Rwanda Population-based HIV Impact Assessment (RPHIA) - Key findings

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INTRODUCTION

The Rwanda Population-Based HIV Impact Assessment (RPHIA), a national household-based survey, was conducted between October 2018 and March 2019 in order to measure the status of Rwanda's national HIV response. RPHIA offered HIV counseling and testing with return of results and collected information about uptake of HIV care and treatment services. This survey was first in Rwanda to measure both national HIV incidence and viral load suppression (VLS). The results provided information on national and subnational progress toward control of the HIV epidemic.

RPHIA was led by the Government of Rwanda (GoR) through the Rwanda Biomedical Centre (RBC) and National Institute of Statistics of Rwanda (NISR). The survey was conducted with funding from the U.S. President's Emergency Plan for AIDS Relief (PEPFAR) and technical assistance through the U.S. Centers for Disease Control and Prevention (CDC). RPHIA was implemented by ICAP at Columbia University in collaboration with GoR entities, including RBC, NISR, National Reference Laboratory (NRL), district, provincial and referral hospitals, and local government authorities. GoR, local civil society organizations and international development partners participated in the steering committees and technical working group during survey implementation.

Key Findings

HIV Indicator	Female	95% CI	Male	95% CI	Total	95% CI
Annual Incidence (%)						
Ages 15-49 years	0.06‡	0.00-0.13	0.10‡	0.00-0.20	0.08	0.02-0.14
Ages 15-64 years	0.07‡	0.00-0.15	0.09‡	0.00-0.17	0.08	0.02-0.14
Prevalence (%)						
Ages 10-14 years	0.5	0.2-0.7	0.3	0.1-0.5	0.4	0.2-0.5
Ages 15-49 years	3.3	2.9-3.8	1.8	1.5-2.1	2.6	2.3-2.9
Ages 15-64 years	3.7	3.3-4.1	2.2	1.9-2.6	3.0	2.7-3.3
Viral Load Suppression (%)						
Ages 10-14 years	*	*	*	*	(72.5)	56.1-89.0
Ages 15-49 years	78.6	74.2-83.0	65.7	57.2-74.2	74.3	69.7-78.8
Ages 15-64 years	79.1	74.9-83.2	70.5	63.8-77.2	76.0	72.0-80.0

95% CI (confidence interval) indicates the interval within which the true population parameter is expected to fall 95% of the time.
‡ Incidence estimates are based on a small number of recent infections. The survey was powered to estimate national incidence and not for sex-disaggregated estimates; therefore, these estimates and CIs should be interpreted with caution.
Viral load suppression is defined as HIV ribonucleic acid (RNA) <1,000 copies per milliliter (mL) of plasma among HIV-positive individuals.
*An asterisk indicates the point estimates have been suppressed due to observations less than 25.
() Estimates based on 25-49 observations are included in parentheses and should be interpreted with caution.

Annual incidence of HIV among adults (defined as those aged 15-64 years) in Rwanda was 0.08%. This corresponds to approximately 5,400 new cases of HIV annually among adults in Rwanda.

Prevalence of HIV among adults in Rwanda was 3.0%. This corresponds to approximately 210,200 adults living with HIV in Rwanda with more women (3.7%) than men (2.2%) living with HIV. Prevalence of HIV among young adolescents

(those aged 10-14 years) was 0.4%, corresponding to approximately 5,900 young adolescents living with HIV in Rwanda, for a total of 216,000 people living with HIV among those aged 10-64 years.

Prevalence of viral load suppression (VLS) among all HIV-positive adults was 76.0%: 79.1% among women and 70.5% among men. Note, findings of VLS among people living with HIV were regardless of knowledge of HIV status or use of

antiretroviral (ARV) therapy antiretroviral (ARV) therapy(ART)

HIV prevalence peaked at 6.5% among men aged 55-59 years and 7.4% among women aged 50-54 years. Among young women aged 20-24 years, HIV prevalence was three times higher (1.8%) than among men in the same age group (0.6%), the most pronounced disparity by sex
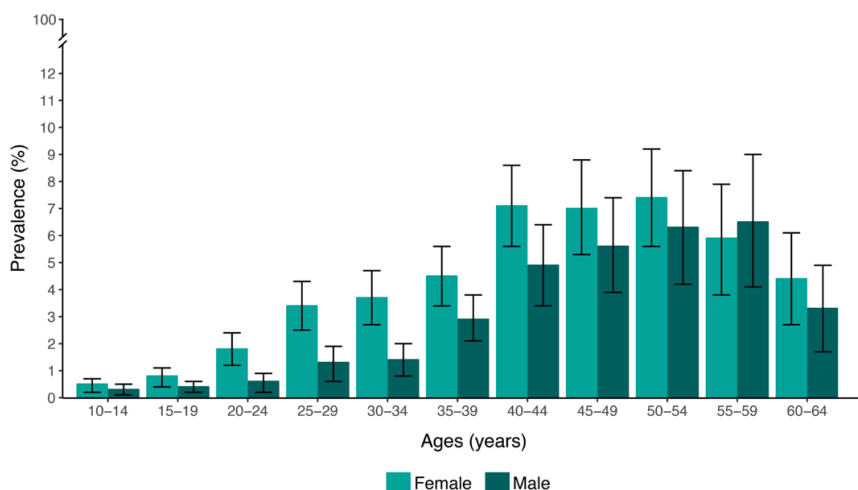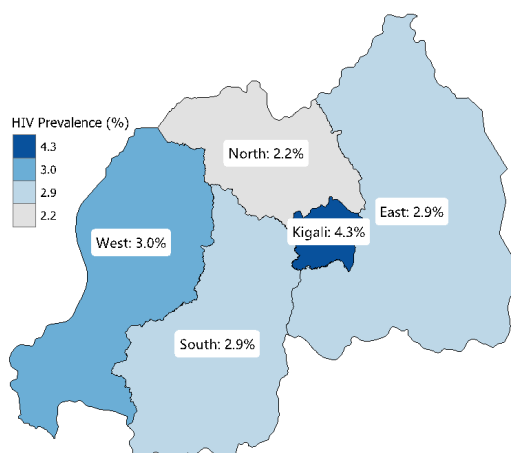

Error bars represent 95% confidence intervals, which indicate the interval within which the true population parameter is expected to fall 95% of the time.

HIV PREVALENCE AMONG ADULTS, BY PROVINCE AND RESIDENCE

Among adults (those aged 15-64 years), the

prevalence of HIV varied geographically across Rwanda, ranging from 2.2% in the North to 4.3% in the City of Kigali. HIV prevalence was 1.9 times higher in urban areas compared to rural areas.

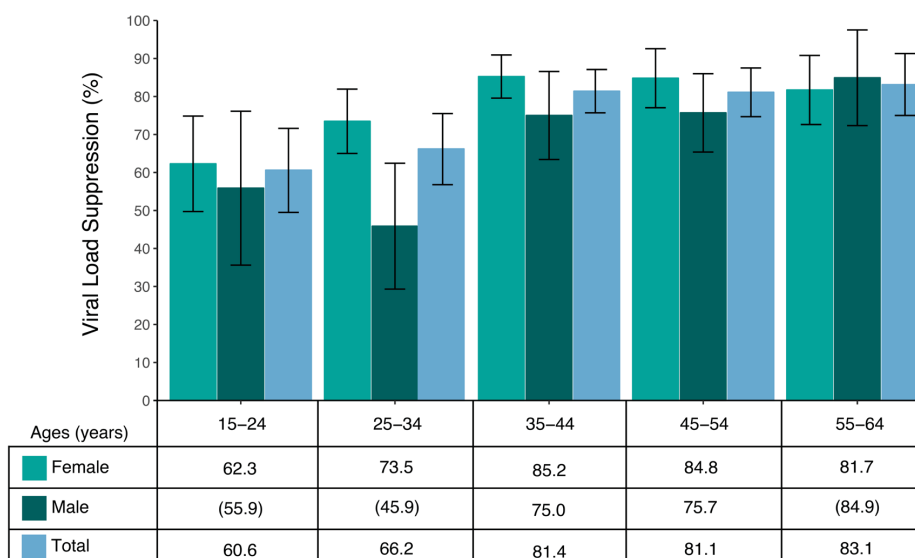| Province	HIV Prevalence (%)	95% CI
City of Kigali	4.3	3.5-5.1
South	2.9	2.2-3.6
West	3.0	2.2-3.9
North	2.2	1.8-2.6
East	2.9	2.2-3.7
Residence		
Urban	4.8	4.0-5.7
Rural	2.5	2.2-2.8
Overall	3.0	2.7-3.3

95% CI (confidence interval) indicates the interval within which the true population parameter is expected to fall 95% of the time.

VIRAL LOAD SUPPRESSION AMONG HIV-POSITIVE ADULTS, BY AGE AND SEX

For HIV-positive women in Rwanda, prevalence of VLS was highest among those aged 35-44 years (85.2%) and lowest in those aged 15-24 years (62.3%). The highest prevalence of VLS in HIV-positive men was found among those aged 55-64

years (84.9%) and the lowest in those aged 25-34 years (45.9%), however, these estimates are based on a small number of observations and should be interpreted with caution.

Error bars represent 95% confidence intervals, which indicate the interval within which the true population parameter is expected to fall 95% of the time. () Estimates based on 25-49 observations are included in parentheses and should be interpreted with caution.

| Ages (years)	15–24	25–34	35–44	45–54	55–64
Female	62.3	73.5	85.2	84.8	81.7
Male	(55.9)	(45.9)	75.0	75.7	(84.9)
Total	60.6	66.2	81.4	81.1	83.1

VIRAL LOAD SUPPRESSION AMONG HIV-POSITIVE ADULTS, BY PROVINCE

Among HIV-positive adults (those aged 15-64 years), prevalence of VLS varied geographically across Rwanda, ranging from 66.7% in the East to 79.6% in the North.

Province	VLS Prevalence (%)	95% CI
City of Kigali	77.4	72.2-82.6
South	79.2	70.6-87.8
West	78.7	71.6-85.8
North	79.6	70.7-88.5
East	66.7	56.6-76.9
Overall	76.0	72.0-80.0

VLS: Viral load suppression.95% CI (confidence interval) indicates the interval within which the true population parameter is expected to fall 95% of the time.
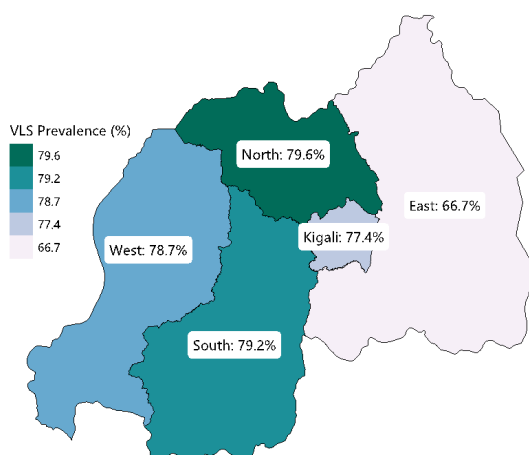
ACHIEVEMENT OF THE 90-90-90 GOALS AMONG HIV-POSITIVE ADULTS, BY SEX

90–90–90: an ambitious treatment target to help end the AIDS epidemic

The Joint United Nations (UN) Program on HIV/AIDS (UNAIDS) and HIV-affected countries have set the 90-90-90 targets that by 2020, 90% of all people living with HIV will know their HIV status; 90% of all people with diagnosed HIV infection will receive sustained ART; and 90% of all people receiving ART will have VLS.

Diagnosed

In Rwanda, 83.8% of HIV-positive adults (those aged 15-64 years) were aware of their HIV-positive status (based upon self-report or the detection of ARVs): 85.6% of HIV-positive women and 80.4% of HIV-positive men.

On Treatment

Among diagnosed1 adults living with HIV, 97.5% were on ART (based upon self-report or the detection of ARVs): 97.6% of HIV-positive women and 97.2% of HIV-positive men.

Viral Load Suppression Achieved

Among adults currently on ART,2 90.1% achieved VLS: 92.4% of HIV-positive women and 85.4% of HIV-positive men.
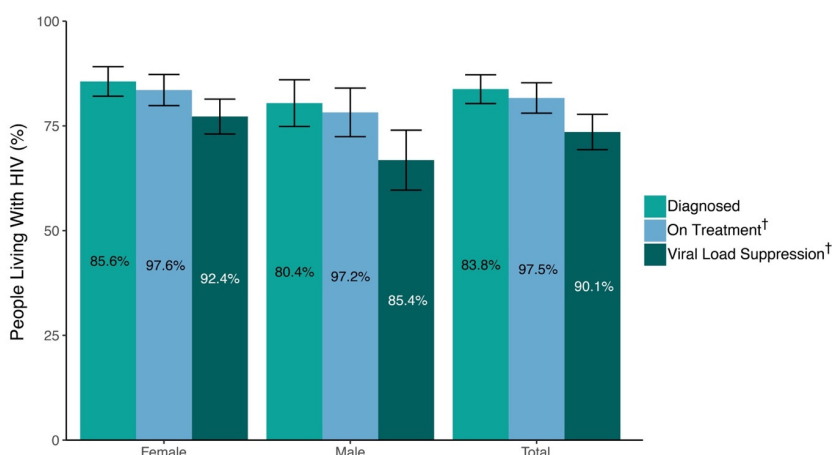
Error bars represent 95% confidence intervals, which indicate the interval within which the true population parameter is expected to fall 95% of the time.
The height of the bars represents population-level coverage of each indicator, among all people living with HIV.
† Inset numbers are the proportions shown in the text above. See text above.
1 Diagnosed: self-reported as HIV-positive or with detectable ARVs.
*2 Currently on ART: self-reported current ARVs usage or with detectable ARVs.*

PREVALENCE OF MEDICAL MALE CIRCUMCISION AMONG ADULTS, BY PROVINCE

Overall, the prevalence of self-reported medical male circumcision (MMC) among men aged 15-64 years was 39.9%. Prevalence of MMC ranged from 30.2% in the South to 62.1% in the City of Kigali. Prevalence of self-reported MMC was highest among young men aged 20-24 years, at 56.6%, and lowest among older men aged 60-64 years (10.2%).

Province	MMC Prevalence (%)	95% CI
City of Kigali	62.1	59.5-64.6
South	30.2	26.6-33.8
West	44.2	40.1-48.3
North	35.9	31.9-39.9
East	36.0	31.7-40.3
Overall	**39.9**	**38.1-41.6**

MMC: Medical male circumcision
95% CI (confidence interval) indicates the interval
within which the true population parameter
is expected to fall 95% of the time.
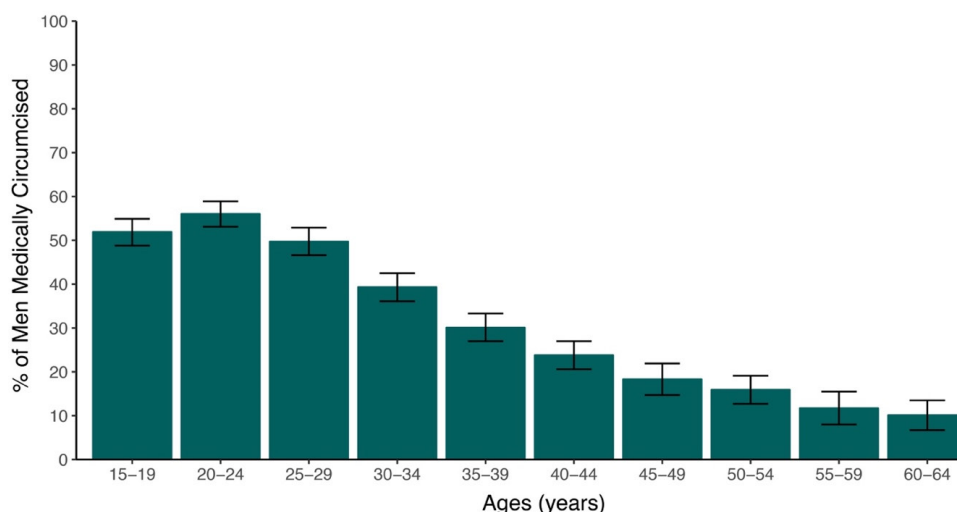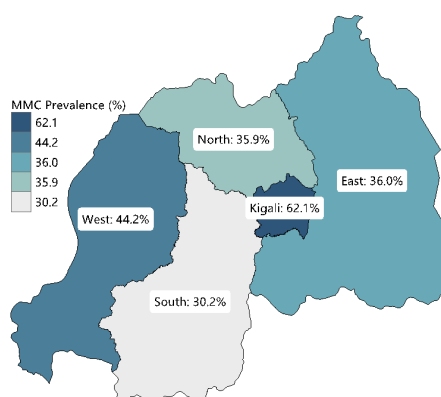
Error bars represent 95% confidence intervals, which indicate the interval within which the true population parameter is expected to fall 95% of the time.

CONCLUSIONS

Annual HIV incidence among adults 15-64 years in Rwanda is 0.08%. The very low incidence measured through RPHIA is reflective of a successful national HIV program. Prevalence of HIV among adults was 3.0%.

Prevalence of community VLS among the overall population of HIV-positive adults in Rwanda is 76%. These results indicate that Rwanda has achieved the UNAIDS 90-90-90 target for VLS of 73% (the product of 90*90*90) among adults living with HIV.

Rwanda's national HIV program efforts have resulted in remarkable progress towards the UNAIDS 90-90-90 goals. The largest gap to achieving epidemic control is in HIV diagnosis.

RPHIA results indicate high levels of linkage to treatment and VLS.

The relatively low proportions of VLS in the East and in men particularly men in the younger age groups are actionable results for tailoring interventions to close the gaps in epidemic control in Rwanda.

The first national prevalence estimates for viral hepatitis among adults 15-64 years were 2.3% for acute or chronic hepatitis B and 1.2% for past or current hepatitis C. These are the first national estimates of the prevalence of acute or chronic hepatitis B and past or current hepatitis C in Rwanda and will be foundational for developing the national hepatitis response.

RESPONSE RATES AND HIV TESTING METHODS

Of 11,339 eligible households, 98.9% completed a household interview. Of 17,003 eligible women and 14,025 eligible men aged 15-64 years, 99.1% of women and 98.3% of men were interviewed and tested for HIV. Of 8,655 eligible young adolescents aged 10-14 years, 99.4% were tested for HIV.

HIV prevalence testing was conducted in each household using a rapid diagnostic testing algorithm based on Rwanda's national guidelines, with laboratory confirmation of seropositive samples using a supplemental assay. A laboratory-based incidence testing algorithm (HIV-1 LAg avidity plus viral load and ARV detection) was used to distinguish recent (within the last year) from long-term infection, and incidence estimates were obtained using the formula recommended by the WHO Incidence Working Group and Consortium for Evaluation and Performance of Incidence Assays, and were calculated using the following parameters: mean duration of recent infection (MDRI) of 130 days with a time cutoff (T)=1.0 year and residual proportion false recent (PFR)=0.00. Survey weights are utilized for all estimates.

The PHIA Project is a multi-country project funded by PEPFAR to conduct national HIV-focused surveys that describe the status of the HIV epidemic. Results will measure important national and regional HIV-related parameters, including progress toward UNAIDS 90-90-90 goals, and will guide policy and funding priorities. ICAP at Columbia University is implementing the PHIA Project in close collaboration with GoR, CDC and other partners.

See phia.icap.columbia.edu for more details.