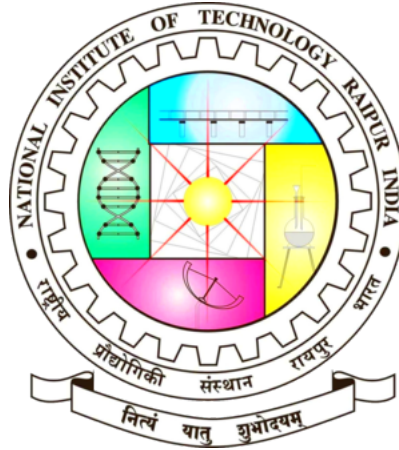


NATIONAL INSTITUTE OF TECHNOLOGY, RAIPUR



5 SOLUTION TO COVID19 PROVIDED BY BIOMEDICAL ENGINEERS

ASSIGNMENT 6 Basic Biomedical Engineering

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1 Introduction

The responsibility of biomedical engineering professional include overseeing the research and development design safety and effectiveness of medical devices, selection and procurement. Installation integration with electronic medical record system, daily operators monitoring, managing maintenance and repair, training for safe use and upgrading of medical devices available to healthcare stalk holder. In this section we studied about problem faced by people during COVID 19 and how biomedical engineers overcome the problem.

2 Ventilators

Patients who are unable to breathe spontaneously need to be put on the ventilator. Ventilators are capable of replacing the breathe function and patients in an advanced state of respiratory distress are usually intubated and sedated at the beginning of the treatment.

They are complex system s providing the healthcare professionals with a lot of flexibility to adapt the assisted breathing setting to be able to wean recovering patients off the ventilator gradually.

Modern ventilators are typically closed loop pressure controlled and capable of detecting spontaneously breathing the synchronise assistance for recovering patients. They also enable the control of the composition of gas the patient breathes from normal air to 100 percent oxygen, usually taking their supply from the hospital's gas supply network but can also be coupled to oxygen tanks or oxygen concentrators if used in a setting where there is no gas network.

3 Personal Protective Equipment Kits

According to infectious disease experts, face shield protect the face from fluids, sprays and droplets while extending the life of N95 face masks. The covid 19 pandemic has depleted supplies of personal protective equipment for healthcare professionals nationwide. Dr. Karilyn Larkin is a hematologist at The Ohio State University Comprehensive Cancer Center- Aurthur G. James Cancel Hospital and Richard J. Solove Research Institute. When she and her colleagues experienced shortages face shield, she turned to Ohio State

engineers-specially Mechanical and Aerospace engineering professor Carlos Castro-for help 3D printing face shields.

4 Testing and tracking

When covid-19 pandemic occurred we needed as many testing kits as possible to tackle the virus. It includes rapid tests which took short time to declare the results as compared to PCR tests. Because of the risk of infection and quick transmission, the development of software and technical application, such as telemedicine to watch the virus's evolution in the population, has gotten a lot of interest. Many testing kits were developed by the engineers. Smart IoT covid-19 automated test booth for paperless and registration and online sample linking.

5 Mental Health

People are expected to quarantine and self-isolate, closing themselves off socially, as the number of mental health concerns rises amid the covid-19 health crisis. For overcoming this many apps were developed like COVID Coach. Even many people were using AR and VR for their entertainment purpose. Doing exercise and yoga to keep themselves fit and while doing this the smartwatch records all their biological activities for tracking their health.

6 Covid Disinfectant Box

As complete sanitization is essential to reduce the chance of infection. Liquid based sanitizer can't be used on electronic or paper we touch which cause spreading of virus among people so for solving these problems our biomedical engineering can make a sanitizer which no water or any chemical which damage the electronic.

DIY Arduino box uses UV to kill viruses without water or chemical. It can also be used to disinfect fruit, vegetable, etc with elements and paper. It will be automatic shut off because of time setting.