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INTERNATIONAL

COVID-19 RESOURCES FOR TEACHERS IN TANZANIA

Prepared by HEAL International in Arusha, Tanzania.

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⇒ Stand Together, Take Action

This resource document was created with teachers in mind, although anyone is free to use it as a source for learning. We wanted to create a short document that allows individuals to quickly understand information about COVID-19 and find links to other, more in-depth resources.

Throughout the document, you will find “Calls to Action” much like the one below that you can use in your own communities - your students, your families, and your friends - to empower others, stop the spread of disease, and ensure that all voices are heard.

✷ Call to Action ✷
We challenge you to **take action** in your own lives to protect yourself and your community. While scientists are doing whatever they can to find effective treatment and vaccines for COVID-19, each and every one of us can also do something to prevent new infections and take care of one another in our communities and working areas.

We believe if teachers get access to the right information it is much easier for the information to reach as many community members as possible and to clear misconceptions in our communities concerning COVID-19 through students.

At HEAL International, we care about the health of our communities - including you. Please let us know how we can continue to support your health and well-being.

⇒ What is COVID-19?

COVID-19, also called coronavirus disease, is an infectious disease that infects both the lungs and the small intestine. The virus that causes COVID-19 spreads primarily through droplets of saliva or discharge from the nose when an infected person coughs or sneezes (see “Transmission”), so it’s important that individuals also practice respiratory etiquette such as coughing into a flexed elbow (see “Prevention”).

The outbreak of the virus began in Wuhan, China, in December 2019 (see “Origins of COVID-19”). COVID-19 is now a pandemic affecting almost all countries globally. At this time, there are no specific vaccines or treatments for COVID-19, however, there are many ongoing clinical trials evaluating potential treatments.

The Virus that Causes Coronavirus Disease

COVID-19 is caused by a newly discovered coronavirus called SARS-CoV-2. Coronaviruses are a large family of viruses that are known to cause illness in both humans and animals. In humans, several coronaviruses are known to cause respiratory infections

ranging from the common cold to more severe diseases such as Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS). SARS-CoV-2 is the most recently discovered coronavirus and is known to cause COVID-19.

⇒ Global and Local Impact

Global Impact

On 12 January 2020, the World Health Organization (WHO) confirmed that a novel coronavirus was the cause of a respiratory illness in a cluster of people in Wuhan City in China. This disease was first reported to the WHO on 31 December 2019.

As of 28 May 2020, there have been a total of 5,656,615 reported cases of COVID-19 (in accordance with the applied case definitions and testing strategies in the affected countries). A total of 355,355 deaths have been reported.

The Americas and Europe have been significantly affected by COVID-19. The African continent has also been greatly impacted. As of 28 May 2020, the African countries with the most confirmed cases are South Africa, Egypt, Algeria, Nigeria, and Morocco.

Situation in Tanzania

Tanzania has confirmed a total of 509 cases and has reported, officially, 21 deaths. In total, the country has administered 652 tests.

The first case of COVID-19 in Tanzania was confirmed on 16 March in Arusha; the individual who tested positive had traveled from Belgium. Immediately following the confirmation of COVID-19 in the country, Prime Minister Kassim Majaliwa announced a range of measures, which included closing schools and limiting public gatherings.

The first COVID-19 related death was recorded in Dar es Salaam on 31 March 2020. Since the first case in Arusha, other positive cases have been confirmed in Dar es Salaam, Mwanza, Kagera, Pwani, Lindi, and Zanzibar.

✷ Call to Action ✷

It is incredibly important to make sure that we are not spreading false information in our communities. When others are sharing false information, we should kindly and respectfully point them in the direction of the correct information.

As a health organization, HEAL International hopes to empower each of you with information that allows you to take action to protect your community. We challenge you to seek out correct information from trusted sources (see more at the end of this document) and share that information with your students.

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⇒ Transmission of COVID-19

SARS-CoV-2, the virus that causes COVID-19, has to get into the lungs of a person in order to make them sick. The only way for a person to be infected with COVID-19 is if fluid from a COVID-19 positive person comes into contact with the door of another person.

Fluids

COVID-19 is transmitted from one person to another through respiratory secretions, such as mucus or saliva, from a COVID-19 positive person. These secretions are expelled as droplets into the air from the nose or mouth when a person with COVID-19 coughs, sneezes or speaks. Other people can catch COVID-19 if they breathe in these droplets or if they touch a surface containing these droplets and then touch their eyes, nose, or mouth.

The virus can also be transmitted through feces, however, we will not specifically focus on that here. Transmission through respiratory secretions is what causes community transmission.

Doors

In order for SARS-CoV-2 to transmit from one person to another, COVID-19 positive fluid has to find it's way into another person's body. The three doors that allow a fluid containing COVID-19 into the body are the mouth, nose, and eyes. The skin is a phenomenal wall against COVID-19, meaning that COVID-19 can't enter the body through the skin.

Manifestation of Disease

COVID-19 infects both the lungs and the small intestine. It does this by binding to a protein receptor called angiotensin-converting enzyme 2 (ACE2), which is present on the membranes of certain cells, specifically epithelial cells in the lower parts of the lungs and in the small intestine. You can read more about this in the "Biology" section below.

It is possible for the virus to be transmitted from one person to another even if the person with COVID-19 does not have any symptoms or feel sick. There is research showing that up to 30% of the people with COVID-19 may be asymptomatic (they do not have any symptoms). This means it is especially important for people to practice prevention techniques and physical distance as much as possible - even if someone doesn't feel sick.

✷ Call to Action ✷

If you are teaching/ sharing this information to students in your classrooms, challenge them to come up with situations that might pose a risk for transmission. If they are thinking about the fluids and doors, they should be able to determine what kinds of situations would put them or others most at risk.

In addition, you can have them think about what we can do to prevent the spread of the virus given that we know how it is transmitted.

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⇒ Preventing the Spread of COVID-19

There is currently no vaccine or cure available anywhere in the world for coronavirus disease (COVID-19). Since there is no treatment available, it is incredibly important that we prevent the spread of the disease. Luckily, there are verified preventative measures that we can all take to protect ourselves and our communities.

The following precautions are recommended for everyone to take in order to prevent the spread of COVID-19. This may seem like a long list, but they go a long way in protecting our communities.

- Wash your hands often with soap and water for at least 20 seconds, or use an alcohol-based hand sanitizer that contains at least 60% alcohol.
- Avoid large events and mass gatherings.
- Wear a cloth face mask in public areas such as the market or on public transportation, where it's difficult to avoid close contact with others. This is especially important in areas with ongoing community spread.
- Practice physical distancing as much as possible. This means to stay about 2 meters away from other people, especially those with respiratory symptoms.
- Cover your mouth and nose with your elbow or a tissue when you cough or sneeze. Throw away the used tissue.
- Avoid touching your eyes, nose, and mouth.
- Clean and disinfect surfaces you often touch on a daily basis. This could include surfaces in your house or items like your phone and computer.

In addition, if you (or someone you know) is sick, the following actions can be taken to prevent spreading the disease to other people:

- Stay home from work, school, and public areas. It's important that you rest and take care of yourself!
- Avoid taking public transportation.
- Wear a mask if you are around others.
- Isolate as much as possible from others in your home, and use a separate bedroom and bathroom to protect loved ones.
- Avoid sharing dishes, glasses, bedding, and other household items.
- Seek medical care, and if possible, communicate with the hospital or healthcare provider before you visit them.

Why Practice Social/ Physical Distancing?

One of the most effective ways to prevent the transmission of COVID-19 is by practicing social distancing. In cases where someone cannot stay home, it is important that we all practice social distancing by staying at least 2 meters (about 6 feet) away from people at all times while in public. A distance of 2 meters is effective because if a person coughs or

sneezes, the particles that are released travel out 2-3 feet before they settle to the ground. Maintaining 2 meters distance from others decreases the chance that you will come into contact with those particles.

Because particles containing the virus settle to the ground/ on surfaces, it's important to regularly wash our hands, clean surfaces that might be infected, and avoid touching our face.

✷ Call to Action ✷
As a teacher, you can encourage your students to make posters that show prevention methods and hang them around the school and in their communities. Posters are a great way of communicating information to a lot of people very quickly. We also have some posters on our website under the resources tab if you would like to print and distribute those.

We also challenge you to uphold prevention measures in your classroom and your school. Talk to your students about how they can prevent the spread of COVID-19 by washing their hands, not touching their face, and wearing a mask when possible.

⇒ Testing for COVID-19

Testing for COVID-19 is required to confirm the presence of the disease and is highly recommended for individuals who are showing severe symptoms or have risk factors that would increase the severity of the disease (being immunocompromised, being elderly, etc).

Types of Tests

There are two kinds of tests available for COVID-19: viral tests and antibody tests.

- A viral test tells us if someone currently has an infection. It will look for the presence of the virus itself inside of the sample.
- An antibody test tells us if the person has previously had an infection. Antibody testing is relatively common around the world for many other diseases. During this test, they will look to see if the person has antibodies against the disease, which would indicate that they had previously been infected.

An antibody test may not be able to show if a person have a current infection, because it can take 1-3 weeks after infection to make antibodies. We do not know yet if having antibodies to the virus can protect someone from getting infected with the virus again, or how long that protection might last.

Where and When to Get Tested

Each country has specific testing guidelines. In Tanzania, if you are not feeling well, it is recommended that you visit the hospital. Health facilities have a mandate to isolate patients who are suspected cases of COVID-19 and send samples from that patient to the National

Lab for testing. If a person tests positive, they will be sent to one of the nationally identified treatment facilities.

Who Should Get Tested?

Viral testing is highly recommended for people with severe symptoms, individuals who are hospitalized, or those in high-risk situations (such as healthcare providers). It is important to remember that a lot of places in the world do not have the testing resources to test every person.

The CDC recommends that people with mild illness should recover at home and may not need to be tested. The CDC offers specific guidance for who should be tested, but decisions about testing are often made by local health departments or healthcare providers.

Results of the Test

If someone receives a viral test for COVID-19 and it comes back positive, it means that they have the virus that causes COVID-19. Health professionals will guide their treatment and will ensure that the risk to others has been reduced. If the person tests negative for COVID-19 with a viral test, they were not infected at the time their sample was collected. However, this does not mean that they will not get sick. They should take preventative measures to protect themselves and their loved ones.

Importance of Testing

Testing is a very important part of controlling an epidemic and ensuring that people are aware of their status and can take appropriate measures to protect themselves and their loved ones. The more people that we know have a disease, the more measures we are able to put in place to protect the community and reduce the strain on hospitals. Testing also helps to:

- Allocate resources
- Save time and equipment in hospitals
- Improves the effectiveness of social distancing
- Provide data to help better understand the disease.

⇒ Treatment for COVID-19

There is no cure or treatment anywhere in the world for COVID-19. Depending on the symptoms that someone has, it is possible to treat those symptoms and support the person through the progression of the illness, allowing their bodies to heal and their immune system to address the underlying events.

Patients who are severely ill with COVID-19 often present with a condition called acute respiratory distress syndrome, or ARDS. Treatment for ARDS involves supplemental oxygen and mechanical ventilation, with the goal of getting more oxygen into the blood. This is one

of the main reasons that hospitals all around the world have been focused on increasing the number of ventilators they have.

Treatment of COVID-19 is an active area of research and several randomized clinical trials are ongoing to determine whether specific drugs are useful in the fight against COVID-19. Among those drugs are antiviral medications, including Remdesivir, and other antiretrovirals that have been used to treat HIV. Many other possible treatments are also being tested in well-designed clinical trials. Since those trials have not ended, it is too early to say whether these medicines are effective in treating COVID-19.

When to Seek Care

If you (or someone you know) have minor symptoms, such as a slight cough or a mild fever, there is generally no need to seek medical care. In this case, you can stay at home, self-isolate, and monitor your symptoms. Seek immediate medical care if you have difficulty breathing or pain/pressure in the chest. If possible, call the national hotline or your healthcare provider in advance, so he/she can direct you to the right health facility.

Additionally, if you live in an area with malaria or dengue fever it is important to seek care if you have a fever. When you attend the health facility, wear a mask, keep at least 2 meters distance from other people, and do not touch surfaces with your hands. If it is a child who is sick, help the child stick to this advice.

⇒ The Biology of COVID-19

Symptoms of COVID-19

People with COVID-19 have had a wide range of symptoms reported – ranging from mild symptoms to severe illness. Symptoms may appear 2-14 days after exposure to the virus. Someone with COVID-19 may have any of the following symptoms:

- Fever or chills
- Cough
- Shortness of breath or difficulty breathing
- Fatigue
- Muscle or body aches
- Headache
- New loss of taste or smell
- Sore throat
- Congestion or runny nose
- Nausea or vomiting
- Diarrhea

It is important to remember that someone does not need to have symptoms in order to transmit the virus.

Infection Mechanism

Infection by SARS-CoV-2 starts with droplets from an infected person's cough, sneeze, or breath being breathed in by another person. These droplets could be in the air or on a surface that someone touches before touching their eyes, nose, or mouth. That gives the virus a passage to the mucous membranes in the throat.

Once the virus has entered the body, it moves down the respiratory tract, which is the airway that includes the mouth, nose, throat, and lungs. Since the lower parts of the airway - deep in the lungs - have more ACE2 receptors than other parts of the respiratory tract, COVID-19 is more likely to go deeper than viruses like the common cold. SARS-CoV-2 has spiky surface proteins that help it latch to the receptors on healthy cells. Once the virus gets inside the cells, it takes over the production machinery of the cells to produce more copies of itself. Eventually, it kills some of the healthy cells.

Additionally, infection by the virus can cause the lungs to become inflamed, making it difficult for the patient to breathe. This can lead to pneumonia, an infection of the tiny air sacs (called alveoli) inside the lungs where blood exchanges oxygen and carbon dioxide. For most people, the symptoms end with a cough and a fever, but for some, the infection gets more severe. About 5 to 8 days after symptoms begin, these individuals experience shortness of breath (known as dyspnea). Acute respiratory distress syndrome (ARDS) begins a few days later.

Impact on pregnant women

Currently, there is no data showing that COVID-19 affects pregnant people differently than others. However, much remains unknown. We do know that pregnant people have had a higher risk of severe illness when infected with viruses that are similar to COVID-19, as well as other viral respiratory infections, such as influenza.

Impact on people living with HIV

COVID-19 is a serious disease and all people living with HIV should take all recommended preventive measures to minimize exposure to, and prevent infection by, the virus that causes COVID-19. As in the general population, older people living with HIV or people living with HIV with heart or lung problems may be at a higher risk of becoming infected with the virus and of suffering more serious symptoms.

✷ Call to Action ✷

For teachers of secondary school biology who have students that are interested in how COVID-19 affects the body, you could encourage them to think about - and even draw - the process of how the virus gets into our bodies and makes us sick.

For all teachers (and parents!), we can share about the impact that the virus has on individuals who are immunocompromised, such as those with HIV/AIDS, and ensure that they are receiving proper support.

⇒ The Origins of COVID-19

There are, as with all diseases, many theories about where the virus that causes COVID-19 comes from. While this is an important question that scientists are constantly working to answer, we must remember that the virus is here with us now and that it won't go away on its own. In order for us to protect ourselves and our communities, we must focus on preventing the transmission of COVID-19 first, and then we can focus on better understanding where it came from.

SARS-CoV-2 was an unknown virus before the outbreak began in Wuhan, China in December 2019. The first cases of the disease caused by this virus were found to be associated with a large seafood and animal market in Wuhan. SARS-CoV-2 is genetically similar to other viruses that are naturally hosted in bats, and it has been postulated that most of the coronaviruses in humans are derived from a bat reservoir (this has not been proven for every coronavirus).

Following this theory, it is most likely that the virus mutated in order to infect a pangolin, a large mammal that is often sold in food markets, and then it "jumped" to humans through a process called zoonosis. This process - a virus jumping from an animal to a human - happens all of the time in the world, and is indeed the cause of more than half of all infectious diseases.

Although many people have speculated it, it is unlikely that this virus was created in a laboratory and then released to infect humans.

⇒ Scientific Developments

It's important to know that this is a rapidly evolving situation and that things are constantly changing. The global response to COVID-19 draws on the lessons learned from other disease outbreaks over the past several decades. Although there is research and development happening across many fields, the two we will highlight are in vaccine and treatment development.

If you are interested in the developing landscape of vaccines and drugs, you can find more information on the CDC website and from the Milken Institute. The Milken Institute indicates that there are currently 223 treatments in consideration and 141 vaccines in development.

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Vaccine Trials

Since this is a new coronavirus, there is no vaccine. Developing one can take several years, although scientists are working hard to speed up the process to create and test a vaccine that will be effective against COVID-19.

On 9 April 2020, the journal *Nature* reported that 78 vaccine projects had been launched around the globe – with a further 37 in development. Among the projects that are underway are vaccine programs that are now in phase-one trials at Oxford University, two others at US biotechnology corporations, and three more at Chinese scientific groups. Many other vaccine developers say they plan to start human testing this year.

However, no one knows exactly when we will have a working vaccine or how effective any of these vaccines will be, and it could take a long time to find out. It is recommended that people should adhere to preventive measures provided by health authorities to prevent new infections and make sure each and every person knows how the novel coronavirus is spread.

Drug Trials

There is currently no approved specific treatment for COVID-19, although Remdesivir (an antiviral drug) has been authorized for emergency use by the United States Food and Drug Administration (USFDA) pending formal approval.

The World Health Organization (WHO) has organized the international "Solidarity" trial to compare untested treatments for COVID-19 against one another. The study treatments include drugs that are currently used to treat other conditions, such as the antivirals *remdesivir* and *lopinavir plus ritonavir*, the antimalarials *chloroquine* and *hydroxychloroquine*, and *interferon-beta*, which is used to treat multiple sclerosis.

There are also a number of studies that are looking at the effectiveness of herbal medicines, such as the one developed by the government of Madagascar, to determine if they have any effect against the virus. There have been no conclusive results yet.

✷ Call to Action ✷

We want people to be safe and healthy, but we don't want people taking medication that is not approved to work or has not been studied. As always, it's important to seek out and share correct information about the medications that have been approved to work.

As an educator and active community member, you can share correct information from trusted sources with your students, colleagues, family, and friends.

⇒ Other Resources to Explore

There are many places you can find up to date information about the COVID-19 situation. You can read more information from the World Health Organization, the Center for Disease Control, and the Africa Center for Disease Control Resources.

The Iowa Department of Public Health has a number of great infographics in both English and Swahili, as does the CDC.

In addition to the resources linked throughout the resource packet, these resources might also be helpful:

- Global Research on Coronavirus Disease - WHO
- Public Health Recommendations in Swahili
- WHO Myths about COVID-19
- Clinical Trials Fighting the COVID-19 Pandemic