
FROM THE DESKS OF
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To Our Patients,

We have had a request to dedicate this newsletter to the complications associated with COVID-19. We are more than happy to meet the requests of our community, but at the same time we don't want to send out an email that increases sadness or fear. If you currently do not fear COVID-19, then this newsletter is for you. Please read it twice. And then put a copy on your refrigerator. If you are already taking COVID-19 very seriously, you may want to skip some sections so as not to increase your fears beyond reasonable levels.

I (Jeannette) would first like to bring a few smiles to your faces (and surprise Dave at the same time.) In the last issue, I included a childhood picture of me. Now it is Dave's turn, even though he doesn't know it. Many of our patients have known Dave for a long time. Some of you remember Dave when he looked like the photo on the left, a teenager with his niece Yael on his shoulders.



A handful
of our
patients
have told
me
stories of
Dave's
parents
and their
memories
of Dave
as a small
child...
(priceless
and
joyful)



With all of this solitude and time hiking in the mountains, I've spent many hours appreciating the sky. Another major event this week was the Comet C/2020 F8. We hope that many of you had a chance to see it. (Photo courtesy of my friend and fellow hiker Mario Santiago.)



Office Updates:

- We will be sending out an email, and flyer to those without email, of our upcoming programming very soon. It will include: Balance classes, Nutrition and Immune Health classes, Zoom classes on various medical topics, and a Zoom Trivia Night (Jeannette Style – both fun and informative.)
- Currently the quickest COVID testing is available in the community through [CO COVID Drive Up](#) at 24-48 hours. They have daily testing in Thornton and also a mobile unit. The next mobile testing is advertised below. Latest word on the street is that the Pepsi Center test results are delayed up to 7-10 days.

COCOVID DRIVE UP IS HOSTING




COVID-19 & ANTIBODY TESTING

AT CAPITOL HEIGHTS PHARMACY
1200 MADISON ST. DENVER, CO

TUESDAY, JULY 28TH 9-11 AM

How do I sign up?

- Scan the QR code
- Select appointment time
- After receiving email confirmation, follow the link to fill out the health form



HAVE A QUESTION? CONTACT COCOVID DRIVE UP

WWW.COVIDDRIVEUP.COM • (720) 647-5858 • COCOVIDTESTING@GMAIL.COM

Complications from COVID-19 – Not for the faint of heart

Anytime a person suffers a health event there is always the risk for complications. For example, if you are walking through the living room and bump your leg into the coffee table, you will get a superficial bruise. You may not have any complications at all. But, if you also get a tiny cut on your shin from the corner of the coffee table and bacteria that normally live on the skin get into the cut, you will develop a complication in the form of a skin infection (cellulitis). If you are on blood thinners, you may bleed more than the average person and develop the complication of a deeper, lumpy, more painful bruise called a hematoma.

The same is true for COVID-19. When an individual gets the virus, they may or may not go on to develop complications. Some of the complications are more likely than others and some of them are temporary while others may become permanent.

The most common complications of COVID-19 are the development of blood clots and low oxygen levels. Patients can form blood clots in the veins or arteries anywhere in the body. The most common locations are in their legs (deep vein thrombosis or DVT) and lungs (pulmonary

embolism or PE.) Some patients who get blood clots need to be on blood thinners, like Warfarin, Xarelto or Eliquis, for months while others need them for the rest of their lives. COVID-19 disrupts the iron in patient's red blood cells, making it harder for their blood to carry oxygen from their lungs to the organs of their body, resulting in low oxygen levels.

The complications affecting the heart, kidney, liver and neurologic organs (brain, spine and nerves) are moderately common, and not as common as blood clots or low oxygen levels. Pertaining to the heart, complications include damage to the heart muscles (acute myocardial injury), abnormal heart rhythms (arrhythmias), and/or a decrease in the effectiveness of the heart's ability to pump blood (cardiomyopathy). When the kidneys are affected, blood flow to the kidneys is diminished resulting in injury that can progress to kidney failure. If it progresses to severe kidney failure, a patient would need dialysis at least temporarily. If the kidneys do not recover, the patient would need dialysis permanently or a kidney transplant. Patients can also sustain acute liver injury and liver failure although the reasons why are not completely understood. Unfortunately, dialysis for livers is not readily available, so patients with permanent liver failure would need a transplant. There are many, many neurologic complications. Some of them include hearing loss, strokes, unsteadiness (ataxia), seizures, numbness and tingling in the hands and feet (neuropathy), fatigue, impaired consciousness (delirium), meningitis/encephalitis, psychosis (seeing and hearing things that don't exist), and dementia-like syndromes.

Less common complications include lung complications, septic shock, other abnormal bleeding problems, and inflammatory conditions. In terms of the lungs, patients can develop pneumonia when the air sacs (alveoli) become inflamed and fill with pus. These warm moist air sacs can then serve as a breeding ground for bacteria resulting in a secondary pneumonia. When the air sacs (alveoli) in the lungs can no longer effectively exchange oxygen and carbon dioxide, patients develop acute respiratory failure. If patients don't get better, they progress to a condition called Acute Respiratory Distress Syndrome (ARDS) where the lungs are so severely damaged that they begin to fill with fluid from leaky blood vessels.

As a patient's body tries to fight the COVID-19 infection it releases chemicals to fight the infection. These chemicals can cause a person's blood pressure to drop and they can go into shock which leads to multi-organ failure, including kidney and liver failure as discussed above. There is another condition that we see with severe COVID-19 infection as with other severe infections called disseminated intravascular coagulation (DIC). DIC is a disorder of the blood clotting system that results in abnormal clots, which can lead to internal bleeding and organ failure. Rhabdomyolysis can also occur causing muscle cells to break down and die. When the cells die, they fall apart releasing a protein called myoglobin that floods the patient's bloodstream and clogs the kidneys.

Children have been experiencing a new syndrome named Multisystem Inflammatory Syndrome in Children (MIS-C). It is associated with COVID-19 though the biomedical association is unclear and it presents with fever, abdominal pain, vomiting, diarrhea, rash, headache, and

confusion. This syndrome is similar to toxic shock syndrome or Kawasaki disease as it also causes blood vessels to become inflamed.

The long-term side effects of COVID-19 include lung fibrosis, heart damage, loss of function from strokes, high blood pressure in the lungs from blood clots, kidney damage, liver damage, male infertility, hearing loss, and fatigue. Specifically, Post COVID Lung Fibrosis is a form of irreversible lung damage and scarring that occurs in the young and old. It is caused by the blood clots blocking blood from circulating to parts of the lung and from the immune systems response to the virus creating inflammation that scars the lungs. Some patients will eventually need transplants. Interestingly, males have been experiencing infertility because there is an abundance of ACE2 in testicular cells. ACE2 is the receptor that COVID-19 binds to when entering cells. These long-term complications seem not to appear months after a COVID-19 infection, but rather persist after they develop during the initial infection. The more severe the initial infection the more likely one is to develop complications that can then become long lasting. Again, from what we know now, I would NOT expect new complications to arise months to years later. Although, decreased fertility may not be discovered until one is trying to conceive.

Questions for Dave and I

1. Who's at risk for COVID-19 complications?

We don't really know. There are some risk factors (see below), but even young fit healthy people unexpectedly become severely ill and go on to develop complications.

Greatest risk for severe illness from COVID-19

- Those over 65
- Race/ethnicity non-white
- Gender – male
- Use of certain medications – narcotics, amphetamines, medications that compromise the immune system (i.e. medications for lupus, or rheumatoid arthritis)
- Poverty and crowding
- Certain occupations – increased close person contact with decreased protections, in poorly ventilated areas
- Cancer
- Chronic Kidney Disease
- COPD (Chronic Obstructive Pulmonary Disease)
- Transplant Patients
- Obesity (BMI > or =30)
- Heart failure, coronary artery disease or cardiomyopathies
- Sickle cell disease
- Type 2 diabetes mellitus

Might increase risk for severe illness from COVID-19

- Asthma

- Stroke
- Cystic Fibrosis
- Immunocompromised State
- Neurologic condition
- Liver disease
- Pregnancy
- Pulmonary Fibrosis
- Smoking
- Thalassemia
- Type 1 Diabetes Mellitus

2. How likely is it for a child to spread COVID 19?

Some research suggests that children appear to be infected by the COVID-19 virus mainly through their adult family members and that children are less likely than adults to spread the virus to the rest of the household. Importantly, studies show that children age 10 and above transmit the virus just like adults, so this only applies to children 9 and under.

Of note, children under age 1 (infants), if they do get COVID, are at higher risk of severe illness with COVID-19. This is likely due to their immature immune systems and smaller airways, which make them more likely to develop breathing issues with respiratory virus infections. Eleven percent of infants had severe or critical illness. In comparison, rates of severe or critical illness were about 7% for children ages 1 to 5, 4% for those 6 to 10, 4% for those 11 to 15 and 3% for those 16 and older.

3. If one tests positive for COVID but has no symptoms, is that person contagious?

If someone test positive by nasal swab or is IgM positive blood test (done less often), consider them CONTAGIOUS for 2 weeks. If a person has an IgG positive blood test, then had the virus and are no longer contagious.

4. Since unfortunately this virus is connected to funding, is there some reason that cause of death is always listed as COVID when there may be other underlying causes, like heart attack, or other underlying complications and no distinction is made in the statistics?

The statistics have been recorded wrong in both directions. In the beginning, people were dying before COVID tests came back and so the deaths were labeled as pneumonia, even though we eventually learned that they had died of COVID-19. Some people died of heart attacks because their hearts (or other chronic diseases) were stressed by having COVID, though they didn't die of COVID directly. Some people died of blood clots or secondary infections caused by COVID, but not directly from the virus. In

the last two examples, the thought is that they would not have died if they hadn't contracted COVID-19. Lastly, some people die of the virus itself. Overall, there are inconsistencies in the data, but it is the best that we have. I also find it helpful to look at how many more people are dying now compared to prior years and not just those listed as COVID deaths.

On a lighter note, the first six months of this year has taught me some wonderful things. I need to spend more time outdoors. If I stop going to the gym, I don't feel as good. So, I need to keep exercising. Yogawithadriene.com and fitnessblender.com remain my favorite "go to" sites for home workouts. While I'm always busy doing something... there is tomorrow and I need to go to bed at a reasonable time. If I can't smile at people, I'm going to laugh more and louder. I need to keep investing energy into maintaining relationships with my friends and family. And, creativity (like writing these letters) makes me feel connected and brings me joy.

Keep the questions and requests coming!

As always, we send our best,
Wear your mask,

Jeannette and Dave

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