



**Health
Information
and Quality
Authority**

An tÚdarás Um Fhaisnéis
agus Cáilíocht Sláinte

Advice to the National Public Health Emergency Team: Duration of restriction of movements for individuals exposed, or potentially exposed, to SARS-CoV-2

Submitted to NPHE: 30 September 2020

Published: 4 November 2020

About the Health Information and Quality Authority

The Health Information and Quality Authority (HIQA) is an independent statutory authority established to promote safety and quality in the provision of health and social care services for the benefit of the health and welfare of the public.

HIQA's mandate to date extends across a wide range of public, private and voluntary sector services. Reporting to the Minister for Health and engaging with the Minister for Children and Youth Affairs, HIQA has responsibility for the following:

- **Setting standards for health and social care services** — Developing person-centred standards and guidance, based on evidence and international best practice, for health and social care services in Ireland.
- **Regulating social care services** — The Chief Inspector within HIQA is responsible for registering and inspecting residential services for older people and people with a disability, and children's special care units.
- **Regulating health services** — Regulating medical exposure to ionising radiation.
- **Monitoring services** — Monitoring the safety and quality of health services and children's social services, and investigating as necessary serious concerns about the health and welfare of people who use these services.
- **Health technology assessment** — Evaluating the clinical and cost-effectiveness of health programmes, policies, medicines, medical equipment, diagnostic and surgical techniques, health promotion and protection activities, and providing advice to enable the best use of resources and the best outcomes for people who use our health service.
- **Health information** — Advising on the efficient and secure collection and sharing of health information, setting standards, evaluating information resources and publishing information on the delivery and performance of Ireland's health and social care services.
- **National Care Experience Programme** — Carrying out national service-user experience surveys across a range of health services, in conjunction with the Department of Health and the HSE.

Foreword

The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is a highly infectious virus which has caused tens of millions of cases of COVID-19 since its emergence in 2019, with a considerable level of associated mortality. In the context of the ongoing COVID-19 pandemic, SARS-CoV-2 constitutes a significant public health concern due to its high basic reproduction rate, the absence of immunity in the human population, and the current lack of an effective vaccination or treatment approaches.

The National Public Health Emergency Team (NPHET) oversees and provides national direction, guidance, support and expert advice on the development and implementation of strategies to contain COVID-19 in Ireland. Since March 2020, HIQA's COVID-19 Evidence Synthesis Team has provided research evidence to support the work of NPHET and associated groups and inform the development of national public health guidance. The COVID-19 Evidence Synthesis Team, drawn from the Health Technology Assessment Directorate in HIQA, conducts evidence synthesis incorporating the scientific literature, international public health recommendations, and existing data sources as appropriate.

From September 2020, as part of the move towards a sustainable response to the public health emergency, HIQA provides evidence-based advice in response to requests from NPHET. The advice provided to NPHET is informed by research evidence developed by HIQA's COVID-19 Evidence Synthesis Team and with expert input from HIQA's COVID-19 Expert Advisory Group. Topics for consideration are outlined and prioritised by NPHET. This process helps to ensure rapid access to the best available evidence relevant to the SARS-CoV-2 outbreak, to inform decision-making at each stage of the pandemic.

The purpose of this report is to outline the advice provided to NPHET by HIQA, with consideration of the scientific literature, international recommendations and input from the COVID-19 Expert Advisory Group, regarding the currently recommended 14-day duration of restricted movements for individuals exposed, or potentially exposed to SARS-CoV-2.

HIQA would like to thank its COVID-19 Evidence Synthesis Team, the members of the COVID-19 Expert Advisory Group and all who contributed to the preparation of this report.

A handwritten signature in black ink, appearing to read 'Mairín Ryan', with a stylized flourish at the end.

Dr Máirín Ryan

Deputy CEO & Director of Health Technology Assessment

Health Information and Quality Authority

Acknowledgements

HIQA would like to thank all of the individuals and organisations who provided their time, advice and information in support of this health technology assessment.

Particular thanks are due to the Expert Advisory Group (EAG) and the individuals within the organisations listed below who provided advice and information.

The membership of the EAG is as follows:

Dr Niamh Bambury	Specialist Registrar in Public Health Medicine, HSE - Health Protection Surveillance Centre (HPSC)
Prof Karina Butler	Consultant Paediatrician and Infectious Diseases Specialist, Children's Health Ireland & Chair of the National Immunisation Advisory Committee
Dr Jeff Connell	Assistant Director, UCD National Virus Reference Laboratory, University College Dublin
Dr Eibhlín Connolly	Deputy Chief Medical Officer, Department of Health
Prof. Máire Connolly	Specialist Public Health Adviser, Department of Health & Adjunct Professor of Global Health and Development, National University of Ireland, Galway
Prof Martin Cormican	Consultant Microbiologist & National Clinical Lead, HSE Antimicrobial Resistance and Infection Control Team
Ms Sinead Creagh	Laboratory Manager at Cork University Hospital & Academy of Clinical Science and Laboratory Medicine
Dr Ellen Crushell*	Consultant Paediatrician, Dean, Faculty of Paediatrics, Royal College of Physicians of Ireland & Co-Clinical Lead, Paediatric/Neonatology National Clinical Programme
Dr John Cuddihy	Specialist in Public Health Medicine & Interim Director, HSE- Health Protection Surveillance Centre (HPSC)
Dr Cillian de Gascun	Consultant Virologist & Director of the National Virus Reference Laboratory, University College Dublin
Dr Lorraine Doherty	National Clinical Director Health Protection, HSE- Health Protection Surveillance Centre (HPSC)

Ms Josephine Galway	National Director of Nursing, Infection Prevention Control and Antimicrobial Resistance, AMRIC Division, HSE- Health Protection Surveillance Centre (HPSC)
Dr Vida Hamilton	Consultant Anaesthetist & National Clinical Advisor and Group Lead, Acute Hospital Operations Division, HSE
Dr David Hanlon	General Practitioner & National Clinical Advisor and Group Lead, Primary Care/Clinical Strategy and Programmes, HSE
Dr Patricia Harrington	Head of Assessment, Health Technology Assessment, HIQA
Dr Derval Igoe	Specialist in Public Health Medicine, HSE- Health Protection Surveillance Centre (HPSC)
Prof Mary Keogan	Consultant Immunologist, Beaumont Hospital & Clinical Lead, National Clinical Programme for Pathology. HSE
Dr Siobhán Kennelly	Consultant Geriatrician & National Clinical & Advisory Group Lead, Older Persons, HSE
Ms Sarah Lennon	Executive Director, SAGE Advocacy
Mr Andrew Lynch	Business Manager, Office of the National Clinical Advisor and Group Lead - Mental Health, HSE
Dr Gerry McCarthy *	Consultant in Emergency Medicine, Cork University Hospital & Clinical Lead, National Clinical Programme for Emergency Medicine, HSE
Prof Paddy Mallon	Consultant in Infectious Diseases, St Vincent's University Hospital & National Clinical Programme for Infectious Diseases, HSE
Dr Eavan Muldoon*	Consultant in Infectious Diseases, Mater Misericordiae University Hospital, National Clinical Lead for CIT and OPAT programmes & National Clinical Programme for Infectious Diseases, HSE
Dr Desmond Murphy	Consultant Respiratory Physician & Clinical Lead, National Clinical Programme for Respiratory Medicine, HSE

Dr John Murphy	Consultant Paediatrician & Co-Clinical Lead, Paediatric/Neonatology National Clinical Programme, HSE
Dr Gerard O'Connor	Consultant in Emergency Medicine, Mater Misericordiae University Hospital & National Clinical Programme for Emergency Medicine, HSE
Ms Michelle O'Neill	HRB-CICER Programme Manager, Health Technology Assessment, HIQA
Dr Orlaith O'Reilly	Joint Clinical Lead, HSE Integrated Programme for Prevention and Management of Chronic Disease
Dr Mary O'Riordan	Specialist in Public Health Medicine, HSE- Health Protection Surveillance Centre (HPSC)
Dr Margaret B. O'Sullivan	Specialist in Public Health Medicine, Department of Public Health, HSE South & Chair, National Zoonoses Committee
Dr Michael Power	Consultant Intensivist, Beaumont Hospital & Clinical Lead, National Clinical Programme for Critical Care, HSE
Dr Máirín Ryan (Chair)	Director of Health Technology Assessment & Deputy Chief Executive Officer, HIQA
Dr Lynda Sisson	Consultant in Occupational Medicine, Dean of Faculty of Occupational Medicine, RCPI & National Clinical Lead for Workplace Health and Well Being, HSE
Prof Susan Smith	General Practitioner & Professor of Primary Care Medicine, Royal College of Surgeons in Ireland
Dr Patrick Stapleton	Consultant Microbiologist, UL Hospitals Group, Limerick & Irish Society of Clinical Microbiologists
Dr Conor Teljeur	Chief Scientist, Health Technology Assessment, HIQA
Ms Anne Tobin	Assessment and Surveillance Manager, Medical Devices, Health Products Regulatory Authority

* Alternate nominee for programme /association

Advice to the National Public Health Advisory Team

The purpose of this evidence synthesis is to provide advice to the National Public Health Emergency Team (NPHE) on the following policy question:

'Does the evidence support the current 14-day duration of restriction of movements for individuals exposed, or potentially exposed, to SARS-CoV-2?'

The response to the policy question is informed by three elements:

1. An evidence summary of the incubation period of COVID-19, or time to a first positive test, in individuals exposed to SARS-CoV-2
2. A review of current international recommendations for restriction of movements for individuals exposed, or potentially exposed, to SARS-CoV-2
3. Input from the COVID-19 Expert Advisory Group.

The key points of this evidence synthesis, which informed HIQA's advice, are as follows:

- The impact of the SARS-CoV-2 virus is reflected in the continued growth of COVID-19 cases and associated mortality worldwide. Public health interventions aim to minimise the burden of COVID-19 by reducing the spread of SARS-CoV-2. Important interventions that may be associated with specific durations of time include 'restriction of movements' and 'self-isolation'.
 - 'Restriction of movements' (or quarantine) is defined as separating and restricting the movements of people who were exposed or potentially exposed to COVID-19. This is performed as a precautionary measure to prevent onward transmission should exposed individuals later become diagnosed.
 - 'Self-isolation' (or isolation) is defined as separating those with symptoms of, or diagnosed with COVID-19, from people who are not infected, to prevent transmission to others while they are infectious.
- Individuals may be infectious before, or soon after they show symptoms of COVID-19. This disease is also associated with a large proportion of asymptomatic individuals who will never develop symptoms, but may transmit the disease. Therefore, the implementation of an adequate period of restriction of movements for those exposed, or potentially exposed, to SARS-CoV-2 is essential to reducing transmission.

- The incubation period of a disease, defined as the time from exposure to symptom onset, can help to inform the necessary duration of restricted movements. Given the high proportion of asymptomatic individuals, it is also important to identify when the disease is detectable in those who have no symptoms.

Evidence summary

- An evidence summary was undertaken to estimate both of these aspects to inform the necessary duration of restricted movements:
 - This evidence summary included 98 studies; with 96 containing data relevant to the incubation period, and three with data on time to first positive test in asymptomatic individuals based on serial testing.
 - In terms of incubation period, it is important to try to estimate the cumulative proportion of people who are likely to show symptoms by each day from exposure. Fourteen of the 98 studies provided this form of data and were used to inform the main analysis where the distribution of the data was quantified.
 - The results of this main analysis indicated that the median incubation period of COVID-19 is between five and six days. On average, approximately 95% of individuals who experience symptoms will do so by day 14, indicating that approximately 1 in 20 develop symptoms after this time. Approximately 82% to 87% of individuals will develop symptoms by day 10, indicating that approximately one in six develop symptoms at a later date. Some individuals may take 21 days or more to exhibit symptoms; however, there is considerable uncertainty associated with this data.
 - Studies involving the serial testing of asymptomatic populations were limited to three studies of small sample size that provide very low certainty evidence. A narrative synthesis of results highlighted that these individuals may typically be detected by day 10 following exposure, but this duration may be substantially longer in some individuals.
 - Insufficient data were available to conduct subgroup analyses by exposure type or setting. Limited, very low certainty evidence suggests that the incubation period may be longer for children and older adults (aged ≥ 60 years) than those presented for the general populations.

- The majority of evidence comes from studies of low quality design, and there were important limitations associated with the studies and the quantitative analysis undertaken within the evidence summary.
- Overall, the results of this evidence summary indicate that the widely recommended 14-day period of restricted movements is likely to capture approximately 95% of individuals who will become symptomatic. For asymptomatic populations, there is limited information of low certainty regarding the time from exposure to SARS-CoV-2 detection.
- The evidence supports the current recommended 14-day duration as a reduction would potentially increase the risk of transmission. However, policy and clinical judgment over what constitutes an acceptable rate of potentially missed cases, and therefore potentially infectious individuals entering the community, could determine the need for a change in duration overall.

International public health recommendations

- A review of international public health recommendations, from a predefined list of 22 countries and four agencies, regarding restriction of movements (quarantine) was undertaken:
 - Current recommendations in Ireland are that close contacts of a COVID-19 case should get tested for COVID-19 and restrict their movements for 14 days; receipt of a virus 'not detected' test result does not reduce the duration. Close contacts are tested on identification and at seven days after last known contact with the index case. For potential travel-related exposure, those arriving from a country which is not on the 'green list' should restrict their movements for 14 days with no testing advised.
 - For close contacts of a confirmed, or clinically suspected COVID-19 case, the World Health Organization (WHO), US Centres for Disease Control and Prevention (CDC) and multiple countries currently recommend 14 days quarantine.
 - The currently recommended duration of quarantine for all close contacts of COVID-19 case is 10 days in Austria, Norway, Switzerland and The Netherlands. Updated Belgian recommendations, yet to be translated into public health guidance, specify a seven day period.
 - European Centre for Disease Prevention and Control (ECDC) documents from the 15 and 24 September 2020 state that the duration of quarantine can be reduced from 14 days if a PCR test taken on or after day 10

following last exposure to the case is negative (virus not detected). However, it is noted that, given the residual risk of transmission, early release from quarantine may not be applicable to certain high-risk settings or for contacts working with vulnerable populations. All other countries and organisations reviewed currently specify that the duration of quarantine cannot be reduced on the basis of negative test results.

- For travel-related exposure, the duration of quarantine recommended depends on the country from which travel originated. Individual countries specify quarantine durations of 7 to 14 days if the origin country is not on a 'green list'; some countries include testing pre-departure and or on arrival.
- The European Commission has proposed a common approach to travel based on a colour system. People travelling from an area classified as 'red' or 'grey' must either undergo 14 days quarantine or a COVID-19 test after arrival, with testing being the preferred option.

COVID-19 Expert Advisory Group

- A meeting of the COVID-19 Expert Advisory Group was convened for clinical and technical interpretation of the research evidence.
 - Based on the research evidence presented, the COVID-19 Expert Advisory Group reasoned that the current evidence supports the ongoing use of the 14-day duration of restriction of movements.
 - The COVID-19 Expert Advisory Group identified additional factors which should be considered to inform both this policy question and potential further research and policy questions. These included:
 - differences in the risk of infection by exposure setting (close contact: household versus non-household) and type (for example, close contact versus potential travel-related exposure) that could allow for potentially different recommended periods of restricted movements.
 - analysis of any existing contact tracing data in Ireland regarding test positivity on day 0 and day 7, segregated by symptomatic and asymptomatic populations, and the likelihood of pre-symptomatic detection.

- identify any sources of evidence on the proportion of cases with a negative test (virus not detected) result at day 10 since exposure who subsequently become symptomatic.
 - the infectivity and transmission capability of asymptomatic populations.
 - mechanisms to address perceived barriers arising from socioeconomic disparities that are impacting timely access to testing and ability to restrict movements.
 - adherence to restriction of movements and how this may vary according to differences in the specified duration of restricted movements, including any behavioural factors influencing this adherence. Consideration should be given to the analysis of the existing Irish data regarding adherence to the current testing strategy.
 - the implications of any reduction in the duration of restriction of movements for contacts working with vulnerable populations or contacts in high-risk settings.
- The COVID-19 Expert Advisory Group highlighted that further consideration should be given to the ECDC recommendation (published 15 September 2020) allowing the period of restriction of movements to be reduced from the recommended 14 days, if a PCR test taken on or after day 10 following last exposure to the case is negative (virus not detected). It was highlighted that it would be important to explore the evidence underpinning the ECDC recommendation. It was also noted that the organisational implications of including a day-10 test on current testing policy should be considered.

Advice

Arising from the findings above, HIQA's advice to the National Public Health Emergency Team, provided on 30 September 2020 in advance of the NPHE meeting on 1 October 2020, is as follows:

- In the context of no change to the current testing protocol, HIQA advises that NPHE retains the 14-day period of restriction of movements for individuals exposed, or potentially exposed, to SARS-CoV-2. This advice pertains to recommendations regarding restriction of movements, regardless of exposure type (close contact or potential travel-related exposure). The advice is

informed by research evidence on the incubation period of SARS-CoV-2, international guidance, and input from the COVID-19 Expert Advisory Group.

- Further consideration should be given to the ECDC recommendation (published 15 September 2020) allowing the period of restriction of movements to be reduced from 14 days if a PCR test taken on or after day 10 following last exposure to the case is negative (virus not detected).

Published by the Health Information and Quality Authority (HIQA).

For further information please contact:

Health Information and Quality Authority

George's Court

George's Lane

Smithfield

Dublin 7

D07 E98Y

+353 (0)1 8147400

info@hiqa.ie

www.hiqa.ie

© Health Information and Quality Authority 2020