

# A cross-sectional study on levels of knowledge on provision of second-line antiretroviral therapy in Malawi in 2016

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## Introduction

In 2016, WHO estimated that around 5.2% of patients receiving first-line antiretroviral therapy (ART) in Malawi should have been on second-line ART. However, by June 2016, only 1.5% of ART patients were on second-line antiretroviral drugs (ARVs). Switching to second-line ART largely depends on careful clinical assessment and access to laboratory measurements. Low switching rates may be due to challenges with viral load (VL) testing, long turnaround times for VL results, and lack of proper training on second-line ART provision.

In 2016, the International Training and Education Center for Health (I-TECH), in collaboration with the Malawi Ministry of Health and other PEPFAR implementing partners, conducted a certification exam to assess knowledge of health care workers who were providing ART in order to ascertain their readiness to start providing second-line ART. We analyzed the knowledge level of different cadres of health workers on the management of second-line ART.

## Methods

This 2016 cross-sectional study assessed readiness of 754 first-line ART providers to provide second-line ART in the 26 districts of Malawi. The certification examination, which was conducted at the end of a 5-day workshop on provision of second-line regimen, had the following domains: (a) **identifying names of ARV regimens** (4 questions), (b) **regimen selection and identification of ARV side-effects** (8 questions), (c) **regimen dosing** (3 questions), and (d) **interpretation of VL results and adherence to VL testing protocols** (10 questions).

Descriptive statistics were conducted using STATA v15.0. The passing score was **80%**. Associations were assessed using Chi-Square tests.

Ethical approval for this assessment was obtained from the National Health Science Research Committee (Lilongwe, Malawi), University of Washington (Seattle, WA), and the Centers for Disease Control and Prevention, Center for Global Health Associate Director for Science (Atlanta, GA).

## Results

The 754 ART prescribers included 21 (3%) medical doctors, 241 (32%) clinical officers, 260 (34%) nurse and midwife technicians, 147 (20%) medical assistants and 85 (11%) nurses of other categories. A total of 290 (38%) passed the second-line ART certification exam. Medical doctors had the highest proportion passing the exam.

Table 1: Association of participant characteristics with percentage that correctly answered questions in the four categories of second-line ART certification examinations in Malawi 2016

Participant characteristics	n (%)	Categories of the second-line ART certification questions											
		Correctly identified second-line ARV			Correctly selected second-line ARV			Correctly dosed different second-line			Correctly interpreted viral load		
		No. passed	% passed (95%CI)	P-value*	No. passed	% passed (95%CI)	P-value*	No. passed	% passed (95%CI)	P-value*	No. passed	% passed (95%CI)	P-value*
<b>Total</b>	754 (100)	518	68.70 (65.26-72.00)		71	9.42 (7.43-11.73)		588	77.98 (74.85-80.89)		67	8.89 (6.95-11.14)	
<b>Region</b>				0.06			0.69			<0.001			0.81
North	134 (18)	87	64.93 (56.21-72.96)		10	7.46 (3.64-13.30)		87	64.93 (56.21-72.96)		10	14.29 (3.64-13.30)	
Central	220 (29)	141	64.09 (57.37-70.43)		22	10.00 (6.37-14.75)		178	80.91 (75.08-85.88)		20	7.73 (4.29-12.64)	
Southern	400 (53)	290	72.50 (67.84-76.82)		39	9.75 (7.03-13.09)		323	80.75 (76.54-84.50)		37	7.34 (4.85-10.58)	
<b>Cadre</b>				<0.001			<0.001			0.27			<0.001
Medical Doctor	21 (3)	18	85.71 (63.66-96.95)		7	33.33 (14.59-56.97)		18	85.71 (63.66-96.95)		3	14.29 (3.05-36.34)	
Clinical Officer	241 (32)	194	80.50 (74.92-85.30)		40	16.60 (12.13-21.91)		195	80.91 (75.37-85.67)		36	14.94 (10.69-20.08)	
Medical Assistant	147 (20)	91	61.90 (53.54-69.78)		7	4.76 (1.94-9.57)		113	76.87 (69.21-83.42)		5	3.04 (1.11-7.76)	
Registered Nurse	44 (6)	32	72.73 (57.21-85.04)		0	0.00 (0.00-8.00)		38	86.36 (72.65-94.82)		2	4.55 (0.56-15.47)	
Nurse Midwife Technician	260 (34)	155	59.62 (53.38-65.63)		13	5.00 (2.69-8.40)		192	73.85 (68.06-79.08)		15	5.77 (3.26-9.34)	
Community Nurses	41 (5)	28	68.29 (51.91-81.92)		4	9.76 (2.72-23.13)		32	78.05 (62.39-89.44)		6	14.63 (5.57-29.17)	

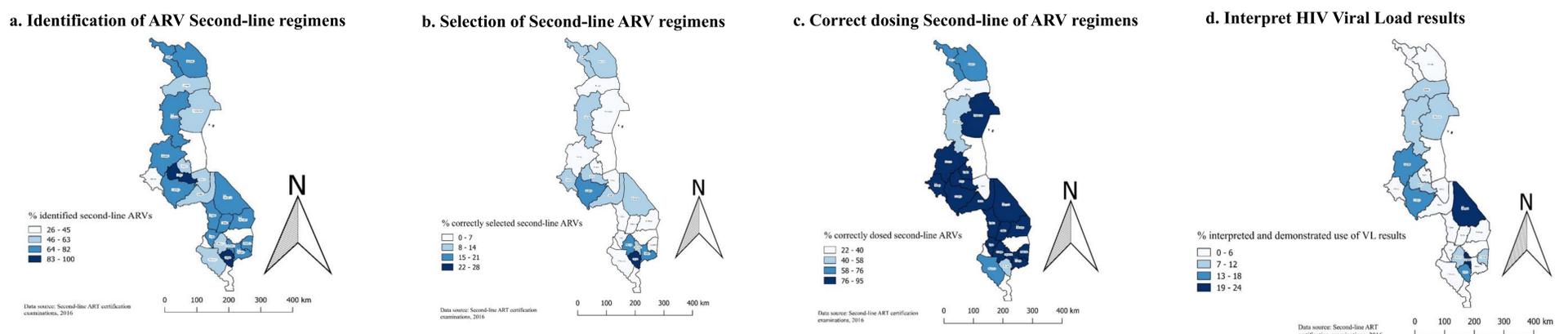
\*Chi-Square p-values

ARV=Antiretroviral drugs

ART=Antiretroviral therapy

- 518 (69%) correctly **identified second-line ARV regimens**. Medical doctors and clinical officers had the highest passing rates, while nurse midwife technicians had the lowest.
- 71 (9%) correctly **identified regimens for managing side-effects** related to second-line regimens. While no registered nurses selected appropriate second-line ARV regimens, 17% of the clinical officers correctly selected appropriate second-line regimens.
- 588 (78%) ART providers used **correct dosing** for second-line ARV regimens, with the majority of all cadres passing this domain.
- 67 (9%) of ART providers passed the **VL result interpretation** domain. Correct interpretation of VL results was significantly associated with cadre.
- Spatial distribution showed high performing districts whose lessons can be shared with other districts (**Figure 1**).

Figure 1: Spatial Distribution of Cadres Passing Second-line Certification Exams in 2016 in Malawi



## Conclusions and Recommendations

This assessment found that medical doctors and clinical officers had comparable knowledge to provide second-line ART, and while registered nurses scored similarly to medical doctors and clinical officers in certain domains, but lower in others. To strengthen task shifting approaches, **capacity building should focus on how to correctly select second line regimen and interpret viral load results**. Training activities should also consider regional and district-level variability in capacity.



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