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A Guide to Home-Based COVID Treatment

Step-By-Step Doctors' Plan That Could Save Your Life

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Disclaimer: This booklet does not provide individual medical advice or prescribe treatment but is provided as an educational service for patients and their families to know what options are available and widely used for many conditions. Patients should consult the physicians of their choice for individual medical evaluation and recommendations for treatment tailored to individual needs.

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Disclosure: All physicians contributing to the treatment protocols in this guide for patients are actively treating COVID patients and are focused on early, home-based delivery of medical treatment options unless critical care in hospital is determined to be urgently needed. The contributors have no financial ties with any pharmaceutical company or product suggested in the treatment algorithms.

All contributors have volunteered their time and expertise as a community service in this time of national emergency to help inform patients of their options for research-based, peer-reviewed, safe treatments. They have received no remuneration for their contributions. The opinions expressed in this guide are those of the physician contributors and not those of their institutions listed.

INTRODUCTION

A Guide to Home-Based COVID Treatment is built on the rapidly accumulating peer-reviewed published medical research, written by practicing physicians with decades of experience treating patients with all kinds of illnesses.

We provide a step-by-step guide to medically sound early *treatments* that have a reasonable probability of success in this emergency pandemic. There are oral medications that are approved for other conditions, but not yet proven to be efficacious specifically for COVID-19 by the U.S. Food and Drug Administration. In the global pandemic emergency, large scale randomized clinical trials have not been feasible in the face of such critical illness. The National Institutes of Health at this time does not recommend treatment outside of the hospital because there are no current medications specifically approved for outpatient COVID-19 treatment, even though the mortality rate once patients require hospitalization is unacceptably high.

Thus, treatment administered outside of the hospitalized setting should be under the supervision of a physician or licensed medical professional who is knowledgeable in the use of the medications and the monitoring approach for ambulatory, home-based COVID-19 as described in this guide. Patients who worsen in any way should seek emergency room evaluation immediately.

There are four major pillars to infectious disease pandemic response:

1) Contagion control (stop the spread of the virus)
2) Early ambulatory, home-based treatment
3) Late-stage treatment in hospital
4) Vaccination

This guide will focus on the pillar of early, ambulatory, home-based medical treatment overseen by your physician, using a combination of available medicines, already FDA-approved for other medical conditions, and widely used in clinical medicine every day.

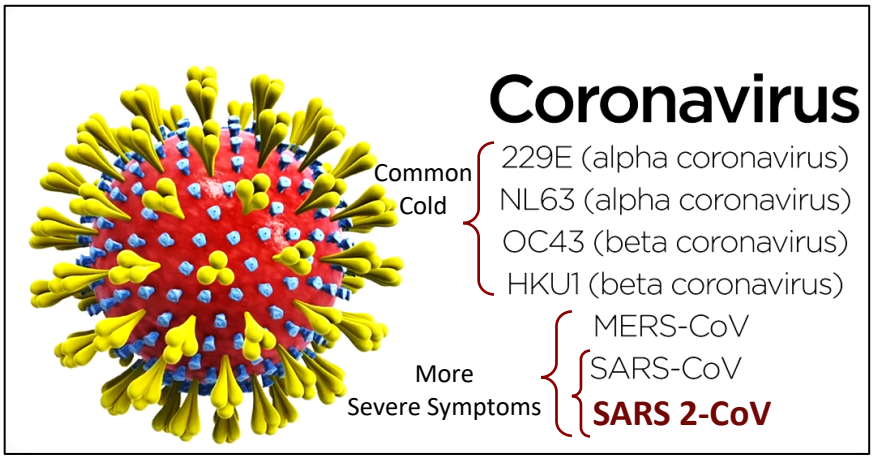
We have learned more about what medicines work, how to use them, when to use them, who is most at risk, and what strategies work. Please read this with an open mind. We are writing this to HELP you, to TEACH you how to work with your doctor.

As physicians, we know we need to focus now on ***early*** treatment to as the most immediate way to reduce hospitalizations and death. This is your guide to help you know your options, and to use with your personal physician.

Let's get started!

Chapter 1
Overview: SARS-CoV-2 Coronavirus

What Is Coronavirus?



Coronavirus is a family of common respiratory viruses. There are seven different strains of coronavirus. Four can cause symptoms many people experience in the fall/winter seasons: from the common "cold" with cough and runny nose to flu-like body aches and even a low-grade fever.

SARS-1 (Severe Acute Respiratory Syndrome), MERS (Middle East Respiratory Syndrome) and most recently, SARS-2 COVID-19 are newer coronaviruses that have emerged since about 2002-2003, and may cause more serious illnesses.

Diseases that spread widely are called an *epidemic* if they are mostly confined to one region of the world. *Pandemics* refer to diseases that rapidly spread out of a region, around the world. SARS-1 first appeared in China in 2002-2003. It was classified as an epidemic, even though it spread to 26 countries. SARS 1 did spread beyond China but was not considered serious enough to be a pandemic. It had a case fatality rate of about 9.6%.

SARS-1 lasted about two seasons, and then subsided. However, because of its infectious properties, various research labs began to study the SARS-1 virus for different reasons. During these years, the virus was known to have escaped at least six times from several labs in China, causing illness outbreaks.

MERS was first reported in Saudi Arabia in 2012. Contagion reports were similar to SARS-1, but the fatality rate was much more deadly at 34.4%. MERS subsided and there have been few cases reported since the outbreak.

SARS-2 COVID-19 has been a different story. The actual infecting virus has been named SARS-2 or SARS-CoV-2 (Severe Acute Respiratory Syndrome 2) and is reported to be 79% identical to the genetic sequence of SARS 1. The name that was finally given to the "disease" is COVID-19 (short for Corona Virus Disease-2019).

SARS-2 virus and the illness, COVID 19, are classified as a *pandemic* because of its rapid, global spread.

There are many viruses that contribute to the yearly cough, cold, flu, season. *Rhinoviruses* account for 35-70% of all symptoms, followed by *coronaviruses* at about 12-15% and then *adenoviruses*, and *influenza* viruses (7-12%). Rates for each type of seasonal respiratory virus syndrome vary year-to-year. Influenza varies widely each year in severity of symptoms, how easily it spreads to others, and death rates.

How Deadly Is COVID 19?

When a serious infectious disease breaks out, we naturally worry "Am I going to die?" Fear is a common response, so we turn to experts and our government agencies for information and guidance.

The vast majority of deaths from this COVID virus occur in those 75 years old and older, with most of those already sick with other illnesses. A large percentage are in nursing care facilities, over 80 years old, and with an average of 2.5 other medical conditions, such as obesity, diabetes, heart disease, lung and/or kidney disease. These other conditions are called *comorbidities,* and they increase the risk of serious illness with COVID.

The chances of someone *under 50 years old* with symptoms dying from COVID-19 is 0.05%.
The chances of someone under 18 years old dying from COVID is near 0%. Those that do are those with severe underlying medical conditions. There are roughly 7 times more children that die from the flu than COVID-19.

To put it another way, approximately 99.9%+ of individuals who contract COVID will have mild to moderate symptoms and recover, just like with the flu. The majority of deaths are coming from the 0.62% of the population who are in nursing home facilities.

The bottom line? This virus looks and acts very much like the flu, but with one CAVEAT: *Unlike the usual seasonal influenza*, COVID-19 illness can become profoundly serious in *unpredictable* ways.

COVID-19 can very rapidly become critical illness for two primary reasons: this viruses triggers TWO responses in the body much worse than seasonal flu: an *exaggerated inflammatory response* causing damage to critical organs, and an *exaggerated blood-clotting response* leading to multiple blood clots in the lungs, brain and other organs. Doctors have even found blood clots in large arteries like the aorta.

Contagion control remains the first step in reducing the spread of illness. CDC and WHO guidelines on reducing spread of the virus change as new information becomes available. We refer readers to the CDC, WHO, and White House COVID Task Force for updated guidelines on contagion control. As doctors treating patients, our responsibility is to focus on treatment, which is our purpose in writing this guide.

CDC recommends calling your doctor if you develop symptoms. This guide helps you recognize symptoms and when to call your doctor, and what options are available to discuss with your doctor for early treatment.

Chapter 2
I Have Flu-Like Symptoms: What Should I Do?

What should I do first?

Consult your primary physician with the **first onset** of COVID-19 symptoms. If you are experiencing severe, life threatening symptoms call 911 or go to your nearest emergency department for evaluation. ***Difficulty breathing or severe chest pain is a sign of serious illness and needs medical attention promptly.***

The most important reason to contact your physician right away is that studies show ***early treatment*** is the KEY to success with COVID. *Early treatment is especially critical for people at high-risk.*

***HIGH RISK PATIENTS: over age 50, with* one or more other medical conditions**:

- Obesity
- Diabetes, or pre-diabetes ("metabolic syndrome")
- Lung disease (COPD, pulmonary fibrosis, asthma, cystic fibrosis)
- Kidney disease
- Hypertension
- Autoimmune disorders
- History of cancer treatment
- History of taking corticosteroids regularly

What are the symptoms of COVID?

For most people, the first symptoms are not that different from those you have had before at the beginning of a cold or flu. The difference is that COVID can progress rapidly and in unpredictable ways into very severe *respiratory difficulties*, marked *inflammation damage*, and intensified risk of *serious blood clots*. These last three complications of COVID are different from what we see with typical colds or seasonal flu episodes, and are what cause the most serious, potentially life-threatening damage to critical organs.

The three most critical symptoms of possible COVID are ***fever, shortness of breath/difficulty breathing/ pressure in your chest, and severe cough***. Shortness of breath can mean shortness of breath at rest or even shortness of breath doing daily activities.

Keep a journal of your symptoms. It helps any doctors you consult know what has been happening if you keep a daily record of your symptoms by time and date and description of your illness.

Your journal can be life-saving when it comes time to see a doctor, especially in an emergency, since an accurate record of your symptoms, the timeline of when they started, how they progressed and how intense they are can help your doctor made better decisions about what you treatment you need.

***Fever**:* The most accurate way to check for fever is to use an old fashioned oral/mouth thermometer for home use. You can buy these inexpensively at any local pharmacy or on-line. Forehead digital thermometers are easy to use, but they are also expensive and are not as accurate. For young children, you can place the thermometer in the armpit, since it is difficult to have a sick child hold a thermometer in the mouth for three minutes.

Typical Symptoms You May Experience

(but keep in mind, not everyone has all of them):

- Runny nose, sneezing
- Sudden onset of marked fatigue
- Loss of energy, malaise
- Body aches, muscle aches, headaches
- Cough, though in COVID it is usually a *dry* cough. You may not produce mucus (sputum). Color of sputum is not necessarily a reliable indicator of severity or type of illness.
- If your cough is causing you to have increased shortness of breath or interfering with your sleep pattern, this could mean the disease is worsening.
- Feeling "feverish," even if fever (defined as temperature >101 degrees) is not present.
- Chills at night
- Sudden onset of sweats during the day that are unrelated to exercise
- Loss of taste or smell (tends to occur after the other symptoms have been there 1-3 days, but can occur earlier or later)
- Loss of appetite, nausea, GI upset
- Diarrhea may occur, though is not common. It can quickly lead to dehydration and electrolyte imbalances when it does happen.
- After about day 5, when the inflammation gets worse, there is often chest heaviness or tightness, difficulty breathing, shortness of breath.
- Drop in blood oxygen concentration (measured with a finger oximeter you can purchase at your local pharmacy) indicates serious respiratory problems
- Rapid heart rate, palpitations
- Loss of focus, difficulty with concentration and memory

Immediate home care recommendations

Follow the current recommendations from the Centers for Disease Control to reduce the spread of the virus to others. If you suspect COVID or have tested positive for COVID, isolate yourself from other people to minimize spread of the virus. Quarantine time ranges from 7-14 days, depending on the symptoms and your age and medical risks.

Good hygiene reduces spread of the virus. Remember to wash hands and body with soap and water. Maintain good disinfecting procedures throughout your room/home.

Sunlight and fresh air are key components to good health and fighting COVID. Direct sunshine for 10-20 minutes twice a day is a good source of vitamin D. Studies are clear that low vitamin D is a risk factor for getting COVID and having a worse outcome and higher risk of dying. Vitamin D3 in oil in capsules is better absorbed than tablets and is an excellent source of supplemental vitamin D if you cannot be outside in the sunshine, or your blood level of vitamin D is too low. We will describe in upcoming chapters more about doses and how to check your blood levels of vitamin D and other laboratory studies that are helpful.

Plenty of fluids—preferably water, not beverages with sugars and additives—is key to keep your immune system working well and keeping your body healthier to fight off the virus. *Adequate hydration is crucial* – the amount will vary by body weight, but a good rule of thumb is that your urine should be the *color of pale straw.*

If your urine is *dark yellow or gold*, you are definitely not drinking enough water. If your urine is *colorless*, you are drinking too much plain water, and this can make you lightheaded or confused from electrolyte imbalance.

Healthy food intake also gives the vital nutrients for your immune system to work well. Fresh fruits and vegetables are good choices, along with healthy protein options like meats and beans. Avoid excess sugar, excess intake of "convenience" foods high in fat, sugars, salt and additives because these foods cause inflammation and weaken the immune system.

Make sure you talk with your physician about increasing your intake of immune-boosting vitamins and minerals: Vitamin D, vitamin C, zinc, and others as your physician may recommend.

For Fever: Remember, ***fever is both a warning of infection that could be serious, and one of our body's defenses against infection***. Not all physicians agree that every fever should be treated, since it may signal a superinfection that needs aggressive antibiotic treatment, not just a fever-reducing medicine.

For high fever, treatment can be with acetaminophen, ibuprofen, and/or ice packs. Ice packs are easy to use and a good option to keep fever down. Just fill a bag of ice and apply to your back/tummy/flank. Acetaminophen has side effects of oxidative stress on the liver.

One option is to alternate ibuprofen and acetaminophen every 4-6 hours. For example, use ibuprofen at 12 PM and then try acetaminophen at 6 PM, if the fever persists. Do not exceed recommended doses on the package.

Should I Get a COVID Test?

Follow the CDC recommendations on testing which currently state that COVID-19 testing is a decision to be advised by your doctor. Do we test everyone or just test those with symptoms? Are the tests accurate and what happens if you test positive but have no symptoms? Should I quarantine? The media has inundated us with these questions since the COVID outbreak began.

Because rapid treatment is so crucial in COVID, many outpatient physicians elect to treat their patients based on *clinical symptoms, risk factors, and other objective findings from a physical exam or blood work* and do not lose the "window of opportunity" for early treatment by waiting several days for a COVID test report. That is a very reasonable option, since the tests have been at times hard to get and may take too many days for results. Also, reliability of the tests has been a serious problem. We have patients who tested negative but had the cardinal features of the COVID illness and needed treatment. If you have all the symptoms of COVID illness, but a negative test result, most physicians still recommend early treatment to help reduce the risk of requiring hospitalization.

There are two basic types of tests:

1. *diagnostic* tests: an "*antigen*" test and a "*molecular*" test. An antigen test detects certain proteins on the surface of the virus. A molecular test, called *RT-PCR or rRT-PCR* detects fragments of the virus' genetic material.

2. *Antibody tests: (after recovery from COVID):* These tests check for antibodies made by your immune system in response to an infection, such as a viral illness. Antibodies help fight infections and antibodies "remember" what the infection-causing organism looks like to help our bodies fight similar infections in the future.

   Antibody tests are *not* used to *diagnose an active infection*. These tests tell your doctor you had the illness and recovered and have developed immunity. Commonly used antibody tests are not specific to COVID. People may have similar antibody responses to other viral infections, such as the coronavirus that is responsible for the common cold and even the flu virus. The test can only say that you have had a viral infection, not the specific type of virus.

Should you get a COVID test when you develop symptoms? That is a choice between you and your doctor. If you do decide to test, at least you may have some information to guide you.

But either way, if you develop symptoms, the key is to be evaluated by your physician promptly and decide whether you are in the high risk group that needs early treatment to reduce chance of having to be hospitalized or having serious complications.

We encourage you to follow the steps included here to keep yourself healthy, do your best to stay away from sick people, and learn about early treatment options.

Early Treatment Is the Key to Success

Seek early treatment and be your own advocate. All of the physicians contributing to this booklet are on the frontlines treating outpatients at the first signs of COVID illness. Studies in the US and many other countries clearly show that patients who are treated within the first 5 days of symptoms have better outcomes using the combination of medications in the algorithm below. Conversely the death rate is ~12% by the time oxygen is needed, and ~40% for those requiring the intensive care unit. These death rates are unacceptably high. We have found that death rates can be significantly lower with early, outpatient treatment for the high-risk patients over age 50, with one or more other medical conditions.

Do not be afraid to go to your doctor, an urgent care, or a local emergency department. Remember that our job as physicians is to take care of you. ***Do not wait until it is too late***.

Steps to Take:

1. Be proactive.
2. Print the treatment algorithm that we included in this chapter.
3. Study this algorithm of medicines used and when they work the best. You will recognize many. They are in common use as anti-virals, anti-inflammatories, and anti-coagulants.
4. Schedule a TeleMedicine appointment with your primary physician ahead of getting sick.
5. Find out if your physician is willing to treat you according to this peer-reviewed published protocol, developed by experts from major U.S. and Italian medical centers.
6. If your physician is not willing, or knowledgeable to treat you for COVID, start now to find one who is. Look for a physician who is willing to treat your COVID with an aggressive plan as shown in this chapter. Resources for physicians across the United States are listed in Appendix IV. You need an advocate who will work to help you get well.
7. A "wait and see" approach is not adequate for high-risk patients (those over age 50 with one or more other medical conditions). "Wait and see" is a factor contributing to the high death rate in the United States. Countries with the lowest death rates are treating *early at home* with the oral medicines listed in the algorithm that follows in this chapter.
8. Our medical knowledge on how to treat COVID is changing and improving daily, so please do not be afraid to seek professional help promptly if you develop symptoms.

What To Expect at Your Physician Consultation

Many of our physician contributors have patients fill out a questionnaire and/or a flow sheet of their symptoms describing what they are experiencing and how long they have been sick. See the COVID Screening Checklist and COVID Illness Tracking Log in APPENDIX II. Print these and use them to track your symptoms and progress. They are helpful for any doctor you may see.

Vital signs (blood pressure, pulse, height, weight, BMI, blood oxygen levels) are checked and recorded. A COVID test may be recommended. Our physicians typically do not wait for the test results to start treatment if in their medical judgment, symptoms and risk factors mean *prescription medications* should be started rapidly.

Other laboratory tests may be ordered, and might include these basic tests: metabolic profile to check glucose, electrolytes, liver enzymes, etc; a complete blood count; C-reactive protein (general inflammatory marker); D-Dimer (a marker of blood clot risk); 25-OH vitamin D level; serum zinc level; and ferritin.

Additional specialty laboratory tests, such as markers of possible heart attack, may be ordered if the physician thinks necessary after evaluating the patient.

Some of our physicians recommend an EKG initially to check heart rhythm and look for any other abnormalities. Chest X-rays may be ordered if the physician is concerned lung damage or pneumonia may already be present.

Most of our physician contributors recommend patients purchase a device worn on the finger to measure blood oxygen saturation, called an *oximeter,* available at local pharmacies for about $40-50.00

Follow up appointments (in-person, telemedicine) are typically scheduled at about 3, 5 or 7-10 days from start of treatment, and thereafter at intervals determined by the physician, based on the patient's response and risk factors.

Chapter 3

PHYSICIANS' GUIDE TO EARLY HOME-BASED TREATMENT

In countries around the world, doctors have found that treating COVID patients at home quickly when symptoms develop leads to better outcomes, dramatically lower death rates than if doctors send people home to wait until they are so sick they need hospitalizations, ICU admissions, mechanical ventilators and even dialysis when kidneys fail.

Hospital care for critical patients has a much higher death rate, and far higher risk of long-term lung, heart, neurological, and other complications for those who survive.

Home-based treatment makes sense for another reason: *reducing the spread of the illness*. COVID-19 is a highly contagious virus. TeleMedicine allows us a safer option to evaluate patients remotely and assess how they look and sound in addition to evaluating their symptoms and vital signs (which can easily be taken at home). With today's technology, we no longer *need* to have sick patients come to the office in person and risk infecting others.

Advantages of Home-based Treatment:

- Home care is safer because it reduces the risk of picking up other infections from sick people in the hospital.
- Home care also allows people to have family members with them for love and support. It can be terrifying to be seriously ill in the hospital, and even worse to have family unable to visit.
- Home care can quickly use widely available, low cost, generic oral medicines and help avoid risks of IV medicines needed when people are critically ill in the hospital.
- Physicians can prescribe home-based oxygen therapy with oxygen concentrators available through home-health services.
- All the treatment modalities used in hospitals, except for mechanical ventilators, can be implemented at home –faster, and better tailored to the individual patient.

It makes sense to go back to our basic principles in Medicine:

- Control spread of the virus with careful disinfecting procedures in the home.
- Use prescription medicines targeted to the specific problems COVID-19 causes.
- TREAT EARLY when medicines work best for infections.
  None of our medicines work *as well* in the critical late stages of COVID illness.
- Start with the right drugs at the right time, based on the patient needs.
- Be ready to treat intensively with full combination of medicines before critical illness occurs.

Available Medicines, New Uses: Rationale for the Combination of Rx Medicines

COVID-19 illness can become very serious, very rapidly, in *unpredictable* ways. While this does not happen to everyone, it is not possible to predict *who* will develop critical illness or how fast.

This unpredictability and rapid progression in COVID happen because the SARS-CoV-2 virus triggers TWO responses in the body that are much worse than seasonal flu:

- *An exaggerated inflammatory response,* causing damage to critical organs. In its most serious form, this is called c*ytokine storm*.

- *An exaggerated blood-clotting response,* leading to multiple blood clots (thrombi) in the lungs, brain, kidneys, intestines and other critical organs. These blood clots in COVID can occur in both veins *and arteries*, which is unusual and potentially life-threatening if not treated rapidly.

These unique kinds of damage from the COVID virus mean we must use a *combination* of prescription medicines rapidly to block these dangerous effects. The use of prescription medications discussed in this guide should be considered clinically indicated, medically necessary, and appropriate “off-label” use of these products. “Off-label” use of older medicines for new uses occurs every day in doctors’ offices around the country.

In fact, about 20% of *all* prescriptions in the United States are written for "off-label" uses when a doctor thinks a medicine will benefit a patient. That is the same model being implemented in the emergency of the COVID pandemic as we seek ways to help people through this illness and save lives.

As with any medicine you are prescribed, we encourage you to read the safety information and US Food and Drug Administration approved package insert and patient guide before deciding on the risks and benefits of the medication. Patients should read the full prescribing information and patient guide provided with the medication upon pick-up at the pharmacy and ask questions of your physician for additional information/clarification.

The basic groups of prescription medicines and other therapies used in COVID-19:

- Combination *anti-viral* medicines started as soon as symptoms occur
- Medicines to decrease inflammation, such as *corticosteroids* (called *immunomodulators*)
- *Anticoagulant* therapy to prevent blood-clots that can cause strokes, heart attacks, kidney shut-down, and death.
- Non-prescription supportive treatments with zinc, vitamin D, vitamin C, electrolyte drinks such as Pedialyte, and others.
- Home-based oxygen support, such as with an oxygen concentrator. These machines are available *by physician prescription* from home health medical supply businesses and are covered on most medical insurance plans.

I. Antiviral Agents:

These must be started quickly at **STAGE I (Days 1-5)**:
Symptoms include sore throat, nasal stuffiness, fatigue, headaches, body aches, loss of taste and/or smell, loss of appetite, nausea, diarrhea, fever.

These medicines stop the virus from (1) entering the cells and (2) from multiplying once inside the cells, and they reduce bacterial invasion in the sinuses and lung:

- *Hydroxychloroquine (HCQ) with azithromycin (AZM) or doxycycline

OR

- Ivermectin with azithromycin (AZM) or doxycycline

Either combination above must also include zinc sulfate or gluconate, plus supplemental vitamin D, and vitamin C. Some doctors also recommend adding a B complex vitamin.

Zinc is critical. It helps block the virus from multiplying.
Hydroxychloroquine is the carrier taking zinc INTO the cells to do its job.

II. Anti-inflammatory Agents - Corticosteroids ("steroids"): Oral and Nebulized.

These are started at **STAGE II (Days 3-14)** to reduce *inflammation,* the cause of added damage to the lungs and critical organs. **Symptoms** include worsening cough, difficulty breathing, chest heaviness/tightness or chest pain.

As inflammation damages the airways interfering with normal oxygen-carbon dioxide exchange, blood oxygen levels drop and people experience loss of focus, drowsiness, confusion, difficulty concentrating, low energy and severe fatigue.

The exaggerated Inflammation response in COVID further increases the risk of blood clots.

Prescription medicines and other support *added* now to Stage I medicines are:

- nebulized budesonide to help penetrate the lungs and reduce inflammation
- oral prednisone, methylprednisolone, dexamethasone
- colchicine – may also be added to reduce inflammation
- full strength adult aspirin 325 mg to reduce inflammation and risk of blood clots
- home oxygen concentrator may be needed to improve oxygen levels (requires physician prescription)

III. Prescription Anticoagulants ("blood thinners"): STAGE III (Day 7 and beyond):

Symptoms seen in Stage II intensify. Difficulty breathing becomes extreme, oxygen levels drop sharply, risk of heart attack or stroke increases. At this point, people are critically ill.

The medicines to be added to Stage I and II medicines now include:

- Aspirin 325 mg unless told not to take by your doctors
- And/or low molecular weight *heparin injections (e.g. enoxaparin [Lovenox])*
  OR
- apixaban (Eliquis), or rivaroxaban (Xarelto), or dabigatran (Pradaxa) or edoxaban (Savaysa) in standard doses for 5 to 30 days

If these added steps do not lead to improvement, or the patient becomes unstable, a 911 call is warranted for ER evaluation and hospital admission so that more aggressive IV medications (such as remdesivir, Regeneron, and others) may be considered, and more intensive ventilation regimens are possible in ICU settings.

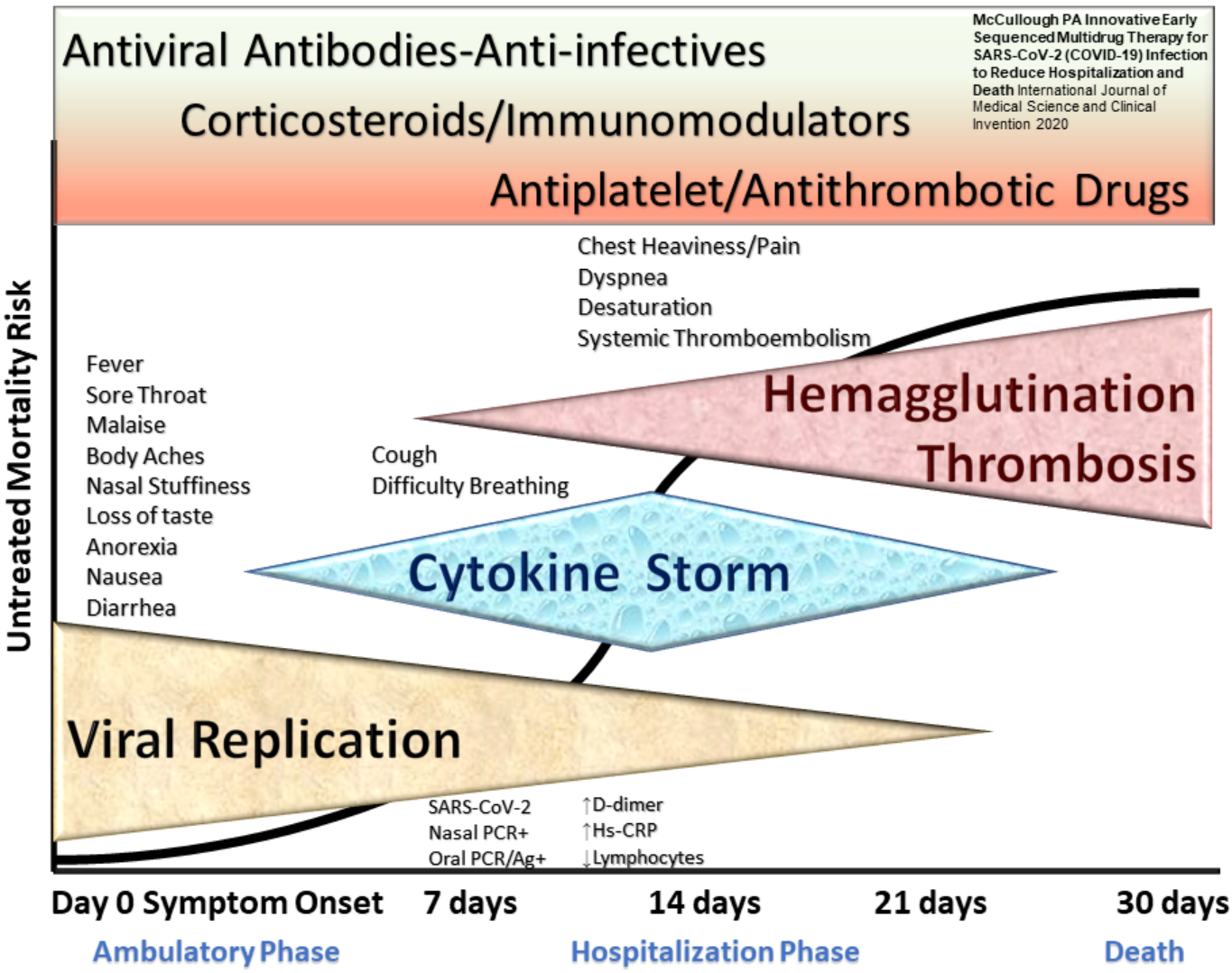
IV. Vitamins, Supplements, and Oxygen.

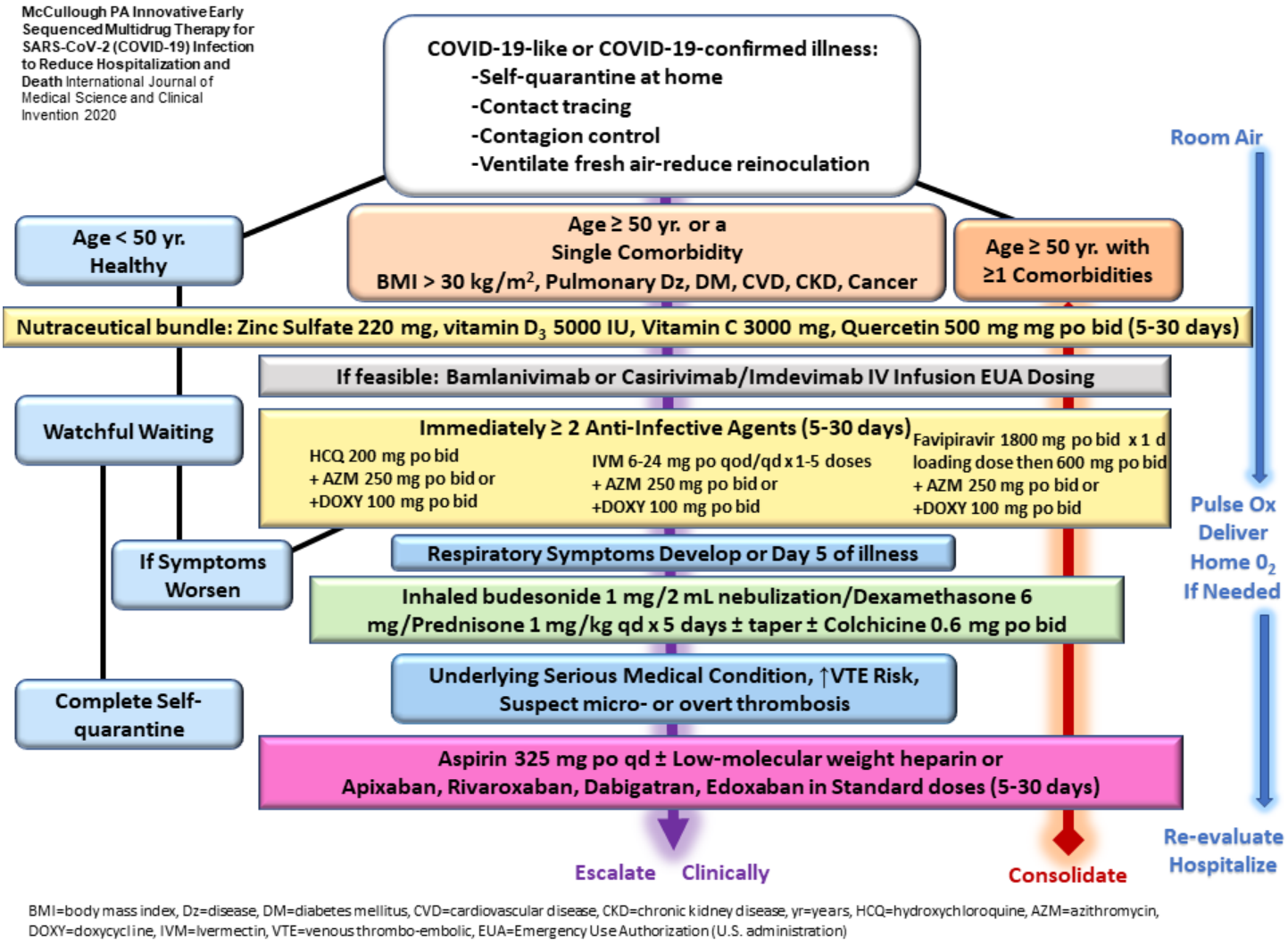
- **Zinc sulfate, gluconate or citrate**. These forms are available in pharmacies, health food stores, and sold online. Zinc sulfate 220 mg provides 50 mg elemental zinc, the recommended anti-viral dose. Zinc in the form of zinc picolinate form is not recommended following reports of liver damage and tumors from studies about 20 years ago. Following these reports, the German Commission E that regulates supplements used in medical practice in Germany banned this form of zinc.

- **Vitamin D3**, preferable in oil in capsules for better absorption. Recommended doses for anti-viral benefit vary from 5000 IU or more for 5-30 days

- **Vitamin C** with bioflavonoids for antioxidant, anti-inflammatory effects. Dose recommendations from our contributors vary from 1000 mg (1 gram) once or twice a day up to 4 or more times a day.

- A word about ***quercetin***. Some physicians are recommending this supplement to reduce viral illnesses because quercetin acts as a zinc ionophore to improve zinc uptake into cells. It is much less potent than HCQ as a zinc transporter, and it does not reach high concentrations in lung cells that HCQ does. Quercetin may help reduce risk of viral illness if you are basically healthy. But it is *not* potent enough to replace HCQ for *treatment* of COVID once you have symptoms, and it does not adequately get into lung tissue unless you take massive doses (3-5 *grams* a day), which cause significant GI side effects such as diarrhea.





BMI=body mass index, Dz=disease, DM=diabetes mellitus, CVD=cardiovascular disease, CKD=chronic kidney disease, yr=years, HCQ=hydroxychloroquine, AZM=azithromycin, DOXY=doxycycline, IVM=Ivermectin, VTE=venous thrombo-embolic, EUA=Emergency Use Authorization (U.S. administration)

Dr. Peter McCullough led a team of international experts and published the first treatment protocol for ambulatory COVID-19 patients developed from experience treating patients in the US. and Italy and supported by the expanding medical literature at the time. The initial protocol was published in the highly respected *American Journal of Medicine,* and the updated protocol depicted in the figure was adapted from the *Baylor University Medical Center Proceedings (in press for November release).*

If you or a loved one are ill or exposed to risk of COVID-19, read the article (shown in image below) by Dr. McCullough and colleagues from leading US and Italian medical centers, which was published in the American Journal of Medicine (link above) and the updated summary in the *Baylor University Medical Center Proceedings* [An updated protocol is available, along with a video explanation by Dr. McCullough.] ***Print these resources for your medical records and take a copy to your physician to discuss these treatment options.***

REVIEW McCullough PA, Kelly RJ, Ruocco G, Lerma E, Tumlin J, Wheelan KR, Katz N, Lepor NE, Vijay K, Carter H, Singh B, McCullough SP, Bhambi BK, Palazzuoli A, De Ferrari GM, Milligan GP, Safder T, Tecson KM, Wang DD, McKinnon JE, O'Neill WW, Zervos M, Risch HA. Pathophysiological Basis and Rationale for Early Outpatient Treatment of SARS-CoV-2 (COVID-19) Infection. Am J Med. 2020 Aug 7:S0002-9343(20)30673-2. doi: 10.1016/j.amjmed.2020.07.003. Epub ahead of print. PMID: 32771461; PMCID: PMC7410805.

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Pathophysiological Basis and Rationale for Early Outpatient Treatment of SARS-CoV-2 (COVID-19) Infection

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Specialties

Internal Medicine
Critical Care
Nephrology
Cardiology
Electrophysiology
Infectious Diseases
Ophthalmology
Epidemiology
Biostatistics

ABSTRACT

Approximately 9 months of the severe acute respiratory syndrome coronavius-2 (SARS-CoV-2 [COVID-19]) spreading across the globe has led to widespread COVID-19 acute hospitalizations and death. The rapidity and highly communicable nature of the SARS-CoV-2 outbreak has hampered the design and execution of definitive randomized, controlled trials of therapy outside of the clinic or hospital. In the absence of clinical trial results, physicians must use what has been learned about the pathophysiology of SARS-CoV-2 infection in determining early outpatient treatment of the illness with the aim of preventing hospitalization or death. This article outlines key pathophysiological principles that relate to the patient with early infection treated at home. Therapeutic approaches based on these principles include 1) reduction of reinoculation, 2) combination antiviral therapy, 3) immunomodulation, 4) antiplatelet/antithrombotic therapy, and 5) administration of oxygen, monitoring, and telemedicine. Future randomized trials testing the principles and agents discussed will undoubtedly refine and clarify their individual roles; however, we emphasize the immediate need for management guidance in the setting of widespread hospital resource consumption, morbidity, and mortality.

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KEYWORDS: Ambulatory treatment; Anticoagulant; Anti-inflammatory; Antiviral; COVID-19; Critical care; Epidemiology; Hospitalization; Mortality; SARS-CoV-2

US/Italian Multicenter Collaboration

Academic Medical Centers
Public Heath
Integrated Health Systems
Community Practice
Biotech Industry

For more information on safety of HCQ and other medicines *in the algorithm,* check the c19study.com website that summarizes more than 154 studies of HCQ-based treatment, which are particularly favorable when HCQ is used in the first few days of COVID-19 symptoms as recommended in the above algorithm.

For further information, see AAPS compendium of articles and studies on COVID-19.

*FDA cautions against use of hydroxychloroquine or chloroquine for COVID-19 outside of the hospital setting or a clinical trial, citing risk of heart rhythm problems. Please consult with your physician before use.

Chapter 4
Emerging Prevention and Treatment Options

Monoclonal antibodies

Natural Antibodies are produced by the body in response to foreign organisms, such as viruses and bacteria. Synthetic antibodies are those produced in a laboratory to mimic ones the body can make. When these synthetic compounds, referred to as "monoclonal antibodies," are made in the lab targeted for a new treatment in medicine, they are patented as new therapeutic agents. This is the type of experimental synthetic monoclonal antibody, Regeneron, you heard described on the news that was given to President Trump as part of his treatment for COVID-19 when he was in the hospital at Walter Reed.

The company Regeneron has produced a drug, called REGN-COV2, that is a combination of two "monoclonal antibodies" intended to fight off the virus SARS-CoV-2 that causes the illness we call CoVID-19. To develop REGN-COV2, Regeneron scientists use antibodies from mice that have been genetically modified to have a human immune system, as well as antibodies identified from humans who have recovered from COVID-19.

The overall effectiveness of Regeneron as a new treatment remains to be seen, since it is still in the experimental stage and is undergoing clinical trials. Only after randomized, controlled clinical trials are completed, will we be able to analyze the clinical data and submit it to the peer-review process needed to determine its overall safety and effectiveness, as well as its side-effect profile.

Convalescent Plasma

Convalescent plasma, or CP, is the serum from blood donated by people who have had an infectious disease, recovered, and developed antibodies to the infectious organism so that their blood contains those antibodies that can be administered intravenously to a another person with that disease to treat the infection. CP was using during the 1918 flu pandemic, and has also been used for measles, mumps, and polio early in the 20th century. When the COVID pandemic hit, physicians began considering this could be a therapy to help ill patients recover.

The FDA approved an Emergency Use Authorization to use CP to treat COVID patients, and it has been given intravenously to COVID patients in the hospital. We do not yet know how effective convalescent plasma therapy will be, because there has not been time for more extensive clinical trials in COVID patients. But data from small studies look promising to lessen the severity and/or shorten the duration of COVID-19 illness. The risk of getting COVID-19 from convalescent plasma has not been tested, but researchers believe that the risk is low because donors have fully recovered from the infection.

Convalescent plasma therapy has some risks, such as allergic reactions, possible lung damage and difficulty breathing, and infections such as HIV and hepatitis B and C though the risk of these infections is low because donated blood is tested for safety.

Prevention Options: Prophylactic Medications and Vaccines

Since SARS-2 virus first appeared, there has been much media focus on developing a vaccine that will protect people from contracting the SARS 2 virus. But in addition to working on a vaccine to help prevent people from becoming ill with COVID, there are already several *prophylactic,* or preventive, medication protocols in use in various countries and in controlled trials in the United States.

Prophylaxis Regimens:

Prophylaxis means treatment designed to reduce risk of getting an illness. It is a basic approach to prevention, particularly with illnesses like malaria, herpes, HIV/AIDS and some other illnesses. Very early on in the COVID pandemic, physicians in India, South Korea, Japan, Costa Rica, Turkey and several other countries began using the safe, widely available and very potent anti-viral medicine *hydroxychloroquine (HCQ)* as a *prophylactic* (preventive) medicine in COVID-19.

The India Council on Medical Research (ICMR) published in March 2020 (updated in May, 2020) their national guidelines for India using HCQ 400 mg once a week for health care workers, physicians, nurses, first responders, high risk patients, and family members of exposed or COVID-positive individuals. As a result of widespread prophylaxis and early treatment with HCQ, India has a death rate 1/10 the rate in the United States, where prophylactic and early treatment use of HCQ has not been recommended or widely available.

As more and more countries learned from the experiences in India and began to use this once a week prophylactic dose of HCQ, the death rates dropped sharply and the demand for hospital beds also dropped.

Dr. McCullough's team at Baylor did a study in their health care workers using HCQ prophylaxis and found it to be effective and safe, with no adverse cardiac events or serious side effects.

The doses of HCQ for prophylaxis are far lower than doses patients with rheumatoid arthritis or lupus or malaria take daily for many years. Because the doses are so low, and not taken daily, risk of side effects is extremely low.

HCQ has a long half-life of about 22 days, so it can be given just once weekly for 8-12 weeks, or longer if someone is continually exposed to COVID, such as people working in hospitals. A new report, *Flattening the Risk: Pre-exposure Prophylaxis for COVID-19* examines this prophylactic treatment that is easy to use, already available, and inexpensive. They make the case for HCQ as the best candidate for this prevention strategy.

Prophylactic regimens are often recommended by the contributors to this guide, who are using several different dose and frequency regimens. Some use the regimen published by the India Council on Medical Research (ICMR), some use 200 mg instead of 400 mg, some recommend the dosing every two weeks instead of once a week, and some doctors even use HCQ for prophylaxis only once a month.

As a result of the safety and significant reduction in risk of becoming ill with COVID-19, physician contributors to this guide are recommending more widespread use of the prophylactic regimens with HCQ that are working so well in other countries. We believe that in the face of a public health crisis, it is important to consider life-saving approaches based on scientific logic, available safety data, and clinical availability, even if definitive results are not yet available pending more extensive clinical trials.

We also believe that prophylactic therapy is the safest and most expedient way to help Americans reduce risk of getting sick with COVID, and be able to open schools, businesses and churches so we can overcome fear, and regain our freedom to live our lives again.

Vaccines in Development:

Several vaccine models are being investigated for SARS-CoV-2 (COVID-19) including DNA and RNA vaccines. These vaccines take genetic information from other sources that is introduced into the cells. This information includes instructions to produce a SARS2-like viral antigen itself, and the immune system then reacts to it to develop immunity to the virus.

The most important consideration before approving a vaccine for human use is to make sure that the vaccine is safe and effective. Developing safe and controlled infection models for humans normally takes many years of phased testing in the lab and then in humans. Many physicians and scientists have been concerned that vaccine manufacturers, with government support, are speeding up this process in ways that are not allowing adequate time for the usual phased testing leading up to human clinical trials. Two vaccine manufacturers already have voluntarily paused their clinical trials in people due to serious adverse events.

Currently, there are no RNA-based vaccines approved for human use so it would seem prudent to take the time needed to ensure safety. Vaccines for RNA viruses are notoriously challenging and difficult to develop. We still, after all these years since AIDS emerged in the 1980s, do not have a vaccine for the AIDS virus, or the SARS-1 coronavirus that emerged in 2002-2003, and both are RNA viruses.

Several attempts have been made to create vaccines for coronavirus and other respiratory viruses but none of the vaccines have survived the testing phases. The vaccine trials for SARS-1 from 2003, for example, was shut down because it produced autoimmune hypersensitivity reactions when exposed to the natural virus after immunization in animal studies.

Another problem is that the SARS-2 virus has already shown many mutations. Viruses adapt to the environment to survive. Like the flu virus, it is difficult to predict what mutations will occur and circulate around the world each season. A new vaccine must be reformulated to adjust to the changing genetic makeup of the SARS-2 virus.

Even the best vaccines for flu are only about 30-60% effective. Compare that with an effectiveness for improvement ranging from 64% to more than 90% in more than 100 new studies showing early, outpatient treatment with our existing medications described in chapters.

As research on the vaccine continues, safety and effectiveness are of primary concern. The good news is there are very safe and effective early treatments already available as we described in Chapter 3. Clearly, early, home-based treatment has now been so successful and offers so much hope, there is less urgency to have a vaccine.

APPENDIX I: Medical Resources

- Early Home-based Treatment Dr. Peter McCullough and colleagues American Journal of Medicine review and peer-reviewed algorithm
- HCQ White Paper: The Economic Standard
- Dr. Brian Tyson's First Person Account of Treating COVID-19 with Hydroxychloroquine

APPENDIX II: CONTRIBUTORS and PHYSICIAN RESOURCES

- Physician Contributors

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- Physician Resource List by State
  aapsonline.org/covidearlytreatment
- Telemedicine Resources for COVID treatment
  www.SpeakWithAnMd.com
  www.FrontlineMDs.com
- Medical and VIDEO Resources
  www.AAPSonline.org
  www.c19study.com
  www.CovidPatientGuide.com

APPENDIX III: Sample Forms for Clinical Tracking in COVID

- COVID Screening Questionnaire and Risk Factor Checklist
- COVID Clinical Tracking Form

(SAMPLE) VIRAL ILLNESS/COVID SCREENING QUESTIONNAIRE
PATIENT NAME_____ DATE:_____

Height:_____ Weight:_____ Age:_____ BP:_____ Pulse:_____RR: _____ O2%____

❑ YES ❑ NO 1. Have you had a fever >101, or felt feverish lately?
❑ YES ❑ NO 2. Have you had a new or different type cough lately?
❑ YES ❑ NO 3. Have you had shortness of breath, difficulty breathing?
❑ YES ❑ NO 4. Any chills or repeated episodes of shaking with chills?
❑ YES ❑ NO 5. Any daytime sweats unrelated to exercise, or night sweats?
❑ YES ❑ NO 6. Any nausea, GI upset, vomiting or diarrhea?
❑ YES ❑ NO 7. Have you had recent loss of taste or smell?
❑ YES ❑ NO 8. Do you have new or different muscle/joint aches?
❑ YES ❑ NO 9. Have you felt loss of energy, or severe fatigue lately?
❑ YES ❑ NO 10. Have you had trouble with focus, memory or concentration?
❑ YES ❑ NO 11. Have you had any other flu-like symptoms?
❑ YES ❑ NO 12. Have you lost appetite and or lost weight?
❑ YES ❑ NO 13. Any travel to COVID-19 areas in last 14 days?
❑ YES ❑ NO 14. Any contact within last 14 days with someone who tested positive for COVID-19? If so when? _____
❑ YES ❑ NO 15. Have you tested positive for COVID-19? When_____
❑ YES ❑ NO 16. Have you been clinically <u>diagnosed</u> with COVID-19?

<u>RISK FACTORS CHECKLIST: DO YOU HAVE ANY OF THESE CONDITIONS?</u>

❑ YES ❑ NO Obesity, Heart disease, history of heart attack, arrhythmias, high blood pressure, TIA, or stroke? (circle any that apply)
❑ YES ❑ NO Lung disease? (COPD, asthma, pulmonary fibrosis, CF, other?)
❑ YES ❑ NO Kidney disease? Type:_____
❑ YES ❑ NO Diabetes, Metabolic Syndrome/Insulin Resistance?
Are you taking insulin? Yes:_____ No:_____
❑ YES ❑ NO Any kind of cancer, undergoing treatment?
❑ YES ❑ NO Any type of autoimmune disease?
❑ YES ❑ NO Do you regularly take corticosteroid medicines?

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(SAMPLE) COVID TREATMENT FLOW SHEET INITIAL SERVICE

DATE_____

Name _____ DOB _____ SEX _____

	Day	1	3	5	7	Comments
1.	Fever or chills. 100° F or higher.					
2.	Cough					
3.	Shortness of breath					
4.	Fatigue					
5.	Muscle or body aches					
6	Headache					
7.	New loss of taste or smell					
8.	Sore throat					
9.	Congestion or runny nose					
10	Nausea or vomiting					
11	Diarrhea					
12.	Pulse Rate/O2 sats					
13.	Side effects/New meds					

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