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Commentary

Mass vaccination campaign during the 2016 influenza outbreak in Panama: Challenges and implications for COVID-19 vaccination efforts



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1. Introduction

Vaccination efforts to curb the spread of COVID-19 are unfolding at a global level while health systems are facing the challenges posed by the pandemic. It is relevant to reflect on outcomes and obstacles from previous emergency mass vaccination campaigns, particularly in the scenario of low- and middle-income countries (LMICs). Our aim is to discuss these in relation to Panama's 2016 influenza A H1N1 outbreak, with a focus on two main challenges: [1] taking measures to make the vaccine rollout more equitable, and [2] guaranteeing an adequate demand by influencing the population's behaviors and beliefs. We will elaborate on how this past effort helped shape present COVID-19 immunization campaigns, discussing implications that might be generalizable to similar countries.

2. Overview of the outbreak and vaccination campaign

Panama, a country with a population of four million people exhibited an increase in laboratory-confirmed cases of influenza A H1N1 beginning on the twentieth week (mid-May) of 2016, exceeding the epidemic threshold (Fig. 1) [1]. An increase in hospitalizations and ICU occupancy followed and the government declared an outbreak. A total of 67 deaths and 792 laboratory-confirmed cases were reported by the end of 2016, with 693 (87.5%) of these reported between the twentieth and the twenty-eight weeks [2].

A mass influenza vaccination campaign was conducted by the Panamanian government, capitalizing on the introduction of the quadrivalent vaccine and the procurement of 3,000,000 doses. A

total of 2,575,147 doses were administered between April 22 and July 13, accounting for 63% of the national population [3]. Almost no cases of H1N1 were reported in the rest of 2016 and in 2017 [1,4]. In the next sections we discuss two challenges faced during the 2016 emergency mass vaccination campaign.

2.1. Taking measures to make the vaccine rollout more equitable

During the 2016 influenza outbreak, immunizations were prioritized in healthcare workers, people 60 years and older, poultry farmers, indigenous populations, pregnant women, children 6 to 59 months of age, and patients with chronic diseases, setting an important precedent for future emergency mass vaccination efforts. Vaccines were distributed free of charge at the clinics run by the Ministry of Health. Since 87% of the population in Panama relies on the public healthcare system, this strategy could have helped overcome financial and geographic obstacles to vaccination, increasing access in populations living in poverty [5].

Inequities in health outcomes and vaccine uptake during health emergencies are driven by structural barriers and complex decision-making factors affecting minorities [6]. Even if we do not rely on estimates on vaccine coverage by socioeconomic strata during Panama's 2016 influenza outbreak, it is possible that the strategies implemented helped make the vaccine rollout more equitable. For example, evidence from the region highlights the role of existing universal vaccination programs as contributors to the reduction of disparities by achieving high immunization rates in the lower income quintiles [7].

2.2. Guaranteeing an adequate demand by influencing the population's behaviors and beliefs

We lack data on vaccine acceptance during the 2016 influenza outbreak, but it is reasonable to postulate that without appropriate nationwide educational campaigns, low demand driven by lack of confidence in vaccines could have been an important threat to the vaccination efforts. This potential threat was mitigated by

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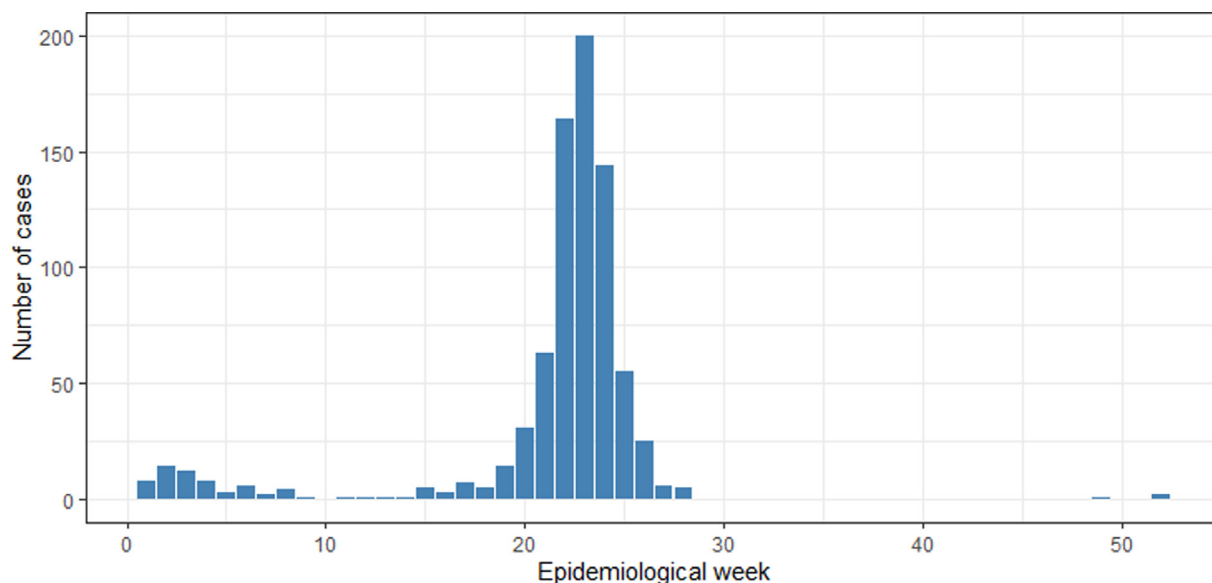


Fig. 1. Number of laboratory-confirmed influenza A H1N1 cases. Panama, 2016. Total for 2016: 792. Source: Pan American Health [1].

transparent risk communication by health authorities, mass media campaigns, and education at healthcare facilities:

2a. Given the magnitude of the health emergency, top government officials capitalized on their leadership role to urge the population to go to local clinics and get vaccinated as the health emergency unfolded. Sharing figures on the number of cases, deaths, and hospitalizations might have increased the population’s perception of risk.

2b. The Ministry of Health established partnerships with mass media platforms conveying information regarding the severity of the outbreak, educating the population on the importance of hygiene measures, and fostering vaccine confidence.

2c. Many of the efforts to educate the communities were concentrated in local clinics. Similar to what has been described by Kimura et al. in previous influenza educational campaigns [8], posters were displayed in common areas and educational flyers were distributed. The core of the intervention were in-person educational sessions regularly conducted by health workers in waiting rooms, with the additional component of providers subsequently discussing and offering influenza immunizations to patients.

Since we did not identify any studies or reports assessing the impact of these interventions in Panama in 2016, we cannot attribute the numbers on vaccine uptake to any of these measures. However, based on previous literature [9,10], it is possible that these might have helped increase health literacy and boost vaccine confidence, positively influencing attitudes towards immunizations and vaccine uptake in 2016 and in the years to come. For example, the number of doses of influenza vaccines administered increased more than three-fold from 2015 to 2016 [825,496 to 2,575,147], and high vaccination rates were observed in the years after the 2016 influenza A H1N1 outbreak (2,043,776 doses administered in 2017) [3]. A survey conducted in March 2020 showed that 74.2% of the population were willing to be vaccinated against COVID-19 [11].

3. Implications for the COVID-19 vaccination efforts

Up to November 21, 2021, Panama has reported 475,997 cases and 7,353 deaths due to COVID-19 (108,636 and 1,678 per million people), with 5.56 million vaccine doses administered and 2.41 million people fully vaccinated (55.1% of the population) [12].

The 2016 influenza outbreak helped shape the country’s response to the COVID-19 pandemic, and one of the implications of this previous health crisis on ongoing and future mass vaccination efforts centers around access to vaccines in underserved populations.

A common feature between these public health emergencies is their potential to deepen health inequalities. Those living in poverty and ethnic minorities are at a higher risk of unfavorable disease outcomes due to reduced access to healthcare, increased exposure to the virus due to living conditions and differential distribution of risk factors leading to severe disease. Because of that, mass vaccination campaigns with a focus on reaching vulnerable populations and those living in poverty not only confer protection against the disease but also prevent further economic damage [13]. In our experience in Panama, we believe that making the vaccine available at no cost and prioritizing high-risk populations are only small steps towards vaccine equity. These policies are necessary but far from sufficient for reaching underserved populations. Further measures are needed, such as prioritizing vaccine distribution to areas with high indicators of economic hardship and delivering vaccines to people facing mobility barriers [14].

The second implication concerns the importance of boosting vaccine confidence and addressing vaccine hesitancy. Contrary to our experience in Panama, in previous influenza outbreaks some countries reported rates of vaccine uptake as low as 0.4%, and authors point at distrust of vaccinations and concerns about vaccine safety as the main reasons for these figures [15,16]. As the COVID-19 vaccination efforts take place, it is vital to conduct studies measuring vaccine hesitancy and measuring the effect of public health communication at a population level, exploring separately the effects of mass media and communications by health authorities. A survey conducted in the U.S. during the 2009 H1N1 pandemic highlighted the importance of government officials in influencing behaviors at a population level [17]. Furthermore, a study assessing the early days of the COVID-19 pandemic suggests that timely provision of risk communication by health authorities has a positive impact, by reducing consumption of sources of misinformation [18].

At a global level, the COVID-19 pandemic takes place in a very different context in comparison to the recent influenza outbreaks. The pervasiveness of disinformation and conspiracy theories in social media platforms provides fertile ground for vaccine hesitancy and skepticism towards science and health authorities. Before COVID-19 vaccination began, a multinational study showed

important levels of lack of confidence in vaccines, with more than 55% of the respondents expressing concerns regarding potential side effects [19]. This underscores the need for optimal vaccine communication, relying on a multi-stakeholder approach in which local leaders and clinicians are able to engage in difficult conversations regarding vaccine hesitancy in their communities, and in which the media articulates in a simple language the benefits of a vaccine and strategically advertises positive information about immunizations [20]. Furthermore, fostering vaccine confidence requires tailored communication strategies to reach underserved populations such as indigenous communities, addressing and discussing their concerns in a culturally relevant way. This effort must be done while ensuring that these communities are given an equal opportunity to benefit from a vaccine after a fair and ethical allocation process.

In the era of COVID-19, improving media literacy can widen citizens' understanding of the risks posed by the disease, the veracity of information, and the impact and benefits of mitigation strategies on their daily lives. When educating the general population or the vaccine hesitant about the benefits of a COVID-19 vaccine, individual and societal benefits should be equally emphasized, acknowledging everyone's unique motivations. Besides fighting vaccine hesitancy, health systems and governments should promote vaccine confidence, a broader attitude at a population level that is rooted in trust in public health guidance.

Despite similarities and differences between the influenza A H1N1 outbreak and the COVID-19 pandemic, based on Panama's 2016 experience we hypothesize that increased access to immunizations and boosting vaccine confidence through education and communication could translate into large gains in the fight against COVID-19 as countries continue their immunization campaigns. Besides increased access and availability of vaccines, strategic approaches such as concentrating educational campaigns in public clinics where a large proportion of the population with lower household income seek care can improve vaccination coverage. Areas for improvement and gaps yet to be addressed are increasing the availability of educational resources in indigenous populations' languages, and encouraging the generation of scientific evidence assessing the effect and cost-effectiveness of different interventions for increasing vaccine acceptance and uptake.

In an era of divisiveness, politicization of public health measures, and eroded trust in traditional public health institutions, it is important to regain the public's confidence to build more effective health systems delivering services to healthier and empowered citizens in the long term. Quoting Dr. Barry Bloom: "the critical ingredient in every vaccine is trust".

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