NATIONAL INSTITUTE OF TECHNOLOGY RAIPUR

BIOMEDICAL ENGINEERING

ASSIGNMENT

Solutions to Covid-19 Provided By Biomedical Engineers

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Semester : First

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1 Solutions to Covid-19 Provided By Biomedical Engineers

1.1 introduction

COVID is a huge problem faced by people all over the world .It a crisis which change the world in perspective of economy,source, population,etc. As we seen at the starting of COVID people losses their l life rapidly, because they are unable to understand the symptoms,or they avoid precautions lack of doctor and beds in hospitals,etc. To seeing this problem our biomedical engineer make some equipment and include some technology which helps out doctor and patient as well. in this section we will discuss about few of them technologies and how our engineers work like a hero during COVID pandemic. Let's discuss few of technologies which helps during COVID——-

1.2 VENTILATORS

Patients in an advanced stage of respiratory distress are frequently intubated and sedated at the start of treatment since ventilators can replace breath function. Patients in an advanced stage of respiratory distress are frequently intubated and sedated at the start of treatment since ventilators can replace breath function. They are complicated devices that give healthcare providers a lot of flexibility in terms of adjusting assisted breathing settings and eventually weaning healing patients off the ventilator. Modern ventilators are usually pressurecontrolled closed loops that can detect spontaneous breathing and provide synchronised aid to recovering patients. They also allow the patient to alter the composition of the gas he or she breathes, ranging from regular air to 100 percent oxygen. They normally get their supply from the hospital's gas supply network, but they can also be connected to oxygen tanks or oxygen concentrators if there isn't one.

1.3 Artificial Intelligence Applications in COVID-19 Pandemic

Artificial intelligence-based solutions assist healthcare organisations in coping with and combating viruses. It could be used to predict forthcoming pandemics or epidemics at an early stage, before they spread. It is feasible to anticipate and track patients by studying data. It could also be used to create and test novel vaccinations, as well as gain a better knowledge of despises. Early detection and diagnosis of the infection Monitoring the treatment and the global cases distribution AI is used for drug delivery design and development for vaccines

1.4 Sanatizing

During COVID Sanatizing is a very important . Some people were sanatize themselves but they were be a part of this crisis because they Sanatizing themselve but they can't sanatize what they touch. And it will be difficult to sanatize everything. We can't sanatize our electronic things because sanatizer consist of water which may be damage our electronics also we can't sanatize papers and others thing because it may be harm them. So thinking about it our engineers introduce some Sanatizing technology . Such as COVID disinfectant box,nano silver technology , etc

1.5 Continuous Positive Airway Pressure (CPAP

well-fitted face mask is an essential component of a CPAP system and as such it is quite intrusive. CPAP is only appropriate for patients who are capable of some breathing strength as CPAP effectively opposes some resistance to expiration. Variants exist that either automatically adjust the level of pressure to the patients breathing characteristics (APAP) or have different levels of pressure for inspiration and expiration. CPAP usually supplies (filtered) air to the patient but most masks have a port for supplementing the supply with oxygen. The next step up in treating COVID-19 patients is Continuous Positive Airway Pressure (CPAP) which is initially intended to prevent airways collapse in sleep apnoea patients, but has been shown to be beneficial to COVID patients if applied early enough in the progression of the disease. A wellfitted face mask is an essential component of a CPAP system and as such it is quite intrusive.CPAP is only appropriate for patients who are capable of some breathing strength as CPAP effectively opposes some resistance to expiration. Variants exist that either automatically adjust the level of pressure to the patients breathing characteristics (APAP) or have different levels of pressure for inspiration and expiration. CPAP usually supplies (filtered) air to the patient but most masks have a port for supplementing the supply with oxygen.

1.6 Disinfecting N-95

The mask is biodegradable, washable, and highly breathable. Because the virus is transmitted mostly by respiratory particles that are airborne, wearing a mask has been one of the most significant and successful health precautions to contain it. The ministry did highlight, however, that preventing viral transmission with traditional masks has proven challenging, particularly in densely populated areas such as hospitals, airports, train stations, and shopping malls, where the virus load is quite high.The Ministry of Science and Technology announced on Friday that a group of Indian scientists has created a self-disinfecting antiviral mask to combat the Covid-19 outbreak. According to the ministry, the antiviral mask coated with copper-based nanoparticles performs effectively against coronavirus and other viral and bacterial illnesses.