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Introduction

In order to help communicate with the citizens of Moore County, county Health Director Robert Wittmann, MPH has partnered with Paul Kuzma, MD to prepare a series of articles meant to inform the public about Covid-19 and public health. Dr. Kuzma has practiced medicine in Moore County for over 20 years and is currently completing his Masters of Public Health degree at Johns Hopkins University. This is the third in a series of articles prepared by Dr. Paul Kuzma to further public understanding of Covid-19.

Treatment of Covid-19

COVID-19 as a disease caused by infection with the SARS-CoV-2 virus. The severity of the disease can vary tremendously from one individual to another. Some people may not develop any symptoms or only have mild illness while others may have severe disease. In some people, the disease is fatal.

Treatment of viral illness of any type can be very challenging, and COVID-19 is no exception. When people become sick, much of the treatment is supportive care that is standard for any sick patient. Many infected patients can remain at home but those who become very ill should be hospitalized. Doctors and hospitals have learned a great deal about helping people with COVID-19, but unfortunately, there is no proven cure for the disease. Until one is developed, the best treatment is prevention. Do everything you can to avoid becoming infected!

Are there any effective Anti-viral medications?

Viruses multiply rapidly and they do so within the cells of the infected individual. effective anti-viral medicine needs to prevent the virus from reproducing without damaging or killing the cells of the infected person. Many anti-viral drugs target enzymes or biologic reactions that are unique to viruses and are not important for the functioning of the infected person. Currently there are no anti-viral drugs specifically approved for the treatment of COVID-19.

Remdesivir is an anti-viral drug that was developed to treat viral diseases such as Ebola. It is now being used to treat patients with COVID-19. In a "petri dish" in a laboratory it can block the infection of cells by coronaviruses. How effective it is in treating patients with COVID-19 is unclear. Several studies have shown decreased severity and duration of COVID-19 in patients treated with Remdesivir. The National Institutes of Health (NIH) expert panel recommends its use in some hospitalized patients. Remdesivir is not FDA approved for the treatment of COVID-19 but is available under

"To Protect and Promote Health through Prevention and Control of Disease and Injury."
<http://www.moorecountync.gov/health/>

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an emergency use authorization. Other anti-viral medications have been used to treat patients with COVID-19, including drugs developed for treating HIV and hepatitis, but none has proven consistently effective.

What is Convalescent plasma?

Antibodies are molecules that are produced by our bodies to fight infections. When we are exposed to a disease, one way we recover is by the production of antibodies that can attach to and help destroy invading organisms. If these antibodies are effective, they can eliminate the invaders. People who have recovered from an infection have usually developed antibodies to the organism that caused the disease.

Convalescent plasma is the liquid component of blood that has been donated by people who have recovered from COVID-19. Since these people have recovered from COVID-19, the plasma contains antibodies that may be effective in inhibiting the virus. The plasma is administered intravenously to the sick patient and the antibodies it contains will circulate in their blood and can attach to the virus and neutralize it. This can boost immunity and neutralize the virus while their body produces its own antibodies. Convalescent plasma has been used for many years to treat other diseases and has a good track record of safety. It is administered intravenously and is only used in the hospital setting. Until recently, convalescent plasma was only administered as part of a clinical trial. In late August the FDA approved a more broad use of this therapy. While the studies that have been done have not shown overwhelming positive results, there does appear to be a benefit to this treatment.

What are monoclonal antibodies?

Monoclonal antibody therapy may be an effective therapy for COVID-19 and recent studies have been very promising. Monoclonal antibodies are specific antibodies that are produced in a lab. Scientists engineer the therapy to contain only antibodies that are likely to be effective against the SARS-COV-2 virus. Monoclonal antibodies are administered intravenously, and the therapy contains a very large number of antibodies designed specifically to neutralize this exact virus. The antibodies circulate in the blood of the infected person and neutralize the virus. If monoclonal antibody therapy is proven safe and effective, it could be both a treatment and as a preventative measure for high-risk individuals. This therapy is only available as part of a clinical trial.

What is dexamethasone? Are steroids effective in treating COVID-19?

Steroids such as dexamethasone are powerful anti-inflammatory medications that decrease the risk of death people who are severely ill with Covid-19. Many severely ill patients have an overactive inflammatory response to the disease and the immune response begins to damage the person. This “cytokine storm” and can be deadly. Cytokines are produced by immune cells such as T-cells and B-cells and this damaging immune response can be lessened by steroid medications such as dexamethasone. Powerful steroid medications must be used with caution, since inhibiting the normal immune response may make COVID-19 worse in some patients.

Are there any other effective treatments?

Currently there are no other recommended treatments for COVID-19. A number of medicines have been considered, and studies are ongoing, but none has proven effective and some have actually increased the risk of death.

This article was prepared with the help of Dr. Gretchen Arnoczy, an expert in infectious disease at FirstHealth of the Carolinas.