

CONTEXT

- In order to reach the final 90 of the 90-90-90 UNAIDS goal¹, access to viral load (VL) monitoring must be expanded to all the people living with HIV (PLHIV) on antiretroviral therapy (ART).
- In Burundi, the OPP-ERA project implemented a molecular biology laboratory for HIV VL monitoring at the ANSS (Association Nationale de Soutien aux Séropositifs) an associative medical center in the capital city of Bujumbura.
- Funded by UNITAID, the OPP-ERA project aimed at increasing access to low-cost VL monitoring through access to Open Polyvalent Platforms (OPPs). The OPP-ERA project, started in 2013, was implemented in 4 countries (Burundi, Cameroon, Côte d'Ivoire and Guinea) by a consortium of actors of the fight against HIV and AIDS: Solthis, Expertise France, Sidaction and ANRS.

GOAL

Describe the 6-year experience of the OPP-ERA project in Burundi in terms of population with access to VL monitoring within the OPP-ERA project and in terms of virological success

METHODOLOGY

All samples collected from August 2014 to April 2019 were considered for analysis. To detect if the population benefiting from VL monitoring within the OPP-ERA project changed over time, patient's characteristics were compared between civil years using chi-2 tests or ANOVA for categorical and continuous variables, respectively. VL was measured on plasma using the Generic HIV VL assay (Biocentric, Bandol France). Virological success was defined as a VL <1000 copies/mL, and failure was considered in case of VL ≥1000 copies/mL. Factors associated with virological failure and with availability of a confirmatory VL after failure were identified using logistic regressions. In case of VL ≥1000 copies/mL, national guidelines recommend a confirmatory VL after 3 to 6 months of adherence strengthening.

RESULTS

- A total of 47,505 VL were measured in the OPP-ERA project in ANSS accounting for 30,791 patients on ART, the number of patients who benefited from VL monitoring steadily increasing with years.
- Factors associated with **lower risk** of failure were: Female gender and older age
- Patients were essentially women (67.8%) and adults. (Table 1)
- Factors associate with **higher risk** of failure were: younger age, being on 2nd or 3rd line of ART, and being on ART for 12 months or for >36 months
- The vast majority of patients who were evaluated were on 1st line ART, this proportion even increased with time.
- The proportion of patients on ART for shorter time increased with time.

Table 1. Patients characteristics by year from 2014 to 2019

	2014	2015	2016	2017	2018	2019	p
N (%)	1,590 (5.2%)	4,852 (15.8%)	5,797 (18.8%)	5,985 (19.4%)	7,475 (24.3%)	5,092 (16.5%)	
Women, n (%)	1,086 (68.3)	3,351 (69.1)	3,939 (68.0)	3,934 (65.7)	5,132 (68.7)	3,430 (67.4)	0.002
Median (IQR) age (yrs)	40 (23-51)	41 (29-50)	41 (31-50)	40 (30-50)	40 (30-50)	40 (30-50)	<0.0001
1 st line ART	1,409 (88.6)	4,486 (92.5)	5,526 (95.3)	5,804 (97.0)	7,181 (96.1)	4,818 (94.6)	<0.0001
Timing of VL							<0.0001
M12	62 (3.9)	197 (4.1)	135 (2.3)	394 (6.6)	749 (10.0)	578 (11.3)	
M24	94 (5.9)	341 (7.0)	517 (8.9)	1,181 (19.7)	1,381 (18.5)	601 (11.8)	
M36	127 (8.0)	344 (7.1)	451 (7.8)	532 (8.9)	749 (10.0)	574 (11.3)	
>M36	1,018 (64.0)	3,499 (72.1)	4,167 (71.9)	3,300 (55.1)	4,187 (56.0)	2,880 (56.6)	
NA	289 (18.2)	471 (9.7)	527 (9.1)	578 (9.7)	409 (5.5)	459 (9.0)	

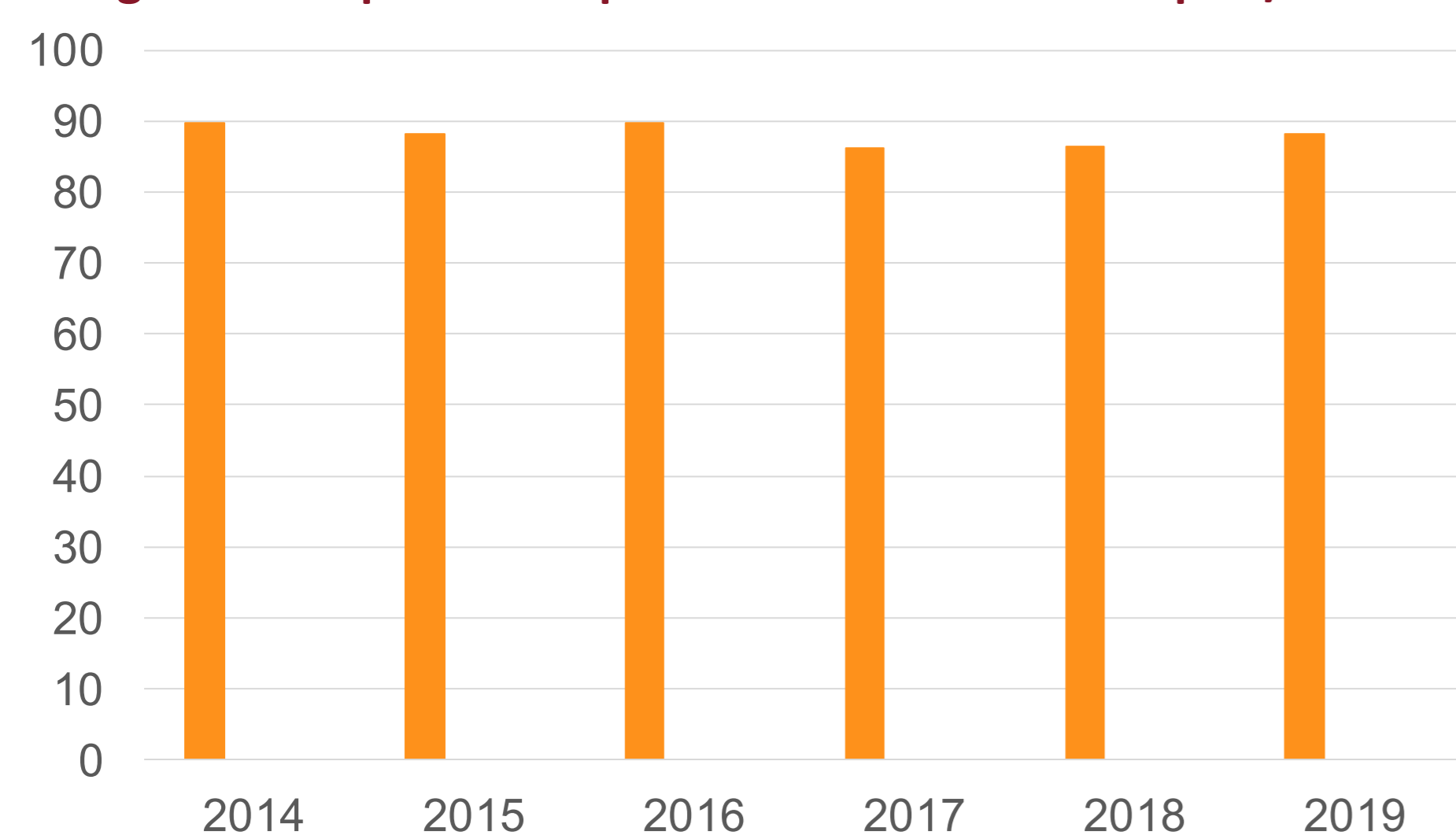
IQR: inter quartile range; ART: antiretroviral therapy; VL: viral load

Table 2. Factors associated with VL ≥1000 copies/mL

	N	Failure (%)	Adj. OR (95% CI)	P
Gender				<0.001
Male	20,872	1,401 (14.1)	1	
Female	9,919	2,351 (11.3)	0.76 (0.71-0.82)	
Age (yrs)*				<0.001
<10	848	213 (25.1)	2.99 (2.50-3.59)	
10-19	2,739	641 (23.4)	2.33 (2.08-2.63)	
20-29	3,666	533 (14.5)	1.31 (1.16-1.47)	
30-39	7,239	842 (11.6)	1	
40-49	7,923	790 (10.0)	0.82 (0.74-0.91)	
≥50	8,149	706 (8.7)	0.68 (0.61-0.75)	
Line of ART*				<0.001
1 st line	29,224	3,527 (12.1)	1	
2 nd or 3 rd line	1,170	181 (15.5)	1.29 (1.09-1.53)	
Timing*				0.005
M12	2,115	307 (14.5)	1.18 (1.01-1.38)	
M24	3,610	505 (12.3)	1	
M36	2,777	339 (12.2)	1.06 (0.91-1.23)	
>M36	19,051	2,280 (12.0)	1.18 (1.06-1.31)	

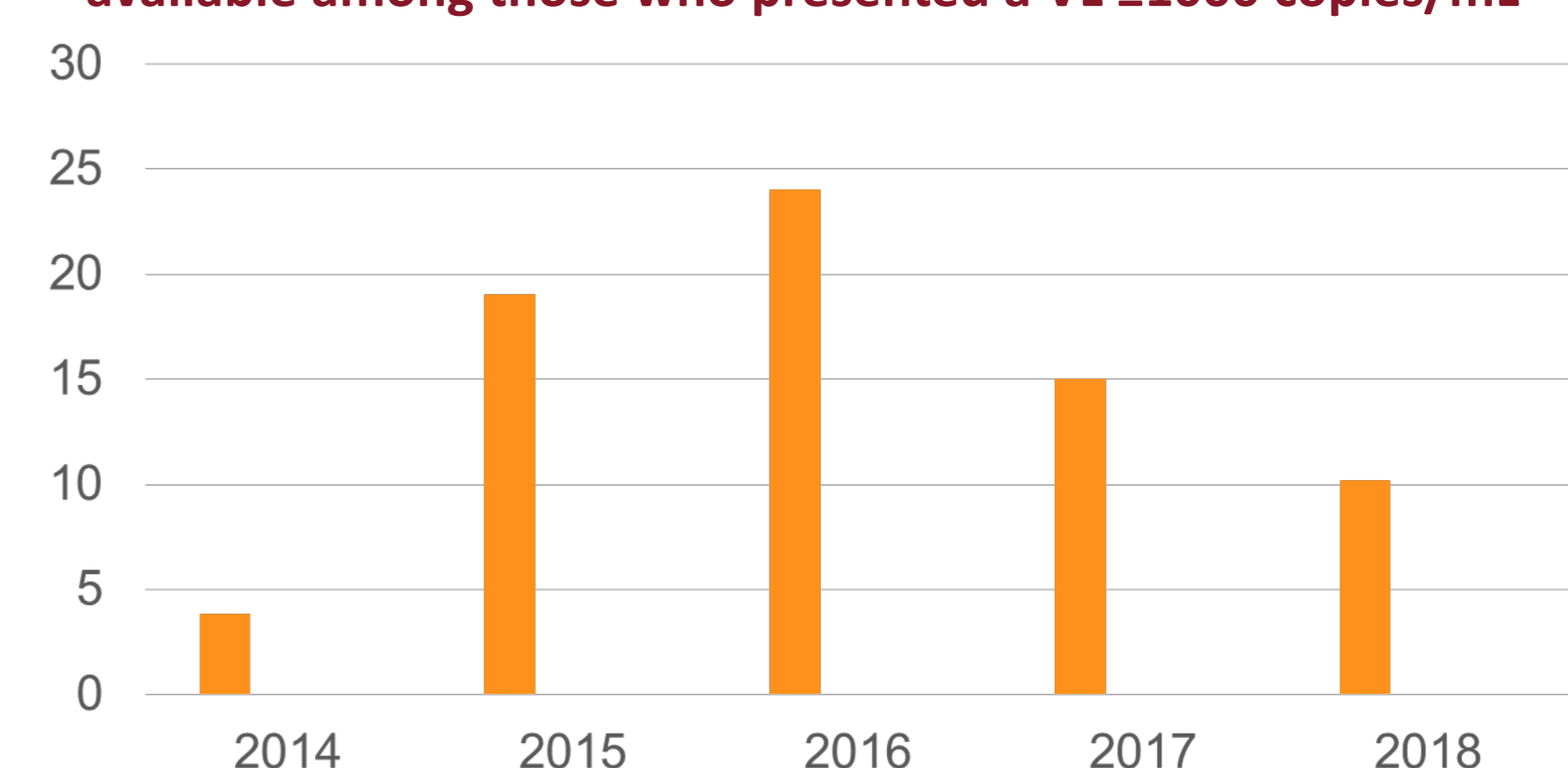
* A missing category was considered but was not reported here

Figure 1. Proportion of patients with VL <1000 copies/mL



The proportion of patients with VL <1000 copies/mL remained stable in time and was close to 90%.

Figure 2. Proportion of patients with a confirmatory VL available among those who presented a VL ≥1000 copies/mL



CONCLUSION

- In Burundi, the OPP-ERA project implemented in a community setting accounted for nearly 50,000 VL tests over 6 years; the number of patients who benefited from VL monitoring steadily increasing over the years.
- In line with the national epidemic, most patients virologically evaluated were adult women.
- Over the years, the proportion of patients with a VL <1000 copies/mL remained stable and around 90%. Younger patients and patients on 2nd or 3rd line ART were more likely to be in failure.
- Surprisingly, the number of patients on 1st line ART did not really decrease over time. One could have anticipated that the patients evaluated would be more and more on 2nd line ART, but this was not the case. This could be related to a lack of switch in case of failure, but our data do not allow to confirm this assumption.
- Despite national recommendations, the proportion of patients for whom VL was re-measured after an initial VL indicating failure remained low. This could reflect a difficulty in the application of the algorithm but could also be explained by access to VL monitoring through another program, but our data do not allow to confirm what happened in the field.