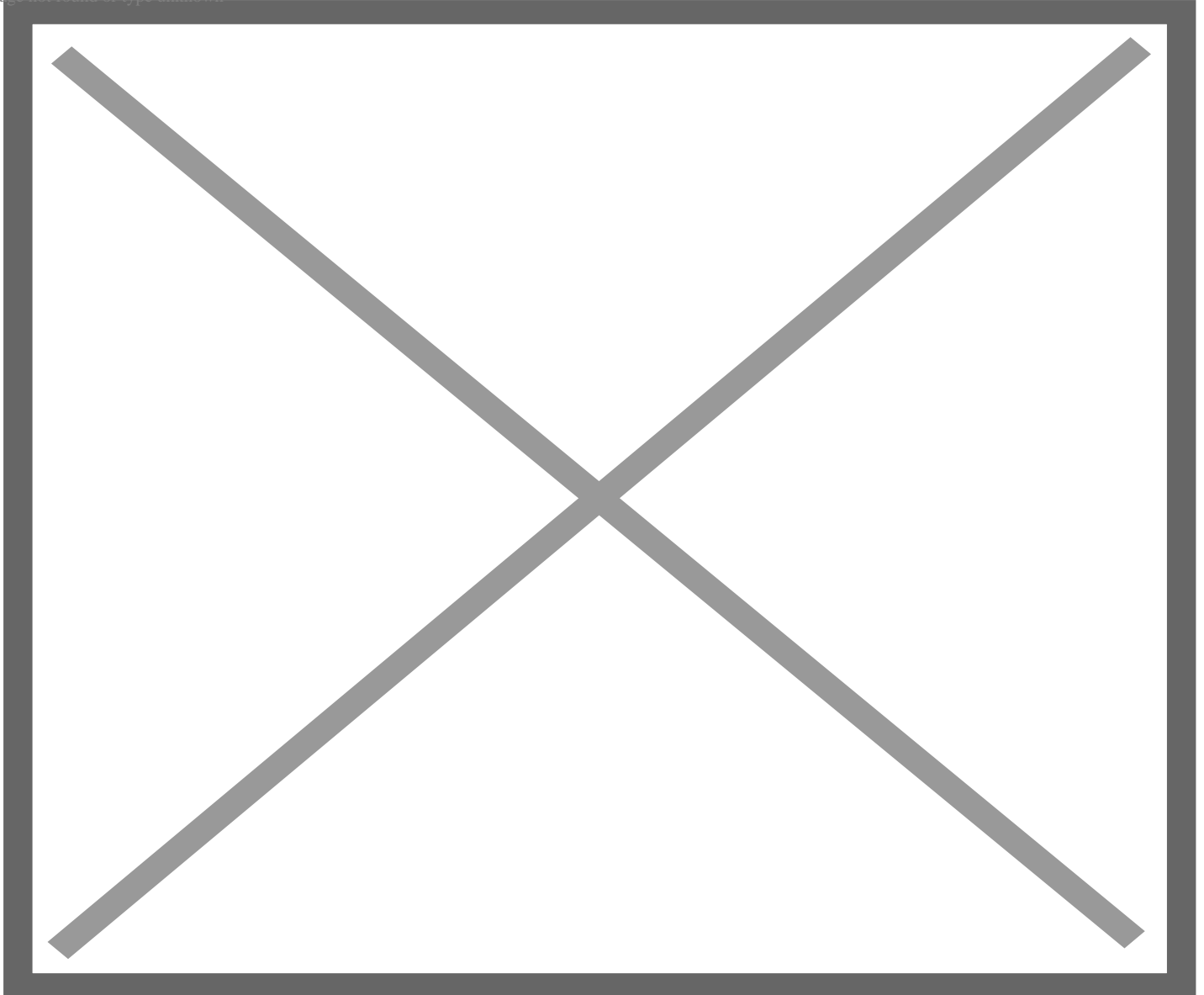


Anxious about getting a COVID vaccine because you don't know what's in it? We know a lot more about it than the safety of hot dogs

“So, you’ve been eatin’ hot dogs and chicken nuggets all your life and you don’t want the vaccine ‘cuz you don’t know what’s in it??” asks a befuddled chicken in a meme.

Actually, plenty of information is out there about “*what’s in it.*”

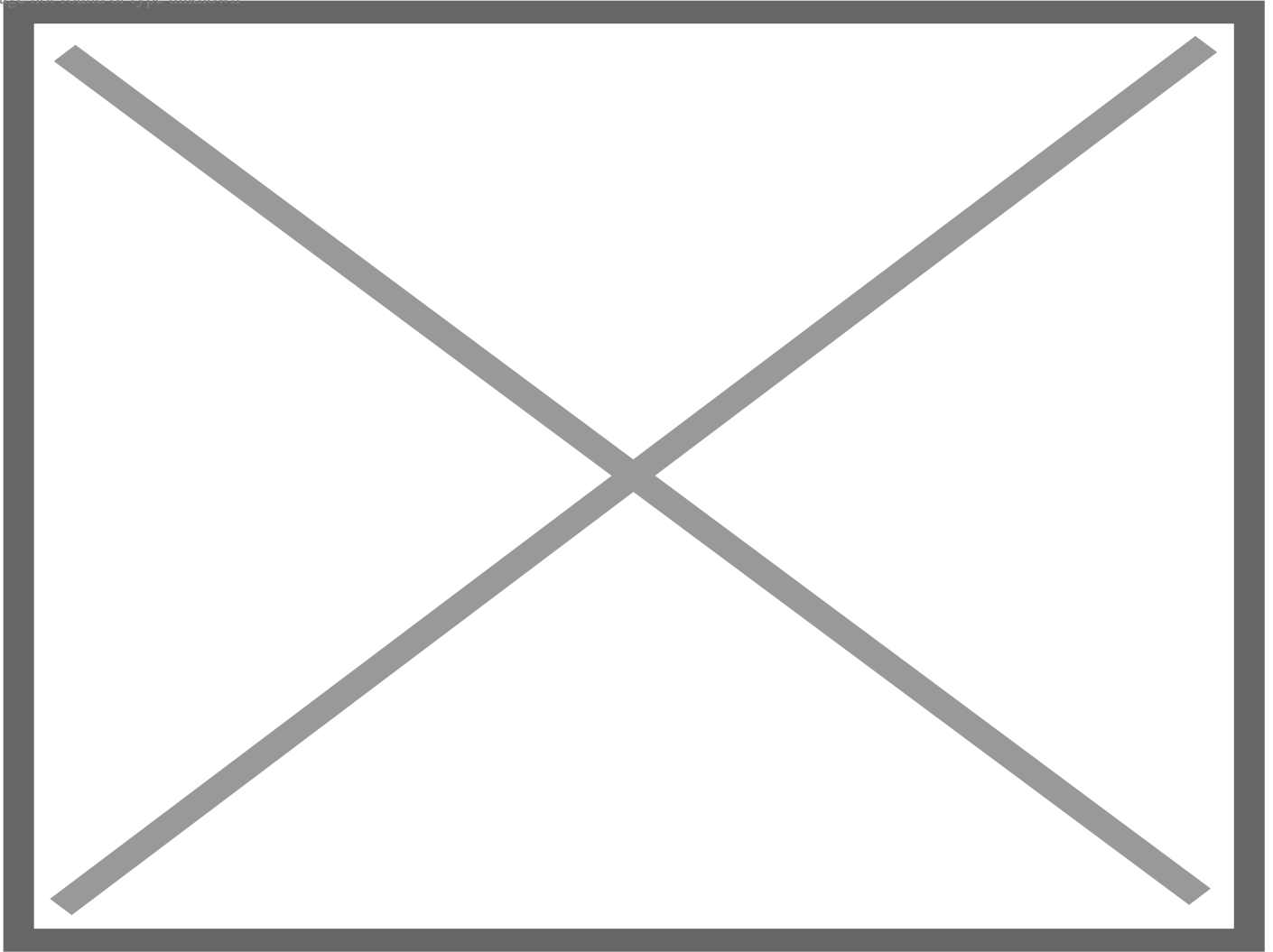
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Upon entering a vaccination center, you're handed a multi-page fact sheet that, among many other things, lists the chemicals about to be plunged into your arm.

The first two COVID vaccines are roughly the same recipe, adjusted for proportions and tiny details: mRNA, 4 fats (including cholesterol), a pinch of sugar, and a few salts. No eggs, preservatives, ricin, or leech nut extract. (See [The First COVID-19 Vaccines: What's mRNA Got to do With it?](#)) Ingredient lists for hot dogs and chicken nuggets are far longer and complex.

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Yet the comparative transparency of vaccine ingredient lists isn't enough to dispel the fear of something new and unfamiliar being jabbed into your body. For many people that fear arises against a backdrop of the history of dishonesty in medicine that has misled and mistreated marginalized groups, as well as the record of unethical clinical trials for some vaccines, notably [influenza](#).

Peppered throughout the vaccine fact sheet, at least for the Pfizer-BioNTech one that I received, are

statements that the product has not been FDA approved, which may surprise some people. Both mRNA vaccines were released under [Emergency Use Authorization](#), which is a stop on the regulatory road to full approval. Along with overlapping clinical trial stages, the EUAs catalyzed the trajectory of the vaccines reaching arms.

Right now, a paradox is unfolding. While many people are frantic to sign up for vaccines, ready to hurl their laptops and phones out the window as appointment slots fill and websites crash, others are hesitant.

Even some healthcare workers, who'd probably know what the chemspeak on the vaccine labels mean, aren't all in for rolling up their sleeves, just yet.

Hesitancy among healthcare workers

A survey of 5,287 healthcare personnel at SUNY Upstate Medical University in Syracuse, from November 23 through December 5, probed attitudes, beliefs, and willingness to get vaccinated. The survey went out a week before the first vaccine EUA. Results appear in [Clinical Infectious Diseases](#).

About a third of registered nurses, allied health professionals, and master's level clinicians reported being unsure about taking the vaccine, while researchers and physicians were more accepting. Concerns included questioning safety and/or efficacy, potential adverse effects, and uneasiness about the speed of vaccine development.

Unexpectedly, clinicians who reported having cared for COVID patients were slightly less likely to want to be vaccinated compared to those who hadn't. But lead author Jana Shaw, MD, MPH, pointed out that the survey didn't address severity of sickness in patients, and therefore may have been skewed towards clinicians treating mild COVID cases. The findings propelled the researchers to better educate their staffs as well as the public about the importance and safety of COVID vaccines.

Other studies echo the hesitancy among healthcare staff. A report from the [CDC](#) revealed that only 37.5% of workers at 11,460 nursing homes were vaccinated, covering mid-December to mid-January.

Intimidation

Worse than hesitancy that affects a single person is spreading misinformation or otherwise discouraging others from being vaccinated. On January 30 at [Dodger stadium](#), 50+ anti-vaccine protesters temporarily shut down a mass vaccination site for about an hour.

The protesters' signs blared *"TURN BACK NOW," "My rights don't end where your fear begins,"* and *"COVID=SCAM,"* while they shouted that the virus isn't real and vaccines are dangerous, according to a dentist waiting on line who spoke with reporters. The dentist wanted the vaccine to protect his patients.



Credit: CNN

Despite the interruption, injections proceeded, and California Governor Gavin Newsom tweeted that night, “we will not be deterred or threatened.”

Countering herd immunity

The consequences of a decision to receive a vaccine or not transcend the personal to the societal.

[\[A recent\] post](#) explained the herd immunity threshold; the percent of a population that must be vaccinated to halt the spread of the infection. The threshold depends on the number of people an infected person infects, which is specific to an infectious disease. The more transmissible the disease, the greater the percentage of the population that must be vaccinated to stop the spread. It's common sense as well as math.

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Herd immunity threshold is a moving target, creeping ever up as new variants barrel into new turf and ease the journeys of viruses propelled in breaths from person to person. The threshold right now is

hovering around 80%. And a reigniting of the embers of the anti-vaccine movement could make the astonishingly fast development of vaccines against the novel coronavirus for naught.

We may never reach herd immunity because of vaccine hesitancy. But it is too soon to give up.

What can we do to counter vaccine hesitancy?

If you agree that people who discourage others from getting vaccines will ultimately hold us all back from returning to normalcy, speak up.

- Post your experiences with the vaccine to social media.
- Learn about old vaccines. They're why we no longer have smallpox, and why kids don't miss school for measles, mumps, rubella, chickenpox, and lots of other infectious ills. (See [Vaccine Memories: From Polio to Autism](#)). But the new vaccines are nothing like those of years past, so ...
- Google "central dogma" to learn about or revisit the connections among DNA, RNA, and proteins – this basis of molecular biology explains most of the COVID vaccines. The central dogma is part of ninth grade biology these days, but those of us a bit older might need a reminder. It is central in the 36 textbook editions I've cranked out. I'm thrilled that people now care about mRNA!
- Assure fretting friends that mRNA vaccines aren't viruses, and they can't enter human cell nuclei and sabotage our DNA. They're just templates that our cells use to mass-produce the spike proteins that alert and mobilize our immune systems to immediately attack viruses in our noses.

From the frenzy to sign up for vaccines, I'm hopeful that the anti-vaccination crowd will shrink enough not to compromise progress towards herd immunity – to protect all of us. I hope that their resistance will be futile.

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