

# Defining and Studying Retention in pre-ART Care for HIV Infected Adults in sub-Saharan Africa

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# Motivation

- **Substantial published data on post-ART retention in but little published data on pre-ART period**
  - May be because emergency response focused on ART (eligibility and treatment guidelines clear)
  - Management guidelines in pre-ART period less developed
  - Also likely because the stages of pre-ART care and measures of pre-ART retention have not been well defined
- **Overview:**
  - Review the current literature on pre-ART retention
  - Discuss why difficulties in defining terms arises
  - Make working suggestions for definitions of pre-ART retention

# Part 1: Defining the Problem

# Why Focus on Pre-ART Period?

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- **Current ART guidelines call for higher thresholds:**
  - Reduce morbidity and mortality before and after initiation
  - Try to reduce overall care and treatment costs
  - Suppress viral load to diminish transmission risk
- **Little progress in achieving earlier initiation in SSA:**
  - Large scale HIV testing campaigns implemented, treatment is widely available
  - Little increase in starting CD4 counts
    - Most have a median CD4 count at ART initiation <200
    - Suggests we are not focused enough on pre-ART care

# Some Terms and Definitions

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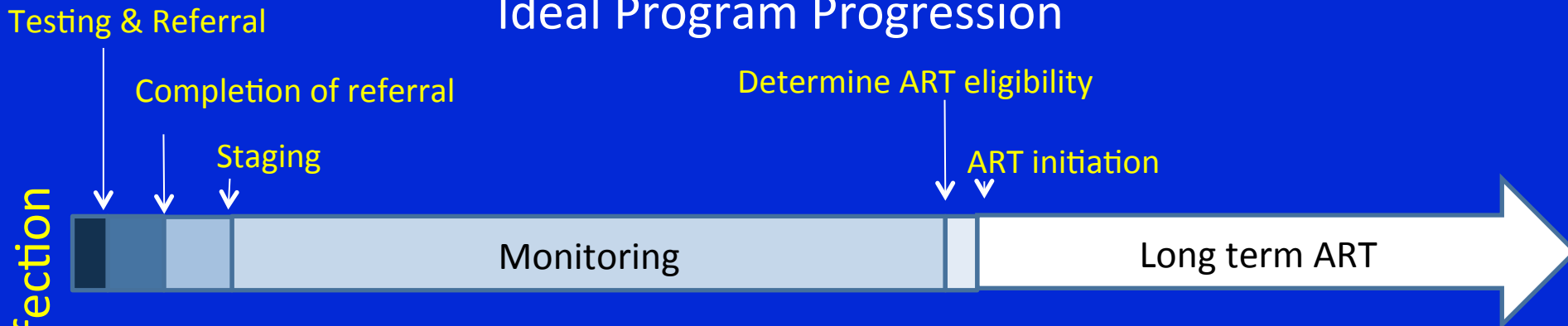
- **Pre-ART care:**
  - All services provided between testing positive for HIV and dispensing of first dose of ARVs
- **Staging:**
  - Determination of whether newly-diagnosed patient should be referred to pre-ART care or to ART initiation
- **Enrollment in care:**
  - Active (intentional) registration by patient for pre-ART care
- **Retention in care:**
  - Patient generally maintaining expected schedule for visits, lab tests, etc. until initiation of ART, without long interruptions (remains in care continuously)
- **Loss to care:**
  - Patient discontinues care for any reason (death, loss, unreported transfer)

# How would an ideal HIV care and treatment program function?

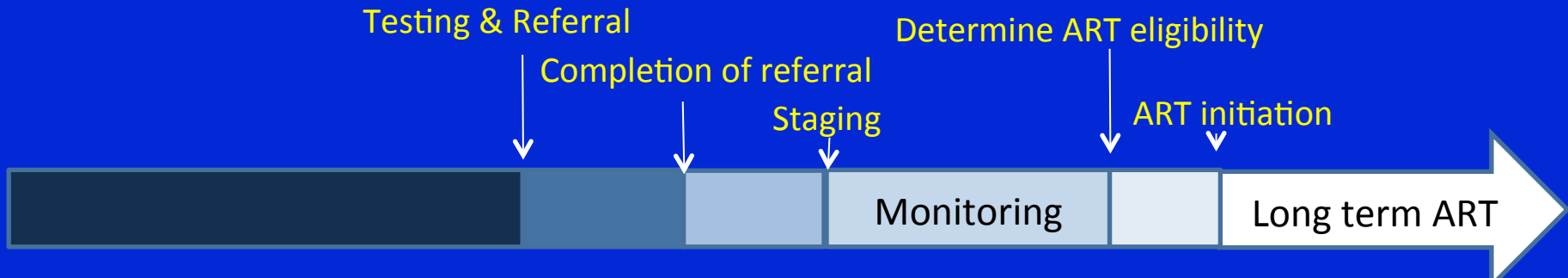
## Disease Progression



## Ideal Program Progression



## Actual Program Progression

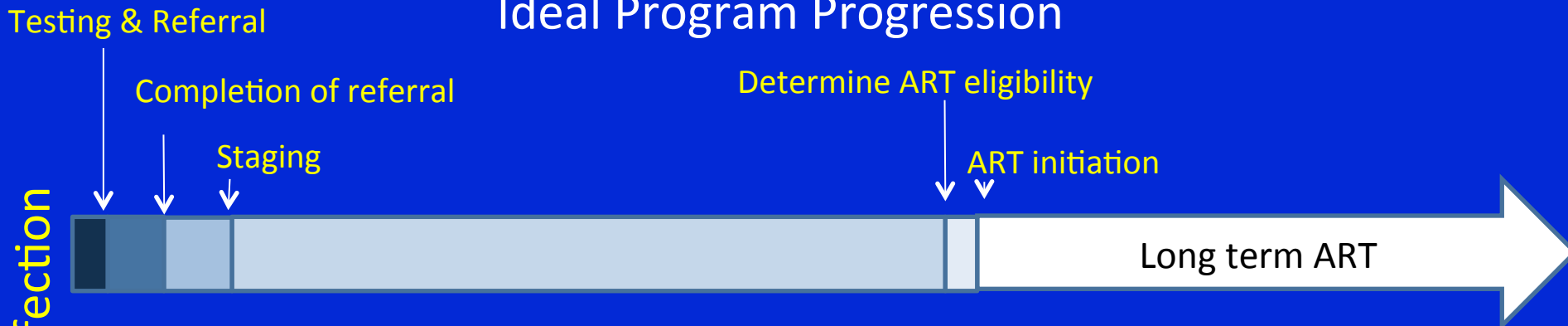


# How would an ideal HIV care and treatment program function?

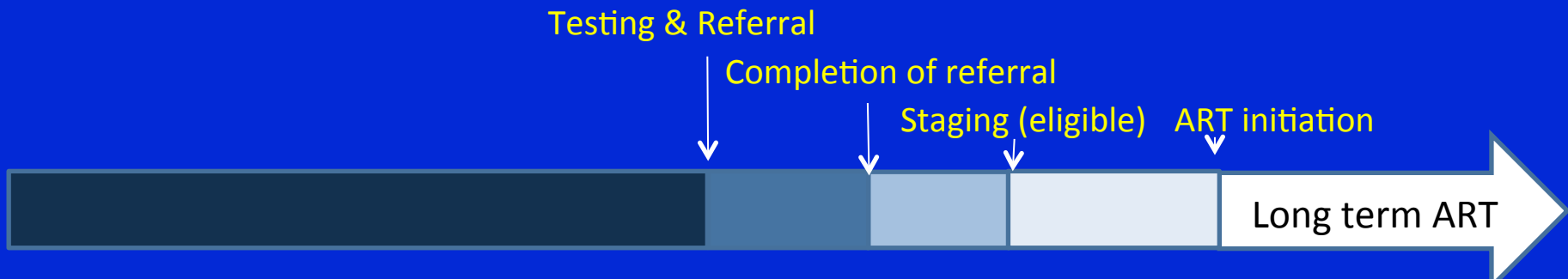
## Disease Progression



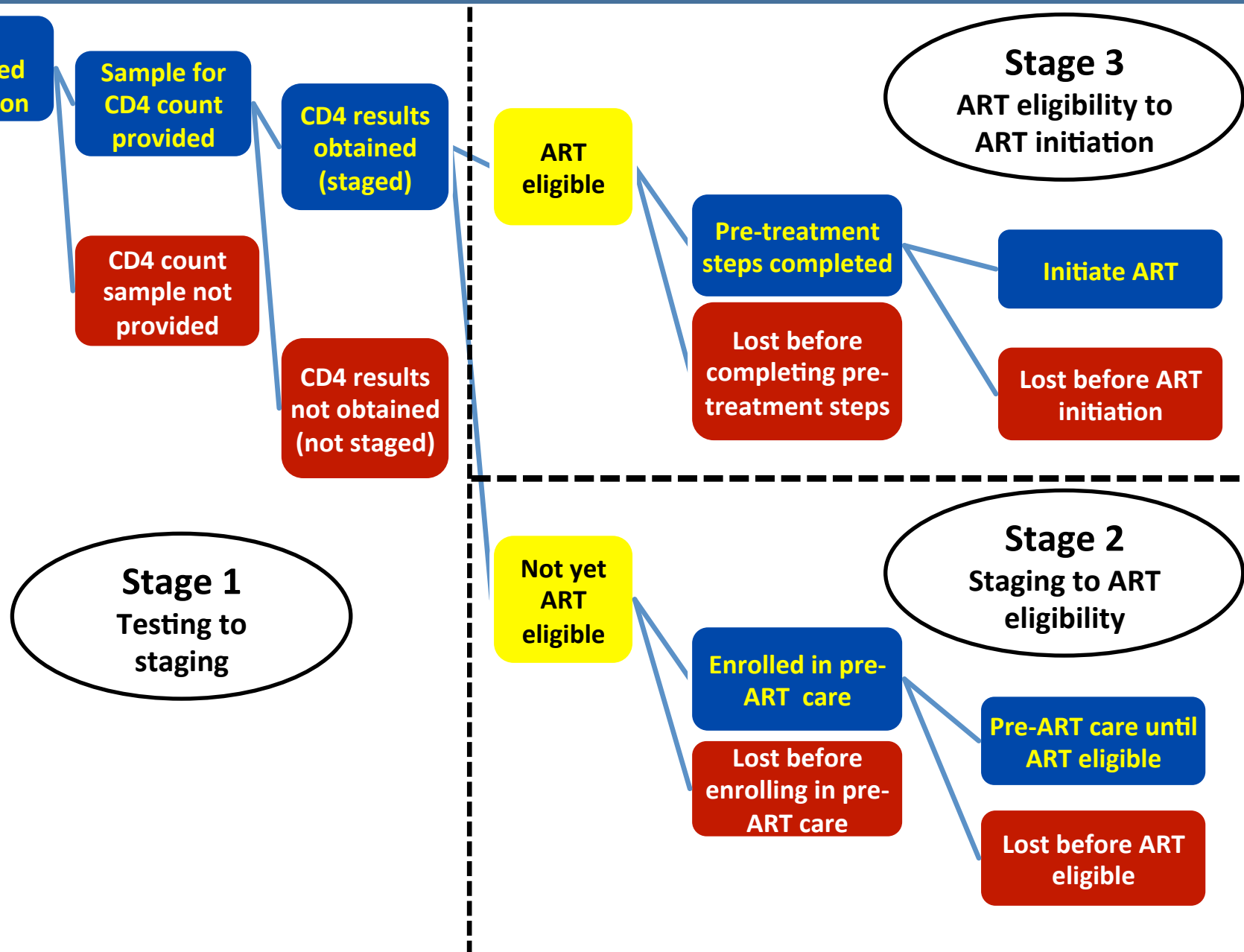
## Ideal Program Progression



## Actual Program Progression



# From Testing to Treatment Initiation





**Part 2: What Do We Know about  
Retention in Pre-ART care in  
sub-Saharan Africa?**

# Review of the Evidence

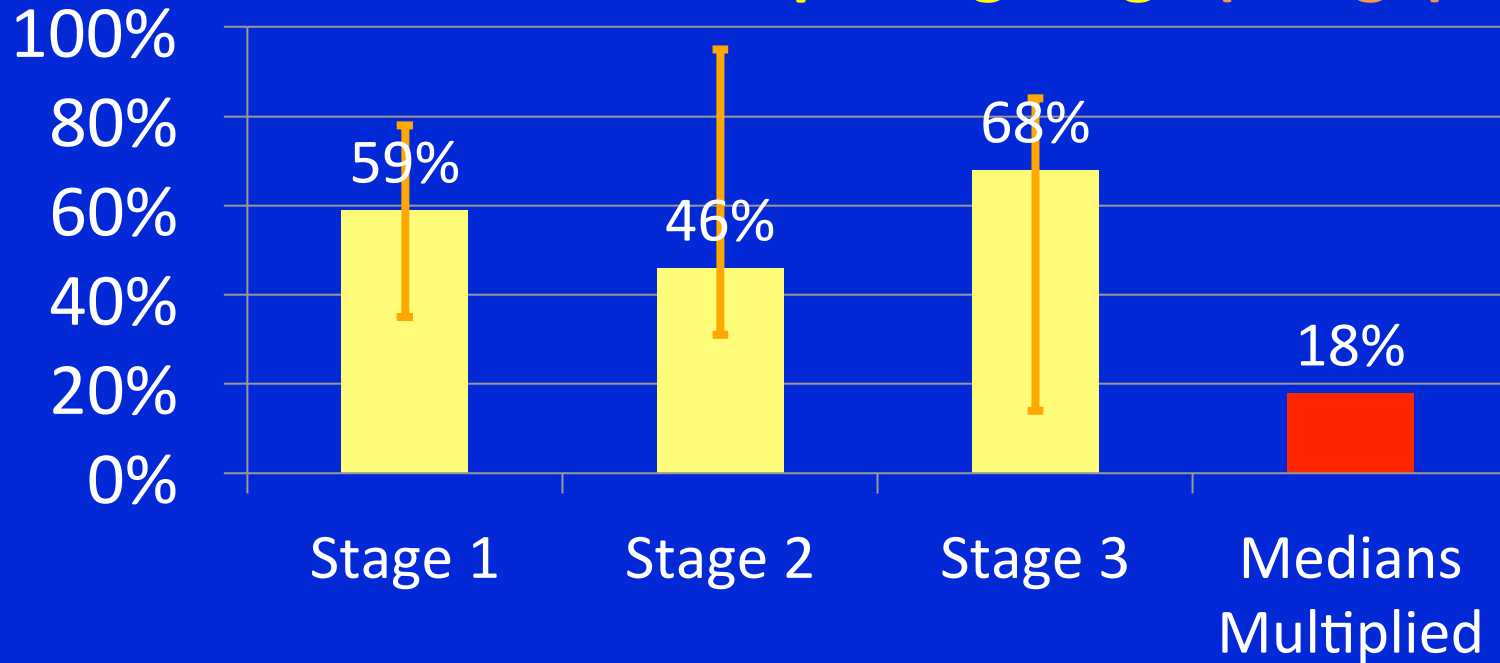
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- Systematic literature review March 2011
- Identified 28 studies with quantitative data on at least on stage in the pre-ART period (38 observations)
- Only 7 countries represented; 1/2 conducted in South Africa
- Almost all published or presented in 2009 or later

Stage	Outcome	Number of observations	Median [range]
Stage 1—HIV testing to staging	Received CD4 count results		
Stage 2— Staging to enrollment in pre-ART care	Remained in pre-ART care until repeat CD4 count, ART initiation, or data censoring		
Stage 3—ART eligibility to ART initiation	Initiated ART		

Source: Rosen S, Fox MP (2011) Retention in HIV care between testing and treatment in sub-Saharan Africa: A systematic review. *PLOS Med*; in press.

## Median % Completing Stage (Range)



- **Summary of evidence**

- 18% continuously in care if no “recycling”
- 33% in most complete study (South Africa)<sup>2</sup>
  - Are only 1/5 to 1/3 of those who test HIV+ retained in care **continuously?**
- Data inconsistently measured and reported

## **Part 3: The Challenges to a Better Understanding of the Problem**

# Conceptual Problems in Defining Pre-ART Retention and Loss

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- **Should we focus on estimating retention across the entire period testing to treatment (all three stages)?**
  - Requires large cohorts/person time, good info systems
  - Do estimates from single stages represent a consistent population?
- **What is a successful outcome for each stage?**
  - Is completion sufficient, or does it have to be timely?
    - For eligibility is it sufficient to be eligible, or eligible without illness/low CD4?
  - What is appropriate interval for success?
- **For stage 1, how to track patients from testing to staging?**
  - Patients at testing sites often have several options for referral to treatment sites that may be run by different providers
    - Must follow all positive patients to all initiation sites; or
    - Pair of 1 testing and 1 treatment site and limit retention denominator to patients who indicate a desire to go to that treatment site

## **Part 4: Suggestions for Defining Retention in pre-ART Care**

# Approach

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- **Define a set of explicit and consistent terms, time intervals, endpoints for pre-ART care**
  - Ideal measure of pre-ART retention would cover entire time from testing to ART initiation, but not yet possible with routinely collected data
  - Focus on complete stages, not components of stage (e.g. HIV test to returning for CD4 result, not just a blood draw)
  - Avoid reporting to date of data censoring
- **For each stage, determine:**
  - What measures have been reported in the literature
  - Appropriate start points, outcomes, time frames to report
  - Who should be excluded from measures reported

# Stage 1: HIV Testing to Staging

Study*	Outcome Used	Days
SA 1	≤ 6 months of HIV test	183
SA 6	≤ 6 months of HIV test	183
SA 6	Ever	
SA 13	≤ 1 weeks of providing sample	7
Malawi 2	≤ 1 month of registering for care	31
SA 7	≤ 12 weeks of HIV test	84
SA 14	Ever	
Uganda 1	Ever	
Mozam 1	≤ 30 days of enrollment	30
Mozam 1	≤ 60 days of HIV test	60
SA 3	≤ 90 days of HIV test	90
SA 11	Ever	

## Starting points:

- HIV test
- Providing sample for CD4
- Registering for care
- Enrollment

## Outcomes:

- Providing sample for CD4 test
- Returning for CD4 count results

## Range:

- 1 week – Ever

## Median:

- 4.5 months



# Stage 1: Working Proposal

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- **Starting point: Testing HIV-positive**
- **Successful outcome: Completing staging**
  - Determination of whether patient should be referred for pre-ART care or ART (CD4 count and medical exam)
- **Negative outcomes: Death, not completing staging**
- **Reporting time: 3 months and 1 year after HIV test**
- **Exclusions:**
  - Patients previously enrolled in a later phase
  - When possible, exclude those who indicate a wish to use a different referral site from where outcome is measured

# Stage 2: Staging to Eligibility

Study*	Outcome Used	Days
Kenya 2	Attended HIV care 2-4 months after HIV test	122
Tanzania 1	Registering at HIV clinic ≤6 mo of referral from test	183
Uganda 2	Attendance at HIV clinic ≤6 months of HIV test	183
SA 8	Attended 1 <sup>st</sup> pre-ART medical appt 1 yr of staging	365
SA 12	Visited referral site after HIV test	?
SA 14	Access of HIV care	?
Ethiopia 1	“Immediate” linkage to HIV care after HIV test	?
Ethiopia 2	Visited referral site after HIV test	?
Malawi 2	Initiating /still in care at 7 months of follow-up	214
Kenya 3	In care 13 months after pre-ART enrollment	397
SA 10	Repeat CD4 ≤13 months of first CD4	397
SA 4	Initiating /still in care up to 3.5 years of follow-up	1278
SA 6	Repeat CD4 by up to 5 years of follow-up	1826
Ethiopia 3	Initiating or still in care at censoring	?

## Starting points:

- Staging
- Referral from HIV test
- HIV test

## Outcomes:

### • One time events:

- Visiting referral site
- Registering
- 1<sup>st</sup> pre-ART visit
- Linkage to care
- Accessing care

### • Repeat events:

- Attending care
- In care
- Repeat CD4

## Range:

- 4 months – 5 years

## Median:

- 1 year

# Stage 2: Working Proposal

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- **Challenging stage as success would be remaining actively in care and getting to ART eligibility before illness or low CD4**
- **Start point: Completion of staging w/referral to pre-ART care**
- **Successful outcomes (tentatively):**
  - < 3 months late for learning eligibility status (last scheduled visit where patient gets results)?
  - Determination of eligibility prior to illness?
- **Negative outcomes:**
  - Death, no visit w/in 3 months of last eligibility status visit, illness prior to eligibility?
- **Reporting time: 6 months, 1 year, yearly thereafter**
- **Exclusions: Transfers**

# Stage 3: ART Eligibility to Initiation

Study*	Outcome Used	Days
Mozam 1	≤90 days of eligibility	90
SA 2	≤3 months after last pre-ART visit	92
SA 6	≤6 mo of HIV test if ART eligibility confirmed	183
SA 1	≤6 months of eligibility	183
Malawi 3	≥8 weeks after starting TB treatment	244
Uganda 3	≤1 year of enrollment in care if ART-eligible	365
SA 9	Date of data censoring up to 3 years	1096
SA 3	Date of data censoring	
SA 4	Date of data censoring	
Kenya 1	Date of data censoring	
Malawi 2	Date of data censoring	
Malawi 1	Not stated	
Uganda 1	Unclear	
SA 5	Unclear	

## Start time:

- ART Eligibility
- Last pre-ART visit
- HIV test
- Enrollment in care

## End time:

- Data censoring
- Amount of time since start point

## Range:

- 90 days-3 years

## Median:

- 6 months

# Stage 3: Working Proposal

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- **Start point: Patient knows ART eligibility**
- **Successful outcome: ART initiation within 3 months of first determining eligibility**
  - Initiation defined by ART being dispensed
- **Negative outcomes:**
  - In care but not initiated, death, lost from care
- **Reporting times: 3 months and 3 monthly intervals**
  - 3 months gives time for completion of ART preparation
- **Exclusions:**
  - Patients known to have transferred, initiated at other clinic

# Conclusions

- **Retention in pre-ART care has been under-researched to date**
  - Review suggests that between 18-33% of patients who test-positive are retained in pre-ART care
  - Attention to pre-ART care sub-optimal
  - Current data lack consistent time periods and outcomes making it difficult to summarize
  - Proposals for standard outcomes and time frames can help give a better picture of the magnitude of the problem

# Acknowledgements

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