“Demystifying Covid-19 Vaccines”

By: Dr. Alidad Zadeh

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Covid-19 virus is human and animal pathogen. It has six versions: Four of them cause the common cold. Two of them cause serious illness (SARS and MERS).

In 2019 Covid-19 was found to cause a cluster of Pneumonias in Wuhan. It has rapidly spread to the entire world infecting about 100 million people and killing over 2 million.

How Does Covid-19 Spread?

It spreads through close contact, from person to person. Spreads can happen even for people near each other, up to approximately 6 feet apart. It can spread by people who are asymptomatic. It can be spread thru respiratory droplets (cough, sneeze, etc.) if absorbed thru mucus membranes (nose, mouth and eyes). It is more contagious than influenza(less contagious than Measles). It can be spread thru airborne transmission.

What IS Covid-19’s Incubation Period?

It can be 4-6 days (and up to 14 days).Then the person develops the symptoms. The illness can last 10 days or longer. Infection period is 8-10 days but can be longer. It starts 1-3 days before the symptoms develop. After the infection period for 3 days there won’t be any symptoms. That is when the person will be released from isolation.

Testing For Covid-19:

Molecular Test- Swab is for diagnosing the active infection and is the most accurate. Examples are: NAAT, LAMP or PCR test.

Antigen Test- Swab is for diagnosing the active infection. It has fastest processing time but is less accurate with false positives in areas with low viral load and false negatives in areas with increased viral load.

Antibody Test-(Blood Test) is proof of past infection and is less accurate.

Clinical Presentation:

Most common initial presentation is cough (50%), fever (43%), Myalgia (36%), Headache (34%).

Less common presentations are: Diarrhea (19%), sore throat (20%) and loss of sense of smell and taste (10%).

Serious Manifestation Of Covid-19

Pneumonia: (Fever, cough, dyspnea, CRX B/L infiltrate)

Acute Respiratory Distress Syndrome (ARDS) which is the most common cause of death and the leading cause of respiratory failure.

Mortality Of Covid-19 in U.S

The number of confirmed death is >400,000 and excess death rate is about 400,000. According to USA Today, on 1/21/2021, the year 2020 was the deadliest year for U.S.

Other Complications of Covid-19:

Cardiovascular: Heart attacks, Arrhythmia and Shock

Thrombotic events: DVT, Pulmonary embolism and Stroke.

Neurological: Encephalopathy

Inflammations: Cytokines release syndrome, Kawasaki disease (mostly in children).

Secondary Infections: Bacterial and Fungal infections

Blood Types and Covid-19:

Blood types are A, B, AB and O. As per (Ann Int. Med, 11/24/2020), Patients with blood type O and Rhesus negative have lower risk of SARS Cov2 infection or severe diseases. Based on retrospective study of 225,000 patients that tested positive between January 15 and June 30, type O had 2.1% chance of getting the infection (lowest out of all blood groups). Rh- was protective as well. Type B+ had 4.2% chance (highest out of all blood groups).

Treatment:

Outpatient*: Monoclonal antibody* decreases hospitalization.

Inpatient: *Remdisivir* speeds recovery.

Dexamethasone decreases mortality in severely ill patients.

Treatments that may not work:

Hydroxychloraquin- RA drug

Convalascent plasma therapy in severely ill.

Lopinavir/Ritonavir- HIV med.

Tocilizumab- IL-6 inhibitor

Treatments That Show Promise:

Ivermectin and *Colchicine*

Recovery From Covid-19:

Time to recovery is highly variable. Mild infections take less than 2 weeks while the severe infections might be much longer(2-3 months).

Covid-19 Sequela could include: Fatigue, Shortness of breath, chest pain, cough and cognitive deficit.

Covid-19 Prevention:

These include: Social distancing, wearing masks, hygiene and vaccines.

Covid-19 Vaccines Type:

Covid m-RNA vaccine (Pfizer-Bio NTech and Moderna)

Viral Vector Covid vaccine (Astrazeneca).

Vaccine Myths:

The m-RNA vaccines will change our DNA; We can get infection from the vaccines; It can cause infertility; If already had Covid, then I don't need the vaccine; Researchers rushed the development of the vaccine so its safety and effectiveness cannot be trusted; Getting Covid-19 vaccine means I can stop wearing my mask; The side effects of Covid-19 vaccines are dangerous; The technology of m-RNA vaccine is brand new.

How Do We End This Pandemic?

We need to reach herd immunity. 10% of U.S population has gotten the infection thus far. We need about 70%-80% of the population to get vaccinated. We need 1.5 million vaccinations daily. Obstacles to this goal are: limited supply, many non-believers in vaccines and uncertainties in duration of the protection, since vaccines are not 100% effective. Vaccinated individuals can still carry the disease and infect others not immune.

Virus Mutation:

There are multiple new strains of Covid virus. The most concerning as of today are:

U.K Strain is more contagious (up to 70% more transmissible) and is possibly more deadly (30% higher risk of death-weak evidence). Pfizer vaccine could still be effective.

South African Strain is more contagious and maybe it is able to evade antibodies and make the vaccines less effective. Moderna vaccine appears to still be effective.

Brazilian strain is similar to the South African strain.

Life After Pandemic:

This shall pass. Corona virus-19 most likely will never be eradicated. Covid can morph into a seasonal disease. As exposure increases, the "novel" Corona virus can become an "endemic" virus similar to the common cold. Moderna is working on booster shots directed at the new variants which most likely will be ongoing.