My Drift

Title: Coronavirus Vaccines
Written by: Jerry D. Petersen
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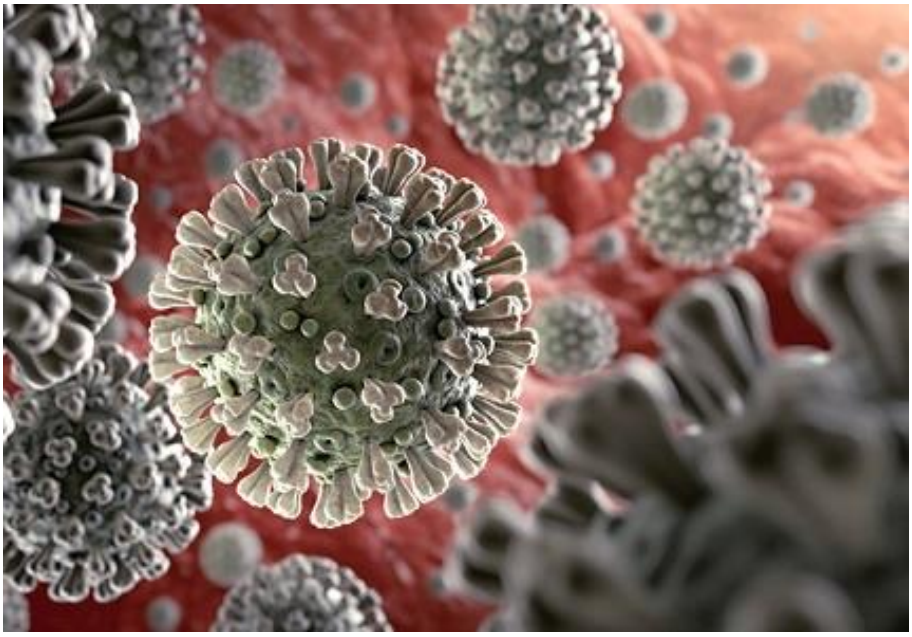
Here we are in December 2020 of the worst year in modern history. The coronavirus pandemic has adversely affected the life of almost every human on the planet. You know it is a bad year when there have been no live sports on TV for most of the year and the bars have been closed since March. It has been the worst of my 80+ years here on earth. Well, at least the years I can remember. I understand that there were a couple of bad years when I was young during World War II that for the life of me, I cannot remember a thing about.

But hey, finally there is some good news! Multiple Coronavirus or COVID-19 vaccines have been developed and people will soon be getting a shot or most likely two shots. Hopefully, this pandemic will be history by the end of 2021 and things will get back to normal. However, health experts are telling us that the next 2 or 3 months will probably be the worst of the pandemic. We all must continue to follow the coronavirus guidelines to contain the spread of this disease.

These new COVID-19 vaccines are supposed to be about 95% effective. When enough people get the vaccine, the pandemic will be over. But, until this happens, there are many problems and obstacles to overcome. In this article, we are going to learn about these new vaccines and the issues getting people vaccinated.

But, before we learn about the new vaccines being developed, here is a short refresher course on this coronavirus or as most people call it – "COVID-19".



Coronaviruses are named for the crown-like spikes on their surface

The clinical name for this novel coronavirus is SARS-CoV-2. It stands for Severe Acute Respiratory Syndrome Coronavirus 2. COVID-19 is the name of the disease caused by the novel coronavirus, SARS-CoV-2, and is short for "Coronavirus Disease 2019".

The seasonal flu is an "all human virus". The DNA/RNA chains that make up the virus are recognized by the human immune system. This means that your body has some immunity to it before it comes around each year. You can get immunity in two ways - through exposure to the virus or by getting a flu shot.

Novel viruses come from animals. Usually, these viruses only transfer from animal to animal (pigs in the case of H1N1) (birds in the case of the Spanish flu). But once one of these animal viruses mutates and starts to transfer from animals to humans, then we have a problem. Why? Because we have no natural or acquired immunity. The RNA sequencing of the genes inside the virus are not human, and the human immune system doesn't recognize it so we can't fight it off.

Most of the time, the mutation only allows transfer from animal to human. The Novel Coronavirus has been around for years (most likely centuries), but its

only transmission was from an infected animal to a human. But now, it mutated so that it can transfer from human to human. Once that happened, we have a new contagion phase and the current deadly pandemic.

When did this novel coronavirus disease start?

We learned about this virus shortly after a cluster of severe pneumonia cases were reported on New Year's Eve 2019 in the city of Wuhan, China. New evidence suggests that the earliest cases of COVID-19 were seen in November 2019, but doctors didn't know what it was at the time.

Wuhan Institute of Virology

China's highest-security virology center is now at the center of debate, speculation and misinformation about how, where, and when the novel coronavirus emerged.

The Wuhan Institute of Virology is the largest biological lab in Asia. It is China's only Biosafety Level-4 (BSL-4) lab. This means it is the only facility in China permitted to handle the most dangerous known pathogens, including the Ebola and Lassa viruses. This lab has done extensive research and testing with the novel coronavirus. The Wuhan Institute of Virology has also been linked to Beijing's covert bio-weapons program.

Reports of a respiratory virus spreading in Wuhan, China, emerged in late 2019. After the number of cases outside China increased rapidly, the World Health Organization (WHO) declared the novel coronavirus COVID-19 disease a pandemic on March 11, 2020.

When did the coronavirus disease start in the US?

A Washington state resident becomes the first person in the United States with a confirmed case of the 2019 novel coronavirus, having returned from Wuhan on January 15, 2020. That was case #1. Today, 11 months later, there have been around 16 million cases and 300,000 deaths in the US

Coronavirus diagnostic testing

COVID-19 testing involves analyzing samples to assess the current or past presence of SARS-CoV-2. Positive viral tests indicate a current infection, while positive antibody tests indicate a prior infection. Samples can be obtained by various methods, including a nasopharyngeal swab (most common), sputum (coughed up material), throat swabs, deep airway material collected via suction catheter or saliva.

Nasopharyngeal swab coronavirus test

NEWS FLASH!!! NEWS FLASH!!! NEWS FLASH!!!

Here I am working on this article on Tuesday, December 8, 2020 when the news came over the Internet saying that the United Kingdom became the first Western country to start inoculating its population with a Covid-19 vaccine developed by Pfizer Inc. and Germany's BioNTech. Maggie Keenan, 90 years old (see picture on next page), received the first shot at a hospital in Coventry, England early Tuesday morning in a program that could provide a taste of the logistical challenges facing other countries, including the US, as they prepare to roll out their own large-scale vaccination plans.

In England, 50 hospitals across the country have been chosen as hubs to administer the vaccine. The government has initially ordered 40 million doses, which will vaccinate 20 million people since two shots are required.

Maggie Keenan receives the first coronavirus shot in England

Who is getting the first shots in the U.K.?

Overall, people will be prioritized in nine tiers according to an independent scientific and medical assessment of their risk of dying from Covid-19. The first in line will be staff and the more than 400,000 residents in nursing homes, followed by health workers and the estimated 3.4 million people over 80 years old. People will then be given priority according to age in decreasing five-year intervals—down to those age 50 and over.

Scientists have been working around the clock since February to develop the COVID-19 vaccine

Coronavirus Vaccines

It is time to learn about COVID-19 vaccines that are ready or about ready for people in the United States and the rest of the world. The three vaccines coming first are Pfizer-BioNTech, Moderna, and AstraZeneca. Several others are being tested.

The German company BioNTech partnered with Pfizer to develop and test a coronavirus vaccine known as BNT162b2.

The FDA says the Pfizer-BioNTech Vaccine is Safe and Effective

In its report Tuesday, the FDA noted that the two-dose vaccine provided benefits even after just the first injection—cutting the risk of getting COVID-19 by about half. The vaccine was found to be 95% effective after the second dose, three weeks later.

FDA scientists also found that the vaccine was effective in reducing the risk of confirmed severe disease after the first dose, an important finding as some health experts were concerned Covid-19 vaccines would protect against only mild to moderate disease.

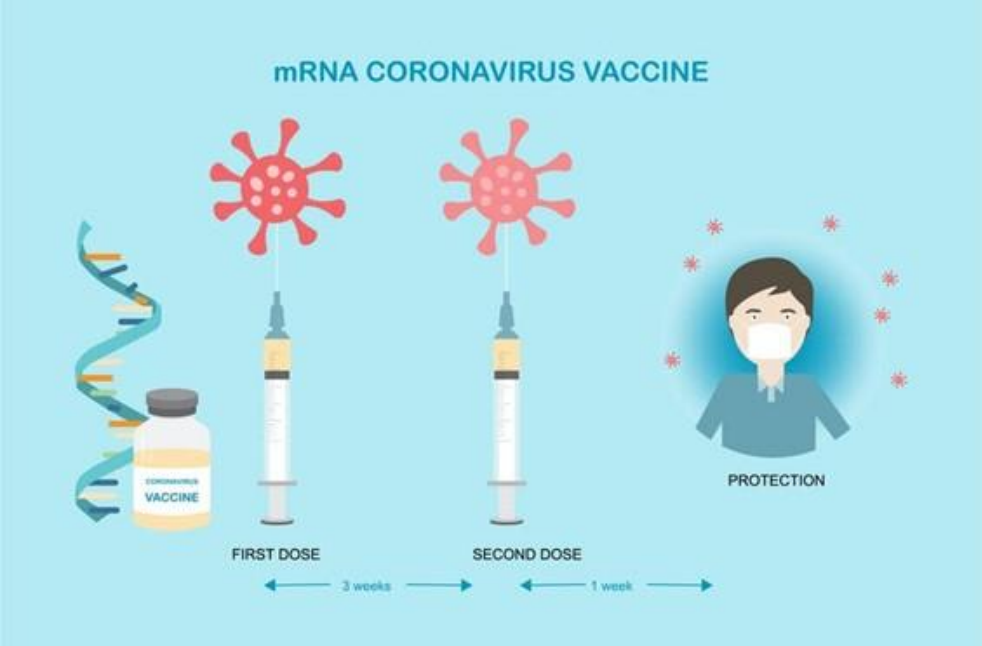
The agency said that the vaccine was found to be effective across race, age, and ethnicity, and that its analyses found no safety concerns in subgroups by race, age, ethnicity, or people with pre-existing conditions.

Side effects were common, however, especially in younger people, the analysis found. The most common complaint was fatigue, followed by pain, redness and/or swelling at the injection site. Other side effects include headache, chills, muscle and joint pain.

How does the Pfizer-BioNTech Vaccine Work?

It is a messenger Ribonucleic Acid (mRNA) vaccine that trains the immune system to recognize the disease-causing part of a virus. Vaccines traditionally contain either weakened viruses or purified signature proteins of the virus. But an mRNA vaccine is different, because rather than having the viral protein injected, a person receives genetic material – mRNA – that encodes the viral protein. When these genetic instructions are injected into the upper arm, the muscle cells translate them to make the viral protein directly in the body.

This approach mimics what the SARS-CoV-2 does in nature – but the vaccine mRNA codes only for the critical fragment of the viral protein. This gives the immune system a preview of what the real virus looks like without causing disease. This preview gives the immune system time to design powerful antibodies that can neutralize the real virus if the individual is ever infected.



While this synthetic mRNA is genetic material, it cannot be transmitted to the next generation. After an mRNA injection, this molecule guides the protein production inside the muscle cells, which reaches peak levels for 24 to 48 hours and can last for a few more days.

Logistics Issues with the Pfizer-BioNTech Vaccine

Two large facilities equipped with hundreds of large freezers in Kalamazoo, Michigan, and Puurs, Belgium, will be the centers of the huge effort to ship the coronavirus vaccine, developed by US drug giant Pfizer and German biotech firm BioNTech, around the world.

Pfizer's Covid-19 production site in Puurs, Belgium, has hundreds of large freezers in which to store the vaccine before shipment.

Other "freezer farms" in Pleasant Prairie, Wisconsin, and in Karlsruhe, Germany, are on standby to provide extra storage capacity. From these storage facilities, the vaccine will be transported in suitcase-sized storage boxes packed with dry ice (solid carbon dioxide) that have been specially designed by Pfizer. Each reusable box can hold between 1,000 and 5,000 doses at ultra-cold temperatures for up to 10 days. Pfizer said its vaccine can be kept for up to five days at fridge temperatures of 2-8C.

Governments are scrambling to prepare for the rollout of the vaccine, which must be stored at -70C (-94F), after the announcement from the two companies that it was 95% effective and had no serious side-effects. The news sparked hopes of a return to normal life and a stock market rally, but now minds are turning to the practicalities of getting the vaccine quickly to populations across the world, especially to the vulnerable people who need it most.

The logistics companies UPS, FedEx and DHL are also getting ready to handle vaccines that need cold storage. UPS has built two freezer farms, one in the Netherlands and one in the US to house a total of 600 deep-freezers that can each hold 48,000 vials of vaccine at temperatures as low as -80C. DHL has also opened a new cold facility, in Indianapolis, and FedEx has been adding freezers and refrigerated trucks.

There will be 100 million doses going to the US, 200 million to the EU and 40 million to the UK. Countries in South America and the Asia-Pacific region have also preordered the vaccine. The companies expect to produce globally up to 50 million vaccine doses in 2020 and up to 1.3 billion doses by the end of 2021.

NEWS FLASH!!! NEWS FLASH!!! NEWS FLASH!!!

Canada's health regulator approved Pfizer's COVID-19 vaccine on Wednesday, 9 December 2020, days ahead of possible approval in the United States, and said it hopes to start giving the shots next week.

Canada is set to receive up to 249,000 doses this month and officials expect to start to administer 30,000 doses soon after an initial batch is shipped from Belgium on Friday, 11 December.

US firm Moderna COVID-19 Vaccine

Moderna says it will apply to regulators in the US in the coming days. It expects to have 20 million doses available in late December 2020. The company hopes to have up to one billion doses available for use around the world next year and is planning to seek approval in other countries too.

Phase 3 testing trial involved 30,000 people in the US with half being given two doses of the vaccine, four weeks apart. The rest had dummy injections. Only five of the COCID-19 cases were in people given the vaccine, 90 were in those given the dummy treatment. The company says the vaccine is protecting 94.5% of people. Short lived fatigue, headache and muscle pain were reported after the injection in some patients.

How does Moderna compare to the Pfizer vaccine?

Both vaccines use the same approach of injecting part of the virus's genetic code in order to provoke an immune response. Protection for both vaccines is around 95%. Moderna's vaccine appears to be easier to store as it remains stable at minus 20C for up to six months and can be kept in a standard fridge for up to a month. Pfizer's vaccine needs ultra-cold storage at around minus 75C and it can be kept in the fridge for only five days.

British Pharmaceutical AstraZeneca

The first full peer-reviewed results of phase 3 trials of the COVID-19 vaccine developed by AstraZeneca in partnership with Oxford University show that it is safe and up to 90% effective in preventing infection, supporting regulatory submissions for emergency use.

British pharmaceutical giant AstraZeneca said Friday, 11 December 2020 that it would soon start working with Russia's Gamaleya Institute to investigate whether their two coronavirus vaccine candidates could be successfully combined. The announcement comes shortly after the developers of the Sputnik V Covid-19 vaccine approached AstraZeneca via Twitter late last month to ask whether they should try combining the two common cold virus-based vaccines to boost efficacy.

Other Vaccines that are in Phase 3 Testing

Johnson & Johnson of the US, France's Sanofi and the UK drug maker GlaxoSmithKline. These vaccines are expected to be stored and shipped in an unfrozen state. They all should be ready early next year (2021).

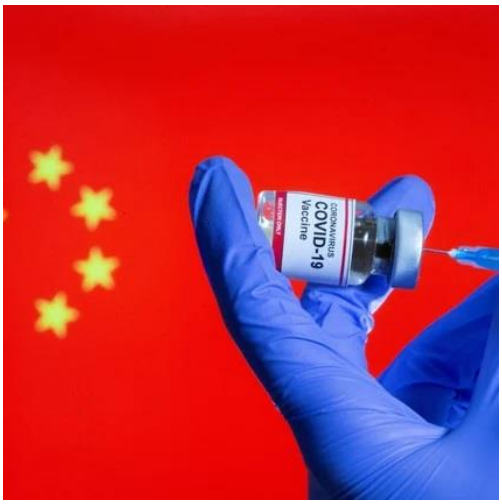
Russia COVID-19 Vaccine

Russia has started its Covid-19 vaccination program with clinics in the capital Moscow inoculating those most at risk from the virus. Its own vaccine Sputnik V, which was registered in August, is being used. Developers say it is 95% effective and causes no major side effects, but it is still undergoing mass testing.

Russia's Sputnik V COVID-19 Vaccine

Thousands of people have already registered to get the first of two shots, but it is unclear how much Russia can manufacture. Producers are expected to only make two million doses of the vaccine by the end of 2020.

China COVID-19 Vaccines



China currently has five coronavirus candidates from four companies which have reached phase 3 clinical trials. Having largely eliminated the spread of coronavirus inside its borders, Chinese drug makers had to look abroad for places to test the efficacy of their vaccines. Together, they have rolled out phase 3 trials in at least 16 countries.

In exchange, many of the host countries have been promised early access to the successful vaccines -- and in some cases, the technology know-how to manufacture them locally. A United Arab Emirates (UAE) drug company in partnership with China's Sinopharm has previously said it hopes to produce between 75 and 100 million doses of the Chinese Sinopharm Covid-19 vaccine next year.

China's Sinopharm vaccine has 86% efficacy against Covid-19 and has been approved for use in the United Arab Emirates

NEWS FLASH!!! NEWS FLASH!!! NEWS FLASH!!!

Here is the NEWS FLASH all Americans have been waiting for. There is now a COVID-19 vaccine for the United States!

US allows emergency COVID-19 vaccine in bid to end pandemic

The US Food and Drug Administration's authorization of the Pfizer-BioNTech Vaccine on Friday, 11 December 2020, following its record-setting swift development, sets the stage for administration of inoculations to begin within a day or two.

The decision clears use of the vaccine shots in people 16 years and older, including the elderly.

President Trump, in a video posted on Twitter Friday night, called the vaccine a "medical miracle." "This is one of the greatest scientific accomplishments in history," he said, speaking from the Oval Office. "It will save millions of lives and soon end the pandemic once and for all." The president said the vaccine is safe and would be free for all Americans.

The FDA's first green light for a Covid-19 vaccine comes little more than a week after a similar authorization in the U.K. It follows a 44,000-person study, which found that the shot was 95% effective at preventing symptomatic Covid-19 and was generally safe.

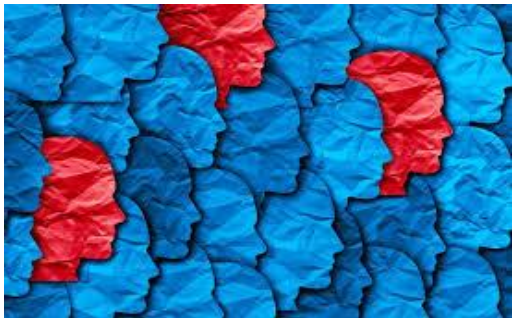
Now, the US begins its largest vaccination campaign ever, bringing together governments, small and big hospitals, as well as retail pharmacy chains with the goal of vaccinating hundreds of millions of people swiftly.

The daunting task will include distributing a vaccine that must be stored at extremely cold temperatures, and since inoculation requires two doses three weeks apart, the challenge of ensuring people return for a booster shot. It also means convincing the large numbers of Americans hesitant to get vaccinated that the shot is safe to take.

Initial supplies will be limited. Pfizer plans to distribute about 25 million doses in the US by the end of the year, potentially enough for 12.5 million people because the vaccine requires two doses. The people first in line will have to wait at least until Monday to get vaccinated, because the shots must be shipped to hospitals and other sites. Most Americans won't be able to get vaccinated before spring or summer, because Pfizer needs time to make enough doses.

If enough people eventually take the shots, schools, businesses, and restaurants could start fully reopening. A vaccine's impact comes not only if it is effective in an individual but also if it is widely taken.

What is herd immunity?



Herd immunity refers to the situation when enough members of a population, or "herd," develop immunity to a pathogen (coronavirus in this case) to prevent further outbreaks. But not all infectious diseases can be controlled through herd immunity. Success depends on two factors:

- **The percentage of the population that must develop immunity before the disease is controlled. This percentage is somewhere around 70%.**
- **How long immunity lasts.**

In announcing the authorization, the FDA cautioned that the vaccine may not protect everyone who gets it. The agency also said doctors and nurses administering the shot should keep on hand treatments for managing immediate allergic reactions. The FDA also said the vaccine might not be as strong in people with compromised immune systems, including those taking drugs that weaken the immune system.

Vaccines typically take years to create, test and bring to market. Pfizer and BioNTech were among dozens of drug makers that raced into action. Not far behind are Moderna Inc., which has a vaccine on track for FDA authorization in as little as a week, and several other drug makers with candidates in the later stages of development and/or testing.

The development and authorization of Pfizer-BioNTech's vaccine advanced faster than any vaccine has ever progressed in the West, in less than a year. A mumps vaccine previously had been the fastest to market, taking about four years.

Pfizer-BioNTech moved quickly by turning to a promising but unproved gene-based technology, known as messenger RNA after the molecules that carry to cells DNA's instructions for making proteins. Moderna's vaccine also employs mRNA technology.

Given the urgent need for a vaccine, the FDA made its decision within weeks, a fraction of the months it normally takes to consider an application. Technically, the agency granted a temporary clearance, known as an authorization for emergency use. The FDA said it still held the vaccine to the high standards it would have demanded if there wasn't a pandemic.

The US government placed an initial order for 100 million doses of the Pfizer-BioNTech vaccine for nearly $2 billion, with the option to purchase 500 million additional doses. Pfizer has been producing vaccine at plants in Belgium and Michigan. To prepare for distributing the doses, the company shipped about 750,000 vaccines from its Belgium plant to the US

The federal government decides how much of the vaccine supplies states will get, based on the size of their populations. States and other jurisdictions will initially get 2.9 million doses from Pfizer, with an additional 2.9 million following three weeks later for the second dose. Weekly shipments of doses would follow.

State governments and health agencies will determine where the millions of vaccine shots will be delivered, and who should get vaccinated first. Hospitals, health clinics and certain public-health locations will serve as vaccination sites initially. Pharmacies will be able to give inoculations as more doses are made available and more people are able to get access.

The US Centers for Disease Control and Prevention recommended the nation's 21 million health-care workers and three million nursing-home and other long-term care residents be the first to receive any Covid-19 vaccine doses. However, states don't have to follow the CDC's guidelines.

CVS Health Corp. and Walgreens Boots Alliance Inc. pharmacies will deliver and administer most vaccine doses for the nation's approximately 15,600 nursing homes and 29,000 assisted-living communities once states give the go-ahead.

Health authorities don't expect there will be enough supply to vaccinate the broader, general population until spring or summer next year. By then, vaccines from AstraZeneca, Johnson & Johnson and other companies should be cleared and able to augment supplies.

How soon vaccinations with the initial supplies will start is unclear. Once a vaccine gets to a hospital, it could start administering shots within hours, vaccine experts say, though it could also take days as hospital workers learn how to handle the containers storing the shots at ultracold temperatures.

A big challenge is persuading millions of people to get vaccinated. Surveys have found large percentages of people in the US, many of whom are in high-risk categories, are hesitant to get vaccinated, partly out of concern development of the vaccine was rushed. The FDA, government and industry officials have made statements seeking to ease any concerns about taking the vaccine.

Distribution of the COVID-19 vaccine begins on Sunday, 13 December 2020

Trucks departed the Pfizer plant in Portage, Michigan, Sunday morning with the first batches of the company's long-awaited Covid-19 vaccine, on their way to 636 predetermined locations.

Pfizer is expected to deliver an estimated 2.9 million doses this week via UPS and FedEx, Gen. Gustave Perna, chief operating officer of Operation Warp Speed, said Saturday. The vaccines leaving Portage — a city just south of Kalamazoo — have US marshal protection to ensure they arrive safely at the hospital systems selected to receive the doses, some as early as Monday.

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First COVID-19 vaccine given in US as roll-out begins

Sandra Lindsay, a nurse at Long Island Jewish Medical Center, received the vaccine live on camera. Footage was streamed on the Twitter feed of New York Governor Andrew Cuomo, whose state was the epicenter of the US epidemic in the first wave earlier this year.

State of Hawaii COVID-19 Vaccination Plan

NEWS FLASH!!! NEWS FLASH!!! NEWS FLASH!!!

The Pfizer-BioNTech Vaccine arrived in Hawaii on 14 December 2020. Hawaii healthcare workers could get vaccine shots in the arm as early as Tuesday, 15 December 2020. The vaccine shipments were distributed to the Queen's Medical Center and other medical facilities.

As hospitals prepare for COVID vaccine shipments, the state has prepared a distribution plan. The state expects 81,000 thousand people to receive COVID-19 vaccinations by the end of the month, including health care workers, staff, and patients in long-term care facilities, and first responders.

With a major hurdle cleared today toward the FDA's emergency approval of the Pfizer vaccine, Hawaii hospitals are expecting to get shipments on Monday. Healthcare workers would then get vaccine shots in arms starting Tuesday or Wednesday.

Tripler Army Medical Center is one of 16 locations chosen by the Defense Department as initial COVID-19 vaccination sites for the military.

Queen's Medical Center - Honolulu

Kaiser Permanente Moanalua Medical Center

Queen's Medical Center and Kaiser Permanente hospital executives say they're ready to give frontline workers the COVID-19 vaccine, but are those employees ready? Most healthcare workers are willing to get the coronavirus vaccine, but some have reservations about being the first ones. With hospitals expecting the first shipment of vaccines as early as Monday, 14 December 2020, the biggest challenge now is overcoming that hesitation.

Lt. Governor Green says that Hawaii's immunization will be broken up into three phases:

- **The first phase is for healthcare workers, long-term care homes, first responders, and essential workers, including teachers.**
- **The second phase is other vulnerable populations, like those with chronic health issues and the elderly. Green said this group will likely get inoculated around February or March.**
- **The third phase is the general population, which won't be until early summer.**

"Each time we get another group vaccinated, we're that much safer," Green said. "But in society, we don't get full herd immunity until we get over 70% of all people immune."

To be considered immune, you need to get the COVID-19 disease or the vaccine or both.

A final comment

I plan to get the vaccine shot as soon as possible. I think I fall into the second phase with people at least 80 years old. So, I should get my shot in February or March.

Bigdrifter44@gmail.com

Bigdrifter.com