

## PEER REVIEW HISTORY

BMJ Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form (<http://bmjopen.bmj.com/site/about/resources/checklist.pdf>) and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below.

### ARTICLE DETAILS

<b>TITLE (PROVISIONAL)</b>	The incubation period of COVID-19 – A rapid systematic review and meta-analysis of observational research
<b>AUTHORS</b>	McAloon, Conor; Collins, Aine; Hunt, Kevin; Barber, Ann; Byrne, Andrew; Butler, Francis; Casey, Miriam; Griffin, John; Lane, Elizabeth; McEvoy, David; Wall, Patrick; Green, Martin; O'Grady, Luke; More, Slmon

### VERSION 1 – REVIEW

<b>REVIEWER</b>	CHUANG SHUK KWAN Hong Kong DH
<b>REVIEW RETURNED</b>	03-May-2020

<b>GENERAL COMMENTS</b>	<p>Line 65, maximum incubation period cannot inform the duration of isolation</p> <p>Only Abstracts with English language is included. As the outbreak started in China, Chinese language studies on Incubation period should at least be included. Not clear about the exclusion criteria of the study. Only 8 out of 20 studies on incubation period found were included in the study, suggest to contact the authors to obtain original dataset of other studies discarded.</p> <p>Line 306, not sure the meaning of “well characterised patients”</p> <p>Overall, this study does not add much to the existing knowledge on incubation period of Covid 19.</p>
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<b>REVIEWER</b>	Peng Li Zhoushan center for disease control and prevention, China
<b>REVIEW RETURNED</b>	30-May-2020

<b>GENERAL COMMENTS</b>	McAloon et al. conducted a meta-analysis to estimate the incubation period of COVID-19. The topic is interesting and the writing is well. One question is when the author found heterogeneity in the analysis, whether to use the random effect model for meta-merging.
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<b>REVIEWER</b>	Ping Yu Jingan District Center for Disease Control and Prevention, Shanghai, China.
<b>REVIEW RETURNED</b>	03-Jun-2020

<b>GENERAL COMMENTS</b>	The key problem of this systematic review is not "systematic" at all. The coauthors missed a lot of studies which while provided incubation period.
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<b>REVIEWER</b>	Zhengyuan Xia The University of Hong Kong, Hong Kong, China
<b>REVIEW RETURNED</b>	03-Jun-2020

<b>GENERAL COMMENTS</b>	<p>General comments: This is a comprehensive and timely review and meta-analysis on the published data regarding incubation period of COVID-19 of various populations. The information and discussion provided are of interest. This reviewer has the following comments/suggestion that the authors may need to address:</p> <p>Specific comments:</p> <ol style="list-style-type: none"> <li>1. Methodology: Source of data: It is good that authors searched PubMed, Google scholar and preprint publications from MedRxiv etc. Other major databases like Cochrane Library, Embase should also be checked. Also, these information should be briefly stated in the abstract.</li> <li>2. The authors mentioned about possible factors that may impact on incubation period. To this end, a recent publication regarding the impact of surgical trauma on incubation period or activation of latent infection should be included/discussed (e.g., Lei S et al. Clinical Characteristics and Outcomes of Patients Undergoing Surgeries During the Incubation Period of COVID-19 Infection. <i>EClinicalMedicine</i>. 2020 Apr 5;21:100331. doi: 10.1016/j.eclinm.2020.100331</li> </ol>
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### VERSION 1 – AUTHOR RESPONSE

Reviewer: 1

Reviewer Name: CHUANG SHUK KWAN

Institution and Country: Department of Health Centre for Health Protection, Hong Kong

Please state any competing interests or state 'None declared': None declared

Line 65, maximum incubation period cannot inform the duration of isolation

Our apologies this should have read 'duration of quarantine'. Now corrected (LINE 63)

Only Abstracts with English language is included. As the outbreak started in China, Chinese language studies on Incubation period should at least be included.

Unfortunately, we did not have the resources to accurately translate articles reported in Chinese. It is important to note that only one Chinese article was removed during the eligibility screening process. Sensitivity analysis of our final meta-analysis (which can be trialed using the RShiny App) demonstrates that the pooled estimates of the incubation period distribution are largely insensitive to the inclusion of a single additional estimate. This point is now raised in the discussion (LINES 332-338)

Not clear about the exclusion criteria of the study. Only 8 out of 20 studies on incubation period found were included in the study, suggest to contact the authors to obtain original dataset of other studies discarded.

More detail is now added on the eligibility and quality assessment of the studies included. Since this article is submitted as a rapid review, it was not possible to individually contact authors to seek to obtain raw data where this has not been provided by the authors. It is worth noting that journals actively encourage the publication of raw data as part of the publication process. However, we now discuss this point as a limitation of the study in the discussion. (LINES 332-338)

Line 306, not sure the meaning of "well characterised patients"

An additional line is added to explain what is meant by "well characterised" (LINES 356-358)

Overall, this study does not add much to the existing knowledge on incubation period of Covid 19. Thank you for your comments. Respectfully we disagree. However we have redrafted our introduction in order to more carefully and clearly outline the importance of this study, explaining how it adds to existing knowledge. It is important to point out that previous studies aiming to summarise the central tendency of the incubation period will significantly underestimate in the variability in this important parameter. Our analysis allows the variation in this parameter, as well as the uncertainty at different parts of the distribution to be characterized.

Reviewer: 2

Reviewer Name: Peng Li

Institution and Country: Zhoushan center for disease control and prevention, China

Please state any competing interests or state 'None declared': None declared

McAloon et al. conducted a meta-analysis to estimate the incubation period of COVID-19. The topic is interesting and the writing is well. One question is when the author found heterogeneity in the analysis, whether to use the random effect model for meta-merging.

Thank you for your positive feedback. The estimates we reported have been based on a random effects meta-analysis. Initially, moderate to high levels of heterogeneity were found. Further subgroup analysis to isolate the cause of this heterogeneity were conducted. All of the heterogeneity could be attributed to the inclusion of two studies. Upon further analysis, one of these studies was removed. This process is reported in lines 244-260. In addition, based on your feedback we have created a new subheading in the Discussion section to clearly communicate our approach. (LINE 306)

Reviewer: 3

Reviewer Name: Ping Yu

Institution and Country: Jingan District Center for Disease Control and Prevention, Shanghai, China.

Please state any competing interests or state 'None declared': No any competing interests

The key problem of this systematic review is not "systematic" at all. The coauthors missed a lot of studies which while provided incubation period.

Further detail on the search methodology, screening and quality assessment has been added to the supplementary material.

Reviewer: 4

Reviewer Name: Zhengyuan Xia

Institution and Country: The University of Hong Kong, Hong Kong, China

Please state any competing interests or state 'None declared': None declared

General comments: This is a comprehensive and timely review and meta-analysis on the published data regarding incubation period of COVID-19 of various populations. The information and discussion provided are of interest.

Thank you for your positive feedback and for your constructive comments and suggestions.

This reviewer has the following comments/suggestion that the authors may need to address:

Specific comments:

1. Methodology: Source of data: It is good that authors searched PubMed, Google scholar and preprint publications from MedRxiv etc. Other major databases like Cochrane Library, Embase should also be checked. Also, these information should be briefly stated in the abstract.

We repeated searches in the additional databases as suggested. Four additional studies were recovered. Three were discarded during the eligibility screening phase. One was included in the final meta-analysis. The manuscript has been updated to reflect these changes.

2. The authors mentioned about possible factors that may impact on incubation period. To this end, a recent publication regarding the impact of surgical trauma on incubation period or activation of latent infection should be included/discussed (e.g., Lei S et al. Clinical Characteristics and Outcomes of Patients Undergoing Surgeries During the Incubation Period of COVID-19 Infection. *EClinicalMedicine*. 2020 Apr 5;21:100331. doi: 10.1016/j.eclinm.2020.100331  
Thank you very much for this suggestion. We now discuss this article in the context of our findings.  
(LINES 365-368)