COVID-19

HOW THE COVID-19 PANDEMIC PUT VACCINE HESITANCY IN THE SPOTLIGHT

Edward Jenner is generally credited with the world's first vaccination back in 1796. Where instead of variolation; exposure to small amounts of smallpox to build immunity, Jenner demonstrated that exposure to cowpox could also create immunity from the similar yet more deadly smallpox.[1] Since then, vaccines have been an essential tool in the fight against infectious diseases; globally they help to save two to three million lives every year from more than 20 potentially deadly diseases.[2] Today in 2021, new COVID-19 vaccinations provide an opportunity to take a huge step forward in reducing the levels of illness, hospitalization, and loss of life.

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CURRENT COVID-19 VACCINES

Numerous vaccines for COVID-19 have been approved and are already in use, or are in clinical development.[3] The vaccines replicate the mechanism of infection by exposing the body to parts of the virus or reduced virus. This exposure through vaccination is enough to safely produce an immune response, without causing illness. The response is remembered by the immune system and prepares the body to fight the COVID-19 virus more effectively in the future, should it be exposed.[4]

The majority of the COVID-19 vaccines currently available need more than one dose, to create the best level of immunity.[5] The vaccines use various approaches to create a safe reduced exposure to weakened or modified, noninfectious COVID-19, while still generating an immune response.[3,4] The types are listed below[3,4]:

Protein-based vaccines. Use fragments of proteins or protein shells that are harmless, but can mimic the COVID-19 virus. They are commonly used with an adjuvant to strengthen the immune response. Examples: Novavax, GSK-Sanofi.

Whole virus vaccines. Use a form of the virus that has been inactivated or weakened so it can't cause the illness. An adjuvant is sometimes added to boost the immune response. Examples: Sinopharm, Valneva.[6]

RNA and DNA vaccines. Use genetically engineered RNA or DNA that, once in the body, create a protein that itself safely prompts an immune response. Examples: Pfzier-BioNTech, Moderna.

Viral vector vaccines. Uses a genetically engineered virus that can enter the body to

produce coronavirus proteins yet can't cause the disease. Examples: Oxford-AstraZeneca, Janssen (Johnson & Johnson).

All of these vaccines stimulate the body's own immune system to build antibodies to fight the actual Sars-CoV-2 (COVID-19) virus.[3,4]

FACILITATING RAPID DEVELOPMENT OF THE VACCINES

The creation of vaccines against COVID-19 has been achieved in record-breaking time. This was only possible through a united global response to a public health emergency. Large private and public financial investments; existing knowledge about coronavirus; and use of established vaccine technology all played a part.[7] Coronaviruses had been studied since the 1960s, and the severe acute respiratory syndrome (SARS) outbreak in 2003 and later the Middle East respiratory syndrome (MERS), further built upon this knowledge.[8] Therefore when scientists in China identified and shared the genetic sequence of the new coronavirus back in January 2020, it meant researchers could begin work on new vaccines immediately.[7]

Vaccines have also been widely used to treat other diseases for hundreds of years, so scientists could use existing vaccine technology in order to create a new vaccine for COVID-19. Even the novel messenger RNA technology, used in the Pfizer and Moderna vaccines amongst others, was built upon three decades of research.[9]

Development of a vaccine begins with non-clinical laboratory-based research, before going through three stages of clinical trials in volunteers. The development process was fast-tracked by performing aspects of required development stages in parallel, rather than following the usual sequential process.[10] Clinical trial recruitment was boosted by huge numbers of ready volunteers, eager to play their role in combating the pandemic, and private, public, and philanthropic resources enabled research investment and scaled up production.[7,11] Despite the urgency, it is important to acknowledge that each vaccine must still be evaluated and approved according to current regulatory guidelines and legal requirements before it can be used; as with every other vaccine produced.[10]

STRATEGIC AIMS OF THE GLOBAL COVID-19 VACCINATION PROCESS

Countries are now rolling out vaccines to their adult citizens, and millions of people have already been vaccinated. Israel, UAE, UK, and the US are the countries leading the way in cumulative doses administered per 100 people. The global trends demonstrate increasing production and distribution of these life-saving vaccines.[12]

If a substantial proportion of a population is vaccinated, "herd immunity", also known as "population immunity" can be achieved, effectively hindering the spread of the virus.

With massive demand for vaccines, rollout is currently state administered, guided by prioritization established by the authorizing governments. Generally first in line are healthcare workers who are at greater risk due to their efforts to mitigate the effects of the pandemic. They are joined by the elderly, those with chronic conditions, and other groups who are most at risk of hospitalization and death. As vaccine supplies

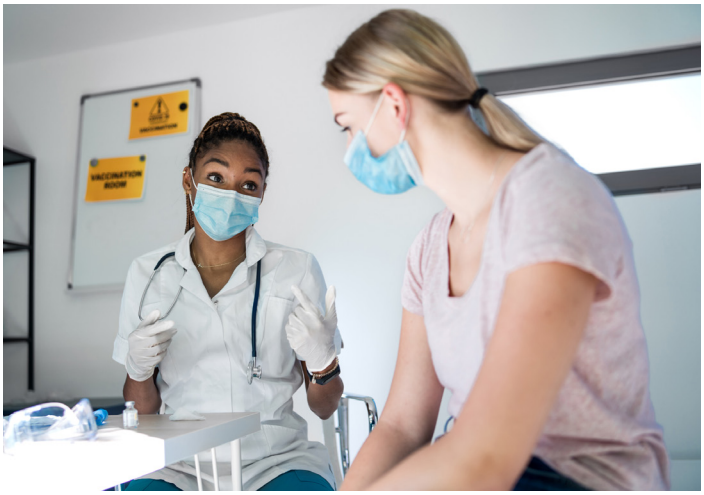
increase, the remit widens, and the strategy will aim to reduce transmission in order to start renormalizing social and economic functions, which have been severely constrained by the pandemic-induced restrictions.[13]

If a substantial proportion of a population is vaccinated, "herd immunity", also known as "population immunity" can be achieved, effectively hindering the spread of the virus. Herd immunity can also protect those who cannot be inoculated due to health conditions, like an allergy to a vaccine ingredient. It is not yet known what percentage of a population will need to be vaccinated to reach herd immunity for COVID-19.[14]

The speed of vaccine rollout is paramount. Like all viruses, COVID-19 reproduces itself in cells, often creating slight errors or mutations. While most of these mutations will not create notable effects, some can lead to changes that can make the virus more transmissible or resistant to vaccines. The emergence of several mutations, such as the UK, South Africa and Brazilian variants, have caused concern, especially concerning reduced vaccine effectiveness. There is a risk that, as the virus infects more people, it increases the possibility for the emergence of mutations that can challenge the effectiveness of the vaccines if not enough of the population are inoculated quickly enough.[15] Therefore getting as many people vaccinated as soon as possible is critical.

The strategic aims of a global COVID-19 vaccination rollout are ambitious and the stakes are high. However any vaccine program is ultimately reliant not only on access, but on people's willingness to be immunized.

The objective of programs like COVAX, co-led by Gavi, the Vaccine Alliance, the World Health Organization (WHO), and the Coalition for Epidemic Preparedness Innovations (CEPI), are to ensure that the populations of middle and low-income countries also have access to vaccines. The first shipment of 600,000 doses of the Oxford-AstraZeneca vaccines arrived to fanfare in Ghana in late February, and heralded the start of a truly global rollout.[16] The strategic aims of a global COVID-19 vaccination rollout are ambitious and the stakes are high. However any vaccine program is ultimately reliant not only on access, but on people's willingness to be immunized.



WHAT IS VACCINE HESITANCY?

The majority of the population appreciate the value of inoculation and are generally happy to be vaccinated. Conversely, there is a much smaller group who are determinedly anti-vaccine. And between the two are those who are undecided; the vaccine hesitant. In 2019, even prior to the pandemic, the WHO labelled "vaccine hesitancy" – the reluctance to get vaccines even when they are available – as one of the top 10 threats to global health.[17]

HESITANCY AROUND COVID-19 VACCINES

A global poll on COVID-19 vaccine hesitancy has found it is localized by country rather than by continent. Of 15 countries surveyed, Brazil, UK, and China were the least vaccine hesitant and Russia, South Africa and France the most hesitant. The main reasons for hesitancy were worries about safety and concerns about the speed of vaccine development. There

were also doubts about the effectiveness of the vaccines and perceived low risk from COVID-19. However, January 2021 saw a significant uplift in people willing to take the vaccine in several countries, most notably Italy, Spain and the UK, which have seen an increase of 26%, 23% and 20% respectively since December 2020.[18]

Although health care workers are usually prioritized in national rollout programs, recent studies from Europe, North America, and Asia have shown a significant level of COVID-19 vaccine hesitancy in this group. Among 2,678 health care workers in France and the French speaking parts of Belgium and Canada; 49% showed high acceptance, 23% moderate acceptance, and 28% reluctance, mostly driven by vaccine safety concerns.[19] A sample of over 800 Hong Kong-based nurses found only 40% intended to accept a COVID-19 vaccination due to suspicions about safety and efficacy, believing it unnecessary, or that they didn't have time to take it.[20] While in US health care workers, 58% have already, or would take a COVID-19 vaccine as soon as they could. A figure higher than the general population yet still fairly low.[21]

Despite higher risk of severe illness or death from COVID-19, there tends to be a greater incidence of vaccine hesitancy in racial and ethnic minority groups.[22,23] Concerns such as general mistrust of government and health systems, or worries about safety and side effects have meant lower levels of uptake of the vaccine in these populations.[21,23] Research involving all ethnicities from France, and UK and Ireland found that being younger than 65 years and female also increased the likelihood of COVID-19 vaccine hesitancy.[24,25]

False: Pfizer's COVID-19 vaccine linked to infertility.

One fabricated claim that has spread rapidly on social media suggests that the spike protein, which is targeted by the Pfizer vaccine, is similar to placenta proteins and thereby leads to infertility in women. It's possible that this theory gained major traction because there are similarities between the COVID-19 spike protein and a placental protein, misleadingly lending the story an element of credibility. Numerous experts agree however that these minor similarities would not be enough for the body to mistake the two proteins. Pfizer trial data has also not found any impact on fertility.[27]

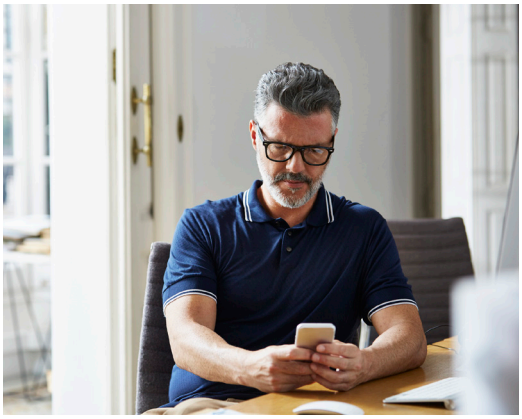
INFLUENCE OF THE "ANTI-VAXX" MOVEMENT

Investigations into anti-vaccine activists found that they perceive the pandemic as a perfect opportunity to entrench skepticism about vaccines, and that their two key targets are ethnic minority groups and parents. They are aware that health professionals need to persuade the public to take an action and be vaccinated, whereas anti-vaccine groups need only to create doubt as to efficacy, safety, or necessity. Therefore content is designed to create doubt around three main areas: the threat posed by COVID-19, the safety of the vaccines, and whether we can trust experts.[26] Anti-vaccine messaging often operates by selectively presenting real data and narratives that are twisted to generate doubt and distrust. The strand of truth within these otherwise false posts can create powerful messaging.

IMPACT OF SOCIAL MEDIA IN SPREADING ANTI-VACCINE THEORIES

There has been some opposition to vaccination ever since the first smallpox vaccine. Today, social media allows for anti-vaccine rhetoric to proliferate more rapidly, with social media algorithms repeatedly exposing hesitant users to content that is hostile to vaccines.[28] An analysis of global information on Facebook split users into anti-vaccine, pro-vaccine, and undecided views. They found that, although fewer, anti-vaccination clusters managed to

become highly entangled with undecided clusters whilst pro-vaccination clusters remained more peripheral.[29] The fact that there are 59.2 million people who follow anti-vaccine groups on Facebook, Instagram, Twitter, and YouTube indicates the scale of the problem.[26]



In response to these issues, social media companies have policies that oppose false content or conspiracy theories about COVID-19 that could be harmful. For example, Facebook, Instagram, and Twitter have taken steps to ensure that COVID-19 misinformation is removed and searches are first met with credible, authoritative information from governments or established health bodies.[30,31] YouTube, meanwhile, has removed advertising revenue from videos containing misinformation about COVID-19 vaccines.[32] However a recent audit found that, when nearly a thousand posts containing misinformation about COVID-19 and therefore contravening the social media companies' own policies were sent to them, only 5% were dealt with.[33]

It is recommended that individuals resist the urge to disagree with or correct anti-vaccine information online as this can actually cause posts and topics to trend. Instead, it is suggested that users post pro-vaccine information, and let others know online when they have been vaccinated.[26] US data suggests that knowing someone who has been vaccinated for COVID-19 is correlated with enthusiasm for the vaccine. Hearing that a trusted doctor or health care provider, or a close friend or family member has been vaccinated may also help alleviate hesitancy.[21]

OVERCOMING VACCINE HESITANCY

To overcome vaccine hesitancy, organizations are encouraged to be transparent about what is known about the virus. Also to offer fact-based information about the side effects that can be expected, while acknowledging that not everyone will have the same viewpoint on vaccines.[34] Information that may encourage people to get vaccinated emphasizes the vaccine's effectiveness at preventing illness, protection for those who are vaccinated, and the ability to return to normal life.[21]

Careful consideration needs to be given to encouraging high-risk, low-uptake groups — such as ethnic minority groups — to be vaccinated. Current examples of this include engaging with faith and community leaders and setting up vaccination centers in places of worship, such as mosques and temples, and other community hubs.[35] Making information available in multiple languages and the use of strategic messaging to overcome historic mistrust of government and health care systems are also recommended.[35,36]

The COVID-19 vaccinations are not mandatory and while personal choice must be respected, each person vaccinated is a step towards reduced morbidity and mortality from COVID-19, and an opportunity to enjoy greater personal and population-wide freedom from pandemic-imposed restrictions.

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Sources:

1. Edward Jenner (1749-1823): from variolation to vaccination. Hektoen International. https://hekint.org/2017/02/01/edward-jenner-1749-1823-from-variolation-to-vaccination. Accessed March 3, 2021.
2. Vaccines and immunization. World Health Organization. https://www.who.int/health-topics/vaccines-and-immunization#tab=tab_1. Accessed March 3, 2021.
3. There are four types of COVID-19 vaccines: here's how they work. GAVI.org. https://www.gavi.org/vaccineswork/there-are-four-types-covid-19-vaccines-heres-how-they-work. Accessed March 3, 2021.

4. Types of vaccines for COVID-19. British Society for Immunology. https://www.immunology.org/coronavirus/connect-coronavirus-public-engagement-resources/types-vaccines-for-covid-19. Accessed March 3, 2021.
5. Why do we need multiple doses of a vaccine? British Society for Immunology. https://www.immunology.org/coronavirus/connect-coronavirus-public-engagement-resources/why-multiple-doses-covid19-vaccine. Accessed March 3, 2021.
6. COVID-19 – VLA2001. Valneva. https://valneva.com/research-development/covid-19-vla2001. Accessed March 3, 2021.
7. Lurie N, Saville M, Hatchett R, Halton J. Developing Covid-19 Vaccines at Pandemic Speed. N Engl J Med 2020; 382:1969-1973. DOI:10.1056/NEJMp2005630.
8. Ye ZW, Yuan S, Yuen KS, et al. Zoonotic origins of human coronaviruses. Int J Biol Sci. 2020;16(10):1686-1697. DOI:10.7150/ijbs.45472.
9. Verbeke R, Lentacker I, De Smedt SC, Dewitte H. Three decades of messenger RNA vaccine development. Nano Today. 1019;28. 100766, ISSN 1748-0132. DOI:10.1016/j.nantod.2019.100766.
10. COVID-19 vaccines: development, evaluation, approval and monitoring. European Medicines Agency (EMA). https://www.ema.europa.eu/en/human-regulatory/overview/public-health-threats/coronavirus-disease-covid-19/treatments-vaccines/vaccines-covid-19/covid-19-vaccines-development-evaluation-approval-monitoring. Accessed March 3, 2021.
11. Public encouraged to register for COVID-19 vaccine trials as 100,000 already sign-up. Gov.UK. https://www.gov.uk/government/news/public-encouraged-to-register-for-covid-19-vaccine-trials-as-100000-already-sign-up. Published August 17, 2020. Accessed March 3, 2021.
12. Coronavirus (COVID-19) Vaccinations. Our World in Data. https://ourworldindata.org/covid-vaccinations. Accessed March 3, 2021.
13. Roadmap for prioritizing population groups for vaccines against COVID-19. World Health Organization. https://www.who.int/immunization/sage/meetings/2020/october/Session03_Roadmap_Prioritization_Covid-19_vaccine.pdf. Published September 27, 2020 - Draft. Accessed March 3, 2021.
14. Coronavirus disease (COVID-19): Herd immunity, lockdowns and COVID-19. https://www.who.int/news-room/q-a-detail/herd-immunity-lockdowns-and-covid-19. Updated December 31, 2020. Accessed March 3, 2021.
15. Can Covid-19 Vaccines Keep up with an Evolving Virus? Labiotech.eu. https://www.labiotech.eu/trends-news/emergex-covid-19-vaccine. Updated February 11, 2021. Accessed March 3, 2021.
16. COVID-19 vaccine doses shipped by the COVAX Facility head to Ghana, marking beginning of global rollout. World Health Organization - News. https://www.who.int/news/item/24-02-2021-covid-19-vaccine-doses-shipped-by-the-covax-facility-head-to-ghana-marking-beginning-of-global-rollout. Published February 24, 2021. Accessed March 3, 2021.
17. Ten threats to global health in 2019. World Health Organization. https://www.who.int/news-room/spotlight/ten-threats-to-global-health-in-2019. Accessed March 3, 2021.
18. Attitudes to COVID-19 vaccines. IPSOS & World Economic Forum. https://www.ipsos.com/sites/default/files/ct/news/documents/2021-01/attitudes-to-covid-19-vaccines-ipsos.pdf. Updated January 2021. Accessed March 3, 2021.
19. Verger P, Scronias D, Dauby N, et al. Attitudes of healthcare workers towards COVID-19 vaccination: a survey in France and French-speaking parts of Belgium and Canada, 2020. Euro Surveill. 2021;26(3):pii=2002047. DOI:10.2807/1560-7917.ES.2021.26.3.2002047
20. Wang K, Wong ELY, Ho KF, et al. Intention of nurses to accept coronavirus disease 2019 vaccination and change of intention to accept seasonal influenza vaccination during the coronavirus disease 2019 pandemic: A cross-sectional survey. Vaccine. 2020;38(45):7049-7056. DOI:10.1016/j.vaccine.2020.09.021.
21. KFF COVID-19 Vaccine Monitor: January 2021. Kaiser Family Foundation (KFF). https://www.kff.org/report-section/kff-covid-19-vaccine-monitor-january-2021-vaccine-hesitancy. Updated January 22, 2021. Accessed March 3, 2021.
22. COVID-19 Racial and Ethnic Disparities. CDC. https://www.cdc.gov/coronavirus/2019-ncov/community/health-equity/racial-ethnic-disparities/disparities-illness.html. Updated December 10, 2020. Accessed March 3, 2021.
23. Covid-19 vaccine hesitancy among ethnic minority groups. BMJ 2021; 372 DOI:10.1136/bmj.n513. Published February 26, 2021.
24. Schwarzinger M, Watson V, Arwidson P, et al. COVID-19 vaccine hesitancy in a representative working-age population in France: a survey experiment based on vaccine characteristics. The Lancet. Public Health. 2021 Feb. DOI: 10.1016/s2468-2667(21)00012-8.
25. Murphy J, Vallières F, Bentall RP, et al. Psychological characteristics associated with COVID-19 vaccine hesitancy and resistance in Ireland and the United Kingdom. Nat Commun. 2021: 12, 29. DOI:10.1038/s41467-020-20226-9.
26. The Anti-Vaxx Playbook report. (p. 9, 42-43.) Center for Countering Digital Hate (CCDH). Published November 2020. https://252f2edd-1c8b-49f5-9bb2-cb57bb47e4ba.filesusr.com/ugd/f4d9b9_fddbfb2a0c05461cb4bdce2892f3cad0.pdf. Accessed March 3, 2021.
27. No evidence Pfizer Covid-19 vaccine affects women's fertility. Full Fact. https://fullfact.org/health/vaccine-covid-fertility. Updated December 8, 2020. Accessed March 3, 2021.
28. Boyd S. Pushing back – tackling the anti-vax movement. British Medical Association (BMA). https://www.bma.org.uk/news-and-opinion/pushing-back-tackling-the-anti-vax-movement. Published January 11, 2021. Accessed March 3, 2021.
29. Johnson NF, Velásquez N, Restrepo NJ, et al. The online competition between pro- and anti-vaccination views. Nature 2020; 582, 230–233. DOI:10.1038/s41586-020-2281-1.
30. An Update on Our Work to Keep People Informed and Limit Misinformation About COVID-19. Facebook. Updated April 16, 2020. Accessed March 3, 2021.
31. As the global community faces the COVID-19 pandemic together, Twitter is helping people find reliable information, connect with others, and follow what's happening in real time. Twitter Inc. Updated January 12, 2021.
32. Monetization update on COVID-19 content. YouTube. Accessed March 3, 2021.
33. Failure to Act report. (p11.) Center for Countering Digital Hate (CCDH). September 2020. https://252f2edd-1c8b-49f5-9bb2-cb57bb47e4ba.filesusr.com/ugd/f4d9b9_dbc700e9063b4653a7d27f4497f3c2c2.pdf. Accessed March 3, 2021.
34. How Public Health Officials Can Increase Confidence in the COVID-19 Vaccine. Verywell Health. https://www.verywellhealth.com/local-officials-covid-19-vaccine-skepticism-5091834. Updated December 11, 2020. Accessed March 3, 2021.
35. Policy paper: UK COVID-19 vaccine uptake plan. UK Government. https://www.gov.uk/government/publications/covid-19-vaccination-uptake-plan/uk-covid-19-vaccine-uptake-plan. Updated February 13, 2021. Accessed March 3, 2021.
36. How to overcome COVID-19 vaccine hesitancy among black patients. American Medical Association (AMA). https://www.ama-assn.org/delivering-care/public-health/how-overcome-covid-19-vaccine-hesitancy-among-black-patients. Updated December 29, 2020. Accessed March 3, 2021.

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