Rwanda Public Health Bulletin

Vol. 2 (1) ; March 2020

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

HIGHLIGHTS

1. **COVID-19** Preparedness activities in Rwanda
2. **COVID-19** Rwanda response updates
3. **COVID-19** Through the lens of the media
4. **COVID-19** Knowledge, attitudes and preventive practices in Rwanda
5. **COVID-19** A global health emergency
6. **COVID-19** Epidemic curve from outbreak in Rwanda

Ministry of Health

Rwanda Biomedical Centre
Healthy People, Wealthy Nation

Rwanda
Public Health Bulletin

General Information

Rwanda Public Health Bulletin (RPHB) is an open access source and peer reviewed journal 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.rwandapublichealthbulletin.org/manuscripts/submission and should fulfil the RPHB's instructions.

Go to https://www.rwandapublichealthbulletin.org/about/instructions for instructions to authors.

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Publisher: Rwanda Health Communication Centre (RHCC).

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

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CONTENT

Dear Readers,

I take this opportunity to thank you all, particularly health care workers on the frontline, for your collaboration in the fight against COVID-19 to keep Rwandans safe.

I would like to assure Rwanda Public Health Bulletin readers that since the declaration of the outbreak in China in December 2019, Rwanda developed mitigation strategies and established standard operating procedures to prepare and respond to COVID-19. Rwanda activated its procedures in March 2020 when the country registered its COVID-19 index case. A special task force team of public health experts is now in place at the central level with well-established entities and trained responders across the country. The national reference laboratory is equipped with needed software and hardware supports and machines to test for COVID-19 disease.

Based on the global situation, however, it appears that the fight against COVID-19 is likely to continue for months, if not years. It is therefore very critical that authentic and evidence-based information is shared to health care workers and the entire general population from credible sources, such as the Rwanda Public Health Bulletin. This will allow Rwanda's task force to concentrate their efforts on actual response activities and not scatter energy on addressing rumors and reinforcing prevention measures to the overall population. This issue provides detailed information on the COVID-19 pandemic, preventive and response measures available in the country.

As you read this RPHB 2 (1) issue, I would like to encourage that you share information or your scientific pieces of work on this platform, especially during this period when less is known about the disease we are addressing.

Together, we shall overcome COVID-19.

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

Dear Colleagues,

It is my honor to present to you the second volume of the Rwanda Public Health Bulletin (RPHB) with its first issue of March 2020. I would like to express my appreciation for your continued interest in the Rwanda Public Health Bulletin content.

This issue is released in a period when the world is responding to the novel coronavirus pandemic outbreak (COVID-19). Since December 2019, the spread of COVID-19 is on a continuous rise and is globally claiming lives. Unfortunately, Rwanda is not immune to this global threat and is currently working to effectively respond and contain the outbreak. You might have noticed that early this year, the government of Rwanda started to implement different prevention measures including placing hand washing stations in public places, establishing response plans. With the current situation where neither a cure nor a vaccine is available, it is important for the Rwandan public health community and overall health care workers to be well informed on the current prevention measures implemented and outbreak management in Rwanda.

This issue is dedicated to Rwanda's approach to control and respond to COVID-19. The content covers the role of the media in managing the outbreak, a brief overview on Rwanda's preparedness strategies, the Rwanda's current overall COVID-19 outbreak situation, and finally on health care workers' level of knowledge and practices on COVID-19. As your read this issue, I would like to remind you that each of us is called to play a role in responding to this outbreak: In your respective hospitals and other areas of work, I ask that you support the response team by using the information provided on this platform to demystify rumors and non-evidence information circulating through different non-professional platforms in the general population.

The issue comes with innovations and better visibility of the bulletin and published materials inform you of the current situation of the disease outbreak in Rwanda. The issue is available online at www.rwandapublichealthbulletin.org.

I wish you a pleasant reading.

Stay healthy, stay safe and stay at home.

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

COVID-19 preparedness activities in Rwanda

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Received: March 28, 2020
Accepted: April 15, 2020
Published: April 30, 2020

Cite this article as: Harnett et al. COVID-19 Preparedness activities in Rwanda. Rw. Public Health Bul. 2020; *Rw. Public Health Bul. 2020. 2(1): 07-10.*

INTRODUCTION

WHO declared the Coronavirus Disease 2019 (COVID-19) as a public health event of international concern (PHEIC) on 30 January 2020 [1]. The risk is currently evaluated as very high globally and international cooperation is crucial to effectively combating COVID-19 [2,3,5].

So far, 183 cases of Coronavirus have been reported in Rwanda as of 25 April 2020 [6]. The Government of Rwanda has set up a multidisciplinary team to assess and strengthen preparedness and response to the epidemic [8].

Rwanda introduced stepped up detection at all its borders. The Government of Rwanda has implemented strict quarantine procedures and strengthened the existing healthcare system to respond to the current situation [2].

The country has put in place preparedness and response mechanisms to deal with a possible outbreak, including below preventive measures [2,3].

PREVENTIVE MEASURES

These are preventive measures recommended [3,8]:

» Hand wash regularly using clean water and soap or use sanitizers to avoid contamination.

» Avoid touching eyes, nose, mouth and handshakes.

» Cover your mouth and nose with a tissue or sleeve when coughing or sneezing.

» Avoid unnecessary travel to affected countries.

» If you have a history of travel in affected countries and present one of the following symptoms: fever, cough, runny nose, sore throat. Please contact 114 for more information.

» Rwanda has strengthened its surveillance and prevention measures at all points of entry, health facilities, public places and in the community [3,4].

HIGHLIGHTS OF CURRENT GLOBAL COVID-19 PANDEMIC AS OF 25/04/2020

» Total affected countries and territories: 211 (178 countries + 33 territories)

» Cumulative number of cases: 2,940 234 confirmed (194 530 new in last 24 hours)

» Cumulative recovery cases: 841,966 recovered/ discharged

Cumulative death: 5873 deaths (84 new)

COORDINATION AND LEADERSHIP

» Activation of the national taskforce for COVID-19 prevention and response.

» Activation of the national technical coordination team (Incident Management System/IMS) for the prevention and response.

» Development and dissemination of the first version of COVID-19 guidelines and SOPs to guide response teams, health facilities and partners.

» Activation of district taskforce for COVID-19, ensuring coordination at district level.

» Development of national preparedness plan.

SURVEILLANCE

The Rwanda Biomedical Centre established health screening points at 31 points of entry (Kigali International Airport and 30 land and water border entries) [2,4].

The cumulative number of people screened is 1,400,859 at land borders and 61,209 screened at Kigali International Airport (KIA) from 27th January – March 5th, 2020 [4,5].

Surveillance screening documents were developed to guide health care workers. These include: case definition, screening algorithm, case investigation form and contact tracing standard operating documents [2,4,5].

LABORATORY

The National Reference Laboratory (NRL) has been upgraded to test COVID-19 since early February, 2020 in partnership with Robert Koch Institute (RKI), Germany; The Centers for Disease Control and Prevention and the World Health Organization [4].

NRL has been able to run cumulatively over 900 tests for COVID-19 and all were tested negative [4].

12 laboratory technicians from NRL were successfully trained as trainers and continued to provide trainings to over 32 lab technicians from district satellite laboratories for sample collection and management [2,4].

CASE MANAGEMENT, INFECTION, PREVENTION & CONTROL (IPC)

RBC trained 219 health care providers (Medical doctors, laboratory technicians, environmental health and nurses) from all hospitals in Rwanda [4].

RISK COMMUNICATION AND COMMUNITY ENGAGEMENT

Rwanda has strong skills in developing and implementing national, regional, and cross-border Risk Communication and Community Engagement (RCCE) strategic plans for managing outbreaks. [2,8]. With experience in managing all awareness activities related to detection and response during public health emergencies, including Ebola Virus Disease, the RCCE Technical Working Group has developed structures at the district and community levels related to COVID-19 [2,8].

» Strengthened capacity building for RCCE members, including a training completed by Malick Kayumba and Alexis Kapiteni by the African Union and Africa Centres for Disease Control and Prevention.

» Messages on prevention have been developed, designed, pretested, and disseminated.

» A list of spokespersons and media contacts have been prepared at central and district level and provide them with talking points on regular basis.

» Train journalists on COVID-19 pre and during outbreak reporting.

» Daily updates on the country situation are shared with the general population through national radio and TV, as well as through all social media channels.

» Aggressive awareness campaigns to increase knowledge on preventive measures on COVID-19 are being widely implemented through different communication channels including community meetings, Radio, TV, caller tune, radio comic series, electronic billboards in strategic places and social media.

» COVID-19 awareness and prevention messages are being sent through SMS to all phone holders registered to national telecommunication companies.

» The Rwanda health sector increased the capacity of the existing Call Centre toll-free number 114 with new equipment and staff to ensure it is operational 24/7, an increase from the previous operation of 13 hours a day/6 days a week [8]. The team provides needed information and advice to all those who call the toll-free number 114 and produce reports from the daily media monitoring and information from the focal points in the community to ensure proper management of rumors [2,8].

LOGISTICS

Hospital capacities for holding and isolating cases is being upgraded and as well as the identification of quarantine and isolation and treatment site [2,4].

HOSPITAL AND ISOLATION CENTERS PREPARATION

With the support of the Ministry of Health (MoH) and Rwanda Biomedical Centre (RBC), staff from all hospitals, health centers, health posts, community health workers, private clinics, and the existing Infection Prevention and Control (IPC) committee at each health facility mentioned above have been trained on Coronavirus, COVID-19. Training, which took place at Kigali teaching hospital CHUK, included pathophysiology, signs and symptoms, screening and preventions measures, and the IPC staff have been tasked to oversee any issues related to COVID-19 [2].

The training focused on preventive measures and the construction of handwashing sinks at all hospital entry points and in various areas throughout the hospital [8]. The screening procedure has been initiated for both health facility staff, as well patients who seek medical care at each facility. Screening is based on body temperature with travel or contact history, and signs and symptoms of an active respiratory infection. The screened people are then categorized according to those who have been identified to be at high risk, and are then sent to a designated isolation center for further management [2,8].

Prevention measures enacted at the healthcare facilities include social distancing, meaning at least 1 meter of space between people [3,8]. In addition, staff meeting conferences have been placed on hold in hospitals and all other activities which may gather groups of people have ceased [2]. Each health facility has an isolation room reserved for suspected COVID-19 cases, and stocked with with appropriate Personal Protection Equipment (PPE) (Figure 1 and Figure 2) which includes single-use impermeable coverall, masks, glasses, shoe cover, gloves, and hoods [2].

Figure 1: *Simulation exercises at Kigali University Teaching Hospital (CHUK) (Left) and healthcare professional in a PPE (Right)*

All health facilities have been equipped with ambulances for easy transport of suspected cases to designed COVID-19 treatment centers [2].

All hospitals have created a system of responsiveness for any suspected cases of COVID-19. The channel starts by contacting key persons who take the patient to the isolation room for blood sampling, which is then sent to NRL to be tested. After test results are released, patients with negative test results are released back in the community, whereas patients with positive test results are transported via dedicated ambulances to one of the treatment centers to be managed and followed up [2,8].

The MoH and RBC have created COVID-19 treatment centers in Kanyinya and at LaPalisse Hotel in Nyamata, and deployed well-trained personnel for the management of COVID-19 patients. In each center, COVID-19 positive patients have been followed and managed, and for those identified with severe respiratory failure, mechanical ventilators have been reserved at Rwanda Military Hospital (RMH) [2].

Figure 2: *Healthcare professionals in training (Left) and isolation room (Right) at Rwanda military hospital*

In conclusion, the best way to curb the virus spread, is to avoid shaking hands, avoid close contact (at least than a meter), wash hands regularly with soap and clean water and use alcohol-based hand sanitizer regularly where hand washing is not applicable (WHO).

Infection prevention and control, risk communication, community mobilization and data management are key to the successful containment of the virus.

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COVID-19 Rwanda response updates March 14 – April 25, 2020

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Received: March 28, 2020
Accepted: April 15, 2020
Published: April 30, 2020

Cite this article as: Hartnett et al. Covid-19 Rwanda response updates March 14 – April 15, 2020. *Rw. Public Health Bul. 2020; 2(1): 11-12.*

INTRODUCTION

As of March 2020, WHO declared the Coronavirus Disease 2019 (COVID-19) as a global pandemic [1], and on March 14 2020, Rwanda reported its first COVID-19 confirmed case [2]. In response and to effectively contain COVID-19, the government of Rwanda activated the national joint task force- a multidisciplinary team to lead all activities pertaining to COVID-19 in the epiCentre as well as at district levels [3].

Rwanda has maintained and implemented the following measures [3,4]:

» To encourage the population to regularly wash hands using clean water and soap or alchol based hand sanitizers.

» To avoid touching eyes, nose, mouth and handshakes.

» Wear masks in public areas.

» Avoid contact with others and stay home if experiencing fever, cough, sneezing shortness of breath.

» Clean and disinfect surfaces around your home and work,

» To cover mouth and nose with a tissue or sleeve when coughing or sneezing.

» To limit unnecessary travel to within and across cities.

» To recognize COVID-19 key symptoms : fever, dry cough and sore throat and use a set hotline (114) to seek help or report any suspect cases.

» Rwanda has suspended international travels for an initial one month period from March 2020.

» The country has been organizing cluster based screening as an active case finding strategy.

» The country has declared a national lockdown from March 21- April 30, 2020.

In addition to prevention measures, the Government is quarantining and isolating asymptomatic cases in pre-set and prepared sites; the majority of people in these sites are recent travelers quarantined upon arrival at Kigali International Airport [3,4,7].

RWANDA COVID-19 CURRENT KEY HIGHLIGHTS

» Total cumulative number of cases: 183 (As of 25 April 2020)

» About 75% of all confirmed cases were recent travellers, majority of which were quarantined immediately upon arrival.

» Total Recoveries/ Discharged: 88

» No death.

SURVEILLANCE

The Rwanda Biomedical Centre established health screening points at 31 entry points (Kigali International Airport and 30 land and water border entries) using surveillance screening documents pre-prepared and distributed early this year [8].

LABORATORY

The national Reference Laboratory (NRL) has been upgraded to test for COVID-19 since early February, 2020 in partnership with Robert Koch Institute (RKI), Germany; The Centers for Disease Control and Prevention and the World Health Organization [5].

RISK COMMUNICATION AND COMMUNITY ENGAGEMENT

National awareness campaigns continue to be widely implemented using different communication channels available such as radio, TV, meetings, social media channels and drones [2,5].

COVID-19 awareness and prevention messages are also being sent through SMS [6].

LOGISTICS

Hospital capacities for holding, quarantine sites and case isolation are constantly being upgraded [2].

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COVID-19 through the lens of the media

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Received: March 31, 2020
Accepted: April 20, 2020
Published: April 30, 2020

Cite this article as: Hartnett et al. COVID-19 through the lens of the media *Rw. Public Health Bul. 2020; 2(1): 13-15.*

KEY MESSAGES

It is imperative for the media to maintain accuracy in shared and available information while delivering organized, timely, and informative messages to the public.

The media has the responsibility to mitigate misinformation by fact-checking, reviewing inaccurate content, and utilizing legitimate stories for the dissemination of information.

The media plays a key role in decreasing public panic, rumors, and stigma.

Social media platforms should, therefore, be used as a critical tool in disseminating timely and accurate information and to provide reliable guidance to the public.

INTRODUCTION

COVID-19 has spread internationally, disrupting lives, communities, and economies worldwide. The rate and severity of the growing pandemic has become a crisis of international concern causing widespread feelings of confusion, panic, rumors, misconceptions, and fear. The pandemic spread has widely affected humanity in different aspects; the rate of information dissemination and information saturation has thus spread worldwide [1].

MEDIA MANAGEMENT DURING THE COVID-19 OUTBREAK

During a public health outbreak, a surge of information sharing and widespread coverage in the media is inevitable. However, in a time where information is more accessible than ever, the rapid spread of misinformation and false claims consequently has the potential to evoke feelings of panic or confusion to the public [1].

The media, therefore, plays an important role in mitigating the spread of misinformation and limiting feelings of panic and stigmatization by appropriately fact-checking sources of information, eliminating inaccurate content from reporting, and following appropriate communication guidelines before reporting [1,2].

Responsible reporting, from a media standpoint, encompasses appropriate message development, rumor control, and dissemination of messaging through reliable communication channels [3].

In Rwanda, the dissemination of information to the public and the media is facilitated by the Risk Communication and Community Engagement team at the Ministry of Health through Rwanda Biomedical Centre [4]. To ensure accuracy in coverage and reporting, preparedness and response following Rwanda's index case in March 2020, updates have been issued daily and shared with relevant media houses on the number of confirmed cases and other relevant information [9]. In addition, a media list is consistently updated and shared with relevant authorities to build credibility in reporting [1,4].

COMMUNITY MOBILIZATION MESSAGING

In Rwanda, the circulation of rumors is managed through community mobilization teams tasked to effectively handle information gathering strategies and ensure accurate and appropriate responses [4]. The sharing of information to the public and media is done through consulting technical staff including clinicians, scientists, and epidemiologists [1]. Sources of information such as radio, television, social media, and other media platforms, enable technical subcommittees to disseminate authentic messages and correct information to the media, and thus the public [2,4].

It is also important for the management of disease outbreaks to undertake rapid assessments to understand what the community knows and believes about the virus and its sources of information. Knowledge, attitudes, and practices must be recognized to guide messaging to the community for effective mobilization interventions[4]. Through a rapid research team, comprised of staff from the district and national level, including the district health promotion and disease prevention officers, the district health director, the district community health worker supervisor, a social researcher, and social mobilizer from the national level, Rwanda is able to identify and assemble a data team at the district level for the data collection on the population perceptions about COVID-19 [3,4].

Through Rwanda's 24/7 toll-free hotline, 114, the public, including media, is encouraged to call for COVID-19 related questions and corresponding answers through the assistance of preparedness and response teams of the Ministry of Health through the Rwanda Biomedical Centre [4].

THE AGE OF SOCIAL MEDIA

Now more than ever, in an age where the public has immediate access to news and information at the click of a button, social media has served as both a positive source of information and a platform to perpetuate rumors and false information sharing at a rapid rate during the COVID-19 outbreak [1,4].

With growing instructions being put in place by authorities, including nationwide lockdowns, more are turning to social media to receive instant updates and guidance [3]. With the general population spending more time at home to prevent the spread of the virus, social media has risen as one of the most popular platforms for news and information. Rwanda has Rwanda has implemented strategies, to particularly and timely respond to social media messaging and rumors to prevent the spread of inaccurate information [4].

In addition, social media continues to serve as a platform to provide the public with suggestions on how to protect themselves, to post positive messages antagonizing fears and concerns, to spread messages of support to one another, and to provide community-based prevention guidelines [4].

In conclusion, feelings of stigma and fear, especially during an outbreak such as COVID-19 have the potential to cause rumors and misinformation sharing in the media. In such situations, a mishandled media response can create conflicting messaging, further disease spreading, and panic throughout the community. On the other hand, through social mobilization and community engagement efforts, disease awareness and prevention measures can be accurately disseminated through effective response efforts in order to mitigate mixed or inaccurate messaging. Through factual media messaging, legitimizing sources of content, and disseminating appropriate information, the media can be a paramount and useful source of information sharing in response to COVID-19 disease outbreaks.

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Knowledge, attitudes and preventive practices towards COVID-19 among frontline healthcare workers in Rwanda

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Received: April 11, 2020
Accepted: April 20, 2020
Published: April 30, 2020

Cite this article as: Ndishimye et al. Knowledge, attitudes and preventive practices towards COVID-19 among Frontline Healthcare Workers in Rwanda *Rw. Public Health Bul. 2020; 2(1): 16-21.*

ABSTRACT

The aim of the study was to assess knowledge, attitudes and preventive practices towards COVID-19 among frontline healthcare workers in Rwanda. It was a descriptive cross-sectional study conducted with 177 healthcare workers at the frontline for the current outbreak. Half of the respondents were aged between 31-40 and majority were males, mostly physicians, and working more in urban rather than rural settings. Almost all respondents were able to correctly identify COVID-19 key symptoms, and 89% were aware of factors likely to be associated with increased fatality rates. Considerable proportions of respondents understood dynamics of COVID-19 infectiousness: 87% respondents were aware of possibility of infection before the onset of symptoms; 99% completers responded yes on droplets and fomites as a major transmission route. All respondents- 100 % understood and agreed on the necessity of self-isolation and quarantine as COVID-19 control measures, and about 95% reported to be mainly adopting hand washing, social distancing, limiting unnecessary travels and crowds as well as using facial masks and gloves. All survey respondents were well informed about COVID-19 and its prevention, in a relative way, and it seems to influence their attitudes and practices regarding the prevention of the outbreak.

INTRODUCTION

The coronavirus disease 2019 (abbreviated "COVID-19") is an infectious acute respiratory infection caused by the novel coronavirus. The virus is a positive-strand RNA virus with high homology to bat coronavirus [1]. This pneumonia was first discovered in December 2019 in Wuhan, China, and currently presents a significant global health threat for the entire world [1,2]. COVID-19 is highly transmitted via droplets and fomites during close unprotected contact between an infector and infectee, and based on current evidence, its main clinical symptoms include fever (with temperature above 38 degrees celsius), dry cough, difficulty breathing, fatigue, muscle pain, and difficult breathing [3-5].

The COVID-19 epidemic has spread very quickly these last days, and more people infected with

Potential Conflicts of Interest: No potential conflicts of interest disclosed by all author. **Academic Integrity:** All authors confirm their substantial academic contributions to development of this manuscript as defined by the International Committee of Medical Journal Editors. **Originality:** All authors confirm this manuscript as original piece of work, and has not been published elsewhere. **Review:** All authors allow this manuscript to be peer-reviewed by independent reviewers in a double-blind review process. **Publisher:** Rwanda Health Communication Centre, KG 302st., Kigali-Rwanda. Print ISSN: 2663 - 4651; Online ISSN: 2663 - 4653. **Website:** www.rwandapublichealthbulletin.org

this virus have since been and continue to be identified in different countries. In response to the pandemic situation, the World Health Organization (WHO) declared it a public health emergency of international concern on January 30 and put in place a series of recommendations calling for collaborative efforts from all countries to prevent further spread of COVID-19 (6, 7). No specific antiviral therapies are available, but efforts to develop antivirals and a vaccine continue (8).

Following the confirmation of its first COVID-19 case on 14/03/2020, Rwanda activated and adopted several unprecedented measures to control COVID-19 transmission, first in the epi-center (Rwanda's capital city- Kigali) but also expanded these measures in other provinces of the country. Measures included air travel bans, closure of all borders, suspension of public transportation, limitations of unnecessary movements, closing of public spaces such as schools, churches, isolation and care for COVID-19 infected patients and/ or suspected cases. From March 20, 2020, a national lockdown, self-quarantine campaign was launched and led by Rwanda National Police- requiring people to stay and work from home (9).

In addition to this, Rapid Response Teams (RRTs) were activated at central and district levels to respond to the pandemic. These multi-sectoral RRTs operate from inside the National COVID-19 Joint Taskforce and are composed of members with different profiles including medical doctors, nurses, infection prevention and control experts, lab technicians, epidemiologists, public health officers and psychologists among others.

Global and in country evidence shows that the battle against COVID-19 is still continuing, and health professionals are and will continue to play an important role in the management and response of the outbreak. To guarantee success, people's adherence to COVID-19 well informed control measures is essential and is largely affected by their knowledge, attitudes, and practices (KAP) towards the disease. Previous studies have shown that knowledge and attitudes towards infectious diseases are associated with level of panic emotions among the population, which can further complicate attempts to prevent the spread of the disease (10, 11).

The aim of this assessment was to investigate the knowledge, attitudes and preventive practices among frontline health professionals towards COVID-19. Findings form this survey may be useful in recommending any remedial measures and additional interventions to improve awareness and attitudes among concerned task forces.

METHODS

A survey was administered from March 25 - April 1, 2020, ten days following Rwanda's registration of its first COVID-19 case. It was an online survey and a google questionnaire was circulated to 220 health care workers (HCWs) trained as frontline responders.

All healthcare workers including, medical doctors, pharmacists, nurses, laboratory staff and epidemiologists, prepared and responding to COVID-19 from both urban and rural areas were considered eligible to take part in this survey. Participants were first briefed about the objectives and the outcomes of the assessment.

The tool had 10 questions on general knowledge about COVID-19 and 7 questions on attitudes towards the management of COVID-19. This survey asked an open-ended question to understand personal practical measures put in place by HCWs in order to protect themselves and their families. A general practical question was also posed for HCWs to suggest health education channels.

The study toolkit was designed by a team of investigators after a rigorous literature review. The kit was validated in 2 steps. First, it was sent to researchers and health professionals to provide their expert opinion with respect to its simplicity, relativity and importance. Second, a pilot study was conducted by selecting a small sample of health professionals from the RRTs who gave their opinions on making the questionnaire simpler and shorter. This survey was reviewed and registered under the Rwanda National Health Research Registry. Data was analyzed using Excel.

RESULTS

A total of 177 HCWs responded to the survey and their demographic characteristics are summarized in the table below [Table 1].

Half of the respondents were aged between 31-40 and most were males.

Predominant occupations were medical doctor and pharmacist. Respondents worked more in urban than rural settings.

Table 1: Demographic characteristics of respondents-

Characteristic		% of respondents
Age	20-31	29
	31-40	51
	41-Above	20
Gender	Male	73
	Female	27
Occupation / Profession*	Med. Doctor	68
	Nurses	8
	Pharmacist	12
	Lab Technician	2
	Other	10
Work Area**	Rural	29
	Urban	74

** Profession in health care can be cross cutting from one occupation to another. We assumed that a few respondents worked under more than one occupation. "Others" was defined in this survey as any other HCW potentially responding to the crisis i.e.: physiotherapists, anesthesiologist and/or radiologists. ** HCWs often work from both rural and urban areas.*

Off all respondents, 52% mentioned they were involved in COVID-19 response activities at the time of survey as shown in Figure 1..

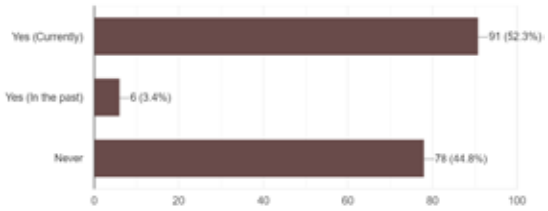

Figure 1. *I have been involved in COVID-19 Preparedness and Response Activities:*

General knowledge about COVID-19

Almost all HCWs were able to correctly identify COVID-19 key symptoms. However, only about 52% and 58% of respondents selected respectively fatigue and sore throat equally important signs. In addition, only 35% and 18% were able to identify myalgia, and loss of smell/taste as other COVID-19 symptoms respectively.

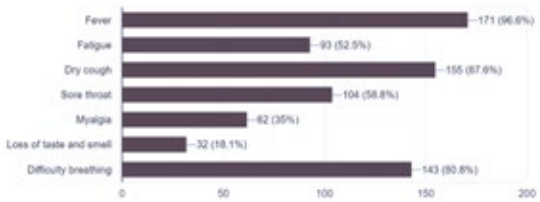

Figure 2. *The main identified clinical symptoms of COVID-19*

Data from this survey revealed that 98% of respondents fully understood that the management of COVID patients is currently only limited to palliative care. 89% were also aware of factors likely to be associated with death or increased fatality rates.

Considerable proportions of survey respondents understood dynamics of COVID-19 infectiousness: 87% respondents were aware of possibilities to infect before the onset of symptoms; 99% of completers responded yes on droplets as a major transmission route (Fig. 3). The majority- 94% of respondents were informed that the incubation period is not constant and could vary from shorter (2 days) to longer (14 days) periods. In the same way, 89% were aware that the virus could survive on different surfaces for varied lengths of time (minutes or hours) (Fig. 4).

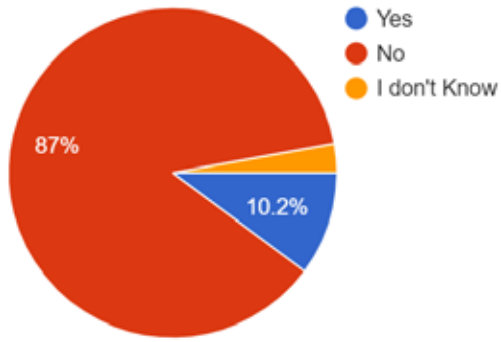

Figure 3. *People with COVID-2019 cannot be infectious before the onset of symptoms:*

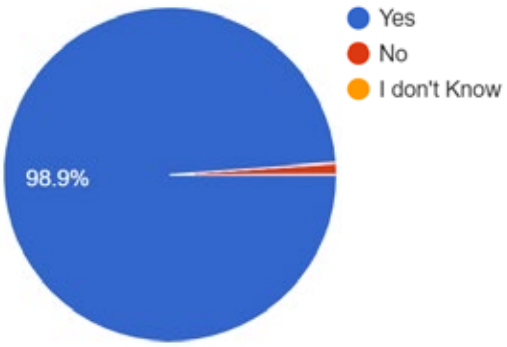

Figure 4. *COVID-19 spreads through coughing droplets from infected individuals*

Attitudes toward COVID-19

All respondents 100% understood and agreed on the necessity of self-isolation and quarantine as COVID-19 control measures and about 98% believed that placing hand washing stations in public places was one among other effective prevention strategies. However, Fig. 5 shows that about 40% total believed or did not know if the virus is less resistant to high temperatures. About 22% HCWs believed or are still uncertain about effects of lemon water and garlic as potential COVID-19 cures.

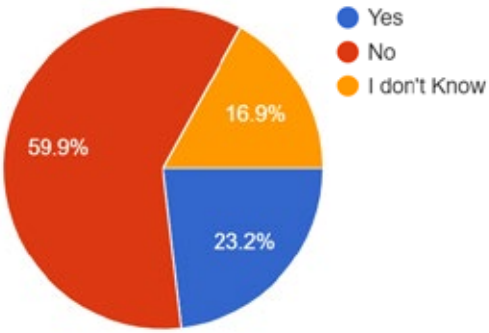

Figure 5: *It is easy to control COVID-19 in warm settings, since the virus is less resistant to high temperatures.*

A proportion of about 28% HCWs also believed it was important for wider communities to use protective masks as opposed to limiting usage to only medical professionals and suspected cases. And finally, 68% of respondents believed that there is still not much known about COVID-2019, the new coronavirus, and current knowledge is based on other types of coronavirus.

Protective Practices toward COVID-19

About practical measures put in place by HCWs in order to protect themselves and their families, about 95% of health care workers reported to be mainly adopting hand washing, social distancing, limiting unnecessary travels and crowds as well as using facial masks and gloves. Other measures included: disinfecting before entering their residences and interacting with family members, and using electronic payments rather than handling money. HCWs also mentioned a reinforcement of patients' triage measures_mainly based on temperature monitoring and educating their communities. In addition, HCWs said they suspended their activities outside Kigali.

Recommended Communication Channels

Seventy-two percent of respondents suggested the use of radios, TV shows, posters, billboards, community leaders, and other social media platforms as probable channels for health education and awareness approaches on COVID-19.

DISCUSSION

Overall, findings from this survey suggest good levels of knowledge and informed beliefs about COVID-19. This could be explained by the fact that majority of responders to this survey were medical doctors, who are likely expected to be more interested in the disease, and therefore, to continuously be educated about it. Moreover, working in urban areas could also have exposed respondents to several sources of information (e.g.: COVID-19 preparedness and response meetings and billboard messages) compared to working in rural settings. The lower response rate from HCWs in rural settings might have been due to limited accessibility to the internet for HCWs to be able to complete the online survey.

Results from this survey show a considerable number of HCWs not currently being involved in COVID-19 response activities, while there is a likelihood of HCWs global shortage (12). A plausible explanation to this would be that many of the case management sites have not yet been activated due to the small number of confirmed cases by the time of survey. However, this survey cannot ascertain whether if those not involved are more located in rural or in urban settings.

Although fever, dry cough and shortness of breath are major symptoms of COVID-19, current evidence also shows that other symptoms such as myalgia and loss of smell and taste could equally be indicative of COVID-19 infection (13). Not being able to identify these other possible symptoms might cause HCWs to dismiss potential cases, particularly in settings where no rapid tests exists to rule out uncertainty.

Results from this survey also revealed satisfactory levels of understanding of COVID- 19 dynamics of infectiousness; this could suggest that health care workers might be applying good prevention practices, leading to possible reductions in cross contaminations among HCWs particularly in treatment facilities.

This survey also showed a certain level of non-evidenced global beliefs in Rwanda HCWs (14). In situations where no cure and scientific evidence are available, a circulation of miss information is inevitable. The belief that there is still not much known about COVID-2019, could partially be explained by the uncontrolled increase of information, scientifically proven or not that is circulating on different platforms. In the current situation, fear and panic can lead people to be less critical of the content that they receive.

Among protective measures stated by HCWs, The investigators suspect that limitation of movement between districts could have affected patients with other existing health conditions other than COVID-19. This assumption could be due to the plausible fact that generally majority of specialists tend to be more concentrated in cities- versus in rural areas. Suggested health education channels in this survey are already being utilized by the response task force team to disseminate information to both HCWs and the general population at large.

Limitations

The most predominant responders were medical doctors; results in this survey might have been skewed to the highest level of knowledge compared to the actual knowledge and skills of HCWs.

Qualitative surveys through interviews could have better measured attitudes.

CONCLUSION

Overall, findings from this survey suggest that Rwanda's healthcare workers were relatively well informed about COVID-19 with appropriate preventive practices during the rapid rise period of the outbreak. With no confirmed cure and vaccine, effective response to COVID relies more on strong prevention measures and well-prepared health care providers. Hopefully, under the joint efforts of the Government of Rwanda and partners, the country surely will win the fight against COVID-19 in the near future.

Acknowledgement

Authors of this survey acknowledge technical and administrative support from:

All respondents to this survey: Many of whom are health care workers on the forefront of response strategies.

Human resource teams working in different isolation and treatment Centres.

Special recognition goes to the entire National Joint Taskforce for facilitating the implementation of this survey.

Team working allowed us all to put together this document in such a short timeframe.

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The coronavirus disease 2019 (COVID-19) - A global health emergency

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Received: April 26, 2020
Accepted: April 28, 2020
Published: April 30, 2020

Cite this article as:
Nsanzabaganwa et al. The Coronavirus Disease 2019 (COVID-19) - A global health Emergency. *Rw. Public Health Bul. 2020; 2(1): 22-29.*

ABSTRACT

The 2019 novel coronavirus (SARS-CoV-2) is a new strain of virus emerged in Wuhan Hubei, China in December 2019. The coronavirus disease (COVID-19) caused by the virus spread worldwide and results in hundreds of thousands of deaths and was declared a global pandemic on 11 March 2020 by WHO. Here we review the current literature on COVID-19 to understand its epidemiological, clinical, laboratory, radiological characteristics and management. We will also look at infection control and surveillance measures applied on a global level. Studies have shown a wide spectrum of severity and symptoms ranging from mild to severe respiratory symptoms. Human to human transmission and via droplets was reported and wearing masks, avoidance of public contact, hygiene practices and quarantines have been implemented in many countries to contain the disease. Quick laboratory tests COVID-19 have been developed and many supportive treatments were reported but to date, no proven effective treatment or vaccine is available.

INTRODUCTION

Coronaviruses (CoVs) are a large family of zoonotic viruses (transmitted from animals to humans). Severe acute respiratory syndrome coronavirus (SARS-CoV) that broke out in China in 2003 was reported to be transmitted from civet cats to humans, and the Middle East respiratory syndrome coronavirus (MERS-CoV) was also transmitted from dromedary camels to humans [1].

Infected humans would normally present cold/flu-like symptoms. In some cases, symptoms might also present like severe pneumonia with severe acute respiratory syndrome (SARS). Cumulatively, CoVs have resulted in more than 10,000 cases in the past two decades, with a mortality rate of 10% for SARS-CoV and 37% for MERS-CoV [1].

The 2019 novel coronavirus (SARS-CoV-2) is a new strain not previously identified in humans that causes the coronavirus disease (COVID-19).

The virus emerged in Wuhan Hubei, China in December 2019 with a typical clinical picture of viral pneumonia [1,2]. The virus spread to other provinces in China, and outside China.

Potential Conflicts of Interest: No potential conflicts of interest disclosed by all author. **Academic Integrity:** All authors confirm their substantial academic contributions to development of this manuscript as defined by the International Committee of Medical Journal Editors. **Originality:** All authors confirm this manuscript as original piece of work, and has not been published elsewhere. **Review:** All authors allow this manuscript to be peer-reviewed by independent reviewers in a double-blind review process. **Publisher:** Rwanda Health Communication Centre, KG 302st., Kigali-Rwanda. Print ISSN: 2663 - 4651; Online ISSN: 2663 - 4653. **Website:** www.rwandapublichealthbulletin.org

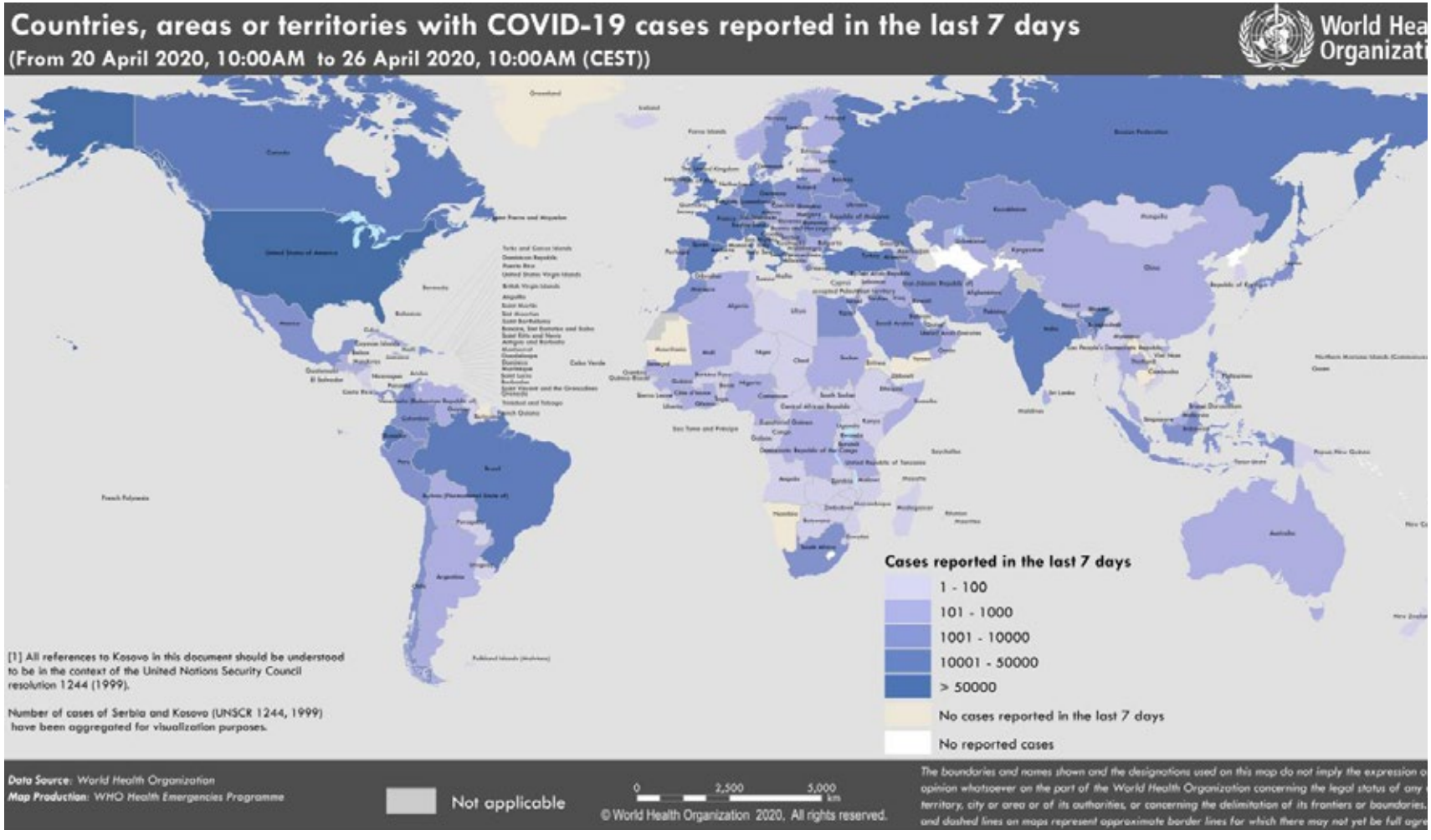


Figure 1. Countries, territories or areas with reported confirmed cases of COVID-19, 26 April 2020 (WHO)

The boundaries and names shown and designations on this map don't imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or its authorities, or concerning delimitation of frontiers or boundaries. Dotted or dashed lines on the map represent approximate border lines for which they may not yet be full agreement.

In January 2020, following the rise in epidemiological statistics, COVID-19 was declared a public health emergency of international concern (PHEIC) by the World Health Organization. After spreading to 114 countries,it was declared a global pandemic on 11 March 2020 [3,4,6].

EPIDEMIOLOGICAL AND CLINICAL CHARACTERISTICS

Studies have shown the virus' origination to be in connection to a seafood market in Wuhan, China [10-15]. The population with poor immune function such as older people, diabetics, those with heart or lung diseases, renal or hepatic dysfunction, are at higher risk for more serious complications from COVID-19 [16].

It was found that in Italy as in France, there were more deaths among people aged at least 70 years compared to China [13,14].

While the infection curve in China began to reach a plateau on the 29th day (February 12) then decrease gradually from the 39th day, In Italy, an inflection occurred on the 20th day (March 11).

In France, the trend remains in an exponential progression. This is the same as the global. In Spain, the evolution of the number of deaths follows a similar but faster exponential progression [14].

The virus is transmitted through droplets and close contact (similar to the transmission of the common cold) or by contact with contaminated objects and surfaces. Persons in the incubation period curry the virus and may be contagious, giving COVID-19 a stronger transmission competence. The incubation period is wide; it ranges from 2-14 days and the symptom onset is, on average, 5-6 days [4].

This characteristic enabled COVID-19 to cause tens of thousands of cases in both China and other parts of the world becoming becoming a pandemic (Figure 1) [5].

As of 26 April 2020, the total number of confirmed cases was over 2,800,000 confirmed cases and over 193 700 deaths (Figure 2) [12].

Common signs of infection include fever, dry cough, fatigue and difficulties in breathing. Myalgia or fatigue was also found common. At least 2 in 3 confirmed cases in Germany, and 30% of patients testing positive in South Korea, have developed the loss of sense of smell [17]. Sputum, headache, hemoptysis, nausea, and diarrhea are less common. Severe infection can cause severe pneumonia, severe acute respiratory syndrome (SARS), kidney failure and even death [1,2]. In a single-centre case series of 138 hospitalized COVID-19 confirmed patients in Wuhan China, 26% of patients received ICU care due to SARS, and mortality was 4.3% [2]. Patients who required ICU care were older compared to the patients who didn't [1,2].

Figure 2: *Situation in numbers globally, 26 April 2020 (WHO)[12]*

Clinical manifestations in children with COVID-19 were found to be non-specific and milder than those in adults. These were mainly caused by the family cluster outbreak [4].

WHO published the guidance on clinical management of severe acute respiratory infection when COVID-19 is suspected.

This guidance describes, in detail, all interventions from triage to special considerations for pregnant patients [6]. Common complications included shock, ARDS, arrhythmia, acute cardiac injury and acute kidney injury [1,2].

LABORATORY CHARACTERISTICS AND RECOMMENDATIONS

WHO recommends taking lower respiratory specimens (sputum, endotracheal aspirate, or bronchoalveolar lavage) for detecting COVID-19 infection.

If initial testing is negative in a patient strongly suspected, specimens are collected from multiple respiratory tract sites (nose, sputum, endotracheal aspirate) and in addition, blood, urine, and stool may be collected. More WHO recommendations are available at http://www.who.int/csr/resources/publications/biosafety/WHO_CDS_CSR_LYO_2004_11/en/

The presence of SARS-CoV-2 in respiratory specimens can be detected by next-generation sequencing or real-time reverse-transcriptase polymerase chain (RT-PCR) methods but other tests may be conducted in cases of complications like blood counts, liver or kidney function tests.

WHO has published a draft code of conduct for the handling of Genetic Sequence Data related to outbreaks (https://www.who.int/blueprint/what/norms-standards/GSDDraftCodeConduct_forpublicconsultation-v1.pdf?ua=1) and Serological testing may be useful to confirm immunologic response [2].

In a study done in China, blood counts of patients on admission showed leucopenia and lymphopenia, higher levels of prothrombin time and D-dimer and increased aspartate aminotransferases [1], increased lactate dehydrogenase, higher creatine kinase, and creatine [2].

The COVID-19 was found to be present in saliva which makes saliva a noninvasive specimen for diagnosis [8].

RADIOLOGICAL CHARACTERISTICS

The typical findings of chest CT images are bilateral multiple lobular and subsegmental areas of consolidation bilateral ground-glass opacity (figure 3).

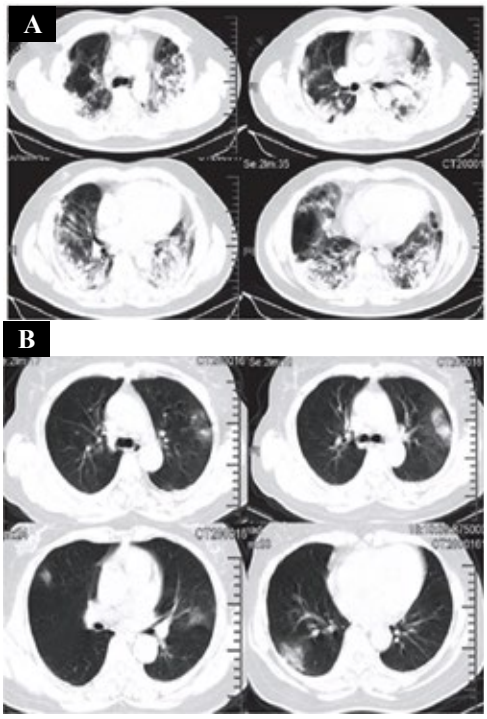
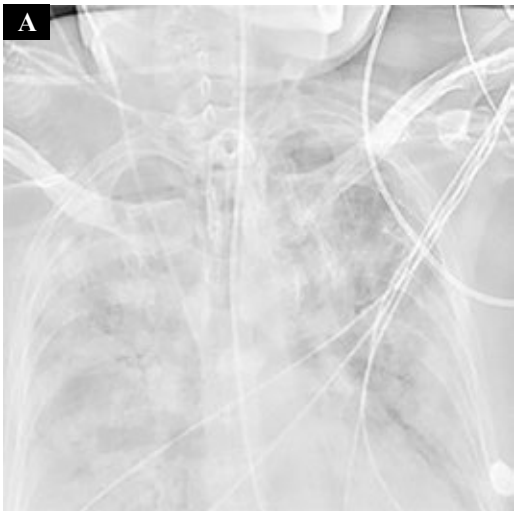


Figure 3: *(A) Transverse chest CT images from a 40-year-old man showing bilateral multiple lobular and subsegmental areas of consolidation on day 15 after symptom onset. Transverse chest CT images from a 53-year-old woman showing bilateral ground-glass opacity and subsegmental areas of consolidation on day 8 after symptom onset (B) [1].*

In a systematic review of compiled literature on CT characteristics of COVID-19, it was found that septal thickening, bronchiectasis, pleural thickening are some of the less common; and pleural effusion, pericardial effusion, lymphadenopathy, cavitation, pneumothorax may be seen with disease progression (Figure 4) [3].



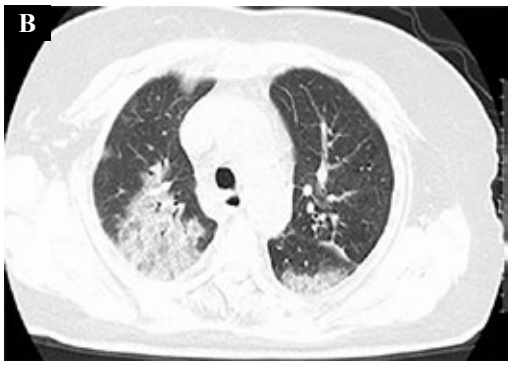


Figure 4: *A 79-year-old woman diagnosed with COVID-19 (Courtesy of Song F, Shanghai Public Health Clinical Center, Shanghai, China). Chest radiograph (A) and CT-Scan image (B) obtained on day 4 show airspace consolidation [9].*

TREATMENT AND CLINICAL OUTCOME

There is no vaccine or antiviral treatment for human and animal coronavirus to date. Active symptomatic support remains key to treatment.

Recommended antiviral drugs such as IFN- alpha (5 million units twice a day) and lopinavir/ritonavir (400 mg/100 mg twice a day) would be helpful. There are other many drug options that came from experience treating SARS [10].

Chloroquine phosphate, an old drug for the treatment of malaria, has shown possible efficacy against COVID-19 associated pneumonia in multiCentre clinical trials conducted in China [11]. In-vitro studies have shown chloroquine to be effective against SARS-CoV-2 and severe adverse reactions were reported to occur when prescribed doses are higher than required for malaria [18].

Symptomatic treatments may include oxygen therapy and ventilation, anti-inflammatory drugs as well as antibiotic treatment in a case of secondary infection [1,7].

In a study conducted in China, 68% of patients previously hospitalized showed improvement to different supportive treatments and were discharged following at least 10 days of treatment without fever, with improvement of chest CT images and viral clearance in respiratory samples [1].

INFECTION PROTECTION AND CONTROL

After spreading of the coronavirus around the world, one country after another adopted measures to stop COVID-19 from spreading [13].

They stopped schools, sports events, religious services, non-essential businesses and travels as well as other social gatherings.

While case numbers are progressively increasing in some countries, in others, first in Asia but increasingly in Europe, there is a decrease in cases indicating that the lockdown measures and social distancing efforts are working [15].

WHO developed a guidance on self-protection, and the use of protection equipment. This guidance is constantly updated as new information emerges about COVID-19 outbreak and are all accessible at https://www.who.int/emergencies/diseases/novel-coronavirus-2019 WHO quickly published advice on the use of masks in the community, during home care and in healthcare settings in the context of the COVID-19 outbreak. This publication focusses on information needed by public health and infection prevention and control professionals, healthcare managers, healthcare workers and community health worker about the appropriate use of masks [12].

Advice for the general public on protective measures is published in text, videos or images on https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public

It gives details on appropriate hygiene and travel precautions, social interactions, and health alerts to go to hospital (https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public).

WHO recommends social distancing, regularly washing hands with cleansers and recommend people to avoid touching eyes, nose or mouth with hands.

Countries around the world have adopted measures to contain the virus and have released recommendations to their citizens to reduce the COVID-19 transmission.

For instance, Rwanda through the Rwanda Biomedical Centre (RBC) published public advice and recommendations in a case of sickness with COVID-19 and for reduction of infection risks (Figure 5). COVID-19 symptoms and Guidance for self-isolation (Figure 6) are also publicly available at https://www.rbc.gov.rw/index.php?id=707.

Figure 5: *Guidance for self-isolation (RBC)*

Figure 6: *Guidance for reducing the risk of infection*

MYTH BUSTERS

The WHO publishes information to buster some myths surrounding the outbreak and provides downloadable graphics to share (Figure 9). Myths and rumors can be damaging to public health and increase the risks of contamination since inaccurate information is a barrier to preventive and treatment measures.

Working with global experts to expand scientific knowledge on COVID-19 and to disseminate information from and legal reliable sources tasked to fight COVID-19 as well as is crucial to dispel the myths. For more myth busters, visit https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public/myth-busters

Figure 9: *Some examples of myth busters published by WHO on its website*

ONLINE TRAINING ON COVID-19

The WHO Health Emergencies Program (WHE) developed online trainings as a weapon to fight the COVID-19. The course is free and available to anyone on OpenWHO.org in different languages and the introductory video to the course was posted on YouTube. This course was established to assist UN country teams in scaling up country preparedness and response to COVID-19 and to go with the Operational Planning Guidelines to Support Country Preparedness and Response (https://www.who.int/emergencies/diseases/novel-coronavirus-2019/training/online-training). In addition, WHO published the simulation exercise simulation guideline preparedness and response to COVID-19 (https://www.who.int/emergencies/diseases/novel-coronavirus-2019/training).

GLOBAL SURVEILLANCE

The guidance on Global Surveillance for human infection with the the COVID-19 is available and regularly updated to help countries in monitoring the disease outbreak, rapidly detecting new cases in countries providing epidemiological information to conduct a risk assessment at the national, regional and global level and to guide response measures [13].

WHO requests that national authorities report probable and confirmed cases within 24 hours through the National Focal Point and the Regional Contact Point for International Health Regulations at the appropriate WHO regional office by using a template found at https://www.who.int/publications-detail/global-surveillance-for-human-infection-with-novel-coronavirus-(2019-ncov) [4].

Limitations: Since Covid-19 was identified in December 2019 in Wuhan, China, it has spread rapidly worldwide and has shown a very wide spectrum of symptoms and severity.

Although there has been evolution in the scientific knowledge about the pandemic, there is still a gap in scientific knowledge on the virus. This shows a need of extensive scientific research to accurately prove the data reported.

Our survey focused on the articles published in English during the first 4 months of the outbreak and it cannot reflect the entire body of research on COVID-19 worldwide.

In conclusion, the COVID-19 still needs to be studied deeply to help provide a good clinical description for clinicians and viral evolution, infectivity, transmissibility, and pathogenicity needs to be carefully studied and understood to develop treatment, and guidelines that can help in the fight against the pandemic.

Currently, the approach to the COVID-19 pandemic is to control the transmission of infection, use of personal protection precaution and early diagnosis, isolation, and supportive treatments for affected patients. Antibacterial agents are ineffective.

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Epidemic curve from outbreak of COVID-19 in Rwanda

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Received: April 23, 2020
Accepted: April 27, 2020
Published: April 30, 2020

Cite this article as: Semakula et al. Epidemic curve from outbreak of COVID-19 in Rwanda. *Rw. Public Health Bul. 2020; 2(1):30-31.*

From December, the novel coronavirus disease 2019 (Novel COVID-19) is progressing worldwide. As of April 22, 2020,, an estimate of 2.6 million cases were confirmed of which 185, 166 death, were recorded worldwide at https://www.coronatracker.com/ In Africa, the first case was identified on February 14, 2020 in Egypt and it took 30 more days to have the first patient confirmed positive to Covid-19 in Rwanda [1]. Here, we present a graphic depiction of the number of cases by date of case confirmation.

Data on all confirmed cases reported in Rwanda between March 14 and April 22, 2020 were extracted from electronic medical records system. Cases were being confirmed as infected by SARS-CoV-2 by real time RT-PCR [2].

A total of 153 individuals with laboratory-confirmed cases of Covid-19 were identified. 82 (54.2%) cases were recorded from people with travel history in 14 days preceding the date of first case confirmation. Currently 84 (54.9%) patients have recovered and were discharged from the treatment centers [3]. As the number of imported cases was increasing, on March 21, 2020, Rwanda announced country lockdown and started to test people with travel history, and their contacts of those who tested positive to COVID-19 [2,4].

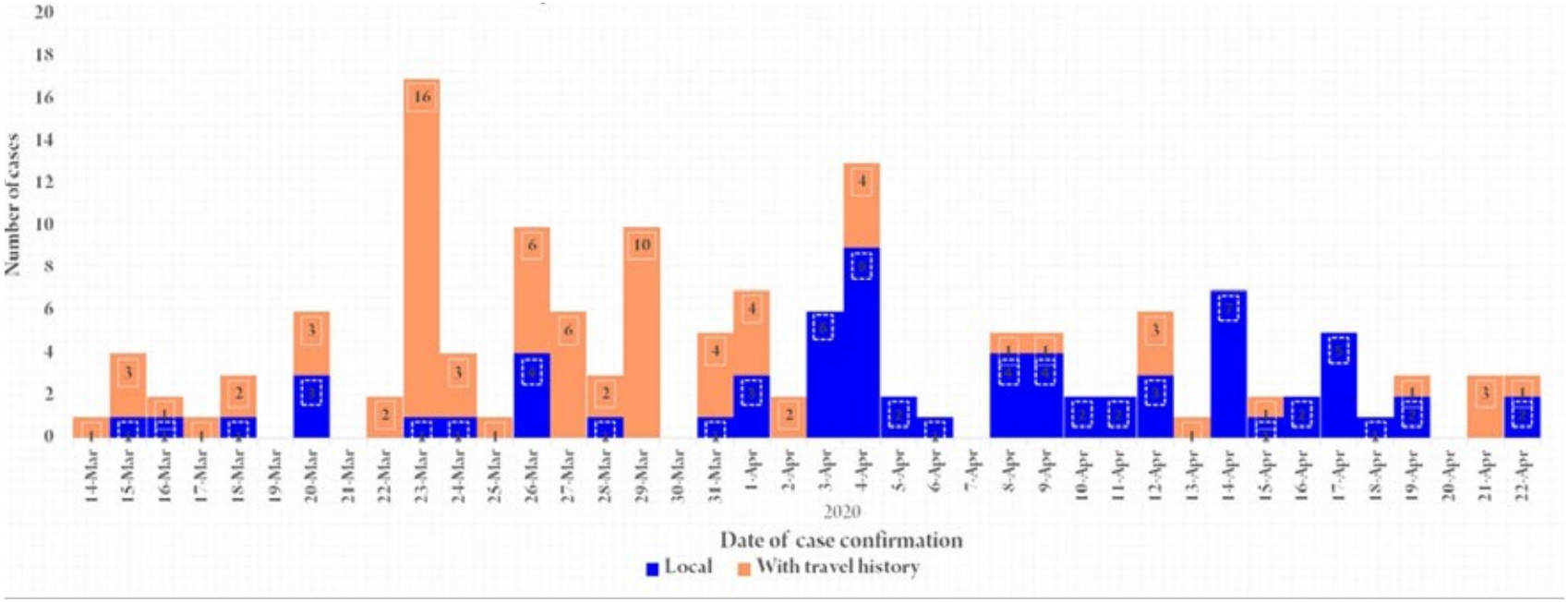

Figure 1: *Epidemic curve from outbreak of COVID-19 in Rwanda*

Acknowledgment

All Data science team COVID-19 Rwanda

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Rwanda
Public Health Bulletin

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 Centres for Disease Control and Prevention 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's and operating under the Rwanda Biomedical Centre (RBC).

Registration

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

Rwanda
Public Health Bulletin

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 is divided into 4 paragraphs with the following headings and MeSH keywords:

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

2. 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.

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

4. 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.

5. Keywords: Following the abstract. They are 3 to 10 words or short phrases that assist indexers in cross-indexing the article. They should be MeSH terms, and are published with the article.

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 research question 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 unblended 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.

Method

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).

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 objective and follow from the results.

3. PUBLIC HEALTH NOTICES / OUTBREAK REPORTS

Following the Centre for Disease Control recommendations, for PH 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 Centre 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 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.

Franc critics to the journal are bravely motivated and would be as much as possible published.
Are normally up to 800 words.

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
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Publisher

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Email: rwandapublichealtbulletin@rbc.gov.rw

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Acknowledgement

This publication has been made possible through technical and financial support from the Bloomberg Data for Health Project at the CDC Foundation.