



# Differentiated Service delivery for AHD

## What's New from AIDS2020

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**HIV LEARNING NETWORK**  
The CQUIN Project for Differentiated Service Delivery

# Who is presenting with AHD on ART?

## Using a Multi-state model to examine advanced HIV disease and engagement in care among patients on ART in Southern Africa

AIDS 2020 PEC0438 Using a multi-state model to examine advanced HIV disease and engagement in care among patients on antiretroviral therapy in Southern Africa

**Using a multi-state model to examine advanced HIV disease and engagement in care among patients on antiretroviral therapy in Southern Africa**

**Background**  
Patterns of patient engagement in care and clinical stability have changed as ART programmes have expanded and matured in southern Africa. The earliest advanced HIV disease (AHD) is found among ART-experienced patients who have interrupted treatment. We explored patterns and predictors of transitions from one to next state.

**Methods**  
Using data from IeDEA Southern Africa, we included all patients aged ≥16 years with a CD4 count at ART start, and ≥1 subsequent CD4 measure. Lapse in care was defined as no visit within previous 21 years. We defined five states of care after ART initiation:  
• AHD (CD4 <200) on ART  
• CD4 >200 on ART  
• lapse in care after AHD  
• lapse in care after CD4 >200  
• death  
The starting state for each patient was calculated according to state on date of second CD4 count on ART, or date of first lapse in care, whichever came first. A multistate model was used to estimate transition probabilities between states over time.

**Results**  
• Characteristics of 283,134 patients included in the study are shown in Table 1.  
• The prevalence of AHD on ART has increased from 47% to 7% over last decade (Figure 1).  
• For patients who had CD4 <200 on ART, the probability of ever experiencing AHD on ART was higher for those with lower CD4 counts at ART start, men, youth and adolescents and those over the age of 60 (Table 2).  
• The probability of lapse in care after CD4 >200 was highest among those aged 15-25 years, and the probability of death was similar among those aged 15-25 and those aged 40-60 years (Table 2).  
• Later calendar year of ART start was associated with higher probability of remaining in AHD state (Figure 2).

**Table 1: Characteristics at ART start of patients ≥16 years (n=283134)**

Sex	n	%
Males	99353	35%
Age (years), median (IQR)	34.3	178.4 (110)
5-10	6411	2%
10-15	5121	2%
15-25	27903	10%
25-40	161776	58%
40-60	74664	26%
60+	4758	2%
CD4 count, median (IQR)	181	97 (28)
0-50	34508	12%
50-100	124217	44%
100-200	82029	29%
200-500	24543	9%
>500	17827	6%
Year of ART start		
2004-2006	33859	12%
2007-2008	78536	28%
2010-2011	88676	31%
2013-2015	61999	22%
2016-2018	17511	6%

**Table 2: Probability of ever visiting AHD on ART, lapse in care after CD4 >200 and death, at 5 years after model entry for those CD4 >200 on ART, by sex, age, and CD4 count at ART start\***

AHD on ART	CD4 count			Lapse in care after CD4 >200			Death					
	Age	Sex	CD4 count	Age	Sex	CD4 count	Age	Sex	CD4 count			
Male	5-10	0.072	0.078	0.059	5-10	0.187	0.195	0.217	5-10	0.013	0.014	0.013
Male	10-15	0.142	0.131	0.087	10-15	0.240	0.239	0.233	10-15	0.030	0.021	0.030
Male	15-25	0.333	0.082	0.068	15-25	0.222	0.281	0.335	15-25	0.032	0.033	0.031
Male	25-40	0.420	0.075	0.060	25-40	0.202	0.211	0.235	25-40	0.026	0.025	0.025
Male	40-60	0.104	0.081	0.063	40-60	0.187	0.185	0.217	40-60	0.032	0.034	0.033
Male	60+	0.122	0.096	0.075	60+	0.214	0.223	0.249	60+	0.036	0.044	0.040
Male	5-10	0.085	0.080	0.039	5-10	0.178	0.186	0.208	5-10	0.028	0.019	0.018
Male	10-15	0.281	0.070	0.058	10-15	0.211	0.220	0.223	10-15	0.035	0.031	0.034
Male	15-25	0.277	0.059	0.045	15-25	0.261	0.272	0.301	15-25	0.023	0.024	0.023
Male	25-40	0.268	0.051	0.041	25-40	0.254	0.202	0.224	25-40	0.018	0.018	0.018
Male	40-60	0.071	0.054	0.042	40-60	0.179	0.187	0.207	40-60	0.023	0.024	0.024
Male	60+	0.081	0.086	0.081	60+	0.202	0.215	0.240	60+	0.042	0.044	0.042
Female	5-10	0.071	0.071	0.071	5-10	0.171	0.171	0.171	5-10	0.017	0.017	0.017
Female	10-15	0.141	0.141	0.141	10-15	0.241	0.241	0.241	10-15	0.031	0.031	0.031
Female	15-25	0.311	0.311	0.311	15-25	0.211	0.211	0.211	15-25	0.021	0.021	0.021
Female	25-40	0.411	0.411	0.411	25-40	0.201	0.201	0.201	25-40	0.020	0.020	0.020
Female	40-60	0.101	0.101	0.101	40-60	0.181	0.181	0.181	40-60	0.031	0.031	0.031
Female	60+	0.121	0.121	0.121	60+	0.201	0.201	0.201	60+	0.041	0.041	0.041

**Figure 1: Prevalence of states by calendar year**

**Figure 2: Probability of being in each ART care state over time, from date of AHD on ART, by CD4 and calendar year of ART start**

- Using data from 283,134 patients from the IeDEA Cohorts ;data from 2004-2017
- Included patients > 5 years old with baseline CD4 and ≥ 1 subsequent CD4 measurements
- Defined states of care :
  - CD4 <200 on ART
  - CD4 > 200 on ART
  - lapse after AHD
  - lapse in care after CD4 > 200
  - death
- Model to examine transition between these states over time
- Prevalence of AHD on ART decreased from 47% to 7%
- **Patients who had a CD4 > 200 on ART probability of ever experiencing AHD on ART was higher for those with**
  - lower CD4 at start
  - Men
  - Youth and adolescents
  - > 60 years

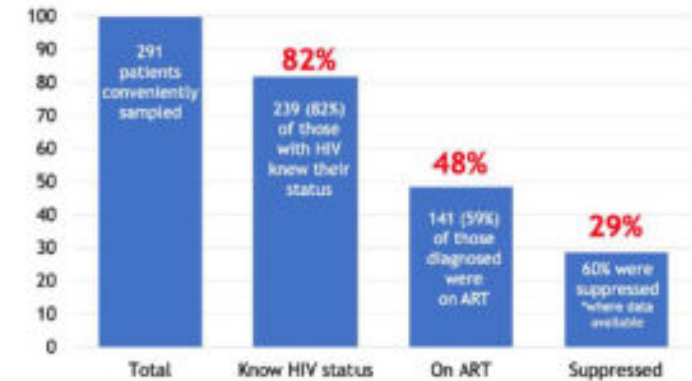
Patten G et al (PEC0438)

# What are we finding in AHD clinics?

- Botswana (*PED1180:Tsholo K et al*) :

- 291 patients admitted with AHD
- 82% knew their status
- **48% were on ART**
- 29% were suppressed

Figure 2: Location in the care cascade of patients presenting with advanced HIV disease



- Malawi (*PEE1475: Sunguti J et al*):

- 401 patients with AHD **57% of those enrolled in AHD clinic were on ART** with VL >1000 and CD4 < 200 100% tested with LAM 8.2% positive
- 95.3% tested with CRAG 3.9% positive
- Of those Serum CraG positive: 10/15 had CSF CraG performed ; 80% positive
- 100% CSF CraG positive on treatment ; 85.7% started prophylaxis

# Outcomes for patients presenting with AHD?

## Outcomes of HIV-Infected Clients who present with advanced disease at enrollment into care- Kenya

- 951 clients
- 76% baseline CD4 ; 24% CD4 < 200
- Patients presenting with AHD were less likely to achieve VS at 6 mths on ART.
- There was no difference in VS between those with and those without advanced disease at 12 months
- Probability of LTFU at 6 and 12 months were 6.1% and 10.8% with advanced disease compared to 5.1% and 8.7% with no advanced disease
- Finding highlights the utility of baseline CD4 and need for differentiated , individualised care at HIV diagnosis

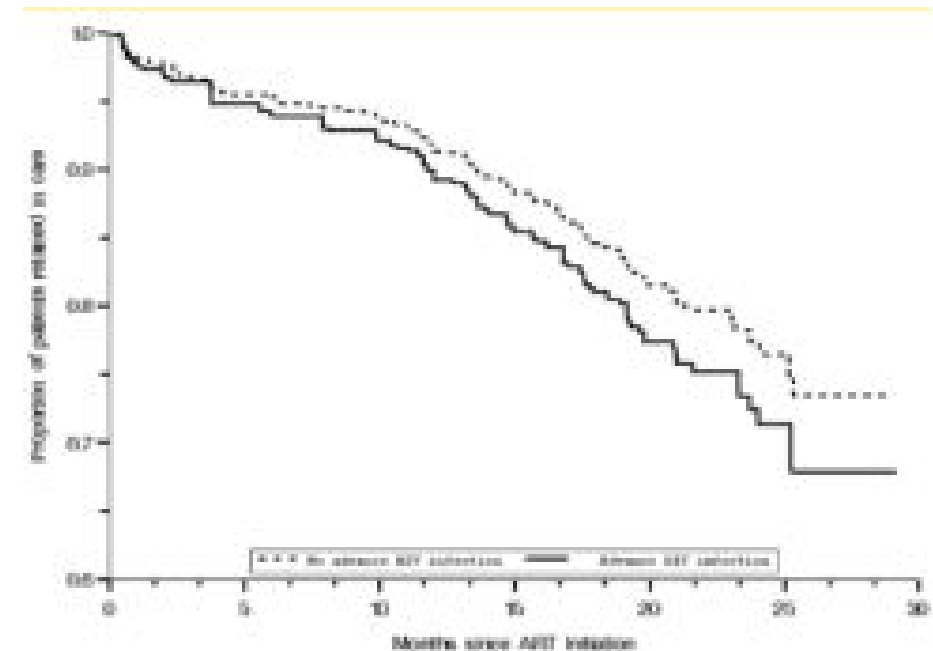
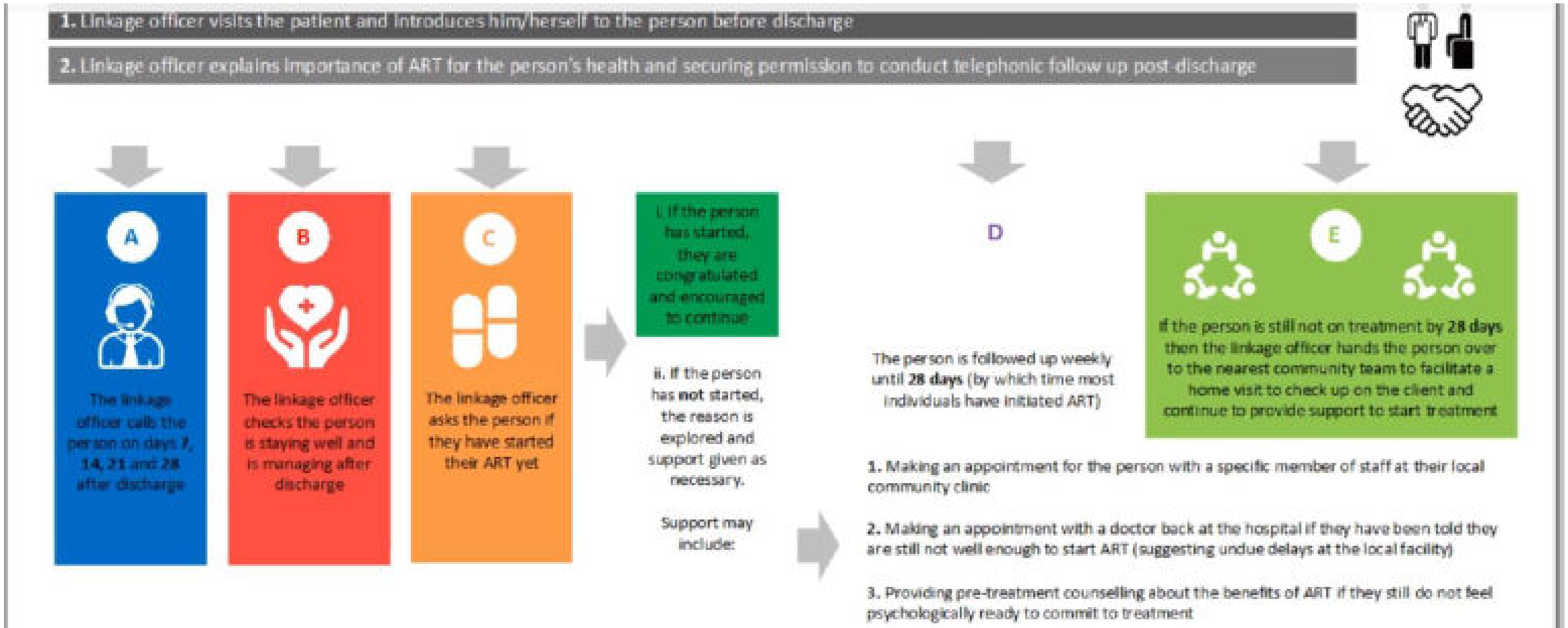


Figure 3: Kaplan Meier survival curve of patients retained in care by advanced HIV status.

# Differentiated service delivery models for AHD Initiation and Linkage

Improving antiretroviral therapy initiation in hospital and after discharge in Johannesburg, South Africa

Melanie Bisnauth OAE04

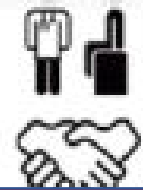


# Differentiated service delivery models for AHD

## The importance of Linkage

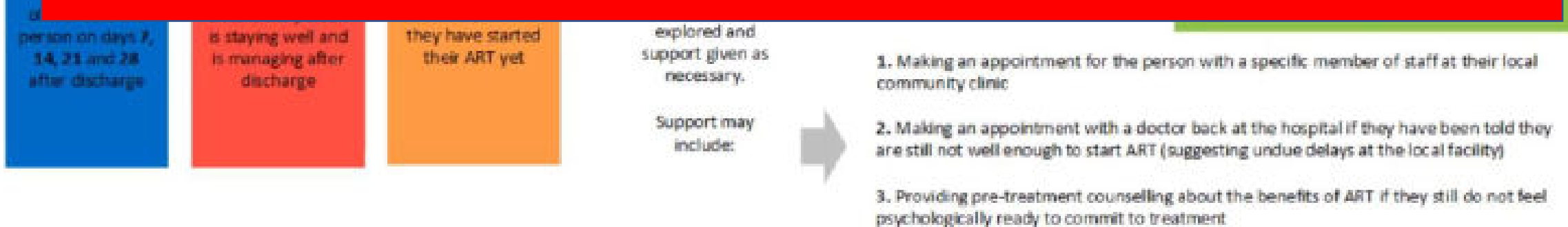
1. Linkage officer visits the patient and introduces him/herself to the person before discharge

2. Linkage officer explains importance of ART for the person's health and securing permission to conduct telephonic follow up post-discharge







Before implementing the model, an average of **55%** of clients needing ART were confirmed to have initiated treatment following hospital admission.

After implementation, **over 90%** of clients had initiated ART within 28-days post-discharge



# This AHD Linkage Model In the Building Blocks

 WHEN	At discharge ; Days 7,14,21 and 28 post discharge
 WHERE	Remotely Initiation at Primary care
 WHO	Designated Linkage Officer
 WHAT	Asked if staying well Asked if ART initiated – if not reason explored and referral made if needed

# Timely switch to an effective regimen

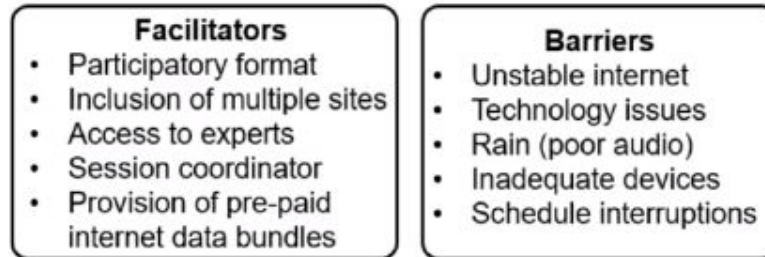
OAE0403 - Building capacity for management of patients on advanced ART regimens through guided practice using the ECHO tele-monitoring model in Kenya  
 John Humphrey, Indiana University, School of Medicine

## Results

### Staff participant characteristics.

Characteristics	N=245 n (%)
Female	168 (68%)
Median age (IQR)	38 (33-43)
≥5 years of experience	167 (68%)
Type of staff	
Nurse	53 (22%)
Clinical officer	62 (25%)
Counsellor	79 (32%)
Nutritionist	17 (7%)
Social worker	10 (4%)
Other	25 (10%)

### Key themes identified through SSIs.



- Multi site
- 245 staff
- Case discussions using zoom

### Pre/post intervention questionnaire (n=32).

Attribute	Pre		Post	
	Mean	95% CI	Mean	95% CI
Manage patients on 2 <sup>nd</sup> line ART	5.0	4.7-5.4	6.5	6.2-6.7
Switch ART for 2 <sup>nd</sup> line failure	4.9	4.5-5.3	5.8	5.6-6.1
Manage patients on 3 <sup>rd</sup> line ART	3.8	3.3-4.3	6.1	5.7-6.4
Identify barriers to adherence	5.8	5.6-6.1	6.0	5.7-6.4
Use MMAS-8 adherence scale	5.5	5.2-5.9	5.9	5.6-6.3
Provide adherence support	5.4	5.0-5.8	5.8	5.4-6.1
Construct a multidisciplinary team plan	5.2	4.7-5.5	5.9	5.6-6.2
Interpret a HIV drug resistance test	4.7	4.2-5.1	5.4	5.0-5.7

<sup>a</sup>Likert scale: 1 — None or no skills; 2 — Vague knowledge, skills or competence; 3 — Slight knowledge, skills or competence; 4 — Average among peers; 5 — Competent; 6 — Very competent; 7 — Expert, teach others

OAE0403



# National Coordination for AHD

## Implementing an optimal advanced HIV disease (AHD) package of care: Lessons learnt from national service delivery planning in Malawi

James Dyson Telela<sup>1</sup>, Yamikani Gumulira<sup>1</sup>, Elinat Matupa<sup>1</sup>, Shaun McGovern<sup>1</sup>, Paul Nyasulu<sup>2</sup>, Bilal Wilson<sup>2</sup>, Rose Nyirenda<sup>2</sup>, Clement Khalika Banda<sup>1</sup>, Andrews Gunda<sup>1</sup>



### Background

Since 2010, Malawi has tripled the number of people living with HIV (PLHIV) accessing antiretroviral therapy (ART) from ~250,000 to over 800,000 by 2019. Despite significant gains in ART coverage, HIV-related mortality still counts for 15,000 deaths annually. A major driver of this mortality: patients still present to care with AHD and are more susceptible to deadly opportunistic infections like TB and cryptococcal meningitis (CM). With an aim to curb deaths, the Malawi Ministry of Health and Population (MoHP), with support from national partners, developed a new set of AHD policy recommendations in line with the World Health Organization guidance. These policies laid a strong foundation for potential AHD service delivery but required a well-coordinated and holistic implementation approach to ensure a sustainable national transition to the new package of AHD care.

### Description

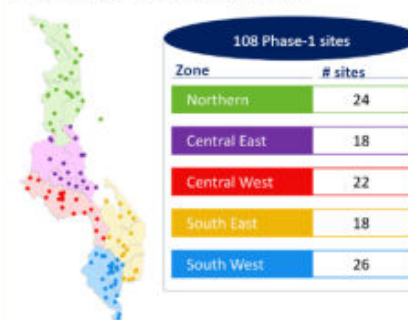
In 2018, Malawi MoHP included AHD management in the revised HIV treatment guidelines. To facilitate decision-making around implementation, a national taskforce was established and responsible for coordinating and leading a number of activities, including, but not limited to: quantifying commodity need, mapping and placing CD4 machines, leading consultative meetings with districts, defining AHD service-delivery and implementation approach, and developing AHD standard operating procedures (SOPs), and training curriculum.

### Lessons learnt

- Governance:** Establishing a taskforce with HIV experts and partners was critical for ensuring a coordinated AHD implementation strategy. There was effective coordination of the task force meetings by MoH where implementing partners shared experience.
- Implementation:** A phased implementation was identified as the best approach to ensure a smooth introduction and allow for continuous improvement and sharing of lessons for onward rollout. Health facilities with inpatient capacity and well experienced staff were selected for phase 1 with the aim of curbing learnings for rollout in phase 2 sites.
- AHD Model:** A hub-and-spoke model was adopted to make AHD implementation feasible given the limited capacity of periphery sites. Peripheral sites as spoke sites are meant to screen and refer patients to hub sites for further management and hub sites are also responsible for back referral for clients needing follow care up after admission and dispense drugs as the nearest point of collection and further care.
- AHD Resources:** The adoption of the [global AHD toolkit](#) was an efficient way to adopt and tailor existing job aides, training curriculum, and SOPs to Malawi's needs. This was supplemented by rich resources from implementing partners who were piloting AHD implementation in different regions of the country.
- Supply chains:** Quantification, procurement, and distribution of focal AHD commodities were completed. The commodities included CrAg LFA, TB LAM, Liposomal Amphotericin B, Flucytosine, 3HP, CD4 Reagents, Cotrimoxazole and other associated drugs and laboratory reagents. Global fund resources were leveraged to support procurement of these commodities.

Ultimately, 108 health facilities out of 751 were selected for the first phase of implementation with more than 300 service providers trained to provide AHD services in secondary and tertiary level health facilities.

Image 2: Phased implementation approach



The chosen facilities cover **every zone and district** in Malawi, allowing for **focused Phase-1 implementation** that is representative of the diversity of facility types.

**Phase-2 will include 264 additional facilities.** Implementation at these sites will rely heavily on lessons learned from Phase-1 implementation.

### Conclusion

Strategic preparation and coordinated stakeholder engagement has led to successful AHD rollout and Malawi will continue to monitor implementation. Countries that have yet to adopt and implement AHD management can learn from Malawi's implementation model.

- Governance
- Phased implementation
- Hub and Spoke model
- AHD training resources
- Supply chain

### Image 1: Quality of Care Taskforce structure

**Mandate:** Develop a quality of care model to address gaps within the HIV treatment program

### Membership



### Scope



# Resources

- Links to abstracts will be available on CQUIN website
- Link to principle of DSD for advanced disease available at  
<https://clintonhealth.app.box.com/s/77fxpxhs5xoias7zkgyh61mqwzu06kwa>