



**DEPARTMENT OF MICROBIOLOGY
AHMADU BELLO UNIVERSITY
ZARIA**



Vice Chancellor (Ag): Professor Danladi Amodu Ameh, B.Sc., M.Sc. (ABU), Ph.D. (Alberta)

Head of Department: Professor Maryam Aminu, B.Sc., M.Sc., Ph.D. (ABU), PGDE (FCE)

E-mail: Microbiology@abu.edu.ng

Phone Number: +2348033287031

**CORONAVIRUS DISEASE (COVID-19) PANDEMIC:
THE VIRUS, DISEASE, PREVENTION AND CONTROL**

CORONAVIRUS DISEASE (COVID-19)

- Coronavirus disease 2019 (COVID-19) is a novel viral disease caused by Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2).
- Coronaviruses are enveloped +ssRNA viruses belonging to the family *Coronaviridae*.
- They are found in different animal species including camels, cattle, cats and bats.
- In general, estimates suggest that 2% of the population are healthy carriers of coronaviruses and these viruses are responsible for about 5% to 10% of acute respiratory infections (Chen *et al. Journal of Medical Virology*. April 2020; 92(4): 418-423).
- The COVID-19 was first reported in Wuhan, China in December 2019, was declared a pandemic by the World Health Organization (WHO) on March 11, 2020 (WHO COVID-19 Situation Report-51, 2020) and has now been reported in 210 countries.
- There is presently no properly tested and approved drug or vaccine against the virus which has now affected over 2.65 million and claimed the lives of no fewer than 184, 600 people worldwide as at April 23 2020.
- Out of the 1, 739, 398 currently infected patients worldwide, 1, 681, 196 (97%) are in mild condition while 58, 202 (3%) are in serious or critical condition (NCDC and WHO April 23, 2020, 09:14 GMT).
- Presently, the number of cases in Nigeria is over 870 with 28 deaths (NCDC, April 23, 2020, 09:14 GMT).

WHY COVID-19 IS A MORE SEVERE FLU

- Genotypic drift over longer time leads to the evolution of novel viruses ('*quasispecies*'). The evolution of quasispecies is most conspicuous in viruses with large RNA genomes such as coronaviruses.
- Consequently, Coronaviruses are fraught with genetic defects, making them undergo substantial mutations leading to more pathogenic novel types such as the SARS-CoV-2.
- The SARS-CoV-2 is therefore more pathogenic, contagious and spread more easily and rapidly.
- As a novel type, there is lack of immunity to the virus and the mortality rate is high (3.4% against 0.1% for FLU).

MODE OF SPREAD

Coronaviruses are most commonly spread from person-to-person through:

- respiratory droplets from coughs or sneezes which get into individuals through mouths and noses of nearby individuals and inhaled into the lungs;
- close personal contact with one another by touching or shaking hands;

- touching surfaces or anything (Phone, ATM, Door handle, Clothing, Banknotes, Gate pass etc.) likely to have been contaminated with the virus, then touching the eyes, nose or mouth before washing hands.

Coronaviruses may persist on surfaces for a few hours or up to several days. A choir outbreak study conducted in Skagit County, Mount Vernon, USA has shown SARS-CoV-2 to be viable for 3 hours on suspension. Furthermore, forceful breathing action of singing was shown to disperse SARS-CoV-2 viral particles which are inhaled (Lloyd-Smith *et al. New England Journal of Medicine*; March 7th 2020).

SYMPTOMS

Like most viral infections, over 80% of persons infected with the COVID-19 virus will experience mild to moderate respiratory illness and recover without requiring special treatment.

The risk of serious disease and death in COVID-19 cases among persons in the United State has been shown to increase with age and the period within which the symptoms would appear is 2-14 days (CDC COVID-19 Response Team). However on the average, it takes 5-6 days from when someone is infected with the virus for symptoms to show.

According to the US Centers for Disease Control and Prevention and the WHO COVID-19 Situation Report-51, 2020, older adults (over 60 years) and those with underlying medical conditions like cardiovascular disease, diabetes, chronic respiratory disease, and cancer are more likely to develop severe illness [MMWR, March 27 2020 /69 (12); 343-346]. Individual differences in immune response could lead one person to severe diseases and another one to be fine.

Common Early Symptoms

- Difficulty in breathing, tiredness, sore throat, aches and pains,
- Persistent pain or pressure in the chest,
- New confusion and inability to arouse,
- Bluish lips or face,
- Loss of sense of taste and smell;
- And less commonly diarrhoea, nausea or a runny nose.

Symptoms of Severe Illness

- Fever, dry cough and shortness of breath.
- In more severe cases, it can cause pneumonia and severe acute respiratory syndrome.

IMMUNITY TO COVID-19

- The appearance of antibody in serum and nasal secretions is followed by resolution of coronavirus infection.
- Immunity with other coronaviruses does not persist and it wanes within a year or two. Therefore, patients may be re-infected sometimes within a year or two.
- For SARS-CoV-2, a new type of coronavirus, it takes about three weeks to build up sufficient quantity of antibodies and even then, they may provide protection for only a few months. This is according to Eric Vivier, a Professor of Immunology of the Public Hospital System in Marseilles on April 20 2020.
- This may explain why some COVID-19 patients have already been re-infected.
- Immunity to COVID-19 can only be extrapolated from other coronaviruses and even that data is quite limited.

PREVENTION OF COVID-19

When a disease is new, there is no vaccine until one is developed. It can take a number of years for a new vaccine to be developed. For viral infections, prevention is better than cure, therefore, the best way to prevent COVID-19 is to avoid being exposed to or infected by the virus.

Prevention (Protection of Oneself)

- Frequently clean hands by using alcohol-based hand rub or wash hands with soap and water at least 20 seconds after being in a public place.
- If soap and water are not available, use a hand sanitizer that contains 60% alcohol; or use 10ml of Dettol plus 1ml of JIK (bleach) in 100ml of clean water to prevent infection from contaminated surfaces. Cover all surfaces of hand and rub them together until they feel dry.
- Avoid touching, nose, eyes and mouth with unwashed hands.
- Avoid close contact with anyone who has a fever and cough or who is sick.
- Put distance (6 feet) between oneself and others as community transmission is fast becoming a major means of contracting SARS-CoV-2 infection.
- There is presently no acceptable antiviral drug or vaccine against COVID-19, there is therefore, the need for social reorganization where social distancing measures must be strictly emphasized and practiced.
- The COVID-19 is now at the community transmission phase in Nigeria with asymptomatic individuals who are not showing clinical symptoms within our neighborhoods infecting others unknowingly. **Therefore we must consider everybody around us as already infected so we can take appropriate precautions.**

Prevention (Protection of Others)

- Stay at home if unwell except to get medical attention or care.
- When coughing and sneezing, cover mouth and nose with a flexed elbow or tissue.
- Used tissue should be properly discarded immediately after use and hands washed or sanitized after 20 second.
- Refrain from smoking and other activities that weaken the lungs.
- Practice physical distancing by avoiding unnecessary travel and staying away from large gathering.
- Clean and disinfect touched surfaces.
- Seek medical care early if one has a fever, cough, and difficulty breathing, and share travel history with healthcare provider.
- Avoid consumption of raw or undercooked animal products.
- Handle raw meat, milk, and animal organs with care to avoid cross-contamination with uncooked foods. Practice good food safety measures.

WHEN TO WEAR A MASK

- Wearing a mask is not required if healthy or indoors, except when taking care of an infected patient.
- Wear a mask when stepping out of the house and when going to places where one is likely to meet a crowd or large gatherings.
- Wear a mask to protect others if one is infected and has a fever, cough and difficulty in breathing.
- Mask is worn by uninfected persons to avoid respiratory droplets from an infected person, and prevent community spread.
- Since the COVID-19 is now at the community transmission phase in Nigeria, mask **MUST** be worn by everyone when outdoor.

GENERAL CONTROL MEASURES OF THE SPREAD OF SARS-CoV-2

Individual should:

- a) report any person with any of the above mentioned symptoms to health authorities;
- b) obey the lockdown measures and the STAY INDOORS rules;
- c) avoid crowded places such as gymnasium, schools (including Quranic), markets, churches, mosques, wedding halls etc.;
- d) observe quarantine for 14 days if one had contact with an infected person and
- e) avoid unneeded visits to medical facilities.

Government should:

- a) aggressively find cases by increasing testing and isolating those found positive, as well as aggressive contact tracing;
- b) ensure infected person are isolated;
- c) ensure strict enforcement of the lockdown and social distancing measures while restricting movement within the country and from outside the country;
- d) provide palliative measures and ensure effective distribution of relief materials to enable vulnerable population comply with the lockdown and
- e) ensure that staff salaries are promptly paid.

Since the cases in Nigeria is on the increase, combating SARS-CoV-2 infection will require rapid identification of cases and implementation of aggressive measures.

Finally and most importantly, maintaining **SOCIAL DISTANCING** is **KEY** to slow the spread of the virus.

CONTACT IF NECESSARY

- If you have come in contact with a confirmed coronavirus case and experience any of the symptoms mentioned above, call Nigerian Centre for Disease Control (NCDC) at 080097000010 immediately.
- Visit the following link for more information: covid19.ncdc.gov.ng, @NCDCgov on Facebook and Twitter.

Take note, learn more about the virus, tell others, **STAY AT HOME**, take plenty of fruits and vitamins that boost the immune system and avoid large gatherings.

Most importantly we should pray that God will help us overcome the pandemic as it is within the reach of man to combat any disease.

STAY SAFE AND TOGETHER WE CAN BEAT THIS PANDEMIC!!!

**This is a public awareness information from the Department of Microbiology,
Faculty of Life Sciences, Ahmadu Bello University, Zaria, Nigeria.**