Do I REALLY need another COVID shot?

PRESENTED BY: LEONARD H. KANTERMAN, MD

(With a detour into the world of Viruses and Vaccines)

(INCLUDING RSV)

Curriculum Vitae

(Why I am qualified to teach this class!)

B.A. Bucknell University, Lewisburg PA 1973

M.D. SUNY Downstate Medical Center Brooklyn NY 1977

Internship and Residency Internal Medicine, Walter Reed Army Medical Center, Washington DC 1977-1980

Board Certified Internal Medicine 1980

Internal Medicine, Fort Riley KS 1980-1984

Internal Medicine, Warren OH 1984-2013

Chairman, Medical Ethics Committee, Trumbull Memorial Hospital, ~10 years

What is COVID-19

- COVID-19 = Corona Virus Infectious Disease (20)19
- Corona viruses have been around for a long time
- They are part of a family of respiratory viruses related to the common cold virus
- They like to live in the lining tissue of people's mouths and noses, in a warm and moist environment
- They spread generally through the air, from the mouth and nose of an infected person to an uninfected person
- They mutate spontaneously, sometimes to forms that are much more contagious and can make people much sicker.
- Mutations help the virus survive by avoiding the body's existing immune defenses. That's why the "original" vaccine doesn't work forever and boosters may be needed.

What is a Virus?

- A virus is an INCOMPLETE living organism. It lacks the ability to sustain itself or reproduce independently.
- Viruses consist of genetic material (DNA or RNA) and a protein coat, that protects the viral dna and helps it get into the cells it needs to invade. And pretty much NOTHING else.
- To sustain, reproduce, and thrive, a virus MUST invade a host cell.
- The virus then "hijacks" the cell's machinery so IT takes over, using the host cell's mechanisms for its own purposes.

Why are Viruses so hard to treat?

- Viral illnesses are very hard to treat. HIV-AIDS is a good example of a viral disease, treatment controls or suppresses infection, and can reduce transmission, but it never really "goes away" completely. And if you recall, it took many, many years to develop truly effective treatment.
- Viruses are hard to treat because they "hide" inside our own cells. To kill the virus, the medicine has to get into our own cells and attack the virus without hurting our own cells. This is a REALLY tall order.
- "Regular" antibiotics (like penicillin) are completely ineffective against viruses.
- Anti-viral medicines are of limited usefulness. (When I was in practice, I used to say this about anti-flu drugs: if you take the drugs, you will get better in 7 days. If you don't take them and only treat the symptoms, you will get better in a week!)

The case for vaccines

- Since viruses are so hard to treat once you catch them, the emphasis has changed to vaccines.
- Vaccines are designed to protect people who have not yet gotten sick from a virus from EVER getting sick.

The Immune System (How vaccines work)

- Our body has an immune system to fight off foreign invaders (like viruses but also bacteria and other threats), to combat illness and make us better.
- The immune system has a "memory" component. It REMEMBERS infections you have already had and, if you get exposed to the same (or a very similar) illness again, it goes into high gear to prevent you from getting sick again.
- A vaccine is an injection of foreign material designed to expose the immune system to a potential invader. The vaccine "turns on" the immune system response AS IF it were an infection. The immune system will "remember" the exposure and, if you then get exposed to the "real thing", you have active protection to fight it off.

Some Vaccines Now Available

Measles
Pertussis (Whooping Cough)
Tetanus
Shingles (Zoster)
Polio
Hemophilus
Yellow Fever
Mumps
Diptheria
Pneumonia
Human Papilloma Virus
Smallpox
Hepatitis A & B
Rubella (German Measles)
RSV
Meningitis
Influenza (flu)
Cholera

Why vaccines are safe

- Vaccines do NOT contain the entire organism that would make you sick. They either contain FRAGMENTS of the organism, designed to provoke the immune system response WITHOUT making you sick; or MODIFIED organisms that look like and act like the ones that would make you sick but can't actually make you sick, except for some hopefully minor side effects.
- Vaccines are extensively tested, starting with very small groups and proceeding to much larger groups, to make sure they are BOTH safe AND effective at preventing diseases.

The positive results of vaccination

- Some of these illnesses, like smallpox and polio, have become virtually extinct in nature due to the widespread use of vaccines.
- Many other illnesses, like measles, mumps, diptheria, and pertussis, are now extremely rare among vaccinated people, so outbreaks are unusual and generally seen ONLY in people who have refused vaccination (or in many cases, prevented their children from being vaccinated).
- Many other illnesses, like influenza and shingles, are much milder in people who get vaccinated even if they do get sick. For example, the risk of getting pneumonia or being hospitalized is 60-70% reduced if you get the flu shot and get the flu anyway.

Side Effects and Rare Complications of Vaccines

Every vaccine can produce SOME side effects. After all, you are being injected with a foreign material either from or related to something that can make you sick and are DESIGNED to provoke your immune system, so you have "memory protection".

Most of the side effects are mild and limited in both severity and duration.

Some vaccines have more serious side effects that tend to be relatively rare. If the vaccine was studied in a group of 50,000 people, and a rare but serious side effect happens in 1 out of a million, you won't detect it until the vaccine has been given to millions. This is what happened with the JNJ COVID vaccine and blood clots.

Guillian Barre Syndrome and Flu Shots

Guillian Barre (GBS) is a rare neurologic condition that causes numbness, tingling, and sometimes paralysis. It can occur after a variety of infections, and affects 5-10,000 people a year. Most recover completely, although death can rarely occur with respiratory paralysis.

In 1976, with the swine flu epidemic and vaccine, there was an increase in the occurrence of GBS, about 1 out of every 100,000 who got the vaccine.

With the "regular" annual flu shot, there is about 1-2 cases of GBS for every 1 million vaccines given.

Bottom line: while serious complications from vaccines CAN happen, they are rare, and MUCH lower than the risks of serious illness or death if you don't get the vaccine and get sick from the disease.

The Smallpox Story: The First "Vaccine"

- In the 1700s in Europe, smallpox was a devastating disease. It was highly contagious and had a mortality (killed) about 30-35% of people that got it.
- If you got smallpox and survived, many people developed small scars ("pox") where the infection had been, especially on the face.
- People started noticing, especially in England, that milkmaids had wonderful, clear complexions. Very few milkmaids ever got smallpox.
- Cows had a disease called cowpox(variola) that also caused skin scarring (on the cow). Someone figured out, maybe the milkmaids are exposed to cowpox while they milk the cows and are then protected against smallpox.

From Variola to Vaccine

- In China and India, in the 1500s, doctors figured out that, by taking skin scabs from infected smallpox patients and scraping them into the skin on uninfected people, they could be protected against smallpox. However, 1-2% of people who were given this treatment died from smallpox they got from this treatment. It was better than 25-35% mortality from the disease but not great.
- By the 1700s, doctors figured out that, by taking skin samples from cows with cowpox and doing the same scraping into people's skin, they could protect them from smallpox. The risk of dying from cowpox scrapings was only 1 in 1000, still not perfect but a lot better. This was called "Variolation", after Variola (cowpox).

Edward Jenner and the First "Vaccine"

- In England, by 1796, a physician named Edward Jenner studied the process of variolation (using cowpox), published a scientific paper proving its effectiveness, and popularized the spread of this technique.
- Jenner called the process "vaccination", after the Latin word for "cow", "vacca".
- By the 1940s and 1950s, vaccine preservation techniques improved to where smallpox was largely eradicated in wealthier countries.
- Smallpox remained a worldwide problem with sporadic outbreaks, mostly in poor, 3rd World countries, until the 1960s. A worldwide vaccine effort in the 1970s eliminated smallpox as a disease. The last recorded natural case of smallpox in the world was in 1978. Smallpox has existed only in research laboratories since the 1980s. So, a great example of how vaccines can work against viral illness!

Why was COVID so bad?

- Several factors combined to make COVID so much worse than the "regular" flu.
- It was extremely contagious. And many infected people had NO symptoms, and could spread it to others without even knowing they had it.
- It made some people very, very sick, with severe respiratory illness that could lead to respiratory failure, the need for a mechanical ventilator, and death.

COVID: 2020 vs 2024

- COVID was much, much more lethal than regular flu, especially for certain populations, especially in the pre-vaccine era
- In 2020, the first year of COVID, there were >500,000 deaths. In 2023, there were about 50,000 COVID deaths, and 90% of those were in people over 65.
- The death rate from influenza (the flu) has remained stable for many years, between 25 - 50,000. So, in 2024, the risk of dying from COVID is about the same as dying from the flu.
- The risk of death from COVID was 1% or less below age 40 and doubled every decade, to over 8% at age 70. And certain health conditions like being overweight increased that risk. (The risk of death from "regular" flu is under 1%.)

Is Covid still a serious threat in 2024?

- About 60-65% percent of the US has had SOME Covid vaccination.
- Over 90-95% have had EITHER a vaccine, a case of Covid, or both. So they have at least SOME immunity protection.
- Because so many have SOME immunity, Covid is much less lethal than it was at first.
- SOME people are still getting very sick, and even dying, from Covid. Most of those are either unvaccinated, unboostered, or very frail and elderly.
- The risk of dying from Covid NOW, while much lower than at first, is still very much age related.
- The data for serious illness, hospitalization, and respirator use parallel the death risk. I am just going to focus on death risks.

Age and risk of Covid death

- As of June 2023, there had been 1.1 million total Covid deaths in the US.
- 1 million of those were in people over age 50; only about 100,000 were under age 50.
- For every decade above age 50, risk of dying got higher, although there was little difference between over 70 and over 80.
- January 2021 (just before vaccine), 26,000 weekly US Covid deaths.
- December 2023: 1600 weekly US deaths from Covid. So the death rate has declined by 94% since the first vaccines.

Vaccine status, age, and Covid death risk

- January 2022: (peak)
- risk of dying (all ages) is 33/100,000/week for unvaccinated; 3/100,000/week vaccinated – 90% LOWER!

- April 2023
- Risk of dying (all ages) 0.6/100,000/week unvaccinated; Overall rate has declined by 98%.
- 0.3/1000,00/week vaccinated. Vaccinated risk still 50% lower.

Vaccine status, age, and risk of death

Average weekly Covid deaths per 100,000 in the U.S.

From the weeks of Oct. 1, 2022 to April 1, 2023

	Unvaccinated	Vaccinated	Boosted
All	**2.5**	0.6	0.3
BY AGE			
80 years and older	**24.6**	7.2	3.9
65 to 79	**8.9**	1.3	0.6
50 to 64	**1.06**	0.24	0.15
30 to 49	**0.18**	0.04	0.02
18 to 29	**0.04**	0.01	0.01
12 to 17	**0.02**	0	0
5 to 11	**0**	0	0
6 months to 4 years old	**0.02**	0.01	0

So, do I still need a Covid booster?

- Since Covid continues to evolve and mutate into new forms, which the OLD shots don't fully protect against, boosters may be necessary.
- The VALUE of boosters varies greatly with age. The death rate for people under 50 is so low, the extra protection from a booster may not be necessary.
- Since the death rate, while much lower than its peak, is still much higher for people over 65, and especially over 80, a booster dose still helps lower that risk by at least 50%.
- This is why Medicare has recommended, and pays for, booster doses for seniors over 65.

From the professional to the personal: Why I joined the COVID vaccine trial

- When COVID first hit the US in the spring of 2020, there was great concern the healthcare system would be overwhelmed and there wouldn't be enough doctors and nurses to take care of sick people in the hospital.
- An appeal was made for retired doctors to consider going back to work. It was even stated that the medical board would make re-activating an expired license easy.
- I had retired from medicine in 2013, and, for the first time since I had retired, I considered (for about 15 minutes) going back to work.
- I quickly realized that at my age (67), the risk of illness to myself and my family would be too great to accept.

Could I still do something helpful?

- I knew that, for a highly contagious and potentially lethal respiratory virus, the only viable long term solution would be a vaccine.
- I knew that, for a vaccine to be released for general use, extensive studies with thousands of patients would be needed to insure that the vaccines were BOTH safe and effective.
- There are 3 phases of clinical trials. Phase 1, the vaccine is given to a few dozen to a few hundred people to make sure it won't hurt them. Phase 2, the vaccine is given to a few thousand people to see if it works. And Phase 3, the vaccine is given to tens of thousands to make as sure as possible to see if it is safe and effective ENOUGH to vaccinate millions.

The risks of a vaccine trial

- Once the vaccine has been given in Phase 2 to a few thousand people, the likelihood that something very serious would occur as a side effect or complication was pretty low.
- However, as we now have seen with the JNJ vaccine, very rare but serious complications like blood clots that happen to 1 in a million can be missed when the vaccine is given to, say, only 50,000 people.
- So while I felt the risks of participating were low, I knew they were not zero.
- In a placebo controlled, double blind study, half the people get the "real deal" and half get a placebo (salt water) shot.
- I felt the 50-50 chance of getting the "real" vaccine 6 months before anybody else was worth the very small risk of a serious reaction. And if I got the placebo, I was no worse off than I would have been anyway.

Did I have side effects from the vaccine?

- When you are in a trial, they do not tell you whether you have been given the "real deal" or the placebo, as they do not want to bias the information you give them.
- However, the (mild) side effects I had convinced me I had been given the real vaccine.
- About 32-36 hours after each shot (of 2), I had an episode where I had chills, a headache, felt achy all over, and felt very, very tired. I took a couple of Tylenol and took a nap for an hour or so and felt better.
- The 2nd shot's episode was slightly more intense than the first shot.
- After the 2nd shot, I had such a sore arm for about 3 or 4 days that I said, "Either I got the real vaccine or the person who gave me the shot is the worst shot giver in the world!"

What about RSV?

- RSV (Respiratory Synctial Virus) is a common virus that has been around for a long time. It causes upper respiratory symptoms, bronchitis, and pneumonia.
- RSV is usually a very mild illness, but can be severe in toddlers under 2 or older adults, especially "frailer" adults with heart, lung, or immune problems.
- The death rate from RSV is about 10-15,000 a year, as compared to COVID or influenza (~50,000 deaths a year).

Should I get the RSV vaccine

- RSV vaccine was developed and released in 2023.
- Because so many RSV infections are very mild, the CDC came out with what I would call a "lukewarm" recommendation for seniors. ("Get it if you have underlying conditions and may be at risk".)
- Due to the CDC's recommendation, Medicare decided to pay for seniors to get RSV.
- The CDC's recommendation was just modified in July 2024. The new guidelines: Take if over 75, or if you are between 60 and 75 and have serious underlying illness.

Questions?
Thank you for your time!