Addressing Vaccine Hesitancy during the COVID-19 Pandemic: Learning from the Past and Moving Forward

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Anong hirap ang kailangan niyong maranasan para kayo ay magpabakuna na? How much suffering are you willing to risk experiencing to persuade you to go for COVID-19 vaccination?

Working at a COVID-19 Referral Center, we probably saw a lot more critically ill COVID-19 patients than in other hospitals in the Philippines. During the height of the Delta surge in 2021, our intensive care units (ICUs) for adults and pediatric critical COVID-19 were always full with a long waiting line. The typical medical history of the patients would be a senior retiree, usually a *Lolo* (grandfather) or a *Lola* (grandmother), who needed urgent support to be hooked to a mechanical ventilator because they could not breathe on their own anymore. When asked about their COVID-19 vaccination status, *Lolo* and *Lola* were often not vaccinated. Other times, the patient may not yet be old enough to be considered a *Lolo* or *Lola* but may have illnesses like heart failure, diabetes, hypertension, or on dialysis. They too were often not vaccinated. And occasionally, we admitted small children who would seemingly be out of place in the sea of adult patients in the Emergency Room. One would think that because the very young have not yet been allowed to get vaccinated, the people around them would strive to be vaccinated to protect these little ones. On the contrary, though, we saw many young patients whose exposures to COVID-19 came from their unvaccinated parents. This heartbreaking situation continued despite the intensive COVID-19 vaccination program of our government. When one thinks about it, it is possible that some of the many deaths and sufferings of patients and the anguish of grieving families, as well as the lonely exits of beloved ones dying alone amidst CPR machines and teams, may have been avoided had unvaccinated patients opted to be vaccinated. Now over 2 ½ years into the pandemic with many cases said to be mild, we continue to have a continuous flow of admissions for COVID-19 which fall into the moderate, severe, and even critical COVID-19, and some of them are because they have remained unvaccinated. Where and how can we improve the situation?

How we wish we can end vaccine hesitancy for the COVID-19 vaccines

With all the efforts of the government, as well as proactive organizations, schools, and agencies to educate the public, through endless webinars and tri-media information campaigns, we hope that the knowledge gap about COVID-19 vaccines has been addressed. While we have attempted to be as clear as possible, using easy-to-understand materials and answering relevant questions, every once in a while, we still get unbelievable answers from patients! Such as when a 60-year-old businesswoman with diabetes and hypertension was admitted to the hospital for moderate COVID-19 with pneumonia and when I asked her why she was not vaccinated yet, she confidently retorted back, "*I was not informed about such vaccines!*" So, there are still instances we fail to reach some groups or persons, or some persons failed to reach and connect with mainstream information campaigns.

The increased vulnerability of identified populations such as the elderly and those with underlying chronic illnesses to become sicker if they get COVID-19 has been explained, in all ways and means including TV, radio, print, and social media, and in every dialect. The vaccines are free, and the process to get vaccinated has become simpler and easier to access. And yet so many of our *Lolos* and *Lolas* and other vulnerable Filipinos remain reluctant to get the booster doses or even the first dose, or delay their decision and remain unvaccinated. This phenomenon where the community reaches a lower than desired acceptance rate to get vaccinated despite having access to free vaccines is termed vaccine hesitancy.[1] Within the vaccine-hesitant persons is a subgroup who are even more firmly against vaccines, and this newer concept is called vaccine resistance or anti-vaxxers.[2] News outlets, published literature, and public databases from all over the world say the same message: that hospitalization and

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death from COVID-19 are more likely for unvaccinated individuals.[3-5] Yet even with strong evidence that the Emergency Use Authorization (EUA) - approved vaccines are highly effective and safe, a significant proportion of people continue to express hesitancy, delaying or refusing to get vaccinated against the SARS-CoV-2 virus. This reduces the hope of establishing the desired herd immunity and eventually controlling the pandemic. Thus, the World Bank launched a program in 2021 to support countries in addressing vaccine hesitancy using behavioral science.[2]

Working to save these lives at the frontlines, I cannot help but wonder why our vulnerable citizens would not come for their COVID-19 vaccines, which are available for free and prioritized for them. It seems counter-intuitive when *Lola* would try to defend her decision that the reason she opted not to get vaccinated is that she is already too old. Her explanation is already a day too late when she is already hooked to the life support system to help her breathe. I sigh with disbelief and frustration at the lost opportunity.

While many Filipinos have received their two COVID-19 vaccine doses already, many now hesitate to update with recommended booster doses, especially the most vulnerable.

The Philippines has a running total of over 3.9 million confirmed COVID-19 cases and 63,297 deaths as of October 10, 2022.[6] Is it perhaps because that translates to only a 1.6% death rate? With a Philippine population of 112 million,[7] the government announced having reached the 50% target on January 14, 2022,[8] after having given 117,337,626 doses to over 54 million Filipinos who have completed two required doses. The formidable task of vaccinating started last March 1, 2021,[9] and almost one year later, at least 30% or about 30 million people still need to be vaccinated to reach the 80% target for herd immunity. The World Health Organization (WHO) has repeatedly expressed concern about the low and "sluggish" vaccination rates, particularly for senior citizens. The government itself has expressed dissatisfaction with the slow rate of vaccine uptake of the vulnerable priority group. On March 10-12, 2022 the Department of Health (DOH) had its fourth intensified mass vaccination campaign. This time the vaccinators went from house to house and to workplaces, as well as set up vaccination stations at pharmacies, clinics, transportation terminals, airports, and seaports and even churches, all in an attempt to make the vaccines more accessible to these vulnerable groups and convince them to get vaccinated.[10]

Despite these, our hospital COVID-19 census at the Philippine General Hospital (PGH) for April 2022 showed despairing trends that for every 100 patients admitted for COVID-19, 59 did not have any vaccine dose yet and 37% did not have their booster yet. And for every 100 patients in the ICU, 70 were unvaccinated and the rest were not updated with their booster shots.[11]

Why are many Filipinos still hesitant to receive the COVID-19 vaccine?

Vaccine hesitancy is a complex phenomenon, often because of many factors.[1] It is widespread and observed in every nation across the entire world.[12] An objective measure of vaccine hesitancy is vaccine acceptance. In the most published surveys during the COVID-19 pandemic, the acceptable vaccine acceptance rate is at least 70%.[12] Low rates of COVID-19 vaccine acceptance have been reported in Kuwait (23.6%), Jordan (28.4%), Italy (53.7%), Russia (54.9%), Poland (56.3%), the US (56.9%), and France (58.9%).[12]

But unique to the Philippines is the relatively recent unfortunate experience with another new vaccine. It may be useful to look back at the Dengvaxia case to help better understand the vaccine hesitancy phenomenon during the current pandemic. Rewind to 2018 when the country was excitedly launching the very first dengue vaccine in the world, exactly three years before the introduction of these currently new COVID-19 vaccines.[13] Still vividly fresh in the recall of many Filipinos is the highly sensationalized Dengvaxia vaccine controversy.[14,15]

The name "Dengvaxia" sparks negative connotations.

Dengvaxia is the very first dengue vaccine brand in the world. The live recombinant vaccine produced by the pharmaceutical company, Sanofi, sponsored clinical research of the vaccine (CYD-TDV) in the Philippines in 2013. One year later, Dr. Rosario Capeding, a Filipino pediatrician and researcher, and her team published a landmark paper on the efficacy and safety of Dengvaxia for children in a distinguished medical journal.[16] By April 2016, Sanofi with the Philippines' DOH grandly launched this first-ever Dengue vaccine with an ambitious target of vaccinating at least one million students through a school-based mass immunization program. It was like a dream come true for both the vaccine industry and the Philippine health department. Sanofi has reportedly invested 20 years of research and over US $1.8 billion, and the Philippine government felt blessed for having been selected to be the site to launch a vaccine. This great event was supposed to herald the end of the high morbidity and mortality caused by dengue. The Philippines was the second country to issue regulatory approval for the use of the novel vaccine (the first was Mexico). The DOH has reportedly procured a total of US$ 67M worth of vaccines in good faith that it will significantly reduce the high burden of dengue in the country. The school-based vaccination rolled out aggressively reaching thousands of children. The program was later expanded and by the end of 2017 news reports estimated that over 830,000 individuals have received the first dose of Dengvaxia.[15]

Safety signals detected

During the same period, there were safety signals detected by local epidemiologists leading to questions about the safety of the vaccine. This group of vigilant physicians led by Drs. Antonio and Leonila Dans claimed that it was important to consider the phenomenon called antibody-dependent enhancement (ADE). ADE is a disease mechanism unique to certain infections including dengue theorized that the second occurrence of dengue infection can be more severe than the first one. Giving the vaccine can possibly mimic the effect of the first infection.[17] Thus, paradoxically a child who has received Dengvaxia may actually be at greater risk of a more serious dengue illness. The next year in November 2017, Sanofi announced that, after reviewing an updated analysis of long-term (six-years) clinical trial data of Dengvaxia, it was relabeling Dengvaxia so that its use will be restricted only to those who had dengue infection before.[18] The analysis confirmed that Dengvaxia provides persistent protective benefits against dengue fever in those who had prior infection. But for dengue-naïve children (or those who have never been previously infected), Sanofi wrote "more cases of severe disease could occur following vaccination upon a subsequent dengue infection."

This created a chaotic response from the Filipino general public, particularly the parents of the vaccinated children. The DOH immediately suspended the Dengvaxia vaccination. The Philippine FDA revoked the license of the vaccine. The whole country was glued to the news as the story transformed into a national scandal. By February 2018, the Public Attorney's Office filed a lawsuit against the executives of Sanofi, Zuellig Pharma Company, and some officials of the DOH claiming that the death of a 15-year-old girl was due to the effects of Dengvaxia.[19] Some televised appearances and announcements of various personalities at this time were described in editorials as "theatrical" and "wild."[20,21] The number of alleged adverse events creeped up so that the office of the public attorney claimed that at least 8,400 Dengvaxia recipients have suffered from some adverse events.[14] Social media was flooded with posts and reposts of graphic narratives of autopsies of children who have allegedly died from the effects of the dengue vaccine as well as feeds from popular bloggers. The scandal was also given a huge amount of airtime on national television because of two protracted congressional inquiries which focused more on the alleged corruption issues rather than establishing the safety of the vaccine.[14] By March 2019, the Department of Justice (DOJ) announced that it had probable cause to indict several high-ranking officials from both Sanofi and the Philippine DOH.[22] They were accused of reckless imprudence resulting in homicide, ignoring the identified risks and adverse effects of the vaccine, and thus responsible for all the subsequent deaths. A panel of medical experts from the University of the Philippines - Philippine General Hospital (UP-PGH) was formed to independently investigate the deaths allegedly linked to Dengvaxia.[23] Through the months, even the research team led by Dr. Capeding was charged.[24,25]

The Dengvaxia experience and the COVID-19 pandemic

The above events led to a marked drop in vaccine confidence among Filipino parents from 93% in 2015 to only 32% in 2018, documented by the survey by the London School of Hygiene and Tropical Medicine of 1500 Filipino participants as a measure of the impact of the Dengvaxia crisis on vaccine confidence.[26] With all of these fresh in the recent memory of the public, the Dengvaxia saga is also believed to have contributed to the low and slow Philippine public response and acceptance of the new COVID-19 vaccines, particularly at the start of the pandemic. Gorman and colleagues pointed out that the "stickiness" of such kinds of past but alarming experiences should have been resolved.[27] The much-awaited results of the investigations of the unbiased medical experts tasked to unravel the truth behind all the allegations summarized their findings on February 2021 saying that out of 14 deaths reviewed, there was possible causality between the three deaths and the Dengvaxia vaccine but more tests were needed to definitely establish the solid link.[28] This non-closure of such a significant national experience built the case for vaccine hesitancy which is thought to continue to torment a portion of the Filipino population during this phenomenal period in our history.[29] It remains vivid in the consciousness of many Filipino people during the COVID-19 pandemic and especially with the rapid introduction of new COVID-19 vaccines during the early part of the pandemic. Our *Lolos* and *Lolas* would usually express legitimate concerns like, "What if this is Dengvaxia all over again?" This public health dilemma was palpable despite the guidance of the WHO. Especially affected are the poor, uneducated, and under-resourced Filipino parents who are influenced more by attractive and sensationalized health misinformation. Landicho-Guevarra, Renosa, and Wachinger reported their findings during in-depth interviews of 44 vaccine-hesitant caregivers and parents from Cavite province who had delayed or refused vaccination for their children.[30] Those interviewed admitted that most of their fears for side effects of the new COVID-19 vaccines stem mostly from their previous undesirable, even traumatic, experiences from the recent Dengvaxia controversy. Not surprisingly, they are suspicious of the true agenda behind the new COVID-19 vaccines, implying various theories. Most of those interviewed perceived the vaccines as non-essential to their lives. Their current sources of information include the influence of their neighbors and traditional media such as television and radio. The confusion is further fueled by the heavy infodemic and misinformation feeding the mistrust against the COVID-19 vaccines. Diverse perspectives of various leaders even among physicians likewise contribute to confusion and indecision on COVID-19 vaccination.

Is there a viable solution for vaccine hesitancy? Can we just ignore them?

While it is often exasperating to have to deal with the COVID-19 anti-vaxxers, we cannot ignore them. Nossier reminds us that vaccine hesitancy is present in all kinds of settings across the world and boldly puts forward that failure to address barriers to vaccination can fuel the greatest threat to the efforts to end the pandemic.[31] Context-specific interventions are needed, but for these to take place, a better understanding of the reasons behind such hesitancy is needed.[2,32,33] The paper of Caple, Dimaano, and the team came as a welcome update to situate us better.[33] They studied the responses of 7,193 participants to open-access nationwide online surveys. They found that a high 62% were willing to be vaccinated against COVID-19. Perceived barriers to receiving the COVID-19 vaccines include fear about the side effects, effectiveness, and safety of the vaccines, as well as the possibility of receiving fake COVID-19 vaccines (97%). The authors recommended that our public health authorities should address these barriers, including transparency in ensuring the integrity of the vaccine rollout to reassure their citizens that they are not receiving fake doses. The research team also initiated a public awareness campaign by generating infographics on their FB page to alleviate these worries.[34] While online surveys may have their limitations and are not representative of the general population in the Philippines, these findings are still helpful.

Other interesting revelations from the Caple survey tell us that many respondents (21%) were willing to pay an average amount of PHP1,892 [USD38] for the COVID-19 vaccines. There was a high sense of inclination to pay among individuals 31 to 40 years, single respondents, and students despite the low minimum daily wage in the Philippines in 2021 of only PHP537 [USD10.54]. The study also revealed significant vaccine brand preference among our Filipino respondents (83%) for COVID-19 vaccines made in the USA or Europe over the vaccines developed in China and Russia. In the context of a national program so heavily dependent on vaccines from China at the start of the vaccine roll-out, the authors recommended that the government strategically manage this evident vaccine preference to prevent Filipinos from unnecessarily delaying immunization to obtain their preferred vaccine brand. During recent months, more vaccines for the boosters are indeed from the US, yet the take remains low. The WHO has guided governments to help them achieve the goal of high uptake of COVID-19 vaccines.[35]

Did we pass the Scorecard of the COVID-19 Vaccination?

With all the solutions being attacked from all angles, the scorecard of the Philippines after more than a year of intensive implementation of the COVID-19 vaccination program shows that 36.18 million people in the Philippines have not received any dose of a COVID-19 vaccine.[36] This is despite the achievement of having jabbed a total of 165 million doses of COVID-19 vaccines of all brands given across the country by September 29, 2022. with 64.2% of the population fully vaccinated.[37] The acceptance rate for boosters has been much lower.[38] As of March 1, 2022, the government has reduced the COVID-19 restrictions to the lowest level (Level 1) because of the markedly reduced number of cases.[39] On September 12, 2022, Executive Order 3 from President Ferdinand Marcos Jr. allowed the voluntary wearing of masks when outdoors.[40] With this recent development, there is a pervading sense that the pandemic is over; leading to a further drop in the uptake of the population for COVID-19 vaccine booster doses. The recent campaign attracted a small portion of the 40 million individuals eligible for booster shots. Health Officer-in-Charge was quoted to have said that it is impossible to reach the 50% goal (or 23 million individuals) for their booster doses.[39] In a way, most citizens who have refused to be vaccinated feel they were right, after all, claiming that even without getting vaccinated, they are very much alive and back to work. While there is an effort from the government to pressure workplaces to require full vaccination or show proof of a negative COVID-19 test every two weeks, this is expectedly countered by human rights advocates. On July 26, 2022, the DOH launched another stronger nationwide booster vaccination campaign called the "PinasLakas" to push up the number of Filipinos who will get their booster shots.[41] By October 6, 2022, the proportion who have received a booster dose among those who received the complete primary series remained low: 58% among healthcare workers (or A1), 39% among elderly citizens (or A2), and 32% among those with comorbidities (or A3).[42] At the same time, on the international scene, we also read about the availability and approval to use and rollout the new bivalent COVID-19 booster which is a combination of the original vaccine and a reformulation targeting the mutated spike protein seen in the BA.4 and BA.5 variants of the Omicron SARS-CoV-2.[43]

Conclusion: So much has been done, but still more to do.

Reality check of the global pandemic situation obligates all of us, both in the public and private sectors, to be vigilant and continue to find solutions to protect ourselves, our families, and our communities against the mutating SARS-CoV-2 so that we see less and fewer infections, suffering, and deaths. Our people continue to struggle with viewpoints and emotions loaded with uncertainty and mistrust, some of which may still find their origins from the unpleasant memories of the Dengvaxia vaccine. We need to help our people move on. We need to listen and understand them, and then feed them with correct and updated information on the new vaccines and the changing virus. Our goal is to persuade our *Lolos* and *Lolas,* and all other vulnerable persons that the risk of severe COVID-19 should already be a compelling reason to get vaccinated. They need not wait to be part of the unfortunate COVID-19 statistics and realize the lost opportunity one day too late. Let us all do our part to correct the misinformation that fuels vaccine hesitancy and together end this pandemic.

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