Malawi Experience with Goals analysis (HIV Testing Model)

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Leveraging DSD Strategies to Optimize HIV Testing and Linkage Services
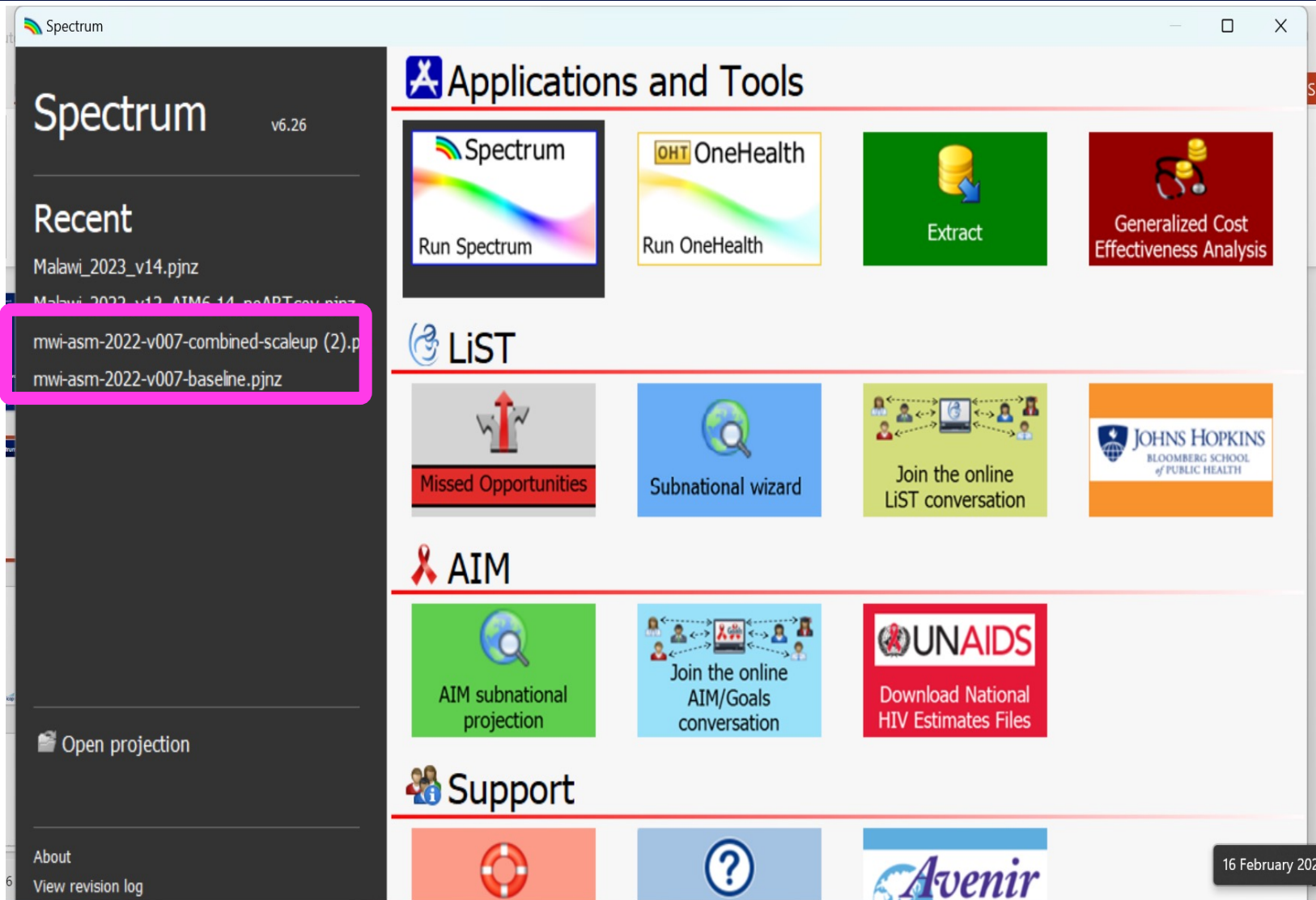March 13-16, 2023 | Nairobi, Kenya

Outline

- **Overview of the Spectrum software**

- **Rationale for Goals Model**

- **Goals testing model**
  - Structure and access
  - Inputs
  - Processing
  - Outputs
  - Advantages
  - Precautions
  - Status Neutral Testing and Goals testing model

Spectrum Overview : Suite of Estimation and Projection applications

SPECTRUM is a suite of easy-to-use policy models which provide policymakers with an analytical tool to support the decision-making process

Available for download (free) at https://www.avenirhealth.org/software-spectrum.php

Goals : Spectrum model estimating effects of interventions and resource allocation

- **DemProj:** Demography
- **FamPlan:** Family Planning
- **LiST:** Lives Saved Tool (Child Survival)
- **AIM:** AIDS Impact Model
- **Goals:** Cost and impact of HIV Intervention
- **Resource Needs Module:** Costs of implementing an HIV/AIDS program
- **RAPID:** Resources for the Awareness of Population Impacts on Development
- **TIME:** TB Impact Model and Estimates - Epidemiological and cost-effectiveness analysis of TB control strategies
- **Malaria:** Impact of malaria interventions
- **STI:** Estimation of burden and trends in Sexually Transmitted Infections
- **NCD:** Non-communicable diseases and mental health, substance abuse, and neurological disorders

- **One of the many spectrum models**
- **Used to estimate the Cost and Impact of HIV interventions**
- **Helps in resource allocation**
- **Malawi use cases**
  - **NSP(2015-2020)**
  - **NSP(2020-2025)**
  - **HIV prevention strategy(2023-2027)**

icap Global Health

Goals testing model-Rationale for Malawi
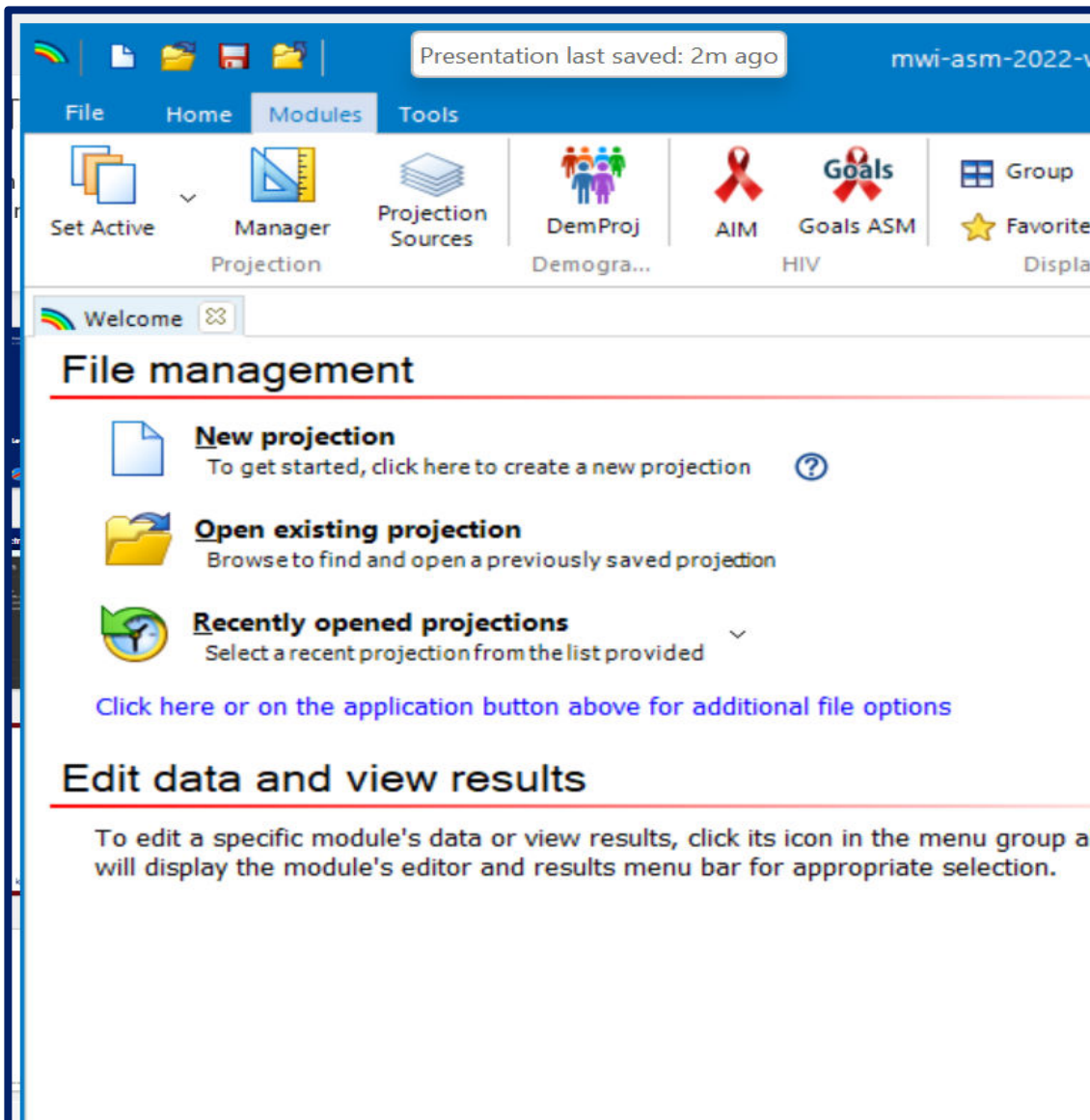
- **Malawi is at 94.7 % on 1st 95.**

- **The few undiagnosed PLHIV need to be contextualized in terms of person and place**

- **Forecasting testing needs is a pre-requisite for effective resource allocation**

- **The Goals testing model is used to estimate cost effectiveness of testing strategies to achieve firstly the 1st 95 and then the other two.**

Goals Testing model structure and access
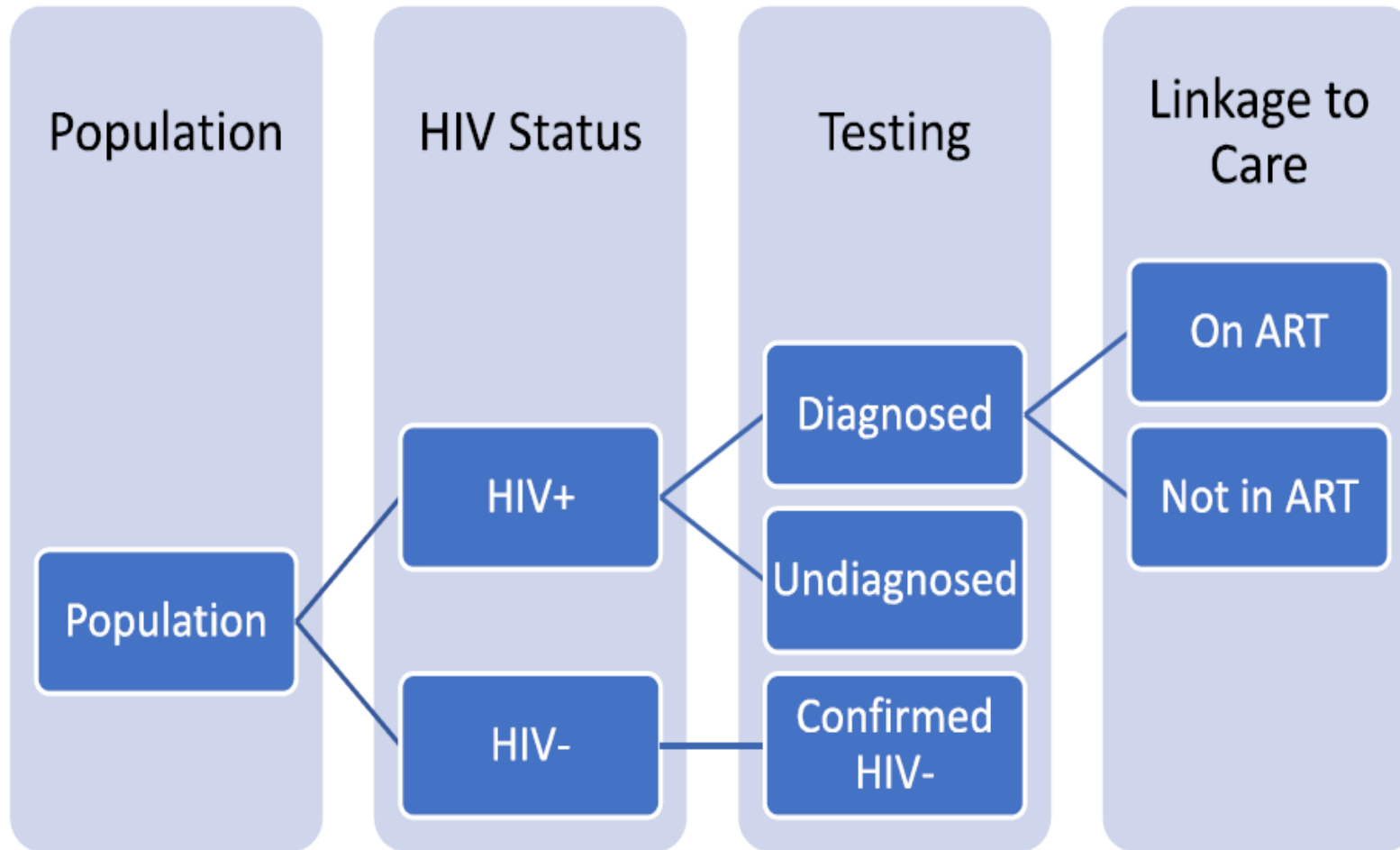
How to access

- **Access the Online version or Offline excel version also available**

- **Create new project or edit existing one**

- **Enter assumptions**

- **View results**

Interactive version available at http://goalshivtestingmodel.org/

Goals Testing model: Inputs

Populations	Total Annual Pop size	PLHIV (2022)	Diagnosed (2022)	On ART (2022)
ANC	609,367	39,191	38,407	38,407
ANC partners	609,367	35,039	31,332	25,891
STI patients	331,262	55,358	49,095	47,468
Patients with symptoms	48,825	16,275	15,912	14,631
FSW	39,004	19,463	19,028	18,604
MSM	35,391	4,530	4,051	3,347
PWID	8,369	2,260	2,209	2,031
TB	16,074	7,359	7,359	6,891
Partners newly diagnosed	99,281	49,641	48,532	44,625
Infants born to HIV+ women	39,191	1,463	1,105	0
Other children	7,870,080	56,265	41,411	41,411
Other women	4,884,770	448,534	438,666	438,666
Other men	4,307,458	252,637	225,858	208,678
Total	**18,898,438**	**988,014**	**922,964**	**890,651**

Other inputs

- **Cost estimate per test**
- **Testing strategies/approaches**
- **Desired testing coverages**

Caution!

- Care must be taken to ensure that the data entered is as accurate as possible
- Garbage in=Garbage out!

Interactive version available at
http://goalshivtestingmodel.org/

Goals testing model- backend processess

Model Calculations

The model tracks each population group p over time t by HIV status (HIV+ or HIV-), knowledge of status (diagnosed or undiagnosed) and ART status (on ART or not on ART). The diagnosed population D is calculated as the diagnosed population in the previous year, plus those newly diagnosed through testing, minus those who drop out of the population group through turnover and those who die.

$$D_{p,t} = D_{p,t-1} + n_{p,t} - t_{p,t} - d_{p,t}$$

Where:

$D_{p,t}$ = the number diagnosed as HIV+ in population group p at time t
$n_{p,t}$ = the number of new diagnoses in population group p at time t
$t_{p,t}$ = the number of people leaving the population group due to turnover
$d_{p,t}$ = the number of diagnosed people dying in population group p at time t
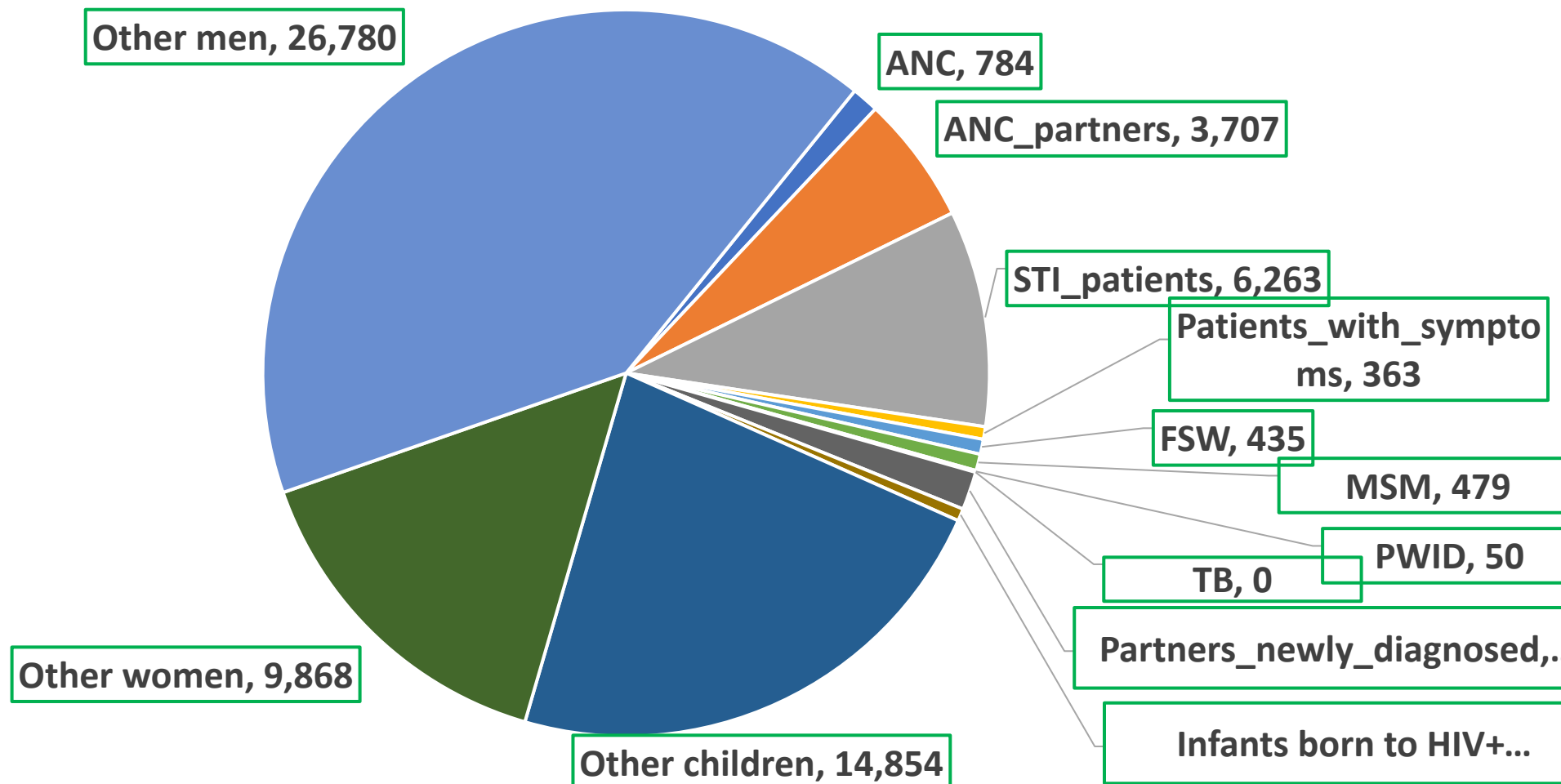
$$t_{p,t} = D_{p,t-1} \times \lambda_p$$

where:

λ_p = the rate of turnover in population p

The undiagnosed population is simply the HIV+ population minus those diagnosed.

- The model will automatically process the data entered to determine outputs

Goals model-Malawi outputs-1: -Distribution of undiagnosed PLHIV

Other men, 26,780

ANC, 784

ANC_partners, 3,707

STI_patients, 6,263

Patients_with_symptoms, 363

FSW, 435

MSM, 479

PWID, 50

TB, 0

Partners_newly_diagnosed,…

Infants born to HIV+…

Other women, 9,868

Other children, 14,854

Advantages of the Goals Model

Helps in *target setting*: Based on geographical and population prioritization (HIV Prevention strategy and GC7)

Generates *targets by testing approach* based on yield (HIV prevention strategy and GC7)

Provides insights in *HTS Decentralization* (on going program management)

Based on the targets, it provides valuable *information on costing* of commodities (HIV Prevention strategy and NFM4 and GC7)

Goals Testing Model: Precautions and Limitations

1. Need for high quality data (program, survey, projections) for reliable estimates

2. Requires consensus on realistic desired testing coverages

3. Requires reliable cost estimates

4. More focus on yield than testing volume (Status neutral testing –new focus due to increasing number of diagnosed PLHIV but not on ART)

Our new Testing policy and M&E tools specifically addresses status neutral testing

Goals model and status Neutral Testing

Status neutral testing aspects in the model includes:

- Use of predicted yield to estimate NNT (Number Needed to Test) i.e. determining testing volumes

- Use of various HTS model mix including offering social network-based testing approaches for Key and priority populations

- Linking all tested to post test services

Thank you!