BRIEFING ON COVID-19 - ROTARY 3/11/2020

Dr. Bob Hockberger suggested I do this briefing and he reviewed these points only for medical accuracy.

Back in 2009, when I was on the interagency pandemic policy team of the Domestic Readiness Group, I would walk over to the White House complex about once a week. A member of my staff was in meetings twice a week. We did that for several months. The DRG was led by the National Security Council. I was primarily there representing the HR policy aspects for the 2-million person Federal workforce, but I also had an ongoing role in emergency planning. In May that year, I moderated a 2-hour H1N1 panel of experts from CDC, Federal Health Service, OSHA, and OPM that was held for HR Directors of departments, agencies, and national unions.

The group first started meeting when A-H1N1 (pdm09) was in Mexico, before it hit the U.S. (first case reported in April). Experts briefed us on all the issues raised by a pandemic. Others gave us up-to-the minute developments. We also had guidance from the *National Strategy for Pandemic Influenza* which was issued in 2005 after the 2003 SARS outbreak.

I am not a medical professional. I have data from past experience and, based on that, I've known what to look for in data about the current coronavirus. One good thing: I don't have to put any spin on the data.

Today I will tell you what to expect and why; the difference between containment and mitigation; and what we can do to protect ourselves. The news is not good, except for the fact that we can individually and collectively do things to protect ourselves.

There are 60 people in our club. Based on averages seen so far, before this pandemic is over, almost all of us will come in contact with someone infected with the virus. Of our 60, 10 are likely to come down with the virus. Statistically, of the 10, 8 will have mild cases and 2 will have serious cases. Given the average age in our club, there is a good chance that 1 of the 2 will die, particularly if older with a compromised immune system. (I just described me.)

People tend to remember dramatic information like that without remembering context. For context, PLEASE REMEMBER that I am talking about <u>averages</u> and about <u>statistics</u> that are likely to <u>change</u>. An important point is that the average person who gets the virus may not have taken basic precautions, such as regular hand washing and avoiding crowds. If we take precautions we may all be fine. And also remember, we are not average. We are Rotarians.

The virus is called Severe *(bad)* Acute *(comes on all at once as opposed to being chronic)* Respiratory *(from nasal passage to lungs)* Syndrome Coronavirus 2 (SARS-CoV-2) and the disease from it is called COVID19.

I should be able to tell you what the Federal government activities have been so far, but unfortunately, John Bolton disbanded the NSC's Global Health Security team in 2018, so things apparently changed. Although the current administration also wanted to cut pandemic response funding three years in a row, a bipartisan Congress disagreed. As Republican Tom Cole from Oklahoma told the President three years ago, there was a much greater likelihood that his administration would face a pandemic than it would a terrorist attack. The funding remained, but leadership was lost.

Based on progress so far, there likely will not be dramatic emergency procedures in place for the whole country, other than to ensure supplies of protective gear are available for health care providers; to ensure there are enough facilities to handle those seriously ill, including quarantine locations; to make test kits available throughout the country; and possibly to limit transportation. Already, the State Department has warned Americans not to take cruises. Individual states and localities will be making the calls on other mitigation actions like school closings.

Some Federal agencies and many contractors are already implementing their COOP plans for Continuation of Operations in an emergency, with an emphasis on teleworking if possible. The SEC was one of the first agencies to implement that.

What all pandemic planning considers is the worst-case scenario of the 1918 pandemic, which infected 1/3 of the world's population (which world population back then was only 1.5 billion) and caused the deaths of 10% who were infected. That is, the world had 500M sick and 50M dead. We did not have the needed tools back then. We were also at war. [The end of World War I did not come until November 11, so combatants did not release data at the time; those data were classified. Spain, which was neutral in the war, was the first to release flu data. The pandemic did not start in Spain and Spain did not have the highest incidence, but because they were first to share data, it was called the Spanish Flu.]

Something to understand is when the World Health Organization declares an illness as a *pandemic*, it is only stating that the disease has spread within communities in at least 2 countries in each of two or more world regions. It does not say anything about morbidity or severity. Although those tests have been met, WHO did not declare this an epidemic until about three hours ago. The head of WHO on Monday said this will be the first pandemic in history that could be controlled. The key word is "could." The first objective is containment-- to test and find cases and track down and isolate people so the virus does not spread. The second objective is mitigation, to reduce damage when containment is not enough, such as through social distancing.

Containment depends on testing. Normally, CDC-developed or approved test kits would have been out at least a month ago (in 2009 they were out a few days after our first case of H1N1), but there was a delay in getting started and the first batch was defective because of a production lab mistake. CDC also did not approve private lab tests at first. One million kits were to become available last week, but only 75,000 were distributed with restrictions on their use. Many more will be needed. CDC had also limited when scarce test kits could be used; they just relaxed that control this week. China has tested about 400,000 and South Korea, which received the coronavirus the same time we did, has tested more than 200,000. During that same period we tested fewer than 8,000 (figures most quoted range from 1,700 to 4,800, but one sources says 8,000). The countries that have been the slowest to react, so far, have been Iran, Italy, and the U.S. Experts say by not having enough information about those infected we have spent months trying to quarantine not enough people.

Containment may still work in many countries, and officials at our CDC continue that approach, but they acknowledged this week that we basically lost the chance for containment to work in the U.S. and now need to focus more on mitigation. If that is true, then based on a China study, it appears that for the current novel coronavirus, roughly 82 percent of cases are mild, 15 percent are severe and 3 percent are critical. The morbidity (death rate) has been cited most frequently as about 1.5% to 2%, although President Trump said he has a hunch it is below 1% and the World Health Organization has mentioned 3.4%. (The WHO 3.4% was based on 3,400 deaths of 100,000 known cases, but it is likely high. The problem is nobody really knows how many cases there are against which to compare the number of deaths.) There are too many infected who are not in the health care system and, remember, there have not been enough test kits to come up with a good survey. Using 1.5% for planning purposes is probably reasonable. Those figures are what I used for our example with 60 members.

Given the latest from our CDC, there is little doubt that this novel coronavirus will sweep the country. Although the virus can make some people very sick and a lot of people can die, the morbidity and severity percentages are relatively low-- which turns out to be a problem. If 82% have mild cases, a lot of infected people may not know they have it. Nobody else will know, either. Those whose illnesses cannot be noticed will spread the disease to others. The numbers rise above the ability to track down sources of infection and to quarantine. However, we can do things to protect ourselves. Instead of relying on containment of those infected, we need to mitigate the situation by containing ourselves as healthy people—just avoid gatherings of people or being in closed places like ships and planes. Different countries are handling mitigation in different ways. In Wuhan province, at one point China forbade residents from coming out from their homes for more than two weeks. Italy has severely limited travel.

German scientists reported a few days ago that, unlike the 2002-2003 earlier SARS pandemic, in which infected people mainly emitted the virus after it had gone into the lungs, this SARS emits the virus primarily from the throat. That comes in the first five days of infection. The scientists said at peak shedding, people with COVID-19 are emitting more than a 1,000 times more virus than was emitted during peak shedding of the earlier SARS infection. Unfortunately, according to research just reported from Johns Hopkins, symptoms do not show up until after those five days (median for symptoms has been cited a little higher than 5 days).Those German and Johns Hopkins data are from individual studies that need confirmation from additional studies. Without confirmed research to the contrary, CDC and others say symptoms can develop between 2 and 14 days after infection. Symptoms are fever, cough, and shortness of breath. Those with weakened immune systems may have pneumonia or bronchitis. That often leads to a "tipping point" beyond which everything goes downhill, so medical care is needed early.

The virus primarily enters through the respiratory system, not the digestive system. For most, the full cycle of the disease is over in about 14 days. For those whose disease has gone to the lungs, it can last several weeks, but one study shows the virus is not emitted beyond 14 days.

Most at risk are the elderly and those with compromised immune systems (80% of those who have died so far have been 60 or older: ~8% of those 70-79; ~15% of 80+). Early-on there was also concern about infants (neonates), but for some reason they and children under 9 seem to be surviving pretty well. The CDC this week suggested that older people stock up on essentials and stay at home, away from the teeming masses. Another option might just be to use a grocery delivery service. The VA and the national nursing home association have both told people not to visit nursing homes or senior centers unless absolutely necessary.

One factor that makes a novel virus spread so broadly is its newness. Only a few people so far have immunity from a recent infection. Nobody has gained immunity from a flu shot, because this virus is not yet included. There is no specific vaccine yet and, although promising developments based on early DNA and RNA sequencing by China have already appeared, experts say it should be 12 to 18 months before a vaccine is tested and available in any quantity. Treatments for those infected may be here within 9 months, but even if a good treatment is available in 9 months that will be too late for many people.

Back in 2009, knowing it would be a long time before we had a vaccine, we got pretty excited about using Tamiflu as a stop-gap measure. It had been developed by Roche in 1999 as a general flu (neuraminidase portion) inhibitor, working both before and immediately after infection. Tests, mostly funded by Roche, showed it to be safe. Its generic version was

prequalified by WHO in May of 2009 and was stockpiled to deal with the H1N1 virus. Early-taken Tamiflu almost certainly saved many lives and may be a reason the H1N1 death rate was so low. But two things went wrong. One was a steep rise in reports of serious adverse effects, particularly neuropsychiatric events. The other was the discovery of virus mutations that were Tamiflu resistant. A vaccine was available that October. For 2019-2020 the quadrivalent seasonal flu shot protects against A (H1N1), along with A (H3N2) and two influenza B viruses.

Flu viruses thrive most in cold, dry air. That is why flu season in the northern hemisphere is in the fall and winter, peaking between December and February. Transmission usually drops down significantly in the spring and summer. For a new virus, there is either a heavy wave in the first winter and a smaller wave in the next fall (which may happen in China) or a small wave in what remains of this winter and a big wave in the fall (which is more likely in the U.S.). In between, during the warmer months, the rate of transmission usually slows, but does not fully go away. We have no idea if that pattern will hold this summer. However, in case you really want the flu this summer, you can always travel to Australia, South America, or southern Africa while they have their winter.

It would be irresponsible to declare victory over the pandemic because of a seasonal drop in infections this spring or summer, or even to hold out the prospect that transmission will end in April. Experts are almost certain infections will continue through the spring and will be followed by a wave that could be big by October.

As an example of transmission patterns, the 2009 strain of the A-H1N1 virus (swine flu) hit the U.S. in late March, about a month earlier than the current virus arrived. Back in 2009 those who did computer modeling alerted us to the likelihood of the seasonal waves. But infections still rose during April and May. By June we had 1 million cases. In the fall things really ramped up. According to a CDC report in February 2010, 57 million Americans had been sickened, 257,000 had been hospitalized and 11,690 people had died (including 1,180 children) due to swine flu from April 2009 to mid-January.

From the 2009 data you can calculate that there was a very low death rate of 0.02%. We had hoped preparation for the 2009 virus would turn out to be just a rehearsal for a more serious pandemic. It was. That figure of 11,690 dead was not even as bad as the usual annual flu, which strains have claimed 12,000 – 61,000 deaths annually since 2010.

That brings us to the really bad news about today. First, there is no reason to think that COVID-19 in 2020 will hit fewer than the 57 million U.S. people hit in 2009 unless we take dramatic action limiting contacts. (Population in 2009 was 309M; 329M now.) Second, if the

mortality rate this year is 1.5%; that would mean 855,000 deaths. That is well more than 10 times the death rate from the normal flu (0.1%). Some experts (Harvard, WHO, Hong Kong) think 60% or more will get the virus, based on actions so far; in the U.S. that would be 198M, with a 1.5% death rate of nearly 3M (2.97M).

Every responsible source of information about the virus uses a lot of words like "likely", "usually", "could", "probably", or "possibly." There are some scientists who believe the pessimistic views of the coronavirus are overstated. They believe the virus could become less fatal over time. Morbidity has two factors: the mutant version of the strain and the health of the host. In comes the operation of the survival of the fittest. A really deadly strain kills off its host and does not propagate as much, while the tamer versions propagate more broadly, possibly building up resistance in the population. Then the pandemic fizzles. At least that is what some scientists expect.

WHO expects countries with strong medical care systems, particularly Canada and European countries with medical care for all, should have better survival rates than third-world countries with poor health care systems. Canada and others should also do some better than the U.S., which only has 92% covered by insurance. The other 26 million in the U.S. may not afford medical care, particularly when their symptoms don't seem too serious; they can still be carriers. If you have medical insurance, coronavirus testing should be covered without a copay, based on Medicare and the Affordable Care Act provisions.

Financial impacts are hard to figure out. The U.S. manufacturing supply chain was already damaged by recent tariff trade wars. It is now taking another hit from the virus, particularly for raw materials and parts coming from China and Korea. If China takes its greatest wave of infections now, it may have enough people who have survived with immunity to keep things going in a few months—possibly at a time when U.S. manufacturing and demand is down due to our own dealing with the virus. The interruption in world-wide productivity and product demand has to have a huge effect, but it will someday go away. In the meantime, there is a higher risk for businesses and individuals to default on debts. You figure out the consequences on your own.

As part of risk mitigation, organizations with conferences and events this spring may have to cancel. There is no way to know if a warmer weather decline in cases will be enough to help events in April and May or not, but the risk cannot completely go away. Whatever happens this spring, unless something major changes, events and travel next fall have a good chance of being at an even greater risk than this summer, based on previous experience with the waves.

The masks most in demand are N95's, but even if these are properly fitted, they do not do much for normal activities for healthy people. The CDC and OSHA have said they should not be worn longer than a single use. Masks are important for people who are actually sick, to reduce the spread of respiratory droplets, and are needed by those who provide close medical care for patients. If you are not really close to someone infected, you are more likely to be infected by touching something where droplets landed and then bringing the virus to your face.

The best things to do are common sense. If you want to be part of the 80% or so that never get the virus, you need to take precautions. What are they?

- Wash your hands frequently and right before eating. Wash them or use hand sanitizers after touching surfaces in public places. Bring your own sanitizing wipes if you can, because stores may run out of wipes to use on grocery cart handles, etc. Also remember that wipes for surfaces are not good enough for hands. *(It is still unknown how long the virus will remain on a surface. It is known that the virus will not stay viable for the days or weeks that products spend in transit, as from China.)*
- Avoid handshakes. These were originally just signs you were not armed. At this point, you or others may be! Touch the outside of elbows (avoiding the inside of elbows where you might have sneezed). Better yet, touch ankles or just do a slight bow. *Right now take a moment and think of the things you have touched since you last washed your hands.*
- If you cough or sneeze, cover with a tissue or use your sleeve or shoulder. Throw away the tissue; don't poke it back in your pocket where you will touch it again. Do not cover your mouth and nose with your hand.
- Avoid touching your face. That makes it easy for virus entry by eye, nose, or mouth. (A 2015 study showed we touch our faces about 24 times an hour.)
- If you are sick, stay home. It doesn't matter whether you have symptoms that are linked to the coronavirus. Just stay home if you are sick. That will protect others and will protect you.
- If you are older or have a compromised immune system, don't travel; and stay out of crowds.
- If a meeting can take place on-line, that is better. Basically, social separation for this virus is recommended to be 6 feet apart. If a person is coughing run away!
- Be careful about food preparation and serving and those who do it for you. I was once a certified food safety inspector, so I'm always noticing things. One thing that bothers me is when servers touch a pitcher to a glass rim or straw. They become bees pollinating flowers—taking germs from one glass to another. Keep aware!

- When eating at a restaurant, you normally can expect the food will be safe. But have a hand sanitizer handy for after you handle a menu or a salt shaker.
- Be consistent. It does not help to have 6' of separation from everyone at work and then go stand in line at Costco or Starbucks.
- Eat healthy, get enough sleep, and do other things to keep your immune system up, including immune-boosting vitamins. And if you get sick from anything, drink lots of water. Coronavirus patients report they are told to have gallons of water and electrolytes early in the infection.
- If you drink beer, you can still drink Corona beer, but alcohol can reduce immune efficiency. I've read it has something to do with B and T cells.
- And finally, keep checking the CDC and WHO websites for information and advice, including the WHO myth-busters page.

Mike Carmichael