SARS-CoV-2

Government ministers have asked you to assess the relative efficacy of two alternative quarantine strategies for reducing SARS-CoV-2 transmission. The baseline strategy requires contacts of a suspected COVID-19 case to quarantine for 10 days. The alternative "test-to-release" strategy allows individuals to leave quarantine early if they test negative partway through the quarantine period. Which will be more effective? You have been asked to consider:
– potentially differing rates of compliance with the two strategies
– how many days after the start of the quarantine period the "test-to-release" should be taken
– imperfect sensitivity (i.e. the occurrence of false negatives) and specificity (i.e. the occurrence of false positives) of the test

Design a model that could help you answer these questions. For instance, you may wish to include the following:

- a compartment diagram of the disease including demographic states that you wish your model to track (showing arrows between your compartments denoting flows).
- Any further information on the model set-up (e.g. whether you wish to use a stochastic model and if so what type)
- A short list of information or parameters that you need to run your model
- Any values of these parameters needed (you may find googling helpful here - remember to state your source)
- A short list of where any uncertainty is in your assumptions, model structure or parameter values.