ANATOMY OF THE CORONAVIRUS INFECTION PROCESS

Kirksville, MO 3/25/2020 – We all know Coronavirus COVID-19 is a sometimes deadly respiratory disease. But how does the virus infect a human being and what symptoms does it cause?

According to the Centers for Disease and Prevention (CDC), we are still learning how COVID-19 is transmitted by, but it's suspected it spreads from person to person when one person comes within close contact (less than six feet) with an infected person through respiratory droplets sent into the air when the infected person coughs or sneezes. The droplets can land in a healthy person's nose or mouth or be inhaled in the lungs. The CDC also believes the virus can be transmitted from surfaces or objects contaminated by the virus when someone touches them then touches their face, especially their nose, mouth and possibly eyes.

As with most viruses, the droplets travel to the back of the nasal passages to the mucous membranes in the back of the throat – the upper respiratory system. That's what causes the symptoms of dry cough and sore throat. But even before most people start experiencing these symptoms, the coronavirus has started replicating itself and you can be transmitting the virus before you even know you have it. From there, the virus moves down into the lungs, infecting the epithelial cells of the lining of the lung. Epithelial cells are what typically protect your lungs from viruses, but COVID-19 attaches to and penetrates the cells. The replicating virus cells start killing healthy cells. When the virus moves to your lungs, it causes those influenza-like symptoms: shortness of breath, headache, muscle pain, fatigue. You will probably also develop a fever as your body's immune system tries to keep the virus from killing your healthy cells. As the virus travels further down into the lung, from the upper respiratory system to the lower, you can develop respiratory issues like bronchitis and pneumonia.

With pneumonia, the sacs of your lungs are damaged by the virus. Your body sends immune cells to the lungs to fight it off which causes the air sacs to swell, and that decreases airflow in your lungs. If your immune system can beat the virus, you'll probably recover. If it doesn't, you might not have a good outcome. When your lungs fail to send enough oxygen to your other organs, like the liver, kidney and brain, those organs begin to shut down. That's why some patients are placed on a ventilator –to supply enough oxygen to their organs to keep all or some of them from failing.

This is why people with depressed immune systems, lung problems and other chronic diseases suffer more serious effects of the disease which require hospitalization or, in some cases, are fatal. Also, as we age, our immune system gets weaker which is why adults age 65 and older are more susceptible to the virus. All of these people need to be protected because they are far more likely to suffer more severe consequences of the novel coronavirus.

Knowing how the virus works, it's obvious that all of the measures recommended by the CDC are designed to help prevent the spread of the disease – hand hygiene, not touching your face, disinfecting surfaces and objects, social distancing by maintaining at least six feet between you and another person. Never allowing the virus to enter your nose, throat and lungs in the first place appears to be the best way to stay healthy. And adhering to the CDC guidelines might just help you do that.

The Adair County Health Department, advises that residents continue to take the following measures to reduce transmission of the disease:

- Practice social distancing at all times. That means keeping six feet or more between you and other people.
- If you feel sick, stay at home and call your doctor. Do not go to work. Do not go anywhere. If you are having difficulty breathing and/or chest pain, call 911.
- If your children are sick, keep them home and call their doctor.
- If you are an older person, stay home and away from other people.
- If you are a person with a serious underlying health condition that can put you at increased risk (for example, a condition that impairs your lung or heart function or weakens your immune system), stay home and away from other people.
- Work or engage in schooling from home whenever possible. If you have to go to work, ask your employer about taking steps to protect your health, including taking temperatures of employees and putting more space between them.
- Avoid social/family gatherings.
- Avoid eating or drinking at bars, restaurants, and food courts. Use drive-thru, pickup, or delivery options.
- Avoid travel, shopping trips, and social visits unless they're absolutely necessary.
- Do not visit nursing homes or retirement or long-term care facilities unless to provide critical assistance.

- Practice good hygiene by washing your hands, especially after touching any frequently used item or surface. Avoid touching your face. Sneeze or cough into a tissue or the inside of your elbow. Disinfect frequently used items and surfaces often.

The Adair County Health Department continues regular operations during this time. Home health nurses and therapists continue to see patients, WIC services continue, as well as immunizations on a case-by-case basis, infectious and communicable disease services, and environmental services.

If you need to contact the Adair County Health Department, call 660-665-8491, visit our website at www.adair.lphamo.org, or our Facebook page.