



Rwanda

# Public Health Bulletin

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## HIGHLIGHTS

1. Rwanda COVID-19 Vaccination Program Implementation
2. Rwanda COVID-19 Vaccination Success Story
3. HIV/AIDS Awareness, Knowledge and Behavior: 2019-20 RDHS Key Findings
4. Child Health and Nutrition: 2019-20 RDHS Key Findings



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# Public Health Bulletin

## General Information

Rwanda Public Health Bulletin (RPHB) is an open-access and peer-reviewed bulletin published by Rwanda Health Communication Centre (RHCC).

Its mission is to serve as a knowledge sharing platform for national and international public health scientific information. Content published under RPHB will be used to control and address potential public health outbreak threats and strengthen health systems through real time availability of information.

This will allow more and effective communication between policy makers, researchers and health practitioners.

A new issue is published quarterly with supplements and special reports. Publication materials are submitted online at <https://www.rbc.gov.rw/publichealthbulletin/manuscripts/submission> and should fulfil the RPHB's instructions.

Go to <https://www.rbc.gov.rw/publichealthbulletin/about/instructions> for instructions to authors.

Scientific scholars who would like to join RPHB and become peer reviewers are welcome. They can find more details at <https://www.rbc.gov.rw/publichealthbulletin/about/reviewers>

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# Public Health Bulletin

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Dear Readers,

I take this opportunity to thank the readers of the Rwanda Public Health Bulletin (RPHB) for the continuous support in the publication of the bulletin.

The world has been through constant public health alert with multiple interventions to limit the rapid progress of COVID-19, the organization of treatment sites and case management of COVID-19, and the implementation of strategies and policies to contain and prevent the disease. In addition, Africa is recording the 3rd wave of the rise of COVID-19 cases with an increasing impact of lockdown measures on the economy.

In Rwanda, the pandemic is getting more stabilized with fewer new cases, and locally contained outbreaks in some parts of the country are under control for disease progression. We appreciate all health professionals' efforts, the dynamic institutionalization of the management of this pandemic across the treatment sites, and the sacrifices of frontline clinicians and public health experts. We commend their contributions to the fight against COVID-19, and we assure the continuous support from the Rwandan government agencies and our partners in the health sector.

In this issue, you will get updates on the pandemic's current status and the progress of vaccination campaigns against COVID-19 in Rwanda. I believe the information transmitted will be resourceful to your works, and reinforce your endeavor to support the fight against COVID-19.

I would like to encourage you to share relevant data and information related to public health issues and keep fully engaged in the fight against COVID-19 as it continues claiming more lives worldwide.

Together, we shall overcome COVID-19.

A handwritten signature in black ink, appearing to be 'S. Nsanzimana', written over a faint, light blue circular watermark that matches the RPHB logo.

Dr. Sabin Nsanzimana, MD, PhD  
Director General  
Rwanda Biomedical Centre



Dear Colleagues,

I would like to appreciate your continued interest in the RPHB content. Coming back to this platform and providing your feedback brings growth and allows us to produce more relevant content in following issues.

As the world progresses towards a post-pandemic era with the global introduction of vaccines, it is my hope that most health care workers/ public health experts are resuming their routine work. The bulletin therefore seeks to keep you informed and updated on the most pressing national and global issues and progresses as well as innovations.

This issue contains information on the implementation and success story of Rwanda's COVID-19 vaccination roll outs, 2019-2020 Rwanda Demographic and Health Survey (RDHS) key findings on HIV/ AIDS and child health as well as nutrition.

To continue to enlarge the community of Rwanda's local public health writers, the bulletin is organizing a workshop to train trainers on scientific writing. This approach will help to ensure that more local-publishable contents are available to sustain the bulletin. A formal invitation, an agenda and application details will shortly be shared after the release of this issue on the RPHB website.

We hope that once you have completed this training, you are able to produce publishable contents and consider the RPHB a platform worth sharing your work on.

Until next, enjoy your read!

Sincerely,

A handwritten signature in black ink, appearing to be 'L. Mutesa'.

Prof. Leon Mutesa, MD, PhD  
Editor-in-Chief

# Rwanda COVID-19 Vaccination Program Implementation

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## INTRODUCTION

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With more than 118.3 million cases and more than 2.6 million deaths from coronavirus disease 2019 (COVID-19) worldwide [1] and more than 20,000 total cases and 275 deaths in Rwanda, efforts have been made to ensure global and non-discriminatory access to the vaccine [2]. COVID-19 vaccines help develop immunity to the virus that causes COVID-19 by making the human body produce memory T-lymphocytes and B-lymphocytes [3] that will remember how to fight that virus when attacked and effectively eliminate the viruses [4].

As vaccination campaigns are underway in different countries, as of 9 March 2021, 300 million vaccine doses have been administered [1]. Rwanda was not left behind in the fight against the pandemic and is among the first African countries to have started the COVID-19 vaccination campaign [5,6].

## COVID-19 VACCINATION PROCUREMENT

Towards the end of 2020, the Government of Rwanda had already applied for different vaccines, including Pfizer/BioNTech, Moderna and AstraZeneca vaccines, among others and had also submitted all required documents to COVAX, a framework aimed to ensure equitable access and fair allocation of COVID-19 health products [7]. Rwanda ordered 1 million doses of COVID-19 vaccines in its first emergency phase of vaccination. The primary beneficiaries are people at high risk, such as health professionals, people with comorbidity, and the elderly with 65 years and above [6,7]. Rwanda set up infrastructures such as procuring ultra-cold freezers and containers for each of the 4 provinces for proper

storage and distribution of vaccines. Facilities for easy transport, protocols, and personnel were prepared for better roll outs of COVID-19 vaccination campaigns [6,8]. Rwanda received the first batch of 1,000 COVID-19 vaccine doses in mid-February 2021 from Moderna [8]. On 3 March 2021, Rwanda received 240,000 doses of the AstraZeneca-Oxford and 102,960 doses of the Pfizer vaccine through the COVAX initiative. It became the first African country to use the Pfizer vaccine (Figure 1) [9,10]. Other 50,000 more doses donated by India were also received [11].

## NATIONAL COVID-19 VACCINE ROLLOUT

Rwanda started the emergency phase of COVID-19 vaccination with 1,000 COVID-19 vaccine doses

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from Moderna that were immediately administered to the frontliners [4].



**Figure 1:** Rwanda health minister, Dr Daniel Ngamije (third from left) receiving COVID-19 Vaccines through COVAX at Kigali International Airport (Adapted from WHO Africa [News](#), 3 March, 2021).

In this phase, people at high risk are vaccinated for free (Figure 2A) [9]. These include healthcare professionals, community health workers, people with disabilities, people with comorbidities, the elderly 65 years and above, prisoners, taximoto and cab drivers, airport staff, traders and security guards [8,10,11].

Rwanda national vaccine plan also covers all refugees and asylum-seekers who live in Rwanda [11] and, by 12 March 2021, refugees who work for health services across the six refugee camps in Rwanda and all adult refugees at the Gashora Emergency Transit Mechanism center were vaccinated (Figure 2B) [12].

By 12 March 2021, Rwanda had vaccinated over 249,000 people countrywide against coronavirus, a week since the vaccination campaign launch [13]. Rwanda's government continues negotiations with partners, including international organizations and other governments, to acquire additional vaccines



**Figure 2:** A) A nurse receiving her COVID-19 vaccination (Adapted from [RBC.gov.rw](#), 13 March 2021). B) A refugee receiving his COVID-19 vaccination at the Gashora Emergency Transit Mechanism center, Rwanda (Adapted from UNHCR [News](#), 12 March 2021).

to cover more people [10] with the plan to vaccinate 8 million people in 2 years [8].

In conclusion, getting vaccinated is one of many preventive measures against the COVID-19 pandemic. Vaccination is the only solution available to protect oneself and others and eradicate the pandemic. Vaccines enable the immune system to be ready to fight the virus causing COVID-19. It takes some weeks for the body to produce enough antibodies to fight the disease. Therefore, if vaccinated with the first dose, preventive measures and precautions should be maintained till some weeks after receiving the second dose, which marks complete vaccine against COVID-19.

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# Rwanda COVID-19 Vaccination Success Story

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## INTRODUCTION

From late 2019 when the coronavirus disease (COVID-19) emerged, there were concerns about African countries' ability to withstand the pandemic [1]. As the pandemic was severely affecting Europe and America, overwhelming their healthcare systems. Experts started warning that Africa's weak healthcare systems would not be able to cope [2]. However, a number of African countries, including Rwanda, managed to effectively control the pandemic compared to many advanced countries [3,2]. After the development of COVID-19 vaccines, wealthy countries raced to procure enough doses and this left low-income countries unable to have access to enough vaccines. African countries were able to secure and receive COVID-19 vaccines through COVAX (the COVID-19 global access initiative, co-led by GAVI, the WHO and CEPI) and others [3]. Among the few countries, Rwanda served as an exemplar in controlling the pandemic and conducting successful COVID-19 vaccine rollout during the first quarter of 2021 [5].

## COORDINATION

Prior to the arrival of the first vaccines, the Joint Task Force Committee (JTFC) and the scientific advisory group for COVID-19 vaccination began establishing possible decentralised strategies for quick and effective rollout [6]. Decisions made for mitigations were decentralized across ministries and local authorities, down to village leaders and Community Health Workers (CHWs) [8]. This approach led to the successful transport of vaccines from central distribution hubs in Kigali to remote areas of the country within 24 hours following vaccines' arrival (Figure 1) [5].

## NATIONWIDE DEMOGRAPHIC SCREENING AND PRIORITIZATION

Rwanda's health system follows a decentralized model with emphasis on community involvement [5]. With the help of CHWs and village leaders, surveys were conducted to collect updated demographic information on community members and household structures [3].

Collected data were used to draw vaccination priority lists. Among key populations/groups were target healthcare workers, the elderly population, people with comorbidities and disabilities, teachers, prisoners and refugees within the first

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hours of the countrywide vaccine rollout [3,9,10].

## STRATEGIC AND SETTING BASED VACCINE ALLOCATIONS

Rwanda acquired 437 new refrigerators before the arrival of vaccines in preparation for adequate storage. Upon arrival on March 3rd 2021, Astra-Zeneca vaccines that require 2 to 8 degree Celsius storage temperature [11], were allocated to remote settings without freezers [3,7].



**Figure 1:** Rwanda ministry of defence helicopter transporting vaccines to remote regions (Adapted from Rwanda Ministry of Health twitter: @RwandaHealth, March 4, 2021).

Meanwhile, Pfizer vaccines that require freezing temperatures (-25 to -15 degrees Celsius) were distributed in the capital city, Kigali, which has the infrastructure to ensure safe storage (Figure 2) [3,12].



**Figure 2:** COVID-19 vaccines distribution to different healthcare facilities (Adapted from Rwanda Ministry of Health twitter: @RwandaHealth, March 4, 2021).

## TRAINING OF HEALTHCARE WORKERS

Healthcare workers were trained on national vaccination rollout guidelines, including hospital directors, doctors, nurses, data managers, surveillance officers, and HCWs, depending on their contribution to service delivery and data management [8].

Staff, logistics, supplies and digital tools for real-time tracking were allocated to all vaccination sites to ensure effective rollout and proper monitoring [3].

## COMMUNICATION WITH THE PUBLIC

Rwanda's decentralized healthcare system became pivotal in effective communication to the public since the COVID-19 outbreak declaration in late 2019 [13]. CHWs and village leaders have assisted in educating citizens on prevention measures. When Rwanda was preparing to receive the vaccines, they helped inform the population on the importance and safety of vaccination, addressed myths [5].

In addition, the Government of Rwanda used the media, particularly radio, newspapers and TV interviews as well as social media to keep the population informed and updated (Figure 3).



**Figure 3:** Rwanda Biomedical Center (Left) in interview about COVID vaccination on national TV (RTV) (Adapted from RwandaTV, March 15, 2021).

Key messages were on ensuring citizen about vaccines' safety, criteria of the priority group, vaccination process and settings and significance of vaccination [3,8].

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# HIV/AIDS Awareness, Knowledge and Behavior: Rwanda Demographic and Health Survey (RDHS) Key Findings

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## INTRODUCTION

The 2019-20 Rwanda Demographic and Health Survey (RDHS) is the sixth Demographic and Health Survey (DHS) conducted in Rwanda, following those implemented in 1992, 2000, 2005, 2010, and 2014-15. The National Institute of Statistics (NISR), in collaboration with the Ministry of Health (MOH), implemented the survey. Data collection took place from November 9, 2019, to July 20, 2020. The data collection was interrupted for more than 2 months from March 21 to June 7, 2020, due to the nationwide lockdown for the coronavirus disease (COVID-19) pandemic. Funding for the 2019-20 RDHS was provided by the Government of Rwanda, the United States Agency for International Development (USAID), the United Nations (ONE UN), the Centers for Disease Control and Prevention (CDC), the United Nations Children's Fund (UNICEF), the United Nations Population Fund (UNFPA), UNWOMEN, and Enabel. ICF provided technical assistance through The DHS Program, which assists countries in the collection of data to monitor and evaluate population, health, and nutrition programs.

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## KNOWLEDGE OF HIV PREVENTION

The 2019-20 (RDHS) included a series of questions asked of both women and men that addressed respondents' knowledge of HIV prevention, awareness of modes of HIV transmission, and behaviors that can prevent the spread of HIV.

Nearly all women (99.7%) and men (99.9%) have heard of AIDS. Table 1 shows that 92% of women and 95% of men age 15-49 know that consistent use of condoms is a means of preventing the spread of HIV. Eighty-nine percent of women and 87% of men know that limiting sexual intercourse to one faithful, uninfected partner can reduce the chance of contracting HIV.

Finally, 83% of women and men, each, know that both using condoms and limiting sexual intercourse to one uninfected partner are means of preventing HIV.

## COMPREHENSIVE KNOWLEDGE ABOUT HIV PREVENTION AMONG YOUNG PEOPLE

Table 2 presents information about comprehensive knowledge of HIV prevention among young people age 15-24. Comprehensive knowledge of HIV prevention is defined as knowing that both condom use and limiting sexual intercourse to one uninfected partner are HIV prevention methods, knowing that a healthy-looking person can have HIV, and rejecting the two most common local misconceptions about HIV transmission: that HIV can be transmitted by mosquito bites and by sharing food with a person who has HIV. Knowledge of how HIV is transmitted is crucial in enabling people to avoid HIV infection.

Table 2 shows that 59% of young women and 57% of young men have comprehensive knowledge of

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**Table 1: Knowledge of HIV prevention methods**

| Background characteristic | Percentage of women who say HIV can be prevented by: |                                                                    |                                                                                      |                 | Percentage of men who say HIV can be prevented by: |                                                                    |                                                                                      |               |
|---------------------------|------------------------------------------------------|--------------------------------------------------------------------|--------------------------------------------------------------------------------------|-----------------|----------------------------------------------------|--------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------|
|                           | Using condoms <sup>1</sup>                           | Limiting sexual intercourse to one uninfected partner <sup>2</sup> | Using condoms and limiting sexual intercourse to one uninfected partner <sup>2</sup> | Number of women | Using condoms <sup>1</sup>                         | Limiting sexual intercourse to one uninfected partner <sup>2</sup> | Using condoms and limiting sexual intercourse to one uninfected partner <sup>2</sup> | Number of men |
| <b>Age</b>                |                                                      |                                                                    |                                                                                      |                 |                                                    |                                                                    |                                                                                      |               |
| 15-24                     | 90.3                                                 | 87.2                                                               | 80.4                                                                                 | 5,672           | 93.1                                               | 85.5                                                               | 81.1                                                                                 | 2,486         |
| 15-19                     | 89.1                                                 | 85.9                                                               | 78.6                                                                                 | 3,258           | 92.5                                               | 84.5                                                               | 80.1                                                                                 | 1,526         |
| 20-24                     | 92.0                                                 | 89.0                                                               | 82.8                                                                                 | 2,414           | 94.1                                               | 86.9                                                               | 82.7                                                                                 | 960           |
| 25-29                     | 93.2                                                 | 89.6                                                               | 84.7                                                                                 | 2,073           | 95.7                                               | 89.1                                                               | 85.5                                                                                 | 710           |
| 30-39                     | 93.7                                                 | 89.8                                                               | 85.1                                                                                 | 4,190           | 96.0                                               | 89.1                                                               | 86.0                                                                                 | 1,628         |
| 40-49                     | 93.8                                                 | 89.4                                                               | 85.3                                                                                 | 2,699           | 95.2                                               | 85.4                                                               | 81.8                                                                                 | 1,022         |
| <b>Residence</b>          |                                                      |                                                                    |                                                                                      |                 |                                                    |                                                                    |                                                                                      |               |
| Urban                     | 92.7                                                 | 83.2                                                               | 78.8                                                                                 | 2,909           | 95.6                                               | 91.0                                                               | 87.9                                                                                 | 1,115         |
| Rural                     | 92.2                                                 | 90.0                                                               | 84.4                                                                                 | 11,725          | 94.3                                               | 85.9                                                               | 82.0                                                                                 | 4,731         |
| <b>Province</b>           |                                                      |                                                                    |                                                                                      |                 |                                                    |                                                                    |                                                                                      |               |
| Kigali                    | 91.3                                                 | 80.3                                                               | 74.1                                                                                 | 2,166           | 95.2                                               | 95.7                                                               | 92.5                                                                                 | 879           |
| South                     | 92.0                                                 | 92.9                                                               | 86.8                                                                                 | 3,065           | 94.6                                               | 88.8                                                               | 84.9                                                                                 | 1,239         |
| West                      | 92.4                                                 | 89.9                                                               | 83.8                                                                                 | 3,174           | 94.7                                               | 88.4                                                               | 84.0                                                                                 | 1,268         |
| North                     | 92.2                                                 | 88.6                                                               | 83.7                                                                                 | 2,226           | 93.8                                               | 77.2                                                               | 73.7                                                                                 | 886           |
| East                      | 93.2                                                 | 89.1                                                               | 84.8                                                                                 | 4,003           | 94.7                                               | 84.8                                                               | 81.1                                                                                 | 1,574         |
| <b>Education</b>          |                                                      |                                                                    |                                                                                      |                 |                                                    |                                                                    |                                                                                      |               |
| No education              | 91.9                                                 | 91.0                                                               | 85.0                                                                                 | 1,377           | 94.5                                               | 87.4                                                               | 83.9                                                                                 | 420           |
| Primary                   | 91.6                                                 | 89.1                                                               | 83.1                                                                                 | 8,363           | 93.8                                               | 87.1                                                               | 82.7                                                                                 | 3,471         |
| Secondary                 | 93.4                                                 | 88.3                                                               | 83.6                                                                                 | 4,252           | 95.6                                               | 86.1                                                               | 83.2                                                                                 | 1,659         |
| More than secondary       | 96.2                                                 | 81.1                                                               | 78.9                                                                                 | 642             | 98.3                                               | 88.5                                                               | 87.0                                                                                 | 295           |
| <b>Wealth quintile</b>    |                                                      |                                                                    |                                                                                      |                 |                                                    |                                                                    |                                                                                      |               |
| Lowest                    | 90.3                                                 | 91.0                                                               | 83.8                                                                                 | 2,741           | 93.3                                               | 85.3                                                               | 80.8                                                                                 | 924           |
| Second                    | 90.6                                                 | 89.6                                                               | 83.4                                                                                 | 2,756           | 94.5                                               | 85.2                                                               | 81.5                                                                                 | 1,076         |
| Middle                    | 93.6                                                 | 89.4                                                               | 85.0                                                                                 | 2,757           | 94.8                                               | 86.3                                                               | 82.4                                                                                 | 1,227         |
| Fourth                    | 93.7                                                 | 90.3                                                               | 85.5                                                                                 | 2,966           | 93.9                                               | 86.7                                                               | 82.7                                                                                 | 1,278         |
| Highest                   | 93.2                                                 | 84.2                                                               | 79.3                                                                                 | 3,414           | 96.1                                               | 90.2                                                               | 87.2                                                                                 | 1,342         |
| Total 15-49               | 92.3                                                 | 88.7                                                               | 83.3                                                                                 | 14,634          | 94.6                                               | 86.9                                                               | 83.1                                                                                 | 5,846         |
| 50-59                     | na                                                   | na                                                                 | na                                                                                   | na              | 93.1                                               | 91.0                                                               | 85.4                                                                                 | 667           |
| Total 15-59               | na                                                   | na                                                                 | na                                                                                   | na              | 94.4                                               | 87.3                                                               | 83.4                                                                                 | 6,513         |

Percentage of women and men age 15-49 who, in response to prompted questions, say that people can reduce the risk of getting HIV by using condoms every time they have sexual intercourse and by having one sex partner who is not infected and has no other partners, according to background characteristics, Rwanda DHS 2019-20.

na = Not applicable, <sup>1</sup>Using condoms every time they have sexual intercourse, <sup>2</sup>Partner who has no other partners, Ages were in years.

HIV prevention. Ever-married young women and men are slightly more likely to be knowledgeable about HIV prevention than young women and men who had never married. Among both sexes, the proportion with knowledge generally increases with age and educational attainment. Urban young people are slightly more likely than rural young people to have knowledge of HIV prevention.

## MULTIPLE SEXUAL PARTNERS

Limiting the number of sexual partners and practicing protected sex are crucial in the fight against the spread of sexually transmitted

infections, including HIV. Respondents to the 2019-20 RDHS were asked detailed questions about their sexual behavior, including the number of partners they had in the 12 months preceding the survey and condom use during their most recent sexual encounter. Table 3 shows that only 1% of women reported having multiple sexual partners in the 12 months preceding the survey and 9% reported having sexual intercourse with a person who was neither their husband nor lived with them. Fifteen percent each of never-married women and 27% of divorced, separated, or widowed women had sexual intercourse with a person who was neither their husband nor lived with them. Among

**Table 2: Knowledge about HIV prevention among young people**

| Background characteristic | Women age 15-24                                             |                 | Men age 15-24                                               |               |
|---------------------------|-------------------------------------------------------------|-----------------|-------------------------------------------------------------|---------------|
|                           | Percentage with knowledge about HIV prevention <sup>1</sup> | Number of women | Percentage with knowledge about HIV prevention <sup>1</sup> | Number of men |
| <b>Age</b>                |                                                             |                 |                                                             |               |
| 15-19                     | 54.3                                                        | 3,258           | 54.7                                                        | 1,526         |
| 15-17                     | 52.4                                                        | 2,158           | 53.8                                                        | 1,001         |
| 18-19                     | 58.1                                                        | 1,100           | 56.3                                                        | 525           |
| 20-24                     | 65.0                                                        | 2,414           | 61.6                                                        | 960           |
| 20-22                     | 63.3                                                        | 1,470           | 59.9                                                        | 612           |
| 23-24                     | 67.6                                                        | 943             | 64.5                                                        | 348           |
| <b>Marital status</b>     |                                                             |                 |                                                             |               |
| Never married             | 57.3                                                        | 4,732           | 57.2                                                        | 2,346         |
| Ever had sex              | 60.2                                                        | 1,151           | 61.5                                                        | 707           |
| Never had sex             | 56.3                                                        | 3,582           | 55.4                                                        | 1,639         |
| Ever married              | 66.7                                                        | 940             | 59.3                                                        | 140           |
| <b>Residence</b>          |                                                             |                 |                                                             |               |
| Urban                     | 60.3                                                        | 1,140           | 64.7                                                        | 462           |
| Rural                     | 58.5                                                        | 4,532           | 55.7                                                        | 2,024         |
| <b>Province</b>           |                                                             |                 |                                                             |               |
| Kigali                    | 56.3                                                        | 809             | 64.2                                                        | 344           |
| South                     | 60.6                                                        | 1,150           | 63.0                                                        | 526           |
| West                      | 54.5                                                        | 1,215           | 56.2                                                        | 560           |
| North                     | 56.8                                                        | 879             | 46.8                                                        | 373           |
| East                      | 63.3                                                        | 1,619           | 56.2                                                        | 683           |
| <b>Education</b>          |                                                             |                 |                                                             |               |
| No education              | 49.1                                                        | 77              | (33.0)                                                      | 49            |
| Primary                   | 52.6                                                        | 2,778           | 52.4                                                        | 1,336         |
| Secondary                 | 65.1                                                        | 2,691           | 63.8                                                        | 1,051         |
| More than secondary       | 69.1                                                        | 126             | 78.2                                                        | 50            |
| Total 15-24               | 58.8                                                        | 5,672           | 57.4                                                        | 2,486         |

*Percentage of young women and young men age 15-24 with comprehensive knowledge about HIV prevention, according to background characteristics, Rwanda DHS 2019-20.*

*<sup>1</sup>Knowledge about HIV prevention means knowing that consistent use of condoms during sexual intercourse and having just one uninfected faithful partner can reduce the chance of getting HIV; knowing that a healthy looking person can have HIV, and rejecting the two most common local misconceptions about transmission or prevention of HIV. Age was calculated in years.*

women who had multiple sexual partners in the 12 months preceding the survey, 45% used a condom during their last sexual intercourse. Similarly, 46% of women who had sexual intercourse with a person who was neither their husband nor lived with them used a condom during their last sexual intercourse. Women in Rwanda have had an average of 1.7 sexual partners in their lifetime.

Table 4 shows that 6% of men age 15-49 reported having had two or more sexual partners during the

12 months prior to the survey, while 12% reported that they had sexual intercourse with a person who was neither their wife nor lived with them. Among men who had two or more sexual partners in the 12 months prior to the survey, 29% reported using a condom during their last sexual intercourse. Seventy percent of men who had sexual intercourse with a person who was neither their wife nor lived with them used a condom during their last sexual intercourse. Men age 15-49 in Rwanda have had an average of 2.8 sexual partners in their lifetime.

**Table 3: Multiple sexual partners and higher-risk sexual intercourse in the past 12 months: Women**

| Background characteristic  | All women                                            |                                                                                                                      |                 | Women who had 2+ partners in the past 12 months                       |                 | Women who had intercourse in the past 12 months with a person who was neither their husband nor lived with them |                 | Women who ever had sexual intercourse <sup>1</sup> |                 |
|----------------------------|------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------------------------------------------------|-----------------|-----------------------------------------------------------------------------------------------------------------|-----------------|----------------------------------------------------|-----------------|
|                            | Percentage who had 2+ partners in the past 12 months | Percentage who had intercourse in the past 12 months with a person who was neither their husband nor lived with them | Number of women | Percentage who reported using a condom during last sexual intercourse | Number of women | Percentage who reported using a condom during last sexual intercourse with such a partner                       | Number of women | Mean number of sexual partners in lifetime         | Number of women |
| <b>Age</b>                 |                                                      |                                                                                                                      |                 |                                                                       |                 |                                                                                                                 |                 |                                                    |                 |
| 15-24                      | 1.2                                                  | 10.1                                                                                                                 | 5,672           | 44.8                                                                  | 69              | 45.7                                                                                                            | 576             | 1.8                                                | 2,089           |
| 15-19                      | 0.6                                                  | 6.1                                                                                                                  | 3,258           | *                                                                     | 21              | 42.8                                                                                                            | 199             | 1.6                                                | 539             |
| 20-24                      | 2.0                                                  | 15.6                                                                                                                 | 2,414           | (45.4)                                                                | 49              | 47.3                                                                                                            | 377             | 1.8                                                | 1,550           |
| 25-29                      | 2.3                                                  | 12.2                                                                                                                 | 2,073           | (49.5)                                                                | 48              | 52.0                                                                                                            | 252             | 1.7                                                | 1,853           |
| 30-39                      | 1.3                                                  | 7.1                                                                                                                  | 4,190           | 44.8                                                                  | 54              | 44.9                                                                                                            | 296             | 1.8                                                | 4,059           |
| 40-49                      | 0.8                                                  | 6.4                                                                                                                  | 2,699           | *                                                                     | 21              | 39.1                                                                                                            | 174             | 1.7                                                | 2,667           |
| <b>Marital status</b>      |                                                      |                                                                                                                      |                 |                                                                       |                 |                                                                                                                 |                 |                                                    |                 |
| Never married              | 1.4                                                  | 14.7                                                                                                                 | 5,914           | 61.0                                                                  | 85              | 47.5                                                                                                            | 869             | 2.1                                                | 1,956           |
| Married/living together    | 0.7                                                  | 1.1                                                                                                                  | 7,401           | (10.0)                                                                | 53              | 46.0                                                                                                            | 78              | 1.4                                                | 7,397           |
| Divorced/separated/widowed | 4.1                                                  | 26.5                                                                                                                 | 1,318           | (55.0)                                                                | 54              | 42.0                                                                                                            | 349             | 2.8                                                | 1,316           |
| <b>Residence</b>           |                                                      |                                                                                                                      |                 |                                                                       |                 |                                                                                                                 |                 |                                                    |                 |
| Urban                      | 2.5                                                  | 13.3                                                                                                                 | 2,909           | 54.6                                                                  | 73              | 58.6                                                                                                            | 386             | 2.3                                                | 2,101           |
| Rural                      | 1.0                                                  | 7.8                                                                                                                  | 11,725          | 39.5                                                                  | 120             | 40.5                                                                                                            | 911             | 1.6                                                | 8,567           |
| <b>Province</b>            |                                                      |                                                                                                                      |                 |                                                                       |                 |                                                                                                                 |                 |                                                    |                 |
| Kigali                     | 3.1                                                  | 13.3                                                                                                                 | 2,166           | 50.6                                                                  | 68              | 60.2                                                                                                            | 289             | 2.5                                                | 1,602           |
| South                      | 1.2                                                  | 8.8                                                                                                                  | 3,065           | (38.2)                                                                | 35              | 38.4                                                                                                            | 270             | 1.7                                                | 2,253           |
| West                       | 0.9                                                  | 7.2                                                                                                                  | 3,174           | (54.5)                                                                | 28              | 50.8                                                                                                            | 228             | 1.5                                                | 2,266           |
| North                      | 1.0                                                  | 7.3                                                                                                                  | 2,226           | *                                                                     | 22              | 43.8                                                                                                            | 162             | 1.5                                                | 1,620           |
| East                       | 1.0                                                  | 8.7                                                                                                                  | 4,003           | (38.5)                                                                | 39              | 37.6                                                                                                            | 349             | 1.7                                                | 2,927           |
| <b>Education</b>           |                                                      |                                                                                                                      |                 |                                                                       |                 |                                                                                                                 |                 |                                                    |                 |
| No education               | 0.8                                                  | 7.1                                                                                                                  | 1,377           | *                                                                     | 11              | 28.9                                                                                                            | 97              | 1.8                                                | 1,312           |
| Primary                    | 1.5                                                  | 9.0                                                                                                                  | 8,363           | 41.5                                                                  | 126             | 42.5                                                                                                            | 751             | 1.8                                                | 6,621           |
| Secondary                  | 1.2                                                  | 9.2                                                                                                                  | 4,252           | (62.7)                                                                | 49              | 53.6                                                                                                            | 392             | 1.7                                                | 2,246           |
| More than secondary        | 1.0                                                  | 8.8                                                                                                                  | 642             | *                                                                     | 6               | 66.7                                                                                                            | 57              | 1.5                                                | 489             |
| <b>Wealth quintile</b>     |                                                      |                                                                                                                      |                 |                                                                       |                 |                                                                                                                 |                 |                                                    |                 |
| Lowest                     | 1.3                                                  | 10.0                                                                                                                 | 2,741           | (27.1)                                                                | 36              | 28.7                                                                                                            | 274             | 1.7                                                | 2,212           |
| Second                     | 1.1                                                  | 8.4                                                                                                                  | 2,756           | (50.8)                                                                | 29              | 36.5                                                                                                            | 232             | 1.6                                                | 2,025           |
| Middle                     | 1.4                                                  | 7.0                                                                                                                  | 2,757           | (45.9)                                                                | 38              | 45.7                                                                                                            | 193             | 1.7                                                | 2,004           |
| Fourth                     | 1.5                                                  | 9.1                                                                                                                  | 2,966           | (62.9)                                                                | 45              | 56.8                                                                                                            | 271             | 1.9                                                | 2,129           |
| Highest                    | 1.3                                                  | 9.6                                                                                                                  | 3,414           | (37.6)                                                                | 44              | 58.0                                                                                                            | 327             | 1.7                                                | 2,300           |
| <b>Total</b>               | <b>1.3</b>                                           | <b>8.9</b>                                                                                                           | <b>14,634</b>   | <b>45.2</b>                                                           | <b>192</b>      | <b>45.9</b>                                                                                                     | <b>1,297</b>    | <b>1.7</b>                                         | <b>10,669</b>   |

Among all women age 15-49, percentage who had sexual intercourse with more than one sexual partner in the past 12 months, and percentage who had intercourse in the past 12 months with a person who was neither their husband nor lived with them; among those having more than one partner in the past 12 months, percentage reporting that a condom was used during last intercourse; among women age 15-49 who had sexual intercourse in the past 12 months with a person who was neither their husband nor lived with them, percentage who used a condom during last sexual intercourse with such a partner; and among women who ever had sexual intercourse, mean number of sexual partners during their lifetime, according to background characteristics, Rwanda DHS 2019-20.

**Note:** Figures in parentheses are based on 25-49 unweighted cases. An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed.

<sup>1</sup>Means are calculated excluding respondents who gave non-numeric responses, Ages were in years.

**Table 4: Multiple sexual partners and higher-risk sexual intercourse in the past 12 months: Men**

| Background characteristic      | All men                                              |                                                                                                                   |               | Men who had 2+ partners in the past 12 months                         |               | Men who had intercourse in the past 12 months with a person who was neither their wife nor lived with them |               | Men who ever had sexual intercourse <sup>1</sup> |               |
|--------------------------------|------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|---------------|-----------------------------------------------------------------------|---------------|------------------------------------------------------------------------------------------------------------|---------------|--------------------------------------------------|---------------|
|                                | Percentage who had 2+ partners in the past 12 months | Percentage who had intercourse in the past 12 months with a person who was neither their wife nor lived with them | Number of men | Percentage who reported using a condom during last sexual intercourse | Number of men | Percentage who reported using a condom during last sexual intercourse with such a partner                  | Number of men | Mean number of sexual partners in lifetime       | Number of men |
| <b>Age</b>                     |                                                      |                                                                                                                   |               |                                                                       |               |                                                                                                            |               |                                                  |               |
| 15-24                          | 2.0                                                  | 12.5                                                                                                              | 2,486         | (59.4)                                                                | 51            | 78.4                                                                                                       | 310           | 2.2                                              | 847           |
| 15-19                          | 0.7                                                  | 6.1                                                                                                               | 1,526         | *                                                                     | 10            | 75.1                                                                                                       | 93            | 1.7                                              | 280           |
| 20-24                          | 4.2                                                  | 22.6                                                                                                              | 960           | (64.9)                                                                | 40            | 79.8                                                                                                       | 217           | 2.4                                              | 567           |
| 25-29                          | 9.5                                                  | 21.9                                                                                                              | 710           | 43.9                                                                  | 67            | 67.5                                                                                                       | 156           | 2.8                                              | 623           |
| 30-39                          | 8.0                                                  | 11.8                                                                                                              | 1,628         | 21.9                                                                  | 130           | 60.7                                                                                                       | 192           | 3.0                                              | 1,598         |
| 40-49                          | 7.0                                                  | 6.4                                                                                                               | 1,022         | 6.1                                                                   | 71            | 58.5                                                                                                       | 65            | 3.1                                              | 1,019         |
| <b>Marital status</b>          |                                                      |                                                                                                                   |               |                                                                       |               |                                                                                                            |               |                                                  |               |
| Never married                  | 3.4                                                  | 17.3                                                                                                              | 2,867         | 69.7                                                                  | 97            | 74.3                                                                                                       | 495           | 2.8                                              | 1,109         |
| Married/living together        | 7.5                                                  | 6.4                                                                                                               | 2,860         | 9.3                                                                   | 214           | 57.2                                                                                                       | 184           | 2.7                                              | 2,860         |
| Divorced/separated/<br>widowed | 7.7                                                  | 36.7                                                                                                              | 119           | *                                                                     | 9             | (67.6)                                                                                                     | 44            | 5.3                                              | 119           |
| <b>Type of union</b>           |                                                      |                                                                                                                   |               |                                                                       |               |                                                                                                            |               |                                                  |               |
| In polygynous union            | 58.6                                                 | 20.9                                                                                                              | 77            | (7.3)                                                                 | 45            | *                                                                                                          | 16            | 6.5                                              | 77            |
| Not in polygynous union        | 6.1                                                  | 6.0                                                                                                               | 2,783         | 9.8                                                                   | 169           | 56.2                                                                                                       | 168           | 2.6                                              | 2,783         |
| Not currently in union         | 3.5                                                  | 18.0                                                                                                              | 2,986         | 68.8                                                                  | 106           | 73.8                                                                                                       | 539           | 3.1                                              | 1,227         |
| <b>Residence</b>               |                                                      |                                                                                                                   |               |                                                                       |               |                                                                                                            |               |                                                  |               |
| Urban                          | 7.6                                                  | 20.3                                                                                                              | 1,115         | 33.6                                                                  | 85            | 71.9                                                                                                       | 226           | 4.4                                              | 811           |
| Rural                          | 5.0                                                  | 10.5                                                                                                              | 4,731         | 27.2                                                                  | 235           | 68.5                                                                                                       | 496           | 2.4                                              | 3,277         |
| <b>Province</b>                |                                                      |                                                                                                                   |               |                                                                       |               |                                                                                                            |               |                                                  |               |
| Kigali                         | 7.5                                                  | 20.3                                                                                                              | 879           | 43.7                                                                  | 66            | 69.5                                                                                                       | 178           | 4.6                                              | 642           |
| South                          | 3.8                                                  | 10.3                                                                                                              | 1,239         | 20.2                                                                  | 48            | 60.6                                                                                                       | 128           | 2.3                                              | 855           |
| West                           | 6.2                                                  | 11.0                                                                                                              | 1,268         | 22.8                                                                  | 78            | 70.8                                                                                                       | 140           | 2.6                                              | 876           |
| North                          | 3.4                                                  | 9.9                                                                                                               | 886           | (21.9)                                                                | 30            | 71.0                                                                                                       | 88            | 2.1                                              | 621           |
| East                           | 6.2                                                  | 12.0                                                                                                              | 1,574         | 30.4                                                                  | 98            | 74.2                                                                                                       | 189           | 2.8                                              | 1,094         |
| <b>Education</b>               |                                                      |                                                                                                                   |               |                                                                       |               |                                                                                                            |               |                                                  |               |
| No education                   | 5.9                                                  | 6.1                                                                                                               | 420           | *                                                                     | 25            | (50.6)                                                                                                     | 25            | 2.5                                              | 388           |
| Primary                        | 5.5                                                  | 11.3                                                                                                              | 3,471         | 24.9                                                                  | 192           | 65.0                                                                                                       | 393           | 2.8                                              | 2,584         |
| Secondary                      | 5.2                                                  | 14.8                                                                                                              | 1,659         | 40.3                                                                  | 86            | 77.9                                                                                                       | 246           | 3.1                                              | 867           |
| More than secondary            | 6.3                                                  | 19.7                                                                                                              | 295           | *                                                                     | 18            | 73.8                                                                                                       | 58            | 3.2                                              | 249           |
| <b>Wealth quintile</b>         |                                                      |                                                                                                                   |               |                                                                       |               |                                                                                                            |               |                                                  |               |
| Lowest                         | 5.0                                                  | 10.6                                                                                                              | 924           | (19.1)                                                                | 47            | 54.4                                                                                                       | 97            | 2.4                                              | 702           |
| Second                         | 3.4                                                  | 8.4                                                                                                               | 1,076         | (23.2)                                                                | 36            | 63.1                                                                                                       | 90            | 2.4                                              | 737           |
| Middle                         | 5.8                                                  | 10.4                                                                                                              | 1,227         | 24.8                                                                  | 71            | 66.4                                                                                                       | 128           | 2.3                                              | 841           |
| Fourth                         | 6.1                                                  | 12.9                                                                                                              | 1,278         | 34.8                                                                  | 78            | 78.8                                                                                                       | 165           | 3.1                                              | 882           |
| Highest                        | 6.6                                                  | 18.1                                                                                                              | 1,342         | 34.6                                                                  | 88            | 73.5                                                                                                       | 243           | 3.8                                              | 926           |
| Total 15-49                    | 5.5                                                  | 12.4                                                                                                              | 5,846         | 28.9                                                                  | 320           | 69.6                                                                                                       | 723           | 2.8                                              | 4,088         |
| 50-59                          | 4.1                                                  | 3.7                                                                                                               | 667           | (26.3)                                                                | 27            | (52.9)                                                                                                     | 25            | 4.1                                              | 661           |
| Total 15-59                    | 5.3                                                  | 11.5                                                                                                              | 6,513         | 28.7                                                                  | 347           | 69.0                                                                                                       | 747           | 3.0                                              | 4,748         |

Among all men age 15-49, percentage who had sexual intercourse with more than one sexual partner in the past 12 months, and percentage who had intercourse in the past 12 months with a person who was neither their wife nor lived with them; among those having more than one partner in the past 12 months, percentage reporting that a condom was used during last intercourse; among men age 15-49 who had sexual intercourse in the past 12 months with a person who was neither their wife nor lived with them, percentage who used a condom during last sexual intercourse with such a partner; and among men who ever had sexual intercourse, mean number of sexual partners during their lifetime, according to background characteristics, Rwanda DHS 2019-20.

**Note:** Note: Figures in parentheses are based on 25-49 unweighted cases. An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed.

<sup>1</sup>Means are calculated excluding respondents who gave non-numeric responses, Ages were in years.

2019-2020 RDHS SUPPORTERS





# Child Health and Nutrition: Rwanda Demographic and Health Survey (RDHS) Key Findings

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## INTRODUCTION

The 2019-20 RDHS collected data on a number of child health indicators, including vaccinations of young children, nutritional status assessed through anthropometric measures, infant feeding practices, and treatment practices for sick children.

## VACCINATION OF CHILDREN

Universal immunization of children against six common vaccine-preventable diseases, namely tuberculosis, diphtheria, whooping cough (pertussis), tetanus, polio, and measles reduces infant and child mortality. In Rwanda, vaccines against *Haemophilus influenzae* type B and hepatitis B were used in combination with DPT (diphtheria, pertussis, and tetanus) vaccine and called pentavalent. A phased rollout of the pneumococcal conjugate vaccine (PCV) that protects against *Streptococcus pneumoniae* bacteria, which cause severe pneumonia, meningitis, and other illnesses, commenced on December 22, 2014, in Rwanda. On February 20, 2015, Rwanda introduced one dose of inactivated poliomyelitis vaccine (IPV) at 14 weeks of age into its national routine immunization schedule. The country also uses Inactivated Polio Vaccine (IPV) not to replace the oral polio vaccine but to strengthen a child's immune system and protect against polio.

Overall, Rwanda has established a schedule for the administration of all basic childhood vaccines based on the World Health Organization's guidelines. An important measure of vaccination coverage has been the proportion of children age 12-23 months who have received all "basic" vaccinations.

A child is considered to have received all basic vaccinations if he or she has received a bacille Calmette-Guérin (BCG) vaccination against tuberculosis; three doses of DPT vaccine; at least three doses of polio vaccine; and one dose of measles vaccine. These vaccinations have to have been administered in the first year of life; with BCG given shortly after birth or at first clinical contact, polio and the pentavalent vaccines at approximately 6 weeks, 10 weeks, and 14 and finally measles at or soon after 9 months.

A second measure of vaccination coverage is the proportion of children age 12-23 months and 24-35 months who have received all age-appropriate vaccinations. A child age 12-23 months is considered to have received all age-appropriate vaccinations if the child received all basic vaccinations along with a birth dose of hepatitis B and polio vaccine, one dose of inactivated polio vaccine, and three doses of pneumococcal vaccine (also given at age 6, 10, and 14 weeks). Similarly, a child who is age 24-35 months has to have completed all age-appropriate vaccinations if the child has received a second dose of measles given at 18 months in addition to all of the age-appropriate vaccinations relevant for a child aged 12-23 months.

In the 2019-20 RDHS, information on vaccination

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coverage was obtained in two ways—from health cards and from mothers' verbal reports. Mothers of children born since from January 2017 were asked to present their child (children) vaccination cards where all the vaccination records were noted; the interviewer then recorded from the card the dates of each vaccination received. In cases where the card indicated the child had not received all basic vaccinations, the mother was asked whether the child had received other vaccinations that were

not recorded on the card, and if so, they too were recorded.

In instances where there were no cards available, the child's vaccination information was solely based on the mother's recall. The mother was asked to recall all the vaccines administered to their children.

The RDHS survey reported that vaccination cards were seen for 97% of children age 12-23 months

**Table 1: Vaccinations by background characteristics**

| Background characteristic | DPT-HepB-Hib |        |        | Polio2         |        |        | IPV    |        |        | Rotavirus |        |        | All age appropriate vaccinations <sup>4</sup> |                 |                    | Children age 24-35 months |                    |                                               |
|---------------------------|--------------|--------|--------|----------------|--------|--------|--------|--------|--------|-----------|--------|--------|-----------------------------------------------|-----------------|--------------------|---------------------------|--------------------|-----------------------------------------------|
|                           | 1            | 2      | 3      | 0 (birth dose) | 1      | 2      | 3      | 1      | 2      | 3         | 1      | 2      | Measles & Rubella                             | No vaccinations | Number of children | Measles & Rubella         | Number of children | All age appropriate vaccinations <sup>5</sup> |
| <b>Sex</b>                |              |        |        |                |        |        |        |        |        |           |        |        |                                               |                 |                    |                           |                    |                                               |
| Male                      | 99.1         | 99.6   | 99.2   | 98.7           | 92.8   | 99.6   | 99.0   | 97.6   | 92.2   | 99.6      | 99.0   | 98.5   | 99.1                                          | 99.5            | 99.1               | 97.3                      | 94.7               | 83.2                                          |
| Female                    | 99.4         | 99.6   | 99.6   | 99.3           | 95.1   | 99.6   | 99.6   | 97.8   | 92.7   | 99.6      | 99.6   | 99.2   | 99.5                                          | 99.5            | 99.5               | 96.3                      | 94.5               | 85.7                                          |
| <b>Birth order</b>        |              |        |        |                |        |        |        |        |        |           |        |        |                                               |                 |                    |                           |                    |                                               |
| 1                         | 99.6         | 99.6   | 99.5   | 99.2           | 96.4   | 99.9   | 99.4   | 98.0   | 91.4   | 99.7      | 99.2   | 98.9   | 99.9                                          | 99.4            | 99.4               | 96.6                      | 96.1               | 85.3                                          |
| 2-3                       | 99.5         | 99.6   | 99.3   | 98.8           | 94.5   | 99.5   | 99.3   | 97.6   | 93.5   | 99.6      | 99.3   | 98.7   | 99.6                                          | 99.4            | 99.4               | 98.5                      | 96.7               | 86.6                                          |
| 4-5                       | 99.7         | 99.7   | 99.3   | 99.3           | 92.1   | 99.7   | 99.2   | 98.1   | 93.0   | 99.7      | 99.7   | 99.3   | 99.7                                          | 99.7            | 99.7               | 94.8                      | 97.1               | 83.0                                          |
| 6+                        | 98.5         | 99.3   | 99.3   | 98.3           | 90.1   | 99.3   | 99.3   | 96.8   | 90.6   | 99.3      | 99.3   | 98.2   | 98.2                                          | 98.2            | 98.2               | 94.9                      | 92.0               | 78.3                                          |
| <b>Vaccination card</b>   |              |        |        |                |        |        |        |        |        |           |        |        |                                               |                 |                    |                           |                    |                                               |
| Seen                      | 99.4         | 99.9   | 99.7   | 99.4           | 94.1   | 99.9   | 99.7   | 99.1   | 92.7   | 99.9      | 99.7   | 99.3   | 99.7                                          | 99.5            | 99.5               | 97.9                      | 97.0               | 85.7                                          |
| Not seen/no card          | (93.1)       | (90.9) | (87.4) | (82.7)         | (68.8) | (91.3) | (83.4) | (46.4) | (84.0) | (91.0)    | (84.7) | (81.2) | (83.1)                                        | (81.4)          | (81.4)             | (91.4)                    | (44.2)             | (38.8)                                        |
| <b>Residence</b>          |              |        |        |                |        |        |        |        |        |           |        |        |                                               |                 |                    |                           |                    |                                               |
| Urban                     | 99.2         | 99.8   | 99.8   | 98.9           | 96.8   | 99.2   | 99.2   | 97.3   | 91.7   | 99.2      | 99.2   | 99.1   | 99.2                                          | 99.2            | 99.2               | 98.3                      | 97.0               | 88.1                                          |
| Rural                     | 99.2         | 99.8   | 99.5   | 99.0           | 93.4   | 99.7   | 99.3   | 96.6   | 92.6   | 99.7      | 99.4   | 99.8   | 99.6                                          | 99.3            | 99.7               | 95.2                      | 95.2               | 83.7                                          |
| <b>Province</b>           |              |        |        |                |        |        |        |        |        |           |        |        |                                               |                 |                    |                           |                    |                                               |
| Kigali                    | 99.0         | 99.0   | 99.0   | 99.0           | 95.7   | 99.0   | 99.0   | 98.6   | 95.5   | 99.0      | 99.0   | 99.0   | 99.0                                          | 99.0            | 99.0               | 97.5                      | 97.1               | 91.2                                          |
| South                     | 99.2         | 100.0  | 99.3   | 99.0           | 92.1   | 99.8   | 99.3   | 98.6   | 93.9   | 100.0     | 99.3   | 100.0  | 99.5                                          | 99.1            | 99.3               | 97.3                      | 97.3               | 85.3                                          |
| West                      | 98.9         | 99.7   | 99.7   | 99.1           | 95.1   | 99.7   | 99.7   | 97.3   | 97.2   | 99.7      | 99.7   | 99.1   | 99.7                                          | 99.7            | 99.7               | 94.6                      | 99.1               | 89.1                                          |
| North                     | 99.7         | 99.3   | 99.3   | 98.1           | 97.7   | 99.7   | 99.2   | 97.2   | 78.5   | 99.3      | 98.8   | 97.1   | 98.8                                          | 98.3            | 98.8               | 93.8                      | 93.8               | 73.4                                          |
| East                      | 99.4         | 99.7   | 99.5   | 99.2           | 91.3   | 99.7   | 99.7   | 97.1   | 94.1   | 99.7      | 99.5   | 99.2   | 99.7                                          | 99.5            | 99.5               | 97.8                      | 95.2               | 83.1                                          |
| <b>Education</b>          |              |        |        |                |        |        |        |        |        |           |        |        |                                               |                 |                    |                           |                    |                                               |
| No education              | 98.5         | 99.1   | 98.5   | 98.5           | 90.3   | 99.1   | 98.5   | 96.2   | 93.4   | 99.1      | 98.5   | 97.7   | 99.1                                          | 98.5            | 98.5               | 97.8                      | 95.0               | 83.6                                          |
| Primary                   | 99.2         | 99.7   | 99.5   | 98.9           | 93.1   | 99.7   | 99.3   | 98.1   | 92.5   | 99.7      | 99.4   | 98.8   | 99.6                                          | 99.3            | 99.3               | 97.4                      | 95.3               | 83.3                                          |
| Secondary                 | 99.6         | 99.6   | 99.5   | 99.4           | 98.6   | 99.6   | 99.6   | 97.6   | 95.8   | 99.6      | 99.6   | 99.7   | 99.6                                          | 99.6            | 99.6               | 98.6                      | 96.6               | 87.6                                          |
| More than secondary       | 96.1         | 96.1   | 96.1   | 96.1           | 96.1   | 96.1   | 96.1   | 95.6   | 95.4   | 96.1      | 96.1   | 96.1   | 96.1                                          | 96.1            | 96.1               | 96.1                      | 95.6               | 87.1                                          |
| <b>Wealth quintile</b>    |              |        |        |                |        |        |        |        |        |           |        |        |                                               |                 |                    |                           |                    |                                               |
| Lowest                    | 99.0         | 100.0  | 99.3   | 98.5           | 92.5   | 100.0  | 99.0   | 96.2   | 90.9   | 99.7      | 98.7   | 97.8   | 100.0                                         | 99.3            | 99.3               | 97.3                      | 93.4               | 80.2                                          |
| Second                    | 99.7         | 99.3   | 99.1   | 98.4           | 91.6   | 99.1   | 98.7   | 97.3   | 90.6   | 99.3      | 99.1   | 98.4   | 99.3                                          | 99.0            | 99.0               | 97.9                      | 95.2               | 81.2                                          |
| Middle                    | 100.0        | 100.0  | 100.0  | 99.7           | 93.5   | 100.0  | 100.0  | 98.2   | 95.5   | 100.0     | 100.0  | 99.5   | 99.6                                          | 99.6            | 99.6               | 98.9                      | 95.1               | 84.3                                          |
| Fourth                    | 99.4         | 99.7   | 99.7   | 99.4           | 96.1   | 99.7   | 99.7   | 99.1   | 95.8   | 99.7      | 99.7   | 99.4   | 99.4                                          | 99.4            | 99.4               | 98.2                      | 97.5               | 91.2                                          |
| Highest                   | 99.2         | 99.9   | 99.9   | 98.9           | 96.8   | 99.2   | 99.2   | 97.8   | 97.8   | 99.2      | 99.2   | 99.2   | 99.2                                          | 99.2            | 99.2               | 98.7                      | 96.9               | 85.8                                          |
| Total                     | 99.2         | 99.6   | 99.4   | 99.0           | 93.9   | 99.6   | 99.3   | 97.7   | 92.4   | 99.6      | 99.3   | 98.8   | 99.5                                          | 99.3            | 99.3               | 97.8                      | 95.5               | 84.4                                          |

Percentage of children age 12-23 months and children age 24-35 months who received specific vaccines at any time before the survey (according to a vaccination card or the mother's report), percentage with all basic vaccinations, and percentage with all age appropriate vaccinations, according to background characteristics, Rwanda DHS 2019-20.

BCG = Bacille Calmette-Guérin

DPT = Diphtheria-pertussis-tetanus

HepB = Hepatitis B

Hib = *Haemophilus influenzae* type b

Note: Figures in parentheses are based on 25-49 unweighted cases. Children are considered to have received the vaccine if it was either written on the child's vaccination card or reported by the mother. For children whose vaccination information is based on the mother's report, date of vaccination is not collected. The proportions of vaccinations given during the first and second years of life are assumed to be the same as for children with a written record of vaccination.

For children whose vaccination information is based on the mother's report, children reported to have received HepB (birth dose) received the vaccine within 24 hours after birth. For children whose vaccination information is based on the written record of vaccination, children are considered to have received hepatitis B (birth dose) if this vaccine is recorded on their card, regardless of when the dose was administered.

Polio 0 is the polio vaccination given at birth.

BCG, three doses of DPT-HepB-Hib (pentavalent), three doses of oral polio vaccine (excluding polio vaccine given at birth), and one dose of measles vaccine, and one dose of measles vaccine.

BCG, hepatitis B (birth dose), three doses of DPT-HepB-Hib (pentavalent), four doses of oral polio vaccine, one dose of inactivated polio vaccine, three doses of pneumococcal vaccine, and one dose of measles vaccine.

BCG, hepatitis B (birth dose), three doses of DPT-HepB-Hib (pentavalent), four doses of oral polio vaccine, one dose of inactivated polio vaccine, three doses of pneumococcal vaccine, and two doses of measles vaccine.

and 93% of children age 24-35 months. Table 1 summarizes data for children aged 12-23 months and 24-35 months. Overall, 96% of children received all basic vaccinations, while 84% received all age-appropriate vaccinations. Ninety-nine percent of children received BCG, 99% the three pentavalent doses, and 98% the three doses of oral polio. Coverage of vaccination against measles was reported at 98%. Less than 1% of children in Rwanda did not receive any vaccinations during the reported period.

Basic vaccination coverage differs slightly by residence, mother's education and wealth.

Figure 1 shows the trend of children age 12-23 months who received all basic vaccinations since 2000.

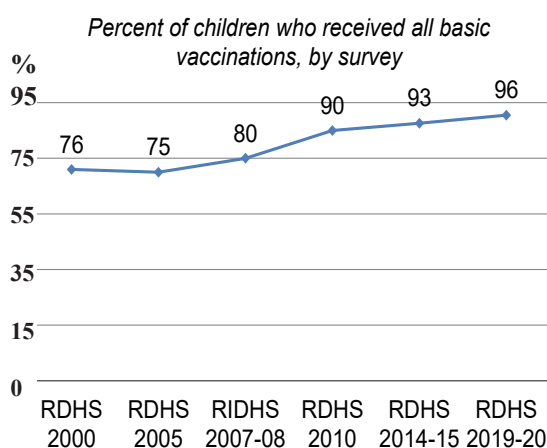


Figure 1: Trends in childhood vaccinations, 2000 to 2019-20 past 12 months

## CHILDHOOD ACUTE RESPIRATORY INFECTION, FEVER, AND DIARRHEA

Acute respiratory infection (ARI), fever, and dehydration from diarrhea are important contributing causes of childhood morbidity and mortality in developing countries (WHO 2003). Timely medical attention when a child presents symptoms related to the above illnesses is paramount in reducing child deaths.

In the 2019-20 RDHS, for each child under age 5, mothers were asked if the child had experienced a cough accompanied by short, rapid breathing or difficulty in breathing as a result of a chest-related problem (symptoms of ARI); fever; or an episode of diarrhea in the 2 weeks preceding the survey. Respondents were also asked if treatment was sought when the child was ill. Overall, 2% of

children under age 5 showed symptoms of ARI, 19% had a fever, and 14% experienced diarrhea in the 2 weeks preceding the survey (data not shown). It should be noted that the morbidity data collected are subjective because they were based on a mother's perception of illnesses without validation by a written medical record.

Table 2 below shows that treatment from a health facility or provider was sought for 73% of children with ARI symptoms and 62% of those with a fever. Treatment was sought from a health facility or health provider for 52% of children with diarrhea. Thirty-four percent of children with diarrhea received a rehydration solution from an oral rehydration salt (ORS) packet; 37% of children with diarrhea were given zinc supplements, and 22% received both ORS and zinc supplements.

## NUTRITIONAL STATUS OF CHILDREN

Anthropometric measurements (height and weight) for young children were collected in the 2019-20 RDHS to provide outcome measures of nutritional status. Weight measurements were taken using lightweight SECA scales with digital displays (model no. SECA 878U), which were designed and manufactured under the authority of the United Nations Children's Fund (UNICEF). Height/length measurements were taken using a standard measuring board (Shorr Board®). Recumbent length (lying down) was measured for children younger than age 24 months; standing height was measured for older children.

The three indices (height-for-age, weight-for-height, and weight-for-age) are expressed as standard deviation units from the median for the reference group. Children who fall below minus two standard deviations (-2 SD) from the median of the reference population were regarded as moderately malnourished, while those who fall below minus three standard deviations (-3 SD) from the reference population median were considered severely malnourished.

Each of these indices provides information about growth and body composition that is useful in assessing nutritional status. Stunting, or low height-for-age, were signs of chronic undernutrition that reflects failure to receive adequate nutrition over a long period. The most direct causes are usually (1)

**Table 2:** Treatment for acute respiratory infection, fever, and diarrhea

| Background characteristic | Children with symptoms of ARI <sup>1</sup>                      |                    | Children with fever                                             |                    | Children with diarrhea                                          |                                                        |                       |                               |                    |
|---------------------------|-----------------------------------------------------------------|--------------------|-----------------------------------------------------------------|--------------------|-----------------------------------------------------------------|--------------------------------------------------------|-----------------------|-------------------------------|--------------------|
|                           | Percentage for whom advice or treatment was sought <sup>2</sup> | Number of children | Percentage for whom advice or treatment was sought <sup>2</sup> | Number of children | Percentage for whom advice or treatment was sought <sup>2</sup> | Percentage given fluid from ORS packet or pre-packaged | Percentage given zinc | Percentage given ORS and zinc | Number of children |
| <b>Age in months</b>      |                                                                 |                    |                                                                 |                    |                                                                 |                                                        |                       |                               |                    |
| <6                        | *                                                               | 19                 | 54.1                                                            | 111                | (42.5)                                                          | (16.9)                                                 | (16.0)                | (5.4)                         | 53                 |
| 6-11                      | *                                                               | 20                 | 64.0                                                            | 208                | 46.8                                                            | 28.4                                                   | 27.9                  | 14.2                          | 191                |
| 12-23                     | (79.1)                                                          | 37                 | 65.6                                                            | 437                | 58.6                                                            | 39.5                                                   | 41.3                  | 26.3                          | 408                |
| 24-35                     | *                                                               | 23                 | 61.3                                                            | 304                | 50.5                                                            | 35.2                                                   | 38.3                  | 24.0                          | 238                |
| 36-47                     | *                                                               | 21                 | 58.8                                                            | 261                | 45.1                                                            | 29.4                                                   | 38.6                  | 22.6                          | 151                |
| 48-59                     | *                                                               | 16                 | 64.3                                                            | 186                | 52.8                                                            | 37.2                                                   | 36.9                  | 25.3                          | 99                 |
| <b>Sex</b>                |                                                                 |                    |                                                                 |                    |                                                                 |                                                        |                       |                               |                    |
| Male                      | 66.7                                                            | 74                 | 63.6                                                            | 770                | 51.9                                                            | 34.0                                                   | 35.5                  | 22.3                          | 600                |
| Female                    | 79.7                                                            | 62                 | 61.0                                                            | 736                | 51.9                                                            | 34.4                                                   | 37.7                  | 22.1                          | 541                |
| <b>Residence</b>          |                                                                 |                    |                                                                 |                    |                                                                 |                                                        |                       |                               |                    |
| Urban                     | *                                                               | 14                 | 68.9                                                            | 212                | 46.0                                                            | 26.0                                                   | 27.6                  | 16.3                          | 163                |
| Rural                     | 71.1                                                            | 123                | 61.2                                                            | 1,295              | 52.9                                                            | 35.5                                                   | 38.0                  | 23.2                          | 978                |
| <b>Province</b>           |                                                                 |                    |                                                                 |                    |                                                                 |                                                        |                       |                               |                    |
| Kigali                    | *                                                               | 13                 | 71.8                                                            | 175                | 42.8                                                            | 21.4                                                   | 20.3                  | 8.8                           | 133                |
| South                     | *                                                               | 19                 | 61.6                                                            | 260                | 52.4                                                            | 34.0                                                   | 34.3                  | 21.5                          | 211                |
| West                      | 67.2                                                            | 51                 | 63.3                                                            | 443                | 53.3                                                            | 38.1                                                   | 42.3                  | 26.2                          | 358                |
| North                     | *                                                               | 19                 | 53.3                                                            | 257                | 50.7                                                            | 32.3                                                   | 37.3                  | 21.4                          | 197                |
| East                      | (82.2)                                                          | 34                 | 63.4                                                            | 372                | 55.3                                                            | 36.9                                                   | 38.2                  | 25.1                          | 242                |
| <b>Mother's education</b> |                                                                 |                    |                                                                 |                    |                                                                 |                                                        |                       |                               |                    |
| No education              | *                                                               | 19                 | 57.1                                                            | 164                | 44.4                                                            | 33.1                                                   | 29.4                  | 20.5                          | 154                |
| Primary                   | 68.7                                                            | 97                 | 59.0                                                            | 996                | 51.3                                                            | 33.8                                                   | 36.9                  | 22.0                          | 758                |
| Secondary                 | *                                                               | 17                 | 72.2                                                            | 304                | 59.7                                                            | 35.9                                                   | 42.7                  | 25.7                          | 207                |
| More than secondary       | *                                                               | 3                  | (89.3)                                                          | 43                 | *                                                               | *                                                      | *                     | *                             | 22                 |
| <b>Wealth quintile</b>    |                                                                 |                    |                                                                 |                    |                                                                 |                                                        |                       |                               |                    |
| Lowest                    | (66.8)                                                          | 40                 | 52.3                                                            | 364                | 46.6                                                            | 31.1                                                   | 32.2                  | 19.1                          | 311                |
| Second                    | (63.8)                                                          | 38                 | 56.5                                                            | 333                | 45.9                                                            | 33.5                                                   | 34.6                  | 22.5                          | 255                |
| Middle                    | *                                                               | 30                 | 62.3                                                            | 316                | 54.2                                                            | 38.4                                                   | 41.1                  | 27.0                          | 239                |
| Fourth                    | *                                                               | 13                 | 70.5                                                            | 275                | 63.0                                                            | 37.5                                                   | 43.5                  | 25.2                          | 201                |
| Highest                   | *                                                               | 15                 | 77.4                                                            | 219                | 55.0                                                            | 29.9                                                   | 31.8                  | 16.2                          | 135                |
| Total                     | 72.7                                                            | 137                | 62.3                                                            | 1,507              | 51.9                                                            | 34.1                                                   | 36.5                  | 22.2                          | 1,141              |

Among children under age 5 who had symptoms of acute respiratory infection (ARI) or had fever in the 2 weeks preceding the survey, percentage for whom advice or treatment was sought, and among children under age 5 who had diarrhea during the 2 weeks preceding the survey, percentage for whom advice or treatment was sought, percentage given a fluid made from oral rehydration salt (ORS) packets or given pre-packaged ORS fluid, percentage given zinc, and percentage given ORS and zinc, according to background characteristics, Rwanda DHS 2019-20.

**Note:** Figures in parentheses are based on 25-49 unweighted cases. An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed.

<sup>1</sup>Symptoms of ARI include short, rapid breathing which was chest-related and/or difficult breathing which was chest-related.

<sup>2</sup>Excludes advice or treatment from a traditional practitioner

not eating enough or eating foods that lack growth-promoting nutrients and (2) recurrent infections or chronic diseases that cause poor nutrient intake, absorption, or utilization. Wasting, or low weight-for-height, is a measure of acute undernutrition. It represents a failure to receive adequate nutrition in the period immediately before the survey. Wasting may result from inadequate food intake or from a recent episode of illness causing weight loss. Overweight and obesity, or high weight-for-height, results from an imbalance between energy consumed (too much) and energy expended (too little). Overweight and obesity are now problems in many countries. Weight-for-age is a composite

index of height-for-age and weight-for-height. It includes both acute (wasting) and chronic (stunting) undernutrition and is an indicator of overall undernutrition.

The means of the Z-scores for height-for-age, weight-for-height, and weight-for-age are also calculated as summary statistics representing the nutritional status of children in a population. These scores describe the nutritional status of the entire population of children without the use of a cut-off point. A mean Z-score of less than 0 (that is, a negative mean value for stunting, wasting, or underweight) suggests a downward shift in the

entire sample population's nutritional status relative to the reference population. The farther away mean Z-scores are from 0, the higher the prevalence of undernutrition.

Height and weight measurements were obtained for 4,052 (unweighted) children under age 5 who were eligible to be measured in the 2019-20 RDHS subsample households at the time of the survey. The analysis of anthropometric indices (height-for-age, weight-for-height, and weight-for-age) included valid dates of birth and measures of both

height and weight. Valid height and weight data were available for nearly all children (99.7%).

Table 3 and Figure 2 show nutritional status for children under age 5 according to the three anthropometric indices. Thirty-three percent of children in Rwanda were stunted (below -2 SD), with 9% being severely stunted (below -3 SD). Stunting generally increases with age, peaking at 40% among children age 24-35 months. A higher proportion of children in rural areas (36%) than urban areas (20%) were stunted. Similarly, children

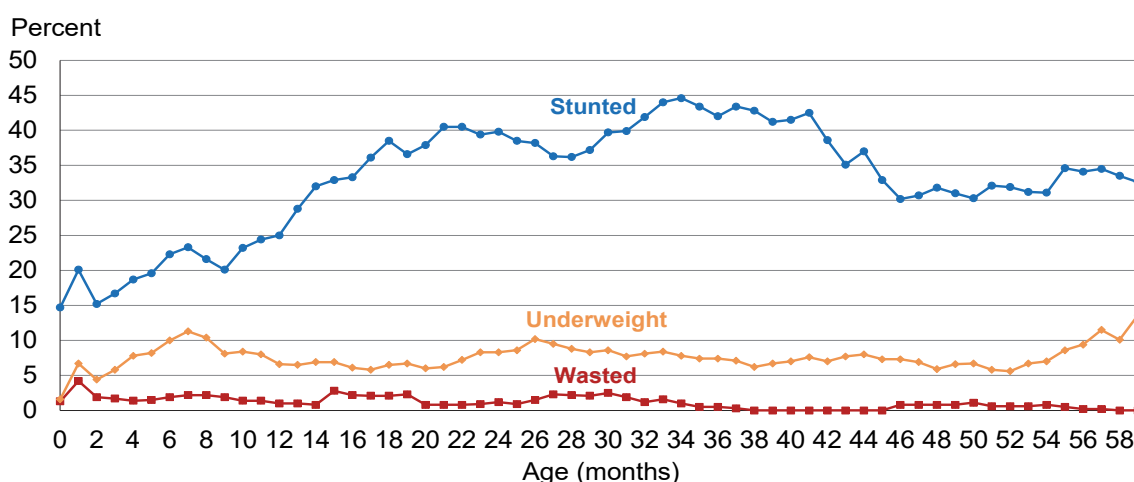


Figure 2: Nutritional status of children by age

**Note:** Stunting reflects chronic malnutrition; wasting reflects acute malnutrition; underweight reflects chronic or acute malnutrition or a combination of both. Plotted values are smoothed by a 5-month moving average.

in North province (41%) and West province (40%) were more likely to be stunted than other children. In this survey, stunting was strongly correlated with mother's education level. Children of women with no education were more likely to be stunted than those whose mothers have been to school. Stunting was inversely related to wealth quintile; 49% of children in the lowest wealth quintile were stunted compared with 11% of children in the highest quintile.

About 1% of children in Rwanda were wasted, with less than 1% severely wasted.

Overall, 6% of children under age 5 were overweight. The results also showed that 8% of all children under age 5 were underweight and 1% severely underweight. The proportion of children who were underweight is greater in rural areas (9%) than urban areas (4%). Underweight was strongly associated with mother's education; 11% of children whose mothers had no education compared to less than 1% of children whose

mothers had a secondary education. Underweight was related to wealth; 12% of children in the lowest wealth quintile were underweight, as compared with 2% of children in the highest quintile.

## INFANT AND YOUNG CHILD FEEDING PRACTICES

Breastfeeding is sufficient and beneficial for infant nutrition in the first 6 months of life. Breastfeeding immediately after birth also helps the uterus contract, hence reducing the mother's postpartum blood loss. Giving any other foods and water (in addition to breast milk) before the child is age 6 months is generally discouraged because it may inhibit breastfeeding and expose the infant to illness. Infants older than age 6 months need other food and drink while they continue to breastfeed until age 2 or older; breast milk remains an important source of energy, protein, and other nutrients such as vitamin A and iron. The food



given should include a variety of options such as peeled, cooked, and mashed vegetables; grains; fruit; some oil; and also, meat, eggs, chicken, and dairy products to provide adequate nourishment (Pan American Health Organization 2002).

The 2019-20 RDHS collected data on infant and young child feeding (IYCF) practices for all children born in the 2 years preceding the survey.

Table 4 shows breastfeeding practices by child's age. The results show that 81% of children under age 6 months were exclusively breastfed, this is slightly decreased from the 87% figure reported in 2014-15. In addition to breast milk, 2% of these young children consumed plain water, 8% consumed non-milk liquids, 4% consumed other milk, and 5% consumed complementary foods. Four percent of infants under age 6 months were

**Table 3:** *Vaccinations by background characteristics*

| Background characteristic                      | Height-for-age <sup>1</sup> |                        |                   |                    | Weight-for-height      |                        |                   |                    | Weight-for-age         |                        |                   |                    |
|------------------------------------------------|-----------------------------|------------------------|-------------------|--------------------|------------------------|------------------------|-------------------|--------------------|------------------------|------------------------|-------------------|--------------------|
|                                                | Percentage below -3 SD      | Percentage below -2 SD | Mean Z-score (SD) | Number of children | Percentage below -3 SD | Percentage below -2 SD | Mean Z-score (SD) | Number of children | Percentage below -3 SD | Percentage below -2 SD | Mean Z-score (SD) | Number of children |
| <b>Age in months</b>                           |                             |                        |                   |                    |                        |                        |                   |                    |                        |                        |                   |                    |
| <6                                             | 4.5                         | 16.2                   | -0.9              | 397                | 0.6                    | 1.5                    | 11.4              | 395                | 2.4                    | 5.1                    | 1.8               | 395                |
| 6-8                                            | 5.7                         | 22.7                   | -1.1              | 219                | 0.3                    | 2.7                    | 9.2               | 218                | 2.9                    | 10.2                   | 2.9               | 218                |
| 9-11                                           | 5.2                         | 19.8                   | -1.2              | 222                | 0.9                    | 1.3                    | 5.5               | 222                | 2.7                    | 8.3                    | 1.4               | 222                |
| 12-17                                          | 7.3                         | 32.8                   | -1.5              | 409                | 0.5                    | 2.2                    | 4.0               | 410                | 1.2                    | 7.2                    | 0.2               | 410                |
| 18-23                                          | 10.9                        | 39.0                   | -1.7              | 411                | 0.0                    | 0.7                    | 5.4               | 411                | 0.2                    | 5.8                    | 0.4               | 411                |
| 24-35                                          | 11.8                        | 40.4                   | -1.7              | 854                | 0.1                    | 1.7                    | 6.2               | 854                | 1.2                    | 9.3                    | 0.4               | 854                |
| 36-47                                          | 9.5                         | 37.9                   | -1.7              | 818                | 0.0                    | 0.0                    | 4.7               | 820                | 0.8                    | 6.7                    | 0.3               | 820                |
| 48-59                                          | 10.7                        | 32.5                   | -1.6              | 827                | 0.0                    | 0.7                    | 3.2               | 828                | 1.2                    | 8.5                    | 0.3               | 828                |
| <b>Sex</b>                                     |                             |                        |                   |                    |                        |                        |                   |                    |                        |                        |                   |                    |
| Male                                           | 11.0                        | 37.0                   | -1.6              | 2,084              | 0.0                    | 0.9                    | 5.8               | 2,083              | 1.6                    | 9.0                    | 0.7               | 2,083              |
| Female                                         | 7.5                         | 29.2                   | -1.4              | 2,074              | 0.3                    | 1.4                    | 5.4               | 2,075              | 1.1                    | 6.3                    | 0.6               | 2,075              |
| <b>Mother's interview status</b>               |                             |                        |                   |                    |                        |                        |                   |                    |                        |                        |                   |                    |
| Interviewed                                    | 9.0                         | 33.1                   | -1.5              | 3,908              | 0.2                    | 1.2                    | 5.7               | 3,906              | 1.3                    | 7.5                    | 0.7               | 3,906              |
| Not interviewed, but in household              | *                           | *                      | *                 | 18                 | *                      | *                      | *                 | 18                 | *                      | *                      | *                 | 18                 |
| Not interviewed, not in household <sup>2</sup> | 13.2                        | 33.2                   | -1.6              | 232                | 0.0                    | 0.5                    | 4.5               | 234                | 1.7                    | 10.3                   | 0.0               | 234                |
| <b>Residence</b>                               |                             |                        |                   |                    |                        |                        |                   |                    |                        |                        |                   |                    |
| Urban                                          | 4.9                         | 19.8                   | -1.0              | 694                | 0.4                    | 1.6                    | 6.7               | 693                | 0.3                    | 3.7                    | 1.1               | 693                |
| Rural                                          | 10.1                        | 35.8                   | -1.6              | 3,464              | 0.2                    | 1.0                    | 5.4               | 3,466              | 1.5                    | 8.5                    | 0.6               | 3,466              |
| <b>Province</b>                                |                             |                        |                   |                    |                        |                        |                   |                    |                        |                        |                   |                    |
| Kigali                                         | 5.9                         | 21.3                   | -1.1              | 561                | 0.4                    | 1.8                    | 6.3               | 559                | 1.0                    | 4.8                    | 1.6               | 559                |
| South                                          | 9.1                         | 32.7                   | -1.6              | 835                | 0.1                    | 2.2                    | 3.1               | 834                | 2.1                    | 10.4                   | 0.1               | 834                |
| West                                           | 13.2                        | 40.2                   | -1.7              | 997                | 0.3                    | 0.6                    | 6.2               | 996                | 1.2                    | 8.1                    | 0.7               | 996                |
| North                                          | 11.7                        | 40.5                   | -1.8              | 635                | 0.0                    | 0.5                    | 7.7               | 636                | 1.7                    | 7.7                    | 0.2               | 636                |
| East                                           | 6.0                         | 28.8                   | -1.4              | 1,130              | 0.2                    | 0.8                    | 5.5               | 1,133              | 0.8                    | 6.9                    | 0.8               | 1,133              |
| <b>Mother's education</b>                      |                             |                        |                   |                    |                        |                        |                   |                    |                        |                        |                   |                    |
| No education                                   | 14.5                        | 45.1                   | -1.9              | 473                | 0.2                    | 0.8                    | 5.6               | 473                | 2.8                    | 10.5                   | 0.6               | 473                |
| Primary                                        | 10.0                        | 35.6                   | -1.6              | 2,517              | 0.2                    | 1.3                    | 5.3               | 2,516              | 1.3                    | 8.3                    | 0.6               | 2,516              |
| Secondary                                      | 3.8                         | 23.3                   | -1.2              | 778                | 0.0                    | 0.7                    | 5.8               | 778                | 0.7                    | 4.6                    | 0.6               | 778                |
| More than secondary                            | 1.9                         | 5.6                    | -0.3              | 158                | 1.2                    | 3.2                    | 11.5              | 158                | 0.0                    | 0.2                    | 3.1               | 158                |
| <b>Wealth quintile</b>                         |                             |                        |                   |                    |                        |                        |                   |                    |                        |                        |                   |                    |
| Lowest                                         | 15.9                        | 48.5                   | -1.9              | 948                | 0.2                    | 1.4                    | 5.5               | 949                | 2.0                    | 12.2                   | 0.3               | 949                |
| Second                                         | 11.8                        | 40.5                   | -1.8              | 850                | 0.2                    | 1.1                    | 3.6               | 850                | 1.3                    | 10.1                   | 0.0               | 850                |
| Middle                                         | 8.4                         | 32.8                   | -1.5              | 799                | 0.3                    | 1.2                    | 5.5               | 800                | 2.0                    | 6.7                    | 0.2               | 800                |
| Fourth                                         | 6.6                         | 28.6                   | -1.4              | 798                | 0.0                    | 0.8                    | 6.3               | 798                | 0.6                    | 6.1                    | 1.2               | 798                |
| Highest                                        | 1.7                         | 10.7                   | -0.8              | 763                | 0.3                    | 1.1                    | 7.4               | 762                | 0.5                    | 1.9                    | 1.7               | 762                |
| Total                                          | 9.2                         | 33.1                   | -1.5              | 4,158              | 0.2                    | 1.1                    | 5.6               | 4,158              | 1.3                    | 7.7                    | 0.6               | 4,158              |

Percentage of children under age 5 classified as malnourished according to three anthropometric indices of nutritional status: height-for-age, weight-for-height, and weight-for-age, according to background characteristics, Rwanda DHS 2019-20BCG = Bacille Calmette-Guérin

Note: Each of the indices is expressed in standard deviation units (SD) from the median of the WHO Child Growth Standards. An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed.

<sup>1</sup>Recumbent length is measured for children under age 2; standing height is measured for all other children

<sup>2</sup>Includes children who are below -3 standard deviations (SD) from the WHO Growth Standards population median

<sup>3</sup>Includes children whose mothers are deceased

<sup>4</sup>For women who are not interviewed, information is taken from the Household Questionnaire. Excludes children whose mothers are not listed in the Household Questionnaire.

**Table 4:** Breastfeeding status by age

| Age in months | Breastfeeding status |                            |                                               |                                                            |                                         |                                                  | Total | Percentage currently breast-feeding | Number of youngest children under age 2 living with the mother | Percentage using a bottle with a nipple | Number of all children under age 2 |
|---------------|----------------------|----------------------------|-----------------------------------------------|------------------------------------------------------------|-----------------------------------------|--------------------------------------------------|-------|-------------------------------------|----------------------------------------------------------------|-----------------------------------------|------------------------------------|
|               | Not breast-feeding   | Exclusively breast-feeding | Breast-feeding and consuming plain water only | Breast-feeding and consuming non-milk liquids <sup>1</sup> | Breast-feeding and consuming other milk | Breast-feeding and consuming complementary foods |       |                                     |                                                                |                                         |                                    |
| 0-1           | 0.8                  | 86.9                       | 0.2                                           | 8.2                                                        | 2.0                                     | 1.9                                              | 100.0 | 99.2                                | 238                                                            | 3.1                                     | 242                                |
| 2-3           | 0.0                  | 88.9                       | 1.1                                           | 7.5                                                        | 2.5                                     | 0.0                                              | 100.0 | 100.0                               | 265                                                            | 2.2                                     | 266                                |
| 4-5           | 2.1                  | 68.1                       | 3.2                                           | 8.5                                                        | 6.9                                     | 11.1                                             | 100.0 | 97.9                                | 278                                                            | 7.6                                     | 283                                |
| 6-8           | 3.1                  | 9.7                        | 0.2                                           | 3.0                                                        | 5.3                                     | 78.7                                             | 100.0 | 96.9                                | 412                                                            | 13.2                                    | 420                                |
| 9-11          | 2.0                  | 1.7                        | 0.2                                           | 1.6                                                        | 0.0                                     | 94.4                                             | 100.0 | 98.0                                | 405                                                            | 11.2                                    | 417                                |
| 12-17         | 4.7                  | 0.3                        | 0.1                                           | 0.7                                                        | 0.0                                     | 94.3                                             | 100.0 | 95.3                                | 797                                                            | 6.8                                     | 825                                |
| 18-23         | 14.8                 | 0.0                        | 0.1                                           | 0.1                                                        | 0.0                                     | 84.9                                             | 100.0 | 85.2                                | 750                                                            | 4.0                                     | 807                                |
| 0-3           | 0.4                  | 88.0                       | 0.7                                           | 7.8                                                        | 2.3                                     | 0.9                                              | 100.0 | 99.6                                | 503                                                            | 2.6                                     | 508                                |
| 0-5           | 1.0                  | 80.9                       | 1.6                                           | 8.1                                                        | 3.9                                     | 4.5                                              | 100.0 | 99.0                                | 781                                                            | 4.4                                     | 791                                |
| 6-9           | 2.4                  | 8.0                        | 0.3                                           | 2.7                                                        | 4.1                                     | 82.4                                             | 100.0 | 97.6                                | 531                                                            | 12.3                                    | 546                                |
| 12-15         | 3.8                  | 0.4                        | 0.1                                           | 0.6                                                        | 0.0                                     | 95.1                                             | 100.0 | 96.2                                | 556                                                            | 7.4                                     | 576                                |
| 12-23         | 9.6                  | 0.1                        | 0.1                                           | 0.4                                                        | 0.0                                     | 89.7                                             | 100.0 | 90.4                                | 1,547                                                          | 5.4                                     | 1,633                              |
| 20-23         | 14.6                 | 0.0                        | 0.2                                           | 0.0                                                        | 0.0                                     | 85.2                                             | 100.0 | 85.4                                | 509                                                            | 3.9                                     | 551                                |

Percent distribution of youngest children under age 2 who are living with their mother, by breastfeeding status and the percentage currently breastfeeding; and percentage of all children under age 2 using a bottle with a nipple, according to age in months, Rwanda DHS 2019-20.

Note: Breastfeeding status refers to a "24-hour" period (yesterday and last night). Children who are classified as breastfeeding and consuming plain water only consumed no liquid or solid supplements. The categories of not breastfeeding, exclusively breastfeeding, breastfeeding and consuming plain water, non-milk liquids, other milk, and complementary foods (solids and semi-solids) are hierarchical and mutually exclusive, and their percentages add to 100%. Thus children who receive breast milk and non-milk liquids and who do not receive other milk and who do not receive complementary foods are classified in the non-milk liquid category even though they may also get plain water. Any children who get complementary food are classified in that category as long as they are breastfeeding as well.

<sup>1</sup>Non-milk liquids include juice, juice drinks or other liquids

fed using a bottle with a nipple, a practice that is discouraged because of the risk of illness to the child. Seventy-nine percent of children age 6-8 months receive timely complementary foods.

The minimum acceptable diet indicator is used to assess the proportion of children age 6-23 months who meet minimum standards with respect to IYCF practices. Specifically, children age 6-23 months who have a minimum acceptable diet meet all three IYCF criteria below:

□ Breastfeeding, or not breastfeeding and receiving two or more feedings of commercial infant formula; fresh, tinned, or powdered animal milk; or yogurt.

□ Fed with foods from five or more of the following groups: (a) breast milk; (b) grains, roots, and tubers, including porridge and fortified baby food from grains; (c) legumes and nuts; (d) dairy products (milk, yogurt, cheese); (e) eggs; (f) meat, poultry, fish, and shellfish (and organ meats); (g) vitamin A-rich fruits and vegetables (and red palm oil); and (h) other fruits and vegetables.

□ Fed the minimum recommended number of times per day, according to their age and breastfeeding status:

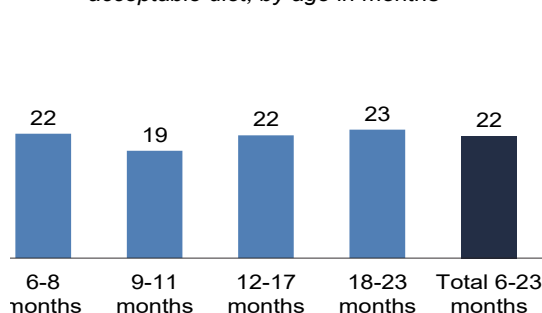
- For breastfed children, minimum meal frequency

is receiving solid, semisolid, or soft food at least twice a day (for infants age 6-8 months) or at least three times a day (for children age 9-23 months).

- For non-breastfed children age 6-23 months, minimum meal frequency is receiving solid, semisolid, or soft food or milk feeds at least four times a day. At least one of the feeds must be a solid, semisolid, or soft food.

Figure 3 shows the percentage of children being fed the minimum acceptable diet, by age. Among children age 6-23 months, only 22% are fed in accordance with the criteria for a minimum acceptable diet.

**Percent of children fed a minimum acceptable diet, by age in months**



**Figure 3:** Minimum acceptable diet by age, in months

2019-2020 RDHS SUPPORTERS



## About the Rwanda Public Health Bulletin (RPHB)

The Rwanda Public Health Bulletin (RPHB) is a printed and open access, peer-reviewed journal, published as the flagship scientific and technical periodical publication. RPHB is a public health bulletin launched in March 2019 by the Rwandan Ministry of Health, through the Rwanda Biomedical Centre (RBC) in collaboration with the CDC Foundation and with support from Bloomberg Philanthropies Data for Health Initiative.

## Mission

To serve as a scientific information dissemination platform of national and international significance, mainly in areas related to the Rwanda Ministry of Health's essential mission to strengthen national and local health systems and improve the health of the people of Rwanda. The Rwanda Public Health Bulletin publishes disease surveillance summaries, public health response guidelines, public health notices, case reports, outbreak reports, original research papers, and policy briefs among others. It generally features issues of importance to its targeted audience, which is health professionals, academic researchers, policymakers and anybody interested in health issues. Articles for publication are received from doctors, nurses, allied health professionals, students, policymakers, government bodies, non-governmental bodies and others.

## Aim

To bridge the gap in public health information sharing between policy-makers, researchers, health professionals and practitioners.

## Publisher

RPHB is a publication of the Rwanda Health Communication Centre (RHCC) which is the communication arm of the Rwanda Ministry of Health and operating under the Rwanda Biomedical Centre (RBC).

## Registration

Online ISSN: 2663 - 4651, Print ISSN: 2663 - 4643

## INSTRUCTIONS TO AUTHORS

All works submitted to this bulletin will have to belong to the types of articles stated below:

### 1. ORIGINAL RESEARCH

Referred to as “Primary Research” pioneer in a determined domain. It can be from various aspects: Clinical features, pathophysiology, biochemistry, molecular biology, etc...

#### THE TITLE

The title of the article should be concise and informative. It should contain enough thoughts on the subject.

#### ABSTRACT

Abstract of 250 words maximum must accompany each manuscript and be divided into 4 paragraphs with the following headings and MeSH keywords:

**Introduction:** stating the purposes/aims of the work; the research undertaken, the hypothesis tested or the procedure evaluated.

**Materials and methods:** briefly stating what was done and what materials were used, including the number of subjects, the methods to assess the data and to control bias.

**Results:** Providing key findings of the study, including indicators of statistical significance, actual numbers, as well as percentages.

**Conclusion:** Summarizing in 1 or 2 sentences the work on the basis of the findings. It emphasizes new and important aspects of the study or observations.

#### THE MAIN TEXT

The text of observational and experimental articles is divided into sections with the following headings: Introduction: should always begin the text, and requires brevity and focuses. It conveys the nature and purpose of the work, and quotes the relevant literature. Only strictly pertinent background

information is necessary for understanding why the topic is important. We suggest the final paragraph clearly states the hypothesis or purpose of the study.

### METHODS

Details of clinical and technical procedures should follow the introduction. A clear description of the selection of the observational or experimental subjects should be given. The identification of all aspects of the study, its reasoning, and the related relevance should be explicitly justified. In case, the study was done in a particular way, the guiding principles should all be clarified. Exclusion and inclusion criteria or partial inclusion, the reliability index, the confidentiality index, the analysis step, and the data collection processes should be also carefully specified. This section should provide sufficient details on the methods, instrumentation, procedures, all drugs and chemicals used (including generic names, doses, routes of administration). It should allow other workers to reproduce the study if necessary.

This section should also state the self-evaluation of the study by: independent/consensus readings blinded or unblinded to other information and estimate the fluctuation of recall biases by random ordering of studies.

Be clear about the retrospective or prospective nature of the study. Finally, provide references to established methods, including statistical methods that have been published, forthcoming, or that may not be well known. New description or substantially modified methods may be used however, give reasons for the use of these techniques, and evaluate their limitations. Statistical methods should be described with enough details to enable a knowledgeable reader with access to the original data to verify the reported results. A general description of methods would be defined in the methods section, whereas a specific statistical method used into analysis would be summarized in the results section. Any general use of the computer program should be



specified, and more details have to be clarified about any randomization issues.

## RESULTS

Logical sequence of presentation of results is required in the text; along with tables, and illustrations. Repetition of data from illustrations into the text should be avoided; however, emphasize or summary of only important observations would be helpful. Avoid the “non-technical use” of technical terms in statistics which should be defined and reserved for the right purpose. Moreover, define all those statistical terms aside with or including abbreviations and/or most used symbols. Any complication and/or unexpected finding should be reported and the more possibly explained and the author should report lost to follow up and dropouts from a clinical trial.

## DISCUSSION

Use ample subheadings. Emphasize the new and important aspects of the study and the conclusions that follow from them. Avoid repetition of details included in other parts. This section requires the mention of the implication of the findings, and their limitations for future research, involving relating the observations to other relevant studies.

Finally, the conclusions should be linked to the goals of the study; though mostly avoiding:

Unqualified statement not completely supported by the data

Statement on economic benefits and costs unless the report includes economic data and analyses

Claim of priority and alluding to work that has not been completed.

Whereas new hypotheses could be suggested when warranted, but they should be clearly labeled as such and recommendations, when appropriate and needed, may be given.

## Acknowledgments

List all contributors who do not meet the criteria of authorship, such as those who provided purely technical help, writing assistance, or a department chair who provided only general support; and their respective contribution will be headed as provided. Everybody must have given written permission to be acknowledged. References: References should be numbered consecutively in the order in which they were first mentioned in the text. They will be identified in the text, tables, and legends by arabic numbers. This bulletin uses the IEEE style (Institute of Electrical and Electronics Engineers) for referencing the citations. It is advised to avoid citations or personal communication unless they provide essential and pertinent information. In all case, the name of the person and date of communication should be cited in parentheses in the text.

## 2. CHECKLIST FOR SURVEILLANCE REPORTS

Disease surveillance summaries are reported following the checklist below:

**Title:** Compose a title that includes the name of the health condition, population, time and place.

**Abstract:** Provide a structured abstract including the following sub-headings: Background; Objectives; Methods; Results; and Conclusion.

## INTRODUCTION

**Context:** Summarize the current situation regarding the health condition under surveillance and identify why it is important. Objectives: State the objective of the surveillance report.

## METHODS

**Setting:** Describe the setting, locations and dates of the surveillance period.

**Population:** Describe the population under surveillance. Definitions: Provide definitions for each health event under surveillance, including

case definitions and any public health interventions.

**Information sources:** Describe all data sources, including the objective of any surveillance systems, what data were collected and how data were gathered, transferred and stored. Supplementary data: If appropriate, note where to access supplemental material (e.g., [www.opendata.gc.ca](http://www.opendata.gc.ca)).

**Data quality, missing data and reporting delays:** Describe how the data quality was assessed. Explain how missing data were addressed. If data is reported by date of diagnosis or symptom onset, include a statement about whether the data for the most recent periods may be revised.

## DATA ANALYSIS

Describe any analytical methods used providing sufficient detail to enable a knowledgeable reader with access to the original data to judge its appropriateness and to assess the reported results.

## RESULTS

**Descriptive:** Provide a summary of the descriptive data, including demographics.

**Data Quality:** Report on data quality (e.g., completeness, missing data, under reporting)

**Analytic data:** Provide a summary of the analysis including (when indicated) estimates of trends. When applicable, point estimates should include appropriate indicators of measurement error such as 95% confidence intervals (e.g., average annual percentage change used to describe trends or odds ratios used to describe subgroup differences).

**Figures:** Create the minimum number of figures to highlight key results. Create a title that includes person, time and place.

## DISCUSSION

**Key results:** Summarize key results with reference to study objectives

**Comparison:** Consider these findings in relation to the current literature. Strengths and weaknesses: Discuss the strengths and weaknesses of the study (data quality, completeness, sources of

potential bias). Interpretation and generalizability: Provide a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies and other relevant evidence.

**Conclusion:** Ensure conclusions address objectives and follow from the results.

## 3. PUBLIC HEALTH NOTICES / OUTBREAK REPORTS

Following the Center for Disease Control recommendations, for public health notices and outbreak reports to be published they need to cover all four components as stated below:

### INTRODUCTION

Generally, the introductory paragraph should begin with 1 to 3 sentences establishing the existence of the outbreak or underlying public health problem (e.g., “On January 2, 2008, the Nevada State Health Division contacted CDC concerning surveillance reports received regarding two persons recently diagnosed with acute hepatitis C.”). The introductory paragraph also usually contains: a) a statement that an investigation was conducted, when and by whom; b) the most important finding(s); c) the actions taken to stem the outbreak; and d) a statement of the public health implications and actions that should be taken in response to the investigation. Investigation and results: First, present the initial investigation and its findings. This might include: 1) a description of the setting and a statement of how the outbreak came to the attention of health authorities; 2) a clinical description of the index case or initial cases; 3) initial key test results; and 4) hypothesis generation activities and results. Next, summarize the full investigation, including: case definition, case-finding activities, method of investigation, and results. Cases should be counted and described by clinical characteristics, treatment, and outcome, as well as time, place, and person descriptive results. Next, present the methods and results of any analytic epidemiologic studies (e.g.,

cohort or case-control studies). Finally, provide the results of any relevant microbiologic, genetic, or toxicologic results, followed by the results of any testing of environmental samples. Public health response: When appropriate, a brief description summarizing any public health interventions taken and the results of the interventions follows.

## DISCUSSION

Same as for a Full Report, except that a Limitations paragraph might not be required for an Outbreak Report.

## 4. POLICY BRIEFS

This bulletin will use guidelines on reporting/publishing policy notes as they are suggested by the Center for Disease Control (CDC). As the CDC defines them; Policy Notes are intended to announce new official policies or recommendations (e.g., from ACIP or CDC). These reports can be thought of as briefs. Maximum word count at submission is 1,400 words. Up to three tables, figures, or boxes may be included. Policy Notes contain no Discussion or Limitations, and a summary box is not required. Although policy notes or brief might vary, following is a rough guide of what basic notes should have: Introduction: The introductory paragraph should be limited to 150–200 words. It might contain all or some of the following components: a brief introductory statement orienting the reader to the topic and placing it in context, a brief description of the public health problem, a brief statement of the rationale for the policy or recommendation, mention of the most important parts of the policy or recommendations, and one or two sentences stating the conclusions and the public health implications of the new policy or recommendations.

## BACKGROUND

The Policy Note should include a paragraph after the introduction that summarizes background information relevant to the policy

or recommendation that can help the reader understand the context and need for the policy or recommendation.

**Methods:** Should include a summary of the methods used to establish the policy or recommendation, including answers to some or all of these questions: Who was involved in the production of the guidelines or recommendations, and how? What evidence base was considered? What was the rationale for considering this evidence base? Was other evidence excluded from consideration and, if so, why? **Rationale and evidence:** The Policy Note should provide a concise review of the rationale for the policy or recommendation and a descriptive review of the scientific evidence used to establish it. It should include an explanation of how the policy or recommendation adds to, or differs from, relevant policies or recommendations established previously. **Presentation of the policy or recommendation:** The policy or recommendation should state clearly when it takes effect and to whom and under what circumstances it applies.

## DISCUSSION OR COMMENT

The Policy Note should comment on the likely impact of the new policy or recommendation and plans for assessment of the policy or recommendation

## 5. CASE REPORTS

These are reports of an individual patient on their symptoms, treatment reactions on a disease or condition of interest. These reports normally focus on unusual reactions or occurrences. Similar cases to other research reports, case reports might include a literature review of previous similar. Case reports might also address positive patient outcome on particular treatment guidelines or individual impact of a particular intervention. These are mainly used for educational and decision-making purposes. Case reports are normally reported following a checklist found at the CARE Guidelines.

## 6. CASE STUDIES

We recommend authors to follow the “EQUATOR Network” for ample explanations and guidelines in the writing of such articles. They have to be well-described case studies on health care interventions of public health concern. These could be:

Rigorous assessments of processes and program interventions.

Recommendations on possible health interventions.

Never on individual patient (= case report)

## 7. COMMENTARIES / OPINION / METHODOLOGY ARTICLES

We recommend authors to follow the “EQUATOR Network” for ample explanations and guidelines in the writing of such articles. Though these articles are moderated, they should be:

Short, focused, opinionated to previous articles or any subject related to the journal entirely. Contemporary and focusing on specific issues. Normally up to 800 words.

Frank critics to the journal are bravely motivated and would be as much as possible published.

## 8. FORMATTING THE MANUSCRIPT

Please note that articles which are not correctly formatted will be returned to the authors

**Format text:** Style: No Spacing, Single column, Single Spacing

Font: Single Spacing, Times New Roman - size 12

Titles: Capitals and bold, size 14

**Format tables:** Times New Roman, Font size 9  
No vertical lines. Horizontal lines in the table can be removed. No table should be larger than a single A4 page. Footnote should be size 9 and italic

Rwanda

# Public Health Bulletin

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