

Questions and Answers with Joshua LaBaer and Ariel Anbar

From Community Conversation webinar on 1/28/21

- 1. One thing I've often wondered a bit is what exactly 95% efficacy means. It compares what two states? Severe illness defined in some way? Or some sort of detectable infection?**

95% is the effectiveness “in preventing symptomatic, laboratory-confirmed COVID-19 among persons without evidence of previous SARS-CoV-2 infection”.

https://www.cdc.gov/mmwr/volumes/69/wr/mm695152e1.htm?s_cid=mm695152e1_w

I think this means that in a controlled study the vaccine group had only 5% the rate of lab-confirmed (PCR test) infection as the control group. But I am not sure what the testing protocols are in those studies - is everyone regularly tested or is testing just done for those who develop symptoms bad enough to want to find out? I can find out.

- 2. All grad students at UA are able to get the vaccine, is something like this being worked on for ASU? Not just for TA's.**

I'm sure it's a goal. Right now supply is a problem. I can't speak to what is happening at UA. We can look into it.

- 3. So far a lot of the focus on “what happens after the vaccine” focuses on the fact that we don't have enough doses to vaccinate enough people, so as a community we will not see cases decline rapidly yet and we will have to maintain social distancing and masking. But what does the vaccine mean for individuals who receive it, in terms of behavior? If you are at-risk, will be safer to resume some activities that have been off-limits? What do I tell my parents, who are 75+, about social distancing and visiting relatives and volunteering, once they have received their vaccine and waited for immunity period to kick in?**

A few things here: First, remember that if it is a two-dose vaccine, you are not immune after the first dose. We have seen cases of folks who relaxed their behavior only to get infected after the first dose. Moreover, getting infected with partial immunity could select for more resistant strains. Second, we know that vaccines prevent serious illness, which was the endpoint used by the clinical trials. But we don't know if they prevent infection per se. There is evidence that they don't. Third, for these reasons, general recommendations are to continue all mitigation methods whenever you are outside your usual personal "family" circle (the folks you live with). Finally, almost certainly everyone who is fully vaccinated (2+ weeks past last dose) is going to want to relax a bit. Without any formal evidence to say this, I personally think this is ok with close relatives who are either also vaccinated or who are both careful by practice and has a recent negative test. I am being somewhat more cautious here because the risks are high for those who are 75+ and their immune systems are not as capably as that of younger folks.

- 4. COVID Q: If I am tested positive on day one, can I test negative in 7 days with the saliva test? I thought 'no', based on the conversation with Josh and with the ASU test. But different saliva tests are trying to detect different parts of the RNA so I wonder if that's still a possibility. (Thanks for that recorded interview!)**

Yes, you can. If your Day 1 test is done mid-way or later in your infection (let's say, 7 days after exposure and day 4 after you start producing virus in saliva), then your Day 7 test would be 11 days after your first possible positive test and by then you could well have a negative test, especially if you had a mild infection. Not everyone has a persistent RNA signal. Only a fraction of folks have that.

- 5. A question I'd ask if Josh were here: There are potentially many genetic variants emerging from the large number of host infections, some with the potential for mayhem. News reports say that the number of samples sequenced in the US has been extremely low as a fraction of cases. Seems like sequencing is the new testing. Is ASU doing anything in this area?**

Sequencing is a different type of testing. One that is expensive to do. So sequencing begins only after positives have been identified by qPCR or other types of testing. There is too little of this happening in the USA. Lots of reasons for this, not just cost. For example, other countries have national health services that make it not only easier to enroll people into giving samples but easier to get those samples to labs that do sequencing. Our distributed system for giving health care by countless independent providers, both caregivers and testers, as well as insurers, makes it very hard to make those connections. That said, now that ASU has both a testing lab and DNA Sequencers, we have advantages. We have been doing some sequencing at ASU all along, but we are prepared to ramp that up soon. I will say that this is especially highlighted when ASU was the first lab to discover the 3 cases of the B.1.1.7 variant (UK) because the saliva lab found the pattern and Efreem Lim confirmed variant by sequencing.

- 6. Why do some vaccines need to be stored at dry ice temperatures? How are they different from vaccines that can just be stored in a water ice freezer? Are both types m-RNA vaccines?**

Yes, both the Pfizer vaccine (stored at ultra low temp) and the Moderna (regular freezer) are mRNA vaccines. The big difference is probably related more to other ingredients in the formulation that make sure that the mRNA is absorbed into the cells and produced by the cells for the immune cells to respond to. Keep in mind also that part of the clinical trials and FDA process requires companies to commit to a Standard operating procedure (SOP) early, which will include storage temps, and then they have to stick to it all the way through.

- 7. Thanks Ariel. Yes I'd be curious how that is done. The question has that came up is, if you are in the unlucky 5%, might you still hope to experience mitigated symptoms. I think the answer to that is "probably so, but that's not what was measured in the studies." But that is just a complete guess on my part.**

I agree this is probably true and future studies will elaborate on this. We are still in early days.