

## COVID-19 Living Evidence Synthesis 13.1:

### Effectiveness of quarantine and isolation for reducing transmission of COVID-19 and other respiratory infections, as well as impacting other individual and social outcomes in non-health care community-based settings

**Date of Literature Search:** 12<sup>th</sup> December 2022

**Suggested citation:** Bacon SL, Wu N, Joyal-Desmarais KD, Burdick J, Sanuade C, Marques Vieira A, Jagwani M, and the COVID-END PHSM LES Working Group. Montreal Behavioural Medicine Centre, CIUSSS-NIM, 22<sup>nd</sup> December 2022.

**Please note:** This living evidence synthesis (LESs) is part of a suite of LESs of the best-available evidence about the effectiveness of six PHSMs (masks, quarantine and isolation, ventilation, physical distancing and reduction of contacts, hand hygiene and respiratory etiquette, cleaning, and disinfecting), as well as combinations of and adherence to these measures, in preventing transmission of COVID-19 and other respiratory infectious diseases in non-health care community-based setting. The LESs are updated every six weeks and include enhancements from the previous versions (e.g., inclusion of additional study designs and updated risk of bias assessments). The most up-to-date version of this and other [LESs in the suite are available on the COVID-END website](#).

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#### Primary questions

1. What is the effectiveness of different lengths of quarantine\* (e.g., > 10 days, ≤ 10days) in reducing transmission of COVID-19 in non-health care community-based settings (**PICO 1a**)?
2. What is the effectiveness of different lengths of isolation\* (e.g., > 10 days, ≤ 10days) in reducing transmission of COVID-19 in non-health care community-based settings (**PICO 1b**)?
3. What is the effectiveness of different lengths of quarantine\* (e.g., > 10 days, ≤ 10days) in reducing transmission of non-COVID-19 respiratory illnesses (e.g., influenza, respiratory syncytial virus (RSV)) in non-health care community-based settings (**PICO 1c**)?
4. What is the effectiveness of different lengths of isolation\* (e.g., > 10 days, ≤ 10days) in reducing transmission of non-COVID-19 respiratory illnesses (e.g., influenza, respiratory syncytial virus (RSV)) in non-health care community-based settings (**PICO 1d**)?

#### Secondary questions

5. What is the impact of quarantine\* on other individual and societal outcomes (e.g., mental health, financial circumstances) in non-health care community-based settings (**PICO 2a**)?
6. What is the impact of isolation\* on other individual and societal outcomes (e.g., mental health, financial circumstances) in non-health care community-based settings (**PICO 2b**)?

\* *Quarantine* refers to the segregation of individuals who have been in close contact (or suspected contact) with one or more person(s) who has (have) tested positive for COVID-19. *Isolation* refers to the segregation of individuals who have tested positive for COVID-19 or have COVID-19 related symptoms.



## **Executive summary**

### **Background**

- Two key strategies to prevent the spread of COVID-19 are for individuals who have been in contact with an individual who has tested positive for COVID-19 to quarantine and for individuals who are symptomatic and/or have tested positive for the disease to isolate.
- During early phases of the pandemic, a duration of 14 days for these physical distancing measures was a common policy. Over time and across jurisdictions, there have been several variations in the duration of quarantine and isolation periods. However, it is unclear if and what effects different quarantine and isolation durations have had on transmission rates.
- Furthermore, though we know that the pandemic has had a notable impact on a variety of individual and societal outcomes, it is unclear what the specific impact of quarantine and isolation has been.

### **What has changed in this version?**

- This is the first version of this review.

### **Key points**

- There are no primary empirical studies that have explored the effectiveness of different lengths of quarantine and isolation periods on transmission.
- There are no primary empirical studies that have explored the relative impacts of different lengths of quarantine and isolation periods on individual and societal outcomes.
- The limited number of primary empirical studies (i.e., two studies) that have explored the effectiveness of quarantine and isolation periods, relative to no quarantine/isolation on individual and societal outcomes, found a trend for higher depressive symptoms in individuals in quarantine and isolation.

### **Overview of evidence and knowledge gaps**

- There is no available primary empirical evidence on the effectiveness of different lengths of quarantine or isolation on transmission.
- Overall, the evidence on individual and social outcomes has a serious risk of bias, which likely falls in the direction of greater negative impacts of quarantine and isolation.
- There are multiple knowledge gaps within the literature including, but limited to: a total lack of data on transmission; a lack of adjustment for important confounders such as self-reporting of COVID-19 and symptoms experienced during quarantine/isolation; a focus on negative outcomes with no measurement of potential positive aspects of quarantine/isolation; a lack of current data (both reported studies collected data early in the pandemic, and the situation has rapidly changed subsequently); and a lack of consideration of prior COVID-19 infections, vaccination status, or variants.

### **Suggested Tweet**

- The data is too limited to provide anything meaningful that could be tweeted.

## Résumé

### Arrière-plan

- Deux stratégies clés pour prévenir la propagation de la COVID-19 sont les suivantes : a) les personnes qui ont été en contact avec une personne qui a obtenu un résultat positif à la COVID-19 doivent se mettre en quarantaine; b) les personnes qui sont symptomatiques ou qui ont obtenu un résultat positif à la maladie doivent s'isoler.
- Au cours des premières phases de la pandémie, une durée de 14 jours pour ces deux mesures était une politique commune. Au fil du temps et entre les administrations, il y a eu plusieurs variations dans la durée des périodes de quarantaine et d'isolement. Toutefois, il n'est pas clair si et quels effets différentes durées de quarantaine et d'isolement ont eu sur les taux de transmission.
- De plus, même si nous savons que la pandémie a eu des répercussions notables sur divers résultats individuels et sociétaux (p. ex., la santé mentale), nous ne savons pas exactement quelle a été l'incidence particulière de la quarantaine et de l'isolement sur ces résultats.

### Qu'est-ce qui a changé dans cette version?

- Ceci est la première version de cette revue.

### Points clés

- Aucune étude empirique primaire n'a exploré l'efficacité de différentes périodes de quarantaine et d'isolement en cas de transmission.
- Aucune étude empirique primaire n'a exploré les répercussions relatives des différentes durées de quarantaine et d'isolement sur les résultats individuels et sociétaux au-delà de la transmission.
- Un nombre limité d'études empiriques primaires (c'est-à-dire deux études) ont exploré l'efficacité des périodes de quarantaine et d'isolement par rapport à l'absence de quarantaine ou d'isolement sur les résultats individuels et sociétaux. Ils ont trouvé une tendance aux symptômes dépressifs plus élevés chez les gens en quarantaine et en isolement.

### Aperçu des lacunes dans les données probantes et les connaissances

- Il n'existe aucune preuve empirique primaire de l'efficacité de différentes durées de quarantaine ou d'isolement pour la transmission de la COVID-19.
- Dans l'ensemble, les données sur les résultats individuels et sociaux présentent un risque grave de biais, ce qui favorise probablement les groupes de comparaison.
- Il y a des lacunes et des limites dans la littérature, notamment (mais sans s'y limiter) : un manque total de données sur la transmission; un manque d'ajustement pour les facteurs de confusion importants, comme les symptômes ressentis pendant la quarantaine ou l'isolement; une dépendance à l'égard de plans d'observation transversaux et de données auto déclarées; un accent sur les résultats négatifs sans mesure des aspects positifs potentiels de la quarantaine ou de l'isolement; un manque de données qui reflètent la situation actuelle liée à la pandémie (Les deux études déclarées ont recueilli des données au début de la pandémie, et la situation a beaucoup changé depuis); et un manque général de prise en compte des infections antérieures à la COVID-19, du statut vaccinal ou des variants.

### Suggestion de gazouillis

Les données sont trop limitées pour fournir des renseignements importants qui pourraient être diffusés sur Twitter.

## Findings

- For this round a total of 3,646 studies were title and abstract screened, 83 were moved forward for full-text appraisal (20 for PICO 1, 55 for PICO 2, and 8 for PICO 1 and 2). 3 studies were initially included (2 for PICO 2 and 1 for PICO 1 and 2) with 1 study excluded (PICO 1 and 2) due to a critical RoB, leaving 2 studies (both PICO 2) that were used to complete this summary. Both studies had a serious risk of bias.
- The PRIMSA flow chart for this round can be found in Appendix 2.

### **PICO 1a: Summary of findings about different durations of quarantine on COVID-19 transmission**

No studies were included that report on reducing transmission of COVID-19 as an outcome in response to different durations of quarantine.

### **PICO 1b: Summary of findings about different durations of isolation on COVID-19 transmission**

No studies were included that report on reducing transmission of COVID-19 as an outcome in response to different durations of isolation.

### **PICO 1c: Summary of findings about different durations of quarantine on non-COVID-19 respiratory transmission**

No studies were included that report on reducing transmission of non-COVID-19 respiratory diseases as an outcome in response to different durations of quarantine.

#### **Box 1: Our approach**

We retrieved candidate studies by searching: 1) EMBASE; 2) Medline; 3) Psychinfo; and 4) the National Institute of Health (NIH) iSearch COVID-19 portfolio. Searches were conducted for studies reported in English, conducted with humans and published since 1 January 2020 (to coincide with the emergence of COVID-19 as a global pandemic). Our detailed search strategy is included in **Appendix 6**.

Studies were identified up to ten days before the version release date. Studies that report on empirical data with a comparator were considered for inclusion, with modelling studies, simulation studies, case reports, case series, and press releases excluded. Other study designs may be considered for future versions in the absence of other forms of evidence. A full list of included studies is provided in **Tables 1-6 and Appendix 1**. Studies excluded at the last stages of reviewing are provided in **Appendix 3 and 4**.

**Population of interest:** All population groups that report data related to all COVID-19 variants and sub-variants.

**Intervention and comparator PICO 1:** Intervention = individuals who have been exposed to people with COVID-19 (quarantine) or have symptoms/a positive COVID-19 test (isolation) and are in confinement for a fixed period of time. Comparison = individuals in quarantine or isolation for a different fixed period of time.

**Intervention and comparator PICO 2:** Intervention = individuals in quarantine/isolation for a fixed period of time. Comparison = individuals in quarantine /isolation for a different fixed period of time or are not in quarantine/isolation

**Primary outcome:** Reduction in transmission of COVID-19 and other non-COVID-19 respiratory infections. **Secondary outcomes:** Changes in individual and social measures, e.g., mental health and financial security.

**Data extraction:** Data extraction was conducted by one team member and checked for accuracy and consistency by at least one other team member.

**Critical appraisal:** Risk of Bias (ROB) of individual studies was be assessed using validated ROB tools. For RCTs we used ROB-2, and for observational studies, we used ROBINS-I. Judgements for the domains within these tools will be decided by consensus within synthesis team and undergo revision with subsequent iterations of the LES as needed. Additional ROB tools will be added as needed to fit with other study designs. Once a study was seemed to meet one criterion that made it “critical” risk of bias, it was dropped without completing the full ROB assessment. Our detailed approach to critical appraisal is provided in **Appendix 7**.

**Summaries:** We summarized the evidence by presenting narrative evidence profiles across studies by outcome measure. Future versions may include statistical pooling of results if deemed appropriate.

We update this document every six weeks up to the end of March 2023.

**PICO 1d: Summary of findings about different durations of isolation on COVID-19 transmission**

No studies were included that report on reducing transmission of non-COVID-19 respiratory diseases as an outcome in response to different durations of isolation.

**PICO 2a: Summary of findings about the impact of quarantine on individual and social outcomes**

Two studies were included that report on individual and social outcomes in response to quarantine.

One study in public university students from Malaysia found that, when compared to a non-quarantine population, a quarantined population had higher depressive symptom scores. However, they didn't find any group differences for anxiety symptoms or stress. A second study reporting data from adults across seven countries and one territory found that individuals in quarantine were 25% more likely to report having elevated levels of a composite measure of depressive and anxious symptoms, compared to those not in quarantine or isolation. Both studies were at serious risk of bias in a way that likely favoured the no-quarantine comparison group.

**PICO 2b: Summary of findings about the impact of isolation on individual and social outcomes**

One study was included that reported on individual and social outcomes in response to isolation.

The one study was the same as the quarantine study that included adults across seven countries and one territory. This study found that individuals in isolation, either from a diagnosis of COVID-19 or based on symptoms, were 33% and 38%, respectively, more likely to report having elevated levels of a composite measure of depressive and anxious symptoms, compared to those not in quarantine or isolation. This study was at serious risk of bias in a way that likely favoured the no-quarantine comparison group.

**Table 1: Summary of studies reporting on effectiveness of different lengths of quarantine in preventing COVID-19 transmission (PICO 1a)**

Reference	Date released	Setting and time covered	Study characteristics	Summary of key findings in relation to the outcome	RoB Rating
No studies				•	

**Table 2: Summary of studies reporting on effectiveness of different lengths of isolation in preventing COVID-19 transmission (PICO 1b)**

Reference	Date released	Setting and time covered	Study characteristics	Summary of key findings in relation to the outcome	RoB Rating
No studies				•	

**Table 3: Summary of studies reporting on effectiveness of different lengths of quarantine in preventing non-COVID-19 respiratory illness transmission (PICO 1c)**

Reference	Date released	Setting and time covered	Study characteristics	Summary of key findings in relation to the outcome	RoB Rating
No studies				•	

**Table 4: Summary of studies reporting on effectiveness of different lengths of isolation in preventing non-COVID-19 respiratory illness transmission (PICO 1d)**

Reference	Date released	Setting and time covered	Study characteristics	Summary of key findings in relation to the outcome	RoB Rating
No studies				•	

**Table 5: Summary of studies reporting on the impact of quarantine on individual and social outcomes**

Reference	Date released	Setting and time covered	Study characteristics	Summary of key findings in relation to the outcome	RoB Rating
<a href="#">Pang et al., 2020<sup>1</sup></a>	<p><b>Accepted:</b> September 2, 2021</p> <p><b>Published:</b> September 14, 2021</p>	<p>Malaysia</p> <p>April 1-14, 2020.</p>	<p><b>Design:</b> Cross-sectional survey distributed via email to a convenience sample of students.</p> <p><b>Sample:</b> 515 public university students (aged 18+), during the national movement control order. There were 503 (97.7%) students in the comparison group and 12 (2.3%) students in the quarantined group.</p> <p><b>Intervention:</b> Students in mandatory quarantine for 14 days after a close contact with a COVID-19 case. Contacted on day 7 of quarantine.</p> <p><b>Comparison:</b> Students under campus lockdown who were not further quarantined. Students were allowed to move within the vicinity of their hostels and nearby cafeteria. Also allowed social interactions with others on campus under the condition that they followed strict standard operating procedures.</p> <p><b>Key Outcomes:</b> The Depression Anxiety Stress Scale-21 (DASS-21). Contains three scales assessing: (a) depressive symptoms; (b) anxiety symptoms; and (c) stress. Scores range from 0-42 on each scale.</p> <p><b>Terminology:</b> Refers to students under quarantine as being under “compulsory quarantine”. Others are referred to as “non-quarantined”.</p> <p><b>VOCs:</b> Not considered</p> <p><b>Vaccination status:</b> Not vaccinated</p>	<ul style="list-style-type: none"> <li>• <b>Base rates:</b> 20.2% of students had “moderate or above” scores for depression, 25% for anxiety, and 14.2% for stress. Most of the sample had “normal” scores (i.e., lowest category of distress) for all three variables.</li> <li>• <b>Bivariate Results</b> (without adjustments) <ul style="list-style-type: none"> <li>• Significantly higher levels of depression (7.75 vs 4.96, <math>p=.025</math>).</li> <li>• No significant difference in anxiety (5.75 vs 4.44, <math>p=.375</math>) or stress (7.50 vs 5.67, <math>p=.110</math>) between quarantined students and not quarantined students.</li> </ul> </li> <li>• <b>Multiple regression</b> (adjusting for limited sociodemographic variables): <ul style="list-style-type: none"> <li>• Quarantine status was significantly associated to a higher depression score (standardized <math>\beta = .103</math>, <math>p = .020</math>).</li> <li>• Quarantine status was not significantly associated with either anxiety (<math>\beta = .052</math>, <math>p = .234</math>) or stress scores (<math>\beta = .070</math>, <math>p = .112</math>).</li> </ul> </li> </ul>	Serious



<p><a href="#">Schluter et al. 2022<sup>2</sup></a></p>	<p><b>Published:</b> August 1, 2022</p>	<p>Canada, USA, England, Switzerland, Belgium, Philippines, New Zealand and Hong Kong</p> <p>November 6-18, 2020.</p>	<p><b>Design:</b> Cross-sectional survey using representative samples across 8 countries. Conducted online via polling firms with quota-based sampling.</p> <p><b>Sample:</b> 9,027 adults. Quarantine group N = 566 (6.5%); No confinement N = 5753 (66.2%)</p> <p><b>Intervention:</b> Individuals self-reported whether they were in “home quarantine or self-isolation” or in “non-home quarantine” (e.g., at a quarantine centre). Then indicated their reasons for quarantine. Reasons were used to delineate intervention groups:</p> <ul style="list-style-type: none"> <li>• <b>Quarantine:</b> in confinement due to exposure to a case of COVID-19</li> </ul> <p><b>Comparison:</b></p> <ul style="list-style-type: none"> <li>• <b>No confinement:</b> Individuals who reported not being in quarantine or isolation (note: persons engaging in confinement for travel or any health-related purposes are also excluded from the comparison group).</li> </ul> <p><b>Key Outcomes:</b> A composite dichotomous score from people score 10+ on either the Generalized Anxiety Disorder-7 (GAD-7) and/or the Patient Health Questionnaire-9 (PHQ-9).</p> <p><b>Terminology:</b> The terms isolation and quarantine are sometimes used interchangeably. We defined intervention groups according to reasons stated for confinement.</p> <p><b>VOCs:</b> Not considered. <b>Vaccination status:</b> Not considered.</p>	<ul style="list-style-type: none"> <li>• Prevalence of probable GAD or MDE (based on threshold scores of 10+) by group was:             <ul style="list-style-type: none"> <li>• No confinement: 26.0%</li> <li>• Quarantine: 44.7%</li> </ul> </li> <li>• Risk ratios (RRs) [with 95% confidence intervals] for probable GAD/MDE by intervention group was as follows (comparison is the no confinement group)*:             <ul style="list-style-type: none"> <li>• Quarantine: 1.25 (1.11, 1.41)</li> </ul> </li> </ul> <p>*Used adjusted multilevel logistic models (nested within country) with multiple imputation to handle missing data.</p>	<p>Serious</p>
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**Table 6: Summary of studies reporting on the impact of isolation on individual and social outcomes**

Reference	Date released	Setting and time covered	Study characteristics	Summary of key findings in relation to the outcome	RoB Rating
<a href="#">Schluter et al. 2022<sup>2</sup></a>	<b>Published:</b> August 1, 2022	Canada, USA, England, Switzerland, Belgium, Philippines, New Zealand and Hong Kong  November 6-18, 2020.	<p><b>Design:</b> Cross-sectional survey using representative samples across 8 countries. Conducted online via polling firms with quota-based sampling.</p> <p><b>Sample:</b> 9,027 adults. Isolation - diagnosis N = 457 (5.3%); Isolation - symptoms N = 720 (8.3%); No confinement N = 5753 (66.2%)</p> <p><b>Intervention:</b> Individuals self-reported whether they were in “home quarantine or self-isolation” or in “non-home quarantine”. Then indicated their reasons for quarantine. Reasons were used to delineate intervention groups:</p> <ul style="list-style-type: none"> <li>• <b>Isolation - diagnosis:</b> in confinement due to a COVID-19 diagnosis</li> <li>• <b>Isolation - symptoms:</b> in confinement due to having COVID-19 symptoms (without a diagnosis).</li> </ul> <p><b>Comparison:</b></p> <ul style="list-style-type: none"> <li>• <b>No confinement:</b> Individuals who reported not being in quarantine or isolation.</li> </ul> <p><b>Key Outcomes:</b> A composite dichotomous score from people score 10+ on either the Generalized Anxiety Disorder-7 (GAD-7) and/or the Patient Health Questionnaire-9 (PHQ-9).</p> <p><b>Terminology:</b> We defined intervention groups according to reasons stated for confinement.</p> <p><b>VOCs:</b> Not considered.</p> <p><b>Vaccination status:</b> Not considered.</p>	<ul style="list-style-type: none"> <li>• Prevalence of probable GAD or MDE (based on threshold scores of 10+) by group was: <ul style="list-style-type: none"> <li>• No confinement: 26.0%</li> <li>• Isolation - diagnosis: 59.4%</li> <li>• Isolation - symptoms: 50.2%</li> </ul> </li> <li>• Risk ratios (RRs) [with 95% confidence intervals] for probable GAD/MDE by intervention group was as follows (comparison is the no confinement group)*: <ul style="list-style-type: none"> <li>• Isolation - diagnosis: 1.33 (1.18, 1.49)</li> <li>• Isolation - symptoms: 1.38 (1.21, 1.57)</li> </ul> </li> </ul> <p>*Used adjusted multilevel logistic models (nested within country) with multiple imputation to handle missing data.</p>	Serious

## **Acknowledgements**

To help Canadian decision-makers as they respond to unprecedented challenges related to the COVID-19 pandemic, COVID-END in Canada is preparing evidence syntheses like this one. This living evidence synthesis was commissioned by the Office of the Chief Science Officer, Public Health Agency of Canada. The development and continued updating of this living evidence synthesis has been funded by the Canadian Institutes of Health Research (CIHR) and the Public Health Agency of Canada. The opinions, results, and conclusions are those of the team that prepared the evidence synthesis, and independent of the Government of Canada, CIHR, and the Public Health Agency of Canada. No endorsement by the Government of Canada, Public Health Agency of Canada or CIHR is intended or should be inferred.

## **References**

1. Pang NT, et al. Relationships between Psychopathology, Psychological Process Variables, and Sociodemographic Variables and Comparison of Quarantined and Non-Quarantined Groups of Malaysian University Students in the COVID-19 Pandemic. *International Journal of Environmental Research and Public Health* 2021;18.
2. Schluter PJ, et al. An eight country cross-sectional study of the psychosocial effects of COVID-19 induced quarantine and/or isolation during the pandemic. *Scientific Reports* 2022;12:13175.

## ***Appendices***

**Appendix 1: Summary of Included Studies**

**Appendix 2: Flow chart of studies included in the current update**

**Appendix 3: Studies excluded for PICO 1**

**Appendix 4: Studies excluded for PICO 2**

**Appendix 5: PICOs and eligibility criteria**

**Appendix 6: Search database and strategy**

**Appendix 7: Approach to critical appraisal**