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SPECIAL ISSUE

CORONAVIRUS PANDEMIC

- COVID-19: How we should respond
- COVID-19: Case management
- COVID-19: South Sudan preparedness
- COVID-19: How it affects refugees in Uganda
- COVID-19: Training and education resources

SSMJ

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South Sudan Doctors' Association
Juba, South Sudan

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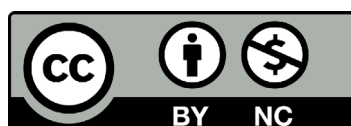
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COVER IMAGE:

A section of the COVID-19 dashboard of the Johns Hopkins University Center for Center for Systems Science and Engineering (CSSE) (Source JHU)

COVID-19 Pandemic: how we should respond

It is quite interesting to listen to a TED talk given by Bill Gates in 2015 in which he strongly stressed the fact that the next greatest human plight is neither going to be a terrorist attack nor a nuclear war but an infectious agent. He went further mentioning that the infectious agent is likely to be a novel virus that will sweep the globe. ^[1]

In December 2019, a cluster of cases of severe pneumonia were detected in the Wuhan province of China. This later turned out to be the presumed source of the COVID-19 pandemic which has spread rapidly around the world. It is worth defining the name COVID-19 which is; **CO**=Corona, **VI**=Virus, **D**=Disease, **19**=2019 which is the year in which the disease occurred first. COVID-19 is the disease and the virus which causes it is SARS-CoV-2. ^[2]

Like many other pandemics in the past, COVID-19 is being marked by death, panic and lots of uncertainties. There has also been a proliferation of different scientific theories pertaining to the mode of transmission, effective preventive measures, treatment options and herd immunity messages. All these serve as a source of social distress, which at times is aggravated by different media messages.

But what does COVID-19 mean for Africa at large and South Sudan in particular? Due to the fluid nature and contagiousness of this pandemic, it is difficult to state the extent to which individual African countries have been/will be affected and I am sure this information will be outdated within the next hour or day. However, it is important to mention that at the time of publication of this editorial (30 April, 2020), South Sudan has confirmed 35 positive cases and tested 181 samples so far according to the African CDC database. ^[3]

A number of countries neighbouring South Sudan have confirmed several cases of COVID-19. Given the epidemiological nature of the spread of COVID-19 and based on the experiences of hard-hit countries, South Sudan could be a hotbed of the pandemic given its location and the almost non-existent health care system.

Along the same line, the WHO director, Tedros Adhanom Ghebreyesus on Wednesday 18th March 2020 called on all African governments to act swiftly when he said: “The best advice for Africa is to prepare for the worst and prepare today. It is not a question about if but rather when Africa will be affected.” ^[4]

What can or should we do then?

The experiences of China, Italy, the UK and South Korea showed beyond doubt that the preparation of healthcare cadres and the wider health system is of paramount importance in combating COVID-19, in addition to several preventive measures put in place. At the helm of these actions lies a political will to address the pandemic as a national priority.

In light of the information that is available at this juncture, the current message is preparedness of the health system, community education, laws to enforce social distancing and, above all testing, testing and testing.

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Charles O.C. Langoya

Royal Infirmary of Edinburgh,
Department of Infectious
Diseases and Medical
Microbiology, Edinburgh, UK

Email: ocherology@yahoo.com

COVID-19: what's in a name?

Edward Eremugo Kenyi

Editor-in-Chief

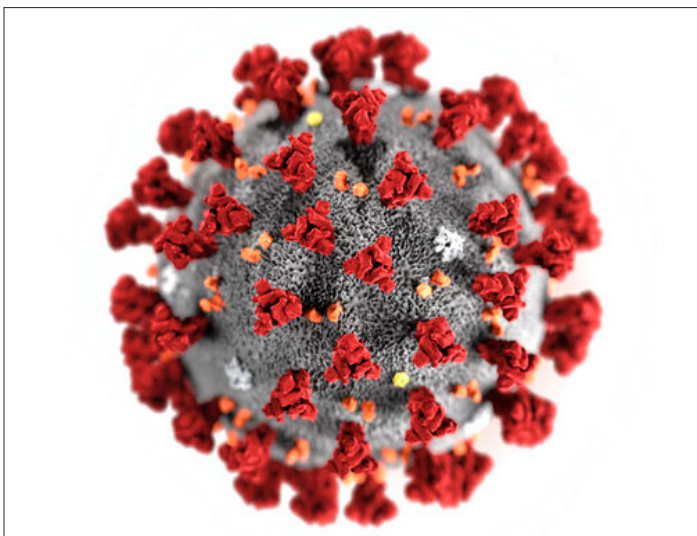
South Sudan Medical Journal

Email: opikiza@yahoo.com

What does each of the following have in common: Ebola, Marburg, Swine Flu, Spanish Flu and Avian flu? They are all diseases named after a location or an animal host.

In the past, this had been the norm: scientists rushed to name a new disease using the place where it was first identified.

Marburg haemorrhagic fever was named after the City of Marburg in Germany in the 1960s. Swine flu and Avian flu were named after the animals thought to have hosted these infections. The origins of Spanish Flu are debated but it was ascribed to neutral Spain in 1918 by World War 1 censors in order to maintain morale among allied soldiers.



This illustration, created at the Centers for Disease Control and Prevention (CDC), reveals ultrastructural morphology exhibited by coronaviruses (credit: CDC)

The idea of naming diseases after their locations started getting bad reviews in 1976 during the naming of the Ebola virus. According to an article on the etymology of Ebola virus:

“When the international commission considered the name “Yambuku virus,” Karl Johnson and Joel Breman noted that naming the Lassa virus after the Nigerian village where it was discovered brought stigma to the community. Johnson suggested naming the virus after a nearby river, and the rest of the commission agreed”.^[1]

It is clear the scientific community settled for Ebola to avoid leaving an indelible mark of horror on the village of Yambuku, and so avoid it being forever associated with a deadly disease.

It was the norm for the virus causative agent and the resulting disease to have different names. The World Health Organization’s (WHO) International Classification of Disease (ICD) names the diseases and the International Committee on Taxonomy of Viruses (ICTV) names the virus.

In 2003, a new coronavirus emerged in Yunnan, China. The WHO moved very quickly to give it a name before a nickname, given by the media, stuck. In order not to name it after the country (Chinese Virus) or the city (Yunnan Virus), the scientific group at WHO convened to name the virus. They wanted a name that included the causative agent or the clinical condition, and an acronym that is easy to use like HIV and AIDS. The WHO settled for SARS - Severe acute respiratory syndrome as the disease and the ICTV named the virus as the severe acute respiratory syndrome coronavirus (SARS-CoV).

In order to make it official, WHO developed best practices for naming new human infectious diseases in 2015.^[2, 3] In consultation and collaboration with the World Organisation for Animal Health (OIE) and the Food and Agriculture Organization of the United Nations (FAO), WHO developed the best practices with the aim:

“to minimize unnecessary negative impact of disease names on trade, travel, tourism or animal welfare, and avoid causing offence to any cultural, social, national, regional, professional or ethnic groups”.

In short, the scientific community cannot henceforth name a new disease based on the old practice of location, etc. It was a game changer.

When the new coronavirus started in China in December 2019, the media started labelling it the “Wuhan” or “Chinese” virus, according to the location where it started. There were also media references to a 1981 apocalyptic novel by Dean Koontz, *The Eyes of Darkness*, which mentioned a killer virus called “Wuhan-400”. However, Koontz did not predict the corona virus outbreak in his novel.^[4]

Because of its similarities to the SARS-CoV mentioned earlier, the ICTV named the virus severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Based on its guidance on best practices, WHO’s ICD settled on naming the new emerging disease ‘COVID-19’ – standing for COrona VIRus Disease of the year 2019. This was a response to avoid a stigmatizing name for the virus being used by the media.

Everyone should use the new name for this coronavirus disease in order not to stigmatize certain communities. Xenophobic attacks against Chinese or Chinese-looking citizens have aggravated the situation.

Calling it what it is can save lives.

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A Note on the CORONAVIRUS Special Issue

Edward Kenyi
Editor-in-Chief, South Sudan Medical Journal

This special issue on COVID-19 has been produced by the SSMJ editorial team and SSMJ supporters inside and outside South Sudan. We have put together an issue that deals entirely with the COVID-19 pandemic, drawing on reputable sources including WHO, UNICEF and CDC.

COVID-19 is a new disease and new insights into the disease are being learnt every day. We continue to identify new symptoms and signs and management plans are evolving as our experience grows. People react differently to the disease. Most who develop serious problems and who succumb tend to be elderly or have underlying health conditions. We have selected the information that provides reliable guidance according to current knowledge. Apologies if any links do not work in the future.

We hope this information will be useful to those dealing with the pandemic in South Sudan, and add to that provided by the government and other sources. These papers are just a start to the coverage of COVID-19 that SSMJ will be providing in future issues and on our website.

We welcome contributions and suggestions from our readers, and we thank all the authors and reviewers who helped us to produce this special issue in a very short time.

Editor-in-Chief admin@southernsudanmedicaljournal.com

COVID-19 Case Management

Ruot Garjiek Teny¹, Charles O. C. Langoya², Ader Macar Aciek³

1. Department of Cardiology, The Karen Hospital, Nairobi, Kenya
2. Department of Infectious Diseases and Medical Microbiology, Royal Infirmary of Edinburgh, UK
3. Department of Internal Medicine, University of Juba, South Sudan

Correspondence:

Ruot Garjiek Teny
ruotteny@gmail.com

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2019 (COVID-19) was first reported to the World Health Organization (WHO) on 31 December 2019 from Wuhan province of China as a cluster of pneumonia cases. The WHO on 11 March 2020 declared this as a global pandemic. COVID-19 is caused by SARS CoV 2 virus which is a member of the coronaviruses.

South Sudan had 35 confirmed cases by 30 April with the first case announced on 4 April, 2020 while the last case (of the 35) declared on 29 April 2020.

WHO case definition - suspected COVID-19 case

- Any person with acute respiratory illness (fever and at least one sign/symptom of respiratory disease (e.g., cough, shortness of breath)
- AND
- With no other aetiology that fully explains the clinical presentation
- AND
- A history of travel to/or residence in a country / area or territory reporting local transmission of COVID-19 disease during the 14 days prior to symptom onset.^[1]

Clinical presentation

The majority of persons with COVID-19 exhibit no symptoms, however around 20% of patients will have fever, dry cough, fatigue, anorexia, shortness of breath, anosmia, productive cough and myalgia.^[2] While gastroenterological and neurological symptoms were reported in less than 10% in certain studies.^[3]

Also, it is worth mentioning that a patient might present with either a combination of the above symptoms or any single one of them.

Assessments and initial investigations in COVID-19 suspects

Clinical assessment

A COVID-19 patient should follow the same assessment as that of any respiratory case, ensuring that Personal Protective Equipment (PPE) is worn by the health staff. That is to say, the ABCDE approach is followed, addressing each abnormality as it is found.

Suspected and positive COVID-19 cases should be isolated in designated areas which must be different from those areas where non COVID-19 patients are managed. Those patients deemed to be severely ill should be managed in a high dependency or intensive care unit. If a suspected case turns out to be negative, then consider an alternative diagnosis and manage accordingly. False negatives exist in COVID-19 cases probably due to errors of sampling when specimens are collected by nasopharyngeal swabbing.

Haematology and biochemistry

Complete Blood Count usually shows a significantly low lymphocytes count with neutrophil to lymphocyte ratio of >1.3. This ratio is found to be useful as an independent mortality risk factor.^[4] Leukocytosis and neutrophilia are predictors of superimposed bacterial infection. However, this should be correlated with a clinical judgment to ensure antimicrobial stewardship is observed.

Elevated C-reactive protein (CRP), D-dimers and normal pro-calcitonin are common features of COVID-19 although not always.^[5]

Baseline *Urea and Electrolytes and Liver Function Tests (LFTs)*. There is no known

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trend relating COVID-19 and abnormalities for these indices. However, it is important to know the baseline on admission.

Microbiology

The diagnosis of COVID-19 is confirmed by isolating the SARS-CoV-2 virus from a nasopharyngeal or oropharyngeal swab by a RT-PCR. Deeper respiratory samples such as those obtained during bronchoalveolar lavage can equally be used for isolating SARS-CoV-2.

Check sputum for microscopy, culture and sensitivity Acid and Alcohol Fast Bacilli (AAFB).

Blood culture (not available in government hospitals in South Sudan at the moment) is quite important due to the fact that, COVID-19 victims may present with fever and cough but, bacterial septic patients could present in the same way. Therefore, ruling out a bacterial infection is of paramount importance. Clinical judgment becomes crucial in a setting with no blood culture facilities.

Radiology

Do a chest X-ray looking for bilateral lower lobes infiltrates and CT scan of the chest (if available) looking for bilateral ground glass changes. Note that no government hospital in South Sudan currently has a CT scan machine.

Criteria for hospital admission

The main reason for admission of COVID-19 patients is respiratory compromise. Therefore, the WHO recommends the admission of the following groups of patients presenting with:

- Shortness of breath
- Low/reduced oxygen saturation for age and comorbidity
- Fever
- Respiratory failure of any type

Medical management of a COVID-19 suspect/patient

For positive cases, determine severity and admission criteria as mentioned above. Review observations which are *oxygen saturation*, respiratory rate, blood pressure, pulse rate and temperature. Each abnormality identified in the observations should be addressed.

Therefore, aim for SpO₂ of 90-96% for majority of patients and adjust oxygen provision accordingly. Please note that the maximum quantity of oxygen that should be delivered via nasal cannulae is 4L/minute. Anything more than this via nasal cannulae is considered aerosol generating and therefore will require different types of PPEs.

Lying in the prone position has been proven to improve oxygenation significantly and therefore should be tried on

patients who can tolerate it.

Paracetamol and analgesia for fevers and myalgias

Intravenous fluid therapy should be given with caution. Over-hydration is associated with increased risk of intubation being required in COVID-19 patients.

Consider antimicrobials for super-added community acquired pneumonia (usually a penicillin +/- macrolide) if clinically, biochemically and radiologically indicated. Use the **CURB65** severity score to assess severity of illness, **C**=confusion, **U**=Blood urea nitrogen >7mmol/litre, **R**=respiratory rate ≥30/minute, **B**=systolic blood pressure <90mmHg, or diastolic blood pressure ≤60mmHg, **65**=Age and above 65. Each positive on the CURB65 scores one (1) point. The severity of the condition is

BOX 1. CURB65 score for mortality risk assessment in hospital^a

CURB65 score is calculated by giving 1 point for each of the following prognostic features:

- confusion (abbreviated Mental Test score 8 or less, or new disorientation in person, place or time)^b
- raised blood urea nitrogen (over 7 mmol/litre)
- raised respiratory rate (30 breaths per minute or more)
- low blood pressure (diastolic 60 mmHg or less, or systolic less than 90 mmHg)
- age 65 years or more.

Patients are stratified for risk of death as follows:

- 0 or 1: low risk (less than 3% mortality risk)
- 2: intermediate risk (3 15% mortality risk)
- 3 to 5: high risk (more than 15% mortality risk).

Reference

- Lim WS, van der Eerden MM, Laing R et al. Defining community acquired pneumonia severity on presentation to hospital: an international derivation and validation study. *Thorax* 2003;58: 377–82.
- For guidance on delirium, see the NICE guideline on [delirium](#).

assessed on the following scale: 1 is low risk, 2 is short inpatient stay or manage as an outpatient, 3 manage as an inpatient and consider Intensive Care Unit (ICU) admission, 4 or 5 intensive management with high probability of ICU treatment.

Consider enrolling patients on any *COVID-19 trials* whenever feasible.

Observe patients with COVID-19 for signs of clinical deterioration, such as progressive respiratory failure by monitoring the respiratory rate and arterial blood gases and sepsis by measuring the lactate dehydrogenase levels (LDH > 49-90 units per litre) and respond promptly with appropriate intervention.

Patients who failed to respond to standard oxygen therapy, should be provided with high oxygen flow and assessed for mechanical ventilator support. Their management should be escalated early to an ICU. The ICU management is outside the scope of this paper.

Discharge criteria

1. Symptoms resolution
2. Viral clearance as documented by two negative viral PCR in two nasopharyngeal samples collected 24 hours apart. A repeat swab should be done at least seven days from the start of symptoms and 48 hours of being fever free (though some guidelines say fever free without the use of antipyretic drugs).^[6]

However, note that point 2 above might not be practical especially when capacity is limited as in South Sudan. In such a case, patients can be discharged home even with positive results when they feel well. This will require close remote follow up by telephone. These patients should be advised to self-isolate for 14 days from symptom onset.

It is worth mentioning that all the preventive measures should be explained to/and maintained by both swab positive and negative individuals.

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Preventing the spread of COVID-19 in South Sudan

Eluzai Hakim

Associate Editor

South Sudan Medical Journal

Correspondence:

eluzaihakim@doctors.org.uk

Introduction

COVID-19 is the illness caused by a new strain of coronavirus first identified in Wuhan City, China in December 2019. It can cause a persistent new onset cough and a high temperature.

Based on data from relatively more affluent countries coronavirus can cause more severe symptoms in people with weakened immune systems, older people (over 60 years) and those with long term conditions like diabetes mellitus, cancer, chronic lung disease and high blood pressure. It is not known if it will be the same in South Sudan.

This is a new disease about which we have no previous experience. The situation is changing rapidly, as we learn more about it. So, we must expect advice to the healthcare professions and public to evolve. For now (April 2020) it seems that preventing spread of the virus using simple practices outlined below is the best way forward.

This article is intended to help healthcare professionals (e.g. nurses, midwives, doctors, therapists and laboratory technicians) advise the general public how to avoid catching the disease. It is based on guidance from the World Health Organization and other reputable organizations.

The local South Sudanese COVID-19 Task Force has developed national guidelines for preventing the transmission of this disease. The advice in this article must be read and implemented alongside the national guidance. It is based on information from the sources listed at the end of this paper.

Messages for health professionals to share with the public

Key messages to protect households from COVID-19 (see more below):

- Wash your hands frequently
- Avoid touching your eyes, nose and mouth with unwashed hands
- Cover your mouth and nose if you cough or sneeze
- Avoid close contact with people outside your household
- Clean and disinfect frequently-touched objects and surfaces in your home.
- If you have fever, cough and / or difficulty breathing, seek medical care early

Also:

- Wear a mask in public if needed
- Take extra care of vulnerable or sick people in your household
- Stay informed and follow advice given by your healthcare provider
- Continue to seek medical care for serious health conditions, and continue to take children for immunizations, continue to take routine medications, and to follow health education advice.

Share, explain and discuss these messages with households

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Hakim, Preventing the spread of COVID-19 in South Sudan. South Sudan Medical Journal 2020; 13(2):40-43

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Wash your hands frequently

Why? Washing your hands with soap and water (or using alcohol-based hand rub) kills coronavirus.

- Wash your hands more often with soap and water for at least 20 seconds. Make sure members of your household and anyone entering your home do the same.
- If you cannot wash hands with soap and water use hand sanitizer if available.
- Wash your hands (see Figure 1):
 - » after you blow your nose, sneeze or cough
 - » before and after eating, and before, during and after you handle food,
 - » before and after feeding a child
 - » after using the toilet
 - » before, during and after caring for a sick person
 - » when you get home or go into work
 - » after visiting a public space, including public transportation, markets and places of worship
 - » after touching surfaces or objects outside of the home or objects coming into the home,
 - » after handling garbage
 - » after touching animals and pets
 - » after changing babies' diapers (nappies) or helping children use the toilet
 - » When your hands are visibly dirty.

When explaining messages about COVID-19 with the public you may need to share this information about it

Coronavirus has a fatty/greasy outer coat that is dissolved by soapy water or alcohol-based hand rub (hand sanitizer).

The coronavirus (which causes COVID19-) is very infectious and lives in the nose and throat. If an infected person coughs or sneezes or spits the virus is carried out with the droplets and can cause infection in another person through their nose, mouth or eyes. The current view is that transmission is significantly reduced if people follow the other behaviours described below including keep at least two metres apart ("social distancing").

The droplets and virus may fall onto surfaces /objects and contaminate them and remain viable for up to several days depending on the type of surface. It is also shed in the faeces. Coronavirus may not cause symptoms so a person who seems healthy may be infectious.



Figure 1. From [World Health Organization](https://www.who.int)

- Use public hand washing facilities (e.g. at bus depots).

Avoid touching your eyes, nose and mouth with unwashed hands

Why? Infected people may leave the virus on surfaces (e.g. door handles, utensils). If you touch these surfaces your hands become contaminated and can transfer the virus to your eyes, nose or mouth. From there, the virus can enter your body and can make you sick.

Cover your mouth and nose with a tissue or in the bend of your elbow if you cough or sneeze

Why? The droplets sneezed or coughed out may carry the virus.

- Cover your mouth and nose when you cough/ sneeze with a tissue or disposable cloth then throw it into the trash or burn it, and wash your hands. If you cannot wash your hands straight away, avoid touching your eyes, nose and mouth. If you have no tissue, cough/ sneeze into the bend of your elbow.

Avoid close contact with people outside your household

Why? If you are close to people in public places you can contract the illness. When someone coughs or sneezes, or even breathes heavily, water droplets spray out from their nose or mouth. If the person coughing or sneezing is infected (even if they are not showing any symptoms) the droplets contain the virus. If you are close, you may breathe in the droplets and virus. If you are infected you can pass the virus to others.

- Avoid crowds, including football matches, religious events, and social gatherings of family or friends, especially in confined and poorly ventilated spaces. Follow your government instructions on crowd restrictions.
- Where possible, keep at least two metres (length of a bed) distance between yourself and anyone you meet or walk near who is not in your household.
- Do not shake hands or hug – safe greetings include a wave, a nod or a bow. These common social norms in our society must be avoided whilst the pandemic lasts.
- Do not share items when in social gathering e.g. shisha, cups or bowls etc. Avoid communal eating, especially sharing the same gravy (“suruba”) by dipping maize or sorghum meal and “kisira” into the same dish using fingers which may not have been well washed. It would be better if people used small individual dishes into which a share of the gravy or “suruba” is served for each person. This change in practice would reduce the spread of other infections such as hepatitis A and dysentery.
- If possible, avoid the use of public/ shared transport. Try to travel at less busy times, keep a safe distance from others, avoid touching handrails or your face, and wash your hands as soon as you can.
- Shop when shops or markets are less busy. Try to keep a safe distance. Wash your hands before and after you visit the shops / market and again after you have unpacked your shopping and put your shopping bags away.

Clean and disinfect frequently touched objects and surfaces in your home

Why? When an infected person coughs or sneezes or spits the virus can get onto surfaces like desks/tables. Anyone touching that surface can carry the virus to eyes, nose or mouth, or onto another surface.

- Surfaces can be cleaned with soapy water or diluted bleach.

If you have fever, cough and / or difficulty breathing, avoid contact with people outside your household. Seek medical care if symptoms are severe



Poster with COVID-19 prevention messages in South Sudan (Source: Frederick Tawad)

Why? National and local authorities will have the most up to date information on the situation in your area. Calling in advance will allow your health care provider to quickly direct you to the right health facility. This will also protect you and help prevent spread of viruses and other infections.

- Stay home and do not travel if you have mild flu-like symptoms. Do not go to school, to work, or to other public places until you are completely free of all symptoms.
- If you have more severe symptoms go to a medical facility. If you have a fever, cough and / or difficulty breathing, seek medical attention and call beforehand if possible. Immediately notify the first person you encounter that you are worried that you have a respiratory infection. Follow the directions of your local health authority.
- Most people in South Sudan live in big, often multi-generational, households. It is likely that members of a household will infect each other. Staying at home for 14 days after the last person in the household thought to be infected will reduce the risk of the household passing the infection to others in the community.
- Evidence suggests that people who develop symptoms are very unlikely to infect other people beyond the 7th day of illness, so these people may be able to return to some of their normal activities at this point, but should follow any government guidelines.

Wear a mask in public places if needed

At time of writing there is no firm WHO guidance on masks although, increasingly, people are wearing them in public places in many countries. So check the latest advice

from your government, [Africa CDC](#) and [WHO advice on masks](#)

Masks should be worn in public if you are coughing or sneezing, or if caring for a person with COVID-19. Masks might protect you in crowded public places from coronavirus droplets from infected people. However, masks must be washed frequently as the outside of the masks may have become contaminated. They may be uncomfortable and hot, and give a false sense of protection. Wearing a mask DOES NOT MEAN THAT OTHER PRECAUTIONARY MEASURES CAN BE REDUCED. Masks can be made from layers cotton fabric, scarves or t-shirts, and must fit well. Surgical masks are needed by health and other frontline workers.

Take extra care of vulnerable or sick people in your household

Why? Some people are at increased risk of developing a serious illness from COVID-19 infection. These include older people and those who have underlying illnesses such as respiratory diseases, cancer and are undergoing cancer treatment, diabetes mellitus, and those who are HIV+ve and are not on effective treatment.

- If possible, these individuals should stay at home and take extra precautions such as keeping a safe distance from others in public, and washing hands often if they have to go out.
- Just one person should look after the sick person; if you need to share a bedroom with someone who is sick, make sure the room has a good air flow; try to have at least two metres between beds or sleep head to toe or put a curtain between the beds.
- The sick person should not prepare food and should eat separately.

Follow advice given by your healthcare provider

Why? National and local authorities have the most recent information on COVID-19 in your area and can advise you what you must do to protect yourselves.

- Stay informed on the latest developments about COVID-19. Follow advice given by your healthcare provider, your national and local public health authority or your employer on how to protect yourself and others from COVID-19.

Continue to seek medical care for serious health conditions, take children for immunizations, take routine medications, and follow health education advice.

Why? The health service is for all medical conditions. Children who are not immunized may get measles (which can be deadly if combined with COVID-19) and other diseases

How to share these messages

Use all forms of media to share and explain the key messages, adapting them to local conditions and beliefs, and national guidelines. As well as radio, TV, posters, discussions and social media, enlist the help of community leaders, faith leaders and people in the media.

Materials used to prepare this paper

- [Africa CDC](#)
- [Better Care Learning Programmes COVID-19](#)
- [Concern Worldwide](#). Advice to help prepare your household for COVID-19.
- [Health Improvement Scotland](#)
- [Pan American Health Organization](#)
- [UNICEF](#)
- [World Health Organization](#)
- [WHO Home Care Posters](#)
- [CDC COVID-19 Households living in close quarters](#)

Materials in graphic or video media

- [Picturing Health Coronavirus messages for communities](#). Video
- [The Slum and Rural Health Initiative \(SRHIN\): Stop the Spread of COVID-19](#)
- [Ripple Africa](#). Coronavirus - Covid-19 - Simple Guide for Malawi
- [WHO](#)
- [Medicines for Humanity](#)

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South Sudan COVID-19 Preparedness

Frederick Khamis Tawad¹, Isaac Cleto Rial² and Changkel Banak Riek³

1. Juba University, College of Medicine
2. College of Physicians and Surgeons of South Sudan
3. Juba Teaching Hospital

Correspondence:

Frederick Khamis Tawad
fkomi@hotmail.com

Background

The nations of the world were confronted with a global health emergency after the World Health Organization (WHO) declared the COVID-19 outbreak a pandemic. Restrictions and regulations were imposed to reduce the spread of COVID-19. The recommendations from WHO and CDC (Centers for Disease Control and Prevention) formed the basis for limiting the spread of the virus but implementation has varied between countries.

The South Sudan government established a COVID-19 management structure with a High-Level Task Force (HLTF) chaired by the First Vice President Dr Riek Machar Teny soon after the declaration of the pandemic. This Task Force coordinates and communicates to the people of South Sudan the measures needed for the prevention of spread of the disease. The major decisions are border closures, travel restrictions, lockdown, and social distancing.

Limitations of the measures

- Lock down appears not to be effective
- Country not ready for case management
- No coordination in decision making and activity regarding COVID-19 management
- Minimal technical support. The taskforce is largely political, lacking significant academic and medical professional input.

Epidemiology and Surveillance

After confirmation of the COVID-19 index case on 5 April 2020, three more cases from Juba and Torit were confirmed by the National Public Health Laboratory bringing the number of confirmed cases to four with the most recent case on 10 April 2020.

Contacts have been listed and contact tracing is ongoing to monitor symptoms, isolate, and test for SARS-COV2. One of the confirmed cases was a contact of the index case, while another had no epidemiological link to any of the other cases and was asymptomatic.

A total of 151 people with symptoms suggestive of COVID-19 have been tested and their contacts traced; only four of the tested cases were positive. All positive cases were adults, three female and one male. One had been identified with an underlying pre-existing health condition, but the rest did not have any. Contact tracing and follow up for all the four cases and their contacts is ongoing.

Clinical symptoms and signs described by the four cases included dry cough, headache, running nose, breathlessness, body aches and fatigue.

The information being gathered includes detailed timelines of exposure of the patients, chronology of symptoms, and contacts in order to understand the transmission dynamics of COVID-19. WHO's investigation protocol for COVID-19 is being used in this exercise.

Rapid Response Teams (RRTs) conduct active surveillance, with sentinel sites in Juba Teaching Hospital and Al Sabah Children's Hospital to detect COVID-19 cases in patients with Influenza-like Illnesses (ILI) and Severe Acute Respiratory Infections (SARI).

Training sessions are being conducted by the Ministry of Health with support

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Training of health workers on COVID-19 (Source: WHO South Sudan)

from WHO for health care workers in these sentinel sites in Juba and with partners in some states in order to detect potential cases of COVID-19. Doctors from all disciplines are participating in the training.

South Sudan Quarantine Policy

Currently there is no nationally approved policy, however the High-Level Task Force recommends:

1. A person with symptoms and / or signs suggesting COVID-19 will be quarantined by the government at the John Garang infectious disease unit (IDU) for 14 days and discharged if they do not develop clinical signs of COVID-19 or show improvement.
2. A person coming from a high-risk country with active local transmission who has no signs and symptoms will have to be quarantined at the IDU for 14 days. This is done in the same facility for the same duration and will probably continue at home if they do not develop symptoms and signs. Follow up is by the Ministry of Health surveillance team.
3. A person coming from a low risk country (where there is COVID-19 but the person is unlikely to be infected) will have to self-monitor at home, but must contact the IDU by calling the designated number 6666 if they develop symptoms. They will be followed up by the Ministry of Health surveillance team.

Investigations

The number of samples tested from 5th – 10th April was 151; 3 females and one male (driver to one of the positive females) tested positive. The rest were negative. Those

tested included 93 contacts to these patients.

No other laboratory typing and sequencing is being done.

Leadership and Coordination

Coordination continues to evolve at National and State levels. At the National level, the High-Level Task Force (HLTF) meet frequently, chaired by the First Vice President to provide strategic guidance and support for the COVID-19 response. The COVID-19 National Steering Committee (formerly known as the National Task Force) is chaired by the Incident Manager, Dr Angok Gordon Kuol and co-chaired by a WHO Incident Manager from the local Juba office. Membership of the Task Force consist of Ministers, Undersecretaries and Director Generals from MOH, officials from Finance, the Trade Unions Chamber, the civil aviation authority and academicians from the University of Juba.

There is a Public Health Emergency Operation Centre (PHEOC) which supports the National Steering Committee and incorporates several Technical Working Groups (TWGs). At the State level, coordination with the PHEOC is through pre-existing arrangements previously set up for managing Ebola Virus Disease (EVD). Preparedness, coordination and further guidance is required to streamline the operation of PHEOC.

The need for a Safety, Security and Access TWG has been raised, to coordinate procedures for movement of humanitarian aid such as goods and supplies and to ensure safety of people moving away from congested areas. Careful management of sites for Internally Displaced Persons will hopefully mitigate risks of potential violence against health workers. Challenges and concerns about identifying potential COVID-19 persons at border crossings need to be addressed in one of the meetings of the HLTF.

Surveillance

Efforts to enhance community-based surveillance under the previously established Ebola preparedness plan have transitioned into the COVID-19 response.

The TWG continues to track, document, and analyse COVID-19 alerts. An “alert” is someone showing flu-like symptoms reporting to the COVID-19 designated facility by calling the number 6666. From 11 April there were 27 alerts in the dataset.

Case Management

Confirmed cases (i.e. with clinical symptoms and signs suggestive of COVID-19) are admitted to the IDU for management as per agreed HLTF protocol. The four positive patients were admitted and managed at Dr John Garang Infectious Disease Unit in Juba and were under quarantine during the reporting period. Their known contacts, who were isolated, were all discharged after test

results were returned negative for SARS COV-2.

Construction work to expand bed capacity at Juba Teaching Hospital has commenced, with support from WHO, with a target of increasing beds from 24 to 100. Four of these beds are equipped with ventilators to undertake mechanical ventilation should this become necessary. The rest are high dependency beds capable of administering oxygen to patients not ready for mechanical ventilation. The newly constructed modernised Emergency department at Juba Teaching is being prepared for potential surge in the admission of seriously ill COVID-19 patients.

Consistent with the policy of social distancing, remote (tele) training on Case Management by the International Non-Government Organisations, International Medical Corps (IMC) and ICAP commenced on 8 April using the online meeting and training facility, and zoom. Lectures to the health workers in the states use an ICAP facility.

The government continues to enforce measures to mitigate the spread of COVID-19 infection countrywide as mandated by the High-Level Task Force. This includes a curfew (from 20:00 hrs to 06:00 hrs), quarantine, social distancing, and frequent hand washing.

Restrictions on local air flights and public transport between and within States are in place.

International flights into and out of South Sudan are suspended, with some exceptions such as delivery of humanitarian services and personnel delivering humanitarian aid leaving the country. A 14 days' quarantine requirement is in place for any arrivals to the country, including through land border points.

Hand washing facilities have been distributed in public places in Juba and the States to enhance hygiene practices and mitigate spread of COVID-19.

To ensure sufficient infection prevention control supplies, partners were tasked to conduct an inventory of supplies and identify gaps for restocking items such as masks, gloves of all types, aprons, waste bins, and hand washing facilities.

Active COVID-19 screening at three International Organisation for Migration (IOM) - supported Ports of Entry (PoEs) - namely Juba International Airport, Wau Airport, and Nimule land crossing - is ongoing.

The TWG conducted a stakeholders' mapping of border areas, particularly in the towns of Nadapal, Kaya, Nimule, and Renk.

UNICEF in partnership with the South Sudan Council of Churches, engaged religious leaders to disseminate COVID-19 messages across the country during the Easter festive season.

Dissemination of COVID-19 text messages as well as a



Poster on COVID-19 outside triage tent at JTH in South Sudan
(Source: Frederick Tawad)

caller tune for all calls in English and Arabic is ongoing through MTN and Zain mobile phone networks in partnership with UNICEF and the Ministry of Health.

The Logistics Cluster (WFP, WHO, UNMISS) has not yet observed any impacts on partners' cargo transportation service requests due to COVID-19. All samples are ferried to the public lab for testing and hence the partners and agencies involved in the COVID-19 effort help with facilitation in their transportation.

The United States Agency for International Development (USAID) and an associated organisation codenamed OFDA have been requested by the HLTF to fund an additional caravan aircraft to assist with the transportation of COVID-19 samples from points of collection to the accredited test laboratory in Juba. The Government of South Sudan has no budget at the moment to fund this service.

Various United Nations agencies such as the World Food Programme (WFP) and the Logistics Cluster are working jointly to support the response to COVID-19 which includes provision of home testing kits, construction of field hospitals and maternity units in the context of this pandemic.

The major challenges

1. Improvement in health and laboratory infrastructure
2. Capacity building in terms of trained manpower (nurses, doctors, laboratory technicians and support staff)
3. Clearly defined infection control measures
4. Adherence to protocols for data collection and sharing with partners. This limits the ability to analyse epidemiologic trends and evaluate surveillance systems.

5. Limited sample Polymerase Chain Reaction (PCR) buffers enough for 500 reactions, increase the stock of N95 and gloves, sample extraction kits and VTMUTM, and payment of incentives for laboratory staff.
6. There is a time lag after reporting of laboratory results, which affects timely response and initiation of case investigation and follow-up of contacts.
7. The night time curfew poses difficulties for those with case management responsibilities
8. Insufficient production of teaching material and public health information posters.
9. While implementation of activities is ongoing under the COVID-19 Country Preparedness and Response Plan, funding remains challenging nationally and in the States.
10. Funding for COVID-19 must be earmarked. Resources available to date have largely been from re-programming funding under the Phase 3 Ebola Preparedness plan, with most funding ended on 31 March 2020.

Lack of Personal Protective Equipment (PPE) and ambulances

There is uncertainty of border crossing status for humanitarian cargo procurement from neighbouring countries, though consignments are currently still being allowed.

Self-quarantine preventive measures being imposed on transporters are expected to cause delays in humanitarian cargo delivery around the country.

Possible intervention alternatives

- strengthen and support the High-Level Task Force committee
- review the country's rapid response, surveillance and preparedness strategy
- massively review and enhance the infection prevention strategy
- create an isolation centre creation with adequate and appropriately trained staff, medical equipment and adequate supplies of reliable PPE.

Recommendations and Priority Follow Up Actions

Coordination and Leadership

While coordination arrangements at National level are increasingly clarified, more guidance is required at State level with improved linkages between National and State levels.

Surveillance and Future Arrangements

1. Further work is needed in joined up working between HLTF and Aid Organisations.

As part of its ongoing work, the HLTF needs to discuss and agree on sharing protocols with the Aid organisations. Clarity is also needed on State-level training sessions and interpretation and application of COVID-19 case definitions, COVID-19 testing strategy, and protocol on raising COVID-19 Alerts.

2. Laboratory Services

- Testing is a key function in the management of this pandemic. More testing using Abbot platform, GeneXpert, and scaling up the PCR testing in the states other than in Juba is recommended. In addition, a sustainable supply of laboratory items must be ensured.
- There is a need to increase human resource capacity in the PCR Laboratory to increase testing capability, particularly for contacts.
- Better connection of the Laboratory with the supply chain for all the needed items by the laboratory
- Training on sample management for all technicians in all the 10 states and the three Administrative Areas is urgently needed.
- Increase human resource capacity commensurate with needs of the pandemic must be defined and funded accordingly.

Hazard Containment

Noting that the curfew is restricting case management and laboratory activities, it is important to ensure movement of COVID-19 personnel and supplies during curfew time.

Conclusions

Implementation of COVID-19 prioritized response activities are ongoing across all pillars following confirmation of four cases in the country.

Funding remains challenging, although allocations have been formally announced by the Government, with the need to expand activities in all states, including IDP Protection of Civilian (PoC) sites and refugee settlements.

At this point, South Sudan is still conducting epidemiological investigation and transmission classification remains pending.

UPDATE:

By 30 April, 2020, the number of confirmed cases in South Sudan was 35, with the highest single-day reported cases of 28 on 28 April, 2020.

Comparing the American and South Korean testing approaches for controlling the spread of COVID-19

Francis M Malwal

University of Juba, College of Medicine,
Department of Pharmacology

Correspondence:

Francis Malwal

francismalwal@gmail.com

Abstract

Background: Coronavirus disease 2019 (COVID-19) is a respiratory tract infection caused by a novel coronavirus. The outbreak started in Wuhan, China, in December 2019 and began to spread rapidly to more than 100 countries and territories. By March 11, the World Health Organization (WHO) had officially declared COVID-19 a pandemic.

Objective: To review the effectiveness of American and South Korean testing approaches of the COVID-19 plan.

Method: Daily reports of the USA's and South Korea's COVID-19 cases from February 15 to April 15, 2020 were examined. The outcome of interest was total number of cases and tests per one million population, daily cases reported, and percentage of recovered cases and case fatality rate (CFR). Data were analysed using Microsoft excel sheet and tables and figures generated.

Result: As of April 15 2020, USA's and South Korea's number of cases per million population are 1,946 and 207 cases, respectively. The daily American confirmed cases of COVID-19 had been increasing steadily from February 15 to April 15, 2020. Our study shows that South Korea and the USA recovered cases were 97% and 63%, respectively, while the case fatality rate in the USA was 37% and 3% in South Korea.

Conclusion: Despite its advanced health care systems, the USA is currently experiencing a devastating virus that has claimed many lives. This is because the USA has approached the outbreak differently. The evidence suggests that South Korea's aggressive testing has effectively managed to control the spread of COVID-19, it increases the recovered rate and reduced the CFR more than the USA's conservative testing approach. Although the South Korea health care system is not comparable to those in the developing countries, it worth mentioning that its plan would suit well these countries and should be adopted.

Keywords: USA, South Korea, Coronavirus, Testing, COVID-19

Introduction

Coronavirus disease 2019 (COVID-19) is a respiratory tract infection caused by a novel coronavirus. The outbreak started in December 2019, in Wuhan, China. The genetic sequencing of the virus suggests that it is a beta-coronavirus closely related to the Severe Acute Respiratory Syndrome (SARS) virus.^[1] Since then, the virus has been spreading rapidly across the world. By March 11, 2020, the virus had reached more than 100 countries, which forced the World Health Organization (WHO) to officially declare COVID-19 a pandemic.^[2] As of April 15, there were more than 1.9 million confirmed cases and more than 123,000 deaths reported worldwide. On that date, the USA had 578,268 confirmed cases and 23,476 deaths while South Korea had 10,591 confirmed cases and 225 deaths reported.^[3]

Citation:

Malwal, Comparing the American and South Korean testing approaches for controlling the spread of COVID-19. *South Sudan Medical Journal* 2020; 13(2):48-51

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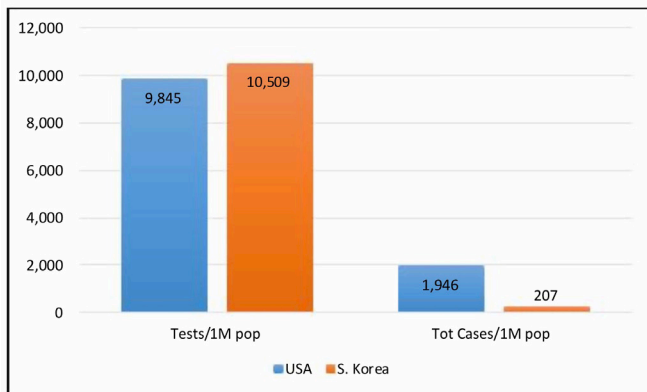


Figure 1. USA and South Korea. Total number of cases and tests per 1 million population [6,9]

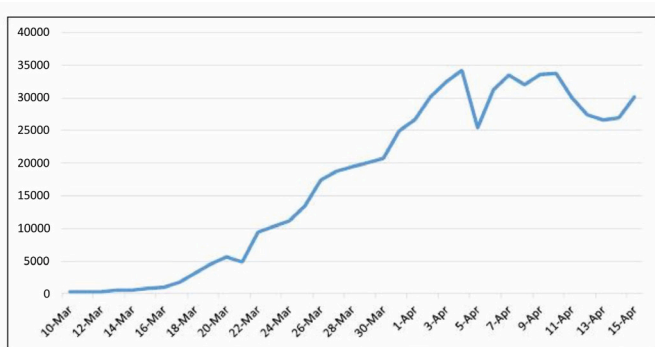


Figure 2. United States of America daily cases of Coronavirus [9]

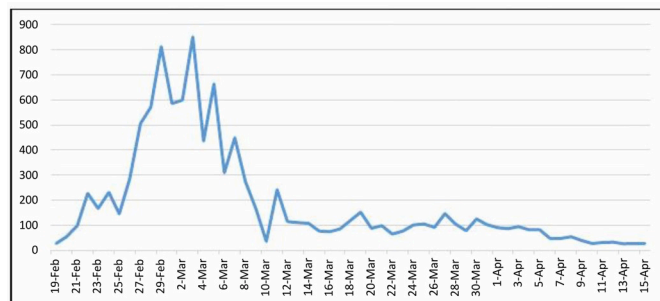


Figure 3. South Korea daily cases of Coronavirus [6]

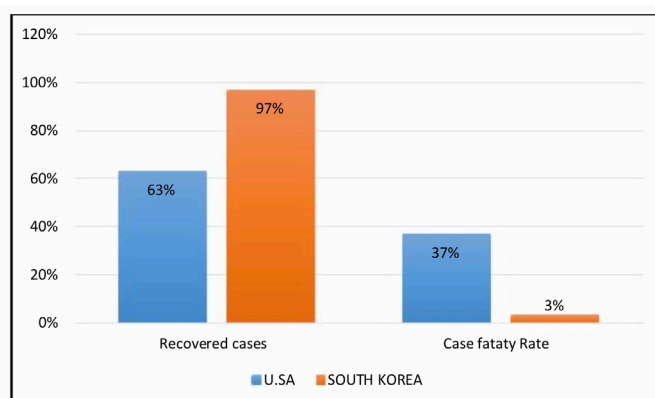


Figure 4. Percentage recovery rate and case fatality rate in USA and South Korea [6,9]

Recent observation studies have shown that while the majority of COVID-19 patients have mild symptoms (81%) that don't require hospital admission, some developed severe symptoms that required hospitalization (19%). Out of those admitted, 14% were seriously ill and required oxygen therapy; 5% of the critically ill patients needed admission to an intensive care unit. Of those sick critically, most required mechanically assisted ventilation. Furthermore, those with mild symptoms did not require hospital admission unless they developed breathing difficulties or conditions that urgently need medical attention. [4, 5]

For the purpose of this review, the USA approach is defined as the conservative testing approach which restricts the testing of coronavirus to those who meet the Centers for Disease Control and Prevention (CDC) guidelines, namely seriously ill patients that require hospitalization; adults with underlying chronic medical conditions such as cardiovascular, respiratory disease, and asthma, and immunocompromised patients. The Korean approach is defined as the aggressive testing approach where every suspected case of coronavirus regardless of severity of disease or underlying medical conditions is tested.

Most studies published since the onset of this outbreak focused mainly on the characteristics, pathophysiology, mode of transmission, and management of COVID-19. Some focused on public health measures such as social distancing, self-quarantine, and containment. However, none have reviewed the effectiveness of South Korea's aggressive testing and USA's conservative testing. The next wave of the outbreak is already happening in developing countries where the health care systems are fragile. Hence, it appears that an outbreak that has overwhelmed the best health care systems in developed countries such as the USA, United Kingdom, Italy, Spain, and France, will have devastating effects on developing nations. Therefore, learning from the experience of other countries that flattened their disease curves early is essential. This study aims to review the effectiveness of South Korea's aggressive and the USA's conservative testing approach and recommend the best approach appropriate for adoption in developing countries.

Ethical consideration

Our review is a secondary data analysis from the WHO daily reports on the COVID-19 pandemic. The datasets used for this review are publicly available.

Method

We reviewed the World Health Organization's COVID-19 daily reports from the USA and South Korea published online from February 15 to April 15. Our review focused mainly on the total (number of cases and tests) per 1 million population, daily cases reported, the percentage

of recovered cases and the case fatality rate (CFR). The percentage of recovered cases and CFR were computed by dividing the number of recovered cases by the total number of recovered cases and deaths respectively, by the total number of closed cases. Data were analysed using Microsoft excel sheet and tables to generate figures.

Results

Figure 1 shows the total number of cases and tests per one million of the population; Figures 2 and 3 graphs the number of USA and South Korean daily confirmed cases from 10 March until 15 April, and Figure 4 compares the percentage recovery rate and case fatality rate in the two countries.

Discussion

As of April 15, 2020, in USA and South Korea, the number of cases per million population was 1,946 and 207 cases, respectively (see Figure 1). Although the health care institutions and population age distribution in both countries are comparable, the number of USA cases per million are more than nine times those of South Korea. South Korea and the USA confirmed their first case on January 19 and 20, respectively, so the only possible differences between the two countries are the way each approached the outbreak. For example, the USA's efforts have been significantly affected by a shortage of COVID-19 testing kits. These shortages have forced the United States health authorities to restrict the COVID-19 testing for seriously ill patients that require admission and patients with underline chronic conditions, namely diabetes, cardiovascular diseases, hypertension, asthma, and respiratory disease, as well as immunocompromised patients.

By adopting this conservative testing, the USA has focused mainly on 19% of patients who were seriously ill and needed hospital admission. Therefore, there is a possibility that 81% of asymptomatic and mild symptom patients have been spreading the infection in the community, especially before introducing public health measures of social distancing, prohibiting public gathering, and total lockdown in some cities. This conservative testing approach left many mild and moderately ill people spreading the infection more rapidly. These may explain the reason behind steady increases in many new cases in the USA since March (see Figure 2) or they had not taken the public health guideline seriously, especially when patients are denied a testing opportunity.^[5] Furthermore, they may assume they were not infected, and the result is spreading of the infection more rapidly.

In contrast, South Korea has been more successful than the USA in controlling the spread of COVID-19 because of experience from the prior outbreaks, such as the 2015 Middle Eastern Respiratory Syndrome (MERS) outbreak^[7] and its aggressive testing approach.

This approach provides a testing opportunity for every individual regardless of their underline medical condition. Besides, South Korea has responded rapidly by inventing and implementing the idea of a drive-through testing centre. This brilliant invention of the drive-through free testing makes the testing process faster, keeps clinicians and patients safe, removes ten minutes from cleaning rooms, and cut the length of the test in half.^[7] Also, South Korea has managed to flatten its curve rapidly because its approach has not left mild and moderate ill patients without testing; therefore, effectively slowing the spread of the infection within communities.

The daily USA's confirmed cases of COVID-19 had increased steadily from February 15 to April 15, 2020 (see Figure 2). Experts believe that the numbers do not accurately reflect the sharp picture of the epidemic. This is because the USA is still unable to produce enough testing kits to meet the urgent surge in demand for testing as the number of infected people continue to increase. Without enough testing available, many patients have to wait a long time before being scheduled for testing. The availability of tests is a significant factor in the control of the outbreak since isolation, tracing of contacts, and quarantine of suspected cases depends on how robust and fast the testing process is. Even though South Korea has confirmed its first cases one day ahead of the USA, it flattened its curved as early as March 11, 2020, leaving the USA struggling with the spread of infection (see Figures 2 and 3).

Although the recovered cases and death toll depend mainly on the quality of health care services, number of hospital and ICU beds, and trained medical personnel, still the recovered rates and CFR are in favour of South Korean aggressive approach. For example, our review shows that recovered cases reported in South Korea and the USA were 97% and 63%, respectively. While the CFR was 37% in the USA and 3% in South Korea (Figure 4), even though estimating the case fatality rate at the beginning of the outbreak overestimate the case fatality, it can give us an overview of the clear picture that may be looming.^[8]

Limitations

The reliance on population data limited our review. It may lead to a deficiency in collecting some key data about the demographic distribution of COVID-19 patients as well as any underlined medical conditions. Also, it is very hard to compare the CFR and recovery rates of different countries due to different settings.

Conclusion

The conservative testing approach in the USA has led to a devastating pandemic that has claimed thousands of lives. The evidence suggests that South Korea's aggressive testing has effectively managed to control the spread of COVID-19, it increases the recovered rate and reduces the CFR more than the USA approach. With no capacity for

case management of severe COVID-19 illness, developing countries should focus on testing of all suspected cases and tracing the contacts to limit the spread of the disease.

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Good Practice Pointer: Testing for the coronavirus

Eluzai Hakim, FRCP Edin, FRCP Associate Editor, South Sudan Medical Journal

Testing for the virus is important, and when this is being carried out, explain to those tested why it is important. It is known that many infected people show no symptoms or signs of COVID-19, but they may be very contagious. Testing allows these asymptomatic people to be identified so they can be quarantined. Some Non-Governmental Organisations have pledged sums of money to support resource poor countries to manage COVID-19. I suggest that a portion of this money be devoted to carrying out testing for the coronavirus in those with symptoms, healthcare workers, the police, prison officers and prisoners, the army, airport personnel, civil servants, school teachers, bus and taxi drivers and those who come into contact frequently with members of the public.

Testing and isolating asymptomatic people eliminated the virus in a village

Sergio Romagnani, an Italian academic at the University of Florence^[1] carried out blanket testing in an isolated village of 3,000 people and found that 50-75% of people were asymptomatic for COVID-19, but these represented a “a formidable source” of contagion. After quarantining those who tested positive the number of people sick from COVID-19 fell from 88 to 7 in less than ten days.

Hence, testing people is vitally important. According to Allyson Pollock,² Professor of Public Health “Case finding, contact tracing and testing, and strict quarantining

are classic tools in public health to control infectious diseases” According to the WHO, these methods have been painstakingly adopted in China. In Singapore and Vietnam meticulous contact tracing, clinical observation and testing were vital in containing the disease.^[2]

The South Sudan Household Survey (UNICEF 2006) stated that the average number of people per household was five. The potential difficulties of quarantining within this social set up could be challenging as most people live in the same room or “tukul”, made of grass thatch and mud and wattle walled. The South Sudan COVID-19 High Level Task Force needs to come up with an innovative plan of quarantining the older person (>60 years) and those who test positive for the virus. The middle way is to test as many people as possible and isolate those who are positive in designated tents or low cost housing which can be erected rapidly using local building materials.

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COVID-19 and infection prevention and control in health facilities

Edward Eremugo Kenyi

Editor-in-Chief

South Sudan Medical Journal

Correspondence:

opikiza@yahoo.com

Introduction

Infection prevention and control (IPC) is a scientific approach and practical solution designed to prevent harm caused by infection to patients and health workers. According to the World Health Organization (WHO), IPC is vital for patient safety and quality universal health coverage since it is relevant to health workers and patients at every single health-care encounter.^[1] Implementing a robust IPC plan in health facilities during the COVID-19 pandemic will go a long way in breaking the chain of infection and spread of the coronavirus. By protecting the health workers from getting sick from infected patients and to preventing the spread the virus from health workers to the public. Every health worker in the facility must be trained in IPC.

The guidance in this article was mainly drawn from an IPC manual developed by Jhpiego and outlines the practices to which all health facilities should aspire.^[2] Readers should consult full reference manuals and guidelines for deeper understanding of the subject.^[1,3]

In order to implement effective IPC standards, the health facility should identify a focal person tasked with the responsibility to implement IPC. Strategies that can be used to prevent or limit transmission in health facilities are:

- Ensuring triage, early recognition, and source control (isolating patients with suspected COVID-19)
- Applying standard precautions for all patients,
- Implementing empiric additional precautions (droplet and contact and, whenever applicable, airborne precautions) for suspected cases of COVID-19,
- Issuing new guidance, policies and protocols for IPC as appropriate,
- Using environmental and engineering controls (e.g., reorganizing health facilities to create isolation rooms, improving airflow in existing rooms).

IPC standard precaution

The standard precautions are a set of activities in the health facility designed to prevent the transmission of infectious disease that are acquired by contact with blood, body fluids, non-intact skin (including rashes) and mucous membranes.^[3] All health workers use these standards when providing care to all patients, regardless of the appearance of disease or are asymptomatic.

The standard precautions are:

- Hand hygiene,
- Use of personal protective equipment (PPE),
- Needlestick and sharps injury prevention,
- Cleaning and disinfection,
- Respiratory hygiene,
- Waste disposal,
- Safe injection practices.

Citation:

Kenyi, COVID-19 and infection prevention and control in health facilities. South Sudan Medical Journal 2020; 13(2):52-56

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In applying standard precautions for all patients, include the following:

- Ensure that all patients cover their nose and mouth with a tissue or elbow when coughing or sneezing.
- Offer a medical mask if available to patients with suspected COVID-19 while they are in waiting/public areas.
- Perform hand hygiene after contact with respiratory secretions and surfaces (e.g. door handles) that may have been contaminated by infected persons.

Hand hygiene

Hand hygiene is the single most important measure to prevent transmission of infection. The goal of hand cleansing is to remove any infected matter by reducing both transient and resident flora. Hand washing can either be done by water and soap or using an alcohol-based hand rub (hand sanitizer) containing at least 60% alcohol. Handwashing should be for at least 20 seconds.

The WHO's "Your 5 Moments for Hand Hygiene", (Figure 1) include washing hands in the following settings:

- Before touching a patient.
- Before performing a clean/aseptic task, including touching invasive devices.
- After performing a task involving the risk of exposure to a body fluid, including touching invasive devices.
- After patient contact.
- After touching equipment in the patient's surrounding areas.

Hand hygiene with soap and water

Handwashing with soap and water is recommended in the following situations: if hands are visibly soiled or contaminated with blood or body fluids; after using the toilet; before eating; and to remove the build-up of emollients (e.g., glycerol) on hands after repeated use of a hand rub.

Hand hygiene with an alcohol-based hand rub

The hand rub should have at least 60 – 80% alcohol content and an emollient like glycerol. Hand rub does not remove soil or organic matter if hands are visibly soiled or contaminated with blood or body fluids so use soap and water instead.

Use of Personal Protection Equipment (PPE)

The purpose of PPE is to protect health workers from serious infectious (e.g. coronavirus) and non-infectious



Figure 1. Your 5 Moments for Hand Hygiene. Source: [WHO](#)

hazards in the healthcare environment. The most common PPE used in health facilities include gloves (examination, sterile, and utility), head cover (cap, hood), mask/respirators, protective eyewear (face shields, goggles or safety glasses), gowns, aprons, closed-toe shoes and shoe covers. Figure 2.

Gloves

Gloves should be the right sizes for the health worker and sterile or non-sterile gloves put on following standard steps. Wearing gloves is not a substitute for hand hygiene. Gloves MUST be changed after contact with contaminated items and between patients. Reprocessing and reusing of gloves, except for heavy-duty utility gloves, should not be done.

Do's and don'ts about glove use:

- Do wear the correct size gloves, particularly surgical gloves,
- Do change sterile surgical gloves every 90-150 minutes during long procedures,
- Do change gloves when a perforation or defect is noticed or when there is a suspected perforation,
- Do keep natural fingernails short to reduce the risk of tears,
- Do pull gloves up over the cuffs of the gown (if worn) to protect the wrists,
- Do not use oil-based or perfumed hand lotions or creams,
- Do not store gloves in areas where there are extreme changes in temperatures.

Gowns

Gowns should fully cover the torso, fit comfortably over the body, and have long sleeves that fit snugly at the wrists. Isolation gowns are designed to prevent contamination of the arms, exposed areas of the body, and clothing from blood and body fluids and other potentially infectious material. Surgical gowns are sterile and preferably fluid-resistant, with sleeves that either taper gently toward the wrists or end with elastic or ties around the wrists. When the surgical gowns are put on, the cuffs of sterile surgical gloves should completely cover the end of the sleeves of the gowns.

Masks

The primary purpose of using masks is to protect health care workers from exposure to infectious materials from patients. Masks are of two types: surgical masks (should be fluid resistant) and procedure/isolation masks (have no specification and are not regulated). Face shields are better for protection against splashes of blood and body fluids. N95 respirators are used to protect from droplets and airborne infectious particles.

Respirators

Respirators are specialized masks, used to prevent inhalation of small particles that may contain infectious agents transmitted via the airborne route. Respirators contain multiple layers of filter material and fit the face tightly. N95 designation means that when subjected to careful testing, the respirator blocks at least 95% of very small (0.3 micron) test particles. They are more difficult to breathe through and more expensive than surgical masks. Every health worker should perform a fit test and seal test when using respirators.

Protective eyewear

The types of protective eyewear are: goggles, safety glasses, masks with attached shield and face shield. Eye protection is required when the mucous membranes of the eyes are susceptible portals of entry for infectious agents. Infection can be transmitted via splashes of blood or other body fluids, especially respiratory secretions emitted during specimen collection, suctioning, or intubation.

Head covering/caps

Head covers are most commonly used as part of surgical attire in surgical and procedure areas. Head covers or caps should be large enough to cover the entire scalp and hair to keep the hair, beard, and scalp covered so that flakes of skin and hair are not shed into the sterile field. During outbreaks like COVID-19, head covers are part of the routine PPE for contact, droplet or airborne precautions.

Footwear

Proper footwear decreases the risk of exposure to blood or other potentially infectious materials, sharps injuries, and

slipping or falling. All footwear should have closed toes, low heels, and non-skid soles. Rubber boots or leather shoes provide the best protection. They must be kept clean. Open-toe slippers and flip flops are not appropriate footwear in health care settings. Clean, sturdy shoes are recommended for all clinical areas.

Respiratory hygiene

During the COVID-19 outbreak, measures to avoid spread of respiratory secretions should be promoted to help prevent transmission in the health facility. Elements of respiratory hygiene and cough etiquette include: ^[2, 3]

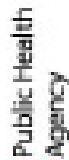
- Covering the nose/mouth with a tissue when coughing or sneezing or using the crook of the elbow,
- Using tissues to contain respiratory secretions and discarding them immediately,
- Performing hand hygiene immediately after contact with respiratory secretions and contaminated objects/materials,
- Asking patients with signs and symptoms of COVID-19 to wear a mask when they come into the health facility,
- Spacing seating in waiting areas at least 2 metres apart to minimize close contact among persons in those areas,
- Supplies such as tissues, wastebaskets, alcohol gel, and masks should be provided in waiting and other common areas,
- Place cough etiquette signs where the public can see them.

Environmental cleaning and disinfection

According to the most recent correspondence published on aerosol and surface stability of SARS CoV-2 as compared with SARS-CoV-1 ^[4], COVID-19 survives for:

- 3 hours in aerosols,
- 72 hours on plastic,
- 48 hours on stainless steel,
- 4 hours on copper surfaces,
- 24 hours on cardboard.

Cleaning and disinfection are essential for keeping all surfaces and equipment safe for patients, providers, and visitors. Cleaning regularly touched surfaces reduces the chance of infection from contaminated surface. Use appropriate cleaning agents for cleaning environmental surfaces. Considerations for choosing a cleaning product and recommended disinfectants depend on intended use, efficacy, acceptability, safety, cost and availability, and volume.



Recommended PPE for healthcare workers by secondary care inpatient clinical setting, NHS and independent sector

Setting	Contact	Disposable Gloves	Disposable Plastic Apron	Disposable face protection (respiratory)	Single mask	Full face shield (Type III) or equivalent	Protective gown	Eye face protection	Eye face protection ¹
Acute medical (inpatient) and orthopaedic departments, trauma, orthopaedic, learning disability, autism (ASD) and sensory settings	Performing single (single) (sterilising) (double) (sterilising) procedures or activities with a high risk of splash or higher risk of splash	✓ single use	✗	✓ single use	✗	✗	✗	✓ single use	✓ single use
	Working in a higher risk acute care area with possible or confirmed cases ²	✓ single use	✓ single use	✓ respiratory use ³	✗	✗	✗	✓ respiratory use ³	✓ respiratory use ³
	Working in an inpatient, maternity, intensive care or with possible or confirmed cases ² - direct patient care (with 2 metres)	✓ single use	✓ single use	✗	✗	✓ respiratory use ³	✗	✓ respiratory use ³	✓ respiratory use ³
	Working in an inpatient area with possible or confirmed cases ² (not within 2 metres)	✗	✗	✗	✗	✓ respiratory use ³	✗	✗	✓ risk select respiratory use ³
	Working in an emergency department/accident and emergency (A&E) (with possible or confirmed cases ²) - direct patient care (with 2 metres)	✓ single use	✓ single use	✗	✗	✓ respiratory use ³	✗	✗	✓ respiratory use ³
	All non-value sensitive possible or confirmed cases ² (with 2 metres)	✓ single use	✓ single use	✗	✗	✓ respiratory use ³	✗	✗	✓ respiratory use ³
	Operating theatre with possible or confirmed cases ² (with 2 metres)	✓ single use	✓ single use	✓ single use	✗	✗	✗	✗	✓ risk select respiratory use ³
	Labour ward/area - 3rd/4th stage labour ward/ delivery (in labour) - 3rd/4th stage labour ward	✓ single use	✓ single use	✓ single use	✗	✗	✗	✗	✓ single or secondary use ³
	Inpatient care to any individual in the extremely vulnerable group undergoing screening ⁴	✓ single use	✓ single use	✗	✓ single use	✗	✗	✗	✗

Table 1

1. This may change or evolve. For more information on eye face protection, see <https://www.gov.uk/government/publications/eye-face-protection-for-healthcare-workers>.
 2. This may change or evolve. For more information on possible or confirmed cases, see <https://www.gov.uk/government/publications/possible-or-confirmed-cases-of-covid-19>.
 3. A full face shield (Type III) or equivalent is preferred for a patient or confirmed case. Risk select for all patients with non-value sensitive, operating theatre, emergency care and other situations where risk is regularly performed.
 4. Higher risk acute areas include: ED, resuscitation areas, wards with non-value sensitive, operating theatre, emergency care and other situations where risk is regularly performed.
 5. A full face shield is preferred for a patient or confirmed case. Risk select for all patients with non-value sensitive, operating theatre, emergency care and other situations where risk is regularly performed.
 6. For screening of extremely vulnerable groups, see <https://www.gov.uk/government/publications/possible-or-confirmed-cases-of-covid-19>.
 7. For screening of extremely vulnerable groups, see <https://www.gov.uk/government/publications/possible-or-confirmed-cases-of-covid-19>.
 8. For screening of extremely vulnerable groups, see <https://www.gov.uk/government/publications/possible-or-confirmed-cases-of-covid-19>.
 9. A full face shield is preferred for a patient or confirmed case. Risk select for all patients with non-value sensitive, operating theatre, emergency care and other situations where risk is regularly performed.
 10. For screening of extremely vulnerable groups, see <https://www.gov.uk/government/publications/possible-or-confirmed-cases-of-covid-19>.
 11. For screening of extremely vulnerable groups, see <https://www.gov.uk/government/publications/possible-or-confirmed-cases-of-covid-19>.
 12. For screening of extremely vulnerable groups, see <https://www.gov.uk/government/publications/possible-or-confirmed-cases-of-covid-19>.
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 19. For screening of extremely vulnerable groups, see <https://www.gov.uk/government/publications/possible-or-confirmed-cases-of-covid-19>.
 20. For screening of extremely vulnerable groups, see <https://www.gov.uk/government/publications/possible-or-confirmed-cases-of-covid-19>.

Figure 2. COVID-19 personal protective equipment (PPE) from Public Health England see COVID-19 personal protective equipment (PPE) Section 5 Table 1. Table 1.

Waste management

The goal here is to identify the categories and sources of waste associated with COVID-19 at the health facility and apply best practices for minimizing, segregating, collecting, transporting, and storing the health facility wastes. Health workers should use the appropriate PPE for waste collection. No equipment used for holding and transporting waste should be used for any other purpose. Use equipment that is easy to load and unload, does not have sharp edges, is easy to clean and is clearly labelled. Waste should be transported to final treatment and disposal area regularly to avoid pile up of large quantities. Waste containers and trolleys should be cleaned and disinfected after use.

Conclusions

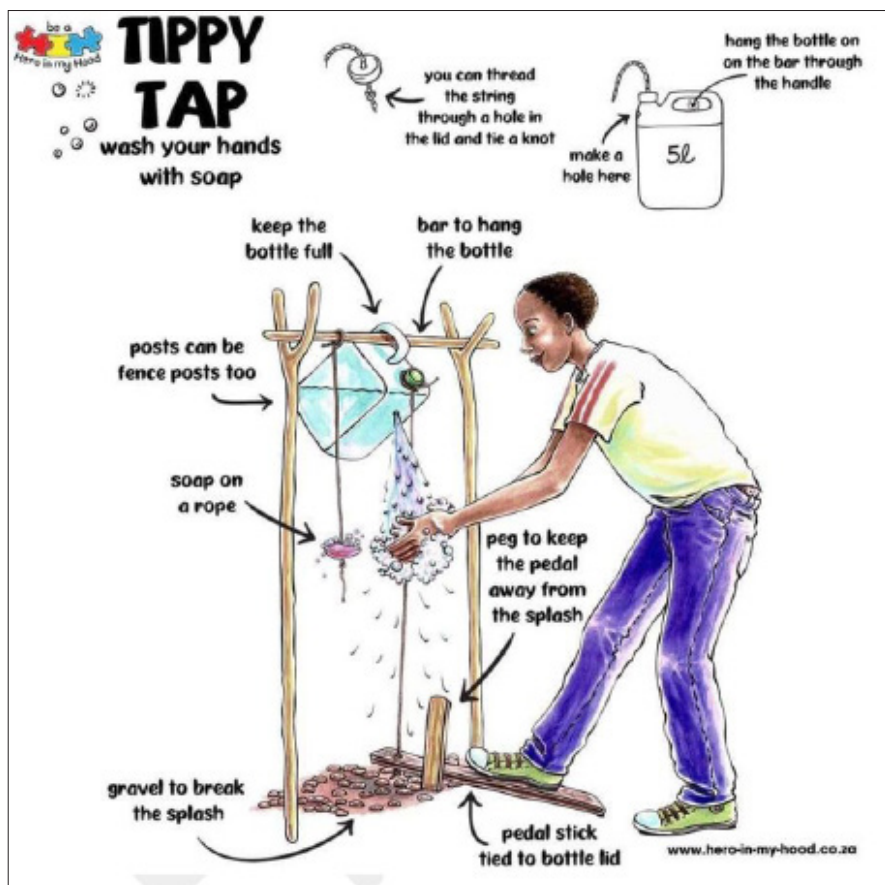
The COVID-19 pandemic calls for a robust implementation of IPC in health facilities to break the transmission of the coronavirus. All health facilities should ensure that at least the minimum requirements for IPC are in place as soon as possible. Health facilities should also apply the standard precautions for all patients by the use of hand hygiene, proper use of PPE and educating patients and families about early recognition of symptoms and basic precautions. Inadequate IPC measures may lead to transmission of COVID-19 to patients, staff and visitors, and within the community.

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Additional materials

- [Covid-19: PHE upgrades PPE advice for all patient contacts with risk of infection](#) BMJ 2020;369:m1391 doi: 10.1136/bmj.m1391 (Published 3 April 2020)
- [WHO Use of masks.](#)



South Sudanese refugees in Uganda face overwhelming odds against COVID-19

Kevin McKague

Canada Research Chair in Social Enterprise and Inclusive Markets, Cape Breton University, Sydney, NS, Canada

Correspondence:

kevin_mckague@cbu.ca

Life in Northern Uganda's Kiryandongo refugee settlement is difficult at the best of times.^[1] Nearly 60,000 refugees, who are predominantly South Sudanese, contend with overcrowding and limited access to healthcare services, especially mental health and psychosocial support.^[2, 3] It is into this environment that the COVID-19 pandemic will soon be introduced.

"Case numbers are increasing exponentially in the African region," said Dr Matshidiso Moeti, the World Health Organization (WHO) regional director for Africa.^[3] It took twenty-six days to reach one-thousand cases of COVID-19 in Africa. Five days later, the number of cases had tripled across the continent.^[4] When this highly infectious respiratory disease arrives in Kiryandongo, the results may be devastating.

Professor Pauline Byakika, a specialist in infectious diseases at Uganda's Makerere University, says that fighting the virus in a refugee camp will come down to prevention and control.^[5] The United Nations High Commissioner for Refugees (UNHCR) agrees. At Uganda's border, the UN has established handwashing and temperature screening facilities. They are educating refugees already in Uganda about hygiene and sanitation while training health workers and increasing distribution of hygiene products.^[6] Such measures may keep the daily number of cases at a low level. However, flattening the curve in a refugee settlement may not be enough. A review of the Kiryandongo refugee settlement's healthcare system reveals that any number of cases above zero should be considered unmanageable.

The Kiryandongo refugee settlement has three primary healthcare facilities. The health centres that are available are understaffed and under-resourced. Making matters more challenging, Professor Thumbi Ndung'u of the African Institute for Health Research says that, "[Africa doesn't] have the hospitals, the ICUs or the ventilators to deal with massive amounts of [infected] people."^[4] The COVID-19 pandemic has imposed unprecedented challenges on healthcare systems in developed nations, resulting in problems with staffing and resources. A system that is understaffed and under-resourced to begin with, such as in refugee settlements, is not well-positioned to meet the challenge of a highly infectious disease.

Jane Ruth Aceng, Uganda's minister of health, says the country is prepared to handle an outbreak in their refugee settlements. "We have tents that we have procured, and [which are] ready to be set up to manage people who may get infected wherever. For those who are severely ill, they will be referred and managed in the regional referral hospitals whose capacities are being built to handle COVID-19."^[5] Uganda's minister of health suggests that refugees with the virus will be properly quarantined.

One would expect Uganda to be at the forefront of protecting refugees against COVID-19, as they have long protected refugees from other crises, such as the conflict in South Sudan. Uganda is known for its progressive refugee policies and allocating land plots to individual refugee families. Their generous policies have so far attracted 1.4 million refugees, mainly from neighbouring South Sudan and the Democratic Republic of Congo.

Of the more than 800,000 South Sudanese refugees in Uganda, a reported 13,500 of them arrived between January 1 and March 24 2020. However, on March 25, the government made the decision to close its borders to new refugees.^[7] In fairness, Uganda may only have been following the lead of the European Union.

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Several weeks earlier, the EU's foreign policy chief, Josep Borrell, told migrants in Turkey: "Don't go to the border. The border is not open."^[8] But as Filippo Grandi, the UN High Commissioner for Refugees, has pointed out, "everyday life has come to a standstill... [but] wars and persecution have not stopped..."^[9] Less than a week after the Commissioner's statement, Uganda closed its borders, putting South Sudanese refugees, and their own nationals, at risk.

However, it is not easy to close a large open border like Uganda's overnight. Titus Jogo, the Refugee Desk Officer in Adjumani, a small town in the Northern Region of Uganda that hosts many refugees, says that despite the closure they receive between 30-34 South Sudanese people per day. The refugees enter through informal border crossings, collect food and money from humanitarian agencies and then cross back into South Sudan. While in Adjumani, the South Sudanese come in direct contact with townspeople, against what are now common practices of social distancing.^[10] With the border officially closed, the South Sudanese individuals still entering Uganda are likely to forgo the UNHCR's disease monitoring efforts in fear of reprisals. Closing borders to non-essential travellers is perhaps a positive measure in most circumstances around the world. In this case however, closing the border to refugees discourages monitoring and increases back-and-forth travel, exposing both countries to higher risk of transmission of the virus.

Beyond measures of prevention and control, however successful, further measures will be required to manage the hidden and potentially fatal effects of the virus. Stress, anxiety and depression caused by the pandemic will compound the already challenging mental health statistics among South Sudanese refugees living in settlements in Uganda. In these settlements, suicides more than doubled in 2019 compared to the previous year, the UNHCR reported.^[3] The UN Refugee Agency attributes the higher rate of suicide to key factors such as, "sexual and gender-based violence, traumatic events both before fleeing the home country and after arriving at a refugee settlement, extreme poverty, and lack of meaningful access to education and jobs."^[3] The pandemic will only increase the need for mental health support on a system that is already beyond strained. Of all the South Sudanese refugees who sought mental health and psychosocial support in 2019, only 29 percent received them.^[3]

Many people in the world affected by COVID-19 will have to confront mental health hurdles. However, those not living in refugee settlements are better equipped to handle day-to-day mental health issues. The WHO, in its considerations for improving mental health during the crisis, emphasizes the importance of maintaining a regular schedule: regular meals, regular sleep, regular exercise, regular contact within social networks while encouraging

children to participate often in fun and educational activities.^[11] In the Kiryandongo refugee settlement, where meals, potable water and access to jobs and education are lacking, maintaining a regular schedule was already a struggle. Therefore, entirely novel approaches are required in order to support mental health and psychosocial wellness in the settlement. Just as Uganda's government and the UNHCR have implemented measures to monitor and control the virus to flatten the curve of respiratory illness, a similar dedication is required to screen for signs of mental health concerns. Such a programme, however, will likely only exist once basic needs are met within the settlement.

A COVID-19 vaccine will not be available to South



COVID-19 prevention messages (Source: Unicef South Sudan)

Sudanese refugees for at least 18 months. In the meantime, those in the Kiryandongo refugee settlement, and in Uganda, Africa and the rest of the world, need to take positive steps to limit the disease's spread. These measures include:

- Training Village Health Team community health workers in understanding COVID-19 and recruiting them to educate refugees and promote hand washing. If soaps and hand sanitizer is in limited supply, refugees can be trained in soap making as has been the case in Kiryandongo. Locally produced soap can be purchased by UNHCR or non-governmental organizations for distribution to all households in refugee settlements and local host communities.
- Training Village Health Team workers to educate refugees on the importance of physical distancing including limiting the number of people who meet together at any one time. Refugees over 70 years old or with additional underlying conditions should be especially protected.

- Church leaders, other faith leaders and other community leaders should be recruited to pass educational messages to their congregations and communities.
- If they come to be required by WHO, cotton face masks can be produced by local refugee tailors, procured by UNHCR or non-governmental organizations, and distributed to refugees and member of host communities living outside refugee settlements.
- If possible, testing refugees to identify asymptomatic people who already have the disease with a view to isolating these people to prevent further spread.

Frontline health workers in health facilities also need to be equipped with proper personal protective equipment. In 2019, the UNHCR and its partners secured only 40 percent of the US\$927 million needed to assist refugees and host communities in Uganda.^[3] The need for funding, particularly in the healthcare sector to purchase needed equipment and supplies, will surely grow during the pandemic. Jack Dorsey, Twitter's chief executive, has pledged to donate US\$1bn to a charitable fund, called Start Small, to "fund global COVID-19 relief".^[12] Organizations like the Real Medicine Foundation which is running health facilities in the Kiryandongo settlement as well as training of nurses in the Juba College of Nursing and midwifery (JCONAM) should be encouraged to apply for some of this emergency funding to help prepare the settlement for the looming pandemic. In these ways the refugees themselves, the Village Health Team community health workers, the UNHCR and non-governmental organizations and others can support South Sudanese refugees like those in the Kiryandongo settlement and provide the resources and knowledge they need to beat the odds against COVID-19.

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Further reading on COVID-19 and vulnerable groups:

- World Health Organization Coronavirus disease (COVID-19) technical guidance: Humanitarian operations, camps and other fragile settings
- Interagency Standing Committee COVID-19: How to include marginalized and vulnerable people in risk communication and community engagement

About the Author: Dr Kevin McKague is the Canada Research Chair in Social Enterprise and Inclusive Markets at Cape Breton University, a Visiting Researcher at the Centre for Refugee Studies at York University and a Research Fellow at the Centre for Peace, Democracy and Development at the University of Massachusetts, Boston.

Communicating to children about the COVID-19 pandemic

Grace J. Soma

Paediatrician.

Editorial Assistant,

South Sudan Medical Journal.

Correspondence:

diktora.grace@gmail.com

Introduction

The end of 2019 ushered in a new decade and the spread of a novel coronavirus causing respiratory symptoms and disease confirmed as an outbreak by the World Health Organization (WHO) in January 2020. The International Committee on Taxonomy of Viruses (ICTV) declared on 11 February 2020 that “severe acute respiratory syndrome coronavirus 2” (SARS-CoV-2) was the name of this new virus due to its genetic similarity to the coronavirus responsible for the SARS outbreak of 2003. The disease caused by this virus was designated the name coronavirus disease of 2019 (COVID-19) by the WHO for purposes of risk communication to the general public^[1] and see p35.

The first cases of COVID-19 were identified in Wuhan City, China and more cases were reported worldwide leading to the determination that the disease had now reached pandemic levels as declared by the WHO in March 2020.^[2] As of 15th April 2020, there were four confirmed cases of COVID-19 in South Sudan with zero deaths and no reported recoveries from the affected individuals who were placed in quarantine.^[3]

Epidemiology of COVID-19 and disease burden in children

Current evidence suggests that COVID-19 affects mainly adults and individuals with weak immune systems, the elderly and those with underlying chronic diseases like diabetes, cancer and chronic lung disease.

There have been few reported cases of COVID-19 in children. As of February 20, 2020, only 2.4% of the 75,465 reported cases in China were in persons less than 19 years of age, mostly as a result of exposure through household members with COVID-19. This picture is similar to that seen during the 2002-2003 nSARS epidemic where, less than 5% of cases were in persons younger than 18.^[4]

Children manifest a milder form of COVID-19 and their symptoms such as fever, cough and difficulty in breathing are also seen when they have viral respiratory infections. Clinical management of COVID-19 includes prompt use of infection prevention measures like use of a respirator or facemask, gloves, gowning and shielding in healthcare settings and supportive management of the respiratory complications.^[4]

Risk communication and community engagement on COVID-19

Past experiences with disease outbreaks such as Ebola and SARS, have shown that risk communication and community engagement are important tools in outbreak management and response. Risk communication, in any disease outbreak, is defined by the WHO as ‘the real-time exchange of information, advice and opinions between experts, community leaders or officials and the people who are at risk’.^[5] Timely messages avoid confusion and prevent misinformation about the disease spread and enable individuals at risk to make informed decisions to prevent them from further risk.^[6]

Maintaining public trust is key in risk communication because without it the public will not believe or act on information provided by public health officials to minimize their personal risk. Regular communication also allows the government to respond rapidly to specific concerns and information needs of the public and healthcare workers.^[6]

Citation:

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Figure 1. Common stress induced behaviour changes in children.
Source: Grace J. Soma (Author).

Importance of communicating to children about the COVID-19 pandemic

Children may play a role in the spread of SARS-CoV-2 in the community. Most risk communication and community engagement strategies are always focused on adults as opposed to children for obvious reasons. However, this does not mean that children cannot be informed about diseases especially of a public health nature such as the current COVID-19 disease. Failure to engage children in risk communication and prevention strategies for COVID-19 means that they can be the weak link in the spread of the disease.

Children all over the world have been affected by measures to curb the spread of COVID-19 such as physical distancing, quarantines and school closures.^[7] Schools have remained widely closed while churches and community gatherings are not permitted in South Sudan since a government directive effective from the 24th of March of 2020.^[8] Restriction of movement of children and disruption of daily activities such as school and play may cause feelings of isolation, disappointment and boredom.^[7] These changes may also affect their temperaments and result in behavioural problems.

Ongoing conversations about COVID-19 may cause worry and anxiety among children depending on the information they hear and their interpretation of it. Feelings of fear over the health of family members and loved ones may result in anxiety and worry. Unlike adults, children are unable to effectively communicate feelings

of anxiety or worry. Anxiety in children can manifest as physical symptoms such as stomach aches, poor feeding and sleeping.^[9]

The Centers for Disease Control and Prevention highlights some common stress induced behaviour changes that parents can watch out for in their children during this period.^[10] Figure 1 highlights some of these behavioural changes.

During these uncertain times when both parents and children are unexpectedly at home, parents may find it challenging to support children who are struggling to cope with the current changes in their lives. The presence of a trusted adult who is able to check with children to find out what they are hearing and how they are feeling about all that is going on is important during this period. This

article shares some useful tips for parents, guardians and caregivers on how to communicate to children about the COVID-19 pandemic.

Tips on communicating to children about the COVID-19 pandemic

Children need to be made aware of what is going on in the world around them but this should be done in a child friendly manner. Below is a compilation of general principles and tips on communicating to children about COVID-19 from UNICEF,^[10] WHO,^[7] CDC^[9] and the Child Mind Institute:^[11]

1. Be available and take the lead

- Take the lead in opening up the discussion on COVID-19 by being available to listen and talk.
- Start by finding out how much they already know, ask open questions, listen and build up on existing knowledge.
- Close conversations with care ensuring that you have not caused more anxiety or introduced new fears.
- Let the child know that you are available to talk and that you will continue to keep informing them on any new updates that they need to know.

2. Be tactful

- It is not necessary to volunteer a lot of information to very young children as this may be overwhelming, what is important is to continue reinforcing good hygiene practices.

- Use age-appropriate language, watch for reactions, and be sensitive to the level of anxiety and understanding.
- Give information that is truthful and appropriate for the age and developmental level of the child.

3. Be calm and reassuring

- Deal with your own anxiety first in order to be calm and reassuring.
- Acknowledge any concerns the child may have, address them as best as possible and offer reassurance.
- Pay attention to what children see or hear on television or radio and limit their exposure in order to avoid anxiety due to too much information on the topic.
- Remind children that everyone is working hard to contain the virus and that they can play their part in this by following the rules and practicing good hygiene as advised.
- Reassure the child that not many children are getting COVID-19 and that those who get it seem to have milder symptoms.

4. Don't use language that can lead to stigma

- Anyone can get sick with any virus including COVID-19 and it is important to avoid language that might blame others and lead to stigma.

- Check if they are experiencing or spreading stigma.

5. Be an example

- Communication is not only about talking, but also about actions that match the words.
- Teach and show children how to reduce the spread of germs by everyday actions like hand washing.
- Remind children not to get too close to people who are coughing or sneezing or sick.
- Remind children to cough or sneeze into a tissue or their elbow, then throw the tissue into the trash.

6. Stick to the facts!

- Let your children know that there may be many stories out there about COVID-19 which may not be true and that they should always come and confirm these stories with you.
- Do not make any guesses, if you are not sure of anything, take the opportunity to learn more on the topic by referring to official public health communications either on radio, TV or mass messaging.

COVID-19 facts for discussions with children

The CDC suggests some useful COVID-19 facts for discussion with children shown in Table 1.

Table 1. COVID-19 facts for discussion with children

What is COVID-19?	<ul style="list-style-type: none"> • COVID-19 is the short name for "coronavirus disease 2019."
How is COVID-19 spread?	<ul style="list-style-type: none"> • COVID-19 is spread through germs that may be present in the environment entering our bodies. • People who have COVID-19 can spread the disease through coughing, sneezing or contaminating surfaces that they touch.
What happens if someone gets COVID-19?	<ul style="list-style-type: none"> • Being sick with COVID-19 is like having the flu. • Someone can have a fever, cough or difficulty in breathing.
What can I do so that I do not get COVID-19?	<ul style="list-style-type: none"> • Don't touch your mouth, nose and eyes to keep germs out of your body. • Keep your hands clean at all times like before eating or touching food, after eating or after visiting the toilet. • Keep your environment clean.
How can I keep my hands clean?	<ul style="list-style-type: none"> • Wash your hands with soap and water for at least 20 seconds especially after blowing your nose, coughing, or sneezing; going to the toilet; and before eating or preparing food.
What should I do if I am coughing or other people are coughing around me?	<ul style="list-style-type: none"> • Cough or sneeze into your elbow or a tissue and discard the tissue straight away. • Do not cough or sneeze at or near someone's face. • Do not get too close to people who may be coughing or sneezing
What should I do if I feel sick	<ul style="list-style-type: none"> • Should you feel sick, make sure that you inform your parent or any adults who take care of you straight away.

Summary

A simple way to remember how to communicate to children about COVID-19 is through the acronym ABCDEs! as in Figure 2.

Conclusion

Physical distancing does not mean emotional distancing and children should be allowed a safe environment to express feelings of fear, anxiety or sadness. Children will best thrive during this period if they are kept close to their family members and caregivers as long as it is considered safe.^[2] Maintaining structure and familiarity of daily routine life is important as children continue to stay at home, this means that learning should continue, inclusion in house chores, play and socialization with members of the same household should be encouraged.^[11]

Communicating with children about COVID-19 through regular family or household updates in honest and developmentally appropriate ways may ease their anxiety. Children always observe adults' behaviours and emotions for cues on how to manage their own emotions during difficult times. A balance of learning, play and involvement in household activities will go a long way in keeping children happy and healthy during this period.^[11]

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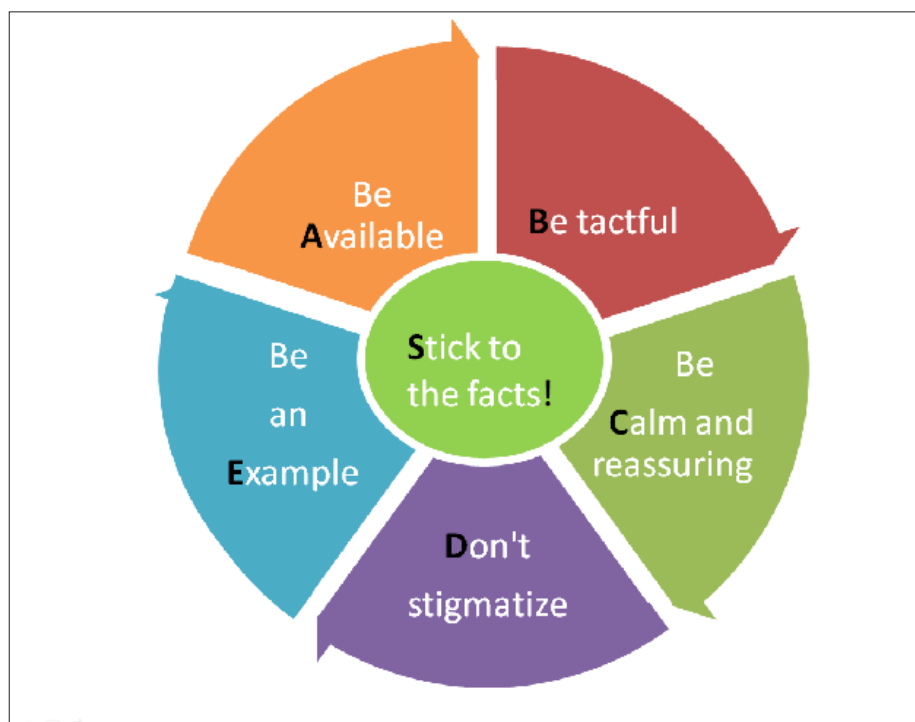


Figure 2. The ABCDEs! for communicating to children about COVID-19. Source: Grace J. Soma (Author).

Pregnancy and young child feeding in South Sudan during the COVID-19 pandemic

Compiled by the Editorial Team

Guidelines on preventing COVID-19 are constantly being updated. The information below was prepared in April 2020 and is based on guidelines given in the materials listed below.^[1,2,3] Check them for updates.

Pregnancy

Based on available information, pregnancy does not seem to alter the risk of getting sick from COVID-19. However, pregnant girls and women have had a higher risk of severe illness when infected with viruses from the same family as COVID-19 and other viral respiratory infections, such as influenza. So it is important that pregnant women know how to avoid COVID-19 – see Figure 1.

Mother-to-child transmission of coronavirus during pregnancy and birth is probable and after birth a new-born is susceptible to person-to-person spread. A very small number of babies have tested positive for the virus shortly after birth, but so far all have remained well. It is unknown if these babies got the virus before or after birth since all had been delivered by Caesarean Section. More evidence is needed to establish if and when Caesarean Sections should be recommended for women with COVID-19.^[4]

To date (April 30, 2020):

- The virus has not, so far, been detected in amniotic fluid, breastmilk, or other maternal samples.
- As this is a very new virus, we are just beginning to learn about it. There is no evidence to suggest an increased risk of miscarriage, and it is considered unlikely that the virus would cause problems with the baby's development.
- Emerging evidence suggests that in China, some babies have been born prematurely to women with symptoms of coronavirus. It is unclear whether coronavirus caused these premature births, or whether it was recommended that the baby was born early for the benefit of the women's health.^[5]

Pregnant girls and women should follow the national guidelines for antenatal care and for avoiding COVID-19.^[6,7]

Infant feeding

More details are given in [Infant and Young Child Feeding](#).

Programmes and services to protect, promote and support optimal breastfeeding and age-appropriate and safe complementary feeding practices should continue during the COVID-19 pandemic. This should be accompanied by a very strong focus on public health education e.g. proper hygiene and safe channels for communications and social distancing in addition to the country's COVID-19 guidelines.

Breastfeeding

- Health staff should continue to provide breastfeeding counselling and practical feeding support to all pregnant women and mothers with infants and young children, whether or not they or their children have suspected, probable or confirmed COVID-19.
- Breastmilk is still the best protection of the immune systems of infant and



Figure 1. [PAHO Communication materials](#)

young children. Where infectious co-morbidities are common, any risk of transmission of COVID-19 through breastfeeding is outweighed by the known risks associated with replacement feeding.

- So, it is important to follow national infant feeding guidelines emphasising on appropriate respiratory hygiene during feeding, and share the following with mothers:
 - » There is no need to wash your breasts (biology likely does that – but note that WHO is further researching).
 - » Wash your hands often with soap and water especially before feeding and after cleaning a baby. Make sure anyone caring for the baby washes their hands often.
 - » Routinely clean surfaces, with which you are in contact, using soap and water.
- As with all probable, confirmed or suspected COVID-19 cases, symptomatic mothers who are breastfeeding or practicing skin-to-skin contact or Kangaroo Mother Care should take extra care to practice respiratory hygiene, including during feeding (see above). If the mother has flu-like symptoms, she should wear a mask/face covering when near a child. See Figure 2.
- When severe illness in a mother with COVID-19 or other health complications, prevents her from caring for her infant or prevents her from continuing direct breastfeeding, encourage and support her to express

milk, and safely provide breastmilk to the infant using a small cup or small spoon while applying appropriate hygiene measures. Consider asking someone who is well to feed the expressed breast milk.

- Advise mothers to continue breastfeeding if the child becomes sick with suspected, probable, or confirmed COVID-19 or any other illness.

Complementary feeding

- Continue to follow the national guidelines on complementary feeding emphasizing respiratory hygiene, and social distancing where possible.
- Share practical, local suggestions for maintaining healthy diets (including fresh fruits and vegetables) and resisting low-nutrient commercial foods and drinks.

Feeding older children

School closures are threatening the delivery of essential nutrition interventions to school-age children, especially the most vulnerable ones. For interim guidance to ensure that the nutritional needs of school children are fulfilled, both where schools are closed and where schools are open. See [Mitigating the effects of the COVID-19 pandemic on food and nutrition of school children](#).

Also

- Be alert to breastmilk substitute manufacturers exploiting the crisis to offer free samples of their products.
- Be careful not to spread myths about COVID-19 (see p 43)
- Use digital, broadcast and social media, including cell phones, to share reliable messages on infant feeding.
- Follow the latest advice for immunization and Vitamin A supplementation activities. See [PAHO](#).

Acknowledgements: Thanks to Mayom Biar Atem and members of the SSMJ Editorial team who helped to prepare this article.

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2. Clinical management of severe acute respiratory infection when COVID-19 is suspected - [Interim Guidance](#) 13 March 2020
3. PAHO/WHO Social Media cards: [Pregnancy and breastfeeding \(COVID-19\)](#)

Take precautions when breastfeeding, day and night

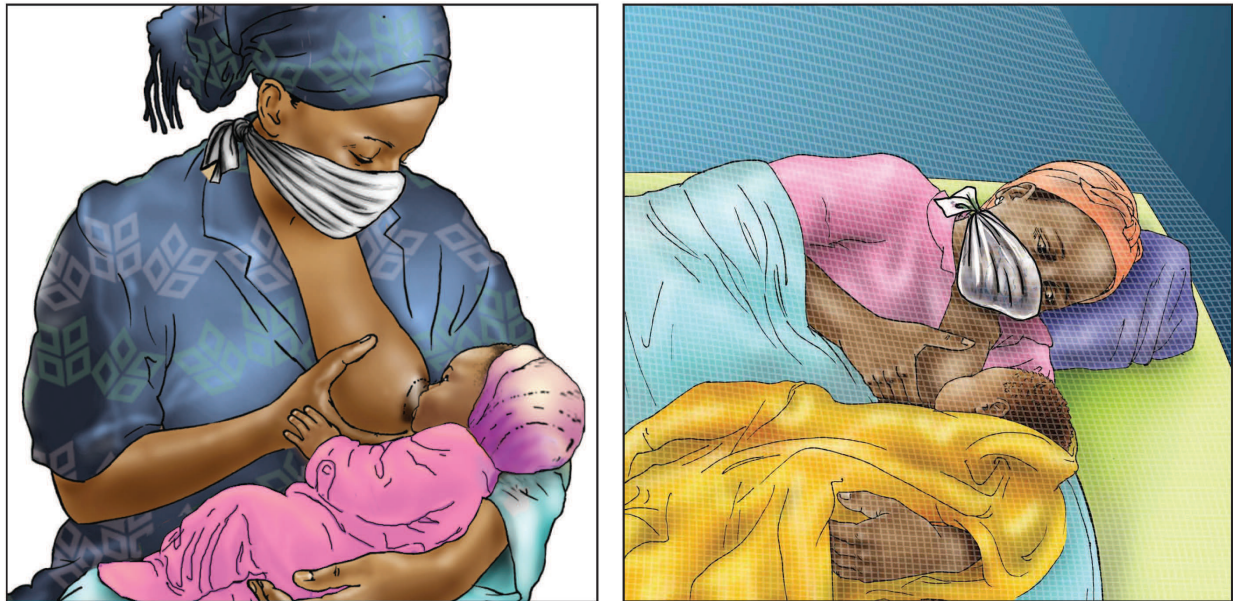


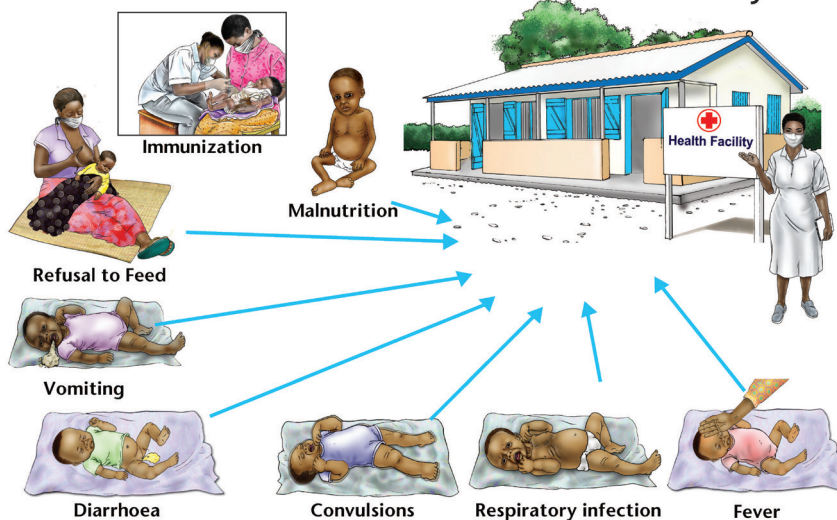
Figure 2. UNICEF/USAID For symptomatic breastfeeding mothers, *Take precautions when breastfeeding, day and night*

4. [Management of pregnant women infected with COVID-19](#)
5. Coronavirus infection and pregnancy: [Information for pregnant women and their families](#)
6. CDC. [COVID-19 Pregnancy and breastfeeding](#)
7. Royal College of Obstetrician and Gynaecologists. Coronavirus (COVID-19) infection and pregnancy [RCOG Pregnancy](#) and [RCOG](#)

Also used:

- UNICEF, GNC, GTAM. Infant and Young Child Feeding in the context of Covid 19. Brief no. 2 v.1, March 30, 2020.
- UNICEF/USAID [Counselling cards Infant and Young Child Feeding Recommendations when COVID-19 is Suspected or Confirmed](#)

When to seek advice from the health facility



Infant and Young Child Feeding recommendations when COVID-19 is suspected or confirmed



When COVID-19 is Suspected or Confirmed

This package of [Infant and Young Child Feeding recommendations when COVID-19 is suspected or confirmed](#) from UNICEF and USAID and partners includes 10 Counselling Cards and a Recommended Practices Booklet, reflecting global guidelines. It provides easy-to-understand recommended practices for counsellors and user-friendly graphics that can be used with communities in different situations. The links to the materials are listed below.

To learn how to adapt these materials, or to create your own materials for your IYCF and COVID-19 programme, email info@advancingnutrition.org.

[Recommended Practices Booklet](#) April 2020

Counselling cards (as jpgs):

- [Counselling card package](#)
- [Cover Card](#)
- [Actions needed to prevent the spread of COVID-19](#)
- [Take precautions during delivery and rooming-in](#)
- [Take precautions when breastfeeding, day and night](#)
- [Wash hands with soap to prevent spread of COVID-19](#)
- [Wash hands for 20 seconds following these steps](#)
- [Practice food safety and prepare clean water](#)
- [Practice safe complementary feeding.](#)
- [When to seek advice from the health facility](#)
- [How to hand express breast milk and cup feed](#)

Tracking COVID-19 and flattening the curve

COVID-19 trackers and dashboards

In a bid to show the visual representation of the spread of COVID-19 around the world, many institutions have developed a dashboard that records the daily increase in the number of cases globally and by countries, which also include the number of fatalities. The dashboard is updated several times a day to keep up with new data.

The [World Health Organization \(WHO\)](#) has a dashboard for tracking global spread of the COVID-19. Another dashboard was developed by the [Center for Systems Science and Engineering \(CSSE\)](#) at the Johns Hopkins University (JHU) to provide researchers, public health authorities, and the public with a user-friendly tool to track the outbreak as it unfolds.^[1] Likewise, [Africa CDC](#) has a dashboard that is focused on the continent's COVID-19 spread.



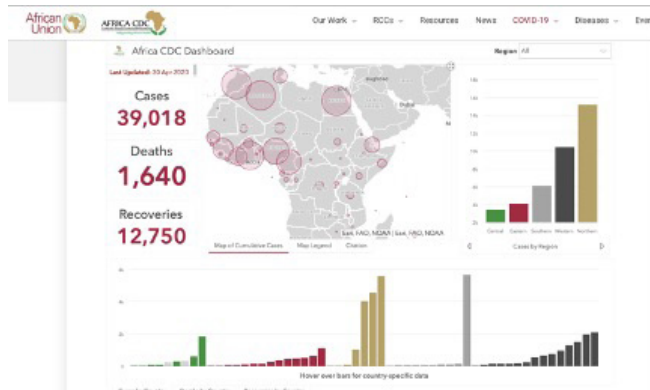
WHO Dashboard



Johns Hopkins dashboard

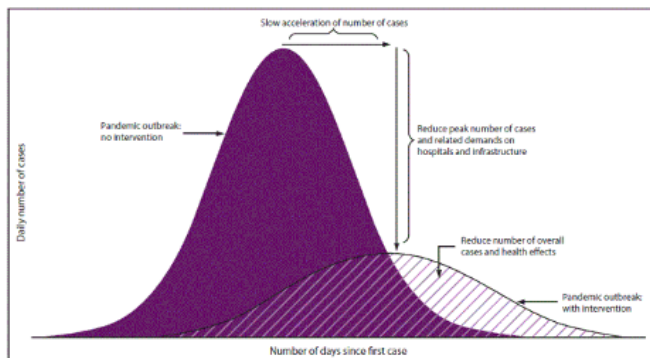
Flattening the curve (Source: CDC)

The epidemic curve of a disease is used to visualize the onset of a disease outbreak. The “**curve**” researchers are talking about refers to the projected number of people who will contract COVID-19 over a period of time, using a theoretical number and modeling. There are two curves. The first curve shows the disease spread without any intervention. The faster the infection curve rises, the quicker the local health care system gets overloaded beyond its capacity to treat people. The second curve shows what the disease would look like if interventions were done to slow the rate of new infections, a much flatter curve. A slower infection rate means a less stressed health care system, fewer hospital visits on any given day and fewer sick people being turned away.



Africa CDC dashboard

Flattening the curve is slowing a virus' spread so that fewer people need to seek treatment at any given time in order not to overwhelm the healthcare system. From previous pandemics, the steps being employed to flatten the COVID-19 curve are: social/physical distancing, testing and contact tracing and lockdowns or stay-at-home practices.



Flattening the curve (Source: CDC)

Reference

1. Dong E, Du H, Gardner L. [An interactive web-based dashboard to track COVID-19 in real time.](#) Lancet Infect Dis; published online Feb 19, 2020.

COVID-19 Myth-busters

- There is a lot of false information around about the coronavirus disease (COVID-19).
- Which of these statements are **TRUE** and which are **FALSE**?
- Test yourself and your colleagues.
- Get more information on COVID-19 myths and how to deal with them from the links below.

Exposing yourself to the sun or to temperatures higher than 25C degrees prevents COVID-19.	• FALSE
You can recover from COVID-19.	• TRUE
Catching COVID-19 means you will have it for life.	• FALSE
Being able to hold your breath for 10 seconds or more without coughing or feeling discomfort means you are free from COVID-19 or other lung disease.	• FALSE
Drinking alcohol protects you against COVID-19.	• FALSE
COVID-19 can be transmitted in areas with hot and humid climates.	• TRUE
People of all ages can be infected by COVID-19.	• TRUE
Older people, and people with pre-existing medical conditions (such as asthma, diabetes, heart disease) appear to be more vulnerable to becoming severely ill with the virus.	• TRUE
Cold weather and snow can kill COVID-19.	• FALSE
COVID-19 can be transmitted in areas with hot and humid climates.	• TRUE
COVID-19 can be transmitted through mosquito bites.	• FALSE
Taking a hot bath prevents COVID-19.	• FALSE
Hand dryers can kill COVID-19.	• FALSE
Thermal scanners can detect if people have a fever. Thermal scanners CANNOT detect whether or not someone has the COVID-19. However, fever is often a symptom/sign of COVID-19.	• TRUE
Spraying alcohol or chlorine over your body kills viruses that have already entered your body.	• FALSE
Vaccines against pneumonia, such as pneumococcal vaccine and <i>Haemophilus influenzae</i> type b (Hib) vaccine, provide protection against the COVID-19.	• FALSE
Eating garlic protects people from the COVID-19.	• FALSE
Antibiotics work against viruses.	• FALSE
Lemon juice protects you from COVID-19.	• FALSE
You get COVID-19 from a blood transfusion.	• FALSE
5G mobile networks spread COVID-19	• FALSE
Acacia seeds protect you from COVID-19.	• FALSE

To date (May 1, 2020), there is **NO** specific medicine recommended to prevent or treat the COVID-19.

More information from:

- [Coronavirus disease \(COVID-19\) advice for the public: Myth busters](#)
- [COVID19: Combatting coronavirus misinformation](#)
- [Six out ten COVID-19 rumours in South Sudan are not true](#)
- [Reuters Institute. Types, sources, and claims of COVID-19 misinformation](#)
- [European Parliament: handy guide on fake news](#)

Examples of online courses and training materials on COVID-19

World Health Organization

[Free self-paced WHO COVID-19 courses](#)

1. Clinical Care Severe Acute Respiratory Infection.

This course is intended for clinicians who are working in intensive care units in low and middle-income countries and managing adult and paediatric patients with severe forms of acute respiratory infection. [Check here.](#)

2. Infection Prevention and Control (IPC) for Novel Coronavirus (COVID-19).

This course provides information on what facilities should be doing to be prepared to respond to a case of an emerging respiratory virus such as COVID-19, how to identify a case once it occurs, and how to properly implement IPC measures to ensure there is no further transmission to health workers or to other patients and others in the healthcare facility. occurs, and how to properly implement IPC measures to ensure there is no further transmission to health workers or to other patients and others in the healthcare facility. [Check here.](#)

3. Emerging respiratory viruses, including COVID-19: methods for detection, prevention, response and control.

This course provides a general introduction to COVID-19 and emerging respiratory viruses and is intended for public health professionals, incident managers and personnel working for the United Nations, international organizations and NGOs. [Check here.](#)

4. eProtect respiratory infections. This course provides information on the basic knowledge and skills health workers need to respond to acute respiratory infection outbreaks, including what ARIs are, how they are transmitted, how to assess the risk of infection and to understand basic hygiene measures to protect themselves. [Check here.](#)

5. Public health interventions in pandemics and epidemics.

This introductory level online course provides information and tools for health workers to better manage disease outbreaks and health emergencies. Materials have been originally designed for WHO African region purposes and have therefore references to Africa more than other continents. [Check here](#)

6. Risk communication essentials Risk communication is a core public health intervention in any disease outbreak and health emergency. This course provides

information on real-time exchange of information, advice and opinions between experts, officials and people who face a threat to their wellbeing, to enable informed decision-making and to adopt protective behaviors. [Here.](#)

Save the Children has developed a [new learning resource](#) to support humanitarian and development staff and volunteers responding to the COVID-19 pandemic. Accessible on the free e-learning platform 'Kaya'.

Medicines for Humanity CORONAVIRUS-19 (COVID-19) Prevention, Treatment & Protecting Yourself and Others. [A Self-Learning Training Curriculum](#) for Community Health Workers & Providers

Health Education England has a package of online COVID-19 resources for free worldwide use. Learners outside of the UK can [access the resources at here.](#)

MEDBOX [List of online courses](#)

Better Care Learning Programmes, Infection Prevention and Control. Module 10. COVID-19 The module is updated as new research and best practices become [available here.](#)

Primary Care International (PCI) [PCI](#) is a not for profit organisation working in resource-poor settings to support primary healthcare workers and the systems they work in. See free COVID-19 e-learning content hosted for all primary care doctors and nurses working in resource-poor settings. The course, which takes ~ one and a half hours, draws on up-to-date guidance from key sources including the WHO and UNHCR. The modules include: A guide to public health measures; The definition of a case of COVID-19 virus, Preparing the primary health care centre; Prevent the spread of COVID-19; Triage and management in primary care; Managing patients with NCDs; Mental health -patients and healthcare workers; and Case studies.

To access the course: Go to the 'PCI Academy' website [homepage](#); Register for an account; Go to the 'COVID-19' course. As numbers are limited due to hosting costs, only frontline doctors and nurses should register.

Horizon Medical Education Downloadable audio courses for frontline workers at [here](#). Free coronavirus course at [here](#).

COVID-19 resources from Africa and beyond

Below is a list of some of the many free documents and websites that can add to the information in the papers published in this issue of SSMJ. Many are regularly updated. Let us know of other resources relevant to those working in and with South Sudan. The resources are grouped into those from:

- UN and other international agencies
- African and other Governments
- NGOs and other organizations
- Journals.

Resources from UN and other international agencies

UNICEF

- [UNICEF Main portal](#)
- [Agenda for Action](#)
- [COVID-19 Latest Updates](#)
- [What parents should know](#)

UNICEF South Sudan

- [UNICEF South Sudan](#)
- [Soap Only COVID-19 Weapon](#)

World Food Programme (WFP) South Sudan

- [WFP South Sudan](#)
- [Emergency dashboard March 2020 South Sudan](#)
- [Hunger Analytics Hub COVID-19](#)

World Health Organization (WHO)

- [WHO main Coronavirus Disease \(COVID-19\) Pandemic](#) site updated
- [All technical guidance](#) updated
- [Operational considerations for case management of COVID-19 in health facility and community](#) Document 19 March, 2020
- [WHO Coronavirus disease \(COVID-19\) technical guidance: Patient management](#)
- [WHO Coronavirus disease \(COVID-19\) technical guidance: Humanitarian operations, camps and other fragile settings](#)
- [WHO Coronavirus disease \(COVID-19\) advice for the public](#)
- [WHO Updated maps of COVID-19 cases and here.](#)
- [WHO Global research on coronavirus disease \(COVID-19\)](#) updated



WHO/Africa Regional Office (AFRO)

- [Main site](#) many videos and social media

Pan American Health Organization (PAHO)

- [PAHO](#) main site updated

[Interagency Standing Committee COVID-19](#) How to include marginalized and vulnerable people in risk communication and community engagement

Resources from/for African and other Governments

US Centers for Disease Control and Prevention (CDC)

- [Main site](#) up-to-date
- [CDC COVID-19 Households living in close quarters](#)
- [Interim Infection Prevention and Control Recommendations for Patients with Suspected or Confirmed Coronavirus Disease 2019 \(COVID-19\) in Healthcare Settings](#) CDC [coronavirus Library](#) updated database

Africa Union. Africa CDC

- [Main site](#)
- [What you should know about the 2019 novel Coronavirus Disease](#)

Kenya

- [Dashboard](#)
- [Utilizing the Community Health Strategy to Respond to Covid 19](#)

Uganda

- [Government COVID-19](#) site

UK Government/Public Health England

- [COVID-19: guidance for health professionals](#) updated
- [Health Education England online COVID-19 resources](#) for worldwide use

Resources from NGOs and other organizations

[African Federation for Emergency Medicine](#) has resources for clinical case management of COVID-19 infections in low-resource settings

[British Psychological Society](#) Responding to coronavirus
[Center for Global Development Strengthening](#) basic care and providing oxygen for COVID-19 patients in low resource settings.

Cochrane. Continuously updated special collections:

- [Coronavirus \(COVID-19\): evidence relevant to critical care](#)
- [Coronavirus \(COVID-19\): infection control and prevention measures](#)
- [An overview of Cochrane’s activities](#) and available resources, updated

[Commonwealth Pharmacists Association](#) newsletter. Covid-19 related sources. See Resources

[Communication Therapy International](#) has a list of resources explaining the virus in several languages. These include:

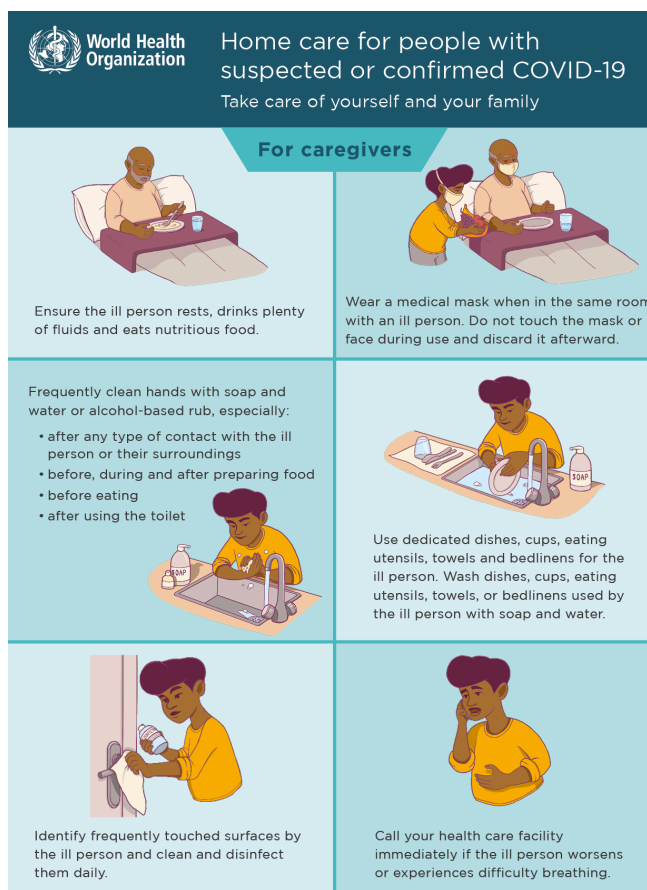
- The Slum and Rural Health Initiative (SRHIN): infographics (evidence-based messages from WHO and other reliable sources) in many local languages. See:
 - » [Infographic English](#)
 - » [Infographic Arabic](#)
 - » [Infographic Kiswahili](#)
- [Talking Mats easy to read coronavirus materials](#)
- [Ripple Africa. Coronavirus](#) - Covid-19 - Simple Guide for Malawi

Geo Poll Report: The Impact Of COVID-19 Across Africa updated

DEVEX

- [COVID-19 Latest news](#) updated
- [Watch:](#) How Rwanda got ahead of the pandemic curve

Humanitarian Response [COVID-19 RCSMCE Strategy South Sudan](#)



EPI-WiN www.who.int/covid-19

MEDBOX - guidelines, educational materials, situation updates, posters, infographics, videos in numerous languages and for different audiences (including refugees, prisons).

Medicines for Humanity Materials for use in local communities and community health clinics, using WHO guidelines - curriculum, and posters

NCD Alliance Coronavirus (COVID-19) resources relevant to non-communicable diseases

Picturing Health COVID videos

- [COVID on the Breadline](#) (video)
- [Coronavirus message for communities](#)

Relief Web COVID-19: [How to include marginalized and vulnerable people in risk communication and community engagement](#)

Royal College of Psychiatrists COVID-19: [Staying well and monitoring health at home](#)

Scientific Animations Without Borders (SAWBO) - animation “Protecting Yourself Against Coronavirus.”

- Swahili (Tanzania) [YouTube](#)



Coronavirus - Covid-19 - Simple Guide

SAVE LIVES - How to try and stay well and avoid spreading the virus

<p>1) Wash hands frequently with soap and water for 20 seconds</p>	<p>2) Cover mouth with elbow when coughing or sneezing</p>	<p>3) Avoid touching your eyes, nose and mouth with unwashed hands</p>	<p>4) 2 metres apart keep two metres distance from each other</p>

5) Stay Home
Where possible stay home

6) Avoid meetings
and being together with other people

Symptoms:
Fever - Headache - Dry cough and shortness of breath - Muscle pain

If you think you have the Virus keep away from other people for two weeks

Most people will only have mild symptoms

Older people, and people with pre-existing medical conditions (such as asthma, diabetes, heart disease) are more likely to become severely ill

www.rippleafrica.org

Video Library: [Sawbo Animations](#)

- English (USA)
 - » [YouTube](#)
 - » [Video Library](#)

[World Obesity Federation](#) Associations between COVID-19 and obesity and its comorbidities.

Journals

British Medical Journal

- [BMJ all covid-19 resources](#)

- [BMJ COVID-19 hub](#)

New England Journal Medicine

- [Resources on the Coronavirus \(Covid-19\) outbreak](#), including clinical reports, management guidelines, and commentary.

The Lancet

- [COVID-19 Resource Centre](#)
- [Global coalition to accelerate COVID-19 clinical research](#) in resource-limited settings

BACK COVER
IYCF Poster: Wash Your Hands for 20 Seconds following these steps

Wash hands for  20 seconds following these steps



Every effort has been made to ensure that the information and the drug names and doses quoted in this Journal are correct. However readers are advised to check information and doses before making prescriptions. Unless otherwise stated the doses quoted are for adults.