

Knowledge of viral load and treatment failure amongst patients on second-line and third-line antiretroviral therapy regimens

A mixed methods study in MSF programmes in Malawi, Kenya and Mozambique

Rose Burns¹, Birgit Schramm¹, Joana Borges², Alexandra Vandenbulcke³, Philippe Blasco⁴, Iza Ciglenecki⁵, Jecinta Oruko³, Elisabeth Szumilin⁴, Irene Mukui⁶, Estelle Pasquier⁴, Lucas Molfino², Valentina Carnimeo¹, Ankur Rakesh¹, Loide Cossa², Denis Ardiel¹, Thandikile Zimba⁷, Thokozani Kalua⁸, Paula Paulino², Alison Wringe⁹.
Epicentre France¹, MSF Mozambique², MSF Kenya³, MSF France⁴, MSF Switzerland⁵, Ministry of Health Kenya⁶, MSF Malawi⁷, Ministry of Health Malawi⁸, London School of Hygiene and Tropical Medicine, UK⁹.

Background

MSF supports HIV care and treatment programs in:

- **Kenya:** Homa Bay District Hospital (rural setting, some mobility among the population for fishing);
- **Malawi:** Chiradzulu district hospital and 10 health facilities (rural setting, some mobility for work in Blantyre);
- **Mozambique:** Maputo at a referral center for complex cases and second-line ART (urban setting, mobile population).
- The number of patients requiring second- and third-line antiretroviral therapy (ART) regimens is increasing in these programs
- Understanding of the elements on which to base adherence interventions for these treatment-experienced patients is limited
- A cross-sectional study on virological failure and drug resistance was conducted in Nov 2014-Dec 2015 among patients ≥ 5 years receiving second-line ART since ≥ 6 months in the 3 programs. A qualitative component explored issues influencing adherence.

Aim: As part of this study we investigated patients' understanding of the relationship between treatment failure, viral load and adherence among those on 2nd and 3rd line ART regimens in MSF programmes in Kenya, Mozambique and Malawi.

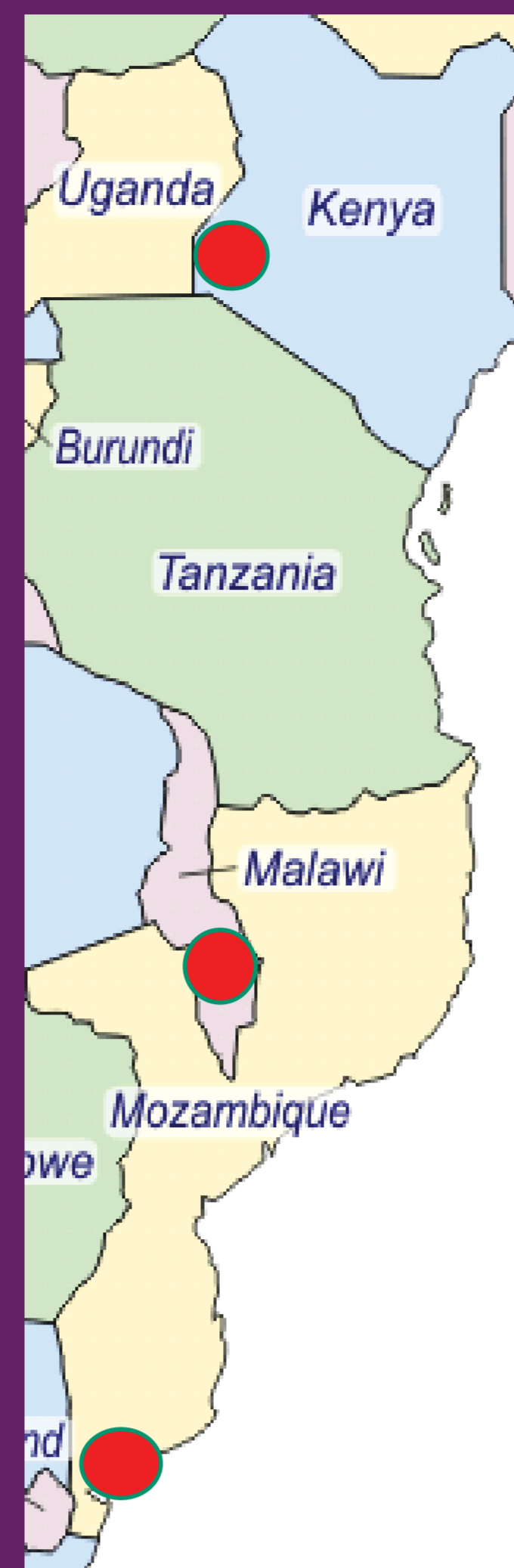


Figure 1: study sites

Methods

Quantitative:

- During the cross-sectional study, a structured questionnaire was administered to assess knowledge on ART and VL. Data shown here are for patients ≥ 18 years (87% of total surveyed).
- ART knowledge was assessed with 9 true/false questions. Good knowledge defined as 7 of 9 answered correctly
- Knowledge of Viral load (VL) was ascertained via two non-probed, pre-coded questions

Qualitative:

- ~12 months after the cross-sectional assessment, repeated in-depth interviews (IDIs) were conducted per site with 13-16 patients, purposively sampled from survey participants ensuring diversity in VL outcomes, adapted ART regimens (second and third-line), age and sex
- IDIs were also held with 5 health workers per site
- IDIs were recorded, transcribed and translated into English for coding
- Content analysis was used to identify emergent themes explaining patients' understanding of viral load and adherence.

Results (quantitative)

N=700 adult participants interviewed: Kenya 299 (51% female); Malawi 212 (59% female); Mozambique 198 (58% female).

- **ART knowledge:** was good in all sites, notably high in Malawi.
- **VL knowledge:** *Can you explain what a VL test is for?* (non-probed)
 - Don't know: 19% (Kenya), 15% (Malawi), 32% (Mozambique)
 - VL test checks if VL is undetectable/measures VL: 67% (Kenya), 73% (Malawi), 55% (Mozambique)
 - VL test checks if the ARV treatment still works: 21% (Kenya), 66% (Malawi), 5% (Mozambique)
 - VL test checks if I am taking the ARV treatment: 4% (Kenya), 38% (Malawi), 1.6% (Mozambique).
- Mostly no association found between virological failure (VL ≥ 1000 copies/ml) and knowledge about ART or VL testing (table 1).
- Overall, knowledge of ART and VL was lower in the Mozambique site.

Table 1: Patient knowledge of ART and VL testing by virological outcome and site

n (%)	KENYA			MALAWI			MOZAMBIQUE					
	VL [copies/ml]	< 1000	≥ 1000	p value	VL [copies/ml]	< 1000	≥ 1000	p value	VL [copies/ml]	< 1000	≥ 1000	p value
Total surveyed	256 (86)	43 (14)			188 (89)	24 (11)	n/a		144 (76)	45 (24)		
Good ART knowledge: (8/9 questions correct)	192 (75)	31 (72)	0.68		186 (99)	24 (00)	0.61		94 (65)	20 (44)	0.013	
Doesn't know if ever had VL test	39 (15)	9 (20)	0.56		9 (5)	1 (4)	0.64		26 (18)	11 (24)	0.37	
Can you explain what is a viral load test/ what it is good for? (Non-probed, replies were coded into following categories)												
Don't know	43 (17)	15 (35)	<0.01		28 (15)	4 (17)	0.76		45 (31)	16 (36)	0.57	
To check if the viral load is undetectable / measure viral load	179 (70)	23 (53)	0.033		135 (72)	20 (83)	0.23		83 (57)	21 (47)	0.21	
To check if the ARV treatment still works	57 (22)	7 (16)	0.37		122 (65)	17 (71)	0.56		6 (4)	4 (9)	0.21	
To check if I am taking the ARV treatment	11 (4)	0 (0)	n/a		72 (38)	9 (36)	0.94		1 (0.7)	2 (4)	0.14	

Results (qualitative)

- Accurate knowledge of ART and its relationship to VL can help motivate some patients to adhere to ART
- However, good understanding of ART and VL results are not sufficient for good adherence. Other individual-level and context-specific factors (e.g. stigma, poverty, mobility) and health systems issues undermined regular pill-taking and varied between sites.
- Adherence intentions improved for some patients after switching regimens, but "relapse" remained a risk if previous barriers to adherence were not continuously addressed.

"I got shocked because when I was joining third line, I was told the amount of my CD4 and my viral load...so it is in my mind that I have to adhere to them (ART) well the way I am told, and if I break ...that's where my life ends." [Man, 3rd line ART, Kenya]

"Sometimes they miss their appointments.. because of the finances, they can not be able to reach the hospital, at times they come late because of the terrains. At times the reception [at the hospital] is not welcoming to them... they are seen as people who are rejects....Yah so those are some of the reports that clients give. And at times they lament the long queues." [Health worker, Kenya]

"I sometimes have appetite of eating fruits, many other things. Nonetheless I can't afford [them]... the same difficulties I used to go through when I was on the first line. Regarding difficulties, nothing has changed. Just to have something to eat is a big problem." [Man 2nd line ART Mozambique]

"If one uses condoms the virus would die because I hear the virus' food are the sperms so it is like we are feeding them, so smoking, condomising, stress, good nutrition, how you work; how you work affects how the medicine works.. Don't work a lot...! **Where did you hear that HIV virus eats sperm?** At the hospital, from counsellors" [Man, 3rd line ART, Malawi]

"Only one of the twins survived...I had a lot of thoughts, I stopped taking drugs for 2 years. [name of counsellor] kept on teaching us...I joined the support group and you could hear people had challenges more than what you are going through, I listened to them then I gathered courage and started taking drugs." [Woman, 2nd line ART, Kenya]

- Counseling was a source of both correct and incorrect knowledge about ART and VL among patients in this study
- Moralistic messages from staff in all sites meant some patients believed that detectable VL and treatment failure were due to unprotected sex, drinking alcohol, smoking, or using traditional medicine. These patients did not explicitly link their VL results to their pill-taking, which could undermine their adherence
- Good quality individual or group counselling was important for helping patients to understand ART and VL results, as well as giving them the morale to maintain pill-taking.

Conclusion

- Despite overall good knowledge of ART, many second-line patients had limited understanding of viral load and its relationship to adherence and treatment failure.
- Health workers need better training on explaining the relationship between viral load, adherence and treatment failure to patients. Better explanations of these relationships can support adherence for some patients.
- Counselling messages need to be i) patient-centered, ii) convey correct information, and iii) focus on problem-solving and identify strategies to address persistent adherence barriers, rather than blaming patients' social and sexual behaviors for treatment failure.
- Site differences in treatment literacy and virological failure can be explained by social, contextual and programmatic differences
- Study limitations include potential site-specific differences in administration of the survey questionnaires and social desirability bias in patients' responses, although efforts were taken to reduce this through fieldworker training and for the qualitative component, use of repeated interviews to build rapport with participants.

Acknowledgements: We would like to thank all of the participants, fieldworkers and MSF field teams for their support and contributions to this study.

For more questions or comments contact: rose.burns@epicentre.msf.org