COVID-19

Guidance for contact tracing of persons who have had their first dose of COVID-19 vaccine within 9 months of a prior SARS-CoV-2 infection

Version 1.1. 09.09.2021

Version	Date	Changes from previous version	Author
1.1	09.09.2021	Update wording around vaccines	Guidance team HPSC
1.0	24.06.2021	Published version 1	

*This document summarises recommendations for changes to contact tracing guidance with respect to **asymptomatic** close contacts (excluding Health Care Workers) who have had their **first dose** of COVID-19 vaccine **within 9 months of a prior SARS-CoV-2 infection.***

This guidance is subject to change over time as new evidence becomes available.

Purpose

The NPHET requested that HPSC review contact tracing guidance with regard to management of close contacts who were infected with SARS-CoV- 2 and who have received a single dose of vaccine, in light of emerging evidence regarding vaccination.

Background and recommendations

This contact tracing guidance applies to individuals who have received one dose of a European Medicines Agency approved COVID-19 vaccine within a 9-month period after infection with SARS-CoV- 2. These vaccines include:

- Pfizer-BioNTech (Comirnaty®) mRNA COVID- 19 vaccine
- Moderna mRNA (Moderna®) COVID-19 vaccine
- Janssen (Janssen®) COVID-19 vaccine
- AstraZeneca (Vaxzevria® or Covishield) COVID-19 vaccine

This guidance may change over time. Please refer to the National Immunisation Office and or the National Immunisation Advisory Committee for the most up to date information on vaccines.

This guidance has been informed by:

- ECDC Technical Report ''Interim guidance on the benefits of full vaccination against COVID-19 for transmission and implications for non-pharmaceutical interventions''
- ECDC Technical Report "Risk of SARS-CoV-2 transmission from newly infected individuals with documented previous infection or vaccination"
- CDC Science Brief "Background Rationale and Evidence for Public Health Recommendations for Fully Vaccinated People" and CDC "Interim Public Health Recommendations for Fully Vaccinated People"
- National Immunisation Advisory Committee evidence review, 'COVID-19 Vaccination after laboratory confirmed COVID-19 infection', published 26.04.2021.
- Health Information and Quality Authority (HIQA) evidence review: "'Duration of immunity (protection from reinfection) following SARS-CoV-2 infection.'' Dublin: HIQA; 2021.

Rationale for changes to Contact Tracing Guidance

Vaccine Effectiveness

All vaccines currently in use in Ireland are proven to be effective against SARS-CoV-2 infection, severe disease and death. Given the proven effectiveness of these vaccines, it is expected that as the roll-out of vaccines increases, the incidence of infection will decrease significantly, leading to reduced transmission overall.

Impact of Vaccination on Transmission of SARS-CoV-2

COVID-19 vaccines do not confer sterilising immunity to all individuals and therefore vaccinated individuals might still be able to transmit SARS-CoV-2 infection to susceptible contacts. However, there is evidence that vaccination significantly reduces infection in vaccinated individuals. A limited number of vaccine studies with prospective follow-up show reduced viral load and duration of virus shedding among vaccine recipients compared to placebo groups. Viral load is thought to be a leading indicator of SARS-CoV-2 transmission. [1] However it is not currently known if these observed reductions in viral load and duration of shedding actually reduce transmission.

Most vaccine effectiveness studies have not been designed to measure transmission risk, following subsequent exposure, from vaccinated individuals to others. One study from Scotland, however, which did directly measure transmission risk, reported a 30% risk reduction for transmission of SARS-CoV-2 from vaccinated health care workers to their household close contacts as compared to transmission from unvaccinated health care workers. The authors of this study noted that given the potential for household close contacts to have been infected through a different route, the true risk reduction for transmission of SARS-CoV-2 in those who have been vaccinated is likely to be as high as 60% [2].

However, information on transmission of SARS-CoV-2 from vaccinated individuals is currently scarce although new evidence is becoming available. The Interim Guidance on benefits of full vaccination against COVID-19 for transmission risks and implications for non-pharmacetical inetreventions concludes that ''based on the limited evidence available the likelihood of an infected vaccinated person transmitting the disease is currently assessed to be very low to low". They further state that although there is no evidence of the severity of disease following transmission from a vaccinated individual to an unvaccinated individual the likelihood of severe disease for unvaccinated individuals is low for younger adults and adolescents and high for unvaccinated older adults or people with underlying comorbidities. [3]

Evidence of sustained immunity post infection

A HIQA review 'Duration of immunity (protection from reinfection) following SARS-CoV-2 infection', published June 3rd 2021, concluded that there is evidence of sustained immunity for over ten months post-infection[4]

Evidence of vaccine boost effect after one dose, for those with previous infection

A recent evidence review by NIAC, 'COVID-19 Vaccination after laboratory confirmed COVID-19 infection', published April 26th, concluded that 'there is good evidence that those with prior COVID-19 infection who subsequently received a single dose of COVID-19 mRNA vaccine had a similar antibody response to those individuals with no prior infection after two doses of COVID-19 vaccine.'

The majority (8/9) of studies listed by NIAC in the review examined this vaccine boost effect after one dose of an mRNA vaccine. [5] One pre-print (non peer-reviewed) study from Sri Lanka examined antibody and T cell responses to a single dose of the Astrazeneca vaccine in previously SARS-CoV-2 infected and naïve health care workers. Following a single dose of the vaccine, those who had previous SARS-CoV-2 infection had significantly higher antibody titres than naïve individuals. [6] NIAC's review concluded that 'although the evidence relates to mRNA vaccines, it is based on immunological priming with subsequent boosting, thus it is reasonable to infer that these findings can be applied to viral vector vaccines.' [5] NIAC's recommendation therefore covered those who had received all current EMA approved vaccines, including the viral vector Astrazeneca vaccine.

NIAC's review also highlighted some evidence that antibody response is correlated with age. [7] NIAC also conclude that 'those who are immunocompromised due to disease or treatment will require two doses due to their less robust immune response'. NIAC's recommendations have therefore been limited to those under 50 years of age who are immunocompetent. See Appendix B for a list of immunocompromising conditions and treatments which are associated with sub-optimal response to vaccines .

Considerations

If a vaccinated individual is exposed to SARS-CoV-2 there are certain factors that may increase the likelihood that they will become infected. An individual may have a decreased response to the vaccine, this can be due to many factors, or they may be exposed to a variant of the virus to which the vaccine is not effective.

Decreased Immune Response

In general there is variation between individuals in the immune response to vaccination [8]. Certain individuals may have a decreased immune response to vaccination. This can be due to a particular medical condition or a treatment that is expected to compromise the ability of their immune system to respond to vaccination. Vaccine responses are also diminished in older individuals [8].

Variants of Concern

SARS-CoV-2 will continue mutating and potentially recombining to evade immune defences in order to replicate and spread. There is already some evidence of potential vaccine escape for B.1.351 and P.1 [9,10]. Infections with variant viruses in vaccinated individuals have been reported, although this phenomen is currently not well understood. The possibility cannot be discounted that in the future there will be new dominant variants that will be transmitted despite vaccination.

Guidelines from other international jurisdictions

An increasing number of countries within the EEA (Austria, Estonia, France, Italy, Norway, Spain, Slovakia, Ireland) are now recommending one dose of vaccine for those who were infected with SARS-CoV-2 in the previous 6 months. [5] Croatia, Germany and Estonia have introduced guidelines stipulating that persons who have had SARS-COV-2 infection in the previous 6-months and have received one dose of vaccine do not require quarantine/movement restriction or testing. [11] See Appendix A for further information.

Recommendations for changes to Contact Tracing Guidance

1. **All persons who are vaccinated should adhere to the general public health advice for vaccinated people**

2. **Persons, under 50 years of age, who**

    a. **had a prior laboratory confirmed SARS CoV- 2 infection**

    AND within 9 months after this infection

    b. **received the first dose of an EMA approved vaccine[1], are then considered fully vaccinated:**

- 14 days after one dose of Janssen (Janssen®) COVID-19 vaccine
- 14 days after one dose of Moderna (Moderna®) COVID-19 vaccine
- 7 days after one dose of Pfizer-BioNTech (Comirnaty®) COVID-19 vaccine
- 15 days after one dose of AstraZeneca (Vaxzevria® or Covishield) COVID-19 vaccine

and therefore if identified as close contacts of a case of COVID-19 and are asymptomatic

NEED NOT

(i) Restrict their movements or

(ii) be tested,

unless specific circumstances apply as follows:

1. Known contact with a case of COVID-19 in which the case is a Person Under Investigation, probable or confirmed variant of concern. In this situation the close contact should be managed as a close contact of a VOC.
2. If the person's immune system response to vaccination could be compromised due to either a known medical condition or being on immunosuppressive treatment, they should be treated as a close contact - offered two tests and advised to restrict their movements. If there is any uncertainty as to whether the close contact has a medical condition or takes a treatment that would result in a sub-optimal response to vaccination, they should also be advised to restrict their movement and contact their treating physician who can advise if these recommendations apply to them. See Appendix B for a list of medical conditions and immunosuppressive treatments which are associated with sub-optimal response to vaccines. This list was compiled from 'The Immunisation Guidelines for Ireland', Chapter 5a – COVID-19 and may be subject to change/update in future.

[1] Vaccine must have been adminsistered as per agreed upon vaccination protocol.

3. A public health or occupational health risk assessment has identified other specific grounds for concern, e.g., outbreak setting
4. The close contact develops symptoms of COVID 19, in which case they need to immediately self-isolate and be referred for one test. If the test result is negative they can discontinue self-isolation once they are symptom free for 48 hours.

Appendix A

Recommendations from other jurisdictions for partially vaccinated individuals who have had previous SARS-CoV-2 infection and are close contacts with a case of COVID-19

Country	Is Restriction of movement/quarantine required?	Is testing required?	Additional information
Netherlands	Yes	Yes	All close contacts, regardless of recent infection or vaccination, quarantine for 10 days. They can stop quarantine if they test negative after 5 days.
Estonia	No	No	
Croatia	No	No	If a COVID-19 survivor received a dose of vaccine within six months from recovery, exclusion from quarantine and/or testing is extended for six months from receipt of the vaccine.
Germany	No.	Not specified	Self-monitoring of temperature and symptoms is recommended until 14th day after exposure
United States of America	Yes	Yes	

Appendix B

Recommendations taken from The Immunisation Guidelines for Ireland, Chapter 5a – COVID-19

Conditions/Treatment associated with sub-optimal response to vaccines	
Cancer	All cancer patients actively receiving (and/or within 6 weeks of receiving) systemic therapy with cytotoxic chemotherapy, targeted therapy, monoclonal antibodies or immunotherapies and surgery or radical radiotherapy for lung or head and neck cancer. All patients with advanced/metastatic cancers. Haematological - within 1 year
Chronic Kidney Disease	On dialysis or eGFR<30ml/min
Immunocompromise due to disease or treatment	Severe e.g. **Transplantation**: - Listed for solid organ or haematopoietic stem cell transplant (HSCT) - Post solid organ transplant at any time - Post HSCT within 12 months **Genetic diseases**: - APECED[1] - Inborn errors in the interferon pathway **Treatment**: - included but not limited to Cyclophosphamide, Rituximab, Alemtuzumab, Cladribine or Ocrelizumab in the last 6 months Other e.g. High dose systemic corticosteroids[2] Persons living with HIV

1. APECED - autoimmune polyendocrinopathy candidiasis ectodermal dystrophy
2.The following doses of prednisolone (or equivalent dose of other glucocorticoid) may increase the risk of severe COVID-19 disease: ● ≥10mg per day for more than 4 weeks with one other immunosuppressant ● ≥20mg per day for more than 4 weeks

References

1. Marks M, Millat-Martinez P, Ouchi D, Roberts Ch, Alemany A, Corbacho-Monné M, et al. Transmission of COVID-19 in 282 clusters in Catalonia, Spain: a cohort study. The Lancet Infectious Diseases [Preprint]. 2021. DOI: 10.1016/S1473-3099(20)30985-3. Available at: https://www.sciencedirect.com/science/article/pii/S1473309920309853
2. Shah AS, Gribben C, Bishop J, Hanlon P, Caldwell D, Wood R, et al. Effect of vaccination on transmission of COVID-19: an observational study in healthcare workers and their households. medRxiv [Preprint]. 2021. DOI: 10.1101/2021.03.11.21253275. Available from: https://www.medrxiv.org/content/10.1101/2021.03.11.21253275v1
3. ECDC Technical Report ''Interim guidance on the benefits of full vaccination against COVID-19 for transmission and implications for non-pharmaceutical interventions'', 21st April 2021. Available at: https://www.ecdc.europa.eu/en/publications-data/interim-guidance-benefits-full-vaccination-against-covid-19-transmission
4. Health Information and Quality Authority (HIQA). Duration of immunity (protection from reinfection) following SARS-CoV-2 infection. Dublin: HIQA; 2021. Available at: https://www.hiqa.ie/sites/default/files/2021-06/Duration-of%20protective-immunity-evidence-summary.pdf
5. The National Immunisation Advisory Committee., 'COVID-19 Vaccination after laboratory confirmed COVID-19 infection', evidence review, published 26.04.2021: https://rcpi-live-cdn.s3.amazonaws.com/wp-content/uploads/2021/04/NIAC-Recommendations-re-COVID-19-VACCINATION-AFTER-LABORATORY-CONFIRMED-COVID-19-INFECTION-26.04.2021-22.30.pdf
6. Jeewandara et al. Antibody and T cell responses to a single dose of the AZD1222/Covishield vaccine in previously SARS-CoV-2 infected and naïve health care workers in Sri Lanka Preprint April 13, 2021.medRxiv doi: https://doi.org/10.1101/2021.04.09.21255194
7. Goel et al. (2021) Longitudinal Analysis Reveals Distinct Antibody and Memory B Cell Responses in SARS-CoV2 Naïve and Recovered Individuals Following mRNA Vaccination. medRxiv [Preprint]. 2021 Mar 6:2021.03.03.21252872. doi: 10.1101/2021.03.03.21252872. PMID: 33688691; PMCID: PMC7941668.
8. Zimmermann P, Curtis N. Factors That Influence the Immune Response to Vaccination. Clinical Microbiology Reviews. 2019;32(2). Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6431125/
9. Madhi SA, Baillie V, Cutland CL, Voysey M, Koen AL, Fairlie L, et al. Efficacy of the ChAdOx1 nCoV-19 covid-19 vaccine against the B. 1.351 variant. New England Journal of Medicine [Internet]. 2021. Available from: https://www.nejm.org/doi/full/10.1056/NEJMoa2102214.
10. Wu K, Werner AP, Koch M, Choi A, Narayanan E, Stewart-Jones GB, et al. Serum Neutralizing Activity Elicited by mRNA-1273 Vaccine. New England Journal of Medicine [Internet]. 2021. Available from: https://www.nejm.org/doi/full/10.1056/NEJMc2102179.
11. Information collected from EWRS communication. Information was provided in response to a query posted by Ireland on 30th April 2021.