAT surveillance;
- Malawi: training of trainers for r-HAT treatment, with following cascade training in seven countries facilitated by DNDi;
- Gambia: training to set up HAT surveillance;
- Ethiopia: training to extend HAT surveillance in the Gambella and South West regions;
- Democratic Republic of the Congo: several courses for healthcare staff (stock management, screening, diagnosis and treatment, quality assurance).

Vector control contributes to curbing the transmission of HAT by reducing tsetse fly densities and tsetse fly–human contact. It is most effective when combined with medical interventions. Considering the vast territory populated by tsetse flies, the areas where the impact is expected to be highest must be prioritized. Community engagement may improve the sustainability of vector control activities. Efforts must be devoted to increasing country ownership of tsetse control.

4.6 Conclusions

The number of cases has remained below 1000 for 7 consecutive years, reaching an all-time low in 2024.

A distinction should be made between confirmed cases (T+) and unconfirmed cases (T-) because the latter are increasing proportionally. From 2018 to 2024, the number of T+ cases fell by 51%, whereas the overall reduction was 43%.

Recently, most cases have been identified through active screening. Good mapping of cases is enabling more precise targeting of villages. With mini mobile units and door-to-door screening, more of the population at risk is reached.

These observations suggest that the elimination of HAT is progressing faster than the trend in the number of cases indicates.

In this scenario of elimination with fewer cases, it is crucial to ensure adequate diagnosis and timely treatment.

The situation of r-HAT is less well known and the risk for r-HAT epidemics is always present.

In this situation it is essential to keep partners' commitment, to promote ownership by national health authorities and to maintain adequate coordination of partners.

5. Status of countries' validation of elimination as public health problem

A country could be considered as having eliminated HAT as a PHP when dedicated medical activities and other epidemiological evidence reliably show < 1 case/10 000 people in all the health districts of the country over the previous 5-year period. Countries meeting these criteria can submit a validation dossier to WHO, documenting the elimination of HAT as a PHP (Figure 5.1). A reviewing validation team evaluates the completeness, accuracy and reliability of the dossier. This team ascertains the likelihood that HAT is no longer a public health problem in the country, that the surveillance system is adequate and that the data can be considered reliable. The WHO secretariat coordinates that process and submits a report to the WHO Regional Office for Africa for endorsement by the Regional Director. The WHO Director-General then sends a letter of validation to the Ministry of Health, and the information is published in the *Weekly Epidemiological Record* and the Global Health Observatory. A reassessment is foreseen after 5 years.

Table 5.1 categorizes the eligibility of the HAT-endemic countries according to the epidemiological situation and surveillance activities to request the validation of elimination as a PHP.

Figure 5.1

Pathway for validation of HAT elimination as a PHP

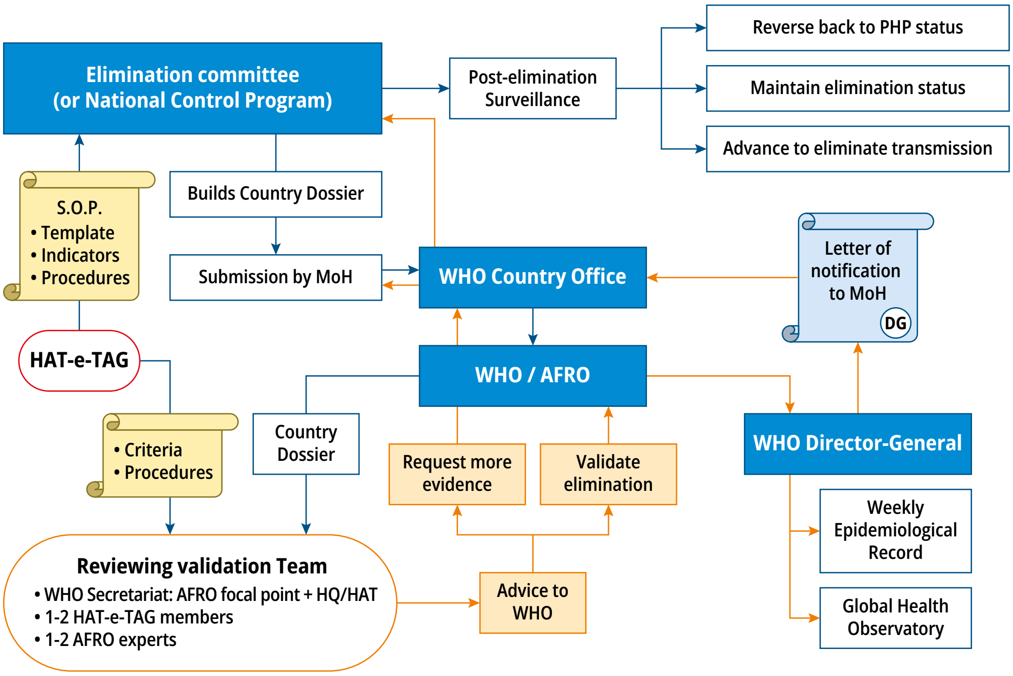


Table 5.1

Eligibility of HAT-endemic countries for claiming validation of elimination as a PHP, according to the epidemiological situation and surveillance activities (update June 2025)

Do not meet incidence criteria (6)	Surveillance absent (5)	Meet incidence criteria but surveillance insufficient (14)	Meet all criteria and are ready to submit dossier (2)	Dossier submitted for validation (1)	Elimination as PHP validated Surveillance continues (9)
Angola Central African Republic Congo Democratic Republic of the Congo Malawi South Sudan	Botswana Eswatini Guinea-Bissau Mozambique Namibia	Burundi Ethiopia Gabon Gambia Liberia Mali Niger Nigeria Senegal Sierra Leone Uganda (Tbr) United Republic of Tanzania Zambia Zimbabwe	Burkina Faso Cameroon	Kenya	★★★★★ Togo (2020) Côte d'Ivoire (2020) Benin (2021) Equatorial Guinea (2022) Uganda-Tbg (2022) Rwanda (2022) Ghana (2023) Chad (2024) Guinea (2025)

Tbg: *Trypanosoma brucei gambiense*; Tbr: *Trypanosoma brucei rhodesiense*.

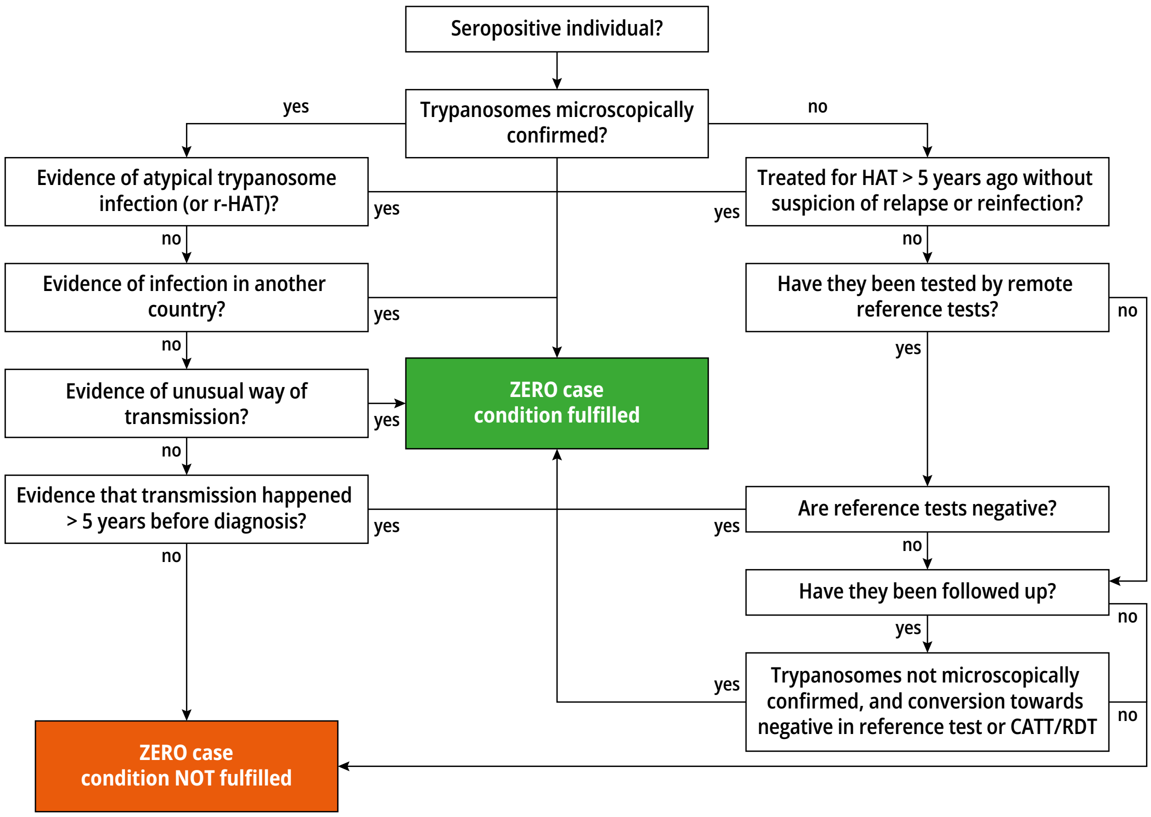
The elimination of HAT as a PHP was validated in Côte d'Ivoire and Togo in 2020; and during 2021–2025 in Benin, Equatorial Guinea, Uganda, Ghana, Chad and Guinea (all for g-HAT) and in Rwanda (for r-HAT). Post elimination surveillance is ongoing. Kenya has already submitted its dossier. Countries are encouraged to advance the validation process. WHO will assist countries in this process.

In 2023, WHO published **Criteria and procedures for the verification of elimination of transmission of *T.b. gambiense* to the human population in a given country** (*12*).

The **elimination of transmission** of g-HAT to the human population is defined as the reduction to **zero of the incidence** of human cases infected by *T.b. gambiense* in a given country for a period of at least 5 consecutive years, based on evidence from appropriate surveillance. The process of documenting elimination of transmission is called **verification**.

An algorithm was developed to deal with possibly confusing situations and to ascertain if there were zero cases (Figure 5.2).

Figure 5.2
Algorithm to fulfil the zero case definition for the verification process



The pathway for the verification of elimination of *T.b. gambiense* transmission is similar to that of the validation of HAT elimination as a public health problem.

Table 5.2 shows the current situation of countries regarding the verification of elimination of g-HAT transmission. Six countries are eligible and are preparing their application; WHO will assist them in this process.

Table 5.2

Criteria for requesting WHO verification of elimination of *T.b. gambiense* transmission and current status of endemic countries (update June 2025)

Two criteria	Epidemiological situation (National Indicator for Elimination) 0 cases reported annually over the previous 5-year period	
Operational surveillance system	**True in all districts**	**Not true in one or more districts**
Adequate	Benin, Burkina Faso, Côte d'Ivoire, Ghana, Togo, Uganda	Angola, Cameroon, Chad, Congo, Equatorial Guinea, Guinea, Democratic Republic of the Congo
Insufficient	Mali, Nigeria, Gambia, Niger, Senegal	Central African Republic, Gabon, South Sudan
Absent	Guinea-Bissau, Liberia, Sierra Leone	

- Eligible for claiming the verification (green)
- Need to reinforce the surveillance before claiming the verification (yellow)
- Non eligible for claiming the verification (orange)

In the discussion, the following points were raised and clarified.

The **increase in T- cases (probable cases)** is not related to the introduction of safer treatments like FEX. Actually, for at least 20 years, probable cases have been diagnosed with a high titration (≥ 1:16) of the CATT test and receive treatment in six of the endemic countries; these criteria have not changed with the introduction of new treatments.

Only in the Democratic Republic of the Congo, where T+ cases solely were treated has the policy changed, as part of a pilot project starting in 2023, where samples from seroreactive individuals are investigated in reference laboratories, with further tests (serology, trypanolysis and molecular tests) which led to diagnosing some (20–25 samples per year) as probable cases to be treated. This policy change, related to accelerating HAT elimination, has contributed to an increase in the number of probable cases. In the other countries, there has been no policy change but there is a *relative* increase in the number of probable cases because they are finding fewer confirmed cases.

The **treatment of T- cases** (probable cases) is a decision of the countries. WHO may promote it depending on the situation and diagnostic capacities.

With regard to the **verification process**, samples from "parasitologically unconfirmed suspects" should be sent to reference laboratories for additional tests to corroborate the suspicion of *T.b. gambiense* infection. Those reference laboratory tests need to be very specific. WHO established a target product profile (TPP) for a test to identify individuals who should receive treatment, as a diagnostic priority. If the reference laboratory tests are negative, the "parasitologically unconfirmed suspect" will not be counted as a case and consequently will not compromise the verification of g-HAT elimination. However, if the results in the reference laboratory are also positive, the suspicion is reinforced and a follow-up should be performed. If sample referral of "parasitologically unconfirmed suspects" is not done, parasitological follow-up must be performed where capacity is available. If such follow-up shows negative results, then the suspicion can be discarded and the individual will not count towards assessing disease transmission. If no follow-up is carried out, the criteria for "zero cases" will not be met.

It should be noted that some possible **areas of transmission are being overlooked**. For example, cases were detected by active screening in historical foci in the Democratic Republic of the Congo where cases had not been reported for many years. There are also areas that are inaccessible due to the security situation.

The question was raised about the role of **surveillance of tsetse flies/xenosurveillance** in indicating the presence of the parasite and its potential transmission. WHO's perspective focuses on human infections, so a zero HAT case situation is possible despite an ongoing circulation of parasites in flies or animals. Xenosurveillance also faces technical issues, requiring PCR (polymerase chain reaction) confirmation that the trypanosomes are of the subspecies pathogenic to humans. Additionally, the infection rate may be so low that examining a large number of flies (e.g. 10 000) may be required to find one infected fly. This implies substantial efforts with limited information gained.

The meeting was reminded that the **FAO Atlas of Tsetse Fly Distribution** in Africa provides detailed information on the geographical range of different *Glossina* species.

The question was raised whether treatment can be used as a **prophylactic measure**. Generally, people with a certain level of suspicion should be treated. Considering the limitations of laboratory tests, treatment could be widened to certain populations, depending on the safety profile of the drug and the epidemiological situation. The technical advisory groups are discussing this in detail. As a prophylactic measure, vector control can be performed.

After treatment for HAT, the **trypanolysis test** may remain positive for several years or even decades, and hence cannot be used to detect a relapse. If there is clinical suspicion of a HAT relapse, direct parasite detection methods should be performed. A lumbar puncture may be helpful, as parasites are more often seen in the CSF (cerebrospinal fluid) of patients with relapse.

There are **no vaccines against HAT** and none are known to be in development. This approach is not considered to warrant further investigation (also due to very low case numbers).

Although the **cuts of US government funding** do not directly impact HAT control activities, there is an indirect impact, which is probably significant given that many other programmes are affected.

6. Situation report of gambiense and rhodesiense HAT

The situation report was presented by NSSCP representatives, separated according to the status of g-HAT and r-HAT endemicity. The countries sent their information and a joint presentation was made.

6.1 Endemic countries for gambiense HAT

The spatial distribution of cases is shown in Figure 6.1. The epidemiological situation in the 23 countries endemic for g-HAT shows a general reduction in the number of new cases in 2024 compared to 2023, except in the Central African Republic and Congo, where there was a slight increase (Table 6.1).

Figure 6.1

Geographical distribution of g-HAT cases cumulated, 2020–2024

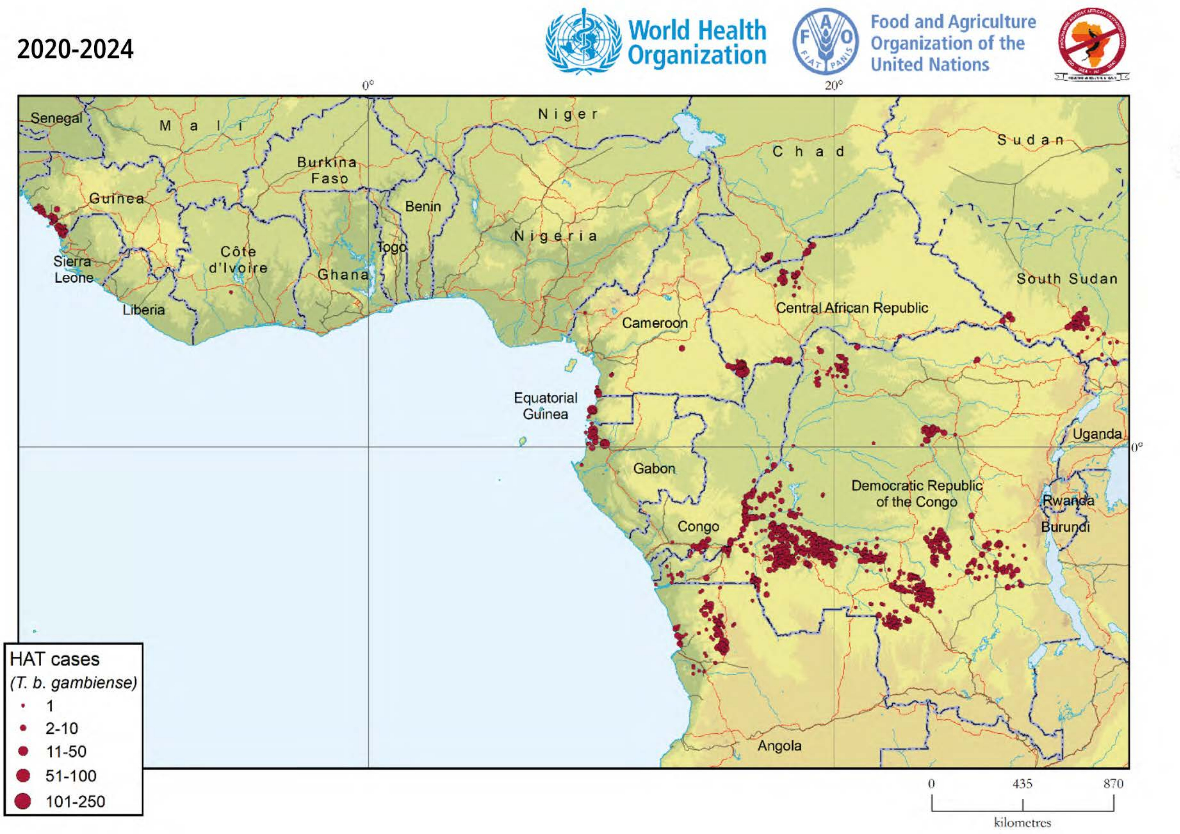


Table 6.1

Case numbers for 2023 and 2024 in the 23 countries endemic for g-HAT

HAT cases	2023	2024
Angola	52	10
Benin	0	0
Burkina Faso	0	0
Cameroon	11	5
Chad	7	5
Central African Republic	104	111
Congo	14	26
Côte d'Ivoire	0	0
Democratic Republic of the Congo	394	330
Equatorial Guinea	7	12

Table 6.1 *continued*

HAT cases	2023	2024
Gabon	12	8
Gambia	0	0
Ghana	0	0
Guinea	24	12
Liberia	0	0
Mali	0	0
Niger	0	0
Nigeria	0	0
Senegal	0	0
Sierra Leone	0	0
South Sudan	50	27
Togo	0	0
Uganda	0	0

The countries endemic for g-HAT identified the following **elements demonstrating local ownership of HAT control and surveillance**:

- Inclusion of HAT in national health development plans;
- The existence of a national HAT policy, the support of personnel and the provision of infrastructure for the control programme;
- The presence of HAT thematic groups (civil society, members of parliament, journalists and opinion leaders);
- The creation of a scientific advisory committee;
- Strengthening the health system by integrating HAT control into primary healthcare structures:
  - integrating community workers into the implementation of vector control and entomological assessments;
  - integration of healthcare workers from active foci into active screenings and passive surveillance (sentinel sites);
- Some countries have drawn up and submitted elimination validation files;
- Suspected cases are appropriately investigated.

The **major challenges to achieving elimination** of g-HAT identified by the endemic countries were:

- Intensifying passive screening coverage;
- Building the capacity of local laboratory technicians in parasitology of HAT;
- Diversifying control strategies in endemic provinces according to epidemiological trends, security situations and resource availability;
- Including vector control adequately in control strategies;
- Strengthening community awareness and commitment to screening and vector control;
- Maintaining sustainable HAT elimination and reinforcing the process of stopping transmission in validated countries;
- Inadequate mobilization of endogenous resources to support control activities;
- In some countries, population movements due to insecurity can disrupt community networks. Endemic areas may be inaccessible due to poor road conditions, flooding and insecurity.

The following **mid-term outlook (5 years)** was provided by the endemic countries:

- Ensure sustainable funding and guarantee national political commitment. Dependence on external funding endangers the continuity of surveillance activities, which are the Ministry of Health's long-term responsibility. Encourage political will to prioritize HAT by mobilizing resources and integrating surveillance activities into health systems;
- Strengthen logistics and motivate staff;
- Investigate latent outbreaks to determine their epidemiological status;
- For countries still reporting cases, strengthen active and passive screening and treat cases appropriately with a view to elimination;
- Finalize and submit the request for verification of elimination of g-HAT transmission;
- Reinforce sentinel site surveillance, supervision and vector control;
- Consider treatment of serosuspects (e.g. the use of acoziborole);
- Optimize coordination between partners.

The **collaboration partners**, their contributions and the countries they support are shown in Tables 6.1.2 and 6.1.3. which are not exhaustive as some partners may not be mentioned. Not all countries had provided information at the time of the meeting.

The achievements in HAT control are the result of sustained collaborative efforts for which the international partners are to be thanked. They are encouraged to get involved in countries that have so far received less support.

Table 6.1.2

Partners of g-HAT national programmes and fields in which they are engaged (not exhaustive)

Partner	Support provided
WHO, IMT	Active and passive screening, research, drugs, diagnostic equipment and training, community-based vector control
DNDi	Research, drugs
LSTM	Vertical vector control, training
IRD	Research
FIND	Technical, equipment, and financial
CIRDES	Technical support, research, and confirmation of HAT diagnosis
Gates Foundation	Research, vector control, vehicles
PATTEC	Research and vector control (screens and traps).
Institut Pasteur	Technical, material, and financial
OCEAC	Support in parasitological diagnosis, vector control, and monitoring/evaluation of progress made in HAT elimination

WHO: World Health Organization; ITM; Institute of Tropical Medicine, Antwerp, Belgium; DNDi: Drugs for Neglected Diseases initiative; LSTM: Liverpool School of Tropical Medicine; IRD: Institut de Recherche pour le Développement; FIND: Foundation for Innovative New Diagnostics; CIRDES: Centre International de Recherche-Développement sur l'Elevage en zone Subhumide; PATTEC: Pan-African Tsetse and Trypanosomiasis Eradication Campaign; OCEAC: Organisation de Coordination pour la lutte contre les Endémies en Afrique Centrale

Table 6.1.3

Partners of g-HAT national programmes and countries in which they are involved (not exhaustive)

Partenaire	Pays appuyés
WHO	All endemic countries
DNDi	Democratic Republic of the Congo; Central African Republic; South Sudan; Guinea; Cameroon
LSTM	Democratic Republic of the Congo; South Sudan;
IRD	Democratic Republic of the Congo; Chad; Côte d'Ivoire; Guinea; Cameroon
IMT	Democratic Republic of the Congo
FIND	Chad; Guinea; South Sudan; Angola
CIRDES	Burkina Faso
Gates Foundation	Côte d'Ivoire; Cameroon
PATTEC	Burkina Faso
Institut Pasteur	Guinea
OCEAC	Cameroon

WHO: World Health Organization; ITM; Institute of Tropical Medicine, Antwerp, Belgium; DNDi: Drugs for Neglected Diseases initiative; LSTM: Liverpool School of Tropical Medicine; IRD: Institut de Recherche pour le Développement; ITM: Institute for Tropical Medicine; FIND: Foundation for Innovative New Diagnostics; CIRDES: Centre International de Recherche-Développement sur l'Elevage en zone Subhumide; PATTEC: Pan-African Tsetse and Trypanosomiasis Eradication Campaign; OCEAC: Organisation de Coordination pour la lutte contre les Endémies en Afrique Centrale.

In the **discussion**, the following points were raised:

In the **Democratic Republic of the Congo**, a national HAT day was established and is celebrated annually on January 30, which also reflects local ownership.

In **Senegal**, HAT surveillance is of good quality but started only 3 years ago. Therefore, Senegal is advancing well towards eligibility for requesting WHO verification of elimination of *T.b. gambiense* transmission.

In **Uganda**, the most recently reported cases were r-HAT.

In **Guinea**, in historical HAT foci, passive screening is maintained. This is also the case in some countries that have not had any declared cases for decades.

In the **Mandoul focus in Chad**, a low number of T+ and T- cases were reported in 2023–2024.

6.2 Endemic countries for rhodesiense HAT

The East Africa group included nine countries endemic for r-HAT: Ethiopia, Kenya, Malawi, Rwanda, Burundi, Uganda, United Republic of Tanzania, Zambia and Zimbabwe. The geographical distribution of cases in the previous 5 years (2020–2024) is shown in Figure 6.2.1.

From 2023 to 2024, an increase in the number of cases in Zambia is noted (Table 6.2.1). In Malawi, the number of cases declined slightly. In 2022, r-HAT re-emerged in Ethiopia after 31 years (6 cases in 2022 and 2 more in early 2023). Since then, no further cases have been reported.

Figure 6.2.1
Distribution of r-HAT cases (blue), 2020–2024

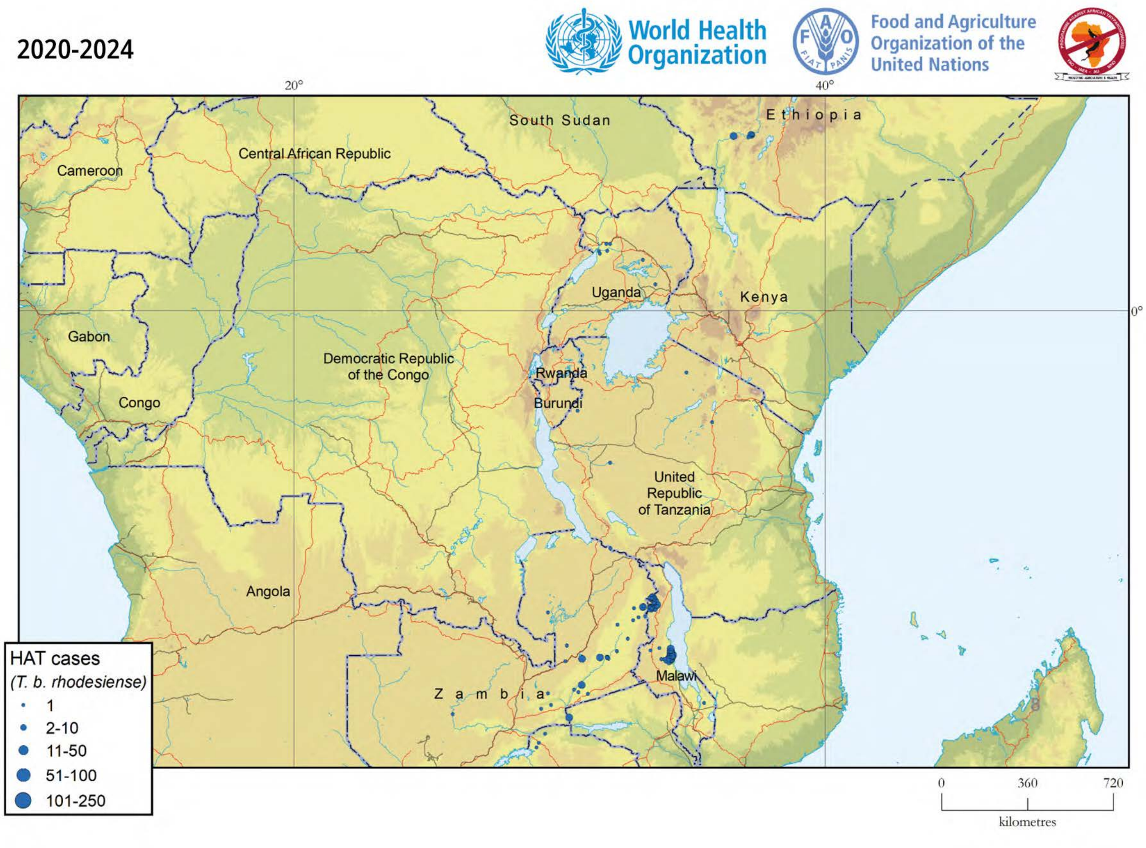


Table 6.2.1
Case numbers for 2023 and 2024 in nine countries endemic for r-HAT

HAT cases	2023	2024
Burundi	0	0
Ethiopia	2	0
Kenya	0	0
Malawi	16	13
Rwanda	0	0
United Republic of Tanzania	1	0
Uganda (Tbr)	0	3
Zambia	5	18
Zimbabwe	0	3

Tbr: *Trypanosoma brucei rhodesiense.*

The countries endemic for r-HAT identified the following **elements demonstrating local ownership of the HAT control/ surveillance**:

- Establishment of HAT programmes at country level and provision of support, though inadequate due to government budgets;
- Availability of HAT structures (e.g. infrastructure and human resources) at national and subnational levels;
- Training of the healthcare workforce on HAT;
- Integration of HAT activities into primary healthcare structures;
- HAT indicators being included in the Integrated Surveillance and Response System and Health Management Information System;
- Monthly reporting of HAT data on local level.

The **major challenges to achieving elimination** of r-HAT as public health problem were identified by the endemic countries as follows:

- Inadequate financial resources;
- Inadequate community sensitization and awareness;
- Poor health-seeking behaviour resulting in advanced disease presentation;
- Limited numbers of partners for programme implementation – dwindling support;
- Loss of expertise due to staff transfers, retirement and new job opportunities;
- Entomological data on *Glossina* is non-existent in some countries;
- Limited data on entomological surveys due to lack of expertise, interest and funds;
- Lack of a mechanism for cross-border surveillance;
- Encroachment on national parks due to population increase.

The **following mid-term outlook (5 years)** was provided by the endemic countries:

- Organize advocacy workshops for resource mobilization through the One Health approach;
- Strengthen capacity (infrastructure and human resources);
- Maintain surveillance, including setting up sentinel sites in known endemic regions/areas;
- Strengthen the integration of HAT activities into the public health system;
- Conduct entomological studies of *Glossina* (tsetse flies);
- Conduct studies on African animal trypanosomiasis, e.g. in Burundi;
- Establish mechanisms for cross-border surveillance of HAT.

The **collaborating partners**, their contributions and the countries they support are shown in Tables 6.2.2 and 6.2.3. The tables are not exhaustive and some partners may not be mentioned. Not all countries had provided updated information at the time of the meeting.

The achievements in HAT control are the result of sustained collaborative efforts. International partners are encouraged to get involved in countries that have so far received less support.

Table 6.2.2

Partners of the r-HAT national programmes and the fields in which they are engaged (not exhaustive)

Partner	Support provided
WHO	Trainings, guidelines, monitoring tools, supervision, diagnostic materials, medicines
DNDi	Trainings and research
Kamuzu University of Health Sciences (KUHES)	Research
Ministries of Health	Equipping health facilities, capacity-building for healthcare providers, support supervision
LSTM	Vector control, research
FIND	Diagnostics, research
Makerere University	Research, training
ITM	Research, training

WHO: World Health Organization; DNDi: Drugs for Neglected Diseases initiative; LSTM: Liverpool School of Tropical Medicine; FIND: Foundation for Innovative New Diagnostics; ITM; Institute of Tropical Medicine, Antwerp, Belgium.

Table 6.2.3

Partners of r-HAT national programmes and the countries they support (not exhaustive)

Partner	Countries
WHO	Burundi, Kenya, Malawi, Rwanda, United Republic of Tanzania, Uganda, Ethiopia, Zimbabwe, Zambia
DNDi	Malawi, Uganda
LSTM	Malawi
Makerere University	Uganda
ITM	Ethiopia, Zimbabwe
FIND	Kenya, Uganda
Kamuzu University of Health Sciences	Malawi

WHO: World Health Organization; DNDi: Drugs for Neglected Diseases initiative; LSTM: Liverpool School of Tropical Medicine; ITM; Institute of Tropical Medicine, Antwerp, Belgium; FIND: Foundation for Innovative New Diagnostics.

In the **discussion**, the following points were raised:

In **Zambia** there was an **increase in cases** last year, but the cause cannot be ascertained. With r-HAT in general, as a zoonosis with irregular transmission to humans, there can always be surprises with epidemic peaks of hundreds of cases in a few months. The cases in Zambia appear to have occurred in several locations throughout the year, which were also detected in tourists returning to non-endemic countries. Further cases are also reported in 2025.

In **Rwanda**, passive HAT surveillance is integrated with malaria surveillance based on microscopy, even at the peripheral level, with regular training of laboratory technicians and healthcare staff. It was requested that **positive slides for training purposes** be provided. Laboratories are also encouraged, if a case occurs, to keep/prepare slides for training purposes.

In **Ethiopia**, the cases occurred in a specific region at high altitude (> 1000 m) where usually there are no tsetse flies. Due to high temperatures with a drought and lack of food for the cattle, farmers from villages moved to the valley and both cattle and humans were exposed to tsetse flies near rivers. This was a time-limited phenomenon. A total of eight cases occurred during 2022–2023, with none reported thereafter. The country was unprepared for HAT cases, as the last ones occurred over 30 years ago. Specific knowledge of HAT was lost. Diagnoses were made after unusual microscopic findings were observed. Diagnosis and treatment were delayed, including administrative delays. Five of these patients died, three without treatment, one due to HAT despite treatment and one due to melarsoprol-associated encephalopathy. After this experience and following training, there is better preparedness should cases appear again in Ethiopia. This outbreak also demonstrates the high mortality rate in unprepared countries.

7. WHO network for HAT elimination: report on the last two years

In order to coordinate the different stakeholders involved in HAT elimination (Figure 7.1) and to strengthen and sustain efforts, WHO launched the network for HAT elimination in 2014.

Figure 7.1
Stakeholders involved in the HAT elimination process

In the past 2 years (since June 2023), the different groups and subgroups of the network have conducted various activities:

- **Stakeholder meetings**
  - 5th stakeholders meeting for g-HAT and r-HAT in Geneva in June 2023.
- **Annual country coordination meetings**
  - in g-HAT endemic countries in February 2024 (Libreville) and February 2025 (virtual);
  - in r-HAT endemic countries in March 2024 (virtual) and February 2025 (virtual).
- **Ad-hoc country coordination**
  - Democratic Republic of the Congo: PNLTHA partners meeting (August 2023, March 2024, January 2025);
  - Guinea (October 2024);
- **Scientific Consultative Groups**
  - Technical Advisory Group for HAT elimination (HAT-e-TAG): 8th meeting in September 2024;
  - HAT-DTAG subgroup (Development of Diagnostic TTPs): no meetings in this period, remote collaboration, finalizing TTPs; and
- **Integration of new treatment tools into national and global policies subgroup**
  - Sub-group "New oral drugs": 14th meeting (June 2024).

The coordination of the different technical partners and NSSCPs is a high priority for WHO. The HAT elimination network continues actively at different levels as a very useful tool for coordination. NSSCPs play a central role in the efforts to eliminate HAT.

7.1 HAT elimination Technical Advisory Group (HAT-e-TAG)

The HAT-e-TAG is the main technical consultative body for WHO concerning HAT elimination. The group convened in Geneva in October 2024 for its **8th meeting**. Meetings are usually held once a year. The group reviewed the advancements in the validation process for the elimination of HAT as a PHP by country (e.g. timelines, quality of the dossier, gap analysis). Post-elimination activities in countries that have already been validated were also reviewed. Chapter 7 of the dossier – the post-validation surveillance plan – is a key chapter that requires a 5-year plan explaining the activities planned to maintain elimination and reach zero transmission (sentinel sites, vector control, other strategies, resources, partners). For example, in one country, post-elimination surveillance was abandoned as the person in charge was transferred to another sector. Thanks to actions taken, HAT surveillance could be re-established.

Verification of the elimination of g-HAT transmission was discussed in three **scenarios**.

- Scenario 1: countries that have been validated for elimination as a PHP and have not reported any cases recently.
- Scenario 2: countries that have been validated for elimination as a PHP, which have recently reported cases.
- Scenario 3: countries not validated for elimination as a PHP that could enter the verification process directly.

The possibility of **population surveys** shortening the requirement of 5-year surveillance for the verification process was discussed. However, a very large sample size would be required to prove statistical significance of absence. Population surveys are not currently advised but will be further explored.

For **r-HAT**, the **"area at risk" indicator** does not adequately reflect the status of elimination. This indicator needs to be revised or replaced, as the epidemiology of r-HAT is different and, despite the declining numbers of cases, the area at risk does not shrink. Most of the areas at risk are sparsely inhabited national parks, meaning that even one case of r-HAT would indicate a high incidence.

The special case of **Namibia** was discussed. r-HAT used to be endemic in northern Namibia, bordering Angola. Although Namibia is considered to be free of tsetse flies, this has not been formally validated. The question was raised whether HAT surveillance would be needed or if entomological confirmation of the absence of tsetse flies would be sufficient, given that the disease cannot be transmitted without the vector. Namibia officers are currently gathering information to work on the dossier.

The **case definitions** were reviewed in the context of the current elimination drive. Parasitologically confirmed and unconfirmed cases must be reported separately. To ensure uniform reporting, the following categories were defined (Table 7.1). Serosuspects are not reported or mapped as cases.

Table 7.1
Categories for reporting a case or suspicion of HAT, by test result

Diagnostic results	Category
Tbg or Tbr confirmed by microscopy	Confirmed case
CATT titer ≥ 1/16, positive TL, ELISA, or molecular tests (DNA/RNA)	Probable case
Positive RDT, CATTwb or <1/16	Sero Suspect

Senegal submitted a request to shorten the required 5 years of surveillance to submit a validation dossier to 3 years, due to a large number of sentinel sites. However, the HAT-e-TAG found no consensus to change this criterion.

The HAT-e-TAG requested that WHO encourage **Benin**, **Côte d'Ivoire**, **Ghana**, **Togo and Uganda** to prepare a verification dossier for the elimination of g-HAT transmission.

7.2 WHO Diagnostic Technical Advisory Group

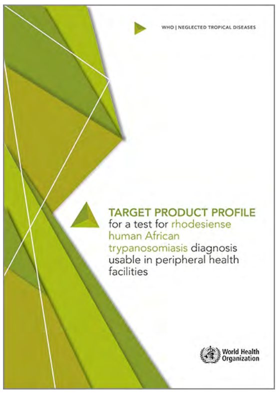
From 2020 to 2023, through a series of meetings and remote collaboration, the WHO Diagnostic and Technical Advisory Group (DTAG) developed TPPs for four new tests needed in the evolving context of HAT. The TPPs developed are listed in order of priority:

1. A test for rhodesiense HAT diagnosis usable in peripheral health facilities;
2. A gambiense HAT test to identify individuals to receive widened treatment;
3. A gambiense HAT individual test to assess infection in low prevalence settings;
4. A gambiense HAT high-throughput test for verification of elimination.

These TPPs are available on the WHO website (Figure 7.2) and were published also in the *Bulletin of the World Health Organization* Volume 101, Issue 8, 2023 (*13*).

Figure 7.2
TPPs developed by the HAT Diagnostic Technical Advisory Group

https://www.who.int/publications/i/item/9789240029378



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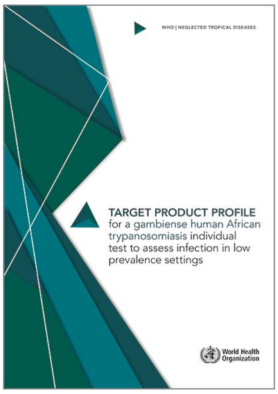

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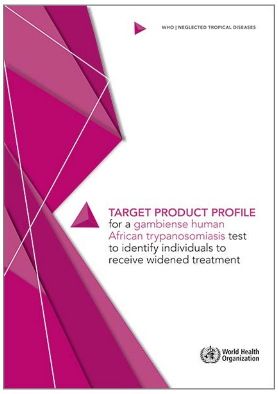

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7.3 Integration of new tools into national and global policies: subgroup on "New oral drugs"

The subgroup on "New oral drugs" is coordinated by the WHO/NTD HAT team and includes various participants: national HAT control programmes, DNDi, the Gates Foundation, Sanofi and Bayer, and several other WHO groups (Prequalification of Medical Products; Regulatory Systems Strengthening; WHO Model List of Essential Medicines; Safety and Vigilance; Innovation, Access and Use; and the Special Programme for Research and Training in Tropical Diseases).

Since December 2014, the group has held 14 meetings. At the last one, **on 19 June 2024**, the implementation of FEX in g-HAT and r-HAT was reviewed. Regarding acoziborole, updates were provided on studies, next steps, and the timing of the development and regulatory processes. Forecasted needs after registration were projected according to different scenarios. The use of acoziborole in r-HAT and how to generate evidence given the small number of cases was discussed.

8. Diagnostics for HAT: advances and perspectives

The diagnostic scenarios for g-HAT and r-HAT are different. Currently, for g-HAT passive screening, serological tests are carried out on clinical suspects; while in active g-HAT screening, the entire population at risk is tested. Seropositives are examined parasitologically and those who are parasite positive are treated. Reference laboratory tests remain optional and can be carried out on unconfirmed seropositives when parasitology is not available or for quality assessment purposes. In a future scenario of widened g-HAT treatment, seropositives will be immediately treated without parasitology, and reference laboratory tests will become necessary to follow the true HAT prevalence, to document elimination and to change control strategies when needed. Diagnosis of r-HAT is based on parasitological confirmation of clinical suspects, followed by treatment. Considering the shortcomings in current and future scenarios, WHO established TPPs (see 7.2).

Serological screening for g-HAT

Three tests are available for serological screening for g-HAT: the CATT (ITM, Belgium) and the rapid diagnostic tests (RDTs) HAT Sero *K*-Set (Coris BioConcept, Belgium) and Abbott Bioline HAT 2.0 (Abbott, Republic of Korea). The most recent results obtained suggest a specificity of 98.6% with CATT, 89.1% for HAT Sero *K*-Set and 79% for Abbott Bioline HAT 2.0. The sensitivity of the two RDTs seems to be around 96%. Compared with the HAT TPPs, the sensitivity of all g-HAT screening tests falls in the minimal TPP criteria. CATT specificity is the only one that complies with the TPP, with the RDT specificities being too low. RDT specificity should therefore be improved. Indeed, to improve specificity, certain control programmes already combine both RDTs in serial. Finally, videoclips showing the test protocols of CATT and of HAT Sero *K*-Set are now available on YouTube.

Parasitological confirmation

The mAECT (mini anion exchange centrifugation technique) is recommended for diagnosis of g-HAT (and, in some situations, for r-HAT). However, production of the DEAE gel, which is donated to WHO (by Cytiva, Sweden) and is an essential component, will stop in 2027. Experiments have recently started to test alternative gels.

In order to facilitate rapid and reliable diagnosis in resource-limited settings, image processing and deep learning based object detection techniques are being explored for trypanosome recognition. Artificial intelligence (AI) has been applied for recognition of trypanosomes in fresh blood film pictures and videos containing *T. brucei* as well as for stained thin blood films containing different species of trypanosomes. An electronic database has been set up.

Reference laboratory tests for g-HAT

Reference laboratory testing is facilitated by a new blood collection kit for remote testing (*Kit de Prélèvement de sang*, KPS). The KPS kit allows collection of specimens for immunological and molecular reference laboratory tests with minimal risk of contamination. It contains all material to collect blood, prepare dried blood spots and conserve nucleic acids in DNA/RNA shield buffer. The kit is available from the INRB in Kinshasa (Democratic Republic of the Congo) and allows storage and transport of specimens, preferentially under cold chain, as at ambient temperature the stability is shorter. Again, a videoclip that shows how to use the KPS kit is available on YouTube.

Immunological reference laboratory tests

The immune trypanolysis test is based on the incubation of live cloned *T.b. gambiense* parasites with the test specimen. In the presence of specific antibodies, the trypanosomes are lysed. On plasma, trypanolysis shows high sensitivity, which decreases when the test is performed on dried blood spots. The specificity of trypanolysis is considered 100% to indicate contact with *T.b. gambiense* trypanosomes. Trypanolysis is only carried out in four highly specialized reference laboratories, for technical reasons but mainly due to the fact that it uses human infective, extremely virulent *T.b. gambiense* trypanosomes.

In order to overcome this limitation, ITM has developed an in vitro production of recombinant *T.b. brucei* in which the variant surface glycoprotein (VSG) of interest has been incorporated through a plasmid targeting the active expression site, while a knockout plasmid stops VSG221 expression under antibiotic selection. In this way, a *T.b. brucei* was created in which VSG switching stops, that produces LiTat 1.3 or 1.5 VSG, and that can be cultured in vitro. This eliminates the need for infecting rodents, the need for trypanosome purification from blood, the dangerous manipulations of human infective *Tbg* trypanosomes. In addition, recombinant VSG is expressed in the species of origin, conserving post-translational modifications. These recombinant parasites can be used for trypanolysis, to produce recombinant VSG for ELISA and for RDTs, and could even be used for CATT production. A first application is a *fluorescent kinetic trypanolysis assay*. For this, a fluorescent reporter gene is integrated in the tubulin array, allowing trypanolysis to be run with automatic fluorescent readings. In negative specimens, the fluorescence remains constant, but in HAT patient plasma, the fluorescence decreases over time (as trypanosomes are lysed).

Another immunological reference laboratory test is the indirect ELISA/*Tbg*. Recent trials confirm its specificity but also suggest lower sensitivity when testing dried blood spots instead of serum or plasma. In order to transform indirect ELISA/*Tbg* into a ready-to-use kit, some adaptations are needed. As it was no longer commercially available, the ABTS substrate has been replaced by a K-blue TMB substrate. Home-made buffers have been replaced by commercial GMP-made buffers. Preliminary data also suggest that lyophilisation of coated plates is possible and stability testing shows promising results. The native LiTAt 1.3 and 1.5 VSG coating could also be replaced by recombinant *T.b. brucei* expressed VSG.

An inhibition ELISA, called *T.b. gambiense*-iELISA has been developed at ITM as a potential replacement for immune trypanolysis in non-specialized laboratories. The first data on its diagnostic performance are encouraging, but the test has some stability issues and is being optimized for better reproducibility and stability. Also in this test, recombinant *T.b. brucei* expressed VSG could be introduced.

Molecular reference laboratory tests

The *Trypanozoon* RT-qPCR multiplex allows parallel detection of RNA targeting 18S2 RNA, and of DNA targeting the TBR tandem repeat. In parallel, an extraction control is run through detection of human RNase P DNA. The specificity of the test is around 99%, but field data on diagnostic sensitivity were lacking due to the low HAT prevalence. Recently, ITM assessed this on 62 specimens from mAECT-positive HAT patients in the Democratic Republic of the Congo. The overall sensitivity of the *Trypanozoon* RT-qPCR multiplex was 80.6%, with DNA detection being most sensitive. However, for one collection site a very low sensitivity was observed. When removing this outlier, sensitivity increased to 90.2%. It was observed that transport delays were not associated with false negativity.

In the specific high sensitivity enzymatic reporter unlocking (SHERLOCK) technique, target nucleic acid is retro-transcribed and amplified and, in a next step, transcribed in vitro. Once the guide RNA recognizes its target sequence, Cas13a is activated and cuts the RNA reporter to release a fluorescent signal that can be quantified with a fluorescence plate reader and/or with a lateral flow assy. The analytical sensitivity of SHERLOCK4HAT reaches 100 parasites per mL for the 7SL and TgsGP target, and 10 parasites/mL for the SRA target. The Institut Pasteur is carrying out field evaluations of the test, and will develop the lateral flow assay further.

Specific r-HAT activities

The University of Glasgow has carried out a study on asymptomatic human carriers of *T.b. rhodesiense*. A total of 988 blood samples were collected in Malawi from asymptomatic individuals with negative thick blood smears, living near wildlife reserves in known r-HAT foci. PCR targeting SRA identified 55 positive individuals of whom 47 could be followed up. During follow up, two were confirmed in passive screening, four had a trypanosome positive thick blood smear and trypanosomes were detected in 22 of 29 skin biopsies. These data seem to suggest *T.b. rhodesiense* carriage in almost 3% of asymptomatic people around these wildlife reserves.

Conclusions

The highest priority TPP is on peripheral diagnosis of r-HAT. However, nothing is in the pipeline in this field, and the increasing use of malaria RDTs reduces microscopy use which was enabling accidental diagnosis of r-HAT.

For g-HAT, the actual RDTs can be used in a screen-confirm-treat scenario. However, once shifting to widened treatment, the low RDT specificity will lead to overtreatment and excessive remote reference laboratory testing. RDTs with higher specificity remain needed. For parasitological confirmation, mAECT is recommended, but the gel production will stop and, if no alternative is found, not only the future of mAECT but also that of CATT production will be in danger. Use of AI has mainly been an academic exercise and, to be useful for g-HAT diagnosis, will have to be combined with simple concentration techniques to reach sufficient sensitivity.

Concerning the reference laboratory tests, the KPS or similar sampling kits are a step forward. Assessment of the sensitivity of HAT diagnostic techniques is becoming a challenge. Use of specimen banks and sharing of specimens will become crucial. In addition, the parasitology experience in the field is waning, and introducing new techniques is not foolproof. While new formats and targets become available, it will be necessary to carry out collaborative diagnostic performance studies against available reference laboratory tests. This will also allow test algorithms to be established to reach the required diagnostic characteristics. One example of such a study in the ongoing STROGHAT study which applies a different algorithm for follow-up of treated individuals and for determining the HAT prevalence in the study.

In the **discussion**, the correlation between trypanolysis and PCR was addressed. The "SpeSerTryp" study compared the diagnostic accuracy of several tests (including ELISA, trypanolysis, multiplex PCR and the SHERLOCK technique) in seropositive individuals who were either parasitologically confirmed or unconfirmed. For the unconfirmed individuals, the agreement between the tests was poor. These findings were quite astonishing, as they suggest that different probable cases would be identified depending on the method used. In the future, these tests need to be evaluated further to understand their value and how they can best be integrated into the diagnostic algorithms. Regarding testing of pooled samples, specificity is maintained; however, sensitivity decreases, particularly with dried blood spots.

9. Treatment of HAT

9.1 Advances and perspectives

The working group on integration of new tools into national and global policies includes various participants: national HAT control programmes, DNDi, the Gates Foundation, Sanofi and Bayer, and several other WHO units (Prequalification of Medical Products; Regulatory Systems Strengthening; WHO Model List of Essential Medicines; Safety and Vigilance; Innovation, Access and Use; and the Special Programme for Research and Training in Tropical Diseases). Collaboration is ongoing with the European Medicines Agency (EMA), the United States Food and Drug Administration (US FDA) and the HAT-e-TAG.

The 2019 WHO interim treatment guidelines enabled the use of **FEX for treating g-HAT**, substantially simplifying clinical practice. FEX is administered orally once daily for 10 days, allowing treatment also in remote settings. Due to its effectiveness in both stages of the disease, a lumbar puncture for CSF examination can be avoided in cases where severe meningo-encephalitic stage HAT is not suspected based on clinical examination. Nifurtimox–eflornithine combination therapy (NECT) remains recommended for patients with ≥100 leucocytes/µL in the CSF. However, FEX therapy also has limitations. It is only recommended for individuals aged ≥ 6 years with a body weight of ≥ 20 kg. It should only be administered under the supervision of trained healthcare staff, together with a meal, to ensure sufficient absorption. Adverse effects of FEX are frequent but are usually mild or moderate and predominantly gastrointestinal.

The new WHO HAT treatment guidelines, published in June 2024, enabled the use of **FEX for treating r-HAT**, replacing suramin and melarsoprol as the first-line therapy in individuals aged ≥ 6 years with a body weight of ≥ 20 kg. As FEX is effective in both stages of r-HAT, a lumbar puncture for staging is no longer required. The introduction of oral FEX represents an advancement in the management of r-HAT considering the life-threatening adverse reactions individuals can have to melarsoprol.

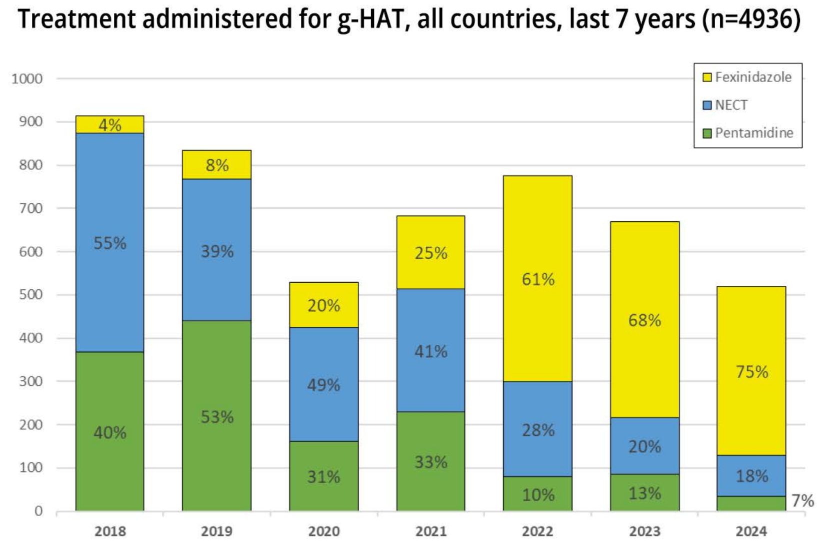
The WHO guideline was published earlier than the scientific manuscript of the **clinical trial**. This also reflects the trust between partners, as DNDi shared the data with WHO before publication, enabling the guidelines to be formulated. A total of 45 patients were included in the single-arm, non-randomized clinical trial at two clinical sites in Malawi and in Uganda (*14*). Of these, 35 were in second stage (34 evaluable). There were no deaths related to FEX or to r-HAT at the end of the hospitalization period. One relapse was detected. Three serious adverse events (SAEs) were reported, all of which were unrelated to fexinidazole.

So far, 12 countries have **officially adopted FEX for g-HAT treatment**: Angola, Cameroon, Central African Republic, Chad, Congo, Côte d'Ivoire, Democratic Republic of the Congo, Gabon, Guinea, Equatorial Guinea, South Sudan and Uganda. WHO has collected pharmacovigilance (PV) data from > 1000 patients treated with FEX.

Figure 9.1.1 shows the **increasing proportional use of FEX** for treatment of g-HAT during a 7-year period (2018–2024). Initially, its use was in clinical trials and, since 2020, in "real life" settings, starting in the Democratic Republic of the Congo, followed by Guinea and other countries. In 2022, more than half of patients were treated with FEX. The 2024 distribution reflects the full implementation (75% of the treatments given).

Figure 9.1.1

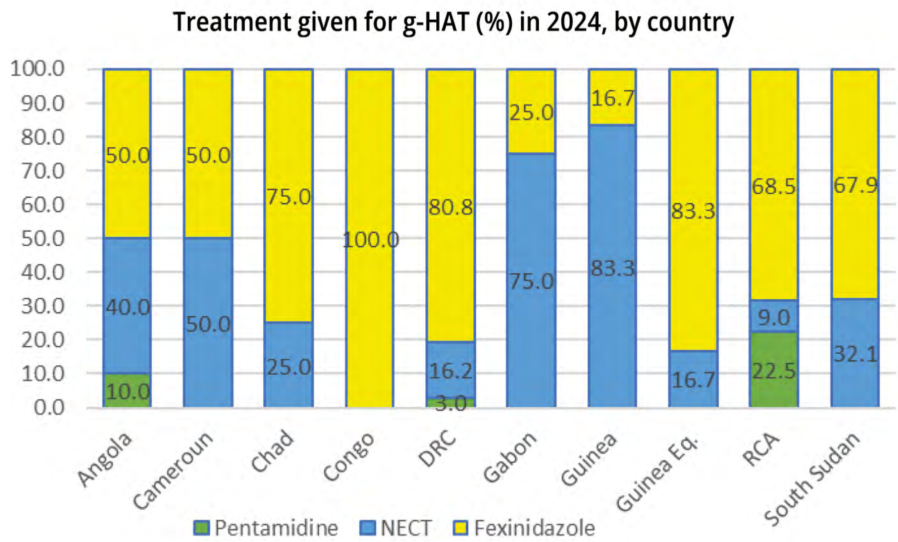
Treatment administered for g-HAT (%), 2018–2024



There is **variability in the use of FEX between countries** (Figure 9.1.2). This is due to different epidemiological situations (e.g. more advanced disease) and different treatment policies.

Figure 9.1.2

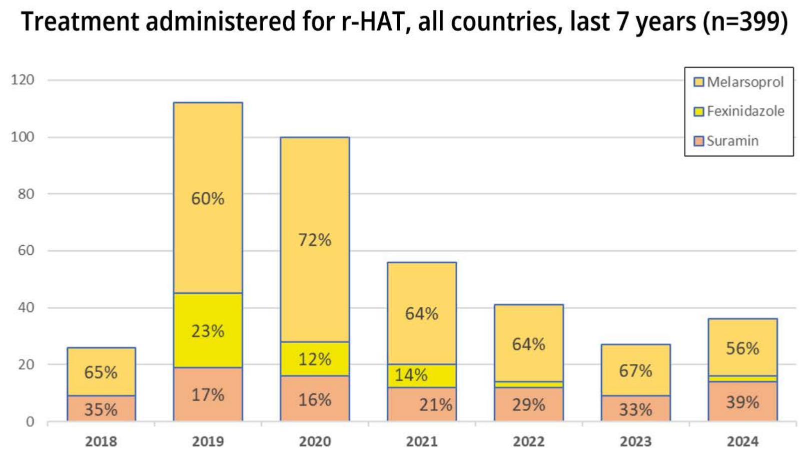
Treatment administered for g-HAT (%) by country, 2024



Regarding the **implementation of FEX for r-HAT**, WHO conducted a training-of-trainers in seven countries in August 2024. To date, FEX has been adopted in three countries: Ethiopia, Malawi and Zimbabwe. Long administrative delays have occurred in the other endemic countries: Kenya, Uganda, United Republic of Tanzania and Zambia. Pharmacovigilance has been implemented. During 2019–2021, FEX was used only in clinical trials. Real-life use started in 2024, with treatment of two patients in Uganda (Figure 9.1.3). Most r-HAT patients present in second stage, for which melarsoprol was previously the only treatment option. FEX is a significantly safer medicine.

Figure 9.1.3

Treatment administered for r-HAT (%), 2018–2024



Zambia currently has the highest number of r-HAT cases and the situation is concerning. FEX has not been adopted, and melarsoprol with a shelf-life extension has been repeatedly rejected by the national Medicines Regulatory Authority. Without treatment, second-stage r-HAT can rapidly progress to death, even within days.

Discussions on the future **use of acoziborole** started in June 2015. A pivotal clinical trial started in October 2016 by DNDi (an open-label, multicentre study assessing the efficacy and safety of acoziborole in adults with g-HAT) and enrolled 208 adults with follow-up of 18 months. Treatment success was 100% (41/41) in the early and intermediate stages and 95.2% (159/167) in stage 2. No serious drug-related adverse events were observed. The submission to the EMA is pending.

Discussions on the possible **widened use of acoziborole for g-HAT** elimination began in December 2019. The multicentre, double-blind, placebo-controlled trial in unconfirmed sero-suspects recruited 1208 patients (randomized 3:1 to receive either acoziborole or a placebo) between December 2021 and August 2023. No safety concerns have emerged from the study, which aligns with the safety profile observed in the pivotal study. The study will be included in the EMA submission file, planned for Q3 2025.

The DNDi trial on the **paediatric use of acoziborole** (the ACOZI-KIDS project, funded by the European and Developing Countries Clinical Trials Partnership; EDCTP) has been ongoing since 2022 in the Democratic Republic of the Congo and Guinea. Step 1, involving children weighing 30–40 kg and aged up to 14 years, with a dose of 640 mg (two adult tablets), has been completed (nine children). Pharmacokinetic results have confirmed that the dose adjustment based on body weight is adequate. No SAEs occurred. Six AEs occurred in three patients, none of which were related to treatment; the patients all recovered. According to the raw data, the success rate was 100%.

Step 2 (children weighing 10–40 kg and aged 1–14 years) completed the inclusions in April 2025, with a total of 26 patients. Crushed tablets of acoziborole were considered the best option after complex development issues of a specific paediatric formulation arose. The Clinical Study Report is expected in Q3 2026.

The primary objective of the **STROGHAT** (Stop Transmission of g-HAT) study is to evaluate a “screen and treat” strategy. The secondary objectives are to provide further evidence on the safety of acoziborole in seropositive g-HAT suspects, and to estimate the costs of the strategy. A prospective evaluation of the screening and diagnostic tests used will also be undertaken.

Enrolment started in July 2024 in Equateur North, Democratic Republic of the Congo. It is expected that about 2500 serosuspects will be included over 3 years. The Clinical Study Report is expected in 2027. The study is partially funded by EDCTP. The study protocol was published in 2025, providing a transparent approach to sharing information on HAT drug trials (*15*).

The **timeline for the introduction of acoziborole for the treatment of g-HAT** foreseen is: EMA submission under Article 58 in Q3 2025 (25 August); EMA scientific opinion in the first semester of 2026; and first country registration in the Democratic Republic of the Congo in 2026 (best-case scenario). Given the administrative requirements, Sanofi, DNDi and all partners are investing substantial efforts to adhere to these timelines.

Discussions have started with partners on the way forward for the **use of acoziborole in r-HAT. r-HAT** poses a risk of re-emergence or outbreaks. Melarsoprol production is expected to be discontinued, leaving only one medicine (FEX) for treatment of stage 2 r-HAT and no medicine for treatment of stage 2 children aged under 6 years or below 20 kg body weight and those who cannot swallow. The in vitro activity of acoziborole against *T.b. rhodesiense* has been demonstrated. The Scientific Advisory Committee of DNDi agrees with exploring innovative ways to obtain authorization to treat r-HAT with acoziborole, given the small number of cases of r-HAT and the associated challenges of conducting a standard clinical trial.

In **conclusion**, the development and deployment of new treatments is proceeding successfully, mostly according to the expected schedule. Obstacles with the formulation of acoziborole have been overcome. In the near future, acoziborole is expected to make a significant contribution to the elimination goals for HAT.

9.2 Pharmacovigilance of fexinidazole

The EMA required that **pharmacovigilance** (PV) be conducted in the first years of implementation of FEX as part of a post-authorization safety study.

As of June 2025, **12 g-HAT countries and three r-HAT countries have officially adopted FEX**. PV is operational in the 13 countries that have reported cases. Simple one-page forms are used and actively requested. PV data are centralized at WHO headquarters.

For **g-HAT**, **PV** started in the Democratic Republic of the Congo in 2020 and is currently operating in 10 countries (Table 9.2.1). A total of 1031 patients were recorded for PV, accounting for 65% (1031/1593) of the total cases treated with FEX. There are delays in transferring data to WHO, primarily in the Democratic Republic of the Congo, South Sudan and the Central African Republic. Furthermore, 1540 follow-up visits were recorded (6 M: 516; 12 M: 420; 18 M: 342; 24 M: 257; unscheduled: 5). The number of follow-up visits is higher than initially anticipated. Patients are encouraged to present themselves for a follow-up visit, but they are not actively traced.

Table 9.2.2 shows the main **characteristics of 1031 patients treated** with FEX for g-HAT. Of these, six were pregnant women (with special follow-up of pregnant women and children after birth); two pregnancy outcome reports so far without any abnormalities; 93% were parasitologically confirmed cases. The majority (61%) of patients experienced at least one adverse event. Six patients experienced SAEs during treatment, five of whom died. A further four deaths were recorded during follow-up. Most of these deaths were clearly unrelated to the treatment or the disease. One death was possibly treatment-related. So far, no relapses have been recorded.

For **r-HAT**, **PV** has only recently begun, currently in the three countries that have adopted FEX (Table 9.2.3). A total of seven patients treated were recorded for PV, accounting for 100% of the total cases treated with FEX. Furthermore, two follow-up visits (6 M) have been recorded so far.

Table 9.2.4 shows the main **characteristics of the seven patients treated** with FEX for r-HAT. The treatment for one patient had to be stopped at day 3 due to rapidly rising liver enzymes and the treatment was changed. One SAE occurred during follow-up: 2 months after treatment, the patient relapsed, with trypanosomes seen microscopically in blood. This patient returned in poor clinical condition and died. The low number of patients precludes drawing conclusions.

Table 9.2.1 and 9.2.2

Summary results of fexinidazole pharmacovigilance data for g-HAT transmitted to WHO, as of 31 May 2025

	N° sites	N° patients
Angola	4	32
Cameroon	2	4
Central African Republic	2	143
Chad	5	14
Congo	4	50
Democratic Republic of the Congo	88	295
Equatorial Guinea	2	18
Gabon	6	17
Guinea	17	29
South Sudan	1	29
Total	**131**	**1031**

Main features (n= 1031)		Missing info
Sex ratio (M:F)	0.82	4
Age in yrs. (median, range)	26 (6–87)	–
Pregnant women	6	65
Trypanosomes seen (T+)	93% (910/975)	56
Dosage prescribed (adult:pediatric)	3.3 (779/235)	17
Full dosage given	97%	28
Any AE during treatment	622 (61%)	–
Serious AE during treatment	6	–
Serious AE during follow up	4	–
Relapses	0	–
Pregnancy outcome reports	2	–
AE during the first two years of life	0	–

AE: adverse event.

Table 9.2.3 and 9.2.4

Summary results of fexinidazole pharmacovigilance data for r-HAT patients transmitted to WHO, as of 31 May 2025

	N° sites	N° patients
Malawi	2	4
Uganda	2	2
Zimbabwe	1	1
Total	**5**	**7**

Main features (n= 1031)		Missing info
Sex ratio (M:F)	6:1	–
Age in yrs. (median, range)	13 (7–63)	–
Pregnant women	0	–
Trypanosomes seen (T+)	100%	–
Dosage prescribed (adult:pediatric)	6:1	–
Full dosage given	6 (86%)	–
Any AE during treatment	5 (71%)	–
Serious AE during treatment	0	–
Serious AE during follow up	1	–
Relapses	1	–
Pregnancy outcome reports	0	–
AE during the first two years of life	0	–

AE: adverse event.

In **summary**, the preliminary PV results suggest that the safety profile of FEX for treatment of g-HAT is good, and consistent with that seen in clinical trials. Efficacy data appear very good so far. The absence of relapses could be backing the WHO/EMA recommendations to treat severe cases with NECT. The cohort size is smaller than the EMA expected. This is explained by the fact that past projections did not anticipate such a rapid decline in HAT cases, plus the implementation has been gradual (FEX treatment only began in the Democratic Republic of the Congo in March 2020 and in other countries in 2022). An agreement has been reached with the EMA to extend recruitment until the end of 2024, and the PV data has already been transferred.

The limited PV data in patients treated for r-HAT does not yet allow any conclusions to be drawn. PV will continue with more countries adopting FEX. A special effort is needed to ensure post-treatment follow up.

In the **discussion**, the question was raised of whether acoziborole resistance may be introduced with its widened use. It could be demonstrated in vitro that resistance can arise. It was specified that the number of seropositive patients recruited and treated in the STROGHAT study would be lower than assumed, as the prevalence was lower than expected, and be due to several exclusion criteria, such as the exclusion of children. However, when combined with the OXA04 trial on the widened use of acoziborole, the sample size would be sufficient to detect uncommon adverse events. It was detailed that serosuspects are tested positive in CATT whole blood or with the RDT HAT Sero *K*-Set.

10. Vector control against gambiense HAT using tiny targets

Traditionally, g-HAT control has focused on the detection and treatment of human cases, with vector control not systematically incorporated into control strategies. While several factors explain this, one of the main reasons was the complexity and cost of vector control methods.

Through a collaboration involving national HAT control programmes, national and international research institutes and with financial support from the European Union and the Gates Foundation, in 2012 the newly developed deltamethrin-impregnated "Tiny Targets" became available and entered the field trial phase. The TPP aimed to develop an easy-to-use, cost-effective tool, suitable for national programmes and limited resources. During field trials, the Tiny Targets demonstrated that they were:

- more effective than traditional vector control methods – for example, twice as effective as traditional traps;
- easier and cheaper to manufacture – using only 10% of the raw materials required for traps;
- long-lasting – the impregnation technology ensures effectiveness for about 6 months under field conditions; and
- easier and cheaper to deploy – after brief training, community members can implement interventions with minimal external support. In the Democratic Republic of the Congo, a three-person team can deploy approximately 200 targets in a single day.

Vector control aims to accelerate the elimination of transmission by working synergistically with medical interventions.

TrypElim and TrypaNo projects

This approach has been introduced in several countries with high g-HAT burden, through two Gates Foundation-funded projects:

- the TrypElim project (led by ITM), in the Democratic Republic of the Congo; and
- the TrypElim project (led by FIND) with LSTM support for vector control in Angola, South Sudan and Uganda, and with IRD support in Chad, Côte d'Ivoire and Guinea.

TrypElim project in the Democratic Republic of the Congo

Since 2015, vector control operations have focused on the former Bandundu province, which at that time reported about half of all g-HAT cases. The project comprised four main work packages: (i) top-down interventions, (ii) community-based interventions, (iii) capacity strengthening and (iv) operational research.

The estimated area of the former Bandundu province is approximately 300 000 km^2. Due to the size and complexity of the region, the goal was to maximize the intervention's reach by protecting as many people as possible with the minimal intervention footprint. In the site selection phase, it was estimated that treating just a selected 4% of the territory could help protect roughly 50% of the population at risk. The intervention scaled up gradually and, in the final years of the project, about 65 000 targets were deployed annually, with two deployments each year. This effort maintained approximately an 80–90% suppression of the tsetse population in all the treated health zones. This strategy was complemented by community-based interventions in selected villages. Additionally, two operational studies explored how to maximize the cost-effectiveness of the intervention by assessing its impact under different strategies – for example, reduced intervention frequency, variations in target density, or comparisons between top-down and community-based approaches.

TrypElim project, multi-country

In Uganda's West Nile region, vector control interventions launched in 2015 contributed to the elimination of g-HAT as a PHP, an achievement validated by WHO in 2022. During the final phase of the TrypElim project, deployment of Tiny Targets was completely halted, although the country's vector control monitoring and intervention capacities remain intact. Following the cessation of vector control activities, we sought to understand how quickly the tsetse population might recover. Data indicate that, 5 years after the last intervention in 2019, the number of tsetse flies captured in Maracha District represents 70% of the initial number. This indicates a significantly slower recovery than predicted by the mathematical models. In the districts of Adjumani, Amuru, Arua, Koboko, Moyo and Yumbe, the tsetse population has so far shown no signs of rebound. Additional interventions in Mundri (South Sudan) and Uíge (Angola) started in 2023 and 2025, respectively, and are currently ongoing.

Future

Although we are still awaiting confirmation on the extension of both projects, we hope they will continue for at least 3 more years. The objectives for both projects will be to (i) support medical operations in accelerating elimination and (ii) maximize the cost-effectiveness of strategies tailored to resource-limited settings. To achieve this, interventions in the Democratic Republic of the Congo will expand to Kasai, and additional countries are expected to join the TrypaNo project (pending confirmation). We hope that the new TrypaNo phase will include Cameroon, Congo, Equatorial Guinea and Gabon. New operational studies will provide mathematical models with the necessary data to predict the impact of small-scale vector control interventions on disease incidence, and to identify the most cost-effective strategies.

The **discussion** revealed that, in contrast to riverine tsetse flies, larger traps are more effective for catching savannah tsetse flies transmitting r-HAT. One hypothesis is that savannah tsetse flies usually feed on large animals, such as buffalo. The insecticide in the Tiny Targets remains stable for years as it remains on the shelf. However, exposure to UV light causes the insecticide to deteriorate. Considering the stability of the insecticide (6–12 months when exposed to sunlight), replacing the targets after 6 months may be the most effective, although this depends on the individual epidemiological situation. Mathematical modelling is used in cooperation with the University of Warwick to predict the required vector control measures and resources. Community-based vector control is complementary to the vertical interventions, as the deployment by community members covers areas where they spend time other than the rivers. The intervention areas for vector control are selected on the basis of epidemiological data, prioritizing areas with human populations. Besides the vector control projects presented here, further activities are done by partners in other countries.

11. Statements of HAT stakeholders

Statements were provided by donors, public and private partners, WHO collaborating centres, international and nongovernmental organizations (some stakeholders did not send statements).

11.1 Donors, public and private partners

Sanofi

Foundation S at Sanofi thanks WHO for organizing this very important meeting, which is critical to succeeding together in the elimination of HAT in 2030 as per the road map. Sanofi has been involved in the fight against HAT for a very long time (since 2001).

Foundation S (The Sanofi Collective) catalyses collective philanthropic actions to extend access to medicine for patients, strengthen community capabilities and empower healthcare workers; building healthier futures for generations to come.

Through 116 different programmes on climate action and health resilience, humanitarian relief, rare diseases commitments, paediatric childhood and sleeping sickness programmes, the Foundation S has improved 29 million lives, including those of more than 200 000 HAT patients.

Sanofi has a 25-year long-term partnership with WHO, which includes donations of HAT medicines, financial support to WHO for screening, and provision of information and education in countries. There has been tremendous success with a 98% reduction in sleeping sickness cases between 2001 and 2024. A partnership with DNDi has been in place since 2009, leading to the approval of fexinidazole in 2018 and the development of acoziborole. Fexinidazole has been recently approved to treat the rhodesiense form of HAT and, thanks to WHO updated guidelines, it is now used in endemic countries.

The partnership with DNDi continues to be very strong with the development of acoziborole, first once a day oral treatment, with very encouraging data already published. Sanofi will submit an acoziborole dossier to EMA in August 2025. The EMA positive opinion is expected in 2026.

HAT medicines are donated by Sanofi and Bayer and distributed by WHO to national HAT control programmes. Regular meetings are held with WHO to update long-term forecast needs, manage short-term requests and distribution, and anticipate potential risks of shortages due to manufacturing and supply.

All stakeholders play an important role. For the first time, a deadly human disease can be eliminated without the use of a vaccine, but the last mile is the most difficult and only by working together will we succeed in eliminating sleeping sickness.

Bayer

Since 2002, Bayer has been a proud partner of WHO in supporting the fight against HAT, particularly during a period of high disease prevalence. Bayer's commitment to finding and providing treatment for HAT dates back to the 1920s, when suramin was invented as the first effective treatment for HAT; it remains an essential drug today. In 2009, the introduction of NECT was a major breakthrough for the treatment of g-HAT, and Bayer extended its support with the donation of nifurtimox. Matched with Sanofi's donation of eflornithine, it was now made possible to provide patients with treatment kits, medicine, and all consumables needed for treatment to reach the remote and resource-poor areas. In addition to donating medicines, Bayer is taking an integrated approach to HAT elimination and has been supporting mobile intervention teams in the Democratic Republic of the Congo, the country with the highest disease burden, since 2013. Hence, Bayer made a significant contribution to the elimination of HAT as a global health challenge in 2020. Although the demand for suramin and NECT is now low, Bayer is committed to maintaining production and donations for as long as needed. Bayer is very proud of its leading role in supporting the elimination of this NTD and in helping to alleviate the associated burden affecting patients.

Coris BioConcept

Elimination of HAT as a PHP and elimination of transmission at the 2030 horizon are ambitious goals that require commitment of all stakeholders involved in case-finding, patient treatment and vector control. These past months have seen a drop in commitment of some countries to the international global effort to tackle diseases (not specifically for HAT). This shows that even when the goal is within reach, victory is not assured. We must therefore continue to collaborate and put all required efforts to keep this elimination goal alive.

The commitment of Coris BioConcept is at two levels: on the one hand by ensuring manufacturing of the HAT Sero *K*-SeT required for testing at the point of need, in active and passive diagnostic activities. To date, more than 6 million tests have been manufactured and we commit to continue the manufacturing in the coming years. On the other hand, a test with enhanced performances remains highly needed to accompany the new HAT treatments such as acoziborole. We will continue our development efforts to increase the performance of the HAT Sero *K*-SeT 2.0 and to make it an affordable alternative to the current HAT Sero *K*-SeT assay. We are currently looking for funding to develop the HAT Sero *K*-SeT 2.0 test. We do not forget that r-HAT is probably even more neglected than g-HAT and will require efforts also in the development of diagnostic tests. This will require more funding and time.

Our commitment applies not only to HAT but also to other tropical diseases such as leishmaniasis, Chagas disease and viral haemorrhagic fevers.

The issue of test registration that was highlighted 2 years ago remains at the centre of our concerns. Diagnostic tests for NTDs have already been withdrawn by some companies due to this hurdle. Tests specifically intended for Africa, such as RDTs for HAT, would benefit from a specific registration status to be defined by the Expert Review Panel for Diagnostics.

Gates Foundation

Guided by the belief that every life has equal value, the Gates Foundation works to help all people lead healthy, productive lives. The goal of the Gates Foundation's NTD team, in our Division of Global Health, is to eradicate or eliminate eight of the diseases included in the 2012 London Declaration. G-HAT is a priority disease within the Gates Foundation's NTD portfolio.

The three aims of the Gates Foundation's HAT work are: (i) to accelerate HAT elimination in all Gates Foundation-supported countries; (ii) to ensure that tools are available to accelerate and sustain HAT elimination by 2030; and (iii) to ensure that HAT elimination strategies are informed by research, modelling and data. The Foundation currently funds a broad range of activities in support of HAT elimination including support to HAT programmes in the Democratic Republic of the Congo (through ITM) and in Guinea, Sierra Leone, Côte d'Ivoire, Chad, Central African Republic, South Sudan, Uganda, Angola (through FIND, IRD and LSTM); advocacy for HAT elimination in the Democratic Republic of the Congo (through CNRSC); diagnostics development (through ITM); deterministic and stochastic mechanistic modelling (through the University of Warwick); and therapeutics development (through DNDi). As part of our ongoing commitment to HAT elimination in the Democratic Republic of the Congo and our continued partnership with the Belgian government in the Democratic Republic of the Congo, we are in the process of renewing our grant to ITM for another 3 years.

The Gates Foundation is grateful for the contributions of the diverse partners supporting global HAT elimination and we are proud to be part of this global network. The immense progress in HAT elimination over recent decades is due to every programme and every partner's collective effort, and we hope to continue this collaboration until we eliminate this deadly disease.

11.2 WHO collaborating centres

ITM as a WHO collaborating centre

The Institute of Tropical Medicine (ITM) in Antwerp (Belgium) continues to serve as the WHO Collaborating Centre for Research and Training on HAT Diagnostics, partnering closely with the Democratic Republic of the Congo's PNLTHA and INRB and France's IRD. ITM curates one of the world's largest panels of *Trypanosoma brucei* strains – more than 320 isolates, including fluorescent, luminescent and drug-resistant derivatives – and has more than 260 whole-genome sequences available. These datasets drive marker discovery (kDNA, satellite DNA, novel *T.b.gambiense* targets) and feed directly into new molecular diagnostic assays.

Strengthening laboratory capacity. A Gates Foundation-funded initiative (INV-031353) has placed RT-qPCR capability in Dipumba, Kasai-Oriental (Democratic Republic of the Congo); routine molecular testing began in May 2025 using Maxwell RSC extraction and MIC cyclers, with higher-throughput workflows and external quality control running at INRB. Under the EU STROGHAT project, ITM has converted the indirect ELISA into a ready-to-use kit built on LiTat 1.3/1.5 antigens; a second-generation inhibition ELISA – designed to replace native VSGs and remove lot-to-lot variability – is under further development.

Recombinant antigen production. ITM has generated genetically stabilized *T.b. brucei* lines that express LiTat 1.3 or 1.5, enabling high-throughput recombinant trypanolysis without the need for animals or biosafety containment. In parallel, the same strains will be transferred to ITM's Applied Technology & Production Unit to explore the potential to create the first fully in vitro, animal-free production platform for recombinant VSGs and CATT antigen.

Field validation and future algorithm. Within the **GAMBIT** project (2025–2028), ITM and INRB will benchmark RT-qPCR, indirect and inhibition ELISAs, and (recombinant) trypanolysis on venous-blood KPS samples – testing serial and parallel combinations. The aim is a streamlined "screen-and-treat" approach ready for acoziborole deployment after 2028, when mAECT confirmation may be retired. Whole-genome and amplicon sequencing of parasite-positive isolates will track the dwindling genetic diversity of ***T.b. brucei*** as elimination approaches.

Institut de Recherche pour le Développement (IRD)

The WHO Collaborating Center for research on host–vector–parasite interactions to sustain surveillance, control and elimination of HAT is based at the IRD (Institut de Recherche pour le Développement) Unit INTERTRYP "Host - Vector – Parasite – environment interactions in NTDs due to Trypanosomatids". INTERTRYP, based in Montpellier (France), is a joint research department of IRD, CIRAD (centre de Coopération Internationale en Recherche Agronomique pour le Développement) and the University of Montpellier, dedicated to the control of human and animal diseases caused by Trypanosomatids in a One Health approach. Its terms of reference include technical assistance, scientific expertise and specialized training at the request of WHO and endemic countries in the context of collaborative projects.

Regarding HAT, the activities are conducted by INTERTRYP and its main African partners: the PNLMTN in Conakry (Guinea), IPR in Bouaké (Côte d'Ivoire), CIRDES in Bobo Dioulasso, (Burkina Faso), and IRED and PNLTHA (Chad), among others. The WHO Collaborating Centre work plan includes five activities: (i) support for passive and active HAT case detection and vector control; (ii) reference testing with the trypanolysis (TL) test (CIRDES, IPR); (iii) training by supervising students and organizing workshops, such as ICAT-8 in Côte d'Ivoire; (iv) provision of expertise to WHO; and (v) support to the WHO HAT elimination strategy by improving diagnostic tools and vector control. Interventional research to reach g-HAT elimination of transmission (EoT) in several countries is also implemented with the national programmes through the Trypa-No! international consortium funded by the Gates Foundation. We also implement research on the animal reservoir of *T.b. gambiense* and we build scientific bridges with Latin America to work both on African and on American trypanosomoses. Although research and control of g-HAT are true "success stories", as shown by the recent elimination as a PHP of g-HAT in Guinea, and the upcoming EoT in Côte d'Ivoire planned for this year, funding is more threatened than ever in the current geopolitical context. While approaching zero transmission, reference laboratory tests will gain importance to follow HAT prevalence, document zero transmission for verification and to make critical decisions on which strategies to apply. It is therefore essential to preserve the unique expertise of the collaborating centres that are pivotal to reach sustainably the EoT objective. Our additional involvement in HAT research include:

- Clinical trials on treatment (with DNDi): acoziborole in children (Guinea), FEX for g-HAT (Democratic Republic of the Congo, Guinea) and acoziborole in seropositives.
- COMBAT: EU H2020, coordinated by Cirad, including a One Health component on the impact of vector control for g-HAT on animal African trypanosomiasis.
- IRD involvement in JEAI RECIT (Guinea), the International Research Network TROUVE (Burkina Faso, Côte d'Ivoire, Cameroon, Guinea) and several IRD PhD fellowships.
- STROG-HAT, coordinated by ITM and funded by Global Health EDCTP3 (Democratic Republic of the Congo).

11.3 Research institutions

Drugs for Neglected Diseases initiative (DNDi)

DNDi is dedicated to developing treatments for neglected diseases to ensure that safe, effective and accessible medicines reach those who need them most. So far, we have successfully developed 13 treatments for six diseases, including HAT, leishmaniasis, Chagas disease, malaria, filarial diseases and mycetoma. Our commitment extends beyond existing treatments, as we continue working on over 40 ongoing research projects focused on neglected diseases.

For HAT, we have contributed to the development and approval of two medicines for three indications. NECT, co-developed by DNDi, Médecins Sans Frontières (MSF) and Epicentre, has significantly improved treatment for late-stage g-HAT. Fexinidazole, the first all-oral treatment for g-HAT, allows patients with mild to moderate symptoms to be treated outside the hospital, reducing the burden on healthcare facilities while improving patient outcomes. Several countries are integrating fexinidazole into their treatment protocols for r-HAT, expanding access to this innovative treatment.

We are also developing acoziborole, a single-dose oral treatment aimed at simplifying HAT management. This treatment could significantly improve accessibility, especially in remote areas where hospital-based care is limited, providing a simpler and more efficient approach. Sanofi is leading its submission to the EMA, planned for Q3 2025, and we are providing active support in this process. Additionally, acoziborole is expected to play a crucial role in a "test-and-treat" strategy, enabling early detection and intervention, which will be key in eliminating HAT transmission.

As part of our ongoing research on acoziborole, we are conducting two clinical trials: one in children aged under 15 years with confirmed g-HAT, the other (STROGHAT) in adult and adolescent seropositive individuals. The STROGHAT study assesses the screen-and-treat approach, evaluating whether treating seropositive individuals without microscopic confirmation can help eliminate g-HAT. It also includes cost analysis and further safety documentation. The study is carried out in collaboration with IMT-Antwerp, IRD, the Democratic Republic of the Congo National Sleeping Sickness Control Programme and the INRB Kinshasa.

Foundation for Innovative New Diagnostics (FIND)

FIND is a global health non-profit organization that works in partnership to facilitate the development, evaluation and implementation of diagnostic solutions for poverty-related diseases. Since 2006, FIND has been facilitating the development and implementation of new diagnostic solutions to support the control and elimination of HAT. Among the tests whose development has been supported by FIND, the first- and second-generation HAT RDTs have been the most impactful and have enabled integration of screening for the disease into the healthcare system. This has improved population coverage and contributed significantly to elimination of the disease aligned with the WHO goals.

FIND is a member and coordinator of the Gates Foundation funded TRYPA-NO! partnership established in 2016. The partnership supports several NSSCPs in the elimination of HAT, and by May 2025, had contributed to the elimination of HAT as a PHP in Chad, Côte d'Ivoire, Guinea and Uganda. Other countries being supported by the partnership include Angola, Central African Republic, Sierra Leone and South Sudan. Funding from the Canton of Geneva has enabled the expansion of these efforts to include Kongo Central Province in the Democratic Republic of the Congo. Through FIND's support, Kenya's Ministry of Health has established a HAT surveillance strategy and developed a dossier on elimination, for validation by WHO.

FIND reaffirms its commitment to continue supporting WHO's and NSSCPs' efforts to achieve and sustain the elimination of HAT.

Institut Pasteur

The Institut Pasteur supports the WHO HAT programme through its biobank platform, the CRBIP and its research units on trypanosome transmission and molecular biology.

The CRBIP's mission is to support scientists to advance research on human diseases by providing project-specific biobanking services and by supplying carefully characterized and fit-for-purpose biological resources. The CRBIP manages biological resources to enable high impact applications and maximize the benefits from the collections. Hence, the CRBIP is happy to continue hosting and managing the HAT collection, as a strategic tool to advance research and applications in the area of HAT, under the governance of WHO. Specifically, CRBIP continues to offer secure biorepository facilities for the HAT collection and distributes specimens to scientists requesting such resources, while operating in compliance with the latest professional biobanking quality standards and applicable regulations. Currently, there are 43 000 samples in stock, including serum, plasma, saliva, urine, CSF and buffy coat, while 685 samples have been distributed to researchers over the past 5 years.

Critical areas of research at the Institut Pasteur include the identification of trypanosome reservoirs (human and animal) and the development of new HAT diagnostic tools. In these areas, the Trypanosome Transmission Group at Institut Pasteur and the Parasitology Unit at Institut Pasteur of Guinea led by Brice Rotureau, and the Trypanosome Molecular Biology Unit at Institut Pasteur led by Lucy Glover, are working together with international partners to implement both fundamental and translational research programmes funded by the Institut Pasteur, the Agence National de la Recherche (ANR), the Gates Foundation and DNDi. As recently demonstrated, the skin is an important but overlooked anatomical reservoir for trypanosomes. Ongoing projects aim to (i) unravel the development of skin-dwelling parasites, (ii) study host–parasite interactions and (iii) translate these results into applications. The prevalence of dermal trypanosomes is still under investigation in humans and domestic and wild animals at study sites in Burkina Faso, Cameroon, Côte d'Ivoire and Guinea, where different detection techniques are being compared on skin and blood samples. Regarding diagnostics, the partners at Institut Pasteur have adapted the SHERLOCK technology, based on a CRISPR-Cas system, to detect active trypanosome infections. These tests could be useful for epidemiological surveillance in the HAT elimination and post-elimination phases. The partners at Institut Pasteur are currently improving these tests for use as RDTs in endemic areas. The Institut Pasteur is dedicated to continuing its collaboration and contributing to the joint efforts towards the elimination of HAT.

Institute of Tropical Medicine (ITM)

ITM in Antwerp has a longstanding history – over a century – of research and innovation in the fight against sleeping sickness. ITM has worked in close partnership with the Democratic Republic of the Congo institutions, notably the PNLTHA and the INRB, providing technical, administrative and logistical support.

Since 2013, ITM has coordinated two major complementary projects funded by the Belgian government and the Gates Foundation, supporting core elimination activities in the Democratic Republic of the Congo. These include exhaustive mass screening of populations living in endemic villages, integration and simplification of passive case detection in the primary health care system, treatment of confirmed cases and tsetse vector control. Capacity strengthening and country ownership of elimination interventions remain central to all support provided.

ITM is committed to training, having delivered trainings on sleeping sickness for PNLTHA and health ministry staff in all endemic provinces of the Democratic Republic of the Congo, and has facilitated higher education opportunities for selected members of PNLTHA and INRB.

ITM has also contributed significantly to data quality, completeness and timeliness, through the development and national expansion of a digital data collection system using an Android application with a server-side dashboard, allowing capture of geo-referenced data and including diagnostic quality assurance features. This tool has enhanced data driven planning, decision-making and resource allocation.

Beyond programmatic support to the Democratic Republic of the Congo institutions, ITM is also seeking to develop and test optimized elimination strategies, adapted to the epidemiological, social and geopolitical context. ITM is coordinating the EU-funded STROGHAT project testing a new elimination strategy based on expanded treatment of screening test seropositive individuals, using acoziborole. Social science research will inform approaches to sustain community participation to screening activities in very low prevalence settings, while health economics studies will assess the cost-effectiveness of various elimination strategies. In the next years, ITM will also invest in testing innovative and sustainable approaches for post-elimination surveillance, adapted to the Democratic Republic of the Congo context.

ITM is also actively involved in diagnostic development and, particularly in the next years, will focus on validating new/improved serological and molecular tests as well as a diagnostic algorithm suited to the elimination and post-elimination phases.

ITM remains committed to working in close synergy with national and international partners, and is grateful to donors for their long term commitment, which is critical to sustaining progress towards the elimination of sleeping sickness target.

Liverpool School of Tropical Medicine (LSTM)

LSTM would like to begin by expressing its sincere thanks to WHO for organizing this important meeting. These gatherings are vital for our community, providing a valuable platform to exchange experiences and learn from one another. It is truly encouraging to hear about the continued progress being made.

LSTM has a longstanding history in trypanosomiasis and tsetse research, and our commitment to this field remains strong. Our current focus is on vector control for gambiense sleeping sickness, primarily through the Trypa-NO! and TrypElim/GAMBIT programmes, using Tiny Targets. In these initiatives, we work closely with national control programmes and partners to support the implementation of vector control in the most affected regions. Alongside technical assistance, we are also dedicated to building the capacity of national programmes to independently implement and sustain vector control efforts.

Over the past decade, significant progress has been achieved in the Trypa-NO! and TrypElim countries through integrated approaches combining medical intervention and vector control. The four original Trypa-NO! countries have successfully reached the elimination of g-HAT as a PHP, and two are on track to achieve elimination of transmission this year. In the Democratic Republic of the Congo, there has been a substantial decline in the number of reported annual cases. However, we recognize that evolving epidemiological landscapes call for adaptive strategies, which is why we are now addressing new operational research questions to refine our approach.

While remarkable strides have been made in the Trypa-NO! and TrypElim countries, we are also aware that there are other countries where support must be initiated or scaled up. We are hopeful that our support can be extended to additional countries in the near future.

Although our current focus is on g-HAT, we previously reported at the last stakeholders meeting on our support for r-HAT control in Malawi. While that programme has now concluded, we are eager to re-engage in r-HAT support moving forward.

Our work at LSTM would not be possible without the collaboration of our valued partners: the national control programmes in Angola, Democratic Republic of the Congo, South Sudan and Uganda; FIND; IRD; ITM; Vestergaard; and our funder, the Gates Foundation. We remain fully committed and look forward to continuing our shared efforts to reach the WHO 2030 targets.

Swiss Tropical and Public Health Institute (Swiss TPH)

The HAT activities of Swiss TPH have reached a marginal level:

- The Parasite Chemotherapy Unit of the Swiss TPH in collaboration with DNDi is finalizing a study on the in-depth pharmacodynamic evaluation of acoziborole against African trypanosomes in vitro, with the focus on *T.b. rhodesiense*.
- With the departure of Dr Marina Antillón and Dr Soledad Castaño, the modelling activities have ceased.
- Professor Christian Burri serves as the Chair of the DNDi ACOZI-Kids clinical trial Project Advisory Committee. He is attending his last WHO meeting today, as he will retire in November 2025 after 35 years of belonging to the tryps family and contribution to the fight against sleeping sickness.

University of Glasgow

The University of Glasgow, in partnership with institutions across Sub-Saharan Africa, is advancing research, diagnostics, surveillance and community engagement to combat HAT.

In Malawi, working with Kamuzu University of Health Sciences, Professor Annette MacLeod and her team, including Walt Adamson, we have identified preliminary evidence of asymptomatic *T.b. rhodesiense* infections with skin-dwelling parasites – potentially reshaping understanding of disease transmission. In the Democratic Republic of the Congo, with the National Institute of Biomedical Research, we have also found signs of skin-resident trypanosomes persisting more than a decade after NECT treatment, raising new questions about parasite clearance.

Alongside these findings, we are developing a low-cost diagnostic tool capable of detecting both HAT and malaria, aligned with WHO's TPPs. A new sequence capture technique now enables high-resolution genome sequencing of *T.b. rhodesiense* from diverse clinical and field sources.

Our surveillance efforts in the Kucha Alfa region of Ethiopia, in collaboration with the Ethiopian Public Health Institute, have gathered data from humans, animals and tsetse flies following the country's first reported HAT outbreak since 1991. In Malawi and Ethiopia, we have also conducted community-based surveys on knowledge, attitudes and behaviours relating to HAT.

Mike Barrett's team continues to investigate mechanisms of trypanocidal drug resistance and support the development of single-dose drugs such as the cyanotriazole series in partnership with Novartis. Richard McCulloch's group is uncovering the molecular mechanisms of antigenic variation and genome structure in *T. brucei*.

A One Health approach, led by Dr Harriet Auty, Professor Mike Barrett, Professor Louise Matthews (University of Glasgow) and Professor Liam Morrison (University of Edinburgh Roslin Institute), is examining the spread of drug resistance in African animal trypanosomosis and supporting the development of new veterinary trypanocides.

We convened a stakeholder meeting on HAT research and diagnostics in Lilongwe (2–3 June 2025), attended by policy-makers, researchers and community leaders. A summary report is forthcoming. Earlier in March 2025, a London meeting brought together experts to explore shared genetic risk factors for HAT and chronic kidney disease.

Community engagement remains central. The award-winning Parasite Street Science initiative – an interdisciplinary collaboration involving scientists, health workers, and performers – has reached thousands through performances and outreach. It was recently commended in the Scottish Parliament.

University of Makerere College of Veterinary Medicine

Dr Enock Matovu represented Makerere University, Uganda's leading public university. There are several HAT-related activities, and the University makes considerable contributions to research and capacity-building for laboratory and field operations. Makerere maintains well equipped laboratories where in vitro trypanosome culturing is undertaken. There are also laboratory animal models for trypanosome experimentation, liquid nitrogen tanks for cryopreservation, and molecular biology techniques including diagnostics and genetic analyses. Several HAT research projects are undertaken, in partnership with several organizations. In collaboration with FIND, Makerere still supports refresher training of field staff to sustain diagnostic capacities in rural health units. Makerere also participated in the recently concluded fexinidazole for r-HAT clinical trial executed in Uganda and Malawi, which led to the introduction of that medicine for r-HAT treatment. The TrypanoGEN project, which immensely contributed to trypanosomiasis research careers in several endemic countries, was concluded and the trained young scientists have now started their journeys as the new breed of trypanosomiasis researchers. The COMBAT project in which Makerere university is involved is in its last year of operation. One of its contributions is investigating trypanosomes circulating in the animal reservoir and their potential to spill over into humans. Timely treatment of infected animals contributes to eliminating the animal reservoir. Makerere University will continue to play its various roles in HAT research and control. Collaboration with national and international players in HAT elimination and post-elimination surveillance will be maintained.

University of Warwick

The HAT MEPP project has had its funding extended until August 2028 by the Gates Foundation. The team will continue to collaborate with the national programmes in Chad, Côte d'Ivoire, the Democratic Republic of the Congo, Guinea and Uganda, as well as beginning new collaborations with other countries. Our primary goal remains the same: to support national programmes and their research partners to deliver effective g-HAT elimination strategies efficiently, taking the local context into account. Recently, our work has included: forecasting the impact of screen-and-treat with acoziborole in the Democratic

Republic of the Congo; quantitatively assessing the impact of past strategy changes and the Ebola outbreak in Guinea; and assessing progress towards elimination of transmission in all foci of Chad.

A new goal is to improve and integrate AI within the graphical user interface to share project results with partners. To achieve this, new team members with expertise in data visualization and AI will work closely with stakeholders to ensure the interface is tailored to user needs and is easier to navigate. A big technical challenge will be to include an interactive chat box so users can ask questions and produce reports based on the HAT MEPP modelling results. In January 2025, we held a fruitful workshop to gather suggestions and feedback from the Democratic Republic of the Congo PNLTHA in Kinshasa. We will be sharing updated versions of the interface and arranging meetings with all our partners throughout the HAT MEPP 3 project to test changes and ensure the interface is adapted to best suit stakeholder needs.

Visit go.warwick.ac.uk/hatmepp to view our latest project results online and a summary of our work in the HAT MEPP booklet.

11.4 International organizations

Food and Agriculture Organization of the United Nations (FAO)

FAO shares with WHO the vision of an African continent free from the burden of trypanosomosis. Within the framework of the Programme Against African Trypanosomosis (PAAT), FAO is committed to sustaining its longstanding collaboration with WHO, aiming to achieve our common goal.

Since 2008, WHO and FAO have jointly developed and regularly updated the continental atlas of HAT, which has since become central to the planning and monitoring of disease elimination. The atlas is also a key source of data for communication, awareness-raising and research. The two organizations also work together to advance policy debate, for example by organizing expert meetings on topics such as vector control and the elimination of g-HAT (*16*).

FAO supports WHO also by firmly placing its activities against animal trypanosomosis in a One Health framework. For example, WHO is regularly consulted in the development and roll-out of the progressive control pathway (PCP) for animal trypanosomosis (*17*), to ensure that synergies with HAT elimination are maximized within the PCP.

Last but not least, FAO plays a pivotal role in the compilation and dissemination of comprehensive high-quality data on tsetse flies and animal trypanosomosis at the continental and national level, with a continental atlas of tsetse fly distribution in Africa recently published (*18*), a continental atlas for animal trypanosomosis in the pipeline, six national atlases already published [i.e. Burkina Faso (*19*), Ethiopia (*20*), Kenya (*21*), Mali (*22*), Sudan (*23*), Zimbabwe (*24*)] and eight more in the pipeline (i.e. Cameroon, Chad, Côte d'Ivoire, Ghana, Mozambique, Senegal, South Africa and Zambia).

International Atomic Energy Agency (IAEA)

In the past decade, Member States have supported an IAEA General Conference resolution in support of the African Union's Pan African Tsetse and Trypanosomosis Eradication Campaign (AU-PATTEC). The resolution recognizes that tsetse and the trypanosomosis problem constitute one of the greatest constraints to socioeconomic development on the African continent, affecting the health of humans and of livestock, limiting sustainable rural development, and thus causing increased poverty and food insecurity.

The General Conference of IAEA requested the IAEA and other partners to strengthen capacity-building in Member States for informed decision-making on the choice of tsetse and trypanosomiasis control strategies and the cost–effective integration of SIT operations in area-wide integrated pest management (AW-IPM) programmes.

The IAEA General Conference also requested the Secretary to coordinate with Member States and other partners to allocate resources through the regular budget and the Technical Cooperation Fund for consistent support to the operational field projects using the SIT, and to strengthen support for research and development (R&D) and technology transfer in African Member States to complement their efforts to establish and expand tsetse fly-free zones.

The IAEA, through the Department of Technical Cooperation and the FAO/IAEA Joint Centre, has played a central role in developing the successful implementation of SIT for plant pests and other key insect pests, and has played a similar role in R&D, including coordinating research projects and field programmes targeting tsetse flies. Also, the IAEA has participated in the external advisory committee of projects funded by the European Commission, as the Controlling and Progressively Minimizing the Burden of Animal Trypanosomosis (COMBAT) project.

The IAEA assists Member States through country programme frameworks to identify the need for the development and implementation of SIT programmes by assisting in the acquisition of the technical baseline data required for the implementation of the field strategies, including assistance in the collection of ecological, seasonal and distribution data, and the suitability of pest population levels for the application of the SIT as part of an integrated area-wide integrated pest management approach.

The IAEA assists in determining whether SIT programmes are justified on economic and environmental grounds, identifies and provides research and development support required for the implementation of SIT, and assists in the development of the necessary infrastructure and training not limited to SIT but including GIS distribution modelling, population genetics, mass-rearing, insect sterilization and more. The IAEA also assists in the development of capacity for mass-rearing, production of sterile insects and other activities related to the SIT application. Finally, IAEA is helping to design the implementation of national, area-wide integrated management strategies with a SIT component.

Finally, the SIT can play a role in the elimination of riverine species in certain areas where eradication is warranted, feasible and environmentally justified.

11.5 Nongovernmental organizations

Médecins Sans Frontières (MSF)

MSF Logistique, the supply centre of MSF, is proud to contribute to the WHO programmes on HAT, a longstanding collaboration. MSF offers its expertise in logistics, procurement and transport of HAT medicines to contribute to the WHO elimination targets.

MSF operational entities are maintaining HAT activities in several countries (Central African Republic, South Sudan) integrated into their programmes. Most of the areas report low numbers of cases.

In the Central African Republic we also collaborate with the Mentor initiative (sponsored by FIND) and the national HAT programme to a decentralized model for screening. The Mentor initiative organizes screening activities in communities using RDT and refers positive patients to MSF hospitals for complementary diagnosis and treatment.

For more than 30 years, MSF and MSF Logistics have been contributing to the medical care of patients affected by sleeping sickness in collaboration with the WHO HAT team. Since 2005, MSF Logistique has been managing the stock of HAT medicines, offering its expertise in logistics, supplies, kits, transport and regulatory pharmaceutical aspects.

We are proud to honour this partnership. MSF Logistics reaffirms its desire to continue supporting the WHO HAT Geneva and Country teams, responding to the specific logistical needs.

12. Conclusions

The meeting concluded with the following points.

- NSSCPs have continued to make great progress towards the elimination targets for HAT. Stakeholders expressed their commitment to continuing support and work towards this end. The number of cases has remained below 1000 for 7 consecutive years, reaching an all-time low in 2024.
- The decline in the number of reported cases is slower than in the previous 20 years. Nevertheless, the overall situation permits an optimistic outlook, as surveillance continues at high levels. The capacity to screen for, diagnose and treat HAT even increased. With mini mobile units and door-to-door screening, more of the population at risk is being reached.
- From 2020 to 2025, the elimination of HAT as a PHP was validated in Benin, Chad, Côte d'Ivoire, Equatorial Guinea, Ghana, Guinea, Togo and Uganda (all for g-HAT) and in Rwanda (for r-HAT). Post-elimination surveillance is ongoing. Kenya has submitted its dossier for validation. Countries are encouraged to engage in the validation process. WHO will assist countries in this process.
- In 2023, WHO published "Criteria and procedures for the verification of elimination of transmission of *T.b. gambiense* to the human population in a given country". Currently, six countries are eligible and preparing their verification applications.
- The case definitions of g-HAT were reviewed in the context of the current elimination process. Parasitologically confirmed (T+) and unconfirmed cases (T-) must be reported separately.

- The number of reported r-HAT cases remains low. Nevertheless, under-detection is a concern and surveillance must be strengthened. There was an increase in cases in Zambia last year. The re-emergence of r-HAT is a constant threat as it is a zoonotic disease with epidemic potential.
- The highest priority TPP is on diagnosis of r-HAT in peripheral settings. However, nothing is in the pipeline in this field, and increased use of malaria RDTs reduces microscopy use for malaria which used to help by leading to accidental diagnosis of r-HAT.
- For g-HAT, the current RDTs are used in a screen–confirm–treat scenario. However, once shifting to widened treatment, the low RDT specificity will lead to overtreatment and excessive remote reference laboratory testing. RDTs with higher specificity remain needed.
- For parasitological confirmation, mAECT is recommended, but the gel production will stop and, unless an alternative is found, the future not only of mAECT but also of CATT production is threatened.
- Concerning the reference laboratory tests, the KPS sampling kits are a step forward. As new test formats and targets become available, it will be necessary to carry out collaborative diagnostic performance studies against reference laboratory tests. Sufficient support should be guaranteed to maintain the functioning of reference laboratories and avoid the loss of expertise.
- So far, 12 countries have officially adopted FEX for g-HAT treatment. In 2024, 75% of patients were treated with this medicine. A total of 1031 patient treatments were recorded for PV. So far, no relapses have been reported. The preliminary PV results suggest that the safety profile of FEX for treatment of g-HAT is consistent with that observed in clinical trials.
- The new WHO HAT treatment guidelines, published in June 2024, enabled the use of FEX in r-HAT. FEX replaces suramin and melarsoprol as the first-line therapy in individuals aged ≥ 6 years with a body weight of ≥ 20 kg.
- Regarding the implementation of FEX for r-HAT, trainers have been trained in seven countries. FEX has been adopted in Ethiopia, Malawi and Zimbabwe, and PV has recently begun operating. Administrative delays in implementation are longer than those in the other endemic countries.
- The pivotal clinical trial for the use of acoziborole in g-HAT demonstrated high efficacy and good safety. The following timeline is foreseen: EMA submission under Article 58 in August 2025, EMA scientific opinion in the first semester of 2026, and the first country registration in the Democratic Republic of the Congo in 2026 (best case scenario).
- The clinical study report of the DNDi trial for widened use of acoziborole for g-HAT is currently being prepared. No safety concerns have emerged from this study.
- Step 2 of the trial investigating the paediatric use of acoziborole (children weighing 10–40 kg and aged 1–14 years) completed the inclusions in April 2025. Crushed tablets of acoziborole were used. The Clinical Study Report is expected in Q3 2026.
- The STROGHAT (Stop Transmission of G-HAT), evaluating a “screen and treat” strategy, began enrolling participants in the Democratic Republic of the Congo in July 2024.
- In the near future, acoziborole is expected to contribute significantly to the elimination goals of HAT. Discussions have started with partners on the best way forward for the use of acoziborole in r-HAT.
- Vector control, in combination with medical and other interventions, contributes to the elimination of g-HAT transmission, and has been introduced in several countries with high disease burden. New mathematical models will predict the impact of small-scale vector control interventions on disease incidence and identify the most cost-effective strategies.
- With the low number of cases, it is crucial to maintain partners’ commitment to HAT elimination, to promote ownership of this goal by national health authorities and to maintain coordination among partners. Although the cuts of US government funding do not directly affect HAT control activities, they probably have a significant indirect impact given the number of programs and people affected.

Dr Daniel Argaw Dagne closed the meeting by summarizing the important aspects of the meeting. He mentioned and thanked each of the people who had organized the meeting in a difficult context. Finally, he thanked the NNSCPs and all stakeholders – the “strong HAT community” – for their joint efforts.

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Annex 1. Agenda

Block 1 - morning		
09:00 – 09:30	**Registration. Organizational issues.**	
09:30 – 09:45	**Introduction and welcome. Opening** Presentation of the meeting and participants. Addresses from WHO officials.	WHO (NTD HQ, TVD AFRO)
09:45– 11:00	**Report on global situation of HAT**. Epidemiological situation and strategies for elimination **Status of validation of elimination at country level**	G. Priotto (WHO) A. Kadima Ebeja (WHO)
11:00 – 11:30	**Update on national programs in gambiense HAT endemic countries, resources and perspectives**	J. Atsame, on behalf of all National HAT Control Programs
11:30 – 12:00	**Update on national programs in rhodesiense HAT endemic countries, resources and perspectives**	C. Wamboga, on behalf of all National HAT Control Programs
12.00 – 12.30	Q & A	
12:30 – 14.00	Lunch Break	
Block 2 - afternoon		
14:00 – 14:20	**WHO network for HAT elimination** Update on subgroups **HAT-DTAG, New treatment tools, HAT-e-TAG, Countries coordination**	G. Priotto (WHO)
14:20 – 14:25	Q & A	
14:25 – 14:55	**Diagnostics: advances and perspectives**	V. Lejon (IRD)
14:55 – 15:05	Q & A	
15:05 – 15:15	Break	
15:15 – 15:40	**Treatment: advances and perspectives**	J. Seixas (IHMT)
15:40 – 15:50	**Pharmacovigilance of fexinidazole**	G. Priotto (WHO)
15:50 – 16:00	Q & A	
16:00 – 16:30	**Vector control: advances and perspectives**	I. Tirados (LSTMH)
16:30 – 16:40	Q & A	
16:40 – 16:55	**Conclusions and points to be followed up**. Way forward	TBD
16:55 – 17:00	**Closing**	WHO

Annex 2. List of participants

Name	Institution	Country
National Sleeping Sickness Control Programs		
Amadeu Dala	Ministério da Saúde	Angola
Luis Baião Peliganga	Ministério da Saúde	Angola
Ndeye Marie Bassabi	Ministère de la Santé	Benin
Romaric Tchebe	Ministère de la Santé	Benin
Kaboré Boezemwendé Ouoba	Ministère de la Santé et de l'Hygiène Publique	Burkina Faso
Boukare Ouedraogo	Ministère de la Santé et de l'Hygiène Publique	Burkina Faso
Victor Bucumi	Ministère de la Santé	Burundi
Alphonse Acho	Ministry of Health	Cameroon
Pierre-Marie Douzima	Ministère de la Santé et de la Population	Central African Republic
Justin Darnas	Ministère de la Santé Publ. et Solidarité Nationale	Chad
Mahamat Oumar Adoum	Ministère de la Santé Publ. et Solidarité Nationale	Chad
Erick Mwamba Miaka	Ministère de la Santé Publique	Democratic Republic of the Congo
Lingué Kouakou	Ministère de la Santé, de l'Hygiène Publique et de la Couverture Maladie Universelle	Côte d'Ivoire
Eustaquio Nguema Ndong	Ministerio de Sanidad y Bienestar Social	Equatorial Guinea
Pedro Ndongo Asumu	Ministerio de Sanidad y Bienestar Social	Equatorial Guinea
Tesfahun Bishaw	Ministry of Health	Ethiopia
Julienne Atsame	Ministère de la Santé et des Affaires sociales	Gabon
Jatta Balla	Ministry of Health	Gambia
Nana Konama Kotey	Ghana Health Serv., Disease Ctrl & Prev. Dpt	Ghana
Mamadou Camara	Ministère de la Santé	Guinea
Moise Kagbadouno	Ministère de la Santé	Guinea
Dickson Kioko	Ministry of Public Health	Kenya
Darwosu Borbor	Ministry of Health and Social Welfare	Liberia
Alfred Chalira	Ministry of Health	Malawi
Mahamadou Doumbia	Ministère de la Santé	Mali
Salissou Adamou	Ministère de la Santé	Niger
Uduak Ntuen	Federal Ministry of Health	Nigeria

Name	Institution	Country
Bienvenue Ossibi Ibara	Ministère de la Santé et de la Population	Republic of Congo
Ladislas Nshimiyimana	Rwanda Biomedical Centre, Ministry of Health	Rwanda
Ndeye Mbacke Kane	Ministère de la Santé et de l'Action sociale	Senegal
Edward Losio	Ministry of Health	South Sudan
Lexson Mabrouk Manibe	Ministry of Health	South Sudan
Piham Gnossike	Ministère de la Santé	Togo
Albert Mugenyi	Coordinating Office for Control of Trypanosomiasis in Uganda (COCTU)	Uganda
Charles Wamboga	Ministry of Health	Uganda
John Gwakisa	Ministry of Health	United Republic of Tanzania
Franck Shamilimo	Ministry of Health	Zambia
Victor Mwanakasale	Ministry of Health	Zambia
Isaac Phiri	Ministry of Health and Child Care	Zimbabwe
WHO Collaborating Centers		
Jan Van Den Abbeele	Institute of Tropical Medicine Antwerp	Belgium
Nick Van Reet	Institute of Tropical Medicine Antwerp	Belgium
Dieudonné Mumba Ngoyi	Institut National de Recherche Biomedicale	Democratic Republic of the Congo
Bruno Bucheton	Institut de Recherche pour le Développement	France
Philippe Solano	Institut de Recherche pour le Développement	France
Veerle Lejon	Institut de Recherche pour le Développement	France
Vincent Jamonneau	Institut de Recherche pour le Développement	France
Jean Mathieu Bart	Institut de Recherche pour le Développement	Guinea
Academia		
Epco Hasker	Institute of Tropical Medicine Antwerp	Belgium
Elena Nicco	Institute of Tropical Medicine Antwerp	Belgium
Philippe Büscher	Institute of Tropical Medicine Antwerp	Belgium
Raquel Inocencio da Luz	Institute of Tropical Medicine Antwerp	Belgium
Jacques Kabore	Centre International de Recherche Développement sur l'Elevage en zone Subhumide (CIRDES)	Burkina Faso
Tito Trésor Melachio	Centre for Research in Infec. Diseases (CRID)	Cameroon
Alain Boulange	Centre de Recherche Agronomique et de Coop. Internat. pour le Développement (CIRAD)	Côte d'Ivoire
Kaba Dramane	Institut Pierre Richet	Côte d'Ivoire

Name	Institution	Country
Kaba Dramane	Institut Pierre Richet	Côte d'Ivoire
Alain Mpanya	University of Kinshasa	Democratic Republic of the Congo
Fay Betsou	Institut Pasteur-Paris	France
Brice Rotureau	Institut Pasteur-Paris	France
Blanca-Liliana Perlaza	Institut Pasteur-Paris/ICAReB Platform	France
Andreas Lindner	Charité - University Berlin, Germany	Germany
Jorge Seixas	Instituto de Higiene e Medicina Tropical	Portugal
Lucille Hellen Blumberg	National Institute for Communicable Diseases	South Africa
Christian Burri	Swiss Tropical and Public Health Institute	Switzerland
Fabrizio Tediosi	Swiss Tropical and Public Health Institute	Switzerland
Marina Antillon	Swiss Tropical and Public Health Institute	Switzerland
Nakul Chitnis	Swiss Tropical and Public Health Institute	Switzerland
François Chappuis	University of Geneva	Switzerland
Enock Matovu	Makerere University, College of Veterinary Med.	Uganda
Lucas Matemba	National Institute for Medical Research	United Republic of Tanzania
Chris Jones	Liverpool School of Tropical Med.-STRESS	United Kingdom
Karina Mondragon-Shem	Liverpool School of Tropical Med.-STRESS	United Kingdom
Andrew Hope	Liverpool School of Tropical Medicine	United Kingdom
Inaki Tirados	Liverpool School of Tropical Medicine	United Kingdom
Sophie Dunkley	Liverpool School of Tropical Medicine	United Kingdom
Steve Torr	Liverpool School of Tropical Medicine	United Kingdom
Annette Macleod	University of Glasgow	United Kingdom
Michael Barrett	University of Glasgow	United Kingdom
Walt Adamson	University of Glasgow	United Kingdom
Eric Fevre	University of Liverpool	United Kingdom
Ching-I Huang	University of Warwick	United Kingdom
Emily Crowley	University of Warwick	United Kingdom
Katherine Rock	University of Warwick	United Kingdom
Ron Crump	University of Warwick	United Kingdom
Samuel Sutherland	University of Warwick	United Kingdom
Boniface Namangala	University of Zambia	Zambia

Name	Institution	Country
Nongovernmental Organizations		
Julian Potet	Médecins Sans Frontières	France
Arnault Cheval	Médecins Sans Frontières-Logistique	France
Doris Arlt Hilares	Médecins Sans Frontières-Logistique	France
Koert Ritmeijer	Médecins Sans Frontières	Netherlands (Kingdom of the)
Francisco Bartolome	Médecins Sans Frontières	Spain
Laurence Flevaud	Médecins Sans Frontières	Spain
Liliana Palacios	Médecins Sans Frontières	Spain
Gabriel Alcoba	Médecins Sans Frontières	Switzerland
UN & Multilateral Organizations		
Chantel Janet de Beer	International Atomic Energy Agency (IAEA)	Austria
Adly M.M. Abdalla	International Atomic Energy Agency (IAEA)	Austria
Massimo Paone	Food and Agriculture Org. of the UN (FAO)	Italy
Giuliano Cecchi	Food and Agriculture Org. of the UN (FAO)	Italy
Artem Metlin	Food and Agriculture Org. of the UN (FAO)	Italy
Research Institutions		
Antoine Tarral	Drugs for Neglected Diseases initiative	Switzerland
Florent Mbo	Drugs for Neglected Diseases initiative	Switzerland
Junior Matangila	Drugs for Neglected Diseases initiative	Switzerland
Laurent Fraisse	Drugs for Neglected Diseases initiative	Switzerland
Sandra Rembry	Drugs for Neglected Diseases initiative	Switzerland
Stephane Hugonnet	Drugs for Neglected Diseases initiative	Switzerland
Joseph Ndungu	FIND	Kenya
Dawn Maranga	FIND	Switzerland
Vincent Fiechter	FIND	Switzerland
Paul Bessell	FIND	United Kingdom
Aline Okoko	OCEAC	Cameroon
Donors & Manufacturers		
Ji Mijung	Abbot / Standard Diagnostics	Republic of Korea
Ulrich Dietmar-Madeja	Bayer AG	Germany
Pascal Mertens	Coris BioConcept	Belgium
Sophie Stille	Cytiva	Sweden

Name	Institution	Country
Jordan Tappero	Gates Foundation	United States of America
Rachel Bronzan	Gates Foundation	United States of America
Pieter Vermaerke	Permanent Mission of Belgium	Belgium
Catherine Castin Vuillerme	Sanofi	France
Agnes Magnen	Sanofi / Foundation S	France
Céline Beauchard	Sanofi / Foundation S	France
Philippe Neau	Sanofi / Foundation S	France
Allan Mortensen	Vestergaard	Switzerland
World Health Organization		
José Ramón Franco Minguell	Consultant	Switzerland
Pere Pérez Simarro	Consultant	Switzerland
Kossi Badziklou	Consultant	Togo
Sharmila Lareef	WHO AFRO MCAT NTD	Gambia
Raoul Saizonou	WHO Country Office	Benin
Renée Nsamba Ntumbannji	WHO Country Office	Democratic Republic of the Congo
Henock Keto	WHO Country Office	Ethiopia
Ghislaine Nkone Asseko	WHO Country Office	Gabon
Felicia Owusu-Antwi	WHO Country Office	Ghana
Augustin Kadima Ebeja	WHO AFRO	Republic of Congo
Dorothy Achu	WHO AFRO	Republic of Congo
Mady Ba	WHO Country Office	Senegal
Jane Hillary Ajo	WHO Country Office	South Sudan
Precious Andifasi	WHO Country Office	Zimbabwe
Daniel Argaw Dagne	WHO HQ	Switzerland
Dieudonne Sankara	WHO HQ	Switzerland
Gerardo Priotto	WHO HQ	Switzerland
Jérôme Salomon	WHO HQ	Switzerland
José Antonio Ruiz Postigo	WHO HQ	Switzerland
Pedro Albajar Viñas	WHO HQ	Switzerland
Pedro Albajar Viñas	WHO HQ	Switzerland
Ramabhadran Sreeram	WHO HQ	Switzerland
Rosa Maria Perea Ibáñez	WHO HQ	Switzerland

World Health Organization

Global Neglected Tropical Diseases Programme
World Health Organization
20 Avenue Appia
1211 Geneva 27
Switzerland
neglected.diseases@who.int
https://www.who.int/teams/control-of-neglected-tropical-diseases