

Solving Healthcare: Finding Balance in Our Response to COVID-19 with Dr. Paul Offit.

Host: Dr. Kwadwo Kyeremanteng, MD, MHA

Guest: Dr. Paul Offit, MD, Director of the Vaccine Education Center at the Children's Hospital of Philadelphia



ONE SENTENCE SUMMARY: Dr. K sits down with Dr. Paul Offit, a Pediatrician Specializing in Infectious Diseases and an Expert of Vaccines, Immunology and Virology. He also Invented the Vaccine for Rotavirus.

Key Takeaways

- **Balance:** We want to limit deaths and avoid over-stressing our healthcare system (i.e. Social Isolation). However, at the same time, we want to protect our economy and avoid the many public health concerns that come from economic depression (discussed below).
- **Vaccines:** It took Dr. Offit 26 years to develop and properly test his Rotavirus vaccine for safety and efficacy.
 - It may be overly optimistic to expect a COVID-19 vaccine in the next calendar year.
 - It may be dangerous to rush through proper testing for a COVID-19 vaccine.
- **“Overkill: When Modern Medicine Goes too Far”** is the title of Dr. Offit’s upcoming book and a fitting theme for the podcast.
 - Dr. Offit posits that we should be more skeptical about the utility of existing medical ideology. We need to constantly question ‘Why’ we do things and adapt our practice to the most up to date evidence regarding COVID-19 or any area of medicine.

A Closer Look

Economy Vs. Social Isolation:

- The downside of social isolation is the negative impact on the economy.
 - With recessions we see spikes in the rates of joblessness, homelessness, drug addiction, anxiety and suicide, and domestic violence .
- Dr. Offit believes the balance is somewhere between our countries (Canada and USA) and a country like Singapore with less social isolation.
 - Singapore did not close Schools/Universities and therefore:
 1. Did not cause an influx in travel among students heading home,
 2. Did not send students home to interact with elderly parents,

3. Allowed young people to contract the virus and contribute to herd immunity once better



Viral Transmission:

- The Coronavirus is transmitted through the respiratory tracts much like the seasonal flu. However, there is evidence of some key distinctions.
- The fact that some countries, like China and Singapore, have been able to suppress it suggests an element of fecal-oral transmission seen in other viruses such as Norovirus.
 - Outbreaks in the settings of cruise ships, nursing homes, and regional epicenters resemble the spread of other viruses spread via Fecal-Oral transmission.
- Reference the attached paper from JAMA that found substantial viral particles in the feces of infected patients.

Incubation/ Contagious periods:

- "This virus is more like RSV, Influenza or rotavirus because, when it infects a patient, it stays in the initial area of infection (nose, throat, respiratory tract). That is different from Measles, Mumps and Varicella which spread through blood to distant sites." – Dr. Offit
 - Measles, Mumps and Varicella thus have longer incubation periods before the onset of symptoms.
 - COVID, RSV and Influenza thus have quicker onset of symptoms (incubation period).
- There is an important distinction between shedding infectious viral particles and being PCR positive (which is our testing method).
 - From Dr. Offit's work on the Rotavirus vaccine, he can tell us you shed viral particles for 6-7 days post symptom onset but you are PCR positive for months after resolution of symptoms.
 - Therefore, our testing is overly sensitive in terms of the risk of transmission and we might be keeping people quarantined too long (Dr. Offit's best guess is that people are contagious only for the first week).

Why Italy has been impacted much worse?

- Italy is an outlier. They are doing much worse than China in terms of deaths/population. (Italy has 3200 deaths and 60 million people compared to China who has 1.4B people but only slightly more deaths).
 - Italy has an older population (25% of country is over age 65).
 - The region most heavily affected is the north of Italy around Milan. They have a "rural economy" with many small towns and no large hospitals with adequately-sized intensive care units.

Vaccines: Upside and downside

- Dr. Offit developed the rotavirus vaccine and it took him 26 years; the idea of making a Coronavirus vaccine in 12 months is very optimistic.
 - There is no other coronavirus vaccine for human coronaviruses (if there were it would make this new vaccine easier to create).
 - The good news is that scientists know what they need to do: spur humans to make antibodies against the glycoproteins on surface of the virus to prevent it from being able to bind to human cells and enter them.
- 3 different approaches to vaccine development:
 1. mRNA injection- the mRNA is transcribed by human cells to make the glycoprotein and induce an immune response and antibody production in a healthy individual. (Company- Moderna)
 2. DNA injection- the DNA is transcribed and encodes the same glycoprotein that will induce an immune response.
 3. Protein injection- used for HPV and Hepatitis B vaccines- Recombinant DNA in cell cultures produces the protein which is isolated and injected into healthy people.
- mRNA vaccines are already in phase 1 clinical trials, which scares Dr. Offit.
 - Dr. Offit fears that they are passing through safety trials too quickly and that the vaccine may pose a larger risk to the health of young people than the disease itself.

- It is important to remember the fragile public image of vaccine safety that exists in our society.
- The Ebola virus outbreak happened and a vaccine was produced within a year because scientists had already been working on it but that set an unfair standard for this novel Coronavirus.



Further Readings

- ❖ Article in Jama regarding fecal-oral transmission: <https://jamanetwork.com/journals/jama/fullarticle/2762997>
- ❖ Dr. Offit's Twitter: https://twitter.com/DrPaulOffit?ref_src=twsrc%5Egoogle%7Ctwcamp%5Eserp%7Ctwgr%5Eauthor
- ❖ Dr. Offit's own Website: <http://paul-offit.com/>

Shownotes by Jacob Ranot