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| **Decision Letter (RSTB-2020-0282)** |
| |  |  | | --- | --- | | **From:** | thibautjombart@gmail.com | | **To:** | alex.morgan@ed.ac.uk | | **CC:** | thibautjombart@gmail.com | | **Subject:** | Philosophical Transactions B - Decision on Manuscript ID RSTB-2020-0282 | | **Body:** | Dear Dr Morgan,  Your article RSTB-2020-0282 entitled "Optimising time-limited non-pharmaceutical interventions for COVID-19 outbreak control" for publication in the upcoming theme issue of Philosophical Transactions B has now been refereed.  Please see the referee reports at the bottom of this email. I share the general opinion of referee 2 that your paper is interesting, topical, clearly written and well presented. However, I also share some of the concerns raised by referee 1, in particular the use of an SIR model where SEIR may have been more appropriate, in particular given the potential impact of pre-symptomatic transmission for COVID-19. I feel this point should be revised (replacing the SIR with SEIR), or at least a better justification should be provided. Please address this point, alongside other comments of the referees, in a revised version. We hope you will be able to revise your manuscript within the next 4 weeks, but please let us know if you would need an extension. Good luck, and thanks again for submitting this interesting piece of work to our special issue.  \*\*GUEST EDITOR TO INPUT SPECIFIC REQUESTS\*\* Please make the following changes in response to the referee reports:  XXXXXXXXX XXXXXXXXX  To revise your manuscript, log into https://mc.manuscriptcentral.com/issue-ptrsb and enter your Author Center, where you will find your manuscript title listed under "Manuscripts with Decisions." Under "Actions," click on "Create a Revision." Your manuscript number has been appended to denote a revision. You will be unable to make your revisions on the originally submitted version of the manuscript. Once the revised manuscript is prepared, you can upload it and submit it through your Author Center.  When submitting your revised manuscript, you will be able to respond to the comments made by the reviewer(s) in the space provided. You can use this space to document any changes you make to the original manuscript. In order to expedite the processing of the revised manuscript, please be as specific as possible in your response to the reviewer(s). IMPORTANT: Your original files are available to you when you upload your revised manuscript. Please delete any redundant files before completing the submission.  We will need: 1) Text file of the manuscript (Word document, tex or similar) including an abstract/summary (up to 200 words), 3-6 keywords, references, tables (including captions), and figure captions. Please visit https://royalsociety.org/journals/authors/author-guidelines/ for full details.  2) Individual high resolution electronic files for each figure in the article (EPS or print-quality PDF preferred (either format should be produced directly from original creation package), or original software format).  3) All supplementary materials accompanying an accepted article will be treated as in their final form. Note that the Royal Society will not edit or typeset supplementary material and it will be hosted as provided. Please ensure that the supplementary material includes the paper details where possible (authors, article title, journal name). Supplementary files will be published alongside the paper on the journal website and posted on the online figshare repository (https://figshare.com). The heading and legend provided for each supplementary file during the submission process will be used to create the figshare page, so please ensure these are accurate and informative so that your files can be found in searches. Files on figshare will be made available approximately one week before the accompanying article so that the supplementary material can be attributed a unique DOI.  Again, thank you for contributing to this themed issue of Philosophical Transactions B and I look forward to receiving your revision.  Yours sincerely,  Dr Thibaut Jombart thibautjombart@gmail.com  Referee reports:  Referee: 1  Comments to Author(s) The Introduction says “Exploratory mathematical modelling into optimising NPIs has arisen from these retrospective analyses (9-15)” and the Discussion says “This work builds on previous epidemiological modelling (9-15)”. Can the authors be more specific about what it is in each of Refs 9-15 that the work builds upon?  What is the rationale for suboptimal interventions? Do the authors advocate that policy-makers should aim to achieve a gradual reduction in the contact rate rather than a faster one, or do they advocate that policy-makers accept that in reality a reduction in contact rates will be gradual and therefore they should plan for this, and trigger an intervention earlier than would be the case if a faster reduction could be achieved? The writing could also be tightened up: if these interventions are “not as obviously beneficial as an optimal intervention” then why do them? I presume the authors mean that achieving a theoretical optimum is impossible due to imperfect information and an inability to apply interventions perfectly and therefore one has to be pragmatic in designing policy. However, surely the “optimal” policy is the policy that works best in reality. If something works “in theory but not in practice” then the theory is wrong – or, at best, irrelevant.  Regarding the statement “We note that for a single time limited intervention, the most effective suboptimal strategy to minimise Imax and Ic(tmax) can be achieved by intervening stronger and for longer than what is considered optimal”, why would intervening maximally not be “optimal” in this framework? Of course, in reality there is a trade-off between reduction in contact patterns and disruption to society but that trade-off is not in this model.  However, the authors are clearly not trying to be realistic, anyway. They dismiss use of a more-realistic SEIR model on the grounds that they don’t really care about timing – despite the fact that timing is clearly critical in reality.  Minor comment: p4 (of the pdf) line 22(ish): “economic” not “economical”.   Referee: 2  Comments to Author(s) This paper considers a SIR model framework to investigate how the peak prevalence and attack rate vary with the duration, magnitude and trigger point of five different non-pharmaceutical intervention scenarios. The baseline model parameter values are chosen to simulate the UK COVID-19 outbreak.  This paper demonstrates the use of models to identify regions of parameter space where peak prevalence or attack rate are minimised.  While the authors stress that the aim of the paper is not to provide specific policy advice for COVID-19 control, the conclusions of this paper have clear policy implications. In particular they show that the optimal intervention parameter values are very sensitive to model parameters. Therefore, sub-optimal strategies (earlier or stronger measures than would be optimal) are more robust to uncertainty in model parameters. This is particularly important in the case of an outbreak of a novel virus, where there is great uncertainty surrounding model parameter values.  I thought this was a very well written paper with thorough analysis, which support the findings and conclusions of the paper. I therefore have only a few comments, as well as a couple of minor typos.  Page 8, line 38 – the authors say that the intervention parameters were optimised to minimise two outcomes (peak prevalence and attack rate). From the results it appears these parameter values are optimised to minimise the peak prevalence or attack rate, rather than minimising both simultaneously. Please can the authors clarify this.  I appreciate that investigation of the impact of waning/partial immunity is beyond the scope of this study. However, it seems that these results depend significantly on the assumption of lasting immunity. Since there is great uncertainty over whether or not there is long lasting immunity to COVID-19 I think it is important that the authors mention how they think waning immunity would affect the results presented in terms of the optimal parameter space.  This paper has focused on COVID-19, however they essentially provide a framework for considering optimal timing and duration of non-pharmaceutical interventions, which could equally well be applied to other outbreak scenarios. In particular I think it might increase the longer-term impact of the work if the authors briefly mention how this framework could be applied in the case of future pandemics.   Figures 1B and S16B are not readable in black and white.  Page 17 line 35 – Figure S26 should be Figure S16  Page 17 line 51 – Figure S27 should be Figure S17 | | | **Date Sent:** | 11-Nov-2020 |  | |