
Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Medicina Clínica 158 (2022) 233–236

MEDICINA CLINICA

www.elsevier.es/medicinaclinica

Special article

# August 2021 and the Delta variant: is mandatory vaccination of individuals against SARS-CoV-2 acceptable?☆

## Agosto 2021 y la variante Delta: ¿es aceptable obligar a las personas a vacunarse contra el SARS-CoV-2?

Rafael Dal-Ré[a,*], Victoria Camps[b]

[a] Unidad de Epidemiología, Instituto de Investigación Sanitaria-Hospital Universitario Fundación Jiménez Díaz, Universidad Autónoma de Madrid, Madrid, Spain
[b] Departamento de Filosofía, Universidad Autónoma de Barcelona, Barcelona, Spain

As the pace of vaccination has accelerated and remarkable levels of herd immunity have been achieved, the urgency of regaining pre-pandemic mobility and lifestyle is creating a new conflict that is leading some governments to impose mandatory vaccination in certain circumstances. Thus, by August 2021, as many as 21 European countries required a certificate of full vaccination - or of absence of infection, through negative antigen or PCR testing, or of having passed COVID-19 - in order to access indoor public places and outdoor events, and mandatory vaccination for healthcare workers.[1,2] In the UK,[2] mandatory vaccination of nursing home workers will be implemented in October. In the US, President Biden proposed paying $100 to those who get vaccinated, and several health institutions, companies and universities require their employees and students to be vaccinated.

The question to ask is whether such demands are justified when more than half of the population in Western countries has already received the full vaccination regimen. Two factors, among others, allow us to approach the answer. The first is the emergence and rapid spread of the Delta variant of SARS-CoV-2, which has high transmissibility rates and high viral loads, even among vaccinated people,[3,4] although the latter decrease more rapidly in vaccinated than in unvaccinated people.[5] The second is the growing difficulty of vaccinating population groups that have not yet done so –whether due to rejection, doubts or apathy–. All incentive measures, however, began to be considered a year ago.

As early as August 2020, several months before the first SARS-CoV-2 vaccines began to be licensed, and almost a year before their licensing and distribution in Western countries would allow any adult to be vaccinated, consideration began to be given to whether vaccination should be encouraged or made mandatory. This was in response to the fact that many people had expressed reluctance to be vaccinated. Thus, in November 2020, only 51% of respondents from 15 countries were willing to be vaccinated in 2021, ranging from 65% in the United Kingdom to 35% in France; in Spain, the data showed 41%.[6] Many people seemed to feel manipulated, others claimed they did not want to be the first. In August 2020, economist Robert Litan put forward the solution of paying to be vaccinated: paying $1,000 per citizen in the US would require about $275 billion, a bargain compared to the estimated several trillion dollars in costs and losses before herd immunity is achieved.[7] Along the same lines, bioethicist Julian Savulescu said in November 2020 that he would prefer a payment in cash or in kind to encourage vaccination against SARS-CoV-2, rather than making it mandatory.[8] The idea of payment, however, was rejected by scientists who believed that citizens might interpret that if they received a sum of money for vaccination, it was because the vaccine was unsafe, thus giving arguments to the anti-vaccine campaigners. Payment in kind (or ‘‘vaccination passport’’) could translate into greater ease in travelling, socialising or working, a solution that has the advantage of avoiding sending the idea that the vaccine is unsafe, while conveying the message that the vaccinated person is no longer a danger to others.[8]

Despite the fears and bad omens of some, the initial good reception of the available vaccines by priority population groups meant that, initially, no country established mechanisms to encourage vaccination. By 7 August 2021, in Western countries, between 50% (Greece and USA) and 62% (Canada) of the population had received the full SARS-CoV-2 vaccination regimen; in Spain, it was 60%.[9] However, at that time, countries such as Spain, France and the UK were reporting 20,000-26,000 cases of COVID-19 per day, while 108,000 cases per day were being reported in the US.[9] Over the past few months, some countries reported that the number of people vaccinated per day has been decreasing. It was becoming increasingly difficult to complete the vaccination of the different age groups. Thus, incentives and, in some countries, mandatory vaccination against SARS-CoV-2 for certain professions or for certain social activities began to be introduced.

☆ Please cite this article as: Dal-Ré R, Camps V. Agosto 2021 y la variante Delta: ¿es aceptable obligar a las personas a vacunarse contra el SARS-CoV-2? Med Clin (Barc). 2022;158:233–236.

* Corresponding author.
*E-mail address:* rafael.dalre@quironsalud.es (R. Dal-Ré).

## Ethical reasons for mandatory vaccination of health and social care professionals

Europe has always been reluctant to force vaccination on the population. Bioethics committees, as well as governments, have preferred persuasion to imposition. But the current pandemic is an unprecedented situation that may require different reasoning from what has been done so far, related to the priorities that have been established in the distribution of vaccines in order to ensure immunity especially for the groups at greatest risk.

At the end of 2020, Western countries, and also the WHO, were advocating that health and social care professionals should be a main priority group - along with the over-65s and people with certain underlying diseases - to be vaccinated against SARS-CoV-2.[10] It was rightly understood that anyone caring for or treating COVID-19 patients is at risk of close contact with the coronavirus and should be vaccinated as soon as possible. As these workers can be vectors of infection for other people and patients,[11] and as vaccination is known to help reduce the transmissibility of SARS-CoV-2,[12] it seems a reasonable measure to vaccinate health and social care professionals at this time.

Ezekiel Emanuel, a very prominent physician and bioethicist active in the ethical complexities of the pandemic, has stressed the need for health and social care professionals to be vaccinated against SARS-CoV-2. In fact, thanks to his initiative, 88 medical, nursing, pharmacy, psychology and epidemiology organisations in the USA have signed a manifesto in favour of compulsory vaccination for these professionals.[13] The rationale is that health and social care professionals have an ethical commitment to ensure that the people they care for are at the centre of their activity and must take the necessary measures to secure their health and well-being. The manifesto urges health and social care institutions to require vaccination of *all* their employees, except when there are medical reasons advising against it. This manifesto responds to the fact that the percentage of these workers vaccinated in the US is very uneven: from 96% of doctors and less than 50% of nurses, to 26% of home health aides.[13] In Canada, along the same lines, the doctors' association and the nurses' association have called for vaccination to be mandatory for healthcare workers.[14] The central administration in Spain does not consider compulsory vaccination of social and health care workers as necessary,[15] considering that a ï00% vaccination rateëhas been achieved among health care workers,[16] and very high but variable vaccination rates among workers in nursing homes,[17] This has not prevented the employers' associations of the nursing home sector and six Autonomous Communities from calling for compulsory vaccination of social and health care workers,[17] We believe that ensuring that *all* persons working in institutions providing medical or nursing care are vaccinated seems a reasonable objective, especially with the possible emergence of new variants that resist the immunity achieved with currently available vaccines and, if appropriate, the administration of booster doses or modified vaccines.

## Ethical reasons for mandatory vaccination of the population

The framework for reflection must be set in a s̈emi-compulsoryv̈accination context, where individuals are required to be vaccinated unless they can justify exemption, and where unvaccinated are p̈enalised.[18] An example of this situation occurs in Spain and in other countries when, in certain epidemiological situations, children have to prove that they have received the vaccines according to the vaccination programme established by the health authorities in order to access school. Recently, the European Court of Human Rights has ruled that mandatory vaccination of children against certain infections is «necessary in democratic societies».[19] However, in the case of SARS-CoV-2, the p̈enaltyb̈eing proposed for nursing home workers who refuse to be vaccinated is a change of employment, most likely outside a nursing home. The same applies to a health worker who is reluctant to be vaccinated; the only way to p̈enalise him/her ïs to prevent him/her from practising as a health worker. In both cases, unlike what can happen when, under certain circumstances, parents are prevented from taking their unvaccinated child to school, the autonomy of the individual is more limited, since it is his or her employment continuity that is at stake. Even so, given the high transmissibility of the Delta variant, it is not unreasonable for health and social care workers to put the protection of vulnerable people before the autonomy of people who, having to carry out care work, are reluctant to be vaccinated.

Autonomy is the ethical principle whereby each person is responsible for his or her decisions, made with sufficient information about the available possibilities and when he or she has the basic capabilities to be able to make use of them. Autonomy is exercised through consent. From an ethical point of view, autonomy is a fundamental value, in Kant's view, the necessary condition of moral action. But it is not the only value to be taken into account; no value is absolute and is only maintained if it withstands the permanence of other equally fundamental values. John Stuart Mill explained that the only justification for limiting people's autonomy is to prevent them from harming others, not from harming themselves. It is true that those who refuse to vaccinate are p̈rotecting ẗhemselves from p̈ossible harm ẅhich they think the vaccine may inflict on them. But this argument must be countered by the indifference they show to the more than likely harm that their attitude may cause to others. Thinking of others, and taking responsibility for what may happen to them, is an attitude of solidarity, in this case incompatible with the attitude of those who think only about their own benefit. In short, in public health, autonomy must be evaluated against other values such as preventing harm: autonomy is always important, but it is not always the most important value.[18]

Vaccination exemplifies how, in public health, individual decisions affect others, and illustrates the inseparable relationship between human rights (the right to health protection), responsibility (protecting those who cannot be vaccinated), and solidarity (intervention that benefits public health).[20] The mandatory nature of vaccination emphasizes the benefit of third parties (the community) over individual benefit. Its assessment must take into account the risks associated with vaccination and those of the disease to be prevented, and the population's risk of developing the disease.[18] To date, regulatory and public health authorities in Western countries understand that the benefit-risk assessment of SARS-CoV-2 vaccines is favourable, provided they are administered according to their recommendations.

The Delta variant of SARS-CoV-2 is the most prevalent in Europe and the US. The available vaccines appear to be slightly less effective against infection and symptomatic disease regarding the new variants compared to the original strain (Wuhan) and the Alpha variant; however, the vaccines are highly effective in preventing hospitalisation and *death*.[21] The Delta variant has a basic reproduction number (Ro) of about seven, making herd immunity likely to be achieved if 85% of the population is vaccinated[22] –far from the 47-62% estimated a few months ago when the Ro for Western Europe was 1.9-2.6[23]–. As the effectiveness of vaccines against infection and symptomatic disease is 80-95%, and appears to be lower against the Delta[21] variant, it must be understood that achieving herd immunity is almost impossible unless the immunisation rate in the population is 90-95%. To reach these vaccination coverages, the paediatric population would have to be vaccinated. Even with this, reaching herd immunity might not be possible since, as mentioned, the Delta variant can infect those who are vaccinated; but, in any case, the population would be protected against hospitalizations

and deaths from COVID-19. The latter would also be the case even if, as has been observed, the effectiveness of Delta variant vaccines in preventing infection or symptomatic disease at high viral loads decreases over time.[24] The aim, in any case, should be to vaccinate as large a percentage of the population as possible, potentially turning SARS-CoV-2 infection into an endemic infection.

In order to determine whether vaccination should be mandatory, the WHO[25] understands that several aspects must be assessed. First, necessity and proportionality: an unequivocal public health benefit must be sought, such as herd immunity. Second, the vaccine must be safe and effective for the population. Third, there must be sufficient availability of vaccines. Fourth, authorities should consider whether mandatory vaccination could affect public confidence in vaccines. And finally, the authorities must be transparent in their decision-making. It is therefore reasonable to ask whether, in Western countries and in the summer of 2021, these requirements, which would make compulsory vaccination ethically acceptable, are met.

## How to implement compulsory vaccination in the general population

Even if, in general terms, there are sufficient reasons to ethically endorse compulsory vaccination, it should be very clearly restricted to those situations where the benefit of others must clearly take precedence over one's own autonomy. The difference of opinion between those in favour of accepting or denying this premise will be mainly due to the need to specify the circumstances and the procedure to do so adequately. This is where incentives for vaccination come into play.

From a bioethical perspective, there are those in favour[26] and those against[27] encouraging vaccination against SARS-CoV-2. In the US, vaccination of the population has been encouraged by paying modest amounts ($100), giving away soft drinks, tickets to sporting events or organising prize draws for exorbitant amounts of money. However, to the surprise of its promoters, the $1,000,000 draw in Ohio (USA) has not proven to be an effective measure.[28] It should be borne in mind that, contrary to what one may believe, offering money is not *per se* a coercive measure, as the person is vaccinated - and receives payment - because he or she understands that it is in his or her best interest, and can always refuse vaccination and payment.[8] Nor does it lead to exploitation of those for whom the payment may be most attractive, the most disadvantaged: this happens if the poor are encouraged to take more risks for the benefit of others; the vaccine, however, protects the recipient, as well as contributing to the benefit of the community.

Payment for vaccination has not been an incentive considered in Western Europe to date. However, in Europe, many countries require a vaccination certificate for many social and work activities. This restricts fundamental rights if individuals cannot access these activities through alternative mechanisms such as proving absence of infection or that they have suffered a previous infection.[26] In the current situation where any adult has access to vaccination, treating those who can prove their vaccination (or through alternative mechanisms) different from those who cannot entails assessing the principle of non-discrimination to avoid infringement of the rights of assembly, freedom of movement and confidentiality of health data.[26] But in this assessment, it is also necessary to consider the lack of responsibility and solidarity of those who do not vaccinate, who jeopardise another fundamental right, namely the right to health protection. It is therefore not surprising that, even in similar epidemiological situations, there are conflicting court rulings. Spain and France have seen opposing rulings by the competent courts at a time when both countries are experiencing a new wave of COVID-19 primarily due to the Delta variant. While in Spain the Constitutional Court upholds the suspension of the provisions of a Galician Health Law which empowered the imposition of compulsory vaccination under threat of fines of up to €3,000 in situations of serious risk to public health,[29] in France the Constitutional Council has validated the ¨covid certificate¨to access crowded places.[1]

## Conclusion

While persuasion, whether at the population level through up-to-date information campaigns or at the individual level through health professionals, is the best way to convince people of the need to be vaccinated, Western countries have reached a situation where it is becoming increasingly difficult to vaccinate people who have not yet been vaccinated. A possible implementation of mandatory vaccination against SARS-CoV-2 Delta variant for health and social care professionals and the population must consider epidemiological, sociological, ethical and legal aspects that have been briefly discussed here. In the summer of 2021, we understand that Western countries, in general, agree on the epidemiological and ethical aspects, and may disagree on the sociological and legal ones. Although the attitude of populations towards vaccines is important - confidence in vaccines against SARS-CoV-2 in May 2021 ranged from 87% (UK) or 78% (Spain) to 47% (Australia) or 56% (France)[30] - governments should focus on epidemiological data, hoping that the courts, if they have to act according to national legislation, will accept any proposals for mandatory vaccination if they deem it appropriate. Translated with www.DeepL.com/Translator (free version) In any case, as we are in a high transmission scenario, it is still necessary to wear a facemask and keep a physical distance when we are with other people in enclosed places, regardless of their vaccination status.

## Funding

This paper did not require any funding.

## Conflict of interests

The authors declare no conflict of interest.

## References

1. De Miguel B. El certificado covid se impone en el día a día de 21 países europeos. El País. 8 de agosto de 2021. [Accessed 20 Ago 2021], https://elpais.com/sociedad/2021-08-08/el-certificado-covid-se-impone-en-el-el-dia-a-dia-de-21-paises-europeos.
2. Stokel-Walker C. Covid-19: the countries that have mandatory vaccination for health care workers. BMJ. 2021;373:n1645.
3. Brown CM, Vostok J, Johnson H, Burns M, Ghapure R, Sami S, et al. Outbreak of SARS-CoV-2 infections, including COVID-19 vaccine breakthrough infections, associated with large public gatherings—Barnstable county, Massachusetts, July 2021. MMWR. 2021;70:1059–62.
4. Li B. Deng A. Li K. Hu Y. Li Z. Xiong Q. et al. Viral infection and transmission in a large well-traced outbreak caused by the Delta SARS-CoV-2 variant. medRxiv. doi: 10.1101/2021.07.07.21260122. preprint.
5. Chia P.Y. Ong S.W.X. Chiew C.J. Chavatte J.M. Mak T.M. Cui L. et al. Virological and serological kinetics of SARS-CoV-2 Delta variant vaccine-breakthrough infections: a multi-center cohort study. medRxiv. doi: 10.1101/2021.07.28.21261295. preprint.
6. Imperial College London. Covid-19: perceptions of vulnerability and attitudes towards a COVID-19 vaccine. Global report. November 2020. [Accessed 20 Ago 2021]. https://www.imperial.ac.uk/media/imperial-college/institute-of-global-health-innovation/Global_ICL-YouGov-Covid-19-Behaviour-Tracker_Vaccines_20201210_vF.pdf.
7. Litan R. Want herd immunity? Pay people to take the vaccine. Brookings. 18 August 2020. [Accessed 20 Ago 2021], https://www.brookings.edu/opinions/want-herd-immunity-pay-people-to-take-the-vaccine/.
8. Savulescu J. Good reasons to vaccinate: mandatory or payment for risk? J Med Ethics. 2021;47:78–85.
9. Holder J. Tracking coronavirus vaccinations around the world. The New York Times. Updated 7 August 2021. [Consultado 20 Ago 2021],

https://www.nytimes.com/interactive/2021/world/covid-vaccinations-tracker.html.
10. Dal-Ré R, Camps V. ¿A quién habría que vacunar primero frente a la COVID-19? Med Clin (Barc). 2021;156:177–9.
11. Cevik M, Tate M, Lloyd O, Maraolo AE, Schafers J, Ho A. SARS-CoV-2, SARS-CoV, and MERS-CoV viral load dynamics, duration of viral shedding, and infectiousness: a systematic review and meta-analysis. Lancet Microbe. 2021;2:e13–22.
12. Egunsola O. Mastikhina L. Dowsett L. Farkas B. Hofmeister M. Saxinger L.et al. Transmissibility of COVID-19 among Vaccinated Individuals: A Rapid Literature Review. medRxiv. doi: 10.1101/2021.06.29.21255526. preprint.
13. Emanuel EJ, Skorton DL. Mandating COVID-19 vaccination for health care workers. Ann Intern Med. 2021;174:1308–10, http://dx.doi.org/10.7326/M21-3150.
14. Canadian Medical Association. CMA and CAN call for mandatory COVID-19 vaccinations for health care workers; 2021 [Accessed 20 Ago 2021], https://www.cma.ca/news-releases-and-statements/cma-and-cna-call-mandatory-covid-19-vaccinations-health-care-workers.
15. Fernando Simón no ve necesario que la vacunación contra el covid sea obligatoria. El Periódico. 7 de agosto de 2021. [Accessed 20 Ago 2021], https://www.elperiodico.com/es/sanidad/20210807/fernando-simon-vacunacion-obligatoria-innecesaria-11975929?utm_source=newsletter&utm_medium=email&utm_campaign=elPeriodico-ed07h.
16. Díaz-Miguel C, Martín del Campo E, Cornejo A. ¿Podría España obligar a sus sanitarios a vacunarse? Posible, aunque enrevesado e innecesario. El Global. 14 de Jul de 2021. [Accessed 20 Ago 2021], https://elglobal.es/farmacia/podria-espana-obligar-a-sus-sanitarios-a-vacunarse-posible-aunque-enrevesado-e-innecesario/.
17. Sosa Troya M. Las patronales de residencias piden que la vacunación sea obligatoria para sus trabajadores. El País. 7 de agosto de 2021. [Accessed 20 Ago 2021], https://elpais.com/sociedad/2021-08-07/las-patronales-de-residencias-piden-que-la-vacunacion-sea-obligatoria-para-sus-trabajadores.html.
18. Nuffield Council on Bioethics. Public health: ethical issues. London: Nuffield Council on Bioethics; 2007 [Accessed 20 Ago 2021]. https://www.nuffieldbioethics.org/assets/pdfs/Public-health-ethical-issues.pdf.
19. Mandatory vaccinations for children'necessary in a democratic society', rules ECHR. Euronews. 4 August 2021. [Accessed 20 Ago 2021], https://www.euronews.com/2021/04/08/mandatory-vaccinations-for-children-necessary-in-a-democratic-society-rules-echr.
20. Committee on Bioethics (DH-BIO). Council of Europe. Statement on human rights considerations relevant to 'vaccine pass' and similar documents. 4 May 2021. [Accessed 20 Ago 2021], https://rm.coe.int/dh-bio-2021-7-final-statement-vaccines-e/1680a259dd.
21. Center for Disease Control and Prevention. Science in brief: COVID-19 vaccines and vaccination. Updated 27 July 2021. [Accessed 20 Ago 2021], https://www.cdc.gov/coronavirus/2019-ncov/science/science-briefs/fully-vaccinated-people.html.
22. Burki TK. Lifting of COVID-19 restrictions in the UK and the Delta variant. Lancet Resp Med. 2021;9:e85.
23. Locatelli I, Trächsel B, Rousson V. Estimating the basic reproduction number for COVID-19 in Western Europe. PLoS One. 2021;16:e0248731.
24. Pouwels KB, Pritchard E, Matthews PC, Stoesser N, Eyre DW, Vihta KD, et al. Impact of Delta on viral burden and vaccine effectiveness against new SARS-CoV-2 infections in the UK. University of Oxford. 19 Agosto 2021. [Accessed 20 Ago 2021], https://www.ndm.ox.ac.uk/files/coronavirus/covid-19-infection-survey/finalfinalcombinedve20210816.pdf.
25. World Health Organization. COVID-19 and mandatory vaccination: ethical considerations and caveats. Policy brief. 13 April 2021. [Accessed 20 Ago 2021], https://www.who.int/publications/i/item/WHO-2019-nCoV-Policy-brief-Mandatory-vaccination-2021.1.
26. Largent EA, Miller FG. Problems with paying people to be vaccinated against COVID-19. JAMA. 2021;9:534–5.
27. Jecker NS. What money can't buy: an argument against paying people to get vaccinated. J Med Ethics. 2021, http://dx.doi.org/10.1136/medethics-2021-107235. Online ahead of print.
28. Walkey AJ, Law A, Bosch NA. Lottery-based incentive in Ohio and COVID-19 vaccination rates. JAMA. 2021;326:766–7.
29. Brunet JM. El Tribunal Constitucional prolonga la suspensión de la ley de Galicia que impone la vacunación obligatoria. El País. 23 Jul 2021. [Accessed 20 Ago 2021], https://elpais.com/sociedad/2021-07-23/el-tribunal-constitucional-prolonga-la-suspension-de-la-ley-de-galicia-que-impone-la-vacunacion-obligatoria.html.
30. Imperial College London. Global attitudes towards a COVID-19 vaccine. May 2021. [Accessed 20 Ago 2021], https://www.imperial.ac.uk/media/imperial-college/institute-of-global-health-innovation/GlobalVaccineInsights_ICL-YouGov-Covid-19-Behaviour-Tracker_20210520_v2.pdf.