



# **DEVELOPMENT OF ENVIRONMENTAL HEALTH ENGINEERING FACILITIES, EQUIPMENT, SENSORS AND PUBLIC HEALTH SYSTEMS FOR TACKLING COVID-19 PANDEMIC**

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# TABLE OF CONTENTS

ABOUT CORONAVIRUS DISEASE (COVID-19)

DEVELOPMENT OF ENVIRONMENTAL ENGINEERING HEALTH FACILITIES

INTRODUCING MODERN EQUIPMENTS AND SENSORS

DEVELOPMENT OF PUBLIC HEALTH SYSTEMS FOR THE TACKLING OF COVID-19 PANDEMIC

# ABOUT CORONAVIRUS DISEASE (COVID-19)



Coronavirus disease (COVID-19) is an infectious disease caused by a new virus. The disease causes respiratory illness (like the flu) with symptoms such as a cough, fever, and in more severe cases, difficulty breathing. You can protect yourself by washing your hands frequently, avoiding touching your face, and avoiding close contact (1 meter or 3 feet) with people who are unwell.

## How it spreads

Coronavirus disease spreads primarily through contact with an infected person when they cough or sneeze.

It also spreads when a person touches a surface or object that has the virus on it, then touches their eyes, nose, or mouth.

# DEVELOPMENT OF ENVIRONMENTAL ENGINEERING HEALTH FACILITIES



As engineers it's our duty to provide a faster and better way in which health facilities can work. When it comes to the medical field the primary goal is to improve the health of people. Doctors have the knowledge of the human body. They know what is good for a person and what not. But to build anything, you need engineers.

Software Engineers can write software that uses algorithms to analyze massive amounts of health information and generate results that help people and doctors in making healthy decisions. Also, making health information readily available using cloud, will make work easier.

One of the main reasons the system lacks stability and infrastructure is that not enough people are aware that health insurance is even possible and affordable for them. Once more people start purchasing quality health insurance, more money will be entering the health care system, and better facilities and hospitals can be built.

# INTRODUCING MODERN EQUIPMENTS AND SENSORS



Modern equipment's should be brought in to test for the coronavirus. People shouldn't have to wait for a long period of time before they know if they are positive or negative.

Development of new modern day temperature sensors. Instead of the usual temperature reading equipment where someone has to hold it and point it to your head to see your temperature while others wait in line, sensors should be put in places like airports and big organizations where a large number of people walk in everyday. The sensor will be developed and placed in such a way that as you start to approach the entrance door the computer will be reading your temperature while you walk, so by the time you get to the door and your temperature is high when you get there the door won't open and then you will be isolated and tested immediately.



Mobile apps can be built to measure blood, urine etc. using accessories for your phone, mail to labs instantly, get results immediately. Or get alerts when your BP fluctuates or your sugar fluctuates or when your heart behaves erratically.

Build better algorithms for insurance companies so they can provide better insurance for cheaper to a wider population.

## A PICTURE OF A MOBILE APP AND SMART WATCH TO KEEP MEDICAL RECORDS AND A MODERN TESTING DIABETES KIT



# **DEVELOPMENT OF PUBLIC HEALTH SYSTEMS FOR THE TACKLING OF COVID-19 PANDEMIC**

Healthcare Engineering professionals play key roles in creating and developing hardware and software to innovate, support, improve and optimize the operation processes and systems of patient care, and to improve patient outcomes through engineering approaches.

Protection of frontline staff- the protection and safety of the frontline staff(the doctors, nurses and all medical personnel attending to patients) should be the first move. If the medical personnel's are not safe how can they keep their patients safe?. So we need to ensure that after everyday treatment and check up of the patients the medical personnel's should also be tested.

Although hospitals are vital to the response, home care and outreach are also really important. In an outbreak, you cannot focus only on hospital care; general practitioners and family doctors have a vital role to play as well. You have to take the wider community into account. People should be advised in their various homes on how to stay safe and avoid contacting and spreading the virus. They should also know the symptoms and what to do if the symptoms continue to appear

The people in retirement and nursing homes are at huge risk from covid-19, as the elderly are the most vulnerable and live in close contact in these facilities, so it's important to reorganize the way they are run. Proper health measures should be taken.

## **CHALLENGES OF DEVELOPMENT OF ENVIRONMENTAL HEALTH ENGINEERING FACILITIES, EQUIPMENT, SENSORS AND PUBLIC HEALTH SYSTEMS FOR TACKLING COVID-19 PANDEMIC. (USING NIGERIA AS A CASE STUDY)**

Poor research institutes: The country lacks research institutes already before the pandemic COVID-19 hit. This is bad cause now that there's an outbreak various researches are meant to carried out before any engineering building can take place. An example is an engineer trying to set up a testing kit. He needs to write an algorithm for it and before a device is set up to output a result, the algorithm will give it specifics or conditions to look out for. If researches are carried out properly this will aid the engineer.

Low funds/capital: A lot of engineers may have the idea of inventions to help combat the virus but not enough funds to actualize their ideas so it dies with them.

**Bad governance:** Involvement of bad governance will rather have them travelling out for the better medical care rather staying here and providing the best for them, and the masses.

**Demand and supply:** The few engineering facilities put in place are so expensive due to high demand and low supply. Because only a few engineers are providing so the masses can't even afford it. This goes a long way to discourage other engineers as they feel if majority can't afford it they'll run at risk of loss.

**SUGGESTIONS FOR THE DEVELOPMENT OF ENVIRONMENTAL HEALTH ENGINEERING FACILITIES, EQUIPMENT, SENSORS AND PUBLIC HEALTH SYSTEMS FOR TACKLING COVID-19 PANDEMIC.  
(USING NIGERIA AS A CASE STUDY)**

Improvement of research institutes: Making robust research institutes that can stand the test of time will help enable the easier development of sensors and engineering facilities to tackle pandemics such as COVID-19. Even if it hits the country without preparation it will aid the quick combating.

Institutions should be set up to receive good ideas of engineers in the society and help them bring it to reality. This will encourage others to even come up with better ideas knowing they'll be actualized at long last it will aid combating of COVID-19.

Good governance: It is evident in developed countries where good governance is the other of the way what it is like. Development of the country facilities will enable it better and readily available to any pandemic of sort.

Government and health organization should try and subsidize all this equipment and facilities to make them easily affordable to the masses and will also encourage developers to involve in them as they know this can be a source of income.



# CONCLUSION

There is no said cure to coronavirus disease, but there are ways as to which the virus can be contained. There are also ways to control the spread of the virus. So as caring humans we are to adhere to these measures.

And we must also note that everyone is important in fighting covid-19.