COVID19 Prevention, Treatment, Vaccines & Lessons Learned So Far

Alan P. Zelicoff, MD

This week we welcomed back one of our favorite medical contributors, epidemiology and infectious disease expert, Dr. Alan P. Zelicoff MD. Dr. Zelicoff has been educating the IAQ Radio+ audience about biological weapons and infectious diseases since 2008. The first show we did in 2008 was on Microbes: Are We Ready for the Next Plague, followed by shows on Ebola, H1N1 and now COVID-19. Disclaimer: Dr. Zelicoff has agreed to help us by researching and commenting on current events related to COVID-19. His opinions are not individual medical advice but rather opinions from someone that has been warning the world for years that pandemics are inevitable.

Nuggets mined from today's episode:

What progress are we making on treatments?
We don't have anything close to the efficacy of penicillin. Treating viruses is hard because it's hard to get *stuff* into viral cells. In intensive care patients, the combination of Remdesivir and steroids have lowered mortality rates by 30%. For pre-hospitalization cases IV drugs are available. IV drugs are costly and hard to administer in long term facilities.

In your opinion where and how did the virus originate? The virus originated in bats. Labs doing viral research would likely have the virus in their collection.

Is supplemental oxygen beneficial? Supplemental O^2 reduces hospitalization rates.

What supplements do you take or recommend? Vitamin D

Have lockdowns worked? Yes, separation of people, not gathering, not traveling, and masks have decreased viral spread. For example, in 7 Albuquerque nursing homes they were able to prevent COVID infections up until November. In New Mexico where he reviews 100s of sample results per week he isn't seeing positive tests for flu or common colds. Flu is less transmissible and has a lower reproduction factor.

Do you blame the American public for being angry and confused by CDC's reversal and admission of airborne transmission of COVID? No, he was also confused by the message that COVID19 is transmissible and there is no need to wear a mask. In 2003 the SARS1 virus was transmitted by large droplets. From info received from China, we knew in January that the virus was being transmitted by aerosols.

Will you be vaccinated? While not a frontline worker, yes he will be vaccinated. He believes that COVID risks outweigh all of the others.

Can there any long-term effects of mRNA manipulation? Unlikely, as mRNA falls apart within a week.

One of the concerns of Anti Vaxxers is dangers of preservatives; do COVID vaccines such as the Pfizer kept at -70°C contain preservatives? The 3 COVID vaccines available in the US do not contain preservatives.

Should prioritization of vaccination be vulnerability based or social justice based? (e.g. NYC's choosing to vaccinate drug addicts and incarcerated over the elderly.)
Prisons are crowded, prisoners engage in high-risk behaviors and prison staff live among the general population. While everyone has an opinion, the advisory committee decision was public health based and designed to minimize spread. Due to age and other factors, 30% of the US population is in the higher risk group. Vaccination is the responsibility of the states. Implementation variability among the states It's a shame we've only vaccinated 20% of the population.

How important is it that there are new strains being found? DNA viruses like smallpox and herpes haven't changed. RNA viruses like COVID are born to mutate.

Everyone with COVID19 has mutated virus in their body. While the UK COVID strain is less lethal, it is more communicable so more people will be infected and while a lower will succumb the number of deaths will increase.

From your perspective what is the single most impressive evidence that masks, decreased travel and social distancing work? There is minimal *influenza* anywhere in the US right when we would expect it to be starting to peak.

The public and political opinion pendulum has swung back and forth on Dr. Anthony Fauci, how do you grade his COVID communication and leadership skills? Dr. Fauci kept things from getting worse. Dr. Zelicoff gives Dr. Fauci a grade of A-. His only criticisms were Fauci's statements: 1) that masking wasn't needed, 2) that models are only as good as the data put. Dr. Zelicoff opined that models are where you need to go to get the answers.

From your perspective what is the single most impressive evidence that masks, decreased travel and social distancing work?
There is minimal *influenza* anywhere in the US right when we would expect it to be starting to peak.

Is there anything you would like to add?
When all is said and done, if novel communicable infectious disease outbreaks are not detected early in their course — indeed, it must be the first few cases that are identified and the information widely — then there is no hope of avoiding widespread manifestations, i.e. a pandemic with hundreds of thousands of deaths or more in the US. We have failed entirely to learn this lesson from COVID (ditto Ebola and others though Ebola was a walk in the park by comparison as it does not transmit nearly as easily), and are as unprepared as ever for the next outbreak …. which will most certainly occur. There is no way another will not manifest.

Have you heard anyone — anyone — even start to discuss 'the next one'?
In the interest of full disclosure, early disease detection was my area of research and, importantly, advocacy when I was working in federal government and the national laboratories. No one in senior policy circles listened during the nearly 30 years I pushed the concept (and actually implemented it on a pilot basis). The CDC

was (and remains) convinced they have the problem licked. They could not be more wrong.

What are the lessons learned so far from the COVID pandemic?
Critical failure points which must be fixed:

First - The complete absence of anything close to a real-time disease detection system in the US. We missed — for MONTHS — cases that were appearing *despite knowing* that the virus was already rampaging through China, and subsequently Europe. I'd bet that most of your listeners believe that front line physicians actually receive timely information on infectious disease activity in their communities (both routine diseases as well as evidence suggestion new ones), and that would be entirely — and I do mean "entirely" — incorrect.

Second - The rather disappointing appreciation among senior public health officials at both the federal and state level for what "exponential growth" actually means, along with a disparaging of the models that accurately predicted it. The latter is best illustrated by the statement one heard on many occasions from both Fauci and Birx, along the lines of "models are only as good as the data you are putting into them". That is about as wrong as I can imagine, and reflects a long-standing — and profoundly important — characteristic of most physicians and infectious disease experts: they know almost no math at all and thus conclude models (which they do not understand) can't be important (simply because they can't understand them).

Both of the items above are critical failure points that are essential to correct in order to respond to the next disease outbreak. You can bet that were another to manifest in the midst of the chaos of COVID we would certainly miss it. Put another way, we can't detect the signs of an impending outbreak when things are otherwise quiet, let alone when we're fighting the last war.

Herd immunity? It's the number of people 1 infected person can infect. Measles is the most communicable disease with an R=40, COVID19 is an R=4, the new variant is COVID is an R=6 (50% more transmissible than COVID16) so 84% of the US population needs to be vaccinated to obtain herd immunity. According to Dr. Zelicoff, medicine sometimes requires arithmetic not math.
The formula is: $Herd\ Immunity = 100 - \frac{100}{Reproductive\ Ratio}$

What evidence supports masking works?
The single most impressive evidence that masks, *decreased travel* and social distancing work, at it is this: There is minimal *influenza* anywhere in the US right when we would expect it to be starting to peak.

ADDENDUM [Highly technical text questions to which DR. Zelicoff provided answers]

What are his thoughts on the Front Line COVID-19 Critical Care Alliance group and their I-MASK protocol which advocates for the use of Ivermectin?
I am aware of this group and its I-MASK protocol. I am also aware of Dr. Pierre Kory's testimony before a Senate subcommittee in December 2020 and have watched part of it. Finally, I am aware of the heated debate over whether or not to engage in randomized controlled trials. Dr. Kory and colleagues appear to be emphatically opposed to a randomized controlled trial claiming, among other things, that in the interim patients who are denied ivermectin are much more likely to either die or have a prolonged course of treatment (including the use of respirators) if they are in the ICU. I note that he claims dramatic effectiveness for the drug (either with or without other drugs in the I-MASK protocol). So, my comments are as follows:

1. If Ivermectin is as effective as claimed (lowering death rate by something like a factor of 4 or 5), given the large number of patients being admitted to ICUs with COVID it would take little time — maybe a few weeks — to see if there is some actual therapeutic efficacy in the context of a randomized controlled trial (RCT)

2. To date, the willingness of *especially* intensive care unit physicians to do RCTs has been remarkable, and has led to meaningful (albeit somewhat modest) improvements in outcomes. I think most academic intensivist physicians would say that their collaboration with physicians at other academic institutions has been collegial, non-bureaucratic, responsive, rapid and mutually beneficial. In other words, there is already a consortium of intensive care unit physicians who are working through a wide variety of proposed protocols to see if they yield benefit. I find it difficult to understand why Dr. Kory (who used to be at one of the University of Wisconsin hospitals but quit) doesn't know about this consortium, and I find it even more difficult to understand why he hasn't

approached them to conduct an RCT *while he continues to do what he thinks is best for patients by using Ivermectin*. He is afraid he may be proven incorrect?

3. The history of medicine is filled with advocates who believe their therapy for a given condition is superior to what is currently offered. Sometimes they are right. Oftentimes they are tragically wrong, by which I mean not only did the therapy prove to be worthless it is sometimes worse than worthless, that is, actually does harm.

4. The few more-or-less randomized controlled trials that have been done with Ivermectin have been either small studies show that there might indeed be benefit. To the best of my knowledge, these studies are from Iraq, Bangladesh and Brazil. I am making no judgement on the quality of those studies other than to note they were small and were not done in conditions that are representative of care in the US. In other words, their results form a good foundation for testing the hypothesis that in US intensive care units Ivermectin might be beneficial.

5. As for prophylaxis — that is, preventing either the acquisition of COVID infection or preventing progression to severe disease among those who are infected by using Ivermectin — I am aware of only the observation that in populations that happen to be prescribed Ivermectin commonly (because parasitic disease or scabies is common), there appears to be some correlation between the frequency of use of Ivermectin and a decrease in COVID infections. But, again, these are only observational studies and are susceptible to bias. For example, patients who are diagnosed with scabies and are given Ivermectin may decide to self-isolate (or be advised to isolate) to prevent spread of scabies to others in their household, which in turn means that other infectious disease is less likely to spread.

Hence, once again, the needs for RCTs. We just do not have any other way of assessing the utility of a drug, particularly in complicated patients with many comorbidities, because there are so many moving parts and variables.

What are his thoughts on PCR Cycle Thresholds and their effectiveness in determining who is actually positive? Could there be a large portion of "positives" that do not actually have COVID-19 the disease? Could getting a CT count help us determine how bad our symptoms could become?

These are good questions and the answers get very technical very quickly. There is no question that the more PCR cycles one puts a given sample through the greater the probability of detecting virus if present, which is to say that the CT count can roughly quantitate the amount of virus present (and, of course, will increase the probability of picking up an inadvertently contaminated sample in a laboratory.

At the present time, there is an attempt to correlate CT count with infectivity. These experiments are very hard to do and there is, to the best of my knowledge, no data to date. Ditto for predicting severity of illness. My guess — it is a guess — is that there is so much biologic variability in individuals that that CT count is a small determinant of both infectivity and also progression of disease, except in extremes of values.

One final point: There are always false positives for any diagnostic test, for any disease condition. At some point, one has to rely on a "gold standard" as the "ground truth". In the cps of COVID, that "gold standard" would be virus culture, but doing so is expensive and slow. One more reason why doing these kind of experiments and analysis is difficult.

Z-Man signing off

Trivia: Name the medical scientist estimated to have saved the most lives worldwide in the 20th century?

Answer: Dr. Maurice Hilleman

Answered by: Patricia Cafaro, Chesterfield, VA