Effectiveness of Direct-Acting Antivirals for the treatment of Viral Hepatitis C in Rwanda

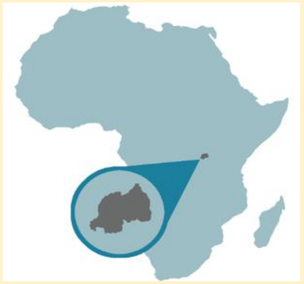
Janvier Serumondo[1], Michael J. Penkunas[3], Alida Ngwije[3], Eric Remera[1], Carol Y. Liu[3], Dieudonne Sebuhoro[1], Justine Umutesi[1], Clarisse Musanabaganwa[2] Gentille Musengimana[1], Corneille Ntihabose[1], Augustin Mulindabigwi[1], Sabine Umuraza[3], Julienne Niyikora[3], Cyprien Ntirenganya[4], Soline D. Mugeni[3], Athanase Kiromera [5], Sabin Nsanzimana[1]

[1]Rwanda Biomedical Center, HIV/AIDS, STIs and Other Blood Born Infections Division Kigali, Rwanda
[2]Rwanda Biomedical Center, Medical Research Centre Kigali, Rwanda
[3] Clinton Health Access Initiative, Demand- Driven Evaluations for Decision (3DE), Kigali, Rwanda
[4]Butare University Teaching Hospital, Internal Medicine, Huye, Rwanda
[5]University of Maryland, Kigali, Rwanda

Topic: General Hepatology

Introduction

- In Rwanda, Viral Hepatitis seroprevalence is estimated at 3.1% to 4.1% within the general population and between 4.5% to 4.7% among people living with HIV[1].
- The Southern and Eastern provinces present the highest prevalence
- Direct-acting antivirals were first introduced in Rwanda in November 2015 for HCV treatment, replacing interferon-based therapies[2].
- Clinical trials conducted mainly in high-income settings have reported up to 95% of sustained virological response 12 weeks post treatment (SVR12) [3,4]
- Little is known about the real-world effectiveness of these drugs for treating chronic HCV in resource-constrained settings.



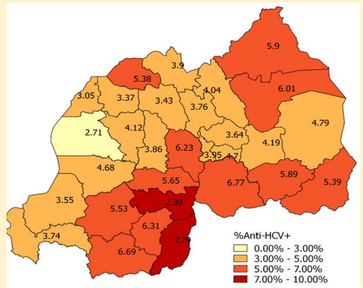


Fig1: Geographic distribution of HCV prevalence in Rwanda

Objectives

The aim of this study was to evaluate the real-world effectiveness of DAAs among the first patients treated in Rwanda's national HCV program. In addition, factors associated with virological failure and premature treatment discontinuation were assessed.

Methods

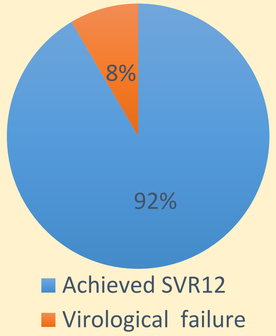
- De-identified demographic, clinical and HCV treatment data were extracted from national HCV program monitoring database.
- Data for all patients initiated on one of the approved DAA-based treatment (Sofosbuvir Ribavarin or Sofosbvir-Ledipasvir with or without Ribavirin) from the four main referral hospitals between November 2015 and March 2017 were included.
- Our primary outcomes consisted of patients who achieved SVR12 and secondary outcomes included virological failure and premature treatment discontinuation.
- Univariable and multivariable logistic regression models were fit to estimate the relationship between patients' clinical and demographic characteristics and treatment outcome.

Conclusion

These results provide the first insights into the effectiveness of DAA-based treatments offered through a national health system in sub-Saharan Africa. The DAAs investigated here were found to be effective when treatment schedules were adhered to. Decentralization and enhanced financing efforts are underway in Rwanda, which could further improve access to treatment and clinical follow-up as the country prepares for HCV elimination.

Results

DAAs Treatment outcome



Results for univariable and multivariable logistic regression models with premature treatment discontinuation as the outcome of interest.

		Crude OR (95%CI)	*p*-value	Adj OR (95%CI)	Wald *p*-value
Province	Kigali	1		1	
	Eastern	0.83 (0.53-1.28)		0.80 (0.52-1.25)	0.330
	Northern	1.56 (0.86-2.82)	0.007	1.46 (0.8-2.66)	0.214
	Southern	0.82 (0.56-1.2)		0.80 (0.54-1.17)	0.250
	Western	1.91 (1.19-3.07)		1.85 (1.14-2.98)	0.012
Insurance Status	Public insurance	1		1	
	Private insurance	0.83 (0.51-1.35)	0.152	0.80 (0.49-1.31)	0.374
	Self-paid	1.55 (0.92-2.58)		1.68 (0.99-2.84)	0.054
Pre-treatment VL (IU/mL)	≤ 808557.5	1			
	>808557.5	0.89 (0.67-1.19)	0.611		
	Missing	0.79 (0.45-1.40)			

- 60.4% (590/894) completed the full treatment sequence. 91.5% (540/590; 95% CI = 88.9-93.6) of patients achieved SRV12.
- In an intention-to-treat analysis (ITT), 60.4% of patients achieved SVR12 (540/894; 95% CI = 57.1-63.6), 50 patients (5.6%; 95% CI = 4.2-7.4) experienced virological failure and 304 patients (34.0%; 95% CI = 30.9-37.2) were considered as discontinuing treatment prematurely.
- Having a pre-treatment viral load above the median (800.000 copies/cmL) was associated with increased odds of virological failure (aOR = 2.6; 95% CI = 1.3 - 5.1; p < 0.01).
- Patients residing in Western Province were more likely to discontinue care (aOR = 1.8; 95% CI = 1.14 - 2.98; p = 0.01) compared to those in Kigali
- The association between paying out-of-pocket and earl treatment discontinuation was trending towards statistical significance (OR = 1.6; 95% CI = 0.9 - 2.8; p = 0.05).

References

1. Karoney MJ, Siika AM. Hepatitis C virus (HCV) infection in Africa: A review. Pan Afr Med J. 2013;14:44.
2. Riedel DJ, Taylor S, Simango R, Kiromera A, Sebeza J, Baribwira C, et al. Hepatitis C treatment outcomes using interferon- and ribavirin-based therapy in Kigali, Rwanda. Trans R Soc Trop Med Hyg [Internet]. 2016;110(8):495–7.
3. Falade-Nwulia O, Suarez-Cuervo C, Nelson DR, Fried MW, Segal JB, Sulkowski MS. Oral direct-acting agent therapy for hepatitis c virus infection: A systematic review. Ann Intern Med. 2017;166(9):637–48.
4. Haridy J, Wigg A, Muller K, Ramachandran J, Tilley E, Waddell V, et al. Real-world outcomes of unrestricted direct-acting antiviral treatment for hepatitis C in Australia: The South Australian statewide experience. J Viral Hepat. 2018;(January):1–11.

REPUBLIC OF RWANDA MINISTRY OF HEALTH

RWANDA BIOMEDICAL CENTER
A Healthy People. A Wealthy Nation

CLINTON HEALTH ACCESS INITIATIVE

UKaid from the British people

Poster Session Online
Poster presented at: EASL The International Liver Congress 2019
DOI: 10.3252/pso.eu.ILC2019.2019
General hepatology
Alida Ngwije
THU-411
ILC2019