To my valued patients:

A videoconferencing announcement: We will soon be changing to Zoom which will be accessible through our website at www.reedwilson.com. We will announce the day of the changeover. Until that time please continue to use the WhatsApp application, that so many of you have tried.

Update on treatment?

We are in a real fight and the usual process of large timely clinical trials with different medications is not practical. Major medical centers including Mass General (one of the Harvard hospitals), the University of Washington and our own Cedars-Sinai have added hydroxychloroquine to treatment options.

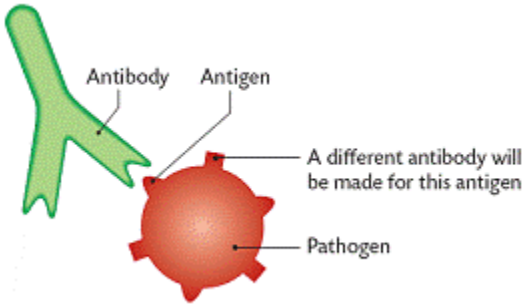
The newest information from last night is that the Food and Drug Administration issued an emergency use authorization for hydroxychloroquine and chloroquine. The agency allowed for the drugs to be "donated to the Strategic National Stockpile to be distributed and prescribed by doctors to hospitalized teen and adult patients with COVID-19, as appropriate. It should be noted that France and Italy performed similar approvals over the weekend.

In France, they studied 80 hospitalized COVID-19 patients. They received a combination of hydroxychloroquine and azithromycin. By day eight of treatment, 93% showed a negative nasopharyngeal swab for the virus. "This allowed patients to rapidly be discharged from highly contagious wards with a mean length of stay of five days.

Some factors we need to remember. If these drugs prove as good early trials show, we do not have an unlimited supply. We need to treat the sickest first. We should also consider our highly exposed healthcare works and first responders and treat them first as they are the COVID-19 warriors and we need them.

There is a new type of vaccine that is in the works, a mRNA vaccine

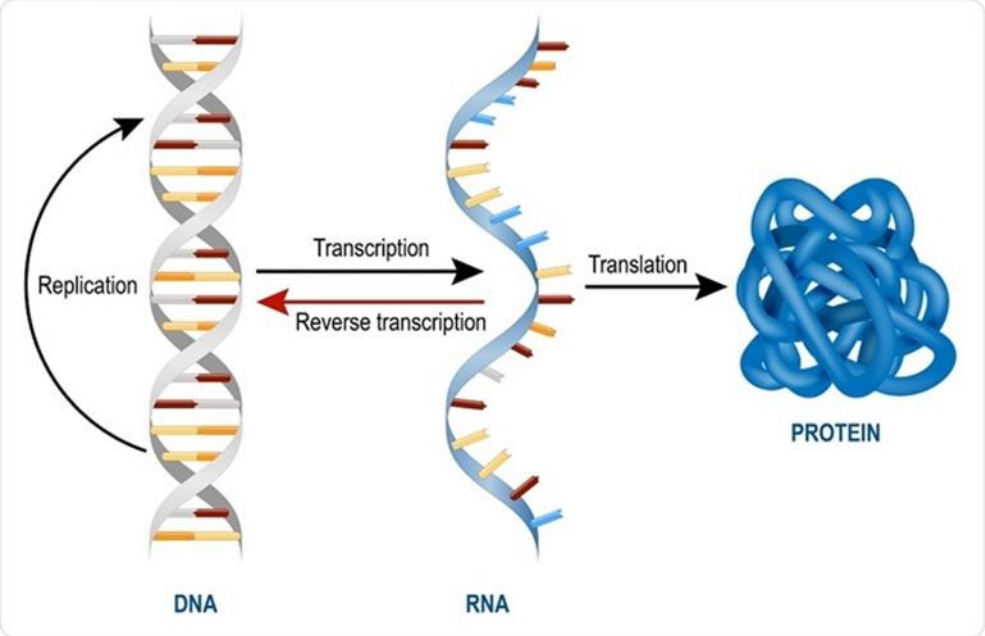
In order to understand some of the exciting new research going on, you need to understand how vaccines work. When bacteria or viruses enter the body, you have special immunity cells which respond. The special immunity cells are lymphocytes and they produce antibodies which are a special set of protein fighters to attack the invaders. In doctor lingo, the antibodies are directed against antigens which are structures the antibodies see on the invaders. Below in green is an antibody, attaching to a triangular red antigen on the surface of a virus.



The first time a body sees an invader, it can take days to ramp up an antibody response. Most of the time we can get enough antibodies going before the virus or bacteria wins, sometimes we can't have enough antibodies prior to the virus or bacteria which is why the elderly and the immunocompromised have a harder time when exposed to the virus or bacteria.

Vaccines are frequently made of dead or weakened antigens. They don't cause infection, but the immune system still sees them as invaders and produces an antibody response. The immune cells which make the antibody "remember" the antigen so when you see it again, you know exactly how to kill it.

Very recently scientists have been starting to make mRNA vaccines. These vaccines are highly potent, can be developed rapidly and are low cost to manufacture.



So how does this work? DNA is the hereditary material stored in the cells of our body. They have building blocks called nucleotides and the order of these building blocks determines the code for all the proteins our body makes. In the picture above, each building block in the DNA is red, white, orange or yellow and look like little bars. The body sends an enzyme to make a single stranded copy of the small segment of DNA, this single stranded copy is known as messenger RNA. It basically takes the exact message to the cell's protein factory with instructions on how to make a protein that the cell and body needs.

And here is where the magic comes in. What if we could deliver directly into our body the messenger RNA of the invader. The body would make the non-infectious antigen and generate a whopping autoimmune response against the virus which has antigens attached. To repeat, the antigen itself is not an infectious agent. But the antigen would immediately stimulate the cells to make lots and lots antibodies and generate immune recognition and protection.

Several companies are currently in phase I trials with volunteers using mRNA from the SARS-CoV-2 to make such a vaccine.

In addition to this new technique, several companies are attacking the problem at different steps in the immune response. Some are using the blood from survivors to see which of more that 500 antibodies are the most potent and in order to use those antibodies in treatment. Some are using the tried and true technique of developing deactivated virus which will trigger an immune response without infection.

Even if you don't get sick, the social isolation does have an effect

Different people respond differently to what is happening around them as we are told to social distance. Maybe you are hunkering down doing hobbies or taking a much-needed relaxation.

Some of you may be trying to keep in contact with friends via the phone (gulp) or facetime. Some of you maybe feeling the walls closing in and have worsening depression or anxiety. No matter who you are and how strong you feel, the self-isolation can have negative feelings and outcomes.

For better or for worse social isolation has been studied in space and in Antarctica as well as in other situations in children, adults and the elderly. It's noted that people start getting lethargic when there is no positive input in their world. Depression and anxiety kick themselves right to the top of our emotional play list.

Aggravating this is the fact that we really don't have a handle on the end point. This produces anxiety as well. When scientists working in remote locations or prisoners in solitary confinement come near the end of their duties or sentence, their moods lift. We don't know yet when the social distancing is going to lift.

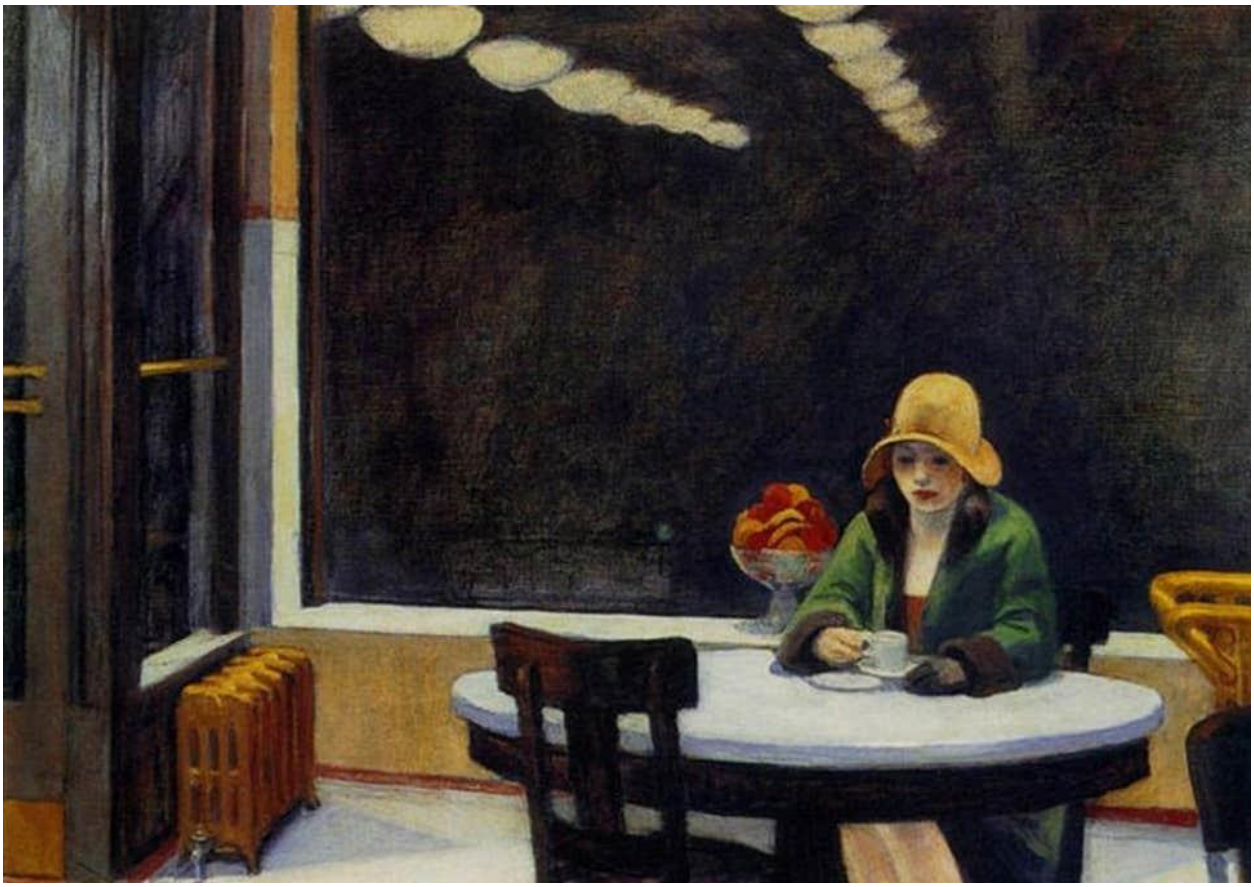
The University of Munich studied simulations of manned spaceflight to Mars. The pure effect of being confined changed peoples sleep, immune system and neurocognitive abilities as well as their metabolism.

The people at most risk during the COVID-19 outbreak are people who were at risk before the outbreak for social isolation. Older adults, lower income people and men seem to be the risk factors. Some say technology is a way around that, but older people are not as familiar with technology and people who have lost jobs and on the lower end of the income scale may not have as much access as others.

A really big factor in all this is the confusion about what is going on. My patients who are not doctors have lots of questions, compounded with various mixed messages from the media. One of the main reasons I have provided you with the newsletter is to get by the soundbites on radio, TV and internet. I want to give you hard data of what is happening, and the amazing things people are doing.

So, what can you do? Exercise is a mood booster. Create structure and predictability so that you have control of what is happening. Realize you are not in this alone and your reaching out may help others as well as yourself. Call or write people, even if you haven't talked to them in a while. You never know, you may reconnect in a lifelong friendship.

Isolation and Art



Automat by Edward Hopper

I thought the women looked lonely, isolated and appeared lost in thought. Here is what the experts say

The painting portrays a lone woman staring into a cup of coffee in an Automat at night. The reflection of identical rows of light fixtures stretches out through the night-blackened window.

Hopper's wife, Jo, served as the model for the woman. However, Hopper altered her face to make her younger (Jo was 44 in 1927). He also altered her figure; Jo was a curvy, full-figured woman, while one critic has described the woman in the painting as "'boyish' (that is, flat-chested)".

As is often the case in Hopper's paintings, both the woman's circumstances and her mood are ambiguous. She is well-dressed and is wearing makeup, which could indicate either that she is on her way to or from work at a job where personal appearance is important, or that she is on her way to or from a social occasion.

She has removed only one glove, which may indicate either that she is distracted, that she is in a hurry and can stop only for a moment, or simply that she has just come in from outside, and has not yet warmed up. But the latter possibility seems unlikely, for there is a small empty plate on

the table, in front of her cup and saucer, suggesting that she may have eaten a snack and been sitting at this spot for some time.