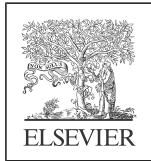




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Should nurses take a COVID-19 vaccine?

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ABSTRACT

The issue as to whether health care professionals have a moral obligation to take a vaccine for a communicable disease is not new. Nonetheless, this issue takes on a fresh urgency within nursing practice in the context of the present COVID-19 pandemic, i.e., is there an ethical requirement for nurses to take a COVID-19 vaccine? This paper approaches the issue by using a hypothetical example of Nurse X who has inadvertently infected Patient Y. French's (1984a) Principle of Responsive Adjustment is adapted to claim that there would be a moral expectation that Nurse X takes a COVID-19 vaccine (unless there are justifiable reasons not to). The proposition is also made that, should Nurse X not take a COVID-19 vaccine, they could be morally associated with originally infecting Patient Y.

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Introduction

SARS-CoV-2, and its resultant COVID-19 disease, has presented—and continues to present with its variants of concern—a major hazard to public health around the world (Zhou et al., 2020, Shekhar et al., 2021). The onset of the virus and its expeditious, widespread, infection of people has represented a climacteric event in the narrative of humanity. The present COVID-19 range of vaccines—as well as other potential vaccine candidates in the pipeline—offer a promising weapon in the public health fight against this virus and thereby providing a possible route back to some semblance of normality.

The issue whether health care professionals have a moral obligation to take a vaccine for a communi-

cable disease, as well as whether it should be mandatory, is not new. Nonetheless, this issue takes on a fresh urgency within nursing practice in the context of the present pandemic, i.e., is there an ethical requirement for nurses to take a COVID-19 vaccine? This question will no doubt retain its pertinence well beyond the conclusion of this present pandemic. This paper approaches the issue by using a hypothetical example of Nurse X who has inadvertently infected Patient Y. French's (1984a) Principle of Responsive Adjustment is adapted to claim that there would be a moral expectation that Nurse X takes a COVID-19 vaccine (unless there are justifiable reasons not to)¹ to prevent or reduce the possibility of infecting again. The proposition is also made that, should Nurse X not take a COVID-19 vaccine (unless there are justifiable reasons not

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to), they could be morally associated with originally infecting Patient Y.²

SARS-CoV-2

SARS-CoV-2 is a highly infectious pathogenic virus that gives rise to the disease COVID-19 (Boulton, 2020; European Centre for Disease Prevention and Control, 2021a; Zhou et al., 2020). It is a virus that can be transmitted from one human being to another through respiratory secretions and droplets via coughing and sneezing, speaking and singing (European Centre for Disease Prevention and Control, 2021a; WHO, 2020; Zhou et al., 2020). Although the first reported case of infected persons was identified in China towards the end of 2019 (Chen et al., 2020; Phillis, 2020; Xafis et al., 2020; Zhu et al., 2020), much still has to be learned about the genesis of this new pathogen as well as the evolving strains and variants.

The contagious and circulating virus SARS-CoV-2 has brought widespread mortality and morbidity and general havoc on social and economic life. On the one hand, the virus has been particularly harmful for those with vulnerable immune systems (Heaton, 2020). The risk of dying from the disease is especially present for those who are elderly and/or who already have other underlying health issues (Walsh et al., 2020). Should an immune system react poorly to the virus SARS-CoV-2, the subsequent disease COVID-19 may lead to mortality (Boulton, 2020).

On the other hand, the public health measures to curtail and control the incidence, spread and burden of disease have demanded cohesive collective action on behalf of citizens such as maintaining good hand hygiene practices, keeping physical distance, as well as performing cough etiquette, using face masks and other coverings. Systems of test, trace and isolate, in

addition to lockdowns and other suspensions of social and economic life, as well as restricting travel and imposing quarantine, have also been included among the arsenal of public health urgent response measures in the ongoing attempt to shield those who are most vulnerable and to prevent the provision of acute hospital care from becoming overwhelmed. In the face of waves and surges of the disease, humanity has proven its capacity to change and suddenly adapt to the circumstances, especially in its use of technology to maintain social contact and to continue the provision of education and other essential services. Yet living with this virus has brought dramatic upheaval and serious disruption to people's lives and caused terrible suffering and death; it has affected people existentially on varying levels in terms of their quality of life, their economic situation as well as their physical and mental health. It is unknown what the lasting health, personal, social, economic and political effects will be once the world emerges out of the shadow of the present pandemic.

Vaccines

Since Edward Jenner's original smallpox vaccine in 1796 (Davidson, 2017; Greenwood, 2014; McAteer et al., 2020; Spaeder, 2016; Stern & Markel, 2005), vaccines signify "... one of the greatest public health achievements ..." (Park et al., 2020; Dubé et al., 2013) and are "... one of the most effective preventive measures in the history of medicine" (Prymula, 2013).

Vaccines "[...] stimulate the body's immune system into a response similar to that caused by invasion by the targeted pathogen, but without developing the illness" (Boulton, 2020). In terms of health of populations, vaccination is considered to be a chief instrument in the fight against various diseases (Carson & Flood, 2017; Chevalier-Cottin et al., 2020; Omer et al., 2009). Vaccines have prevented deaths as well as progressing good public health (Park et al., 2020). In short, "vaccination ... saves lives" (Orenstein & Ahmed, 2017). Various disabilities, which can develop because of certain viruses, as well as the spread of diseases have also been curtailed because of vaccination (Orenstein & Ahmed, 2017). Yet, due to the success of public health programs of vaccinations, the devastation that can be caused by infectious diseases has been almost forgotten in some parts of the world. Strikingly, "vaccination has become a victim of its own success" (Carson & Flood, 2017; Orenstein & Ahmed, 2017; WHO et al., 2009; McAteer et al., 2020).

No vaccine offers complete protection from a targeted virus (Goodman et al., 2020; Asveld, 2008; Orenstein & Ahmed, 2017). Although vaccines can protect individuals from the onset of diseases they may not inevitably inhibit the infection of the virus

¹ Medical grounds are generally included as reasons for refusing a vaccine. For instance, the Centers for Disease Control and Prevention (2020) outline a number of circumstances because of which a person should not obtain a vaccine such as their state of health. It provides a list of vaccines and circumstances in which a person should not obtain or should defer it. A common thread in the circumstances outlined by the Centers are significant allergic responses or when the person's immune system is compromised (<https://www.cdc.gov/vaccines/vpd/should-not-vacc.html>).

The European Vaccination Information Portal (2020) provides a list of situations where vaccines should not be used by a person due to, for example, significant allergic responses, or other problems in the person's immune system or as a result of medication or treatments that the person may be taking or undergoing (<https://vaccination-info.eu/en/vaccination/when-vaccinate/when-avoid-vaccination>).

² My interest here is in the philosophical idea of the Principle of Responsive Adjustment solely as a moral principle; this paper does not argue for French's positions on corporate responsibility.

in the first place (Andre et al., 2008). Vaccination can lead to a lessening in the incidence of disease for those in society who are not yet immunized (or who never will be), which demonstrates the “indirect effects” and “herd protection” that can be caused by a vaccine (Andre et al., 2008). Herd immunity can be acquired by vaccine coverage rate but the rate differs according to the type of disease that is targeted by the said vaccine (Giubilini et al., 2018; Giubilini, 2019) and the reproduction number (Andre et al., 2008). Although herd immunity is considered not to provide an equal level of defense against a virus for an unvaccinated individual person—as would be the case with a vaccine—it nonetheless provides a defense for people who are not able to receive a vaccine (Giubilini, 2019; Orenstein & Ahmed, 2017). Persons, as individuals, can be kept safe by a vaccine and wider society can also obtain protection when more people in society are vaccinated as it lessens the possibility of the disease circulating among people (Orenstein & Ahmed, 2017).

A vaccine targeted at COVID-19 is considered to be a key approach to bringing this pandemic to a conclusion (Lurie et al., 2020) or, at least, to controlling it (European Centre for Disease Prevention and Control, 2021b; Lurie et al., 2020; Giubilini, 2021). The rate at which scientists have progressed vaccines and vaccine candidates for COVID-19 has been exceptional. A successful roll out and coverage of a COVID-19 vaccine is seen to offer a way to lessen infection and therefore mortality rates and enable a return to some semblance of normal life (Grady et al., 2020; Heaton, 2020; Schaffer DeRoo et al., 2020). The large scale practical roll out across health care professionals, vulnerable groups, other frontline workers and wider society, paralleled with it being administered in a medically safe and ethically sound way, is complex but nonetheless urgent.

Is There an Ethical Requirement to Take a Vaccine for a Communicable Disease?

Whether to accept or to reject a vaccine is not only a health question but also an ethical question due to the potential benefits to the person (being vaccinated) as well as to others (Giubilini, 2019). The risk of harm from developing a disease, and spreading contagion, is diminished through the use of vaccines (Verweij, 2001). However, the decision not to take a vaccine may be due to medical grounds such as allergic reactions or an already compromised immune system (Giubilini et al., 2018; Asveld, 2008).

Putting aside medical and other justifiable reasons not to take a vaccine, is there an ethical requirement to take a vaccine for a communicable disease? The question whether health care professionals have a

moral obligation to take a vaccine for a communicable disease, as well as whether it should be mandatory, has been deliberated upon in the literature and continues to exercise the academic and wider health care community, especially with regard to the influenza vaccine (e.g., Anikeeva et al., 2009; Caplan, 2011; Cheng & Worth, 2014; Fricke et al., 2013; Giubilini, 2019; Helms & Polgreen, 2008; Isaacs & Leask, 2008; Maltezou & Tsakris, 2011; Maridor et al., 2017; Ottenberg et al., 2011; Poland et al., 2005; Stead et al., 2019; Steckel, 2007; Stewart, 2009; van Delden et al., 2008; Van Hooste & Bekaert, 2019; Wicker & Marckmann, 2014). Considering that it is deemed to be an effective prevention mechanism (Mo et al., 2019), the influenza vaccine is deemed to be an important tool in keeping patients safe in a health care setting (Haridi et al., 2017). Although influenza is considered to be a vaccine-preventable sickness, nosocomial influenza can still have a significant impact on vulnerable patients (Maltezou & Tsakris, 2011; Helms & Polgreen, 2008).

Yet the uptake of the influenza vaccines by nurses has varied (see Clark et al., 2009; Dedoukou et al., 2010; Dror et al., 2020; Halpin & Reid, 2019; Haridi et al., 2017; Kwok et al., 2021; Mo et al., 2019; Wilson et al., 2019). Aguilar-Díaz et al. (2011) found worries about after-effects and safety as well as questioning the level of efficacy to be the type of reasons given for not taking a vaccine by those working in health care; there was also the view that the virus did not pose a risk to their health as well as the belief that they were not at risk of catching it (Galanakis et al., 2013; Halpin & Reid, 2019). Other reasons given for refusal of vaccines have been based on conscientious objection and beliefs of a religious persuasion (Galanakis et al., 2013; Giubilini et al., 2018).

Galanakis et al. (2013) provide a useful summary of the arguments in favor and in opposition to requiring vaccination (in general) of health care professionals from the perspective of the four main principles of bioethics (Beauchamp & Childress, 2019; McLennan et al., 2008; Lee, 2015; Mo et al., 2019; Osbourne & Clark, 2021,³). Applying these principles of bioethics to the issue of COVID-19 vaccines, the following could be argued: The principle of respect for a patient’s autonomy would normally uphold a competent person’s right to accept or to reject a medical procedure. In the case of a COVID-19 vaccine, it could be argued that a nurse has an autonomous right to choose or not a vaccine for COVID-19. However, autonomy is generally limited by the risk of harm to others or when impinging on other peoples’ rights and entitlements. Therefore, a nurse’s autonomous right to choose or not a vaccine for COVID-19 could be limited by the risk of harm posed to others. From the perspective of the principle of beneficence,

³ Osbourne and Clark (2021) examine the question whether vaccination against COVID-19 should be mandatory for nurses and those working in health care.

vaccines in general can bring benefits in terms of protection to the recipient and to others. A similar point to [Anikeeva et al. \(2009\)](#) could be made about receiving a COVID-19 vaccine that it could afford a nurse the opportunity to continue to deliver care to patients in the context of high level of virus circulating. Although the obligation to increase the benefit or welfare for someone is not unrestrictive, health care professionals do have specific obligations of beneficence towards their patients; taking a vaccine for a vaccine-preventable infection has been considered to be part of this ([McLennan et al., 2008](#); [Beauchamp & Childress, 2019](#)). A similar proposition could be made about taking a COVID-19 vaccine. However, having an obligation of beneficence does not imply that health care professionals should cause harm to themselves to realize a benefit for those in their care ([Galanakis et al., 2013](#)).⁴ For [Galanakis et al. \(2013\)](#), the principle of nonmaleficence would stipulate not causing harm to others by transmitting an infection. [Harris and Holm \(1995\)](#) have argued that there is a prima facie moral obligation not to bring about a preventable harm, such as causing others to get ill. Yet when it comes to health care workers in particular, this is a significant prima facie obligation ([van Delden et al., 2008](#)). If a COVID-19 vaccine can prevent a harm of a virus being transferred from a health care professional to a patient, then the principle of nonmaleficence could be used to support the use of vaccines. If the principle of harm to others is a ground for impinging on a person's autonomy ([van Delden et al., 2008](#)), then it could be proposed that should the threat of COVID-19 pose a real harm to patients and others, then a nurse's autonomous decision to reject a COVID-19 vaccine could be limited by this harm. However, in the case of general vaccination, it is pointed out that evidence would be needed to claim that a patient was harmed by a particular health care professional who had not been vaccinated. In other words, direct causal links need to be shown with evidence ([Galanakis et al., 2013](#)). Finally, in terms of the principle of justice, for those patients who cannot be recipients of vaccines in general, due to medical reasons, would it be fair that they receive treatment by those who are not vaccinated but could be vaccinated (see [Galanakis et al., 2013](#))? A comparable argument could be made in the case of a COVID-19 vaccine.

Although [Beauchamp and Childress's \(2019\)](#) seminal principles could be used and further developed to argue for and against the ethical requirement to take a COVID-19 vaccine, this paper now approaches the issue by using and adapting the Principle of Responsive Adjustment to examine a hypothetical example of Nurse X who has inadvertently infected Patient Y.

Principle of Responsive Adjustment

The Principle of Responsive Adjustment encompasses the view that if someone was the inadvertent cause of something harmful happening or of a negative event, then there is the expectation that they adjust their behavior to ensure that a repetition of the event will not happen ([French, 1984a](#)). [French \(1984a\)](#) traces the roots of this expected change in present behavior to Aristotle (p. 498). In the *Nicomachean Ethics*, [Aristotle \(2001\)](#) writes that "Still they are themselves by their slack lives responsible for becoming men of that kind, and men make themselves responsible for being unjust or self-indulgent, in the one case by cheating and in the other by spending their time in drinking bouts and the like . . ." (p. 30, Book 3:5; [French, 1984b](#), p. 164). The Principle of Responsive Adjustment addresses a fundamental question in the aftermath of a harmful event: Has the person changed their behavior? Have actions been taken to stop the harm that is being caused or is the harm continuing to be caused? Therefore, what the person does after the original action (i.e., do they continue it or do they adjust their behavior) becomes important. What is essential is that remedial measures are taken to stop the recurrence of any harm. At a very minimum, there is an expectation that the action will not happen again.

[French's \(1984a\)](#) development of this position transcends the expectation of change in behavior to the view that if such a change is not initiated, the person can then be held morally responsible for the harmful effect of their past behavior. [French \(1984a\)](#) explains that this does not imply that the earlier nonintentional harm has now become an intentional harm. Rather, if there is no adjustment in behavior, then the person can now be associated with the original harmful occurrence. [French \(1984a\)](#) contends that "... a person's past actions (even if unintentional) can be (and often are) taken into the scope of the intentions that motivate that person's present and future actions" (p. 498). Although the person did not originally intend a harmful action, they now intend not to adjust their actions to prevent or stop such actions from continuing to happen ([French, 1984a](#)).

Under the Principle of Responsive Adjustment, the past behavior is still part of the narrative that constitutes the present moral life of the individual; the person can decide whether to intentionally change their ways to prevent the moral wrong being committed again ([French, 1984a](#)). By not making the necessary changes to present behavior, the past nonintentional harmful behavior is now connected to the present intentional behavior not to change ([French, 1984a](#)). This encapsulates the Aristotelian insight of the person acting within or outside of character: If I did do something unintentionally wrong, the fact that I won't change my ways demonstrates that although the original wrong was not intentional, it was not out of character ([French, 1984a](#)). In other words, the past action

⁴ Any risks of getting vaccinated that are disproportionate to the possible benefits should be taken into consideration (see [van Delden et al., 2008](#)).

was in line with the character of the person and not out of step. Normally, a person is not morally blamed for unintentional action yet there is an expectation that the unintentional action will not be repeated and become part of the person's character (French, 1984a). In short, a basic intuition in morality that lessons need to be learned from mistakes made is encapsulated in the Principle of Responsive Adjustment (French, 1984a) and furthermore that such mistakes should be avoided. There may still, however, be factors that would mitigate nonresponsive adjustments (French, 1984a).

If the Principle of Responsive Adjustment is adapted and applied to examine our hypothetical example of Nurse X who has inadvertently infected Patient Y, the following can be put forward:

Firstly, although Nurse X may not be morally responsible for inadvertently transmitting SARS-CoV-2 to Patient Y there is still a moral expectation that some change in behavior needs to be taken to prevent or reduce the possibility of the virus being transmitted again. What is important is that remedial measures are taken by Nurse X to stop or reduce the recurrence of a possible infection. If a COVID-19 vaccine presents one of the most effective means of reducing the possibility of transmitting the virus, then it could be contended that there is a moral expectation that Nurse X takes a vaccine (unless there are justifiable reasons not to).⁵

Secondly, if Nurse X refuses to make any adjustment to their behavior and does not take a COVID-19 vaccine (without justifiable reason), then they could now be morally associated with the original harmful occurrence of infection. By not making the necessary changes to their present behavior and by not taking a vaccine, their past actions could now be connected to the present intentional behavior of not changing. The action that Nurse X now takes—i.e., whether they continue as they are or whether they adjust their behavior by taking a vaccine—becomes important. It may be more appropriate to speak of being morally associated (rather than responsible) for the following reasons:

In the context of vaccination for influenza, Verweij (2001) argues that there are issues of an epistemological nature with attempting to identify who was the originating cause of a person catching a virus. In a similar manner, is it possible to know that Nurse X passed on the virus to Patient Y? If Nurse X did pass on the virus to Patient Y, can we really claim that this act of transmission belongs to Nurse X (Verweij, 2001)? It is not an 'act' that Nurse X can necessarily control: They may be able to follow infection control measures but they are not able to deliberately control whether the virus is spread or not. There is the view that in order to

establish a full human act for moral evaluation, we would have to ascertain whether Nurse X had knowledge of possessing the virus, had an intention to pass it on to Patient Y and freely wanted to do so (e.g., Aquinas, 2017, I.II; Aristotle, 2001; Campbell, 2011; Davies, 2014). Secondly, although Nurse X may have passed on the virus to Patient Y, it was not Nurse X who made Patient Y subsequently sick but rather the virus (Verweij, 2001). Thirdly, in their discussion of vaccination in general and moral responsibility, Jamrozik et al. (2016) state that a person may be held morally responsible for their behavior but, at the same time, they may be held only morally responsible for some of the consequences arising from that behavior (pp. 764–765). This takes into account the fact that a person may not have full control over the consequences that stem from their behavior (Jamrozik et al., 2016). Two people could behave in the same way but the consequences that stem from their behavior may differ and they may be held morally responsible to a different extent, which could depend on the 'moral luck' of how the situation is evaluated (Jamrozik et al., 2016; Anderson, 2019; Andre, 1983; Athanassoulis, 2005; Hanna, 2014; Nagel, 2012; Williams & Nagel, 1976). Following this line of thought, it could be said that if Nurse X and Nurse Z behaved in the same way but only Nurse X ended up infecting Patient Y, it may be claimed that luck is part of whether or not there was a resulting harm, and therefore the evaluation of the Nurse X's resulting harm is open to moral luck (Jamrozik et al., 2016), i.e., luck signifies that there is no control on Nurse X's part (Athanassoulis, 2005). It is a quite a different situation if Nurse X takes actions to infect Patient Y.

To argue that Nurse X could be deemed to be morally associated with inadvertently transmitting the virus to Patient Y because they do not intend to adjust their behavior to reduce or prevent the possibility of transmitting the virus from happening again, would not remove the possibility that there may be factors that would mitigate nonadjustments to actions (French, 1984a). In addition, it could also be claimed that there is a difference between intending not to adjust behavior and genuinely attempting, but not being able, to adjust behavior. For example, Nurse X may not be able to obtain a COVID-19 vaccine because of access and supply issues.

The adapted Principle of Responsive Adjustment, however, faces challenges with the following hypothetical scenarios: (1) where Nurse X was asymptomatic but a carrier of the virus and infected Patient Y and (2) where Nurse X was not asymptomatic or a carrier of the virus and did not infect Patient Y (or any other patient for that matter). (1) One aspect of COVID-19 is the presence of asymptomatic transmissions (Zhang et al., 2020). A person, who is asymptomatic, may still pass on the virus, which has made the impediment of the spread of the virus difficult (Bai et al., 2020; Velavan & Meyerp, 2020; Zhao et al., 2020). In the case where Nurse X was asymptomatic but still passed on the virus to Patient Y, then although

⁵ This will depend on the effectiveness of the vaccine to decrease the possibility of viral load and transmission, for example (see European Centre for Disease Prevention and Control, 2021c). The vaccine schedule would depend on the immunisation guidelines/recommendations at the time in the respective state.

they may not be aware of contributing to the spread of the infection and may not consider that there is anything that needs to be adjusted, there still remains an adjustment to behavior that needs to be made. This would be similar to the situation in which Nurse X had a confirmed diagnosis of the virus. Although they may have had the virus, they still may not be aware that they may have infected Patient Y. Nonetheless, there would be a need to make adjustment in their behavior. (2) On a surface level, it could be said that if Nurse X was not asymptomatic or a carrier of the virus and did not infect Patient Y with COVID-19, then there is nothing for which to make an adjustment. Therefore, there may be no ethical requirement to take a COVID-19 vaccine. Yet, public health advice has included the view that people should behave as if they had the virus (Augusta Health, 2020; McGreevy, 2020). Considering that Nurse X was not asymptomatic or a virus carrier but nonetheless heeded public health advice to act as if they were a vector of the virus, then it could be claimed that one way to make adjustment to this “as if behavior” is still to take a vaccine. Although there are no past harms, taking a vaccine would remove or reduce remote, but still significant, possible harms.

Conclusion

Ethical questions seem unlimited in health care practice and solutions can greatly diverge; even more so in profound crisis situations and emergencies. The present pandemic has raised numerous ethical questions and, no doubt, further questions will continue to emerge in a post-pandemic world. This paper has approached the issue of whether there is an ethical requirement for nurses to take a COVID-19 vaccine by philosophically using a hypothetical example of Nurse X who has inadvertently infected Patient Y. By adapting the Principle of Responsive Adjustment, it is proposed that there would be a moral expectation that Nurse X takes a COVID-19 vaccine (unless there are justifiable reasons not to). Furthermore, should Nurse X not take a COVID-19 vaccine (without justifiable reasons), then it could be argued that Nurse X could be now morally associated with infecting Patient Y.

Nurses in acute hospital and in long-term residential care settings have found themselves in the eye of the COVID-19 storm. Considering that there is great expectation that COVID-19 vaccines will reduce the risk of disease⁶, it would be easy to assume that there would be a positive attitude towards an uptake of a vaccine among nurses. At time of writing, it still has to be

ascertained how long a COVID-19 vaccine will be effective and whether routine vaccination may be needed as is the case for influenza (see Goodman et al., 2020). Therefore, should the necessity of a more routine uptake of a COVID-19 vaccine to keep the virus and further mutations at bay become a reality, it will be important to monitor levels of uptake among nurses (and other health care workers) going forward, just as in the case of the influenza vaccines. The broader topic of nurses taking other vaccines for communicable diseases may receive a renewed debate with the issue of the new COVID-19 vaccines. The Principle of Responsive Adjustment may also receive further debate in the context of whether nurses and other health care professionals should take vaccines for communicable diseases.

Author Contribution

Alan J. Kearns is the sole author of the paper performing Conceptualization, Methodology, Software, Data curation, Writing – Original draft preparation and Editing.

REFERENCES

- Aguilar-Díaz, F. del C., Jiménez-Corona, M. E., & Ponce-de-León-Rosales, S. (2011). Influenza vaccine and health-care workers. *Archives of Medical Research*, 42(8), 652–657, doi:10.1016/j.arcmed.2011.12.006.
- Anderson, M. B. (2019). Moral luck as moral lack of control. *Southern Journal of Philosophy*, 57(1), 5–29, doi:10.1111/sjp.12317.
- Andre, F. E., Booy, R., Bock, H. L., Clemens, J., Datta, S. K., John, T. J., Lee, B. W., Lolekha, S., Peltola, H., Ruff, T. A., Santosham, M., & Schmitt, H. J. (2008). Vaccination greatly reduces disease, disability, death, and inequity worldwide. *Bulletin of the World Health Organization*, 86(2), 140–146, doi:10.2471/blt.07.040089.
- Andre, J. (1983). Nagel, Williams, and moral luck. *Analysis*, 43(4), 202–207, doi:10.2307/3327571.
- Anikeeva, O., Braunack-Mayer, A., & Rogers, W. (2009). Requiring influenza vaccination for health care workers. *American Journal of Public Health*, 99(1), 24–29, doi:10.2105/AJPH.2008.136440.
- Aquinas, T. (2017). *The summa theologiae of St. Thomas Aquinas*. Second and Revised Edition, 1920. Translated by Fathers of the English Dominican Province. Online Edition by K. Knight. Retrieved from <https://www.newadvent.org/summa/2.htm> Accessed May 10, 2021
- Aristotle. (2001). *Nicomachean ethics*. Blacksburg, VA: Virginia Tech. Trans by Ross, W. D. eBook.
- Asveld, L. (2008). Mass-vaccination programmes and the value of respect for autonomy. *Bioethics*, 22(5), 245–257, doi:10.1111/j.1467-8519.2008.00630.x.
- Athanassoulis, N. (2005). Common-sense virtue ethics and moral luck. *Ethical Theory and Moral Practice*, 8(3), 265–276.
- Augusta Health. (2020). COVID-19 asymptomatic carriers and antibody tests. Retrieved from <https://www.augustahealth.com/health-focused/covid-19-asymptomatic-carriers-and-antibody-tests> Accessed May 10, 2021

⁶ According to the European Centre for Disease Prevention and Control (2021c), “the impact of developing severe disease in a fully vaccinated individual who is infected with SARS-CoV-2 is likely to be very low in younger and middle-aged adults specifically” (p. 7).

- Bai, Y., Yao, L., Wei, T., Tian, F., Jin, D. Y., Chen, L., & Wang, M. (2020). Presumed asymptomatic carrier transmission of COVID-19. *Journal of the American Medical Association*, 323(14), 1406–1407, doi:10.1001/jama.2020.2565.
- Beauchamp, T. L., & Childress, J. F. (2019). *Principles of biomedical ethics* (8th ed). New York; Oxford: Oxford University Press.
- Boulton, J. (2020). In search of a vaccine against COVID-19: Implications for nursing practice. *British Journal of Nursing*, 29(16), 948–953, doi:10.12968/bjon.2020.29.16.948.
- Campbell, J. K. (2011). *Free will*. Cambridge: Polity.
- Caplan, A. (2011). Time to mandate influenza vaccination in health-care workers. *The Lancet*, 378(9788), 310–311, doi:10.1016/s0140-6736(11)61156-2.
- Carson, P. J., & Flood, A. T. (2017). Catholic social teaching and the duty to vaccinate. *American Journal of Bioethics*, 17(4), 36–43, doi:10.1080/15265161.2017.1284914.
- Centers for Disease Control and Prevention. (2020). Who should not get vaccinated with these vaccines? Retrieved from <https://www.cdc.gov/vaccines/vpd/should-not-vacc.html> Accessed May 10, 2021
- Chen, N., Zhou, M., Dong, X., Qu, J., Gong, F., Han, Y., Qiu, Y., Wang, J., Liu, Y., Wei, Y., Xia, J., Yu, T., Zhang, X., & Zhang, L. (2020). Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: A descriptive study. *The Lancet*, 395(10223), 507–513, doi:10.1016/S0140-6736(20)30211-7.
- Cheng, A. C., & Worth, L. J. (2014). Mandatory influenza vaccination of healthcare workers: Is it necessary or sufficient to protect patients? *Healthcare Infection*, 19(3), 114–115, doi:10.1071/HI14018.
- Chevalier-Cottin, E. P., Ashbaugh, H., Brooke, N., Gavazzi, G., Santillana, M., Burlet, N., & Htar, M. T. T. (2020). Communicating benefits from vaccines beyond preventing infectious diseases. *Infectious Diseases and Therapy*, 9(3), 467–480, doi:10.1007/s40121-020-00312-7.
- Clark, S. J., Cowan, A. E., & Wortley, P. M. (2009). Influenza vaccination attitudes and practices among US registered nurses. *American Journal of Infection Control*, 37(7), 551–556, doi:10.1016/j.ajic.2009.02.012.
- Davidson, T. (2017). *Vaccines: History, science, and issues. (The Story of a Drug)*. Santa Barbara, CA: Greenwood.
- Davies, B. (2014). *Thomas Aquinas's summa theologiae: A guide and commentary*. New York: Oxford University Press eBook.
- Dedoukou, X., Nikolopoulos, G., Maragos, A., Giannoulidou, S., & Maltezos, H. C. (2010). Attitudes towards vaccination against seasonal influenza of health-care workers in primary health-care settings in Greece. *Vaccine*, 28(37), 5931–5933, doi:10.1016/j.vaccine.2010.06.108.
- Dror, A. A., Eisenbach, N., Taiber, S., Morozov, N. G., Mizrahi, M., Zigron, A., Srouji, S., & Sela, E. (2020). Vaccine hesitancy: The next challenge in the fight against COVID-19. *European Journal of Epidemiology*, 35(8), 775–779. doi:10.1007/s10654-020-00671-y.
- Dubé, E., Laberge, C., Guay, M., Bramadat, P., Roy, R., & Bettinger, J. A. (2013). Vaccine hesitancy: An overview. *Human Vaccines & Immunotherapeutics*, 9(8), 1763–1773, doi:10.4161/hv.24657.
- European Centre for Disease Prevention and Control. (2021a). Questions and answers on COVID-19: Basic facts. Retrieved from <https://www.ecdc.europa.eu/en/covid-19/questions-answers/questions-answers-basic-facts> Accessed May 10, 2021
- European Centre for Disease Prevention and Control. (2021b). Questions and answers on COVID-19: Vaccines. Retrieved from <https://www.ecdc.europa.eu/en/covid-19/questions-answers/questions-answers-vaccines> Accessed May 10, 2021
- European Centre for Disease Prevention and Control. (2021c). *Interim guidance on the benefits of full vaccination against COVID-19 for transmission and implications for non-pharmaceutical interventions*. Stockholm: ECDC. Retrieved from <https://www.ecdc.europa.eu/sites/default/files/documents/Interim-guidance-benefits-of-full-vaccination-against-COVID-19-for-transmission-and-implications-for-non-pharmaceutical-interventions.pdf> Accessed May 10, 2021.
- European Vaccination Information Portal. (2020). When to avoid vaccination. Retrieved from <https://vaccination-info.eu/en/vaccination/when-vaccinate/when-avoid-vaccination> Accessed May 10, 2021
- French, P. A. (1984a). A principle of responsive adjustment. *Philosophy*, 59(230), 491–503, doi:10.1017/S0031819100067930.
- French, P. A. (1984b). *Collective and corporate responsibility*. New York; Guildford: Columbia University Press.
- Fricke, K. L., Gastañaduy, M. M., Klos, R., & Bégue, R. E. (2013). Correlates of improved influenza vaccination of healthcare personnel: A survey of hospitals in Louisiana. *Infection Control & Hospital Epidemiology*, 34(7), 723–729, doi:10.1086/670992.
- Galanakis, E., Jansen, A., Lopalco, P. L., & Giesecke, J. (2013). Ethics of mandatory vaccination for healthcare workers. *Eurosurveillance*, 18(45), 1–8, doi:10.2807/1560-7917.es2013.18.45.20627.
- Giubilini, A. (2019). *The ethics of vaccination*. Cham: Palgrave MacMillan.
- Giubilini, A. (2021). Vaccination ethics. *British Medical Bulletin*, 137(1), 4–12. doi:10.1093/bmb/ldaa036.
- Giubilini, A., Douglas, T., & Savulescu, J. (2018). The moral obligation to be vaccinated: Utilitarianism, contractualism, and collective easy rescue. *Medicine, Health Care and Philosophy*, 21(4), 547–560, doi:10.1007/s11019-018-9829-y.
- Goodman, J. L., Grabenstein, J. D., & Braun, M. M. (2020). Answering key questions about COVID-19 vaccines. *Journal of the American Medical Association*, 324(20), 2027–2028, doi:10.1001/jama.2020.20590.
- Grady, C., Shah, S., Miller, F., Danis, M., Nicolini, M., Ochoa, J., Taylor, H., Wendler, D., & Rid, A. (2020). So much at stake: Ethical tradeoffs in accelerating SARS-CoV-2 vaccine development. *Vaccine*, 38(41), 6381–6387, doi:10.1016/j.vaccine.2020.08.017.
- Greenwood, B. (2014). The contribution of vaccination to global health: Past, present and future. *Philosophical Transactions of the Royal Society of London. Series B, Biological Sciences*, 369(1645) 20130433, doi:10.1098/rstb.2013.0433.
- Halpin, C., & Reid, B. (2019). Attitudes and beliefs of healthcare workers about influenza vaccination. *Nursing Older People*, 31(2), 32–39, doi:10.7748/nop.2019.e1154.
- Hanna, N. (2014). Moral luck defended. *Nous*, 48(4), 683–698, doi:10.1111/j.1468-0068.2012.00869.x.
- Haridi, H. K., Salman, K. A., Basaif, E. A., & Al-Skaibi, D. K. (2017). Influenza vaccine uptake, determinants, motivators, and barriers of the vaccine receipt among healthcare workers in a tertiary care hospital in Saudi Arabia. *Journal of Hospital Infection*, 96(3), 268–275, doi:10.1016/j.jhin.2017.02.005.

- Harris, J., & Holm, S. (1995). Is there a moral obligation not to infect others? *BMJ: British Medical Journal*, 311(7014), 1215–1217, doi:10.1136/bmj.311.7014.1215.
- Heaton, P. M. (2020). The Covid-19 vaccine-development multiverse. *The New England Journal of Medicine*, 383(20), 1986–1988, doi:10.1056/NEJMe2025111.
- Helms, C. M., & Polgreen, P. (2008). Should influenza immunisation be mandatory for healthcare workers? Yes. *BMJ: British Medical Journal*, 337(7677), 1026, doi:10.1136/bmj.a2142.
- Isaacs, D., & Leask, J. (2008). Should influenza immunisation be mandatory for healthcare workers? No. *BMJ: British Medical Journal*, 337(7677), 1027, doi:10.1136/bmj.a2140.
- Jamrozik, E., Handfield, T., & Selgelid, M. J. (2016). Victims, vectors and villains: Are those who opt out of vaccination morally responsible for the deaths of others? *Journal of Medical Ethics*, 42(12), 762–768, doi:10.1136/medethics-2015-103327.
- Kwok, K. O., Li, K. K., Wei, W. I., Tang, A., Wong, S. Y. S., & Lee, S. S. (2021). Influenza vaccine uptake, COVID-19 vaccination intention and vaccine hesitancy among nurses: A survey. *International Journal of Nursing Studies*, 114, 1–9, doi:10.1016/j.ijnurstu.2020.103854.
- Lee, L. M. (2015). Adding justice to the clinical and public health ethics arguments for mandatory seasonal influenza immunisation for healthcare workers. *Journal of Medical Ethics*, 41(8), 682–686, doi:10.1136/medethics-2014-102557.
- Lurie, N., Sharfstein, J. M., & Goodman, J. L. (2020). The development of COVID-19 vaccines: Safeguards needed. *Journal of the American Medical Association*, 324(5), 439–440, doi:10.1001/jama.2020.12461.
- Maltezos, H. C., & Tsakris, A. (2011). Vaccination of health-care workers against influenza: Our obligation to protect patients. *Influenza Other Respiratory Viruses*, 5(6), 382–388, doi:10.1111/j.1750-2659.2011.00240.x.
- Maridor, M., Ruch, S., Bangerter, A., & Emery, V. (2017). Skepticism toward emerging infectious diseases and influenza vaccination intentions in nurses. *Journal of Health Communication*, 22(5), 386–394, doi:10.1080/10810730.2017.1296509.
- McAteer, J., Yildirim, I., & Chahroudi, A. (2020). The VACCINES Act: Deciphering vaccine hesitancy in the time of COVID-19. *Clinical Infectious Diseases*, 71(15), 703–705, doi:10.1093/cid/ciaa433.
- McGreevy, R. (2020). Covid-19: Dr Ronan Glynn pleads with Dubliners as virus spreads in household. *The Irish Times*. Retrieved from <https://www.irishtimes.com/news/ireland/irish-news/covid-19-dr-ronan-glynn-pleads-with-dubliners-as-virus-spreads-in-households-1.4353620> Accessed May 10, 2021.
- McLennan, S., Gillett, G., & Celi, L. A. (2008). Healer, heal thyself: Health care workers and the influenza vaccination. *American Journal of Infection Control*, 36(1), 1–4, doi:10.1016/j.ajic.2007.07.010.
- Mo, P. K. H., Wong, C. H. W., & Lam, E. H. K. (2019). Can the health belief model and moral responsibility explain influenza vaccination uptake among nurses? *Journal of Advanced Nursing*, 75(6), 1188–1206, doi:10.1111/jan.13894.
- Nagel, T. (2012). *Mortal questions*. Cambridge: Cambridge University Press eBook.
- Omer, S. B., Salmon, D. A., Orenstein, W. A., deHart, M. P., & Halsey, N. (2009). Vaccine refusal, mandatory immunization, and the risks of vaccine-preventable diseases. *The New England Journal of Medicine*, 360(19), 1981–1988, doi:10.1056/NEJMsa0806477.
- Orenstein, W. A., & Ahmed, R. (2017). Simply put: Vaccination saves lives. *Proceedings of the National Academy of Sciences of the United States of America*, 114(16), 4031–4033, doi:10.1073/pnas.1704507114.
- Osbourne, R. M., & Clark, S. J. (2021). Should the SARS-CoV-2 vaccine be mandatory for nurses? An ethical debate. *British Journal of Nursing*, 30(2), 116–121, doi:10.12968/bjon.2021.30.2.116.
- Ottenberg, A. L., Wu, J. T., Poland, G. A., Jacobson, R. M., Koenig, B. A., & Tilburt, J. C. (2011). Vaccinating health care workers against influenza: The ethical and legal rationale for a mandate. *American Journal of Public Health*, 101(2), 212–216. doi:10.2105/AJPH.2009.190751.
- Park, H. S., Samuels, E. L., & Bocchini, J. A. Jr. (2020). Vaccine development: From laboratory to policy. *Pediatric Annals*, 49(12), e509–e515, doi:10.3928/19382359-20201116-02.
- Phillis, A. (2020). A COVID-19 vaccine-dare to dream. *British Journal of Community Nursing*, 25(12), 2–7, doi:10.12968/bjcn.2020.25.12.598.
- Poland, G. A., Tosh, P., & Jacobson, R. M. (2005). Requiring influenza vaccination for health care workers: Seven truths we must accept. *Vaccine*, 23(17-18), 2251–2255, doi:10.1016/j.vaccine.2005.01.043.
- Prymula, R. (2013). Controversies in vaccination. *European Review*, 21(S1), S56–S61, doi:10.1017/S1062798713000227.
- Schaffer DeRoo, S., Pudalov, N. J., & Fu, L. Y. (2020). Planning for a COVID-19 vaccination program. *Journal of the American Medical Association*, 323(24), 2458–2459, doi:10.1001/jama.2020.8711.
- Shekhar, R., Sheikh, A. B., Upadhyay, S., Singh, M., Kottewar, S., Mir, H., Barrett, E., & Pal, S. (2021). COVID-19 vaccine acceptance among health care workers in the United States. *Vaccines (Basel)*, 9(2), 119, doi:10.3390/vaccines9020119.
- Spaeder, G. A. (2016). The moral obligation to vaccinate: Autonomy and the common good. *The National Catholic Bioethics Quarterly*, 16(2), 245–254, doi:10.5840/ncbq201616222.
- Stead, M., Critchlow, N., Eadie, D., Sullivan, F., Gravenhorst, K., & Dobbie, F. (2019). Mandatory policies for influenza vaccination: Views of managers and healthcare workers in England. *Vaccine*, 37(1), 69–75, doi:10.1016/j.vaccine.2018.11.033.
- Steckel, C. M. (2007). Mandatory influenza immunization for health care workers: An ethical discussion. *American Association of Occupational Health Nursing Journal*, 55(1), 34–39, doi:10.1177/216507990705500105.
- Stern, A. M., & Markel, H. (2005). The history of vaccines and immunization: Familiar patterns, new challenges. *Health Affairs (Millwood)*, 24(3), 611–621, doi:10.1377/hlthaff.24.3.611.
- Stewart, A. M. (2009). Mandatory vaccination of health care workers. *New England Journal of Medicine*, 361(21), 2015–2017, doi:10.1056/NEJMp0910151.
- van Delden, J. J., Ashcroft, R., Dawson, A., Marckmann, G., Upshur, R., & Verweij, M. F. (2008). The ethics of mandatory vaccination against influenza for health care workers. *Vaccine*, 26(44), 5562–5566, doi:10.1016/j.vaccine.2008.08.002.
- Van Hooste, W. L. C., & Bekaert, M. (2019). To be or not to be vaccinated? The ethical aspects of influenza vaccination among healthcare workers. *International Journal of Environmental Research and Public Health*, 16(20), 3981, doi:10.3390/ijerph16203981.

- Velavan, T. P., & Meyer, C. G. (2020). The COVID-19 epidemic. *Tropical Medicine and International Health*, 25(3), 278–280, doi:10.1111/tmi.13383.
- Verweij, M. (2001). Individual and collective considerations in public health: Influenza vaccination in nursing homes. *Bioethics*, 15(5-6), 536–546, doi:10.1111/1467-8519.00260.
- Walsh, E. E., Frenck, R. W. Jr, Falsey, A. R., Kitchin, N., Absalon, J., Gurtman, A., Lockhart, S., Neuzil, K., Mulligan, M. J., Bailey, R., Swanson, K. A., Li, P., Koury, K., Kalina, W., Cooper, D., Fontes-Garfias, C., Shi, P-Y., Türeci, Ö., Tompkins, K. R., . . . , & Gruber, W. C. (2020). Safety and immunogenicity of two RNA-based covid-19 vaccine candidates. *The New England Journal of Medicine*, 383(25), 2439–2450, doi:10.1056/NEJMoa2027906.
- WHO, UNICEF, World Bank. (2009). *State of the world's vaccines and immunization* (3rd ed.). Geneva: World Health Organization. Retrieved from <https://www.who.int/immunization/sowvi/en/Accessed> May 10, 2021.
- Wicker, S., & Marckmann, G. (2014). Vaccination of health care workers against influenza: Is it time to think about a mandatory policy in Europe? *Vaccine*, 32(38), 4844–4848, doi:10.1016/j.vaccine.2013.09.062.
- Williams, B. A. O., & Nagel, T. (1976). Moral luck. *Proceedings of the Aristotelian Society, Supplementary Volumes*, 50, 115–151.
- Wilson, R., Scronias, D., Zaytseva, A., Ferry, M. A., Chamboredon, P., Dubé, E., & Verger, P. (2019). Seasonal influenza self-vaccination behaviours and attitudes among nurses in Southeastern France. *Human Vaccines & Immunotherapeutics*, 15(10), 2423–2433, doi:10.1080/21645515.2019.1587274.
- World Health Organization (WHO). (2020). Transmission of SARS-CoV-2: Implications for infection prevention precautions. Retrieved from <https://www.who.int/news-room/commentaries/detail/transmission-of-sars-cov-2-implications-for-infection-prevention-precautions> Accessed May 10, 2021
- Xafis, V., Schaefer, G. O., Labude, M. K., Zhu, Y., & Hsu, L. Y. (2020). The perfect moral storm: Diverse ethical considerations in the COVID-19 pandemic. *Asian Bioethics Review*, 12(2), 65–83, doi:10.1007/s41649-020-00125-3.
- Zhang, J., Wu, S., & Xu, L. (2020). Asymptomatic carriers of COVID-19 as a concern for disease prevention and control: More testing, more follow-up. *BioScience Trends*, 14(3), 206–208, doi:10.5582/bst.2020.03069.
- Zhao, H., Lu, X., Deng, Y., Tang, Y., & Lu, J. (2020). COVID-19: Asymptomatic carrier transmission is an underestimated problem. *Epidemiology and Infection*, 148, e116, doi:10.1017/S0950268820001235 1–3.
- Zhou, M., Zhang, X., & Qu, J. (2020). Coronavirus disease 2019 (COVID-19): A clinical update. *Frontiers in Medicine*, 14(2), 126–135, doi:10.1007/s11684-020-0767-8.
- Zhu, N., Zhang, D., Wang, W., Li, X., Yang, B., Song, J., Zhao, X., Huang, B., Shi, W., Lu, R., Niu, P., Zhan, F., Ma, X., Wang, D., Xu, W., Wu, G., Gao, G. F., & Tan, W. (2020). A novel coronavirus from patients with pneumonia in China, 2019. *New England Journal of Medicine*, 382(8), 727–733, doi:10.1056/NEJMoa2001017.