COVID-19 vaccine hesitancy: Understandable and irrational

April 27 2021, by Marie McCullough

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Life is all about taking calculated risks that are worth the benefits.

For example, motor vehicle accidents are so common and often deadly (about 50,000 fatalities a year) that by law, drivers must have car insurance for financial protection. Even so, most people don't fret about the chance of crashing when they hop in the car because rapid,

convenient transportation is essential to modern life.

Some risks are counterintuitive. For example, prostate cancer screening was touted as lifesaving—until it became clear that many men were risking urinary and sexual dysfunction to treat insignificant malignancies detected with PSA testing.

There are also risks that are remote and vastly outweighed by the rewards, but lots of people don't see it that way.

Yes, we're talking about COVID-19 vaccination.

The pandemic has claimed about 570,000 lives in the U.S., or nearly 1 in every 600 people. Untold millions who have recovered from COVID-19, including those not sick enough to be hospitalized, are suffering physical, psychiatric, and neurological aftereffects, as well as an increased risk of death. Public health officials worldwide agree the only way to turn this awful tide is with vaccination.

Yet surveys show big swaths of the American public are reluctant or flat out refuse to get one of the three authorized vaccines, even though the shots are way more effective and safer than public health experts dared hope a year ago.

Some of the resistance is political; 40% of Republicans have consistently told pollsters they do not plan to be vaccinated. But lots of other factors, including mistaken beliefs and gut feelings, also play a role. Consider that nearly half of frontline health care workers—people who have seen COVID-19 devastation firsthand—haven't yet been vaccinated.

"It's a classic example of human irrationality about risk," New York Times columnist David Leonhardt wrote this past week. "We often underestimate large, chronic dangers, like car crashes or chemical

pollution, and fixate on tiny but salient risks, like plane crashes or shark attacks."

Philadelphia pediatrician Robert Selig sees willful ignorance behind some opt-outs. A 25-year-old patient whom Selig has known since birth declared he wasn't getting vaccinated because he was at low risk of severe COVID-19 and heard that the mRNA vaccines could damage his genes—an internet canard that has been wholly debunked.

"I wanted to say, 'That's ridiculous,' " recalled Selig, head of Andorra Pediatrics. "I tried to explain the importance—that it's not only about him getting the virus, but him spreading it to someone who might get sicker. I was surprised to hear someone his age and intelligence talking that way."

Historical chronicles show that vaccine skepticism is as old as vaccines. The initial smallpox vaccine—made with pus from a cowpox blister—was both hailed and reviled in the late 1700s.

The first polio vaccine, introduced in 1954, was an exception to this pattern of ambivalence because parents were desperate to protect their infants and children from the paralyzing, deadly disease. But even that quantum leap forward soon stoked distrust. A defective batch of vaccine caused 40,000 cases of polio, forcing officials to suspend mass vaccination programs.

All things considered, hesitancy over COVID-19 vaccination is understandable. The immunizations are new, the coronavirus is mutating to evade them, and no medical interventions are perfect.

But understandable is not the same as reasonable, given the devastating human, economic, and emotional toll of the pandemic.

As good as it gets

In December, U.S. regulators authorized the Pfizer-BioNTech and Moderna two-shot regimens, both of which use mRNA technology. (The Johnson & Johnson vaccine, rolled out just last month, has had a rocky start. More about that later.)

Compared to a placebo, both Pfizer and Moderna vaccines were about 95% effective at warding off COVID-19 in clinical trials. In real world use, the shots have been almost that good, although the emergence of partially resistant strains of the coronavirus has spurred the companies to work on booster shots.

The COVID-19 vaccines are highly effective. Here's what the numbers really mean.About 134 million people—41% of the U.S. population—have rolled up their sleeves for at least one dose, including 87 million who are now fully vaccinated. Worldwide, hundreds of millions of doses have been administered, according to the Centers for Disease Control and Prevention data.

Among senior citizens, two-thirds of whom are fully vaccinated, hospitalizations have plunged by 70% and deaths have tumbled 50% since the year began, CDC data show.

The safety profile, meanwhile, is as good as it gets, unless you consider arm soreness and fatigue to be perilous. True, these two vaccines are novel and new, so regulators worldwide are watching for any hint of harm. But in clinical trials, which enrolled 60,000 volunteers, only five people suffered serious side effects that were deemed possibly caused by the vaccines: Pfizer's shots were linked to a shoulder injury and a case of transient lymph node swelling. Moderna was linked to a case of uncontrollable vomiting and two cases of face swelling in people who had cosmetic facial injections.

Most of the volunteers had mild injection-site pain and at least one temporary body-wide reaction, usually fatigue.

After the vaccines were rolled out, a rare, serious but readily treatable allergic reaction was recognized. A February report in JAMA Network found 66 people had suffered anaphylaxis—a rate of 4.7 cases per million doses for Pfizer, and 2.5 cases per million doses for Moderna. This is why you wait 15 to 30 minutes after the injection, to make sure you don't need a shot of epinephrine.

There is no evidence the vaccines cause infertility, shingles, or sudden death, notwithstanding fearmongering on social media.

Breaking through the breakthrough

"Breakthrough" infection—getting COVID-19 despite vaccination—is very rare, even as resistant strains of coronavirus take hold in the U.S. The CDC this month reported 5,800 breakthrough infections among 75 million fully vaccinated people. Most cases were mild, but 396 people needed hospitalization, including 74 who died. Remember, even these vaccines aren't 100% effective, which is why continued masking and distancing are recommended.

This chance of vaccine failure is frightening and even tragic for those who are affected. But do the math, and you'll see that the risk of dying of COVID-19 after vaccination is .0001%, or about 1 in a million. The CDC estimates you are more likely to get struck by lightning in a year.

In contrast, the CDC estimates that for every million infections among the unvaccinated: 500 people ages 18-49 die; 6,000 people ages 50-64 die, and 90,000 senior citizens die.

The J&J vaccine is slightly less effective than the mRNA vaccines, but

requires just one shot and is easier to store.

About 7.9 million Americans got the shot before federal health authorities "paused" its use two weeks ago because the vaccine surveillance system detected eight cases, one fatal, of a catastrophic blood clotting disorder.

Although that case number was updated to 15 on Friday at a federal vaccine advisory committee meeting, the panel made a recommendation—and the CDC immediately agreed—to resume use of the J&J vaccine, with updated product labeling warning about the clotting disorder. The panel was swayed by CDC models that estimated several thousand COVID-19 hospitalizations and deaths would be prevented, while maybe a score of clotting cases would be caused, for every million people who got the J&J shot.

Selig, the pediatrician, and his wife, Candi, a nurse who works with him, both had COVID-19 in January, before they were able to get vaccinated. His wife is still dealing with an after-effect, a chronic cough. Reluctantly, the couple find themselves on the front line of the fight against vaccine hesitancy.

"It's so hard to argue or reason with people," Selig said. "They have their own ideas that have no scientific basis. We're spending so much time trying to convince people. It's like you're beating your head against the wall."