Version 1.1

Transmission and case projections: 2000 to 2050
Data and analysis tool (GUI)

Gambiense Human African Trypanosomiasis (gHAT or sleeping sickness) disease transmission model - **data and results**

User Guide

Contents

Quick guide to getting started

1) Go to: https://hatmepp.warwick.ac.uk/Mandoulfitandproject/v1/index.php

   (We recommend you use Google Chrome, Microsoft Edge or Firefox as your browser to get the best experience)

2) Choose your **disease focus** and **model analysis** from the drop-down boxes. This version of the GUI is only for Chad and Mandoul so the country and disease focus cannot be changed.

Country:	Disease focus:	Model analysis: ⓘ
🇹🇩 Chad ▾	🟢 Mandoul ▾	Prospective ▾

   Note that default results are for Mandoul and the Prospective model analysis

3) The table immediately below will auto generate based on your entries, to show the disease focus population, proportion of people assumed to be screened, deployment of vector control and year of improved medical interventions.

Chad: Mandoul disease focus	
Information	
Chad population (2017)	14,899,994
Life expectancy in 2017 (F/M)	61.7/58.6
Mandoul population (est 2015)	41,000
Screening level (mean/max)	48%/67%
Vector control	Begun 2014, reduction 99.1% [95.8%, 99.6'
Improved medical	Begun 2015

4) Several results tabs can be found under the maps and table. **Charts** under each results tab will auto-generate based on your disease focus.

5) You can **download charts**, by clicking on 'Save Plot' (bottom left of each screen).

Definitions

Terminology	Definition
Assumed (max)	Assumed number of people screened in the projections in the selected foci. This is based on the historical maximum level of active screening (see *Max AS below*)
Assumed (mean)	Assumed number of people screened in the projections in the selected foci under a mean level of active screening (see *Mean AS* below)
Fitted	Model outputs have been fitted to actual case data from the WHO HAT Atlas (2000-2018) and PNLTHA-Chad (2019)
Mean AS	The proportion of people screened is equal to the mean number screened during 2015–2019
Max AS	The proportion of people screened is equal to the historical maximum number screened during 2000–2019
Observed	Aggregate case data from the WHO HAT Atlas/PNLTHA-Chad
PS (Passive Screening)	Passive screening is in place under all strategies
Improved Passive Screening (RDT)	Fortification of the passive screening system by increasing the number of fixed health facilities with rapid diagnostic tests
VC (Vector Control)	Vector control (VC) is simulated to reflect the Tiny Target intervention which began in 2014
Spec (Specificity)	The proportion of people without disease that test negative
Prospective (Future) Model Analysis	Given the current situation the prospective model analysis examines what would be expected to happen in the future
Retrospective (Past) Model Analysis	Examines what would have happened had different strategies been implemented from 2014
Stop 2021	Active screening and vector control cessation from 2021

You can also refer to the main Glossary for a description of commonly used terms and acronyms associated with the gHAT projects.

Results tabs

Screening

| Screening Data | Active Detections | Passive Detections | New Infections |

The **Screening** results tab provides a chart showing you (i) the number of people actively screened by year from 2000-2019 (i.e. the "observed" level in the data) and (ii) the assumed number of people that are screened in the selected foci under a mean level of active screening compared to the historical maximum level of active screening (see <u>definitions</u> for mean AS and max AS) from 2019 onwards.
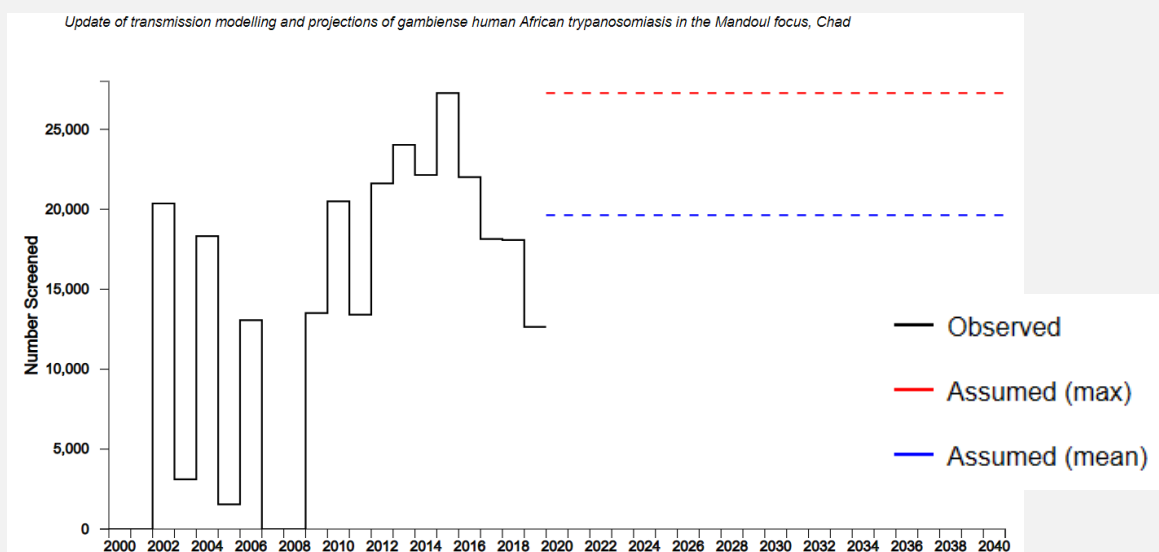
Display year range

From: 2010

To: 2040

Amend the time period as required (defaulted to 2010 to 2040, but this can be scaled to any period between 2000 and 2050).

Note: Screening data remains the same irrespective of the selected model analysis

Illustration 1: Assumed number of people to be screened under a mean and maximum level of active screening
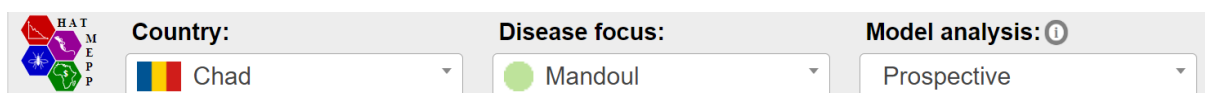

Update of transmission modelling and projections of gambiense human African trypanosomiasis in the Mandoul focus, Chad

Detections & New Infections: Prospective & Retrospective Dataset Model Analysis

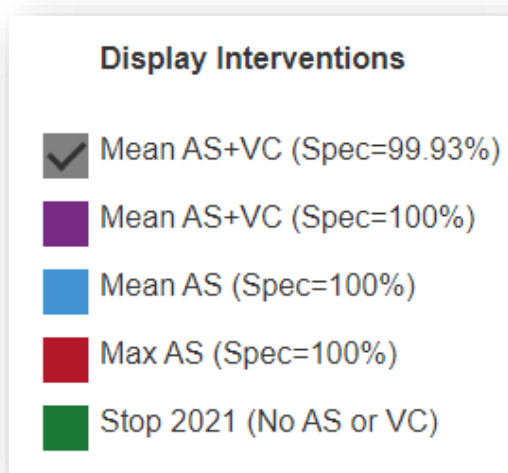| Screening Data	Active Detections	Passive Detections	New Infections

The final three results tabs provide charts to show you the predicted active and passive case reporting by year and by foci, as well as new infections that are not directly measurable, viewable for each intervention strategy (Display Interventions). The **prospective model analysis** examines the current situation in Chad (2020) and the potential impact of future interventions on detections and transmission. The **retrospective model analysis** examines what would have happened had different strategies be implemented from 2014 and how these shape future detections and transmission.

Prospective Model Analysis:

From the grey bar at the top of the page select the disease focus and prospective dataset (hover over the (i) for prospective model analysis details):

	Country:	Disease focus:	Model analysis: ⓘ
HAT MEPP	Chad ▾	◯ Mandoul ▾	Prospective ▾

Then select the active detections, passive detections, or new infections tab below:

Screening Data	Active Detections	Passive Detections	New Infections

Display Interventions

- ☑ Mean AS+VC (Spec=99.93%)
- ⬛ Mean AS+VC (Spec=100%)
- ⬛ Mean AS (Spec=100%)
- ⬛ Max AS (Spec=100%)
- ⬛ Stop 2021 (No AS or VC)

The list of **Display Interventions** (see opposite) appears as a tick box function to allow you to select and compare the results based on different intervention strategies. Specificity (Spec) of the diagnostic algorithm can be set at 99.93% or 100% (see definitions). The tick box will default to Mean AS + VC (Spec = 99.93%). Stop 2021 refers to the cessation of active screening and vector control activities from 2021.

Tips:
- Amend the time period as required (defaulted to 2010 to 2040, but this can be scaled to any period between 2000 and 2050).
- Hover on the results for the year you are interested in to view an information box confirming the predicted highest (97.5 percentile), lowest (2.5 percentile) and median number of cases within the range.

Example:
1. Selected foci: Mandoul from the top bar.
2. Selected dataset: Prospective model analysis from the top bar.
3. Click on the "Active Detections" tab. The range will be from 2010-2040 by default.
4. Select 2012 in the "From" dropdown list on the left-hand side and 2035 in the "To" dropdown list.
5. Show all five strategies from the article by additionally selecting Mean AS + VC (Spec = 99.93%), Mean AS + VC (Spec = 100%), Mean AS + no VC (Spec = 100%), Max AS + no VC (Spec = 100%), Stop 2021 (No AS or VC) in the right-hand side legend.
6. You can save this image by clicking "Save Plot" on the left-hand side.
7. To view predictions for Passive Detections and New Infections with these same settings, simply choose the corresponding tab. The selected strategies and data range will remain the same.

Illustration 2: Example results – predicted active detections and passive detections under five prospective intervention strategies from 2012 to 2035
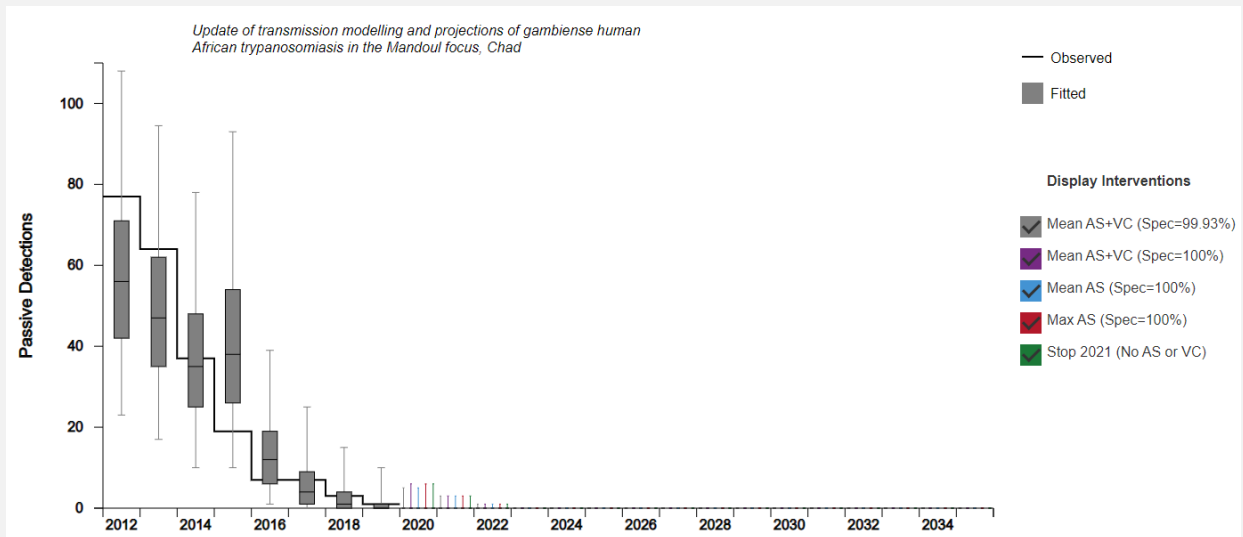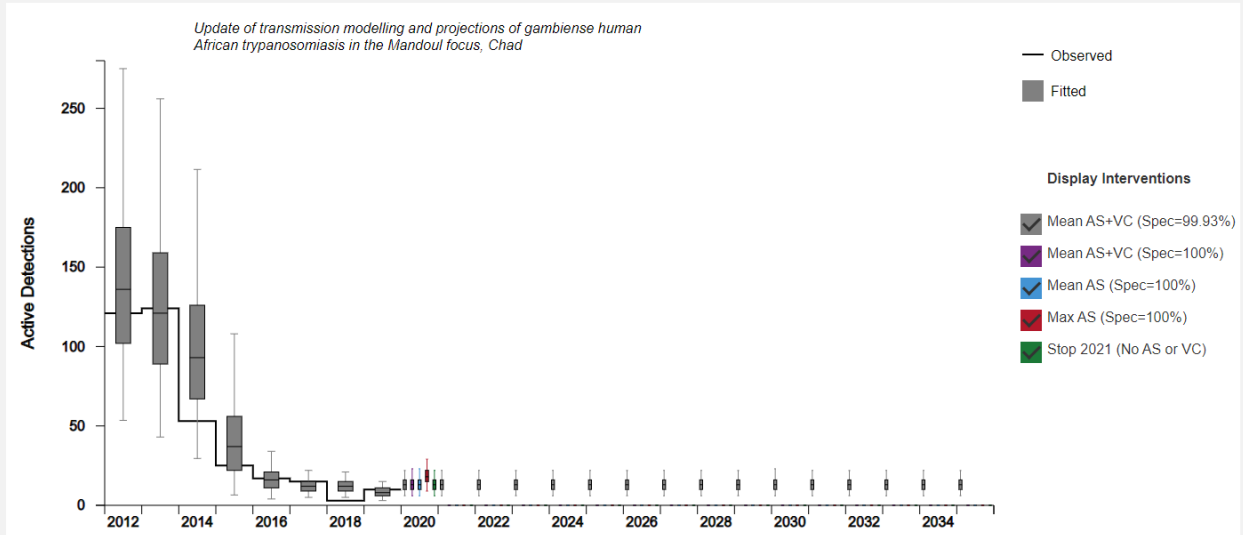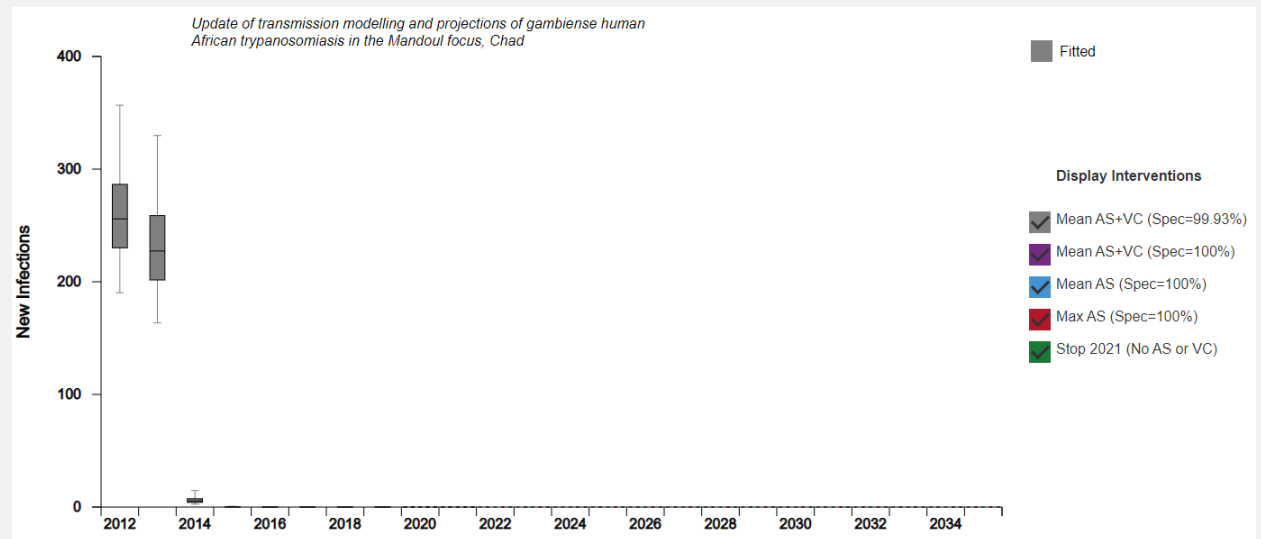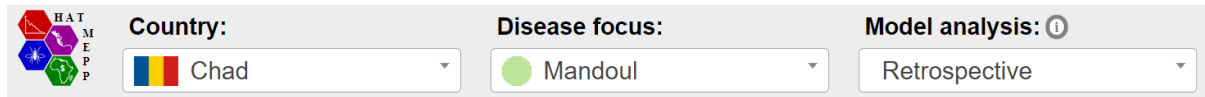
Illustration 3: Example results – predicted new infections under five prospective intervention strategies from 2012 to 2035

Retrospective Model Analysis:

From the grey bar at the top of the page select the disease focus and retrospective dataset (hover over the (i) for retrospective model analysis details):
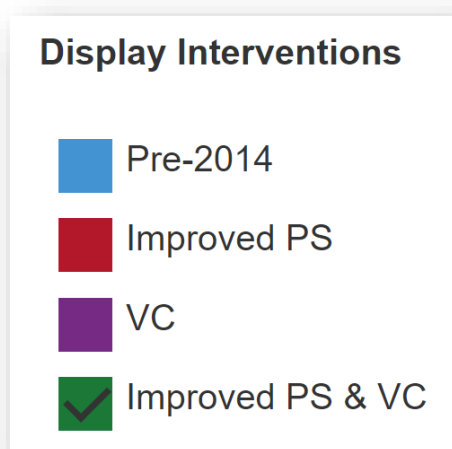
	Country:	Disease focus:	Model analysis: ⓘ
	🇹🇩 Chad ▾	🟢 Mandoul ▾	Retrospective ▾

Then select the active detections, passive detections or new infections tab below:

Screening Data	**Active Detections**	**Passive Detections**	**New Infections**

Display Interventions

🟦 Pre-2014

🟥 Improved PS

🟪 VC

✅ Improved PS & VC

The list of Display Interventions (see opposite) appears as a tick box function to allow you to select and compare the results based on different intervention strategies. The tick-box will default to improved passive screening & vector control as was implemented in Chad from 2014 onwards. Pre-2014 refers to those interventions in place before improvements in passive screening and the introduction of vector control.

Tips:
- Amend the time period as required (defaulted to 2010 to 2040, but this can be scaled to any period between 2000 and 2050).
- Hover on the results for the year you are interested in to view an information box confirming the predicted highest (97.5), lowest (2.5) and median number of cases within the range.

Example:
1. Selected foci: Mandoul from the top bar.
2. Selected dataset: Retrospective dataset from the top bar.
3. Click on the "Active Detections" tab. The range will be from 2010-2040 by default.
4. Select 2012 in the "From" dropdown list on the left-hand side and 2035 in the "To" dropdown list.

5. Show all four strategies from the article by additionally selecting pre-2014, improved PS, VC and Improved PS & VC l in the right-hand side legend.
6. You can save this image by clicking "Save Plot" on the left-hand side.
7. To view predictions for Passive Detections and New Infections with these same settings, simply choose the corresponding tab. The selected strategies and data range will remain the same until you choose a new foci.

Illustration 4: Example results – predicted active detections and passive detections under four retrospective intervention strategies (2012 to 2035)
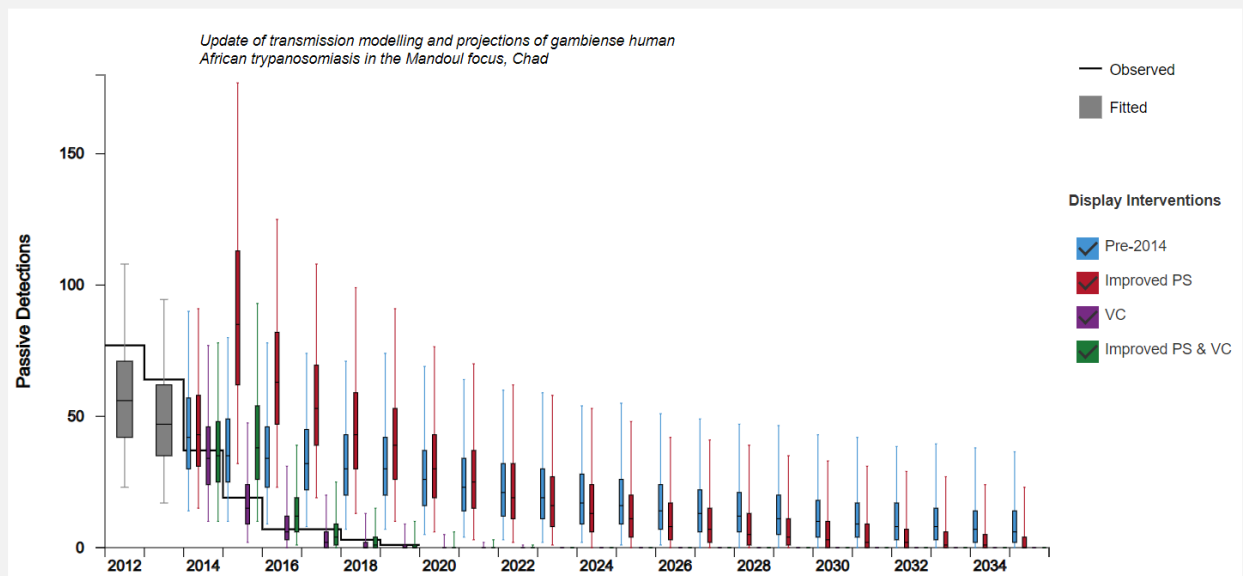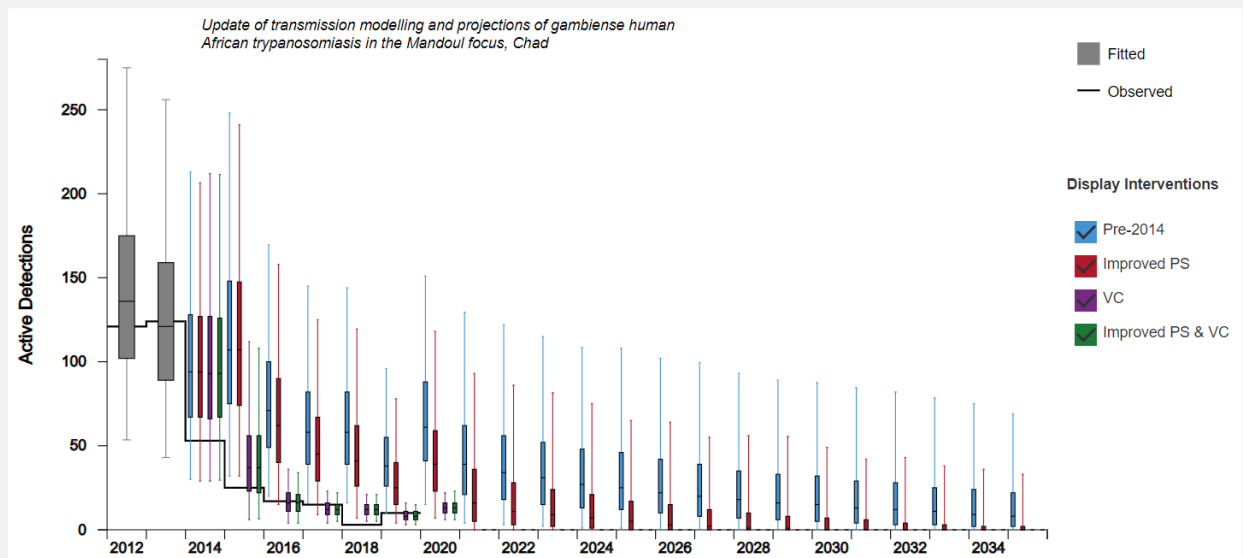
Illustration 5: Example results –new infections under four retrospective intervention strategies (2012 to 2035)